



City of Coquitlam

# **Contract Documents 81832-Phase 1**

## **Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements**



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**Contract No. 81832-Phase 1**

**Cedar Drive Upgrades – Phase 1:**

**Partington Creek Conveyance Improvements**

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# ***Invitation to Tender***



## INVITATION TO TENDER

DATE OF ISSUE: April 17, 2024

*We acknowledge with gratitude and respect that the name Coquitlam was derived from the hən̓q̓əmiñəh̓ word kwikwə́ləm (kwee-kwuh-tlum) meaning "Red Fish Up the River". The City is honoured to be located on the kwikwə́ləm (Kwikwetlem) traditional and ancestral lands, including those parts that were historically shared with the s̓q̓əcíyaʔ təməxw (Katzie), and other Coast Salish Peoples.*

### Tender No. 81832-Phase 1

#### Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements

The City of Coquitlam invites tenders for **Contract 81832-Phase 1 – Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements**, generally consisting of the following, but not limited to:

- Construction of a drainage and environmental channel, along Cedar Drive. This channel will be located between existing Cedar Drive and new Cedar Drive/preload, and will extend from Cedar Drive Sanitary Pump Station towards Gilley's Trail intersection
- Partial removal of existing preload and placing it west of sanitary pump station.
- Planting and "woody debris" installation on proposed riparian area of channel
- Irrigation system for new planting
- Fish/animal salvage
- Erosion and sedimentation control measures and environmental monitoring
- Ground water management

Tender Documents and Drawings are available for downloading from the City of Coquitlam website: [www.coquitlam.ca/BidOpportunities](http://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 pm local time**  
**Wednesday, May 8, 2024**  
("Closing Date and Time")

### **Addenda**

**Tenderers are required to check the City's website for any updated information at: [www.coquitlam.ca/BidOpportunities](http://www.coquitlam.ca/BidOpportunities). Where in its sole discretion it considers it to be necessary or desirable, the City may issue Addenda to amend any portion of the Contract Documents.**

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 may view the Tender Documents and Drawings by contacting the Vancouver Regional Construction Association (VRCA), website: [www.my.vrca.ca](http://www.my.vrca.ca), ph: 604-294-3766, or email at [vrca@vrca.ca](mailto:vrca@vrca.ca), quoting the Coquitlam Tender Reference Number.

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

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, prior to award of any Tender, may negotiate with the Tenderer presenting the lowest price compliant Tender, for changes in the Work, materials, specifications or

conditions without having any duty or obligation to advise any other Tenderers or to allow them to modify their Tenders, and the City will have no liability to any Tenderer as a result of such negotiations or modifications.

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

Procurement of goods and services is conducted in accordance with Chapter 5 of the Canadian Free Trade Agreement (CFTA) and the New West Partnership Trade Agreement (NWPTA).

M. Pain  
Procurement Manager

# ***Instructions to Tenderers***

**Tender 81832-Phase 1**

**Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

**INSTRUCTIONS TO TENDERERS**

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## INSTRUCTIONS TO TENDERERS

(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:* **Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

*Reference No.* **81832-Phase 1**

- |            |                         |     |  |
|------------|-------------------------|-----|--|
| <b>1.0</b> | <b>Introduction</b>     | 1.1 | <p>These Instructions apply to and govern the preparation of tenders for this <i>Contract</i>. The <i>Contract</i> is generally for the following work:</p> <ul style="list-style-type: none"><li>• Construction of a drainage and environmental channel, along Cedar Drive. This channel will be located between existing Cedar Drive and new Cedar Drive/preload, and will extend from Cedar Drive Sanitary Pump Station towards Gilley's Trail intersection</li><li>• Partial removal of existing preload and placing it west of sanitary pump station</li><li>• Planting and "woody debris" installation on proposed riparian area of channel</li><li>• Irrigation system for new planting</li><li>• Fish/animal salvage</li><li>• Erosion and sedimentation control measures and environmental monitoring</li><li>• Ground water management</li></ul> |
|            |                         | 1.2 | <p>All inquiries regarding this Tender are to be submitted in writing referencing the <b>Tender Name and Number</b> sent to:</p> <p><b>E-mail</b>     <a href="mailto:bid@coquitlam.ca">bid@coquitlam.ca</a></p> <p>The deadline for inquiries is <b>2:00 PM</b> local time, <b>Friday, May 3, 2024</b>.</p> <p><b>INQUIRIES RECEIVED AFTER THIS DATE AND TIME MAY NOT RECEIVE A RESPONSE.</b></p>   |
| <b>2.0</b> | <b>Tender Documents</b> | 2.1 | <p>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 "<b>List of Contract Drawings</b>".</p>   |
|            |                         | 2.2 | <p><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 General Conditions, Specifications and Standard Detail Drawings. They are those</p>   |

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 *Tender Closing Date*. All sections of this publication are by reference included in the Contract Documents.

- 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 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 *Contract*, 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.

**3.0 Submission of  
Tenders**

- 3.1 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.

Tenders must be received on or before:

***Tender Closing Time:* 2:00 p.m. local time**

***Tender Closing Date:* May 8, 2024**

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.

**Instructions  
for Tender  
Submission**

- 3.2 **Tender submissions are to be consolidated into one (1) PDF file and uploaded electronically through QFile, the City's file transfer service accessed at website:**

<http://qfile.coquitlam.ca/bid>

- 1. In the "Subject Field" enter: Tender Number and Name**
- 2. Add consolidated Tender file in PDF format and Appendix 1 in XLS format, and Send** (ensure your web browser remains open until you receive 2 emails from Qfile to confirm upload is complete and was sent to email: bid@coquitlam.ca)

**Tenderers are responsible to allow for ample time to complete the submission process. For assistance, phone 604-927-3037.**



- 3.3 Tenders submitted shall be deemed to be received when displayed as a new email in the in-box of the above 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.
- 3.4 The City reserves the right to accept late Tenders to allow for technological delays. The City also reserves the right to accept Tenders by email: [bid@coquitlam.ca](mailto:bid@coquitlam.ca).
- BIDS RECEIVED IN-PERSON, BY COURIER, OR BY FAX WILL NOT BE ACCEPTED.**
- 3.5 Tenders will not be opened in public. The unevaluated results will be forwarded to participants by email.
- 3.6 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.

**4.0 Additional  
Instructions to  
Tenderers**

Additional Instructions to Tenderers

**Obtaining  
Documents**

- 4.1 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 (2009), General Conditions, Specifications and Standard Detail Drawings are available separately from:  
  
Support Services Unlimited  
Suite 102  
211 Columbia Street  
Vancouver, B.C. V6A 2R5  
Tel: 604-681-0295  
Fax: 604-305-0424
  - Copies of the City of Coquitlam Supplementary Specifications and Detailed Drawings to the MMCD 2009 Edition are available for viewing and downloading off the City of Coquitlam website: [Supplementary Specifications and Detailed Drawings to MMCD](#)

**Test  
Excavations**

- 4.2 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.

<b>Business License</b>	4.3	The successful Tenderer shall provide evidence of a City of Coquitlam Business License or Tri-Cities Inter-Municipal Business License prior to commencement of work or supply of materials. For more information, contact Business License Division Ph: 604-927-3085 or apply online at website: <a href="#">City of Coquitlam Business License</a>
<b>No Claim</b>	4.4	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.
<b>No Cost</b>	4.5	The City will not under any circumstances be responsible for any costs incurred by the Tenderer in preparing the Tender.
<b>Right to Accept or Reject any Tender</b>	4.6	<p>The City reserves the right to accept or reject any or all Tenders and the lowest or any Tender may not necessarily be accepted. In its sole discretion, the City may reject or retain for its consideration, tenders which are nonconforming because they do not contain the content or form required by the instructions to tenderers or for failure to comply with the process for submission set out in these instructions to tenderers.</p> <p>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.</p>
<b>Negotiation</b>	4.7	The City, prior to award of any Tender, may negotiate with the Tenderer presenting the lowest price compliant Tender, for changes in the Work, materials, specifications or conditions without having any duty or obligation to advise any other Tenderers or to allow them to modify their Tenders, and the City will have no liability to any Tenderer as a result of such negotiations or modifications.
<b>Cancellation of Tender</b>	4.8	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.
<b>Conflict of Interest</b>	4.9	Tenderers shall disclose any actual or potential conflicts of interest and existing business relationships it may have with the City, their elected or appointed officials or employees.
<b>Collusion</b>	4.10	Tenderers will not discuss or communicate with one another in regards to the preparation of their Tenders. Each Tenderer will ensure that its participation in the Tender process and that of its team members is conducted without collusion or fraud. Failure to comply with this requirement may lead to disqualification without further notice or warning.

**Instruction to  
Tenderers –  
Part II**

**5.0 Tender  
Requirements**

Delete Instructions to Tenderers – Part II Contained in the Edition of the Publication “Master Municipal Construction Documents 2009” and replace with the following:

- 5.1 A tender should be on the Form of Tender as provided and be signed by the authorized signatory(s) as follows:
- 5.1.1 if the tenderer is a partnership or joint venture then the name of the partnership or joint venturer should be included, and each partner or joint venturer should sign personally; if a partner of joint venture is a corporation then such corporation should sign as indicated in paragraph 5.1.3 below; and
  - 5.1.2 if the tenderer is a corporation then the full name of the corporation should be included, together with the names and signatures of authorized signatories.
  - 5.1.3 For the purpose of the Tender submission, digital copies of original documents and electronic signatures are accepted. Original documents are required upon request by the City.
- 5.2 A tender must be accompanied by tender security (“*Bid Security*”) in the form of:
- 5.2.1 a copy (digital or Electronic copy is acceptable) of the original bid bond in an amount equal to 10% of the Tender Price, issued by a surety licensed to carry on the business of suretyship in British Columbia in a form reasonably satisfactory to the *Owner*;
- 5.3 Tenderer should be competent and capable of performing the various items of work. Tenderer shall complete the following statement sheets appended to the Form of Tender:
- 5.3.1 Appendix 1 – the Schedule of Quantities and Prices;
  - 5.3.2 Appendix 2 – a “*Preliminary Construction Schedule*”, generally in the form attached as Appendix 2 to the Form of Tender, and showing *Substantial Performance* by the date or within the duration, shown in paragraph 2.2 of the Form of Tender.
  - 5.3.3 Appendix 3 – name and brief description of the previous experience of the *Superintendent* the tenderer will use for the *Work*;
  - 5.3.4 Appendix 4 – a list of previous comparable work, including a brief description of that work, approximate contract value, and references (with phone numbers);

- 5.3.5 Appendix 5 – a complete list of all subcontractors, if any, that the tenderer will use for the *Work* including full names.; and
- 5.3.6 Appendix 7 – is provided for information only, to indicate the Contract Insurance is to be submitted by the successful Tenderer upon Notice of Award.
- 5.4 The successful tenderer will, within 15 *Days* of receipt of the written *Notice of Award*, be required to deliver to the *Owner* the items listed in FT 5.1.1, including a Performance Bond and a Labour and Material Payment Bond as described in FT 5.1.1(a), failing which the provisions of FT 6.1 will apply.
- 6.0 Qualifications, Modifications, Alternative Tenders**
- 6.1 Tenders which contain qualifications, or omissions, so as to make comparison which other tenders difficult, may be rejected by the *Owner*.
- 6.2 A tenderer may, at the tenderer's election, submit an alternative tender ("*Alternative Tender*") which varies the materials, products, designs or equipment by the *Owner as Approved Equals* as the case may be, but an *Alternative Tender* must be in addition to, and not in substitution for a tender which conforms to the requirements of the *Contract Documents*.
- 6.3 The only *Alternative Tender* that the *Owner* may accept is an *Alternative Tender* submitted by that tenderer whose conforming tender, submitted as required by paragraph 6.2 of these Instructions to Tenderers, would have been accepted by the *Owners* in the preference to other conforming tenders, if no *Alternative Tenders* had been invited.
- 7.0 Approved Equals**
- 7.1 Prior to the *Tender Closing Time and Date*, a tenderer may request the *Owner* to approve materials, products, or equipment ("*Approved Equal*") to be included in a tender in substitution for items indicated in the Contract Documents.
- 7.2 Applications for an *Approved Equal* must be in writing, and supported by appropriate supporting information, data, specifications, and documentation.
- 7.3 If the *Owner* decides in its discretion to accept an *Approved Equal*, then the *Owner* will issue an addendum to all tenderers.
- 7.4 The *Owner* is not obligated to review or accept an application for an *Approved Equal*.
- 8.0 Inspection of the Place of the Work**
- 8.1 All tenderers, either personally or through a representative, are responsible to examine the *Place of the Work* before submitting a tender. A tenderer has full responsibility to be familiar with and make allowance in the tender for all conditions at the *Place of the Work* that might affect the tender, including any information regarding subsurface soil conditions made available by the *Owner*,

the location of the *Work*, local conditions, topographical soil conditions, weather and access. Unless otherwise specified in the *Contract Documents*, a tenderer is not required to do subsurface investigations. By submitting a tender, a tenderer represents that the tenderer has examined the *Place of the Work*, or specifically elected not to. No additional payments or time extensions shall be claimable or due because of difficulties relating to conditions at the *Place of the Work* which were reasonably foreseeable by a contractor qualified to undertake the *Work*.

8.2 Tenderers are referred to GC 11.2.1 regarding **Concealed or Unknown Conditions**.

**9.0 Interpretation  
of Contract  
Documents**

9.1 If a tenderer is in doubt as to the correct meaning of any provision of the *Contract Documents*, the tenderer may request clarification as instructed in paragraph 1.2 of the Instructions to Tenderers.

9.2 If a tenderer discovers any contradictions or inconsistencies in the *Contract Documents* or its provisions, or any discrepancies between a provision of the *Contract Documents* and conditions at the *Place of the Work as* observed in an examination under paragraph 8 of the person named in paragraph 1.2 of the Instructions to Tenderers.

9.3 If the *Owner* considers it necessary, the *Owner* may issue written addenda to provide clarification (s) of the *Contract Documents*.

9.4 No oral interpretation or representations from the *Owner* or any representative of the *Owner* will affect, alter, or amend any provision of the *Contract Documents*.

**10.0 Prices**

10.1 The Tendered Price will represent the entire cost excluding *GST* to the *Owner* of the complete *Work* based on the estimated quantities in the *Schedule of Quantities and Prices* of the Form of Tender. Notwithstanding the generalities of the above, tenderers shall include in the tendered prices (including unit prices, lump sum prices, or other forms of pricing) sufficient amounts to cover:

10.1.1 the costs of all labour, equipment and material included in or required for the *Work*, including all items which, whole not specifically listed in the *Schedule of Quantities and Prices*, are included in the *Work* specifically or by necessary inference from the *Contract Documents*;

10.1.2 all assessments payable with respect to labour as required by any statutory scheme such as unemployment insurance, holiday pay, insurance, CPP and all employee benefits and the Workers Compensation Act;

10.1.3 all overhead costs, including head office and on-site overhead costs, and all amounts for the *Contractor's* profit.

- 10.2 The tendered prices and all subcontracts must allow for compliance with all applicable laws regarding trade or other qualifications of employees performing the *Work*, and payment of appropriate wages for labour included in or required for the *Work*.
- 11.0 Taxes** 11.1 The tendered prices shall cover all taxes and assessments of any kind payable with respect to the *Work*, but shall not include *GST*. *GST* shall be listed as a separate line item as required by GC 19.3.
- 12.0 Amendment of Tenders** 12.1 A tenderer may amend or revoke a tender by giving written notice, delivered by Email, to the office referred to in paragraph 3.4 of the Instructions to Tenderers at any time up until the *Tender Closing Date and Time*. An amendment or revocation that is received after the *Tender Closing Date and Time* shall not be considered and shall not affect a tender as submitted.
- 12.2 An amendment or revocation must be signed by an authorized signatory of the tenderer in the same manner as provided by paragraph 5.1 of these Instructions to Tenderers.
- 12.3 Any amendment that expressly or by inference discloses the tenderer's *Tender Price* or other material element of the tender such that, in the opinion of the *Owner*, the confidentiality of the tender is breached, will invalidate the entire tender.
- 12.4 An acceptable form of a tender amendment which tenderers may, but are not required to, use is as follows:

"Contract:

\_\_\_\_\_  
(TITLE OF CONTRACT)

Reference No.

\_\_\_\_\_  
(OWNER'S CONTRACT REFERENCE NO.)

TO:

\_\_\_\_\_  
(NAME OF OWNER)

We the undersigned wish to amend our tender which we submitted for the above *Contract* by deleting the following tendered prices or items from our tender:

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

\_\_\_\_\_  
(TENDERED PRICES AND/OR TENDER ITEMS IN THE TENDER THAT ARE TO BE AMENDED)

and substituting the following revised tendered prices or items:

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

\_\_\_\_\_  
(REVISED TENDERED PRICES OR TENDER ITEMS)

The extensions in our tender should be adjusted accordingly, and our ***Tender Price*** as set out in Appendix 1 of our submitted **Form of Tender**, and on the ***Schedule of Quantities and Prices***, increased / decreased by \$\_\_\_\_\_, excluding GST. We have not included

our revised ***Tender Price*** in order to preserve the confidentiality of our tender.

Signed and delivered the \_\_\_ day of \_\_\_\_\_, 20\_\_."

**13.0                      Duration of  
                                 Tenders**

13.1      After the *Tender Closing Time*, a tender shall remain valid and irrevocable as set out in paragraph 5.1 of the Form of Tender.

**14.0                      Qualifications  
                                 of Tenderers**

14.1      By submitting a tender, a tenderer is representing that it has the competence, qualifications and relevant experience required to do the *Work*.

**15.0                      Award**

15.1      In exercising its discretion, the *Owner* will have regard to the information provided in the Appendices to the Form of Tender as described under IT 5.3 including the proven experience of the tenderer, and any listed subcontractors, to do the *Work*.

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, not award to a 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 award to a Tenderer 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.

In the event that the lowest total Tender Price by two or more Tenderers is the same amount, the City will select a Tenderer with an overall satisfactory performance record in having completed work on previous relevant projects that are provided as references, and on City projects. Information obtained from references will not be disclosed or discussed with any Tenderer. If all references are equal, selection will be determined by a coin toss in a manner to be directed by the City.

Where only one Tender is received the City may reject such and re-tender on a selected basis.

- 15.2 The *Owner* will notify the successful tenderer in writing.
- 15.3 If there are any discrepancies in the *Schedule of Quantities and Prices* between the unit prices and the extended totals then the unit prices shall be deemed correct, and corresponding corrections shall be made to the extended totals. If a unit price or extended total has been omitted, the following shall apply:
  - a) If a unit price is given but the corresponding extended total has been omitted, then the extended total shall be calculated from unit price and the estimated quantity, and inserted as the extended total;
  - b) If an extended total is given but the corresponding unit price has been omitted, then the unit price shall be calculated from the extended total and estimated quantity, and inserted as the unit price;
  - c) If both the unit price and the corresponding extended total for a tender item have been omitted, then the following test shall be applied to determine whether the tender shall be rejected as incomplete:
    - (i) the highest of the unit prices tendered by other tenderers for that tender item shall be used as the test unit price, and the corresponding test



extended total shall be calculated from the test unit price and the estimated quantity;

- (ii) if the test extended total for the tender item exceeds 1% of the revised total *Tender Price*, including the test extended total, or if the revised total *Tender Price*, including the test extended total, alters the ranking of the tenderers according to the lowest *Tender Price*, then the omitted unit price for that tender item is deemed to materially affect the *Tender Price* relative to other tenders and the tender shall be rejected;
- (iii) if the tender is not rejected under subparagraph (ii) of this IT 15.3 (c), then the unit price and the extended total for that tender item shall both be deemed to be, and the costs for that tender item shall be zero deemed to be included in other tender items prices;

- d) In no event shall page totals in the *Schedule of Quantities and Prices* or the total *Tender Price* be used to calculate missing extended totals or unit prices.

- |             |                       |      |  |
|-------------|-----------------------|------|--|
| <b>16.0</b> | <b>Subcontractors</b> | 16.1 | The <i>Owner</i> reserves the right to object to any of the subcontractors listed in a tender. If the <i>Owner</i> objects to any of the subcontractor(s) then the <i>Owner</i> will permit a tenderer to, within 5 days, propose a substitute subcontractor(s) acceptable to the <i>Owner</i> provided that there is not resulting adjustment in the <i>Tender Price</i> or the completion date set out in paragraph 2.2 of the Form of Tender. A tenderer will not be required to make such substitution and, if the <i>Owner</i> objects to a listed <i>Subcontractor(s)</i> , the tenderer may, rather than propose a substitute subcontractor(s), consider its tender rejected by the <i>Owner</i> and by written notice withdraw it tender. The <i>Owner</i> shall, in the event, return the tenderer's bid security |
| <b>17.0</b> | <b>Optional Work</b>  | 17.1 | If the <i>Schedule of Quantities and Prices</i> includes any tender prices for <i>Optional or Provisional Work</i> , as defined in GC 7.4.1, the tenderers must complete all the unit prices for such <i>Optional or Provisional Work</i> . Such tender prices shall not include any general overhead costs, or other costs, or profit, not directly related to the <i>Optional or Provisional Work</i> .  |
|             |                       | 17.2 | Notwithstanding that the <i>Owner</i> may elect not to proceed with the <i>Optional or Provisional Work</i> , the tender prices for any <i>Optional or Provisional Work</i> , including the extended totals for <i>Optional or Provisional Work</i> unit prices, shall be included in the <i>Tender Price</i> for the purpose of any price comparisons between tenders.  |

# ***Form of Tender***



## Form of Tender

Tender No. 81832-Phase 1

### Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements

#### Summary

Name of **Contractor**: \_\_\_\_\_

**Tender Price** (exclude GST): \$ \_\_\_\_\_

(FROM APPENDIX 1 OF FORM OF TENDER)

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

**On or before 2:00 pm (local time)  
Wednesday May 8, 2024**

#### Instructions for Tender Submission

**Tender submissions are to be consolidated into one (1) .pdf file and uploaded electronically through QFile, the City's file transfer service accessed at website: [qfile.coquitlam.ca/bid](https://qfile.coquitlam.ca/bid)**

- 1. In the "Subject Field" enter:** Tender Number and Name
- 2. Add consolidated Tender file in PDF format, and Appendix 1 in XLS format, and Send** (ensure your web browser remains open until you receive 2 emails from Qfile to confirm upload is complete and was sent to the correct email address: [bid@coquitlam.ca](mailto:bid@coquitlam.ca) )

**Tenderers are responsible to allow ample time to complete the Tender submission process. If assistance is required, phone 604-927-3037.**

May 2024

THE CITY OF COQUITLAM  
3000 Guildford Way  
Coquitlam, B.C. V3B 7N2

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( 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. )

**Contract Name:** Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements  
**Reference No.:** 81832-Phase 1

**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 shall fully disclose any actual or potential conflicts of interest and existing business relationships we may have with the City, their elected or appointed officials or employees:

\_\_\_\_\_

- 1.3 have full knowledge of the *Place of the Work*, and the *Work* required; and  
1.4 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 **October 30, 2024** 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 **15 Days** of receipt of the written *Notice of Award* deliver to the *Owner*:
    - 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*;
    - b) a "clearance letter" indicating that the Tenderer is in WCB compliance; and
    - c) a copy of the insurance policies as specified in SGC Section 24 indicating that all such insurance coverage is in place and;
    - d) a letter confirming the *Contractor* as "Prime Contractor" for the Contract as specified in SGC Section 21.2.1.
  - 5.1.2 within **2 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: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

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 Tax (GST) registration status is as follows:

8.1.1 for information purposes, our GST 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)**

APPENDIX 1						
FORM OF TENDER						
Contract 81832- PHASE 1						
CEDAR DRIVE UPGRADES - PHASE 1 - PARTINGTON CREEK CONVEYANCE IMPROVEMENTS						
SCHEDULE OF QUANTITIES AND PRICES						
(see paragraph 5.3.1 of the Instruction to Tenderers)						
(All Tender and Contract Prices shall NOT include GST. GST will apply upon payment)						
(Should there be any discrepancy in the information provided, the City's original file copy shall prevail)						
ITEM NO.	MMCD/ Supp. Specs	DESCRIPTION	UNIT OF MEASURE	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
1	01 55 00S	TRAFFIC CONTROL, VEHICLE ACCESS AND PARKING				
1.01	(1.5.1)	Traffic Control and Management		Incidental to Contract		
2	01 57 01S	ENVIRONMENTAL PROTECTION				
2.01	(1.6.1)	ESC supply & installation, maintenance and removal	ALLOWANCE	1		\$50,000.00
3	01 58 01S	PROJECT IDENTIFICATION				
3.01	(1.3.1)	Construction Zone Information Signs	Each	4		
4	31 11 01S	CLEARING AND GRUBBING				
4.01	(1.4.1)	Clearing and Grubbing	Lump Sum	1		
5	31 24 13S	ROADWAY EXCAVATION, EMBANKMENT AND COMPACTION				
5.01	(1.8.5)	Common Excavation - Off Site Disposal, includes stripping and top soil removal, placing polythene sheet for erosion control complete	Cubic Meter	2280		
5.02	(1.8.5)	Common Excavation - Onsite Reuse (Native Material Regrade at Channel)	Cubic Meter	1990		
5.03	(1.8.5)	Japanese Knotweed Removal and Off Site Disposal and Stockpiling at 1341 Gilleys Trail.(OPTIONAL)	Cubic Meter	1500		
5.04	(1.8.4)	Removal of Existing Concrete Lock Block Wall (Maximum Six Blocks High)	Linear Meter	120		
5.05	(1.8.14)	Sandbag Barrier	Linear Meter	140		
6	32 11 23	GRANULAR BASE				
6.1	(1.4.3)	19mm Minus Gravel (Road Shoulder)	Tonne	80		
7	33 11 01S	WATERWORKS				
7.01	(1.8.11)	Hydrant Assembly Relocation	Each	2		
7.02	(1.8.14)	Irrigation water service connection and meter (50 mm Diameter)	ea.	1		
8	31 23 23	CONTROLLED DENSITY FILL				
8.1	1.4	Infill of Existing 1200mm Dia. HDPE Culvert with Controlled Density Fill (CEMATRIX or Approved Equal)	Cubic Meter	140		
9	31 37 10	RIPRAP				
9.1	1.4.1	150mm Dia. Riprap	Tonne	80		
10	33 42 13S	PIPE CULVERTS				
10.01	(1.5.2)	1200mm Dia. HDPE Culvert Extension	lin.m	14		
10.02	(1.5.2)	1200mm Dia. 90deg HDPE Bend	Each	2		
10.03	(1.5.4)	Removal of Existing 300mm Dia. PVC Culvert	lin.m	14		
10.04	(1.5.7)	Removal of Existing 500mm Dia. CSP Culvert and off site disposal	lin.m	16		
10.05	(1.5.7)	Removal of Existing 600mm Dia. CMP Culvert and off site disposal	lin.m	11		
10.06	(1.5.7)	Removal of Existing 850mm Dia. PVC Culvert and off site disposal	lin.m	10		



SCHEDULE OF QUANTITIES AND PRICES						
(see paragraph 5.3.1 of the Instruction to Tenderers)						
(All Tender and Contract Prices shall NOT include GST. GST will apply upon payment)						
(Should there be any discrepancy in the information provided, the City's original file copy shall prevail)						
ITEM NO.	MMCD/ Supp. Specs	DESCRIPTION	UNIT OF MEASURE	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>11</b>	<b>32 91 21S</b>	<b>TOP SOIL AND FINISH GRADING</b>				
11.01	(1.4.1)	Growing Medium as specified on Contract Drawings	Cubic Meter	2630		
<b>12</b>	<b>32 92 19S</b>	<b>HYDRAULIC SEEDING</b>				
12.01	(1.8.1)	Hydraulic Seeding	Square Meter	2500		
12.02	1.8.3	Erosion Control Blanket	Square Meter	4700		
<b>13</b>	<b>04 43 00S</b>	<b>CHANNEL SUBSTRATE</b>				
13.1	(1.3.1)	Channel Substrate Gravel Mix	Cubic Meter	1150		
13.2	(1.3.2)	600mm Dia. Boulder	Each	300		
<b>14</b>	<b>32 93 01S</b>	<b>PLANTING OF TREES, SHRUBS, AND GROUND COVERS</b>				
14.01	(1.9.1)	Tree - Amelanchier canadensis - Canada Serviceberry	Each	7		
14.02	(1.9.1)	Tree - Betula alleghaniensis - Yellow Birch	Each	3		
14.03	(1.9.1)	Tree - Cercis canadensis - Eastern Redbud	Each	3		
14.04	(1.9.1)	Tree - Crataegus douglasii suksdorfii - Black Hawthorn	Each	1		
14.05	(1.9.1)	Tree - Gleditsia triacanthus - Honey Locust	Each	3		
14.06	(1.9.1)	Tree - Picea glauca - White Spruce	Each	8		
14.07	(1.9.1)	Tree - Pinus contorta - Shore Pine	Each	8		
14.08	(1.9.1)	Tree - Pinus ponderosa - Ponderosa Pine	Each	38		
14.09	(1.9.1)	Tree - Prunus emarginata - Bitter Cherry	Each	6		
14.10	(1.9.1)	Tree - Pseudotsuga menziesii - Douglas Fir	Each	50		
14.11	(1.9.1)	Tree - Quercus garryana - Garry Oak	Each	19		
14.12	(1.9.1)	Tree - Rhamnus purshiana - Cascara	Each	14		
14.13	(1.9.1)	Shrubs	Each	3661		
14.14	(1.9.1)	Ground Cover	Each	4074		
14.15	(1.9.3)	Large Woody Debris Type 1	Each	31		
14.16	(1.9.3)	Large Woody Debris Type 2	Each	9		
14.17	(1.9.3)	Tree Snag	Each	9		
<b>15</b>	<b>32 84 23S</b>	<b>IRRIGATION</b>				
15.01	(1.11)	Providing and Installing irrigation system complete with double check valve assembly (Watt 007QT), TBOS II controller, Rainbird PEB valves, all labor, equipment and materials needed to complete the work as shown on Contract Drawings including maintenance for one year as described in specifications.	I.s.	1		
<p align="right"><b>Total Tendered Price (exclude GST):</b> _____ \$</p> <p align="right">(Transfer the amount to Form of Tender Summary Page 1)</p> <p align="right"><b>Name of Contractor:</b> _____</p>						

**APPENDIX 2**

**FORM OF TENDER**

**Contract 81832-Phase 1  
Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

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

INDICATE SCHEDULE WITH BAR CHART WITH CONSTRUCTION DURATIONS

CONSTRUCTION ACTIVITY	JUNE				JULY					AUGUST				SEPTEMBER				OCTOBER				
	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5

Substantial Completion Date: **October 30, 2024**

All instream work to be completed within the Fisheries Construction Work Window from August 1 to September 15 as required under the Fisheries Act Authorization.

Proposed Disposal Site: \_\_\_\_\_

**APPENDIX 3**

**FORM OF TENDER**

**Contract 81832-Phase 1  
Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

**EXPERIENCE OF SUPERINTENDENT**

(See paragraph 5.3.3 of the Instructions to Tenderers)

**Proposed Project Superintendent** \_\_\_\_\_

**List of Project Experience**

<b>PROJECT:</b>		<b>Dates:</b>	
<b>Work Description:</b>			
<b>Responsibility:</b>			
<b>Owner/Reference:</b>		<b>Phone No.:</b>	

<b>PROJECT:</b>		<b>Dates:</b>	
<b>Work Description:</b>			
<b>Responsibility:</b>			
<b>Owner/Reference:</b>		<b>Phone No.:</b>	

<b>PROJECT:</b>		<b>Dates:</b>	
<b>Work Description:</b>			
<b>Responsibility:</b>			
<b>Owner/Reference:</b>		<b>Phone No.:</b>	

**APPENDIX 4**

**FORM OF TENDER**

**Contract 81832-Phase 1  
Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

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

<b>PROJECT:</b>		<b>VALUE (\$):</b>	
<b>OWNER:</b>		<b>Phone No.:</b>	
<b>Work Description:</b>			

<b>PROJECT:</b>		<b>VALUE (\$):</b>	
<b>OWNER:</b>		<b>Phone No.:</b>	
<b>Work Description:</b>			

<b>PROJECT:</b>		<b>VALUE (\$):</b>	
<b>OWNER:</b>		<b>Phone No.:</b>	
<b>Work Description:</b>			

<b>PROJECT:</b>		<b>VALUE (\$):</b>	
<b>OWNER:</b>		<b>Phone No.:</b>	
<b>Work Description:</b>			

**APPENDIX 5**

**FORM OF TENDER**

**Contract 81832-Phase 1  
Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

**SUBCONTRACTORS**

(See paragraph 5.3.5 of the Instructions to Tenderers)

<b>Trade:</b>		<b>Tender Item:</b>	
<b>Work Description:</b>			
<b>Subcontractor:</b>		<b>Phone No.:</b>	

<b>Trade:</b>		<b>Tender Item:</b>	
<b>Work Description:</b>			
<b>Subcontractor:</b>		<b>Phone No.:</b>	

<b>Trade:</b>		<b>Tender Item:</b>	
<b>Work Description:</b>			
<b>Subcontractor:</b>		<b>Phone No.:</b>	

<b>Trade:</b>		<b>Tender Item:</b>	
<b>Work Description:</b>			
<b>Subcontractor:</b>		<b>Phone No.:</b>	

<b>Trade:</b>		<b>Tender Item:</b>	
<b>Work Description:</b>			
<b>Subcontractor:</b>		<b>Phone No.:</b>	

**APPENDIX 6**

**FORM OF TENDER**

**Contract 81832-Phase 1  
Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements  
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  
\_\_\_\_\_, 2024, 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 \_\_\_\_\_, 2024.

SIGNED, SEALED AND DELIVERED

In the presence of:

_____	)	_____
_____	)	PRINCIPAL
_____	)	_____
_____	)	SURETY
_____	)	_____

---

**APPENDIX 7**

**FORM OF TENDER**

**Contract 81832-Phase 1  
Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

**CERTIFICATE OF COMPLIANCE for CONTRACT INSURANCE**

---

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

**Contract Number:**      **81832-Phase 1**

**Contract Name:**      **Cedar Drive Upgrades – Phase 1:  
Partington Creek Conveyance Improvements**

**Description of Work:**

- Construction of a drainage and environmental channel, along Cedar Drive. This channel will be located between existing Cedar Drive and new Cedar Drive/preload, and will extend from Cedar Drive Sanitary Pump Station towards Gilley's Trail intersection
- Partial removal of existing preload and placing it west of sanitary pump station
- Planting and "woody debris" installation on proposed riparian area of channel
- Irrigation system for new planting
- Fish/animal salvage
- Erosion and sedimentation control measures and environmental monitoring
- Ground water management
- **Other miscellaneous and incidental work as contained in the Contract Documents**

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

<b>Special Coverage Required:</b>	<b><u>YES</u></b>	<b><u>NO</u></b>	<b><u>Special Coverage Description</u></b>
	(   )	( 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

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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 this \_\_\_\_ day of \_\_\_\_\_ 2024.

**Contract:** Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements

**Reference No.** 81832-Phase 1

#### BETWEEN:

The City of Coquitlam  
3000 Guildford Way  
Coquitlam, B.C. 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 **October 30, 2024**, subject to the provisions of the *Contract Documents* for adjustments to the *Contract Time*.
- 1.3 Time shall be 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 hereunder 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 email, or by hand, or by pre-paid registered mail to the addresses as set out below:

The *Owner*:

The City of Coquitlam  
3000 Guildford Way  
Coquitlam, B.C. V3B 7N2

Tel: 604-927-3500

The *Contractor*:

Tel:  
Email:  
Attention:

The *Contract Administrator*:

The City of Coquitlam  
3000 Guildford Way  
Coquitlam, B.C. V3B 7N2

Tel:  
Email:  
Attention:

- 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
- 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*.

## 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 enure 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)

\_\_\_\_\_  
(AUTHORIZED SIGNATORY AND POSITION - PRINT)

*Owner:*

The City of Coquitlam

\_\_\_\_\_  
(MANAGER, CAPITAL PROJECTS AND INSPECTIONS)  
Representative as Per G.C. 17

\_\_\_\_\_  
(MANAGER, DESIGN AND CONSTRUCTION)

**Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements**

**Reference No: 81832-Phase 1**

**Schedule 1**

**Schedule of Contract Documents**

**(INCLUDE IN LIST ALL DOCUMENTS INCLUDING, IF ANY, SUPPLEMENTARY GENERAL CONDITIONS, SUPPLEMENTARY SPECIFICATIONS, SUPPLEMENTARY STANDARD DETAIL DRAWINGS)**

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 2009. All sections of this publication are included in the *Contract Documents*.

1. Agreement, including all Schedules;
2. The following Addenda:
  - As issued
3. Supplementary General Conditions, if any;
4. General Conditions\*;
5. Supplementary Specifications, if any;
6. Detail Specifications, if any;
7. Specifications\*;
8. Supplementary Detail Drawings, if any;
9. Standard Detail Drawings\*;
10. Executed Form of Tender, including all Appendices;
11. Drawings listed in Schedule 2 to the Agreement –“List of Drawings”, if any;
12. Instructions to Tenderers;
13. COQUITLAM “Supplementary Specifications Master Municipal Construction Documents”  
March 2022

**Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements**

**Reference No: 81832-Phase 1**

**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 A: Traffic Management Detail Specifications  
Appendix B: Environmental Approvals & Authorizations  
Appendix C: Environmental Management Plan  
Appendix D: Archaeological Chance Find Procedures  
Appendix E: Water Meter Specifications  
Appendix F: Standard Detail Drawings & Park Development Standards  
Appendix G: As-Built Drawings

**Bound Separately:** Contract Drawings

TITLE	CONSULTANT	SHEET NO.	REVISION NO.	DATE
COVER – CEDAR DRIVE UPGRADES – PHASE 1	ISL	00		2024/04/16
GENERAL NOTES	ISL	01	A	2024/04/16
KEY PLAN	ISL	02	A	2024/04/16
TYPICAL SECTIONS	ISL	03	A	2024/04/16
DRAINAGE CHANNEL	ISL	04	A	2024/04/16
DRAINAGE CHANNEL	ISL	05	A	2024/04/16
ENVIRONMENTAL PLANTING 1	ISL	06	A	2024/04/16
ENVIRONMENTAL PLANTING 2	ISL	07	A	2024/04/16
ENVIRONMENTAL PLANTING 3	ISL	08	A	2024/04/16
ENVIRONMENTAL PLANTING 4	ISL	09	A	2024/04/16
ENVIRONMENTAL PLANTING DETAILS	ISL	10	A	2024/04/16
ESC NOTES AND DETAILS	ISL	11	A	2024/04/16
ESC PLAN	ISL	12	A	2024/04/16
IRRIGATION PLAN	KORE	14/16	C	2024/04/10
IRRIGATION PLAN	KORE	15/16	C	2024/04/10

# ***Supplementary General Conditions***



## SUPPLEMENTARY GENERAL CONDITIONS

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## 1.0 DEFINITIONS

- 1.1 Abnormal Weather** 1.1.1 **(Replace clause 1.1.1 as follows):**  
Abnormal Weather” means temperature, precipitation, wind or other weather conditions in which the monthly average, differs from the statistical average for that condition in that period by more than one standard deviation, calculated based on data available from Environment Canada. Coquitlam’s Burke Mountain Rain Gauge will be used to compare the rainfall summary versus the available data from Environment Canada.  
[City of Coquitlam Rainfall](#)

## 2.0 DOCUMENTS

- 2.2 Interpretation** 2.2.4 (1) **(Replace clause 2.2.4 (1) as follows):**  
The Contract Documents shall govern and take precedence in the following order as listed in Schedule 1 of the Agreement, taking precedence over all Contract Documents.

## 4.0 CONTRACTOR

- 4.1 Control of the Work** 4.1.1 **(Add to clause 4.1.1 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.
- 4.1.2 **(Add to clause 4.1.2 as follows):**  
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 they 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.
- 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, unless specified otherwise in Supplementary Specifications - Appendix A: Traffic Management Detail Specifications. Written

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

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, they 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 cost of inspections on a Sunday or on a Statutory Holiday by City staff/s will be at Contractor's expense.**

**4.2 Safety**

4.2.2

***(Add new clause 4.2.2 as follows):***

*In an emergency, gas pipeline rupture or leak, Contact FortisBC's 24 Hour Emergency Line (1-800-663-9911) and Coquitlam Fire (911) immediately and then City of Coquitlam's Utility Control Centre (604-927-6287).*

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

4.3.1

***(Replace clause 4.3.1 as follows):***

In performing the Work, the Contractor shall protect the Work and the Owner's property and other person's property from damage. The Contractor shall at the Contractor's own expense make good any such damage which arises as the result of the Contractor's operations. If the Contractor causes damage to private property, the Contractor must obtain a written release from the owner of the damaged property.

4.3.5.1

***(Add clause 4.3.5.1 as follows):***

The Contractor shall notify the Contract Administrator immediately if damage occurs to any City or third party utility or structure.

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 their own cost, with no liability to the *Owner*.

**4.6 Construction Schedule**

4.6.1

***(Replace clause 4.6.1 as follows):***

The Contractor shall within the time set out in the Form of Tender prepare and submit to the Contract Administrator for their 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 documentation required under paragraph 5.1.1 of the Form of Tender has been submitted and the construction schedule has been approved.

4.6.8

***(Add new clause 4.6.8 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 their discretion upon receipt of a written request.

4.6.9

***(Add new clause 4.6.9 as follows):***

Works, undertakings, or activities below the high water mark of fish bearing watercourses (in-stream works) shall be conducted during the least risk to fish work window between **August 1 to September 15 of 2024**.

**4.7 Superintendent**

4.7.4

***(Add new clause 4.7.4 as follows):***

The key personnel named in the Contractor's Tender response, shall remain in these key positions throughout the project. In the event that key personnel leave the Contractor's firm, or for any unknown reason are unable to continue fulfilling their role, the Contractor must propose a suitable replacement, and obtain written consent from the Owner. Acceptance of the proposed replacement is at the sole discretion of the Contract Administrator and the Owner.

**4.8 Workers**

4.8.2

***(Add new clause 4.8.2 as follows):***

The Contractor shall, upon the request of the Contract Administrator, remove any person employed by them for the purposes of the Contract who, in the opinion of the Contract Administrator, is incompetent or has conducted

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themselves improperly, and the Contractor shall not permit a person who has been removed to return to the Place of Work.

**4.9 Materials**

4.9.3

***(Add new clause 4.9.3 as follows):***

The Contractor shall, at their cost,

- a) Be responsible for storing all of the materials supplied for the Work either by themselves 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 themselves or the Owner to ensure that delivery will coincide with their 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 themselves or the Owner which are found to be stolen, missing or damaged while under their care;
- f) Replace all materials found to be defective in manufacture which have been supplied by themselves.

**4.11 Subcontractors**

4.11.3

***(Replace clause 4.11.3 as follows):***

The Contractor shall, upon notice of the Contract Administrator, remove any Subcontractor employed by them for the purposes of the Contract who, in the opinion of the Contract Administrator, is incompetent or has conducted themselves 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.

**4.12 Test and Inspections**

4.12.1

***(Replace clause 4.12.1 as follows):***

The Contractor shall perform or cause to be performed all tests, inspections and approvals of the Work as described in the Contract Documents or as required by the Contract Administrator as part of Quality Control. The Contractor shall complete all the necessary testing at the frequencies described in the Contract Document unless otherwise approved by the Contract Administrator.

Acceptable test and inspection results will not relieve the Contractor of its obligations under the Contract to correct defects or deficiencies in the Work.

4.12.11 ***(Add clause 4.12.11 as follows):***

Failure to follow DFO/FLNRO BMPs and the approved permit for Instream Works or as instructed by Contract Administrator will result in shut-down of the work. 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.

**4.14 Final Clean-up**

4.14.1

***(Replace clause 4.14.1 as follows):***

Prior to applying for Substantial Performance, the Contractor shall remove all surplus products, tools, construction machinery and equipment relating to the Work that is not required for the performance of the remaining Work. The Contractor shall also remove waste, debris and waste products other than caused by the Owner or Other Contractors, and leave the Place of Work clean and suitable for occupancy by the Owner unless otherwise specified in the Contract Documents or directed by the Contract Administrator.

**4.16 Notice of Disruption**

4.16.2

***(Add new clause 4.16.2 as follows):***

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.

**7.0 CHANGES**

**7.1 Changes**

7.1.3

***(Replace clause 7.1.3 as follows):***

Additional work that the Owner may wished performed that does not satisfy the requirements of subparagraphs (a) and (b) of GC 7.1.1 is extra work (Extra Work) and is not a Change. Pursuant to GC 8, Extra Work may be declined by the Contractor or may, upon agreement between the parties, be undertaken as Extra Work.

**7.4 Optional Work**

7.4.2

***(Add new clause 7.4.2 as follows):***

If there are Optional items or Provisional items included in the *Schedule of Quantities and Prices*, those items shall be used only as directed and at the sole discretion of the

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

Contract Administrator through the issue of a Change Order. 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. Clause 9.4 Quantity Variations will not be applicable for these items.

**9.0 VALUATION OF  
CHANGES AND  
EXTRA WORK**

**9.2 Valuation Method** 9.2.4

***(Replace clause 9.2.4 as follows):***

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.

**9.4 Quantity Variation** 9.4.1

***(Replace clause 9.4.1 as follows):***

If for any reason, including an addition or deletion under GC 7.1.1(1) or 7.1.1(2) respectively, the actual quantity of a unit price item varies by more than plus or minus the Variance Threshold Percentage from the estimated quantity for that unit price item listed in the Schedule of Quantities and Prices (the "Tender Quantity") or as otherwise agreed to pursuant to these Contract Documents, then either the Owner or the Contractor may by written notice request the other party to agree to a revised unit price, considering the change in quantities. A party shall make a request for a revised unit price as soon as reasonably possible after the party concerned becomes aware of the quantity variation.

9.4.2 ***(Delete clause 9.4.2 (2))***

**10.0 FORCE ACCOUNTS**

**10.1 Force Account  
Costs** 10.1.1(1)

***(Add to clause 10.1.1(1) as follows):***

Costs for the Contractor's Superintendent, Project Managers, Health and Safety Personnel, and Office/Administration Staff are not eligible for labour costs as those costs are considered incidental to the mark up owing for overhead and labour.

10.1.1(4) ***(Replace clause 10.1.1(4) as follows):***

Force Account Work performed by a subcontractor shall be paid for in the lesser of: (i) the amount provided by



subparagraphs (1), (2) and (3) of this GC, plus a mark-up of 5%, or (ii) the actual amount the Contractor pays the subcontractor including a mark-up of 10% on such actual costs to cover all overhead and profit.

**12.0 HAZARDOUS MATERIALS**

**12.2 Discovery of Hazardous Materials**

12.2.2

***(Replace clause 12.2.2 as follows):***

If the Contract Administrator observes any materials at the Place of Work that the Contract Administrator knows or suspects may be Hazardous Materials, then the Contract Administrator shall immediately give written notice to the Contractor and the Contractor shall immediately stop the Work or portion of the Work as required by GC 12.2.1(1).

**13.0 DELAYS**

**13.1 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 they give 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.

**13.3 Unavoidable Delay**

13.3.1

***(Add to clause 13.3.1 as follows):***

Beyond the reasonable control of the Contractor also includes pandemic or community outbreak

**13.8 Direction to Stop or Delay**

13.8.3

***(Add new clause 13.8.3 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.

**13.9 Liquidated Damages for Late Completion**

13.9.1

***(Replace clause 13.9.1 as follows):***

If the Contractor fails to meet the Milestone Date for Substantial Performance as set out in the Form of Tender, paragraph 2.2 as may be adjusted pursuant to the

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provisions of the Contract Documents, then the Owner may deduct from any monies owing to the Contractor for the Work:

- (1) An amount of \$1,000.00 for each calendar day the actual *Substantial Performance* is achieved after the Substantial Performance Milestone Date; plus
- (2) All direct out of pocket costs, such as costs for safety, security or equipment rental, reasonably incurred by the Owner as a direct result of such delay.

If the monies owing to the Contractor are less than the total amount owing by the Contractor to the Owner under (1) and (2) then any shortfall shall immediately, upon written notice from the Owner, and upon Substantial Performance, be due and owing by the Contractor to the Owner.

**18.0 PAYMENT**

**18.1 Preparation of  
Payment  
Certificate**

18.1.1

***(Replace clause 18.1.1 as follows):***

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

**18.4 Holdbacks**

18.4.2

***(Add to clause 18.4.2 as follows):***

At the sole discretion of the Contract Administrator, an amount equivalent to 10% of the contract award value or 200% of a reasonable estimate, whichever is higher, may be held without interest until all deficiencies have been remedied and accepted by the Contract Administrator.

**18.6 Substantial  
Performance**

18.6.5

***(Replace clause 18.6.5 as follows):***

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

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

*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.

**20.0 LAWS, NOTICES,  
PERMITS AND FEES**

**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 following approvals, authorizations and permits, which are attached in Appendix B:

- the Fisheries Act. Authorization under paragraphs 34.4(2)b and 35(2)(b) of the *Fisheries Act*
- Water Sustainability Act – Change Approval under *Water Sustainability Act* – Section 11(1) Changes In and About a Stream
- City of Coquitlam – Watercourse Protection Development Permit (23 118057 DP)

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;

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

- 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;
- Any fill used on this project shall be certified inert and from a source which is confirmed to be free of contaminants;
- See additional Environmental Notes within the Supplementary Specifications, Section 012005 Contract Specific Instructions and Notations which must be allowed for in the tender prices;

**21.0 WORKERS  
COMPENSATION  
REGULATIONS**

**21.2 Contractor is  
"Prime Contractor"**

21.2.1

***(Add to clause 21.2.1 as follows):***

Prior to the issuance of the "Notice to Proceed" the Contractor must provide a signed "Prime Contractor Designation" form as provided in Appendix IV of these Supplementary General Conditions.

**24.0 INSURANCE**

***(Replace section 24.0 as follows):***

**24.1 General**

24.1.1

**Importance of Prompt Attention to Insurance Requirements:**

The Contractor shall provide the Owner with satisfactory evidence that the insurance required to be provided under this GC is in full force and effect.

24.1.2

**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 in Ottawa, except the Insurance Corporation of British Columbia, which is not subject to this condition.

24.1.3 **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.

24.1.4 **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.

24.1.5 **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.

**24.2 Required Insurance**

24.2.1 **General**  
Damage to work (excluding Building Contracts where Section 24.3, Paragraph 24.3.1, 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.

**24.2.2 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 Substantial Performance 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.

**24.2.3 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.

**24.3 Physical Loss or Damage With Respect to New Buildings under Construction and/or Major**

**24.3.1 Responsibility for Placing Insurance:**

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.

**Additions to  
Existing Structures**

- 24.3.2      **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.
- 24.3.3      **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.
- 24.3.4      **Responsibility of Contractor – Direct Damage Insurance:**  
If the Contractor fails to do all or anything that is required of them 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.
- 24.3.5      **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

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

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.

24.3.6 **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 24.3 of these specifications.

24.3.7 **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.

24.3.8 **Responsibility of Contractor for protection of work, persons and property:**

The Contractor and all persons employed by the Contractor or under their 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.

24.3.9 **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.

**24.3.10 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.

**24.3.11 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 24.3 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.

**24.4 Additional Insured 24.4.1**

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

- The City of Coquitlam

The City 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.

**25.0 MAINTENANCE  
PERIOD**

**25.1 Correction of  
Defects**

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.

**27.0 CONTRACTOR  
PERFORMANCE  
EVALUATION**

27.1

***(Add new clause 27.1 as follows):***

After the completion of the Contract, the Contractor will be evaluated on their performance of the Work. The evaluation will provide percentage scores on the following categories:

1. *Contract Administration*
2. *Construction Management*
3. *Schedule Management*
4. *Communications*
5. *Resource Management and Contractor Performance*
6. *Quality Management*

*An evaluation summary report may be issued to the Contractor with scores for each of these categories. Upon request, the Contractor may attend a meeting with the City to discuss the evaluation.*

*This internal evaluation may be reviewed for reference on subsequent tenders with the City. Evaluation scores can form part of the tender analysis and influence contract award decisions.*

*Evaluation Scores in categories that are below 50% may result in a suspension of tendering privileges with the City.*

**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 \_\_\_\_\_, 20\_\_\_\_, 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.

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

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:

1. Complete the Contract in accordance with its terms and conditions, or
2. Obtain a bid or bids for submission to Obligee for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Obligee and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term 'balance of the contract price', as used in this paragraph, shall mean the total amount payable by Obligee to Principal under the Contract less the amount properly paid by Obligee to Principal.

Any suit under this Bond must be instituted before the expiration of two (2) years from date on which the Notice of Acceptance under the Contract is issued.

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

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Obligee named herein or the heirs, executors, administrators, or successors of Obligee.

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 \_\_\_\_\_ 20 \_\_\_\_.

SIGNED, SEALED and DELIVERED

In the presence of

)  
)  
)  
)  
)

\_\_\_\_\_  
PRINCIPAL

\_\_\_\_\_  
SURETY

## APPENDIX II

### **LABOUR AND MATERIAL PAYMENT BOND**

(Private Contracts – Trustee Form)

NO. \_\_\_\_\_

\$ \_\_\_\_\_

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 \_\_\_\_\_, 20\_\_\_\_.

WHEREAS, the Principal has entered into a written contract with the Obligee dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, 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:

\_\_\_\_\_  
These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

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 proceeding against the Surety on behalf of the Claimants or any of them to enforce the provisions of this Bond. If any act, action or proceeding is taken either in the name of the Obligee or by joining the Obligee as a party to such proceedings then such act, action or proceeding shall be taken on the understanding and basis that the Claimants or any of them who take such act, action or proceeding shall indemnify and save harmless the Obligee against all costs, charges and expense or liabilities incurred thereon and any loss or damage resulting to the Obligee by reasons thereof. Provided still further that subject to the foregoing terms and conditions, the Claimants or any of them may use the name of the Obligee to sue on and enforce the provisions of this Bond.
3. No suit or action shall be commenced hereunder by any Claimant:
  - a) unless such Claimant shall have given written notice within the time limits hereinafter set forth to each of the Principal, Surety and Obligee, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal, Surety and Obligee at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the contract is located. Such notice shall be given (i) in respect of any claim for the amount or any portion thereof required to be held back from the Claimant by the Principal under either the terms of the Claimant's contract with the Principal or under the Mechanic's Liens Legislation applicable to the Claimant's contract with the Principal whichever is the greater within one hundred and twenty (120) days after such Claimant should have been paid in full under the Claimant's contract with the Principal; (ii) in respect of any claim other than for the holdback or portion thereof referred to above within one hundred and twenty (120) days after the date upon which such claimant did

or performed the last of the work or labour or furnished the last of the materials for which such claim is made under the Claimant's contract with the Principal.

- b) after the expiration of one (1) year following the date on which Principal ceased work on the Contract including work performed under guarantees provided in the Contract.
- c) Other than in a court of competent jurisdiction in the Province or District of Canada in which the subject matter of the Contract or any part thereof is situated and none elsewhere, and the parties hereto agree to submit to the jurisdiction of such court.

4. The amount of this Bond shall be reduced by and to the extent of any payments made in good further and in accordance with the provisions which may be filed of record against the subject matter of the Contract, whether or not claim for the amount of such lien be presented under and against this Bond.

5. The Surety shall not be liable for a greater sum than the specified penalty 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 the day and year first above written.

SIGNED, SEALED and DELIVERED

In the presence of

)  
)  
)  
)  
)

\_\_\_\_\_  
PRINCIPAL

\_\_\_\_\_  
SURETY

## 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**  
Coquitlam, BC V3B 7N2
- Named Insured and Mailing Address:
- B. CONTRACT NUMBER AND/OR NAME
- Description of the Work:
- C. INSURANCE POLICY
- Name of Insurer:  
Policy Number:  
Effective Date:
- Liability Limit:  
Expiry Date:
- D. INSURANCE COVERAGE
- 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                        |

\_\_\_\_\_  
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 2009





## APPENDIX IV

### PRIME CONTRACTOR DESIGNATION

Owner:	<b>City of Coquitlam</b>
Contractor:	
Contract:	81832-Phase 1
Project:	<b>Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements</b>

By signing this Prime Contractor Designation form, the Contractor hereby:

1. agrees to be, and accepts designation as, the “prime contractor” for the purposes of the *Workers Compensation Act*, R.S.B.C. 2019, c. 1 (the “Act”) and the *Occupational Health and Safety Regulation*, B.C. Reg. 223/2022 (the “Regulation”) in respect of the Project and Workplace noted above;
2. represents and warrants that the Contractor is qualified and capable to perform the duties of prime contractor and that the undersigned signatory has the authority to accept designation as prime contractor and to bind the Contractor;
3. accepts the duty and responsibility for ensuring the activities of employers, workers and other persons at the Workplace relating to occupational health and safety are coordinated and agrees to do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance with the Act and the Regulation in respect of the Workplace;
4. covenants and agrees to comply with the occupational health and safety provisions of the Act, the Regulation, any other applicable regulations under the Act, and any applicable orders;
5. acknowledges and agrees that the Owner has provided the Contractor the information known to the Owner that is necessary to identify and eliminate or control hazards to the health or safety of persons at the Workplace; and
6. agrees that the designation as prime contractor hereunder may not be assigned or revoked without the prior written consent of the Owner.

**Prime Contractor Name:**

**Prime Contractor Address:**


**Prime Contractor Signature**

**Date**

**Print Name**

Please return a signed copy of this designation to the City of Coquitlam, 3000 Guildford Way, Coquitlam, BC, V3B 7N2. If you have any questions, please contact the City of Coquitlam Health & Safety Manager at 604-927-3070.

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2009

# ***Supplementary Contract Specifications***

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These Supplementary Contract Specifications must be read in conjunction with the Specifications contained in the Master Municipal Construction Documents, Volume II, Printed 2009 and the City of Coquitlam Supplementary Specifications and Detailed Drawings

File #: 11-5330-20/81832 - Phase 1/1 Doc #: 5228652.v3

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**Supplementary Contract Specifications**

to the  
MASTER MUNICIPAL SPECIFICATIONS  
**Volume II – Platinum Book**

**Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements**

CONTRACT 81832 – PHASE 1

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CONTRACT SPECIFIC NOTATIONS

**1.00 CONTRACT SPECIFIC INSTRUCTIONS**

**1.01 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. All instream work will be carried out during Fisheries Construction Window, which is between August 1 to September 15 of 2024.

**1.02 Coordination of Work**

The Contractor shall be responsible to consult with all affected businesses, residents, regarding delays, detours, temporary bus stop closures, and any other works affecting any transit service in the area, and will be responsible to coordinate the works with other Contractors working in the area.

**1.03 Outside Agency Approval**

In accordance with the Contract Documents, the Contractor is responsible to consult with and obtain any approval required to meet and comply with all the conditions required from outside agency such as, but not limited to, BC HYDRO, FORTIS BC GAS, KINDER MORGAN INC., TELUS and etc. in the area of the place of Work.

**1.04 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
- Pick up of Garbage, Recycling and Compostable
- City Utilities Maintenance (or representatives)

**1.05 Site Safety**

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. Supply and use of this equipment is considered incidental to the contract.

Manhole lids, valve boxes and other appurtenances within the roadway that may present a traffic hazard during construction must be clearly marked for traffic.

Manhole lids left raised in preparation for paving must have a rubberized protector ring for traffic safety. Supply and use of this equipment is considered incidental to the contract.

**1.06 Lane Closure Restrictions**

Refer to: **Appendix A: Traffic Management Detail Specifications.**

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.

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 incidental to work described in other sections.

Costs to complete the works taking the above restrictions into consideration shall be included in the prices bid in the Schedule of Quantities and Prices.

CONTRACT SPECIFIC NOTATIONS

Contractor will also be required to attend a pre-construction meeting with Kwickwetlem First Nations (KFN) as a part of the KFN Guardian Program.

**1.07 Survey Layout**

Construction layout will be the responsibility of the Contractor. The Contract Administrator will provide AUTOCAD Drawings to the Contractor.

**1.08 Location of Existing Utilities**

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. Fortis BC Gas Mains & 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.

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. Contact BC One for location of outside agency utilities. 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.

Payment for this work will be treated as incidental to payment for work described in other Sections.

**1.09 Manholes & Valves**

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 be paid by the contractor.

**1.10**

**1.11 Accesses**

The Contractor is responsible to maintain all business/residential vehicles and pedestrian accesses open at all times, the contractor may provide temporary accesses if the affected owner agrees. All costs associated with temporary accesses will be at the contractor's expense.

**1.12 Verification of Dimensions and Quantities**

Before proceeding with work visit site and check and verify dimensions and quantities. Report variations between drawings and site conditions to the Contract Administrator before proceeding with work.

**1.13 Precautions**

Protect areas under construction from damage caused by excessive erosion, flooding, heavy rains, etc. Repair or replace unprotected damaged areas as directed by the Contract Administrator at no cost to the Owner.

**1.14**

**2.00 CONSTRUCTION ACTIVITY**

**2.01 Construction Materials in Sewer Manholes and Pipe**

The Contractor is responsible to ensure that construction activities do not deposit construction materials (e.g. 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 Performance, 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.

**2.02 Site Clean-up During Construction and End of Construction**

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

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

CONTRACT SPECIFIC NOTATIONS

cleaning is to be performed by vacuum truck to the satisfaction of the Contract Administrator and will include off-site disposal of waste material.

Payment for this work will be treated as incidental to payment for work described in other Sections.

**2.03 Pavement Markings**

The Contractor will be responsible for temporary traffic markings necessary for traffic direction and safety until permanent markings are installed.

The Contractor is responsible for the permanent pavement markings after paving is complete.

**2.04 Asphalt Milling Operations**

Asphalt milling activities shall be done in such manner so as to cause the least disruption and inconvenience to traffic and area residents.

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 96 hours prior to milling operation (for each street). 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.

**MILLING OF EXTENSIVE AREAS THAT CANNOT BE PAVED WITHIN 96 HOURS PERIOD (4 DAYS) WILL NOT BE PERMITTED.**

**3.00 MANDATORY MEETINGS AND CONTRACTOR REPRESENTATIVES AND SUBCONTRACTORS**

**3.01 Pre-Construction Meeting Requirements**

After the Award of the Contract, the Contractor (Project Manager & Superintendent) will be required to attend a Pre-Construction Meeting 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:

1. A Detailed Construction Schedule showing the start date & completion date and the durations of major work components showing how all work will be completed within the Contract Duration.
2. Proof of insurance
3. Performance Bond and Labour and Materials Payment Bond
4. WCB Clearance Letter and copy of Notice of Project
5. City of Coquitlam Business License
6. A copy of portions of your Health and Safety Plan including the Title Page, Table of Contents, and portion showing latest revision date.

**3.02 Contract Schedule, Contract Duration, and Charges**

A detailed, realistic construction schedule for this project will be required to be presented at the pre-construction meeting. The schedule must show major components and durations.

All work under this project is to be completed within the designated Contract Duration as contained in the signed **Contract Agreement**, or as formally amended.

**3.03 Contract Superintendent and Subcontractors**

In compliance with the **MMCD General Conditions, Section 4.7, Superintendent**, the Contractor shall have a competent senior representative, (the "Superintendent") in **FULL TIME attendance** at the Place of Work while work is being performed for the duration of the contract.

**This (FULL TIME) attendance is also required when work is being performed by Subcontractors.**

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.

The Owner is not responsible for the direction of Subcontractors.

**3.04 Changes of Contractor Representatives & Subcontractors**

The Superintendent and Subcontractors indicated in the Form of Tender shall not be changed unless:

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.

**3.05 Mobilization and Demobilization**

Payment for mobilization and demobilization of all equipment, labour and materials (both from the Contractor and all sub-contractors) shall be incidental.

**4.00 Environmental Notes**

1. The City has obtained all necessary environmental approvals for the Work. Copies of these Approvals, and/or Authorization Agreements have been provided in the Tender Documents. Contractor and shall be responsible for complying with the terms and conditions specified within the various regulatory approvals and authorizations, listed below. In case of any conflict all terms and conditions in the approvals/authorisations shall prevail upon conditions given in Tender Documents.
  - The Fisheries Act. Authorization under paragraphs 34.4(2)b and 35(2)(b) of the Fisheries Act
  - Water Sustainability Act – Change Approval under Water Sustainability Act – Section 11(1) Changes In and About a Stream
  - City of Coquitlam – Watercourse Protection Development Permit (23 118057 DP)

**5.00 Kwikwetlem First Nations Gaurdian Program**

- 5.1 City has entered into an agreement with Kwikwetlem First Nation (KFN) for a Guardian Program which focuses on environmental, cultural and archaeological impacts of projects within KFN traditional territory.
- 5.2 The Contractor will provide the City and KFN with a two week look-ahead schedule of its construction activities, which will be updated each week, while construction is underway.
- 5.3 KFN is interested in various aspects and stages of the project. Some key phases/activities that may lead to increased presence on- site include but are not limited to:
  - Vegetation removal / grubbing
  - In-stream work
  - Excavation
  - Wildlife surveys
- 5.4 The City's Contract Administrator (CA) will arrange an onsite meeting with the Guardian Manager, Guardian(s) and the Contractor's superintendent, and the Contractor's Project Manager, prior to the start of construction. The purpose of the meeting will be to make introductions and open up lines of communication. The meeting will also provide the opportunity to review the construction schedule and phasing.
- 5.5 The Contractor will provide the CA, the Guardian, and fieldwork@kwikwetlem.com with a two week schedule of work, which the Contractor will update each week, while construction is underway.

- 5.6    The Contractor will be designated as ‘Prime Contractor’ for the construction site, and all attendees of the construction site, including the CA and the Guardian(s), will need to follow the safety protocols as outlined by the Contractor, to ensure a safe work site.
- 5.7    It is intended and expected that there will be open dialogue between the CA, the Guardian Manager, Guardian(s), and the Contractor.  
  
If the Guardian finds a situation where the Contractor is proceeding in a manner that is not acceptable with regard to environmental impacts (or a risk of environmental impacts), the Guardian will inform a kwikwəłəm Lands and Resources representative who will contact the Contractor’s superintendent and the CA about the Guardian’s findings. If the Contractor does not resolve the situation it will be up to the CA to determine the appropriate course of action in collaboration with a kwikwəłəm Lands & Resources representative.
- 5.8.    The payments and fees for the Guardian Program will be paid by the City of Coquitlam.

END OF SECTION



**1.0 GENERAL**

**1.3 Submission**

Delete 1.3.2 and  
replace with the  
following

Submit one copy of an accurate project record document in final form prior to applying for Substantial Performance including any video report. Record documents to include changes in the Issued for Construction Drawings, new elevation, offsets & location of all utilities, manhole rim, catchbasin rim, vaults, valve boxes, inverts walkways/sidewalks, all items affected by the Work and any unknown/new utilities found on site. Legal holdbacks will not be released until record documents have been submitted and accepted by the Contract Administrator.

**END OF SECTION**

QUALITY CONTROL

- 1.0 QUALITY**
- The Contractor shall provide a final product conforming to the Contract Documents and the intent of the work.
- The work is to be accurate to the dimensional and tolerance requirements of the contract.
- Payment will be subject to adjustments based on quality assurance tests performed by the Contract Administrator.
- 1.1 Quality Control (QC) by Contractor**
- The MMCD (2009) definition of “Quality Control” is the process by which the Contractor checks specific materials, products, and workmanship to ensure strict conformance with the Contract Documents.**
- 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.
- Under no circumstances will QC test results produced after completion of the Quality Assurance (QA) results be considered for appeal purposes
- 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.
- 1.2 Inspection of Work, Quality Assurance, and Material Testing, by the Owner**
- The MMCD (2009) definition of “Quality Assurance” means the process by which the Owner evaluates if the work is being constructed in accordance with the Contract Documents. This definition will be used for this contract**
- The *Contract Administrator* will provide construction review through spot inspections and spot materials testing for Quality Assurance.
- Any materials testing results indicating a non-conformance to the Contract Documents will require construction corrective action by the Contractor.**
- All subsequent testing to corrective action to verify conformance to the Contract Documents will be the full responsibility of the Contractor.**
- Inspection review by the Owner will not relieve the Contractor from providing a product that meets or exceeds the requirements of the Contract Documents.
- 1.3 Inspection**
- Materials testing shall be as described in MMCD General Conditions, Section 4.12 with the following change:
- Delete Section 4.12.2(a) and insert the following:
- Where the MMCD specification clauses for Inspection and Testing indicate the Contract Administrator will arrange for all testing for work described in this section will be amended to read The Contractor will arrange for and pay for all testing for work described in this section. The testing shall take place at the following prescribed rates and as directed by the contract administrator. The contract administrator has the authority to call for testing, up to the rates and frequencies specified, at the Contractors cost.

All testing covered under this item shall be performed by a CCIL certified laboratory and technicians with copies of all test results to be sent directly to the Contract Administrator. Re-testing resulting from failed first tests shall be at the Contractors expense.

**1.4 Survey Layout**

All Survey Layout will be completed by the Contractor in accordance with the Contract Drawings and Coordinate System set out within them. The Contractor will be provided digital AutoCAD files but shall be responsible to confirm elevations and tie in locations and report any discrepancies prior to construction.

**1.5 Testing**

Contractor shall carry out inspection and testing (QC) to ensure compliance with Contract Documents. Contractor shall submit test results within one week of testing to the Contract Administrator.

The Contractor shall provide test results prior to the preparation of the payment certificate.

**1.6 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

**1.7 Access to Work**

Allow inspection testing agencies access to Work.

**1.8 Tests**

Test rates and frequencies (excluding failed tests), when not defined in the MMCD or Detail Specifications Sections shall be at the following frequencies:

1. Trench Backfilling and Compaction

1.1 Compaction: 1 test / 10 lm / 300mm lift

1.2 Sieve: 1 test / placed material / 50 m<sup>3</sup>

2. Granular Base

2.1 Compaction: 1 test/500m<sup>2</sup> / 100mm depth of granular base, min. 1 test if < 500m<sup>2</sup>

2.2 Sieve: 1 test / placed material / 250 TONNES

3. Granular Subbase

3.1 Compaction: 1 test/500m<sup>2</sup>/150mm depth of granular subbase, min. 1 test if <500m<sup>2</sup>

3.2 Sieve: 1 test / placed material / 250 TONNES

4. Embankment (Subgrade)

4.1 Compaction: 1 test/ 50m<sup>2</sup> / 0.15m depth of fill, min. 1 test if < 50m<sup>2</sup>

4.2 Sieve: 1 test / placed material / 100 TONNES

5. Asphalt

5.1 Marshall test: 1 test per 250 TONNES placed, per mix specified, min. 1 / day

ASTM D1559, D3203, C117, C136

5.2 Superpave: 1 test per 250 TONNES placed, per mix specified, min. 1 / day

CAI-SP2, ASTM D3203, C117, C136

5.3 Cores: 1 per 500 m<sup>2</sup>/lift, in locations as directed by Contract Administrator

5.4 Continuous asphalt density testing during paving.

6. Subgrade Preparation

6.1 Compaction & Moisture: 1 test / 500 m<sup>2</sup>, min. 1 test if < 500m<sup>2</sup>

7. Concrete Tests

7.1 Air, Slump & 1 Set Cylinders: 1 test / 10 m<sup>3</sup>, min. 1 set / day

**1.9 Measurement for  
Payment**

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	Add 1.0.6	<p>The <i>Contractor</i> is responsible for all temporary traffic control on the streets required for completion of the work. The <i>Contractor</i> will be responsible to provide a Traffic Management Plan (TMP) for approval (5) five working days prior to any lane closures taking place. TMP is to be prepared by a qualified professional to the satisfaction of the Contract Administrator.</p> <p>The TMP shall outline the approach to traffic management, show recognition and minimization of risks indicates signing locations, identify Traffic Control Persons (TCP) stations, show lane shifting and proposed closures.</p> <p>The Contractor is responsible to ensure and maintain all business/residential vehicles, cyclists and pedestrian accesses open at all times. The contractor may provide temporary accesses if the affected owner agrees. All costs associated with temporary accesses will be at the contractor's expense.</p>
		Add 1.0.7	<p>A Road and Sidewalk Closure Permit is required from Coquitlam for all work affecting pedestrian and traffic flow related to construction. A permit is required for each specific construction interference with pedestrian and traffic flow. The road and sidewalk closure permit form can be obtained for use from the City's website at <a href="http://www.coquitlam.ca">http://www.coquitlam.ca</a>. The Contractor must follow the approved TMP. Any changes to this TMP must be submitted to City's Traffic Operations for approval.</p>
		Add 1.0.8	<p>Refer to Appendix A – Traffic Management Detail Specifications</p>
1.4	Traffic Control	Delete 1.4.1 and replace with the following	<p>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.</p> <p>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.</p> <p>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.</p> <p>Add 1.4.9.3.1</p> <p>The <i>Contractor</i>, as required by the <i>Contract Administrator</i> and the City, is to supply Construction Zone information signs (stationary), refer to MMCD 01 58 01 for the required identification signage.</p>
			<p>The <i>Contractor</i> is responsible for the removal of the signs at the completion of the work.</p>

Delete 1.4.10.1.3 and  
replace with the  
following

When workmen or equipment are employed over travelled way over  
brow of hills, around sharp curves or at other locations where  
oncoming traffic would not otherwise have adequate warning.

**END OF SECTION**

1.0 GENERAL

1.0.3 Erosion and  
Sediment Control  
Supervisor

Add 1.03

The Erosion and Sediment Control (ESC) Supervisor is the Qualified Professional who is experienced in implementing ESC Plans and who is responsible for the inspection and monitoring of ESC Facilities to ensure these are installed and maintained in accordance with the ESC Plan, and if necessary, are modified during construction to ensure compliance with the Stream and Drainage System Protection Bylaw No. 4403, 2013.

Add 1.04

Reference should also be made to the relevant terms and conditions contained in the Authorisation under Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*, Change Approval granted under *Water sustainability Act*, section 11(1) Changes in and About a Stream and City of Coquitlam Watercourse Development Permit.

1.2 Temporary Erosion  
and Sediment  
Controls

Delete 1.2.1 and  
replace with the  
following

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 the City of Coquitlam Stream and Drainage System Protection Bylaw No. 4403, 2013 during construction and until the maintenance period is completed. 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.

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.

Sweep streets, and clean catch basins, manhole sumps, detention tanks, and maintain siltation controls as often as the *Contract Administrator* and the City deems necessary.

Follow all Federal and Provincial regulations and guidelines respecting protection of fish, fish habitat, and watercourses.

Delete 1.2.2.2 and  
replace with the  
following

.1 Work around watercourses shall be done in accordance with all federal, provincial and local government environmental legislation, bylaws and applicable standards.

Work around watercourses will be undertaken in a manner consistent with Requirements and Best Management Practices for Making Changes In and About A Stream in British Columbia and Measures to Protect Fish and Fish Habitat outlined by DFO at <https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html> as well as applicable Pathway of Effects outlined by DFO at: <https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>

.2 Notwithstanding federal and provincial legislation and standards, the Contractor's work around watercourses must also meet City of Coquitlam Stream and Drainage System Protection Bylaw 4403, 2013.

			.3 The Contractor shall follow the Erosion and Sediment Control Plan as contained in Contract documents.
			.4 Do not undertake work below top of bank of watercourses without appropriate Notice or approval from the province.
			.5 Do not clear riparian trees, other than those outside of the Streamside Protection and Enhancement Area (SPEA).
			.6 Do not operate construction equipment in watercourses.
			.7 Do not dump excavated fill, waste material or debris into or adjacent to watercourses.
			.8 Design and construct temporary crossings to minimize erosion to watercourses .
		Add 1.2.2.9	All work must be carried out during favorable and low water conditions.
		Add 1.2.2.10	Any fill used on this project shall be certified inert and from a source which is confirmed to be free of contaminants.
		Add 1.2.2.11	All work within a watercourse must be undertaken and completed in isolation of all flowing water to maintain downstream water quality and unrestricted flows.
1.4	Environmental Protection	Add 1.4.3.5	Immediately contain and clean up any leaks and spills of prohibited materials at the <i>Place of Work</i> .
		Add 1.4.3.6	Ensure that a well-stocked spill kit is on-site at all times and that the <i>Contractor's</i> employees are familiar with appropriate spill response techniques.
		Add 1.4.3.7	Immediately notify the <i>Contract Administrator</i> and the City of any leaks or spills of prohibited materials that occur at the <i>Place of Work</i> .
		Add 1.4.3.8	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.
		Add 1.4.3.9	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 15 meters of any water course or surface water drainage.
		Add 1.4.3.10	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 dust control, or other means as necessary to accomplish results satisfactory to the Contract Administrator.
1.6	Measurement and Payment	Delete 1.6.1 and replace with the following	Payment for all ESC work, unless shown otherwise in the Schedule of Quantities and Prices, performed under this section will be determined by the QEP and Contractor and co-ordinated with the City. An optional cash allowance has been provided in the Contract. Payment for this work will be done on a force account basis as described in MMCD GC 10 and in Contract Supplementary Conditions.
1.9	Archaeological / Historical Resources	Add 1.9.1	Archaeological monitoring will be conducted during the excavation of the channel. Should soils that seem unique or have high likelihood of containing archaeological materials, Archaeological Monitors may require a small area to be set-aside for a small quantity of soils for

raking through and identify. Payment for this work will be considered as incidental to payment for work described in other sections.

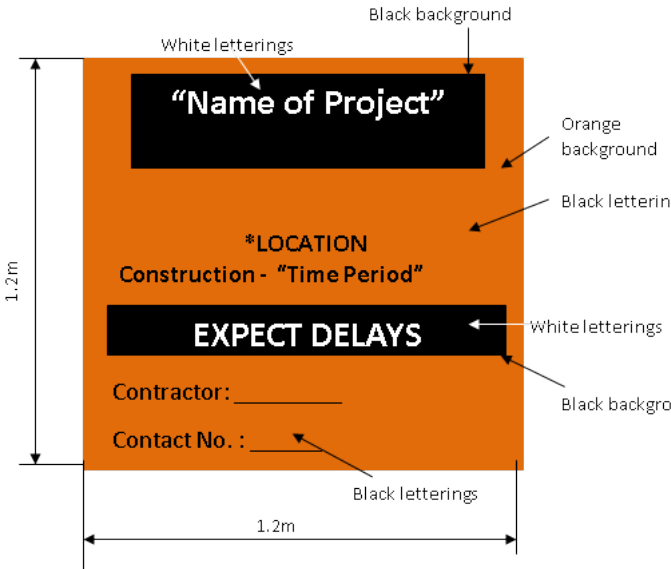
Add 1.9.2  
Immediately cease work and inform the *Contract Administrator* and the City, if any archaeological or historical resources are encountered during construction. Leave these resources in place and do not disturb them in any way.

**END OF SECTION**



1.3	Measurement and Payment	Delete 1.3.1 and replace with the following	Payment for the installation of 1.2m x 1.2m static construction Information signs as shown in Appendix A – Traffic Management Detail Specifications - Clause 6.6 includes supply, placement & removal and will be incidental to payment for work described in other Sections, unless shown otherwise in the Schedule of Quantities and Prices.
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Signs must be removed prior to the Contractor applying for Substantial Performance.



END OF SECTION

**CHANNEL SUBSTRATE**

- |            |                                |    |   |
|------------|--------------------------------|----|---|
| <b>1.0</b> | <b>GENERAL</b>                 | .1 | <p>Section 04 43 00s refers to all materials, labour, equipment, and services required for channel substrate supply and installation.</p> <p>Materials for the channel substrate include:</p> <ul style="list-style-type: none"> <li>.1 Gravel Mix</li> <li>.2 Boulders</li> </ul>  |
| <b>1.1</b> | <b>Related Work</b>            | .1 | Roadway Excavation, Embankment and Compaction <u>Section 31 24 23</u>   |
| <b>1.2</b> | <b>Samples</b>                 | .1 | Samples of the materials are to be provided for review by the Contract Administrator prior to installation.   |
| <b>1.3</b> | <b>Measurement and Payment</b> | .1 | Payment for supply and installation of gravel mix will be based on actual volume placed on site   |
|            |                                | .2 | Payment for supply and installation of boulders will be based on the actual number of boulders placed on site.  |
| <b>1.4</b> | <b>Submittals</b>              | .1 | Provide samples to be approved by the Contract Administrator or arrange for the Contract Administrator to approve the samples at the source, prior to delivery to the site.   |
| <b>2.0</b> | <b>Products</b>                | .1 | <p>Materials</p> <ul style="list-style-type: none"> <li>.1 Gravel Mix <ul style="list-style-type: none"> <li>.1 Size: 10mm to 137mm dia.</li> <li>.2 Average size: 74mm dia.</li> <li>.3 Up to 10% small, rounded boulders allowed (137mm to 160mm dia.)</li> <li>.4 Up to 5% washed sands content allowed</li> </ul> </li> <li>.2 Boulders <ul style="list-style-type: none"> <li>.1 Stone type: not specified</li> <li>.2 Size: 0.6m to 0.8m dia., 0.6m min. height, generally round in form</li> <li>.3 Colour: Grey</li> <li>.4 Finish: Smooth surfaced "river rock"</li> </ul> </li> </ul> |
| <b>3.0</b> | <b>Execution</b>               | .1 | <p>Placement</p> <ul style="list-style-type: none"> <li>.1 Boulders are to be placed prior to the gravel mix placement. The total quantity of boulders is to be placed randomly and to be spread evenly over the entire channel bottom area.</li> <li>.2 Gravel Mix to be placed covering the area shown on the contract drawings to the minimum depth specified.</li> </ul>  |

**END OF SECTION**

**2.0 PRODUCTS**

**2.3 Pit Run Gravel**

Add to 2.3.2

The use of recycled concrete shall be approved by the *Contract Administrator* and the City prior to use.

Add 2.3.3

Asphalt millings free from contaminated and other extraneous material, conforming to the specified gradations may be used as pit run gravel. The use of asphalt millings shall be approved by the *Contract Administrator* and the City prior to use.

**2.7 Granular Pipe Bedding and Surround Material**

Add to 2.7.1

All recycled or other extraneous materials shall be approved by *Contract Administrator* and the City prior to use.

**2.10 Granular Base**

Delete 2.10.2

Add 2.10.3

All 25 mm minus granular base is to conform to the following gradation specifications for Collector / Arterial Roads:

Sieve Designation (mm)	Percent Passing (%)
25	100
19	80-100
12.5	75-90
9.5	50-85
4.75	35-70
2.36	25-50
1.18	15-35
0.30	5-20
0.075	0-5

Add 2.10.4

The intention of the Gradation Chart is to identify the desired mix of size of aggregate in the granular base. The Target Percentage Passing is the middle of the shown Range.

Tests that show sieve values of Percent Passing that are consistently low or consistently high in two (2) or more consecutive tests will be considered to be non-conforming.

**2.11 Recycled Aggregate Material**

Delete 2.11.1 and replace with the following

Aggregates containing recycled material may be utilized if approved by the *Contract Administrator* and the City. In addition to meeting all other conditions of the specifications, recycled material should not reduce the quality of the construction achievable with quarried materials. Recycled material shall consist only of aggregates, crushed portland cement concrete, or asphalt that is free of impurities.

**END OF SECTION**

**1.4 Measurement and  
Payment**

Delete 1.4.1 and  
replace with the  
following

Payment for all clearing and grubbing will be made at lump sum price and include removal and disposal of all branches, stumps, trees, timbers, logs, planter box/wall, grass and vegetation including stripping of 150mm of native top soil to complete the work as shown on the Contract Drawings or as directed by the Contract Administrator.

Payment includes trimming of small branches from trees or hedges as required, branch cutting/pruning to have a clean cut flush to branch collar and use of an approved tree paint to repair damage to surviving vegetation where branches have been removed.

**END OF SECTION**

SHRUB AND TREE PRESERVATION

<b>1.3</b>	<b>Measurement and Payment</b>	Delete 1.3.1 and replace with the following	Payment for all work, unless included in the Schedule of Quantities and Prices, performed under this section will be incidental to payment for work described in other Sections.
<b>2.0</b>	<b>PRODUCTS</b>		
<b>2.1</b>	<b>Materials</b>	Add 2.1.10	Protective Fencing: Posts - Pressure treated wood 100 mm dia.; Post to be 1.8 m to 2.0m in height at 2.0 m O.C. Snow fence as per Coquitlam Approved Products List; Flagging Tape - 4" Orange glow - 'Tree Retention Area'.
<b>3.0</b>	<b>EXECUTION</b>		
<b>3.1</b>	<b>Existing Trees</b>	Add 3.1.7	The <i>Contractor</i> is responsible to minimize damage to all trees which are to remain.
		Add 3.1.8	The <i>Contractor</i> 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, the <i>Contract Administrator</i> and the City for tree damage where proper notification was not received from the <i>Contractor</i> . 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 Substantial Performance of the <i>Work</i> .
		Add 3.1.9	Place protective fencing/barricades as detailed on Coquitlam Standard Detail Drawings COQ-R26 and as shown on the Contract Drawings. <i>Contractor</i> shall maintain fence in good condition during construction.
		Add 3.1.10	When work is to be performed inside fenced areas, <i>Contractor</i> shall take care to avoid damage to existing vegetation. Work to be done inside areas of existing vegetation to be retained includes: <ul style="list-style-type: none"> <li>.1 Removal of isolated trees as directed by the <i>Contract Administrator</i> and the City.</li> <li>.2 Selective pruning and tree removal at edges to create tidy and well-shaped forest edge.</li> <li>.3 Placing planting soil and planting of trees.</li> </ul>
		Add 3.1.11	Do not park, service or fuel vehicles within the vegetation retention areas.
<b>3.4</b>	<b>Pruning</b>	Add 3.4.2	Do not cut roots or branches of retained trees without approval of the <i>Contract Administrator</i> and the City.

END OF SECTION

**1.4      Measurement and  
            Payment**

Delete 1.4 in its  
entirety and  
replace with the  
following

Payment for all work performed under this Section will be incidental  
to payment for work described in other Sections unless shown  
otherwise in the Schedule of Quantities and Prices.

**END OF SECTION**

**1.4 Measurement and  
Payment**

Delete 1.4.1 and  
replace with the  
following

Payment for all work performed under this Section will be incidental  
to payment for work described in other Sections unless shown  
otherwise in the Schedule of Quantities and Prices.

**END OF SECTION**

**1.0 GENERAL**

**1.8 Limitations of Open Trench**

1.8.1  
Replace last sentence  
with the following

If circumstances do not permit complete backfilling of all trenches, and where permitted by the *Contract Administrator* and the City, adequately protect all open trenches or excavations with approved fencing or barricades and, where required, with flashing lights.

**2.0 PRODUCTS**

**2.2 Use of Specified Materials**

Delete 2.2.1.2

Delete Pit Run Sand

Delete 2.2.3.3

Delete Pit Run Sand

**3.0 EXECUTION**

**3.3 Excavation**

Delete 3.3.1.2 and  
replace with the  
following

Connections to existing waterworks systems are to be made by the *Contractor* under the inspection / supervision of the *Contract Administrator* and the City.

**3.6 Surface Restoration**

Delete 3.6.2.4 and  
replace with the  
following

Restore lawns with approved topsoil and sod to match existing lawn.

Delete 3.6.3.1 and  
replace with the  
following

Restore surface with a minimum 100 mm of 19 mm granular road base material.

Delete 3.6.7.5 and  
replace with the  
following

Restore Pavement as detailed on Coquitlam Standard Detail Drawing COQ-G4. Temporary patch shall be a minimum thickness of 50 mm thickness. Permanent restoration to existing asphalt thickness (minimum of 75 mm) with a 35 mm key where existing thickness permits. A 50 mm key is required on Arterial and Collector Roadways. Dry if necessary and paint clean, dry edge with asphalt emulsion (tack coat).

**END OF SECTION**



**1.8 Measurement and Payment**

Delete 1.8.4 and replace with the following

Payment under this item will only apply to removal of the components included in this item under a separate operation as shown on the Contract Drawings or as directed by the Contractor Administrator. No payment will be made under this item for removal of these components as part of the operation for common excavation, and such removal will be treated as common excavation.

Payment will be made at the respective unit prices bid in the Schedule of Quantities and Prices and will include all labour, and equipment required to complete the work, including offsite disposal.

Payment for removal of lock blocks will include all labour and equipment required including placement at a new location on Cedar Drive to act as a protection to City Hydrants, BCH Poles etc.

It is the responsibility of the contractor to locate and verify all utilities.

Delete 1.8.5 and replace with the following

Payment for Common Excavation includes:

1. Unless noted in the Schedule of Quantities and Prices as removal in square meters, common excavation will be measured in cubic metres calculated from measurements taken by the Contract Administrator in the areas of excavation for road widening areas.
2. Payment will include provision of polythene sheets for erosion control as directed by QEP and CA.
3. Cross-sections will be taken after clearing and grubbing and after stripping of 150mm of existing topsoil immediately prior to excavation of material to be incorporated into work.
4. Where determined by the Contract Administrator that truck box volume will be used to determine excavation quantities the volume per load shall be determined using 75% of the struck load quantity.

Truck Type	Material Type	Volume (cu.m)
Tandem	ordinary material	7
Tandem	asphalt/concrete/pipe	4
Triaxle	ordinary material	8
Triaxle	asphalt/concrete/pipe	5
Tandem and Pony	ordinary material	11
Tandem and Pony	asphalt/concrete/pipe	7.5
Triaxle and Pony	ordinary material	13
Triaxle and Pony	asphalt/concrete/pipe	9
Tandem and Transfer	ordinary material	19
Tandem and Transfer	asphalt/concrete/pipe	13

5. Contractor to provide truck slips detailing location type of common excavation, time loaded and location of dump site. The slips are to be given to Contract Administrator by the end of shift or Contract Administrator can deny quantities subsequently submitted.
6. Payment for on-site reuse includes re-shaping, grading, adjustment of moisture content and compaction of the reused material

7. Payment for over-excavation includes deep patch repair, supply, placement and compaction of 75mm clear crushed. Extent to be determined by the Contract Administrator after proof rolling by the Contractor.

Payment will be made at the respective unit prices bid in the Schedule of Quantities and Prices and will include all labour, and equipment required to complete the work, including offsite disposal. It is the responsibility of the contractor to locate and verify all utilities.

Delete 1.8.10 and  
replace with the  
following

Payment for replacement of areas of unsuitable granular base, granular subbase or sub-grade revealed during excavation will include excavation with off-site disposal, supply & compaction of granular base material (25 mm minus unless otherwise specified), and all remedial work required to achieve a suitable base. Payment will be based on the cubic metre volume removed. Payment for base gravel will be made under separate item for base gravel.

Add 1.8.14

Payment for 14x26in woven polypropylene sand bags flood barrier will include supply of all material, site preparation, equipment and labour to complete the work as directed and as shown on Contract Drawings.

## 2.0 PRODUCTS

### 2.2 Specified Materials

Delete 2.2.1.3

Pit Run Sand

Delete 2.2.1.4

River Sand

Delete 2.2.2

END OF SECTION

**GRANULAR SUBBASE**

- |            |                                |   |  |
|------------|--------------------------------|---|--|
| <b>1.4</b> | <b>Measurement and Payment</b> | Delete 1.4.1 and replace with the following | Measurement for granular subbase of variable thickness will be for actual quantity placed based on weigh tickets provided to Contract Administrator as loads are delivered.  |
|            |                                | Delete 1.4.2 and replace with the following | Measurement for granular subbase for each specified thickness will be for the actual area placed.  |
|            |                                | Delete 1.4.3 and replace with the following | Payment for Subsection 1.4.1 & 1.4.2 above includes supply, placement and compaction of granular subbase material, adjustment of moisture content, and boning to establish the road cross-section, shall be included in the unit price bid in the Schedule of Quantities and Prices. |
|            |                                | Delete 1.4.4 and replace with the following | Payment for removal of unsuitable subgrade including disposal off-site prior to direct placement of granular subbase will be made under Section 31 24 13 – 1.8.5 Common Excavation.  |
| <b>2.0</b> | <b>PRODUCTS</b>                |   |  |
| <b>2.1</b> | <b>Specified Materials</b>     | Delete                                      | 2.1.1.1: Select Granular Subbase<br>2.1.1.2: 75 mm Pit Run Gravel<br>2.1.1.4: Pit Run Sand<br>2.1.1.5: Approved Native Material<br>2.1.1.7: River Sand   |

**END OF SECTION**

GRANULAR BASE

1.4	<b>Measurement and Payment</b>	Delete 1.4.1 and replace with the following	Measurement for granular base of variable thickness will be for actual quantity placed based on weigh tickets provided to Contract Administrator as loads are delivered.
		Delete 1.4.2 and replace with the following	Measurement for granular base for each specified thickness will be for the actual area placed.
		Delete 1.4.3 and replace with the following	Payment for Subsection 1.4.1 & 1.4.2 above includes supply, placement and compaction of granular base material, adjustment of moisture content, and boning to establish the road cross-section, shall be included in the unit price bid in the Schedule of Quantities and Prices.
		Delete 1.4.4 and replace with the following	Payment for removal of unsuitable subgrade including disposal off-site prior to direct placement of granular subbase will be made under Section 31 24 13 – 1.8.5 Common Excavation.
2.0	<b>PRODUCTS</b>		
2.1	<b>Granular Base</b>	Add 2.1.1.3	25 mm minus crushed gravel conforming to the gradation specifications for Collector/Arterial Roads under Section 31 05 17S – 2.10.3.
3.0	<b>EXECUTION</b>		
3.5	<b>Proof Rolling</b>	Delete 3.5.1 and replace with the following	For proof rolling, use fully loaded single axle, to 80 KN (18, 000 lb) minimum, dump truck.
		Add 3.5.7	<p>Prior to paving with asphalt concrete, the base surface shall be checked by the <i>Contract Administrator</i> and the City, for deflections utilizing a Benkelman 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.</p> <p>The Benkelman spring rebound value of the completed pavement surface shall not at any point exceed 0.75 mm for arterial industrial roads and lanes, 1.15 mm for collector roads, and 1.5 mm 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

**1.0 GENERAL**

**1.4 Submission of Mix Design**

Delete 1.4.1 and replace with the following

Submit asphalt concrete mix design, including RAP content and trial mix test results to Contract Administrator for review at least two weeks prior to commencing work.

**1.5 Measurement and Payment**

Delete 1.5.1 and replace with the following

Payment for asphaltic concrete paving includes all construction joint preparation, asphaltic surface milling and key 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.

Measurement for asphaltic concrete paving for the specified design mixes will be made at the respective unit prices bid in the Schedule of Quantities and Prices and incorporated into Work will be asphalt concrete actually based on weigh tickets provided to the Contract Administrator as loads are delivered.

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 & Machinery to complete the Hot Mix Asphaltic Paving Work as shown on the Contract Drawings or as directed by the Contract Administrator.

For measurement and payment purposes, Contract Administrator may calculate payment on actual area paved to the thickness specified in in the Schedule of Quantities and Prices and as shown on the Contract Drawings.

**MILLED AREAS MUST BE PAVED WITHIN 48 HOURS (2 DAYS).**

Delete 1.5.3 and replace with the following

Payment for asphaltic concrete sidewalks, pathways, driveways, infill strips paving, and stamped colored asphalt includes all construction joint preparation, saw cutting, supply and placing of the asphaltic concrete, compaction and cleaning frames, covers and lids of castings affected.

Payment includes relocation of lock block and boulder to accommodate asphaltic concrete sidewalk.

Measurement for asphaltic concrete paving for the specified design mixes for will be made at the respective unit prices bid in the Schedule of Quantities and Prices and incorporated into Work will be asphalt concrete actually based on weigh tickets provided to the Contract Administrator as loads are delivered.

Payment for this item includes all applicable materials and work described in 1.5.1. Work includes all necessary adjustments on site during construction to achieve proper tie-in to existing driveways as directed by Contract Administrator. Adjustments performed under this section shall be incidental to payment for work described in other Sections

**1.6 Inspection and Testing**

Add 1.6.3

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 required design and compaction.

**2.0 PRODUCTS**

**2.1 Materials**

Add 2.1.2.1

Usage of recycled asphalt shingles will not be permitted.

Add 2.1.2.2

Usage of softening agents, rejuvenators, or recycling agents will not be permitted.

**2.2 Mix Design**

Delete 2.2.2 and replace with the following

Mix may contain up to a maximum of 15 % by mass of RAP for Upper Course Asphalt and 20 % by mass of RAP for Lower Course Asphalt without a special mix design. The *Contract Administrator* and the City may approve higher proportion of RAP if *Contractor* demonstrates ability to produce mix meeting requirements of the specification.

Delete 2.2.3.2 Marshall Stability and replace with the following

Marshall Stability at 60°C for both lower and upper courses to be 10 KN min.

**3.0 EXECUTION**

**3.3 Preparation**

Delete 3.3.3 and replace with the following

The *Contractor* is responsible for adjusting all utility manhole frames and valve boxes, 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 within the paved surface will be considered incidental to the *Work* unless otherwise noted in the *Contract Documents*.

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.

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.

All manholes must be vertically adjusted a minimum of twenty four (24) hours prior to paving. The use of riser rings for adjusting manhole frames and value boxes will not be permitted.

**3.7 Joints**

Delete 3.7.5 and replace with the following

Construct butt joints at locations as shown on the *Contract Drawing* and as directed in the field by the *Contract Administrator* and the City.

**END OF SECTION**

## 1.0 GENERAL

1.2	Scope	Delete 1.2.1 and replace with the following	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 <i>Contract Drawing</i> .
1.5	Measurement and Payment	Delete 1.5.2 and replace with the following	All permanent markings shall be marked with thermoplastic manufactured by LAFRENTZ ROAD MARKINGS or approved equal, unless shown otherwise in the Schedule of Quantities and Prices.
		Delete 1.5.3 and replace with the following	The lump sum payment for permanent thermoplastic pavement markings covers removal of existing markings, supplying all materials and completing all the permanent thermoplastic pavement markings necessary to provide markings as shown on the Contract Drawings.
		Delete 1.5.4 and replace with the following	NOTE: PAYMENT FOR PERMANENT THERMOPLASTIC PAVEMENT MARKINGS WILL NOT BE MADE UNTIL ALL TEMPORARY PAVEMENT MARKINGS AND REFLECTIVE DEVICES HAVE BEEN REMOVED.
			Payment for signage includes all sign poles, bases, sleeves, sign relocations and sign installations (complete). The City will supply signs to supplement existing signs as required. Payment includes all labor, materials and incidentals to complete the work.
			1. Installation of each new sign pole, cap, sleeve and trapezoidal base includes all costs to supply all materials, labour and equipment and incidentals, as shown on Standard Detail Drawings SS-E11.1 & SS-E11.2, necessary to the install sign structure as shown on the Contract Drawings and as directed by the Contract Administrator.
			2. Installation of each new sign pole, cap, sleeve, galvanized steel bracket for no post barrier, as per MOT Drawing # SP635-3.8.3, includes all costs to supply all materials, labour and equipment and incidentals necessary to the sign structure as shown on the Contract Drawings and as directed by the Contract Administrator.
			3. The unit price payment is for each city supplied aluminum sign installed on a sign pole includes sign mount clamps & all costs to supply all materials, labour and equipment and incidentals necessary to install each sign as directed by the Contract Administrator.
			4. Installation of each aluminum sign on a lamp standard pole or sign pole includes sign mount clamps and all costs to supply all materials, labour and equipment and incidentals necessary to install each sign as directed by the Contract Administrator.
		Add 1.5.5	Payment for the installation of Snowplowable Raised Pavement Markers (RPM) will include all labour, equipment, and materials required to install RPMs to manufacturer's specifications.

## 2.0 PRODUCTS

2.1	Materials	Delete 2.1.1 and replace with the following	All permanent paint markings shall be marked with thermoplastic manufactured by LAFRENTZ Road Markings.
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Delete 2.1.6 and  
replace with the  
following

Pavement Markings:

Delete 2.1.7 and  
replace with the  
following

Thermoplastic material

- .1 Material composition shall be at the discretion of the manufacturer subject to the approval of the Contract Administrator and the City. Each formulation shall be identified by a code number.
- .2 No retained water when tested by ASTM D-570.
- .3 Specific gravity of the supplied product shall be within 3 % of that specified for the selected formulation.
- .4 Material shall not deteriorate upon contact with deicing chemicals, gasoline, diesel fuel or grease dropped by traffic.
- .5 Material shall not break down, deteriorate, scorch or discolour, if held within the application temperature range specified by the manufacturer for a period of four hours and it must be able to be reheated from room temperature to the application temperature four (4) times without showing any of these detrimental effects.
- .6 When applied at the temperature recommended by the manufacturer and at a film thickness of 2 to 4 mm, the material shall set solid and show no tracking under traffic after elapsed times as follows:
  - .1 Two (2) minutes at an air temperature of 10° C, relative humidity less than 75 %, and road surface temperature from 10° C to 20° C.
  - .2 Five (5) minutes at an air temperature of 32° C, relative humidity less than 75 %, and road surface temperature from 35° C to 50° C.
  - .3 The drying time under conditions intermediate between the two air temperatures shall be interpolated using a straight line model.
- .7 The quantity, type, and gradation of the component reflecting glass spheres premixed in the thermoplastic material shall be at the discretion of the manufacturer, but shall provide retroreflection levels specified below.

### **3.0 EXECUTION**

#### **3.3 Application**

Add to 3.3.1.3

Temporary raised pavement markings (TRPMs) are to be provided on all multi-lane roadways as directed by the *Contract Administrator* and the City.

Delete 3.3.3.3 and  
replace with the  
following

Thermoplastic material shall be heated in the melter to a temperature of 382 °F.

**END OF SECTION**



**1.5 Measurement and  
Payment**

Delete 1.5.4 and  
replace with the  
following

Payment for handrails, bollards, bicycle baffles, bicycle fence, and bicyclist sidewalk fence includes all materials, cast-in-place concrete footings, work and incidentals shown on MMCD Standard Detail Drawings C11 and BC MoTI Standard Steel Bicycle Fence Drawing 2891-2 Rev. G, and Drawing SP741-07.02 as separate items for each type of installation including anchors and concrete bases, as required. Measurement will be made along the surface of the ground for length of each item of fence installed. Refer also to Section 05 20 00S – Metal Fabrications, where the more stringent standard between Sections 05 20 00S and 32 31 13 shall take precedence unless noted otherwise by the Contract Administrator.

**END OF SECTION**

**IRRIGATION SYSTEM**

**1.0 GENERAL**

- .1 Section 32 84 23 refers to those portions of the work that are unique to the complete installation of a fully automatic underground irrigation system, including all necessary preparatory work and all electrical, wiring and plumbing connections, and maintenance work during the guarantee period. This section must be referenced and interpreted simultaneously with all sections pertinent to the works described herein.
- .2 The scope of work involves the supply and installation of sleeves, mainline, lateral lines, control zone valves, dripline, spray heads, root watering systems, controller enclosure, controller, and all related items necessary to provide a properly operating automatic irrigation system to distribute water in a way that adequately maintains the landscape while conserving and protecting water resources.
- .3 The scope of work involves maintenance of irrigation system.

**1.1 Related Work**

- .1 Excavation, Trenching and Backfilling 31 23 01
- .2 Aggregates and Granular Materials 31 05 17

**1.2 References**

- .1 The Canadian Landscape Standard (current edition)
- .2 City of Coquitlam Water Meter Specifications (File #: 11-5600-08/000/2014-1)
- .3 City of Coquitlam Supplementary Specifications Master Municipal Construction Documents March 2016 Division 33 Section 22 11 01S Waterworks and details COQ-W2b, COQ-W2e and COQ-W2f.
- .4 **Reference Standards:**
  - .1 ASTM D1248 – High Density Polyethylene (HDPE) Pipe
  - .2 ASTM D2241 – Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-PR)
  - .3 ASTM D2564 – Solvent Cement for PVC Pipe and Fittings
  - .4 CSA B137.0-12 – Thermoplastic Pressure Piping
  - .5 BC Building Code (Current Edition) Part 7 – Plumbing Services
  - .6 B.C.W.W.A. Cross Connection Control Manual

**1.3 Codes and Regulation**

- .1 All work shall be installed in accordance with the requirements of local and applicable provincial and federal regulations. Any work shown on the drawings or described in the specifications which is at variance with the regulations shall be changed to comply with the requisite authority at no cost to the Owner.
- .2 Workers' Compensation Board regulations shall be followed.

**1.4 Permits and Fees**

- .1 The Contractor shall be responsible for obtaining all permits and licenses applicable to the work to be done and shall include costs for such permits and licenses in the tender price.
- .2 Provide Contract Administrator with signed and approved copies of all required permits, including the following:
  - .1 Backflow test report

**IRRIGATION SYSTEM**

- |     |                          |    |   |
|-----|--------------------------|----|---|
| 1.5 | <b>Contract Drawings</b> | .1 | Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Do not scale drawings.   |
| 1.6 | <b>Quality Assurance</b> | .1 | The trade contractor performing this work shall be a "Certified Irrigation Contractor" having met the certification standards established by The Irrigation Industry Association of British Columbia, and having experienced, trained and insured personnel qualified for the scope of work.  |
|     |                          | .2 | A written guarantee of the installed irrigation system shall be provided to the Owner covering workmanship and materials for a minimum of one (1) year from the date of substantial completion. The contractor shall warranty maintenance on the system for a minimum of one (1) year, including but not limited to spring start-up, adjustments and maintenance operations as required, and winterization.   |
|     |                          | .3 | Manufactured products, including but not limited to irrigation heads, quick couplers, controllers, valve boxes and valves, will be warranted as per the manufacturer's standard warranty period or a minimum of one (1) year, whichever is greater.   |
|     |                          | .4 | If the design involves High Density Polyethylene Pipe (HDPE), the Contractor shall be certified in High Density Polyethylene Butt-Fusion as certified by the British Columbia Institute of Technology or approved equivalent.   |
|     |                          | .5 | The double check valve assembly and meter shall be installed and tested by a certified and licensed backflow tester with B.C.W.W.A.   |
|     |                          | .6 | All electrical components or products specified or used in construction of the proposed irrigation system must be CSA approved and installed in accordance with all local, provincial, and national electrical codes.   |
|     |                          | .7 | All materials to be new and without flaws.  |
|     |                          | .8 | The completed irrigation system is to efficiently and uniformly irrigate all areas and perform as required by these specifications.   |
| 1.7 | <b>Submittals</b>        | .1 | The Contractor shall submit evidence of project personnel having certification in High Density Polyethylene Butt-Fusion prior to commencing the work.   |
|     |                          | .2 | The Contractor shall submit prior to construction a copy of their Low- Voltage Field Safety Representative certificate and their backflow tester certificate.   |
|     |                          | .3 | The Contractor shall submit shop drawings, product literature, and specifications for approval by the Owners Representative prior to construction.  |
|     |                          | .4 | A suitably scaled as-built drawing shall be submitted, preferably in AutoCAD 2008 or newer format along with three (3) printed copies of the as-built. Retain a qualified survey instrument operator to record exact location of all irrigation components installed, including but not limited to the controller cabinet, master valve, mainline, sleeves, control zone valves, main water connection, blow-out fittings, pipe drains, lateral end flush valves, soil moisture sensors, sprinklers and any other similar features. Show all other deviations from the irrigation design drawing provided to the Contractor. All components of the irrigation system shall be shown as installed, with clear measurements from an identifiable reference point. |

**IRRIGATION SYSTEM**

**1.8 Site  
Conditions**

- .5 The as-built drawing shall be submitted prior to issue of Substantial Completion. The Contractor shall maintain the as-built record drawing throughout the maintenance and warranty period and issue a revised As-Built Irrigation Drawing at Final Acceptance if any changes are made. The as-built drawings shall be certified by the landscape subcontractor as being an accurate record of installation.
- .6 Operation and Maintenance Manuals:
  - .1 Prepare and deliver to the Owner within five (5) calendar days prior to completion of construction two (2) copies of the following information in 3-ring binders:
    - .2 Parts sheets on every material and component installed under this Contract.
    - .3 Product warranty documentation for all controllers, meters, backflows, valves, filters, sensors, and related irrigation components. Date the warranties with the date of Substantial Performance.
    - .4 Guarantee statements.
    - .5 Complete operating and maintenance instruction on all major equipment.
    - .6 Winterization and spring start-up procedures.
    - .7 Chart of approximate watering times for peak and shoulder season showing all proposed run times for each zone relative to differing precipitation rates and water requirements.
    - .8 Copies of Backflow Test Report.
    - .9 One (1) full sized printed copy of the as-built, two (2) 11" x 17" sized printed copies of the as-built on rip-proof and water proof paper.
    - .10 A disc or portable memory stick with the .dwg file and .pdf file of the as-built.
  - .1 Verify the existence and location of all underground utilities and services prior to commencement of the work.
  - .2 Consult with the Contract Administrator to adjust the design, if necessary, to suit existing site conditions and grades prior to commencement of the work.
  - .3 Ensure sequencing of this work is carried out in coordination with the work of other trades. It is essential to coordinate the installation of sleeves under hard surfaces and irrigation piping through open tree soil trenches to ensure their installation is completed when the work area accessible.
  - .4 Protect from damage existing landscape features, plant material, structures, irrigation work in progress, and the work of other trades.

IRRIGATION SYSTEM

**1.9 Substitutions**

- .1 Where materials are specified by brand name and model number, such specifications shall be deemed to facilitate a description of the materials and material quality and shall establish a standard for performance and quality against which proposed substitutes shall be evaluated.
- .2 Substitution requests shall not be considered unless submitted in writing with sufficient descriptive literature and product samples to permit product comparison.
- .3 All product substitutions shall be of equal or greater performance, value and water efficiency than the original design. All proposed sprinkler substitutions must be accompanied with verifiable water efficiency performance data provided by the manufacturer or an independent industry source such as the Centre for Irrigation Technology (CIT), Fresno.
- .4 Alternate materials shall match the specified materials in performance, flow, and pressure loss so as not to compromise the intent of the design.
- .5 The written approval of the Contract Administrator is required to the use of materials that are different from those shown in the design. Materials installed which have not been pre-approved by the Contract Administrator are subject to removal and replacement with approved materials at the Contractor's expense.
- .6 Shop Drawings or irrigation system are required for any and all aspects of the irrigation system not included in the Drawings. This includes but is not limited to:
  - .1 Revisions to irrigation system design not previously addressed in Contract Documents, including revisions to irrigation system design which markedly alter the original design, as determined by the Contract Administrator
  - .2 Installation details for irrigation components not addressed in Contract Documents
  - .3 Details required by Contract Administrator for review proposed substitutes
  - .4 Tasks identified in project specifications as requiring a Shop Drawing
- .7 Submit Shop Drawing to Contract Administrator for review, comment, and approval or rejection.

**1.10 Notification of Consultant**

- .1 Report to the Contract Administrator, in writing, any conditions or defects encountered on the site during or prior to construction upon which the work of this section depends and which may adversely affect its performance.
- .2 Notify the Contract Administrator and obtain approvals for inspection and testing of irrigation system as specified in this section. Provide the Contract Administrator and Owner minimum 3-days' notice prior to required inspections or meetings.

**1.11 Measurement  
and Payment**

Payment for all work performed under this section would include:

- .1 Supply and installation of irrigation control system. The work includes: permits & fees, supply, installation, testing, programming, and adjustment of irrigation system controller, electrical conduits, controller cabinets, vaults, valve boxes, lids, fittings, wire, excavation, trenching, backfill, and restoration, and all incidentals necessary for the proper installation and operation of a complete irrigation control system.
- .2 Supply and installation of pipes, valves, sprinklers and dripline: the work includes, but is not limited to: supply, installation, testing and adjustment of irrigation pipe, sleeves and conduit, zone control valves, drip control zone kits, electric control wire, common wire, flow sensor wire and spare wires, drain valves, isolation valves, pressure regulators, swing joint assemblies, sprinklers, bubblers, emitters, dripline and root watering systems, air relief valves, flush valves, fittings, vaults, valve boxes and lids, excavation, trenching, backfill and restoration, all incidentals necessary for the proper installation and operation of a complete irrigation system.
- .3 Supply all labour and materials necessary for adjustment of existing systems to meet approval of Contractor Administrator.
- .4 Payment for record drawings and operating manual will be incidental to the work under this section.
- .5 Payment for irrigation tests, inspections, maintenance, winterizations, and spring start-ups during warranty period will be incidental to the work under this section.

**1.12 Tests and  
Inspections**

- .1 System installation inspections shall be held on a regular basis.
- .2 In addition to coordinating the inspection schedule, the irrigation contractor shall, in the presence of the Irrigation Consultant conduct the following tests and inspections:
  - .1 Inspection of mainline and sand bedding prior to burial.
  - .2 Pressure tests of mainline.
  - .3 Layout inspection and operation test of subsurface dripline prior to burial.
  - .4 Coverage and operation tests.
  - .5 System test.
  - .6 HDPE pipe strap test.
- .3 Keep work uncovered and accessible until successful completion of inspection or test.
- .4 Conduct all inspections and tests in presence of Contract Administrator and request Contract Administrator issue signed report to Contractor within three days regarding each test result. Request attendance of Contract Administrator for proposed inspection or test at least three days prior to proposed inspection or test.

**1.13 Backflow  
Assembly Test**

- .1 Conduct backflow prevention assembly test as BC Water Works Association standard using qualified personnel.

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**1.14 Mainline  
Pressure Test**

- .1 Perform mainline pressure test to identify potential leaks and ensure mainline is able to operate at design pressure and maintain pressure.
- .2 Conduct mainline pressure test prior to backfilling of mainline.
- .3 Fill mainline with water and expel all air from pipe. Maintain water in pipe as follows:
  - .1 24 hours for PVC mainline
  - .2 3 hours for HDPE mainline (not including set up time)
- .4 Subject mainline to hydrostatic pressure of 150psi or twice the optimum design pressure of the mainline and not to exceed 200psi.
- .5 Stop supply of make-up water to mainline and record hydrostatic pressure in mainline.
- .6 Visually inspect mainline and fittings for leaks.
- .7 Record hydrostatic pressure in mainline 3 hours after supply of make- up water stopped.
- .8 Determine test result based on difference in recorded pressures at beginning and end of test as follows:
  - .1 Passed test: Less than 5% difference
  - .2 Failed test: Great than 5% difference.
- .9 Identify source of leak and replace any and all defective material and workmanship as necessary to eliminate leak.
- .10 Repeat mainline pressure test and make replacements as necessary until a passed result is achieved.

**1.15 System  
Coverage and  
Operation  
Test**

- .1 Conduct coverage and operation test after installation and operation of complete irrigation system and prior to issuance of Certificate of Substantial Performance:
  - .1 Head spacing does not exceed the distances shown on Contract Drawings
  - .2 Where applicable, irrigation piping should be installed to follow the contours of the land in an effort to minimize low head drainage situations.
  - .3 Heads, boxes, vaults and trenches are at specified elevation relevant to finished grade and not subject to settlement or lifting.
- .2 Conduct operational tests to verify that:
  - .1 Controller can be programmed manually on site and remotely via Owner's central control system.
  - .2 Controller can send and receive communication with Owner's central control system 10 consecutive times without a missed communication.

- .3 Controller responds to flow sensor.
  - .4 Operating pressure is within design parameters.
  - .5 Each zone can be operated automatically and in succession via programmed controller.
  - .6 Performance provides head to head coverage.
  - .7 There is no overspray onto different control zones, hard surfaces or other improvements.
- 1.16 **Dripline Emitter Test**
  - .1 Perform inspection and testing of dripline/emitter manifold and lines to identify potential leaks and confirm manifold, driplines and emitters are able to operate at design pressure. Conduct inspection and testing prior to backfilling of manifold, driplines or emitters.
  - .2 Fill manifold and lines with water at operating pressure and maintain pressure for 1 hour. Visually inspect manifold, driplines and fittings for leaks. Confirm that emitters are functioning correctly. Identify sources of leaks and replace any and all defective materials and workmanship as necessary to eliminate leak.
  - .3 Repeat inspection and testing and make replacements as necessary until no further leaks are identified.
- 1.17 **HDPE Pipe Strap Test**
  - .1 Conduct HDPE pipe strap test at least 1 hour after fusion weld has been made prior to backfilling of HDPE pipe on those fusion welds where, upon visual or tactile inspection, the bead does not roll back properly or is not consistent in height or width.
  - .2 HDPE pipe strap consists of:
    - .1 Cut fusion weld from pipe, allowing 200mm on either side of weld to work with.
    - .2 Cut pipe lengthways through fusion weld to create a strap 1" wide.
  - .3 Bend strap back on itself.
  - .4 If weld breaks repeat test on another fusion weld, chosen by Contract Administrator. If second fusion weld fails then all welds become suspect and the HDPE pipe cannot be installed until the reason for the fusion joint failures is determined.
  - .5 If fusion weld does not break then the weld is acceptable and no further testing of similar welds is required.
  - .6 Replace or repair tested pipe strap.
- 1.18 **Vault Drainage Test**
  - .1 Conduct vault drainage test when vault is installed and backfilled and prior to installation of backflow prevention device and water supply line in vault.
  - .2 1.19.2 Fill point of connection vault with water to a depth of 12" and leave water to drain.



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- .3 Determine test result based on time required for water to drain below finish grade of drain rock in bottom of vault:
      - .1 Passed test: 1 hour or less.
      - .2 Failed test: greater than 1 hour.
- 2.0 PRODUCTS
- 2.1 Vault and Lid
  - .1 Acceptable vaults and matching lids for point of connection equipment are dependent on service size and include the following:
    - .1  $\frac{3}{4}$ " : as per drawings
    - .2 1" to 2" : as per drawings
    - .3 2  $\frac{1}{2}$ " to 3" : as per drawings
  - .2 Lids to have recessed hinges and locking hardware.
- 2.2 Vault Drain
  - .1 Perforated Schedule 40 PVC pipe, 4" diameter with threaded inlet cover having 13mm grated openings.
- 2.3 Backflow Prevention Assembly
  - .1 Acceptable double check valve assemblies are :
    - .1 Watts Series 007 Double Check Valve Assemblies
    - .2 Apollo 4A-100 Double Check Valve Assemblies
- 2.4 Water Service and Meter
  - .1 Unless already installed or otherwise required by the water utility having jurisdiction over the site provide a metered water service, including but not limited to:
    - .1 Permit
    - .2 Backflow prevention assembly
  - .2 Supply and install water meter in accordance with requirements of water utility.
  - .3 Conform size of water meter to mainline diameter and allow for minimal pressure losses.
- 2.5 Flow Sensors
  - .1 Flow sensors impellers to be PVC, sized to match system low and high flows. Acceptable flow sensors are:
    - .1 Toro TFS-050
    - .2 Toro TFS-075
    - .3 Toro TFS-100
    - .4 Toro TFS-150
    - .5 Toro TFS-200
    - .6 Toro TFS-300
    - .7 Toro TFS-400
  - .2 Acceptable wires for flow sensor shall be shielded, direct burial communication cable and includes the following:
    - .1 Regency Wire PE-39 Communication Cable
    - .2 Approved equal
- 2.6 Master Valve
  - .1 Acceptable master valves are as follows:
    - .1 Rain Bird PEB Series
  - .2 Ensure master valve is sized to maximum and minimum flow parameters shown on Contract Drawings.

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| <b>2.7</b>  | <b>Pressure Reducing Valve</b>             | .1 | Acceptable water pressure reducing valves are Watts Series 25AUB-23  |
| <b>2.8</b>  | <b>Blow-Out Assembly</b>                   | .1 | Blowout assembly to be 1" ball valve with plug and swing joint assembly.   |
| <b>2.9</b>  | <b>Irrigation Controller</b>               | .1 | Acceptable irrigation controllers include the following: <ul style="list-style-type: none"> <li>.1 Toro Sentinel V3 Cellular Controller assembly with cellular modem. Updated Toro Sentinel Controller version to be used if available. Cellular modem selection to be approved by City of Coquitlam</li> <li>.2 Rain Bird TBOS-BT if on-site power is not available.</li> </ul> |
| <b>2.10</b> | <b>Control Cabinet</b>                     | .1 | Acceptable controller cabinets are as follows: <ul style="list-style-type: none"> <li>.1 Toro Sentinel Stainless Steel Wall Mount enclosure</li> <li>.2 Toro Sentinel Stainless Steel Pedestal</li> <li>.3 Or as shown on Contract Drawings.</li> </ul>  |
| <b>2.11</b> | <b>Controller to Decoder Communication</b> | .1 | Communication between controller and the field decoders at the electric control valves shall be accomplished using the Paige Electric P7350D   |
|             |  | .2 | Field Decoders (either 1, 2, 4, or 6 station configuration with ability to operate multiple solenoids per station) come pre-addressed.   |
|             |  | .3 | Decoder to solenoid: UF insulated type 14AWG to 150ft. (twisted improves surge resistance).  |
| <b>2.12</b> | <b>Control Wire</b>                        | .1 | Control wire from irrigation controller to electric control valve to be minimum #14-gauge, direct burial, type TWU-40 wire. Control wire to be any colour other than white, blue, purple or red.   |
|             |  | .2 | Common wire from irrigation controller to electric control valve to be minimum #12-gauge direct burial, type TWU-40 wire. Common wire to be white in colour.   |
|             |  | .3 | Master valve wire from the controller to valve to be minimum #14-gauge direct burial, type TWU-40 wire. Wire to be red in colour.  |
|             |  | .4 | Spare control wire to be blue in colour.   |
|             |  | .5 | Spare common wire to be white in colour.   |
|             |  | .6 | All connectors to be new, two-step, CSA approved for the water tight applications and assembled according to the manufacturer's recommendations.   |
| <b>2.13</b> | <b>Two-Wire Conductor</b>                  | .1 | Communication between controller and the field decoders at the electric control valves shall be accomplished using the Paige Electric P7350D   |
|             |  | .2 | Single conductor spare decoder wire shall be CSA approved #14 AWG Blue.  |
|             |  | .3 | All control wire installed shall use a Polyethylene outer jacket.  |

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		.4	All connectors to be new, two-step, CSA approved for the water tight applications and assembled according to the manufacturer's recommendations.
<b>2.14</b>	<b>Grounding and Bonding</b>	.1	Ground assembly consists of CSA and BC Electrical Code endorsed products per irrigation controller manufacturer's recommendations for grounding.
<b>2.15</b>	<b>Electrical Products</b>	.1	All electrical products shall be CSA approved and bear the CSA label. Alternatively, where a product does not bear the required CSA label, it shall be approved in writing, by the authority having jurisdiction.
		.2	Wire conduit shall be Grey PVC DB2 non-metallic electric conduit as shown on drawings, minimum 2" diameter.
<b>2.16</b>	<b>Polyvinyl Chloride (PVC) Pipe</b>	.1	Conform to CSA B137.3-93.
		.2	New condition, extruded from virgin, high impact materials, solvent weldable with belled ends, continually and permanently marked showing manufacturer's name, material, size, and pressure rating.
		.3	PVC pipe to be as follows: <ul style="list-style-type: none"> <li>.1 Class 200 PVC pipe for pipe sizes ¾" to 4" in diameter.</li> </ul>
<b>2.17</b>	<b>Low Density Polyethylene Pipe</b>	.1	New condition CSA Series 100, LDPE in new condition, extruded from virgin materials, continually and permanently marked showing manufacturers name, material, size, and pressure rating
<b>2.18</b>	<b>High Density Polyethylene Pipe</b>	.1	New condition CSA Approved, extruded from virgin materials, continually and permanently marked showing manufacturer's name, materials, size, and pressure rating.
		.2	Material to be listed by the Canadian Standards Association (CSA) and Plastic Pipe Institute (PPI) as a PE-3408 resin with a hydrostatic design basis (HDB) of 1600psi for water at 23°C. Material to comply with ASTM D-1248 as a Type III Class C, Category 5, Grade P34 material and with ASTM D-3350 as a 345434C cell material
		.3	Acceptable HDPE pipe is dependent on operating pressure and to have Standard Density Ratios (SDR) as follows: <ul style="list-style-type: none"> <li>.1 Max. pressure up to 100psi: SDR 17.0</li> <li>.2 Max. pressure exceeding 100psi: SDR 11.0</li> </ul>
<b>2.19</b>	<b>Sleeving</b>	.1	Schedule 40 PVC for irrigation sleeve in bored hole or under hard surface
		.2	Irrigation sleeve diameter to be minimum 2" or twice the diameter or main or lateral line running through it, whichever is greater.
<b>2.20</b>	<b>Valve Boxes</b>	.1	Irrigation valve boxes are to be as follows: <ul style="list-style-type: none"> <li>.1 Rain Bird VB Series Valve Boxes</li> </ul>
		.2	Valve box and matching T Cover Lid and extensions to be commercial grade and green in colour.

**IRRIGATION SYSTEM**

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| <b>2.21</b> | <b>Wire splice boxes</b>        | .1 | Wire splice box and matching lid and extensions to be commercial grade and grey in colour. Wire splice box to have locking lid with stainless steel bolt locking device and appropriate washers. |
| <b>2.22</b> | <b>Electrical Control Valve</b> | .1 | Acceptable electric control valves are:  |
|             |                                 | .1 | Rain Bird PEB Series or Toro P-220   |
|             |                                 | .2 | Valve selection to be confirmed by City of Coquitlam Park Operations staff on a per project basis  |
|             |                                 | .3 | Size electric control valve in accordance with valve manufacturer's recommendations for the design flow.   |
|             |                                 | .4 | Valve shall a sch 80 pvc true union ball valve upstream of each 1" valve. If valve is larger, then install approved gate valve.  |
| <b>2.23</b> | <b>Quick Coupler Valve</b>      | .1 | Acceptable quick coupler valves are as follows:  |
|             |                                 | .1 | $\frac{3}{4}$ " Rain Bird 3-RC   |
|             |                                 | .2 | 1" Rain Bird 5-RC  |
| <b>2.24</b> | <b>Gate Valve</b>               | .1 | Acceptable gate valves include the following:  |
|             |                                 | .1 | Red White #280   |
|             |                                 | .2 | Toyo #206A   |
| <b>2.25</b> | <b>Drip Zone Kits</b>           | .1 | Drip zone kit shall be as shown on the drawing.  |
|             |                                 | .2 | Drip zone kits shall include one (1) schedule 40 PVC ball valve and filter.  |
|             |                                 | .3 | The valve box shall contain maximum of two (2) valves per box.   |
|             |                                 | .4 | Acceptable drip zone kits are as follows:  |
|             |                                 | .1 | 0.3 to 20 GPM: Rain Bird XCZ-100-PRB-COM   |
|             |                                 | .2 | 15 to 40 GPM: Rain Bird XCZ-150-PRB-COM  |
| <b>2.26</b> | <b>Filters</b>                  | .1 | Rain Bird PRB-QKCHK-100  |
| <b>2.27</b> | <b>Swing Joint Assembly</b>     | .1 | Acceptable swing joint assemblies for sprinklers flowing up to 8gpm:   |
|             |                                 | .1 | Rain Bird SA Series Swing Assembly   |
|             |                                 | .2 | For sprinklers flowing greater than 8gpm, use fabricated with three (3) threaded Schedule 40 PVC elbows and one threaded Schedule 80 PVC nipple.   |
|             |                                 | .3 | Length of nipple shall be such a length to permit installed head or valve to be set as specified.  |
|             |                                 | .4 | Diameter of nipple to match inlet for valve or head shown on Contract Drawings.  |
| <b>2.28</b> | <b>Sprinklers - Sprayheads</b>  | .1 | Acceptable sprayhead sprinklers are as follows:  |
|             |                                 | .1 | Rain Bird 1800-SAM, 1800-PRS, 1800-SAM PRS, 1800-SAM-P45 Series  |
|             |                                 | .2 | Rain Bird RD1800 Series Spray Heads  |

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| <b>2.29</b> | <b>Sprinklers - Rotors</b>     | .1  | Acceptable rotors are as follows:  |
|             |                                | .1  | Rain Bird 5004   |
|             |                                | .2  | Rain Bird 5004--SAM-R Series   |
|             |                                | .3  | Rain Bird Falcon 6504 Series   |
|             |                                | .4  | Rain Bird 8005 Series  |
| <b>2.30</b> | <b>Landscape Dripline</b>      | .1  | Acceptable dripline are as follows:  |
|             |                                | .1  | Rain Bird XFD On-Surface Dripline  |
|             |                                | .2  | Rain Bird XFS Sub-Surface Dripline   |
|             |                                | .3  | Rain Bird XFS-CV Dripline  |
| <b>2.31</b> | <b>Drip Emitters</b>           | .1  | Rain Bird Xeri bugs, sized as shown on drawing.  |
| <b>2.32</b> | <b>Bubblers</b>                | .1  | Acceptable bubblers are Rain Bird RWS-B-C-1402 with fabric sleeve.   |
| <b>2.33</b> | <b>Lateral Flush Assembly</b>  | .1  | Ball valve with street elbow and flexible hose on swing joint assembly complete with 10" round valve box.  |
| <b>2.34</b> | <b>Air Relief Valves</b>       | .1  | Rain Bird ARV050 Air/Vacuum relief valve.  |
| <b>2.35</b> | <b>Fittings</b>                | .1  | New condition Schedule 40 PVC conforming to ASTM D-2466-97 standards and of the same material as pipe. Fittings to be designed for solvent welding to PVC pipe except where valves and risers require threaded joints. |
|             |                                | .2  | Nipples to be threaded Schedule 80 PVC and manufactured from same material as pipe.  |
|             |                                | .3  | At the point where the supply source changes from metal to PVC pipe, the metal end of the pipe must be an FIPT (female) adapter and the PVC fitting a MIPT (male) adapter.   |
|             |                                | .4  | Flange couplers may be used upon approval of Contract Administrator  |
|             |                                | .5  | Fittings for LDPE pipe to be Spears insert fittings complete with stainless steel gear clamps.   |
|             |                                | .6  | Fittings for HDPE pipe to be butt fusion type for end-to-end joints.   |
|             |                                | .7  | SDR rating of HDPE fittings must match the SDR rating of the HDPE pipe specified.  |
|             |                                | .8  | HDPE pipe fittings to be molded or fabricated by the pipe manufacturer. HDPE pipe fittings and flange adapters made by contractors or distributors are prohibited.   |
|             |                                | .9  | Fittings for dripline and drip emitters to compatible with specified dripline or emitter and as recommended by manufacturer.   |
|             |                                | .10 | All pipe and fittings installed in irrigation vault to be Schedule 80 per Drawings.  |
| <b>2.36</b> | <b>Pipe Solvent and Primer</b> | .1  | PVC pipe solvent and primer combinations recommended by manufacturer and suitable for use with specified materials and application.  |
|             |                                | .2  | Use solvent and primer as directed by manufacturer. Use only solvent and primer that meets local codes.  |

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|             |                            | .3 | The use of wet and dry solvent and primer is prohibited.  |
| <b>2.37</b> | <b>Thrust Block</b>        | .1 | Thrust blocks to be 20MPa at 28-day strength. Thrust blocks can be either:  |
|             |                            | .1 | Poured in place concrete.   |
|             |                            | .2 | Pre-cast concrete block   |
| <b>2.38</b> | <b>Backfill Material</b>   | .1 | Native excavated material shall be clean excavated soil, free from organic matter, stones larger than 1", building debris, and other foreign substances.  |
|             |                            | .2 | Sand: pit run sand.   |
| <b>3.0</b>  | <b>EXECUTION</b>           |    |   |
| <b>3.1</b>  | <b>Existing Conditions</b> | .1 | Report existing conditions at variance with Contract Drawings to Contract Administrator.  |
|             |                            | .2 | Verify locations of underground utilities prior to commencing excavation and conduct work so to prevent interruption and damage to services and utilities. Make good all damages to same at Contractor's cost.  |
|             |                            | .3 | Verify location of all services in building walls before boring or drilling holes. Make good all damages to same at Contractor's cost.  |
|             |                            | .4 | Protect existing conditions and completed work from disturbance during Work. Make good all damages to same at Contractor's cost.  |
|             |                            | .5 | Adjustments to installation of irrigation system to avoid existing conditions, completed work and utilities will be permitted subject to prior approval by Contract Administrator.  |
| <b>3.2</b>  | <b>Layout</b>              | .1 | Locations of irrigation components shown on plans are schematic in nature. Coordinate actual location of irrigation components with landscaping, building and physical features of site. Confirm proposed changes to location of irrigation components in writing with Contract Administrator prior to installation. Changes that markedly alter the irrigation design in the opinion of the Contract Administrator require submission of Shop Drawings and updated Design Report to the Contract Administrator for their permission to proceed. Record all approved revisions on a marked up set of Contract Drawings. |
|             |                            | .2 | Layout and stake irrigation system per Contract Drawings to confirm:  |
|             |                            | .1 | Layout is within project boundary and property lines  |
|             |                            | .2 | Site grades are consistent with Contract Drawings   |
|             |                            | .3 | Damage to root system of existing trees is minimized  |
|             |                            | .4 | Installation of irrigation components to be minimum of 1 meter outside the dripline of existing trees.  |
|             |                            | .5 | Minimum horizontal and vertical clearances from electrical and other utilities are met.   |
|             |                            | .6 | Location of all sleeving, mainlines, pedestals, vaults, valve boxes, splice boxes   |
|             |                            | .3 | Excavation for layout:  |
|             |                            | .1 | Excavate to ensure depth and bedding requirements are met.  |
|             |                            | .2 | All excavation is unclassified. Report any material or site   |

condition that cannot be excavated by normal mechanical or normal means or that may affect excavation to required depth to Contract Administrator prior to excavation.

.3 Identify and recycle all suitable materials recovered during construction.

.4 Remove and dispose of buried debris exposed during excavation, including decommissioned irrigation materials and underground utilities, which may impede the proper installation and operation of irrigation system.

**3.3 Vault and Lid**

.1 Install vault in location on Contract Drawings or in alternate location approved or directed by Contract Administrator.

.2 Support and brace point of connection components, piping and valves within vault using adjustable aluminum pipe stands complete with riser, pipe clamps, base plate and galvanized or stainless-steel fittings in the quantity per service size indicated as follows:

.1        ¾": 2 supports

.2        1" to 2": 3 supports

.3        2 ½" to 3": 3 supports per vault

.3 Use Schedule 80 Pipe for all inside vault and extend outside the vault a minimum of 12" beyond vault. Make union of Schedule 80 pipe with other pipe in valve box or vault using specified fitting.

.4 Make connections of PVC pipe and metal pipe using male threads on PVC pipe and female threads on metal pipe.

.5 Install vault drain and connect to drain pit, dry well, manhole or catch basin.

**3.4 Backflow  
Prevention  
Device**

.1 Install Double Check Valve Assembly (DCVA) in lockable concrete vault or a locked mechanical room, per Drawings.

.2 Install backflow prevention assembly in accordance with all applicable codes and bylaws and in accordance with the current Cross Connection Control Manual Accepted Procedure and Practice (AWWA).

.3 Support backflow prevention assembly with specified supports per manufacturer's recommendations for locations of the support points.

**3.5 Irrigation  
Controller**

.1 Install irrigation controller in cabinet as per Contract Drawings.

.2 Coordinate controller installation with that of other electrical components.

.3 Install controller and wiring in accordance with local, provincial and national electrical codes.

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|            |                           | .4 | Install communication components per manufacturer's recommendations and establish communication between controller and Owner's Central Control System, including relays or boosters as necessary.                                     |
|            |                           | .5 | Prior to issuance of Certificate of Substantial Performance request irrigation program from Contract Administrator and set controller program accordingly.  |
| <b>3.6</b> | <b>Controller Cabinet</b> | .1 | Install controller cabinet in location shown on Contract Drawings or in alternate location approved or directed by Contract Administrator.  |
|            |                           | .2 | Orient alignment of controller cabinet as approved by Contract Administrator to provide optimal observation of irrigation system in operation.  |
|            |                           | .3 | Install controller cabinet using a poured in place concrete pad mount.  |
|            |                           | .4 | Provide electrical service to controller cabinet as shown in Contract Drawings.   |
| <b>3.7</b> | <b>Flow Sensor</b>        | .1 | Install flow sensor in location specified by Drawings.  |
|            |                           | .2 | Flow sensor wire to run continuously, with no splices, between flow sensor and irrigation controller.   |
|            |                           | .3 | There must be free, unrestricted pipe for at least 10x the pipe's diameter upstream and 5x the pipe's diameter downstream of the tee.   |
|            |                           | .4 | Follow manufacturer's recommendations for installation of flow sensor and wiring.   |
| <b>3.8</b> | <b>Control Wire</b>       | .1 | Install control wire per code by qualified personnel employed by the company holding the electrical permit.   |
|            |                           | .2 | Bury control wire per applicable code and in no case above the bottom side of parallel pipe.  |
|            |                           | .3 | Bed control wire in sand with minimum 2" sand around control wire. Where control wire is in same trench as pipe, place wire beside pipe with horizontal clearance of a minimum of 2" and in accordance with BC Electrical Code depth. |
|            |                           | .4 | Bundle multiple lengths of wire in same trench or conduit with ties at maximum 3.0m intervals.  |
|            |                           | .5 | Install wire with 24" length of coiled slack at all changes of direction, in wire splice boxes and at connections to controlled components.   |
|            |                           | .6 | Identify all control wires entering controller cabinet with permanent label or tag indicating zone number of valve operated by each control wire.   |
|            |                           | .7 | Maintain consistent wire colour through wire splice box.  |



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- .8 Minimize wire splices. Where wire splices are unavoidable make splice only in wire splice box using specified connector.
- .9 Identify spliced wire with permanent label or tag indicating zone number of spliced control valve.
- .10 Where specified on Contract Drawings, install extra control wire to wire splice box. Provide 24" length of coiled slack of each wire end in wire splice box. Identify extra control wire as 'extra' wire with permanent label or tag.
- 3.9 Wire Splice Box
  - .1 Locate wire splice box in planting bed where possible and locate for ease of access, maintenance, and testing.
  - .2 Install wire splice box per Drawings and arrange in a neat and orderly manner.
  - .3 Do not install valves in wire splice box.
  - .4 Wire splice box to be a Rain Bird 10" round valve box.
- 3.10 Grounding and Bonding
  - .1 Install ground assembly in location shown on Contract Drawings or the revised location approved by the Contract Administrator.
  - .2 Use the rod, plate and wire configuration as recommended by the manufacturer of irrigation controller and per BC Electrical Code.
- 3.11 Sleeving
  - .1 Install irrigation sleeves in locations shown on Contract Drawings.
  - .2 Install irrigation sleeve to depth as follows:
    - .1 Mainline Piping
      - .1 24" below walkways
      - .2 36" below driveways, roads and plazas
    - .2 Lateral Piping
      - .1 12" below walkways
      - .2 24" below driveways, roads and plazas
  - .3 Install sleeves to extend 1.0m past edge of hard surface into soft landscape surface.
  - .4 Cap sleeve with removable plug or cover. Maintain plug in sleeve until such time as pipe or wire is ready to be installed.
  - .5 Bed sleeve as follows:
    - .1 Under walkways, 4" of sand placed all around
    - .2 Under driveways, roads and plazas, compacted base aggregate all around per materials shown on Drawings.
  - .6 Bury a piece of detectable metal on top of each end of sleeve to enable location of sleeve end by metal detector after burial.
  - .7 Stake location of each end of sleeve prior to backfilling such that top of stake is 12" above finished grade and maintain. Label exposed end of stake with the word "sleeve".
  - .8 Record location of sleeve ends and label size of sleeve on record drawings.
  - .9 Remove sleeve stake after submission of Record Drawings.

**IRRIGATION SYSTEM**

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|--------------------------------------|---|
| <b>3.12 Valve Boxes</b>              | <ul style="list-style-type: none"> <li>.1 Install manual and electric control valves, control zone kits and quick coupler valves in valve boxes or concrete vault as shown on Drawings.</li> <li>.2 Except as shown otherwise on Contract Drawings or approved otherwise by Contract Administrator, locate valve boxes in planting beds and locate for ease of access, maintenance, and testing.</li> <li>.3 Install valve box flush with finish grade and arrange in a neat and orderly manner.</li> <li>.4 Provide minimum 2" clearance between valve box and all components within.</li> <li>.5 Valve box must not contact irrigation pipe. Use 12" height matching valve box extensions as required.</li> <li>.6 Up to three (3) 1" control valves or two (2) 1½" control valves may be contained within a single valve box provided there is 4" of clearance between valves. Install valves 2" and larger in their own valve box.</li> </ul> |
| <b>3.13 Electrical Control Valve</b> | <ul style="list-style-type: none"> <li>.1 Install in valve box per manufacturer's recommendations and Contract Drawings.</li> <li>.2 Identify electric control valve with permanent label or tag indicating zone number of valve.</li> </ul>  |
| <b>3.14 Quick Couplers</b>           | <ul style="list-style-type: none"> <li>.1 Install in valve box per manufacturer's recommendations and Contract Drawings.</li> </ul>   |
| <b>3.15 Gate Valve</b>               | <ul style="list-style-type: none"> <li>.1 Install in valve box per manufacturer's recommendations and Contract Drawings.</li> <li>.2 Where points of connections are located within a building, install isolation valve immediately downstream of where pipe exits building, installed in rectangular valve box.</li> </ul>   |
| <b>3.16 Blow-Out Assembly</b>        | <ul style="list-style-type: none"> <li>.1 Install blow-out assembly immediately in vault at point of connection. In the case where the point of connection is inside a building, install blow-out connection immediately downstream of isolation valve where mainline pipe exits building.</li> </ul>   |
| <b>3.17 Drip Zone Kits</b>           | <ul style="list-style-type: none"> <li>.1 Install in valve box per manufacturer's recommendations and Contract Drawings.</li> <li>.2 Identify electric control valve with permanent label or tag indicating zone number of valve.</li> </ul>  |
| <b>3.18 Filters</b>                  | <ul style="list-style-type: none"> <li>.1 Install filter in same valve box as valve, per manufacturer's recommendations and Contract Drawings.</li> </ul>   |
| <b>3.19 Swing Joint Assembly</b>     | <ul style="list-style-type: none"> <li>.1 Fabricate assembly of triple swing joint using three threaded Schedule 40 PVC elbows and one threaded Schedule 80 PVC nipple for sprinklers flowing more than 8gpm and pre-assembled Rain Bird swing joint assemblies for sprinklers flowing up to 8gpm.</li> <li>.2 Install swing joint assembly to rotate counterclockwise when depressed.</li> </ul>   |

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|-------------|-----------------------------------|----|--|
|             |                                   | .3 | Tape threads of PVC fittings with Teflon tape and make hand tight.   |
| <b>3.20</b> | <b>Sprinklers</b>                 | .1 | Install per manufacturer's recommendations and in location shown on Contract Drawings.   |
|             |                                   | .2 | Location of heads as illustrated on Contract Drawings is intended as a guide to layout of heads. Establish actual head locations in the field to ensure complete and adequate coverage of all areas to be irrigated and no overspray onto adjacent surfaces and improvements. Do not exceed head spacing shown on Contract Drawings. |
|             |                                   | .3 | Where obstructions or site improvements hinder or block head to head coverage advise Contract Administrator and determine best method to maximize coverage.  |
|             |                                   | .4 | For flat surfaces install head plumb to finished grade. For sloped surfaces install head perpendicular to half the grade of the slope.   |
|             |                                   | .5 | Mount pop-up heads on triple swing joint assembly. Connect bottom inlet of sprinkler to swing joint assembly, not side inlet. Adjust swing joint assembly to set head flush with finish grade. Tape threads of PVC fittings with Teflon tape and make hand tight.  |
|             |                                   | .6 | Adjust arc, radius of coverage and flow at each sprinkler to achieve even head to head coverage of area to be irrigated, with minimum over spray onto other surfaces.  |
| <b>3.21</b> | <b>Landscape<br/>Dripline</b>     | .1 | Do not install driplines or emitters of different flow lengths or spacing on the same zone.  |
|             |                                   | .2 | Place dripline on prepared surface. Surface to be free of sharp rocks or other objects that may damage dripline. Surface to be at grade necessary for dripline to be at specified depth after placement of remainder of topsoil or growing medium.   |
|             |                                   | .3 | Placement of dripline by trenching using hand or mechanical methods permitted only if specified as such on Contract Drawings or upon written approval of Contract Administrator.   |
|             |                                   | .4 | Thoroughly flush each zone after installation and before beginning regular operation of drip zone.   |
|             |                                   | .5 | Stake dripline in beds every 18" on centre.  |
|             |                                   | .6 | Make all zone connections and test manifold, lines and fittings for leaks prior to placement of topsoil or growing medium over manifold, headers, dripline and emitters.   |
| <b>3.22</b> | <b>Drip Emitters</b>              | .1 | Install per manufacturer's recommendations and as shown on Contract Drawings.  |
| <b>3.23</b> | <b>Lateral Flush<br/>Assembly</b> | .1 | Install flush assembly on swing joint in valve box.  |
|             |                                   | .2 | Coil hose in valve box.  |

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**3.24 Pipe and  
Fittings**

- .1 Verify that all pipe, fittings, primer and cements are compatible for proper installation.
- .2 Do not locate open side of trench any closer than 12" from hard surface or feature.
- .3 Keep inside of pipe and outside of pipe ends clean at all times. Cap or plug open pipe ends to keep out dirt and debris.
- .4 Cut PVC pipe ends at right angle to pipe length. Clean burrs prior to joining pipe and fittings.
- .5 Immediately prior to joining pipe and fittings wipe contact surfaces clean with primer on clean rag.
- .6 Apply light coat pipe of cement on inside of fitting and heavier coat on outside of pipe. Insert pipe into fitting and give a quarter turn to seat cement. Wipe excess cement from outside of pipe.
- .7 Wrap male threads of threaded fittings with minimum 3 wraps of Teflon tape immediately prior to making connection.
- .8 Flush all irrigation pipe fully to remove accumulation of dirt and debris prior to installation of heads, dripline, emitters and filters. Flush all laterals in a manner approved by the manufacturer to prevent clogging of screens, nozzles and emitters.
- .9 Conduct mainline pressure test and HDPE pipe strap test and obtain approval of Contract Administrator prior to backfilling lines.
- .10 Sidewall fusion of HDPE is not acceptable.
- .11 Set mainlines and laterals on and backfill with sand to clearance limit shown on Drawings.
- .12 Install thrust blocks at all changes in direction of PVC pipe 2 ½" in diameter or greater, and for any change in direction of gasketed pipe.
- .13 Install lateral piping at a depth of 12" to 24".
- .14 Install mainline piping at a depth of 18" to 32".

**3.25 Thrust Block**

- .1 Place thrust block to support the pipe joints from separating, not to prevent the pipe from heaving. Do not cover top of pipe with concrete thrust blocking at change from a horizontal alignment to a vertical alignment.
- .2 For thrust blocks installed in disturbed soils increase the thrust block area by 50%.
- .3 Place 2 ply of 6mil polyethylene between pipe and thrust block.
- .4 Allow concrete to set before backfilling trench or pressurizing line.
- .5 Obtain approval from Contract Administrator prior to backfilling thrust block.

**IRRIGATION SYSTEM**

- |             |                                    |    |   |
|-------------|------------------------------------|----|---|
| <b>3.26</b> | <b>Cleanup and Restoration</b>     | .1 | Remove all waste and debris resulting from irrigation installation from site.   |
|             |                                    | .2 | Restore all disturbed surfaces to original condition and repair all trench settlement.  |
| <b>3.27</b> | <b>Instructions to Owner</b>       | .1 | Instruct Owner in complete operating and maintenance procedures for irrigation system, including start-up, winterization, and programming.  |
|             |                                    | .2 | Review Record Drawings and Operating Manual with Owner on site.   |
| <b>3.28</b> | <b>General Maintenance</b>         | .1 | Inspect, operate, maintain and adjust irrigation system through the Landscape Maintenance Period until issuance of Certificate of Acceptance to ensure it operates as intended, including but not limited to:                             |
|             |                                    | .1 | Adjust irrigation schedule to ensure survival, health and growth of plant material and respond to soil conditions, climate, and seasons of site.  |
|             |                                    | .2 | Clean sprinkler heads and adjust coverage to eliminate over watering, under watering and overspray onto adjacent surfaces.  |
|             |                                    | .3 | Monitor and clean filtration equipment.   |
|             |                                    | .4 | Restore grass areas, planting beds, hard surfaces and improvements affected by trench settlement and erosion.   |
|             |                                    | .5 | Respond to requests from Contract Administrator for program adjustments, servicing, adjustments and repairs.  |
| <b>3.29</b> | <b>Winterization Maintenance</b>   | .1 | During Maintenance Period be responsible for winterization of irrigation system at end of growing season and prior to onset of air temperatures below 0° Celsius. Be liable for any damage resulting from late or improper winterization. |
|             |                                    | .2 | Request presence of Owner at winterization at least 5 days prior to proposed winterization date.  |
|             |                                    | .3 | Winterization includes but is not limited to:   |
|             |                                    | .1 | Deactivation of controller  |
|             |                                    | .2 | Drainage and blow-out assembly of entire irrigation system.   |
| <b>3.30</b> | <b>Maintenance Spring Start-up</b> | .1 | During Maintenance Period be responsible for spring start-up of irrigation system at beginning of growing season or within 10 days of request for start-up from Owner. Be liable for any damage resulting from late or improper start-up. |
|             |                                    | .2 | Ensure Owner is present for spring start-up. Request presence of Owner at least 5 days prior to proposed start-up.  |

IRRIGATION SYSTEM

- .3 Spring start-up includes but is not limited to:
  - .1 Checking and testing for leaks
  - .2 Cycling irrigation control program through all zones to ensure proper function and performance
  - .3 Checking and adjusting heads and emitters to achieve even coverage with minimum overspray onto other surfaces.
  - .4 Test backflow prevention assembly. Submit test results to Contract Administrator.
  - .5 Saturation of soil with water to a depth of 12" to provide deep watering of all lawn areas, planting beds and tree pits
- 3.31 Guarantee
  - .1 Submit written guarantee, in approved form, stating that all work showing defects in materials, workmanship or operation will be repaired or replaced at no cost to Owner for a period of one year from date of Substantial Performance.
  - .2 Guarantee includes the supply of labour, materials and equipment necessary for the repair and replacement of damaged or defective materials and workmanship. Guarantee also includes spring start-up, winterization, maintenance, necessary testing, program corrections or adjustments and restoration of settled trenches.
  - .3 Guarantee will not apply to materials or workmanship damaged after Substantial Performance by causes beyond the Contractor's control, such as vandalism or abuse.

END OF SECTION

**1.0 GENERAL**

**1.0 General Requirements**

Delete 1.0.1 and replace with the following

- .1 Section 32 91 21 refers to those portions of the *Works* that are unique to the supply, placement and finish grading of *Growing Medium*. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the *Works* described herein.

For the purpose of this specification, the term "*Growing Medium*" shall mean a soil produced offsite by homogeneous blending of mineral particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth and the term "*Topsoil*" shall mean on-site native or surface soil material which may be used as *Growing Medium* provided it meets standards set for imported material *Growing Medium* and can be modified to meet the requirements set out for specified *Growing Medium*.

Add 1.0.3

- .3 For the purpose of this specification, the term '*Soil-Testing Laboratory*' shall mean an independent laboratory, recognized by the landscape nursery industry, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

**1.4 Measurement and Payment**

Delete 1.4.1 and replace with the following

Payment includes supply and installation growing medium and imported top soil that is free from any noxious weeds, fungal growth, mushroom, and any contaminants. Payment will be made separately and includes supply of material, on-site handling, preparing the landscape area subgrade, placing as specified, grading, raking, compacting top soil and application of fertilizers. Payment for growing medium will be for actual volume placed onsite.

Add 1.4.4

Payment includes supply and installation of structural soil as per specifications described in this Section. Payment will be made separately and includes supply of material, geotextile, on-site handling, mixture, preparing the landscape area subgrade, placing as specified, grading, raking, and compaction. Payment for structural soil will be for actual volume placed onsite.

**1.5 Inspection and Testing**

Delete 1.5 and replace with the following

- .1 The *Contractor* is responsible for testing imported *Growing Medium* and all related cost incurred. Testing shall be carried out by an approved *Soil Testing Laboratory*.
- .2 The sample analysis shall be of tests done on the proposed *Growing Medium* from samples taken at the supply source within a minimum of 14 days in advance of *Growing Medium* placement. Allow 7 days for soil testing by the laboratory for each sample. The sample shall be picked up by the *Soil Testing Laboratory* from the supply source. The *Growing Medium* sample shall be a composite of at least three (3) samplings for the proposed source and shall be at least one (1) litre in volume.
- .3 Forward a copy of all test results directly to the *Contract Administrator* and the City for review. The analysis shall outline the testing laboratory's required amendments such as sand, organic matter, fertilizers and lime to achieve adequate growing conditions.

TOP SOIL AND FINISH GRADING

- |            |                                |  |   |
|------------|--------------------------------|--|---|
| <p>1.6</p> | <p><b>Product Handling</b></p> | <p>Add 1.6</p>                                   | <p>.4 The <i>Contractor</i> shall not deliver any <i>Growing Medium</i> to the site until the test results have been reviewed and approved by the <i>Contract Administrator</i> and the City.</p> <p>.5 All submitted soil analysis must be dated and include supplier name and phone number, project location and submitted to <i>Contract Administrator</i> and the City for approval prior to commencing work. Soil analysis shall include measurements of:</p> <p style="margin-left: 20px;">.1 Percent sand, fines, silt and clay</p> <p style="margin-left: 20px;">.2 Organic matter to 100%</p> <p style="margin-left: 20px;">.3 pH, acidifying additive required to achieve noted herein</p> <p style="margin-left: 20px;">.4 Water soluble salts</p> <p style="margin-left: 20px;">.5 Total carbon to nitrogen ration</p> <p style="margin-left: 20px;">.6 Total nitrogen and available levels of phosphorus, potassium, calcium &amp; magnesium</p> <p>.6 At the discretion of the <i>Contract Administrator</i> and the City submit up to two (2) additional samples, at intervals outlined by the <i>Contract Administrator</i> and the City, of <i>Growing Medium</i> taken from material delivered to the site. Samples shall be taken from a minimum of three (3) random locations and mixed to create a single uniform sample of testing. Results of these tests shall be forwarded to the <i>Contract Administrator</i> and the City for review.</p> <p>.7 The <i>Contractor</i> is responsible for soil analysis and requirements for amendments to supply <i>Growing Medium</i> as specified. Failure to satisfy these contractual requirements could result in the <i>Contractor</i> being required to remove unacceptable <i>Growing Medium</i> at their expense.</p> <p>.8 Notify the Contract Administrator at least forty-eight (48) hours prior to <i>Growing Medium</i> placement for inspection.</p> <p>.9 Refer to General Conditions, Clause 4.12 Tests and Inspections.</p> |
| <p>2.0</p> | <p><b>PRODUCTS</b></p>         | <p>Delete 2.0 and replace with the following</p> | <p>.1 All materials to be handled and adequately protected to prevent damage. Do not handle <i>Growing Medium</i> in an excessively wet, extremely dry, frozen condition or in any manner in which structure may be adversely affected. <i>Growing Medium</i> whose structure has been damaged by handling under these conditions shall be rejected and shall be replaced by the <i>Contractor</i> at their expense.</p> <p>.2 Stockpile materials in bulk form in paved areas or in pre-approved areas of the site. Provide additional protection of storage under roof or tarpaulins.</p> <p>.3 Take all precautions to prevent contamination of <i>Growing Medium</i> and amendments from wind blown soil particles, weed seeds and from insects. Contamination of the <i>Growing Medium</i> and amendments may result in their rejection for use.</p> <p>.4 Store fertilizer and chemical amendments in the manufacturer's original containers.</p> <p>.5 All <i>Growing Medium</i> shall be delivered to site <u>premixed</u> from a recognized <i>Growing Medium</i> source ensuring consistency throughout the mix.</p>  |
| <p>2.1</p> | <p><b>Materials</b></p>        | <p></p>  | <p>.1 <i>Growing Medium</i> Preparation</p>   |



- .1 Shall be prepared from Compost Material with Sand and other Soil Amendments as required to meet the specifications herein.
- .2 Ensure commercial processing and mixing of *Growing Medium* components are done thoroughly by a mechanized screening process. Do not mix the components by hand. Ensure the resulting product is a homogeneous mixture having the required properties throughout free of stones 25 mm or larger in any dimension, woody plant parts, toxic materials, foreign object and other extraneous materials harmful to plant growth. Provide composted soil free from crabgrass, couch grass, equisetum, convolvulus, or other noxious weeds or seed or parts thereof.

.2 Inorganic Soil Amendments

- .1 Sand: Imported pit sand or river pump sand, free of impurities, chemicals, horsetails, and other noxious weeds. The saturation extract electrical conductivity of salinity shall not be greater than 3.0 millimhos/cm at 25 degrees C.

<u>Sieve Size (mm)</u>	<u>Percent passing (%)</u>
4.75	95-100
0.50	0-40
0.050	0-5

- .2 Fertilizers: Uniform in composition, free flowing and dry, granular, pill form, or pelleted commercial product with 50% of total nitrogen (if applicable) derived from natural organic material in a slowly available form delivered in unopened water proof containers with the manufacturer's guaranteed N-P-K analysis, type and trade name attached to each container. The planting soil test results will specify a formulation and application rate to achieve the levels of nitrogen, phosphorous and potassium required. Fertilizer to meet the requirements of the Canada Fertilizer Act.

- .1 Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

- .1 Class: Class T, with a minimum 99 percent passing through No. 8 (2.36 mm) sieve and a minimum 75 percent passing through No. 60 (0.25 mm) sieve.
- .2 Provide lime in form of dolomitic limestone.

- .3 Perlite: Horticultural perlite, soil amendment grade.

.3 Organic Soil Amendments

- .1 Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 25 mm sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

- .1 Organic Matter Content: 50 to 60 percent of dry weight containing no cedar, redwood, wood or bark.
- .2 Colour: dark brown to black in colour.



- .2 Supplier of Bark Mulch shall be as per the Coquitlam Approved Products List.
- .3 Dark brown in colour and free of all soil, stones, roots or other extraneous matter, and free of weeds, seeds and spores.

**2.7 Growing Medium Properties for Different Applications**

Properties	Low Traffic Lawn Areas, Trees and Large Shrubs	High Traffic Lawn Areas	Planting Areas, Planters Shrubs & Groundcover
<b>Texture:</b> <b>Particle size classes by Canadian System of Soil Classification</b>	Percent of Dry Weight Mineral Fraction (%)		
<b>Gravel</b> (greater than 2 mm less than 75 mm)	0-10	0	0
<b>Sand</b> (greater than 0.05 mm and less than 2 mm)	50-70	80-90	50-70
<b>Silt</b> (larger than 0.002 mm and less than 0.5 mm)	10-30	5-20	10-30
<b>Clay</b> (less than 0.002 mm)	7-20	2-5	7-20
<b>Organic Content</b> <b>Percent of Dry Weight</b>	5-10	3-5	25-30
<b>Drainage</b> Minimum saturated hydraulic conductivity (cm/hr) in place	2.0	7.0	2.0
<b>Acidity (pH)</b>	6.0-6.5	6.0-6.5	5.0-6.0

**2.8 Miscellaneous Products**

- .1 Root Barrier: 400x610 mm linear root barrier, copolymer polypropylene, 50% recycled plastic, black in colour. Supplier of Root Barrier shall be as per the Coquitlam Approved Products List.
- .2 Construction Adhesive shall be as per the Coquitlam Approved Products List.
- .3 Drain Mat: Light duty, uv stable, impermeable cusped core bonded to a layer of non-woven filter fabric with the following minimum properties:
  - .1 Compressive Strength -718 kN/m<sup>2</sup> as per ASTM D-1621
  - .2 Flow Rate – 188 l/min/Metre as per ASTM D-4716
  - .3 Approximate profile thickness of 10 mm.
  - .4 Supplier of Drain Mat shall be as per the Coquitlam Approved Products List.
- .4 Filter Fabric: Install root barriers in accordance with manufacturer's reviewed installation instructions where indicated on reviewed drawings with vertical root directing ribs facing inwards towards trees or plants; connect panels together as required.
  - 1. Supplier of Filter Fabric shall be as per the Coquitlam Approved Products List.

- .5 Drain Rock: Shall consist of clean round stone or crushed rock. Acceptable material includes 19 mm drain rock or torpedo gravel conforming to the following gradations.

Percent Passing		
Sieve Designation	Coarse	Fine (Torpedo gravel)
25 mm	100	
19 mm	0-100	
9.5 mm	0-5	100
4.75 mm	0	50-100
2.36 mm		10-35
1.18 mm		5-15
0.60 mm		0-8
0.30 mm		0-5
0.15 mm		0-2

## 2.9 Structural Soil

- .1 Soil stabilizer shall be friable, containing a minimum of 4% and maximum of 6% organic matter by dry weight, free from stones and debris over 30 mm. Acidity (ph) shall be in the range 5.5-7.5. Carbon to nitrogen ratio shall not exceed 40:1, and salinity shall not exceed 3.0 milliohms at 25 deg C. Gravel greater than 2 mm shall not exceed 10% of total weight.
- .2 Supplier of Structural Soil shall be as per the Coquitlam Approved Products List.
- .3 *Growing Medium* to be a gap-graded mixture.
- .4 

Texture of Growing Media	Percentage of mixture
Gravel: greater than 2 mm-less than 75 mm	0%
Sand: greater than 0.0 5mm-less than 2 mm	max 60%
Silt: greater than 0.002-less than 0.0 5mm	max 35%
Clay: less than 0.002mm	max 15%
Clay and silt combined	max 40%
Acidity (pH)	6.0-7.0
Drainage: minimum saturated hydraulic	3.0
Conductivity (cm/hr) in place	
Salinity: saturated extract conductivity shall not exceed at 25 degC	3.0 milliohms/cm
Organic content: percent of dry weight	8-12%
- 5 Stone ballast: Clean inert stone of high angularity is preferred over washed gravel. Stone dimension aspect ratio should be 1:1:1 with a maximum 2:1:1 length:width:depth. Single size stone, 60 mm-75 mm clear sieve designation: Blasted Quarry Rock. Aggregate to be used for structural soil shall be free of any foreign elements or material.
- .6 *Structural Geotextile*  
Shall be installed as a structural filter layer directly above the compacted structural soil mixture. Do not install fabric until adequate compaction of the structural soil mixture has been confirmed. Filter fabric shall be selected and designed to withstand wear and tear during construction without deterioration of its strength and filtering properties.

			<p>.1 Supplier of Geotextile shall be as per the Coquitlam Approved Products List.</p> <p>.7 Ground dolomite limestone containing no less than 85% of its total weight as calcium carbonate and magnesium carbonate shall be used to control ph level. The degree of grind for the limestone shall allow 100% of the total weight to pass a #10 (2 mm) sieve, 90% to pass a #18 (1 mm) sieve and 20% to pass a #40 (0.105 mm) sieve. Spread-easy fertilizer shall be used as a slow release fertilizer source of calcium and magnesium.</p> <p>.8 Mixing of structural soil: Blend as per following ratios:</p> <p>.1 5 metric tonnes (MT) of aggregate</p> <p>.2 1 cubic meter of growing media</p> <p>.3 2 kg soil stabilizer</p> <p>.9 Moisten mixture with fine spray of clean potable water while mixing to activate soil stabilizer product. Do not over mix. Place mixture in 300 mm lifts through entire area of structural soil mixture. Compact each lift to 95% MPD prior to placement of next lift. Install filter fabric such to ensure a minimum of 60 cm overlap of all fabric seams and beyond edge of structural soil.</p>
<b>3.0</b>	<b>EXECUTION</b>		
<b>3.2</b>	<b>Preparation of Subgrade</b>	Delete 3.2.4 and replace with the following	Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials, soil contaminated with calcium chloride, toxic materials and petroleum products, and debris which protrudes more than 25 mm above the surface. Dispose of all removed material off site to approved offsite disposal area at no additional cost to the <i>Owner</i> .
		Delete 3.2.5 and replace with the following	Course cultivate entire area which is to receive <i>Growing Medium</i> to depth of 250mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.
		Add 3.2.6	Grade transitions shall be smooth and even and shall blend into surrounding areas as determined by the <i>Contract Administrator</i> and the City.
		Add 3.2.7	Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
<b>3.3</b>	<b>Processing Growing Medium</b>	Add 3.3.4	<p><i>Growing Medium</i> shall be imported and stockpiled on site in a location approved by the <i>Contract Administrator</i> and the City.</p> <p>.1 Carry out stock piling operation such that the <i>Growing Medium</i> structure is not compromised through compaction, vibration or other actions.</p> <p>.2 Stock piled <i>Growing Medium</i> shall be protected from rain, drying and contaminants.</p> <p>.3 <i>Growing Medium</i> shall be free of subsoil, pests, roots, wood, construction debris, undesirable grasses including crabgrass or couch grass, noxious or weeds and weed seeds or parts thereof foreign objects and toxic materials. Presence of these contaminants shall be grounds for rejection of <i>Growing Medium</i> and replacement at no cost to the <i>Owner</i>.</p>
<b>3.4</b>	<b>Placing Growing Medium</b>	Delete 3.4.2 and replace with the following	Place <i>Growing Medium</i> to the required finished grades with adequate moisture, in uniform lifts of 100 mm to 150 mm compacted to 80 MPD

during dry weather, over dry, unfrozen *Sub Grade* where planting is indicated free of any standing water.

		Delete 3.4.5 and replace with the following	<p>Minimum depths after settlement and 80% compaction:</p> <ul style="list-style-type: none"> <li>.1 Trees pits: 900 mm</li> <li>.2 Shrub beds: 450 mm</li> <li>.3 Ground cover areas: 300 mm</li> <li>.4 Lawn areas: 300 mm</li> <li>.5 Blvd. areas: 150 mm</li> </ul>
		Add 3.4.6	<p>Increase sand content to 90% in the planting soil below lawns where heavy wear by pedestrians or maintenance equipment is anticipated. Increase sand content in a 1.5m wide strip at the bottom of swales, banks or other wet areas and as directed by the Landscape Architect. On steep south or west facing banks, reduce sand content in lawns and planting beds to 50 - 60% for better moisture retention.</p>
3.5	Applying Fertilizers	Delete 3.5 and replace with the following	<ul style="list-style-type: none"> <li>.1 Addition of amendment components shall be at the rates indicated in the <i>Growing Medium</i> analysis recommendations via the following methods: <ul style="list-style-type: none"> <li>.1 Lime: Applied with mechanical spreaders over entire planting areas and contained planters. <ul style="list-style-type: none"> <li>.1 Do not apply by hand.</li> <li>.2 Mix thoroughly into the top 100 mm of <i>Growing Medium</i>.</li> <li>.3 Do not allow lime to come into direct contact with nitrogen - phosphate - potash fertilizers.</li> </ul> </li> <li>.2 Fertilizer: Applied with mechanical spreaders over entire planting areas and contained planters. Do not apply by hand. Do not mix into <i>Growing Medium</i>.</li> </ul> </li> </ul>
3.6	Finish Grading	Delete 3.6.1 and replace with the following	<p>Manually fine grade <i>Growing Medium</i> installation to contours and elevations shown on drawings or as directed by <i>Contract Administrator</i> and the City. Eliminate rough spots and low areas to ensure positive drainage.</p>
		Add 3.6.3	<p><i>Finish Grade</i> of <i>Growing Medium</i> shall be 25 mm from finished elevation of adjacent curb or planter wall unless otherwise noted on drawings.</p>
3.9	Clean-up	Delete 3.9 and add the following	<ul style="list-style-type: none"> <li>.1 Ensure all paved areas, tops of planters, adjacent surfaces have been thoroughly cleaned. Ensure all discoloration of adjacent surfaces as a result of <i>Growing Medium</i> installation have been removed.</li> <li>.2 Dispose of materials not required and repair any damage to adjacent surfaces (as determined by the <i>Contract Administrator</i> and the City) off site at no additional cost to the <i>Owner</i>.</li> </ul>
3.10	Weed Control	Add 3.10	<ul style="list-style-type: none"> <li>.1 Ensure all weeds and weed roots that have germinated during the course of work of this section have been eliminated from <i>Growing Medium</i>.</li> <li>.2 Provide the <i>Contract Administrator</i> and <i>Consultant</i> with a written outline of weed removal methodology seven (7) days prior to starting weed removal operations.</li> </ul>
3.11	Structural Soil	Add 3.11	<ul style="list-style-type: none"> <li>.1 Refer to 2.9 in this specification and as shown on the <i>Contract Drawings</i>.</li> </ul>

END OF SECTION

**1.0 GENERAL**

- |                                    |   |  |
|------------------------------------|---|--|
| <b>1.3 Scheduling</b>              | Delete 1.3 and replace with the following   | <ul style="list-style-type: none"> <li>.1 Schedule all operations to ensure optimum environmental protection, grading, <i>growing medium</i> placement, planting, seeding or sodding operations as outlined in the specifications.</li> <li>.2 Schedule seeding to coincide with preparation of soil surface.</li> <li>.3 Organize scheduling to ensure a minimum of on-site storage of seed and fertilizer material, minimum movement and compaction of <i>growing medium</i>, and prompt watering operations. Coordinate work schedule with scheduling of other trades on site.</li> <li>.4 Plan, schedule and execute the work to ensure a supply of water for landscape purposes in adequate amounts and at adequate pressures for satisfactory irrigation of all seeded areas.</li> </ul> |
| <b>1.4 Handling and Storage</b>    | <p>Add 1.4.2</p> <p>Add 1.4.3</p>           | <p>Protect existing Site features against damage or contamination due to Work of this Section. Make good all damage or contamination which occurs to the satisfaction of the <i>Contract Administrator</i> and the City.</p> <p>Deliver seeds, mulch, fertilizers, tackifier and other products to the Site in manufacturer's original containers, clearly identified. Do not remove or deface labels or other identification.</p>   |
| <b>1.5 Drainage Control</b>        | Delete 1.5 and replace with the following   | Provide for proper water management and drainage of site during work of this section. Water management shall include silt traps, erosion control measures, temporary water collection ditches, as well as their adequate maintenance to ensure that storm water which may become laden with soil or growing medium or hydraulic seed is detained and cleaned prior to discharge from site.   |
| <b>1.6 Samples</b>                 | Add to 1.6.1                                | The <i>Contract Administrator</i> and the City may test for purity and germination.  |
| <b>1.7 Site Examination</b>        | Delete 1.7.1 and replace with the following | Examine site prior to the commencement of work to verify surface preparation is complete and has been accepted by the <i>Contract Administrator</i> and the City.  |
| <b>1.8 Measurement and Payment</b> | Delete 1.8.1 and replace with the following | Payment for hydraulic seeding includes the necessary equipment and supply and application of hydraulic mulch & grass seed as shown on the Contract Drawings or as directed by the Contract Administrator. Measurement for payment will be made for surface actually seeded. Areas of overseeding onto existing grass or sod will not be measured for payment.  |
| <b>1.10 Quality Assurance</b>      | Add 1.10                                    | <ul style="list-style-type: none"> <li>.1 <i>Contractor</i> to provide seed analysis that will include but is not limited to:               <ul style="list-style-type: none"> <li>.1 Name and address of supplier</li> <li>.2 Analysis of seed mixture</li> <li>.3 Percentage of pure seed</li> <li>.4 Year of production</li> <li>.5 Date and location of bagging</li> <li>.6 Percentage germination</li> </ul> </li> <li>.2 The sample accepted by the review will form the standard by which the project will be supplied.</li> </ul>  |

**2.0 PRODUCTS**

**2.1 Grass Seed**

Delete 2.1 and replace with the following

- .3 Should the *Contractor* require the source of seed supply to change during the construction a written request must be provided to the *Contract Administrator* and the City 48 hours in advance. The request shall be followed up by submission of proposed seed supplier and substitution seed analysis for *Contract Administrator* and the City review prior to the start of supply to the site.
- .4 All seed shall be delivered and stored in original containers in enclosed storage facility protected from the damage, weather, insects and rodents.

- .1 Grass Seed shall be mixed and supplied by a recognized seed house and delivered in original containers, in accordance with Federal and Provincial seed laws having a minimum germination of 75% and minimum purity of 97%, and meet the requirements of the Government of Canada Seed Act for Canada No. 1 seed.

- .2 Seed mixtures to be approved by the *Contract Administrator* in the original packaging. The seed mixture for boulevards and landscaped areas shall be made up from a minimum of three (3) varieties of Perennial Rye, one (1) of Kentucky Bluegrass and three (3) varieties of Fescue from Coquitlam Approved Products List.

- .1 Seed Mix shall be 50% Perennial Rye, 35% Fescues, 15% Kentucky Bluegrass.

- .2 Seed Rate shall be 50g per square metre.

- .3 Table Guideline of Approved Seed Mix Ratios.

% Seed Count	% Weight	Seed Varieties
15%	25%	All-Star Perennial Rye Grass
5%	15%	Elka II Perennial Rye Grass
20%	15%	Cindy Creeping Red Fescue
15%	15%	Shamrock Kentuck Bluegrass
20%	10%	Cindy Lou Creeping Red Fescue
15%	10%	Longfellow II Chewing Fescue
10%	10%	Gator 3 Perennial Rye Grass
Acceptable products shall be an all-purpose sun / shade mix' conforming to the above mix ratios		

**2.2 Hydraulic Mulch**

Delete 2.2 and replace with the following

- .1 Provide hydraulic seeding solution containing a mulch of wood cellulose fibre specifically designed for hydraulic seeding containing no growth or germination inhibiting factors, and dyed green for visual metering during application.
- .2 Hydraulic mulch to be capable of dispersing rapidly in water to form homogeneous slurry and remaining in such a state when agitated or mixed with other specified materials. When applied, hydraulic mulch is to be capable of forming absorptive mat, which will allow moisture to percolate into the underlying soil and to contain no growth or germination inhibiting factors.
- .3 Mulch is to be dry and free of weeds, weed seeds and other foreign material, and to be supplied in packages bearing manufacturer's label clearly indicating the weight and product name.
- .4 Mulch shall contain a colloidal polythacuride (or equivalent) tackifier which is to be adhered to mulch to prevent separation during shipment and to avoid chemical agglomeration during



			mixing in hydraulic mulching equipment. It shall be 'M-Binder' or approved alternative.
2.3	Water	Delete 2.3.1 and replace with the following	Water shall be potable, free of impurities that would inhibit sod growth. <i>Contractor</i> to ensure adequate water is available to maintain seeded areas during germination and in a vigorously growing, healthy state until <i>Total Performance</i> of work of this section.
2.5	Dolomite Lime	Add 2.5	.1 Dolomite lime shall be finely ground, containing not less than 90% calcium carbonate.
2.6	Wood Posts	Add 2.6	.1 Wood posts shall be 38 mm x 38 mm x 1.5 m No. 1 Grade or better Hem/Fir, untreated wood.
2.7	Binder Twine	Add 2.7	.1 Binder Twine shall be hemp based multiple strand string.
2.8	Flagging Tape	Add 2.8	.1 Flagging tape shall be 30 mm wide, biodegradable ribbon tape made of non-woven cellulosic material, colour: red, or an approved equal.
3.0	EXECUTION		
3.1	Finish Grade Preparation	Delete 3.1.2 and replace with the following	Prior to the broadcast of seed <i>Contract Administrator</i> and the City to review and direct minor adjustments and refinements of finish grades prior to the <i>Contractor</i> proceeding. Review includes grades, <i>Growing Medium</i> depth and condition of finished surface. Subsequent to the <i>Contract Administrator</i> and the City review the <i>Contractor</i> shall re-grade, add <i>Growing Medium</i> and make adjustments as directed by <i>Contract Administrator</i> and the City.
		Delete 3.1.5 and replace with the following	Finish grade smooth to extent required for class of seeding to be carried out, firm against footprints, loose textured and free of all stones, roots, branches, etc. larger than 25 mm or required for removal for class of seeding to be carried out.
3.2	Seeding-General	Delete 3.2.1 and replace with the following	Carry out hydraulic seeding during periods which are most favourable for the establishment of a health stand of grass within the following calendar seasons: <ul style="list-style-type: none"> <li>.1 Spring (April 1st to June 15th)</li> <li>.2 Fall (August 15th to September 30th).</li> <li>.3 Hydraulic seeding shall not take place during periods of rain, freezing and/or abnormally hot and dry weather.</li> </ul>
3.4	Protection	Add 3.4.4	Protect all seeded areas against trespassing and from damage at all times clearly marked, staked, string and flagging tape.
		Add 3.4.5	Perimeter Protection: All seeded areas shall be surrounded by a 900 mm high barrier made up of the following components: <ul style="list-style-type: none"> <li>.1 Wood posts placed at 1.8 metres on centre.</li> <li>.2 Wood Posts to be driven to a depth of 300 mm</li> <li>.3 String two (2) strands of hemp based binder twine (or equal product) between posts. Insure one full wrap of twine around each post.</li> <li>.4 Tie 300 mm strands of 'red' flagging tape at 450 mm intervals along the entire length of both strands of twine.</li> <li>.5 Maintain perimeter protection until <i>Total Performance</i> issued for seeded area. Upon acceptance remove perimeter fence and dispose of off-site.</li> </ul>
		Add 3.4.6	Hydraulic seeded areas that have been damaged by construction operation, construction/ site personnel or construction traffic shall be replaced at no cost to the <i>Owners</i> . Replacement shall include removal

of *Growing Medium*, regarding of subgrade, replacing *Growing Medium* and reseeding as required.

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| 3.5 | <b>Application for Hydraulic Seeding</b> | Delete 3.5 and replace with the following | <ul style="list-style-type: none"> <li>.1 Thoroughly mix seed, fertilizer and hydraulic mulch in water slurry and distribute uniformly over surface with an approved hydraulic mulcher.</li> <li>.2 All seeding is to be done during calm weather and on soil that is free of frost, snow, and standing water. Do not perform the work when wind exceeds 10 km/hr or when the soil is excessively dry.</li> <li>.3 Measure quantities of each material to be charged into hydraulic seeder/mulcher tank accurately either in mass or by commonly accepted system of mass-calibrated volume measurements. Add materials to tank while it is being filled with water and in following sequence:               <ul style="list-style-type: none"> <li>.1 Seed</li> <li>.2 Fertilizer</li> <li>.3 Mulch</li> <li>.4 Tackifier</li> </ul> </li> <li>.4 Thoroughly mix materials into homogeneous water based slurry and distribute uniformly over the area and, all disturbed areas, to be hydraulically seeded.</li> <li>.5 Seeding Rate:               <ul style="list-style-type: none"> <li>.1 Apply at 435 kg/ha or, as recommended by supplier and approved by the <i>Contract Administrator</i> and the City.</li> <li>.2 Fertilizer at the following rate: Evergrow 28-3-8 @ 29g/m<sup>2</sup></li> <li>.3 Fibre Mulch at the following rate: 15kg/m<sup>2</sup></li> <li>.4 Tackifier at the following rate: 45 kg/ha.</li> </ul> </li> <li>.6 Carry out hydraulic seeding with care to ensure homogeneous slurry does not come in contact with foliage of trees, shrubs or other susceptible vegetation.</li> <li>.7 Do not spray homogeneous slurry on objects not expected to grow grass.</li> <li>.8 Promptly rectify any overspray or damage that occurs during hydraulic seeding.</li> <li>.9 Do not leave seed, fertilize, mulch and water slurry in tank for more than 4 hours. Slurry left in tank over maximum allowed time shall not be used for seeding and shall be disposed offsite.</li> <li>.10 Follow up seeding with all maintenance procedures required to maintain the approved grades and obtain uniform germination. The <i>Contractor</i> is to carry out at no cost to the Owner, reseed operations at two (2) week intervals where germination has failed or wash outs have occurred.</li> </ul> |
| 3.7 | <b>Clean-up</b>                          | Add 3.7.2                                 | Flush all walks and paved areas clean to the satisfaction of the <i>Contract Administrator</i> and the City.  |
| 3.8 | <b>Grass Maintenance</b>                 | Delete 3.8 and replace with the following | <ul style="list-style-type: none"> <li>.1 Maintenance of hydraulic seeded areas shall begin immediately after hydraulic seeding operation and shall continue until all deficiencies noted in the <i>Substantial Performance</i> review have been rectified to the satisfaction of the <i>Contract Administrator</i> and the City and conditions for <i>Total Performance</i> been achieved. The <i>Contractor</i> is to notify the <i>Contract Administrator</i> and the City in writing forty eight hours (48) prior to stopping maintenance operations.</li> </ul>  |

- .2 Grass Cutting: After the 'first' cut of hydraulic seeded areas grass cutting operations shall be carried out on a weekly (seven day) basis until *Total Performance* by *Contract Administrator* and the City:
  - .1 First cut of seeded areas shall occur when a uniform grass height of 75 mm has been attained. First cut shall be to a height of 65mm.
  - .2 Continue regular weekly cutting at a height of 50 mm until *Total Performance*.
  - .3 Cutting operations shall be such that each cut is at right angles to the previous cut.
  - .4 *Contractor* to remove grass clippings after each cut and dispose of off-site.
  - .5 Roll when required to remove any minor depressions or irregularities.
  - .6 Immediately repair seeded areas that show deterioration or bare spots. Top-dress all areas showing shrinkage due to lack of watering and seed with seed mix that matches the original seed mix.
- .3 Fertilizer analysis shall conform to recommendations provided with *Growing Medium* analysis. Application of fertilizer shall follow manufacturers' recommendations noting that after October 1 lawn areas shall not be fertilized until April 15th of the following spring.
- .4 Hydraulic seeded lawn areas to be kept free of invasive and/or noxious broadleaf weeds, grasses including but not limited to poa annua, disease, fungi, detrimental nematodes and detrimental insects.

**3.9 Conditions for Total Performance**

Delete 3.9 and replace with the following

- .1 Conditions for *Total Performance* of Hydraulic Seeded areas:
  - .1 Hydraulic seeded areas are vigorously growing, well established with a thick, dense and healthy green appearance.
  - .2 Hydraulic seeded areas shall not have any eroded or wash out areas, bare or dead spots and are free of invasive and/or noxious broadleaf weeds and grasses.
  - .3 No surface *Growing Medium* is visible when established hydraulic seeded areas have been cut to height of 38 mm
  - .4 Hydraulic seeded areas have been cut at least two (2) times, to a height of 38 mm a minimum of (7) days apart.
  - .5 Grass is free of grass varieties other than those specified.
  - .6 Grass is sufficiently established that its roots are growing into underlying *Growing Medium*.
  - .7 Specified maintenance procedures have been carried out.
- .2 Areas hydraulic seeded after September 30<sup>th</sup> will not be reviewed for *Total Performance* until April 30<sup>th</sup> the next year.

**END OF SECTION**

PLANTING OF TREES, SHRUBS AND GROUND COVERS

1.0	GENERAL	Delete 1.0.1 and replace with the following	Section 32 93 01 refers to those portions of the Work that are unique to the sourcing, supplying, placing and maintaining the plant material indicated on the <i>Contract Drawing</i> and the Plant List(s). This section must be referenced to and interpreted simultaneously with all other sections pertinent to the Work described herein.
1.2	References	Delete 1.2.2 and replace with the following	Canadian Nursery & Landscape Association (CNLA) Standard for Nursery Stock (current edition).
		Add 1.2.4	The British Columbia Landscape & Nursery Association (BCLNA).
		Add 1.2.5	ANSI A-300 Tree Pruning Guidelines
1.3	Source Quality Control	Delete 1.3 and replace with the following	<p>.1 Seven (7) days prior to the <i>Contract Administrator</i> and the City review of plant material at source the <i>Contractor</i> shall confirm in writing availability of plant material noted on plant list.</p> <p>.2 Plant material will be supplied from nurseries who are certified by the Clean Plants program, Canadian Nursery Certification Institute (CNCI), current certification standard <a href="http://cleanplants.ca/">http://cleanplants.ca/</a>. The certification shall include but is not limited to the requirements of the current active module(s), e.g. P. Ramorum module. The certification must extend to all fields and allied nursery operations where plant material is sourced. Only nurseries, fields and allied nursery operations that are certified will be permitted to supply plant material for this project.</p> <p>.1 Prior to the review of plant material by the <i>Contract Administrator</i> and the City the <i>Contractor</i> shall submit written documentation with CNCI certification stamp stating that the nursery has undergone all components of a certification program and has been audited to verify that all components are properly implemented.</p> <p>.2 The documentation submitted shall include but is not limited to the nurseries CNCI Clean Plants certification number.</p> <p>.3 Plant Material Review at the source nursery.</p> <p>.1 <i>Contractor</i> shall request for review of the plant material at source nursery to be a minimum of seven (7) days prior to scheduled review.</p> <p>.2 Shipping of plant material to the <i>Place of Work</i> shall not proceed until <i>Contract Administrator</i> has reviewed the plant material at the source nursery.</p> <p>.3 <i>Contract Administrator</i> and the City shall make one (1) visit to source nursery for review of plant material for entire project.</p> <p>.4 All plant material, including substitutions shall be gathered at one location for review.</p> <p>.5 <i>Contractor</i> shall accompany <i>Contract Administrator</i> during plant material review at the source nursery.</p> <p>.4 Plant Material Review at the <i>Place of Work</i></p> <p>.1 All plant material shall be reviewed at the <i>Place of Work</i> by the <i>Contract Administrator</i> and the City prior to planting.</p> <p>.2 Plant material that is rejected by the <i>Contract Administrator</i> shall be immediately removed from the <i>Place of Work</i> and replaced at the <i>Contractor's</i> expense.</p> <p>.5 Imported Plant Material</p>

- .1 Plant material imported from out of province and out of country shall be accompanied with necessary federal and provincial permits and import licenses.
  - .2 The *Contractor* shall conform to all federal and provincial laws and regulations with regard to horticultural inspection of domestic and imported plant material.
  - .6 Condition of Plant Material
    - .1 Plant rootballs and containers shall be completely free of noxious weeds and volunteer plants including Horsetail and Morning Glory.
    - .2 Plant materials grown or supplied in Fabric Containers are not acceptable.
  - .7 All materials and execution to conform to the latest edition of the BCNTA Guide Specifications for Nursery Stock and the BCNTA Guide Specifications for Landscape Construction.
- 1.4 Submittals and Scheduling** Delete 1.4 and replace with the following
- .1 Submit inspection certificates as required by law for each shipment of plant material.
  - .2 *Contractor* shall provide in writing to the *Contract Administrator* and the City a minimum of seven (7) days prior to review of plant material at the source nursery a plant list confirming the quantity, botanical name, common name and size of plants specified.
  - .3 Substitutions
    - .1 *Contractor* shall provide in writing to the *Contract Administrator* and the City a minimum of seven (7) days prior to review of plant material at the source nursery a list of proposed substitutions for review.
    - .2 Plant substitutions shall be of similar genus and species and of equal or greater size as those originally specified. The list shall contain the following information:
      - .1 Botanical name, common name of the specified plant
      - .2 Botanical name, common name of the proposed substitute plant
      - .3 Pot size and plant size in the nursery
  - .4 Planting Schedule
    - .1 *Contractor* shall provide in writing to the *Contract Administrator* and the City upon award of the *Contract* a detailed Planting Schedule outlining dates and duration of planting operations.
    - .2 Revisions to the Planting Schedule as a result of delays of any kind shall be submitted to the *Contract Administrator* and the City in a timely manner prior to the start of planting operations.
    - .3 Schedule all planting to ensure optimum environmental protection, grading, growing medium placement, planting, seeding, or sodding operations as outlined in these Specifications. Organize scheduling to ensure a minimum duration of on-site storage of plant material, minimum movement and compaction of growing medium, and prompt mulching and watering operations. Coordinate Work schedule with schedule of other trades on-site.
    - .4 Coordinate and schedule plating such that no damage occurs to plant material before and after placement. In particular, meet requirements of living plant material.
  - .5 Product Data

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|     |                             |   | <ul style="list-style-type: none"> <li>.1 <i>Contractor</i> to submit a one (1) litre sample of Composted Mulch to the <i>Contract Administrator</i> and the City for review prior to delivery.</li> <li>.2 <i>Contractor</i> to submit a one (1) litre sample of the Prepared Growing Medium to the <i>Contract Administrator</i> and the City for review prior to delivery.</li> <li>.3 <i>Contractor</i> to submit three (3) copies of the anti-desiccant manufacturer product data and specification for <i>Contract Administrator</i> and the City review.</li> <li>.4 <i>Contractor</i> to submit three (3) copies of the fertilizer manufacturer product data and specification for <i>Contract Administrator</i> and the City review.</li> <li>.5 <i>Contractor</i> to submit three (3) copies of the Guying assembly including clamps, collar, guying wire, anchors and wire tighteners manufacturer product data and specifications for <i>Contract Administrator</i> and the City review.</li> </ul>   |
| 1.5 | <b>Handling and Storage</b> | Delete 1.5 and replace with the following | <ul style="list-style-type: none"> <li>.1 Coordinate shipping of plant material and excavation of planting pits to ensure minimum time lapse between nursery digging and on site planting.</li> <li>.2 Ensure branches of trees and shrubs are bound securely into a confined mass during handling and transport.</li> <li>.3 Do not bind planting stock with rope or wire that would damage bark, break or damage branches or damage the natural shape of the plant.</li> <li>.4 Protect plant material against abrasion, and exposure to extreme temperature change during transit.</li> <li>.5 Cover plant foliage and branches with tarpaulin to prevent loss of moisture during transit.</li> <li>.6 Fully support root ball of large trees during all lifting operations.</li> <li>.7 Do not lift trees or shrub by the trunk or branches. Plant material to be moved by lifting the root ball or container.</li> <li>.8 Remove broken and damaged roots with clean cuts using sharp pruning shears.</li> <li>.9 Temporary Storage/ Heel-In of Plant Material onsite               <ul style="list-style-type: none"> <li>.1 Temporarily store trees, shrubs and miscellaneous plant material that cannot be planted immediately by heeling-in. Acceptable heel-in material include approved growing medium or sawdust.</li> <li>.2 Ensure temporary storage/heel-in area is shaded and protected from the wind.</li> <li>.3 Provide sufficient water at regular intervals to ensure health of plant material in the temporary storage/heel-in area.</li> <li>.4 Plant material that has not been properly maintained in the storage/heel-in area and illustrates signs of degradation or stress will be rejected by the <i>Contract Administrator</i> and the City. Rejected plant material shall be replaced by the <i>Contractor</i>.</li> </ul> </li> </ul> |

1.9	<b>Measurement and Payment</b>	Delete 1.9.1 and replace with the following	Payment for trees will be for each tree of size & species specified. Payment for shrubs, grass, perennials, plugs and ground cover will be for each size & species specified. The unit price includes all preparatory work, supply and planting of the trees, shrubs, plants & etc. as applicable, and other incidental specified under this Section including maintenance to meet Conditions of Total performance.
		Add 1.9.3	Payment will be for supply and installation including labor, incidentals, equipment and material needed to complete the work and as shown on Contract Drawing.
1.11	<b>Substitutions</b>	Add 1.11	.1 If it is impossible to obtain the particular plant material listed on the Landscape Drawing, the <i>Contractor</i> may be permitted to suggest substitutions with types and variations possessing the same characteristics. The <i>Contractor</i> must request any substitutions of trees in writing at least one (1) month and shrubs and groundcover at least one (1) month prior to planting. Substitutions must be approved by the <i>Contract Administrator</i> and the City.
1.12	<b>Plant Material Supply and Search Area</b>	Add 1.12	.1 Before substitutions of plant material are proposed, documented proof that materials are not available through search on the west coast of Canada and United States must be provided. Area of supply shall include, but not be limited to, all of Western North America.
1.13	<b>Plant Material Identification</b>	Add 1.13	.1 Plant material that has been located by the <i>Contract Administrator</i> and the City and tagged for the project is to have the identification tags removed only after inspection and instruction by the <i>Contract Administrator</i> and the City after delivery to the <i>Place of Work</i> .
1.14	<b>Plant Material Replacement</b>	Add 1.14	.1. The <i>Contractor</i> shall remove from the <i>Place of Work</i> and immediately replace any plant material that has been determined by the <i>Contract Administrator</i> and the City to have died or failed to grow in a satisfactory manner during the guarantee or maintenance period. .2. The <i>Contractor</i> shall extend the guarantee on this replacement plant material for one (1) year from the date of replacement. .3. The <i>Contractor</i> shall continue such replacement and guarantee of plant material until the <i>Contract Administrator</i> and the City has determined that the <i>Conditions for Total Performance</i> have been met. .4. All required replacements shall be plants of the same size and species as specified on the plant list and shall be supplied and planted in accordance with the drawings, specifications and change orders thereto. .5. The cost of replacements resulting from theft, accidental damage, vandalism, carelessness, neglect on the part of others, shall be borne by the <i>Contractor</i> until the date of <i>Substantial Performance</i> .
2.0	<b>PRODUCTS</b>		
2.1	<b>Plant Material</b>	Delete 2.1 and replace with the following	.1 Plant Material Size .1 Overall plant spread to be measured when branches are in their natural position. .2 Height and spread dimensions refer to main body of plant and not from branch tip to branch tip.

- .2 Grade of plant material to be No. 1 grade or better.
- .3 Plant material obtained from areas with milder climatic conditions from those of the *Place of Work* is acceptable provided:
  - .1 Plant material is moved to the *Place of Work* prior to the breaking of buds at their original climatic zone.
  - .2 Plant material is heeled-in at a protected area until the climatic conditions are suitable for planting.
- .4 Plant material shall have structurally sound, strong fibrous root system free of disease, insects, defects or injuries. All plants, typical of their species or variety, have a normal habit of growth and shall be first quality, sound, healthy, vigorous, well branched, and densely foliated, free of disease, insect pests, eggs or larvae.
- .5 Root Pruning at Source Nursery
  - .1 Plant material shall have been root pruned on a regular basis at the source nursery.
  - .2 Plant material shall be root pruned at least one growing season prior to delivery.
  - .3 Large trees shall be half root pruned during each of two successive growing seasons. The second root pruning shall have carried out a minimum of one growing season prior to delivery.
- .6 Shade, Ornamental and Evergreen Trees:
  - .1 Trees shall have straight trunks and a well-formed branch system which is characteristic of the species
  - .2 Trees shall exhibit clear signs of vigorous growth.
  - .3 Trees shall have good twig extension growth, branch spacing and trunk taper.
  - .4 Tree foliage shall be evenly distributed on upper 2/3 of the tree.
  - .5 Trees shall not have upright branches other than leaders.
  - .6 Trees shall have spreading branches with a single trunk and a single leader and, unless otherwise noted on plans or plant list.
  - .7 Tree trunks and branches shall not have any mechanical damage.
  - .8 Trees shall be in good health with no presence of insects or disease.
  - .9 Trees shall not have been 'headed back'.
- .10 Tree root balls shall be solid, kept moist at all times and/or protected from drying.
- .11 Trees shall not exhibit symptoms of root circling or girdling.
- .7 Container Grown Plant Material:
  - .1 Root ball to container relationship shall be of sufficient ratio to ensure room for healthy, vigorous root development.
  - .2 Plant material shall have been container grown for a minimum of one (1) growing season but not longer than two (2) growing seasons.
  - .3 The plant root systems that do not have the ability to "hold" growing medium when removed from the container will be rejected.
  - .4 Root bound plant material will be rejected.
- .8 Balled and Burlapped Plant Material:



			<ul style="list-style-type: none"> <li>.1 Coniferous and broadleaved evergreens over 2.4 metre tall shall be dug with firm soil root ball.</li> <li>.2 Deciduous trees in excess of 3.0 metre height shall be dug with firm soil root ball.</li> <li>.3 Root ball diameter shall be a minimum of 230 mm (for each 25 mm caliper size).</li> <li>.4 Secure root-balls with burlap, heavy twine and rope.</li> <li>.5 Large tree root balls shall be double layer burlap wrapped. Burlap to be secured with drum laces made up of 10 mm (minimum) diameter rope.</li> </ul>
			<ul style="list-style-type: none"> <li>.9 Tree Spade Dug Plant Material               <ul style="list-style-type: none"> <li>.1 Plant material shall be dug with mechanized hydraulic spade or clamshell type digging equipment.</li> <li>.2 Root ball diameter shall be a minimum of 230 mm for each 25 mm caliper size.</li> <li>.3 Wire basket shall be lined with burlap. Root ball shall be laced and tied to wire basket with heavy rope.</li> <li>.4 Ensure trunk of tree is not damaged by wire basket, ties or rope.</li> </ul> </li> </ul>
<b>2.2</b>	<b>Water</b>	Delete 2.2.1 and replace with the following	Potable and free of minerals and impurities which are detrimental to plant growth.
<b>2.3</b>	<b>Fertilizer</b>	Add 2.3.2	Fertilizer shall be prolonged-release fertilizer tablets containing a minimum of 20% nitrogen, 10% phosphoric acid, and 5% potash (20-10-5) as per Approved Products List. Store in weatherproof storage space.
<b>2.4</b>	<b>Mulch</b>	Delete 2.4.1 and replace with the following	Composed mulch shall be 9 mm black/brown in colour with no cedar or redwood bark or wood material as per Approved Products List.
<b>2.5</b>	<b>Stakes</b>	Delete 2.5.1 and replace with the following	Stakes shall be pressure treated Hem/Fir, 75 mm dia. round, 2500 mm long. Stake fasteners shall be hot dipped galvanized or stainless steel.
<b>2.8</b>	<b>Guying Wire</b>	Delete 2.8.1 and replace with the following	Guyingwire shall be direct burial or screw type disc guy anchor and guy system as per Approved Products List.
<b>2.11</b>	<b>Anti-Desiccant</b>	Delete 2.11.1 and replace with the following	Anti-Desiccant shall be wax-like emulsion, as per Approved Products List, that will provide a transpiration reducing film over the plant surface.
<b>2.12</b>	<b>Flagging Tape</b>	Delete 2.12.1 and replace with the following	Flagging tape shall be 30mm wide 'Red' PVC flagging tape as per Approved Products List.
<b>2.13</b>	<b>Tree Trunk Protection</b>	Add 2.13	<ul style="list-style-type: none"> <li>.1 Tree trunk protection shall be extrusion mold process, polyethylene with UV protectors as per Approved Products List.</li> </ul>
<b>2.14</b>	<b>Burlap</b>	Add 2.14	<ul style="list-style-type: none"> <li>.1 Burlap shall be untreated, free from toxic contaminants and of sufficient strength to hold the rootball in a compact, stable mass that does not move relative to the main stem(s) of the tree or shrub.</li> </ul>
<b>2.15</b>	<b>Wire Baskets</b>	Add 2.15	<ul style="list-style-type: none"> <li>.1 Wire baskets shall be non-galvanized metal basket designed and manufactured for the purpose of tree moving. Basket shall be</li> </ul>

shaped to ensure that the root ball will allow a stable planting condition in accordance with standards noted.

**2.16 Tree Ties** Add 2.16

- .1 Tree ties shall be Flat woven polypropylene material. 20 mm wide, 544 Kg, break strength. extrusion mold process, polyethylene with UV protectors as per Approved Products List.

### 3.0 EXECUTION

**3.1 Pre-Planting Operations** Delete 3.1 and replace with the following

- .1 Place stakes on site to identify location trees, shrubs and plant beds in accordance to the Landscape Plans.
- .2 *Contract Administrator* and the City to review all tree locations and plant bed layout prior to start of plant bed preparation and planting operation.
- .3 Anti-desiccant shall be applied only as directed by the *Contract Administrator* and the City. Application of anti-desiccant shall be in accordance with manufacturer's instructions.
- .4 Coordinate planting operations with other trades and project schedule.
- .5 All planting operations shall be done in a timely manner in accordance to the Planting Schedule.
- .6 Planting Schedule shall be updated as required by the *Contractor* to coincide with status of site and coordination with other trades. Provide the *Contract Administrator* and the City with updates to the schedule as required throughout the planting process.

**3.2 Subgrade Preparation** Delete 3.2 and replace with the following

- .1 The *Contractor* is responsible for confirming the location and extent of existing utilities prior to the start of all planting operations. All attempts should be made to ensure that utility services are maintained to all on and off site parties throughout the entire planting operation.
- .2 Tree Pits
  - .1 Tree Pit Depth 900 mm minimum.
  - .2 Width of tree pit shall be a minimum of 450 mm to 600 mm greater than diameter of the root ball.
  - .3 Prior to the placement of growing medium scarify the sides and bottom of tree pits created with a tree spade to eliminate glazed surface.
- .3 Ensure tree pits dug in heavy or compacted soils exhibit the ability to drain freely by filling each tree pit with a minimum of 20 litres of water. Water should freely drain through subsoil within ten (10) minutes.
  - .1 Notify *Contract Administrator* and the City if tree pits in any soil condition do not drain freely or if tree pit fills with ground water.
  - .2 There shall be no standing water in the bottom of tree pit at time of planting.
- .4 Protect bottom of tree pit(s) against freezing.
- .5 Ensure tree pits and plant beds are kept well drained and free of contaminants and construction debris.
- .6 Planting Areas shall be excavated to the following depths:

**3.3 Planting**

Delete 3.3 and replace  
with the following

- .1 Shrub beds, perennials, ornamental grasses shall be 450 mm.
- .2 Ground covers and annual flowers shall be 300 mm.
- .3 Trees shall be 900 mm.
- .1 Planting operations shall be carried out under conditions that are conducive to healthy, vigorous growth of plant material.
- .2 Plant material shall be planted vertical, straight and plumb at locations staked in field and or noted on landscape plans.
- .3 Ensure orientation of plant material will give best appearance in relation to views from adjacent buildings, roads, walks or use areas.
- .4 Ensure planting depth of root ball is equal to the depth of root ball originally established in the nursery. The top of root ball shall be level with adjacent growing medium.
- .5 Ball and Burlap Plant Material: After plant has been lowered into plant bed or tree pit cut away all root ball ties from around trunk. Loosen burlap from around trunk and cut away minimum top 1/3 without disturbing root ball.
- .6 Container Grown Plant Material: Remove entire container (including biodegradable containers) without disturbing root ball. Score root ball vertically at six (6) locations evenly spaced around entire root ball to minimize girdling of roots.
- .7 Tree Spade Dug Root Balls: Cut wire basket around entire perimeter of root ball. Bend down top 2/3 of wire basket without disturbing root ball. Cut away all root ball ties from around trunk. Loosen burlap from around trunk and cut away minimum top 1/3 without disturbing root ball.
- .8 Backfill planting areas in 150 mm lifts to 2/3 of the depth tamping each lift of growing medium around root system to eliminate air voids. Do not use frozen or saturated growing medium for backfill operation.
- .9 Prior to placing remaining growing medium, thoroughly water planting areas, fill tree pits with water. Complete backfill operation only after water has completely penetrated into growing medium.
- .10 Build 100 mm high by 150 mm wide (4" high by 6" wide) saucer around outer edge of tree pit to assist with maintenance watering.
- .11 Tree Stabilization
  - .1 Guy or stake trees as directed by *Contract Administrator* and the City.
  - .2 Ensure guy pins and stakes are not placed through the root ball.
  - .3 Trees that have had root balls penetrated by guy pins and stakes will be rejected.
  - .4 Tie one (1) to two (2) flagging tape flags to all guy wires at a height that is clearly visible.
- .12 Place tree trunk protection around base of tree trunk as per manufacturer instructions.
  - .1 Trees 100mm caliper or less shall have one protector. Do not interlock ends of tree protector.

.2 Trees greater than 100mm caliper shall have a minimum of two interlocked protectors. Do not interlock outside ends.

.13 Fertilize as per recommendations based on soil testing and place planting tablets at the following rates in prepared planting holes. Spread the tablets in each hole before planting.

	<u>Plant/Container Size</u>	<u>Table Size</u>	<u>Tablets per Plant</u>
.1	Trees	21g	1 per every 1.25mm of trunk caliper
.2	#15/ 45 cm tub	21g	3
.3	#7/ 35 cm tub	21g	3
.4	#5/ 30 cm pot	21g	2
.5	#3/ 27 cm pot	21g	2
.6	#2/ 21 cm pot	21g	1
.7	#1/ 15 cm pot	21g	1

**3.4 Tree Support**

Delete 3.4 and replace with the following

- .1 Guy and stake all trees immediately after planting. Plant material not guyed or staked immediately shall be replaced if damaged.
- .2 Drive one (1) stake per tree vertically into the ground to a depth of 750 – 1000 mm, in such a manner so as not to injure the root or root ball.
- .3 Fasten tree to the crotch and midway between the crotch and the ground with galvanized wire protected by hose.
- .4 Trees to stand plumb upon completion of this operation.

**3.6 Pruning**

Delete 3.6 and replace with the following

- .1 All pruning cuts shall be made with pruning saws or hook and blade pruning tools designed and manufactured for pruning operations. Anvil-type pruning tools shall not be used in any pruning operations.
- .2 Prune trees and shrubs after planting operation as directed by *Contract Administrator* and the City.
- .3 Prune each tree and shrub planted to preserve the natural character of the plant and in a manner appropriate to its particular requirement in the landscape design. Pruning in general shall be heavier on collected than on nursery-grown plants. Remove all soft wood sucker growth and all broken or badly bruised branches with a clean cut.
- .4 Employ clean sharp tools and make cuts without damaging the branch collar.
- .5 Do not damage the leader or lead branches. Plants which have had the main leader or lead branches damaged or removed will be rejected and replaced by the *Contractor* at no cost to the *Owner*.
- .6 Do not remove minor twig branches along the main structural branches.

**3.7 Mulching**

Delete 3.7 and replace with the following

- 1. Prior to the application of composted mulch;
  - .1 Manually remove all weeds and weed roots from root balls and adjacent growing medium.
  - .2 Remove all deleterious material and debris from planting areas.

			.3	All fine grading shall be completed, the growing medium shall be loose and friable.
			.4	The <i>Contract Administrator</i> and the City has reviewed of all planting areas.
			.2	Spread composted mulch to minimum depth of 50 mm.
			.1	Ensure finish composted mulch layer is a minimum of 12 mm below adjacent hard landscape surfaces and edges.
			.2	Ensure mulch is kept 125 mm away from tree trunks and 75 mm away from stems of shrubs.
3.8	Clean-up	Delete 3.8 and replace with the following	.1	Growing medium spilled onto pavement and growing medium stains on pavement or adjacent hard surfaces shall be cleaned up immediately.
			.2	Remove from the site all pots, cans, surplus materials, and other debris resulting from planting operations.
			.3	Ensure complete removal of planting tags, labels, strings, or other materials prior to Substantial Performance.
			.4	Neatly dress and finish all planting areas and flush all walks and paved areas clean to the satisfaction of the Consultant and Owner.
3.9	Maintenance	Delete 3.9 and replace with the following	.1	Maintenance of plants shall begin immediately after planting operation and shall continue in an uninterrupted fashion until all deficiencies noted in the <i>Substantial Performance</i> review have been rectified and the <i>Contract Administrator</i> and the City has provided to the <i>Contractor</i> written confirmation of the date of <i>Total Performance</i> .
			.2	If for any reason the <i>Contractor</i> elects, on his own without the written consent of the <i>Contract Administrator</i> and the City to suspend maintenance operations, the <i>Contractor</i> shall provide the <i>Contract Administrator</i> and the City written notice of such action. Any damages or requirement for the replacement of plant material that as a result of the suspension of maintenance operations shall be the borne by the <i>Contractor</i> at no cost to the Owner.
			.3	Maintenance of plant material includes but is not limited to watering at intervals sufficient to maintain healthy, vigorous growth, weeding of plant beds and tree pits, cultivating of growing medium, pruning, treatment of insects, molds, fungi or disease to the Level 2 "Groomed" as per the BCNLA Landscape Standard, Current Edition or as directed by consultant.
			.4	Plant material shall be deep watered at least once per day when temperatures exceed 25 degrees Celsius.
			.5	Water sufficiently to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
			.6	Supply equipment such as pumps, portable sprinklers systems, tank trucks, hose and sprinklers required for watering operations. Water trucks, if used for watering operations, must service the site from adjacent roads until irrigation system is operational.

**3.10 Conditions for Total Performance**

Delete 3.10 and replace with the following

- .7 *Contractor* to ensure adequate moisture in plant root zone prior to winter freeze-up.
- .8 Reset all plants that have settled to plant depths approved by the *Contract Administrator* and the City prior to the placement of composted mulch.
- .9 Ensure tree guards, stakes, flagging tape on tree guy wire and tree ties are kept secure, taught and in proper repair.
- .1 Conditions for *Total Performance*:
  - .1 *Substantial Performance* shall have been granted by the *Contract Administrator* and the City and, Final Inspection at the end of the guarantee/warranty period.
  - .2 All plant material is healthy; exhibiting signs of vigorous growth and meets the requirements of this specification.
  - .3 Plant material installed less than ninety (90) days prior to frost will be accepted in following spring, thirty (30) days after start of growing season provided that final acceptance conditions are fulfilled.
  - .4 Unless otherwise indicated in the *Contract Drawing* the original shape and form of the plant as reviewed by the *Contract Administrator* and the City has been maintained, leaders are intact, there are no wounds or abrasions on trunks or branches.
  - .5 Mulch has been maintained to specified depths.
  - .6 All planting areas continue to be free draining with no signs of standing water.
  - .7 All plant beds are completely free of weeds and noxious grasses.
- .2 The *Contractor* shall continue to maintain the work of this section until the *Contract Administrator* and the City provides written confirmation that *Total Performance* conditions have been met.

**END OF SECTION**

**WATERWORKS**

<b>1.8</b>	<b>Measurement and Payment</b>	Delete 1.8.11 and replace with the following	<p>Payment for hydrant relocation includes removal and re-use of hydrant assembly, location and exposure of existing utilities, trench excavation, all new pipe, riser pipe, bends, couplings (Robar 1506), any necessary pipe extensions to achieve the required hydrant height, concrete thrust block, tie rods, bedding material, native backfill, import backfill, testing and disinfection, where required, re-use of valve box &amp; cover, on-site re-use of surplus/displaced material, and all other work and materials necessary to complete installation as shown on Contract Drawings and specified under this Section. Final location to be determined on site by Contract Administrator.</p> <p>Native excavated material approved for re-use as trench backfill shall have all cobbles greater than 150 mm diameter removed and disposed off-site and shall be granular in nature and free from organic materials. Native excavated material shall not be used as trench backfill where moisture content does not permit compaction to specified density. Where native excavated material is unacceptable for use as trench backfill, imported trench backfill shall be supplied, placed, and compacted to specified density.</p>
		Add 1.8.14	<p>Payment for water meter and service connection includes mainline double strap saddles, precast box, live tap, corporation stops, curb stops, service pipes, water meters and registers all as per City of Coquitlam Water Meter Specifications  <a href="https://www.coquitlam.ca/DocumentCenter/View/324/Coquitlam-Water-Meter-Specifications-PDF">https://www.coquitlam.ca/DocumentCenter/View/324/Coquitlam-Water-Meter-Specifications-PDF</a>          (with wire length to suit and all related fittings and appurtenances specified and/or shown on COQ WM1 and WM3, as applicable, trench excavation, on-site reuse of surplus/displaced material, supply and installation of all pipe, compression fittings and adapter, and related materials, bedding, native backfill, import backfill, testing (if applicable), flushing, disinfection, and all other work and materials necessary to complete installation to the irrigation system as shown on Contract Drawings and specified under this Section.</p> <p>Native excavated material approved for re-use as trench backfill shall have all cobbles greater than 150 mm diameter removed and disposed off-site and shall be granular in nature and free from organic materials. Native excavated material shall not be used as trench backfill where moisture content does not permit compaction to specified density. Where native excavated material is unacceptable for use as trench backfill, imported trench backfill shall be supplied, placed, and compacted to specified density.</p> <p>Measurement for water meter and service connection will be for each complete service installed, with no regard to length of service pipe installed.</p>
<b>2.0</b>	<b>PRODUCTS</b>		
<b>2.2</b>	<b>Mainline Pipes, Joints and Fittings</b>	Add to 2.2.1.1	<p>Pipe: to AWWA C151, and shall meet the following Pressure Class or Thickness Class:</p> <p>.1 100 mm – 350 mm – Thickness Class 50          .2 400 mm &amp; greater – PC 350</p> <p>Joints: It is mandatory that the push-on integrally thickened bell and spigot type conform to ASTM D3139 Clause 6.2 with single elastomeric gasket to ASTM F477.</p> <p>Delete 2.2.2.2 and replace with the following</p>

		Delete 2.2.4.13 and replace with the following	<p>Joint Restrain Devices: General Requirements:</p> <ol style="list-style-type: none"> <li>.1 Ductile iron castings to ASTM A536.</li> <li>.2 Anti-corrosion coating of ductile iron castings to AWWA C219, AWWA C210, AWWA C213 or AWWA C550.</li> <li>.3 Bolts and nuts high strength low alloy steel to AWWA C111 or as specified in Contract Documents, stainless steel to ASTM F593 or ASTM F738 for bolts and ASTM F594 or ASTM F836 for heavy hex nuts. Rolled threads, fit and dimensions to AWWA C111.</li> <li>.4 Tie rods to 2.2.3.8 of this Section</li> <li>.5 Restrainers for ductile iron pipe shall be mechanical joint fittings or push-on joint fittings with tie rod.</li> <li>.6 Restrainers for PVC pipe shall be mechanical joint fittings or push-on joint fittings with tie rod lugs.</li> <li>.7 Restrained harnesses or integral restrain systems manufactures as part of the pipe joint.</li> <li>.8 All joint restraint systems for PVC pipe be approved by the specific PVC pipe manufacturer, and that they do not derate the pipe manufacturer's recommended working pressures.</li> <li>.9 Restrainers for PVCO pipe shall be mechanical joint fittings or push-on joint fittings with tie rod lugs.</li> <li>.10 All joint restraint systems for PVCO pipe be approved by the specific PVCO pipe manufacturer, and that they do not derate the pipe manufacturer's recommended working pressures.</li> </ol>
		Add 2.2.7	<p>Oriented Polyvinyl (PVC) Pressure Pipe:</p> <ol style="list-style-type: none"> <li>.1 Pipe: <ol style="list-style-type: none"> <li>.1 Pipe to be manufactured to specifications for pipe size ranges as follows: <ol style="list-style-type: none"> <li>.1 Pipes 100 to 600 mm diameter – AWWA C909.</li> <li>.2 Pipes to be certified by Canadian Standards Association for pipe size ranges 100 mm to 600 mm dia. – CSA B137.3.1.</li> </ol> </li> <li>.2 Cast iron pipe equivalent outside diameter.</li> <li>.3 To be compatible with specified mechanical joint and push-on joint fittings and valves without use of special adapters.</li> </ol> </li> <li>.2 Joints: Push-on integrally thickened bell and spigot type to AWWA C909 Clause 4.3.3.2 (a.) with single elastomeric gasket to ASTM F477.</li> </ol>
<b>2.3</b>	<b>Valves and Valve Boxes</b>	Delete 2.3.1.3 and replace with the following	Valves 400 mm and larger shall be butterfly valves.
		Delete 2.3.1.4	
		Delete 2.3.4 and replace with the following	Blow-Down or Blow-Off Valves: 50 mm to 300 mm as specified for mainline gate valves.
		Delete 2.3.6.1.1	



		Delete 2.3.6.1.2 and replace with the following	Circular type valve box shall be Nelson style cast iron.
		Delete 2.3.7.1 and replace with the following	Curb stop valve boxes on 19 mm dia. to 38 mm dia. shall be as shown on Coquitlam Standard Detail Drawings COQ-W2b, COQ-W2j.
		Delete 2.3.7.2	
		Delete 2.3.7.3 and replace with the following	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 shown on Coquitlam Standard Detail Drawings COQ-W2b, COQ-W2j. Service boxes may be Nelson style PVC, except when located in driveways.
		Delete 2.3.7.5 and replace with the following	Corporation stop valve boxes (at mainline tees or tapplings) on services 50 mm dia. and larger as specified for Mainline Valve Boxes per Coquitlam Standard Detail Drawings COQ-W2e, COQ-W2f.
<b>2.5</b>	<b>Service Connections, Pipes, Joints and Fittings</b>	Delete 2.5.1 and replace with the following	Pipe diameter 19 mm to 75 mm to be Type K annealed copper to ASTM B88M.
<b>2.6</b>	<b>Hydrants</b>	Delete 2.6.1.6 and replace with the following	Pump nozzle shall be "quick connect" STORZ type. STORZ type nozzle must be painted gloss black.
		Delete 2.6.2 and replace with the following	Colour: Tremclad Rust Paint Body – Fire Red Hose Caps and Bonnet – Bright Yellow
<b>2.8</b>	<b>Granular Pipe Bedding and Surround Material</b>	Add 2.8.3	Bedding and surround material shall be Type 1 under Section 31 05 17 – 2.7 or 19 mm minus clear crushed gravel.
<b>3.0</b>	<b>EXECUTION</b>		
<b>3.6</b>	<b>Pipe Installation</b>	Add 3.6.15	When the watermain crosses a storm or sanitary sewer, the watermain shall be installed a minimum 0.5 m clear above the sewer. Where this is not possible, the watermain 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"> <li>.1 ANSI/AWWA C214 (factory applied)</li> <li>.2 ANSI/AWWA C209 (field applied)</li> <li>.3 ANSI/AWWA C217-90 (petrolatum tape)</li> <li>.4 All materials used are to have zero health hazard</li> </ul> Installation shall be in accordance with the requirements of the Regional Health Engineer under the Health Act.
<b>3.10</b>	<b>Service Connection Installation</b>	Delete 3.10.4	
		Delete 3.10.5 and replace with the following	Tapplings in cast iron or ductile iron mains to AWWA C151 pipe to be made using double strap saddles specified in 2.5.3 of this Section.

WATERWORKS

		Add 3.10.13	Water service connections (19 mm and 25 mm) must be installed as one continuous length of pipe.
3.18	Cleaning and Preliminary Flushing	Add 3.18.5	<p>Water mains 400 mm and larger shall be swabbed as per the following procedure:</p> <ol style="list-style-type: none"><li>1. <u>Purpose and Scope</u><ol style="list-style-type: none"><li>.1 To remove any possible contaminants introduced into the water main through pipe storage or installation activities.</li></ol></li><li>2. <u>Swab Requirements</u><ol style="list-style-type: none"><li>.1 Swabs are to be of a polyurethane foam construction, minimum 2 lb/ft<sup>3</sup> density</li><li>.2 Swabs are to be new. Used swabs will not be accepted.</li><li>.3 Swab outside diameter must be minimum 1 nominal size larger than the largest diameter main to be swabbed (e.g. 150 mm main requires minimum 200 mm diameter swabs)</li><li>.4 Swab length must be minimum 1.5 times the outside diameter.</li></ol></li><li>3. <u>Swab Entry Point</u><ol style="list-style-type: none"><li>.1 2 swabs are to be inserted into the beginning of the first length of water main installed into the trench. Swabs are to have a minimum of 1 meter separation between them.</li><li>.2 Minimum 300 grams of calcium hypochlorite granules are to be installed in between the 2 swabs.</li></ol></li><li>4. <u>Swab Discharge Point</u><ol style="list-style-type: none"><li>.1 Swabs are to be discharged from the water main at the end of the installation (ie-permanent or temporary dead end)</li><li>.2 A temporary connection for a discharge assembly of minimum 150 mm (100 mm is acceptable for 100 mm water main only) is to be made to the end of the new water main pipe (connection to a blow off assembly is not acceptable).</li><li>.3 The discharge assembly must consist of a 90 degree elbow and appropriate fittings to adapt to 150 mm "camlock" style layflat hose. The assembly must have adequate thrust protection to avoid blowing off during the swabbing procedure.</li><li>.4 The 150 mm layflat hose must extend above the surface of the existing ground.</li></ol></li><li>5. <u>General Swabbing Requirements</u><ol style="list-style-type: none"><li>.1 Swabbing to be performed after the satisfactory completion of all pipe work (as determined by the city inspector), and prior to flushing, pressure testing, and chlorination of the new water main.</li><li>.2 Swabbing of the water main is to be witnessed by the City of Coquitlam.</li><li>.3 Although a minimum of 2 swabs must be used for each run, additional swabs may be required depending on the time required for the water to run clear after swab discharge. This determination will be made by the City of Coquitlam.</li></ol></li></ol>

- .4 Swabs are to be used once only. Additional new swabs will be required for additional swab runs if deemed necessary by the city.
- .5 Swabs must be stored and handled hygienically.
- .6 The contractor must provide all labour and materials required to carry out the swabbing procedure.
- .7 Swabbing should be completed from a low point to a high point where possible.
- .8 A plan to complete the swabbing must be submitted to the City of Coquitlam prior to the work taking place for approval.
- .9 The contractor must take all necessary action to prevent flooding of the discharge area.

6. Swabbing Procedure

- .1 The length of main within the swabbing run must have all connections larger than 25 mm isolated by closing appropriate valves.
- .2 The new main is to be filled and swabs propelled via a certified backflow prevention device (double check valve assembly) and water meter from the existing system. The connection to the existing system will form part of the plan submitted to the city for approval.
- .3 Appropriate flow is to be used to propel the swabs at approximately .75 meter per second velocity. See following list for appropriate flow:

Main diameter (mm)	Approximate flow required to produce 0.75 m/s velocity (l/s)
100	6.3
150	12.6
200	25.2
250	37.9
300	56.8
600	227.2

- .4 Upon discharge of the swabs, the main must be flushed until the water runs clear.
- .5 The supply point can then be slowly closed.
- .6 Additional swabs must be run through the water main if excessive debris is noted to be discharged from the main or there is excessive clean up time after the swabs are discharged.

**3.23 Connection to Existing Mains**

Delete 3.23.1 and replace with the following

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 and the City to schedule work to prevent construction delays.

Add 3.23.2

Provide written notification to all affected residents a minimum 48 hours prior to service interruption.

Add 3.23.3

Arrange shutdown of the existing valves by the City. *Contractor* shall not operate any valves without prior approval of the *Contract Administrator* and the City.

Add 3.23.4

Provide temporary water service while existing service is interrupted as detailed in *Contract Drawing* or Project Specific Specifications.

WATERWORKS

- Add 3.23.5 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.
- Add 3.23.6 *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 water service interruption.
- Add 3.23.7 Procedures for Bacteriological Tests shall be as described in AWWA C651-99. No connection to existing water mains will be authorized until final results of coliform bacterial testing have been received and reviewed by the Water Superintendent.
- 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 *Contract Administrator* shall review with the Water Superintendent and the *Contractor* sampling locations and appurtenances.
- The *Contract Administrator* 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 at least every 366m of the new main as well as the terminus and all branches.
- Test results will be delivered to the Water Superintendent who will provide a copy to the Contract Administrator.
- 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.
- 3.25 Permanent Capping of Existing Water Service Connections Add 3.25 Permanent capping of existing water service connections to be completed as per Coquitlam standard Detail Drawings COQ-W2g, COQ-W2h, and COQ-W2i.

END OF SECTION

**STORM SEWERS**

<b>1.6</b>	<b>Measurement and Payment</b>	Delete 1.6.1 and replace with the following	Payment for storm sewer will be made at the unit price bid for storm sewer (regardless of depth) consistent with pipe materials, diameters and backfill requirements shown on the Contract Drawings and described under individual payment items in the Schedule of Quantities.
		Delete 1.6.2 and replace with the following	Payment for storm sewers includes location and exposure of existing utilities, saw cutting pavement, trench excavation, dewatering, bypass pumping, disposal of all surplus excavated material, disposal of existing storm pipe, support of adjacent piping, supply and installation of all pipe, fittings and related materials, tie-ins to existing storm pipe, re-benching existing manholes as necessary, ramping, existing catchbasin or lawn basin lead tie-ins to new storm, construction joints, bedding, temporary asphalt patching, temporary surface restorations, import backfill, native backfill, granular base, granular subbase, 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.
			Measurement for storm sewer will be made horizontally from manhole centerline to manhole centerline over surface work has been completed.
			Native excavated material approved for re-use as trench backfill shall have all cobbles greater than 150 mm diameter removed and disposed off-site and shall be granular in nature and free from organic materials. Native excavated material shall not be used as trench backfill where moisture content does not permit compaction to specified density. Where native excavated material is unacceptable for use as trench backfill, imported trench backfill shall be supplied, placed, and compacted to specified density.
		Delete 1.6.5 and replace with the following	Payment for catchbasin or lawn basin leads include all applicable materials and work described in 1.6.2
			Measurement for catchbasin leads or lawn basin leads will be made horizontally from centreline of catchbasin or lawn basin to terminus of work for each pipe size installed with no regards to depth range.
<b>2.0</b>	<b>PRODUCTS</b>		
<b>2.2</b>	<b>PVC Pipe, Mainline Smooth Wall</b>	Delete 2.2.1 pipe size ranges and replace with the following	200 mm dia. – 375 mm dia. to ASTM D3034 450 mm dia. – 1,200 mm dia. to ASTM F679
<b>2.3</b>	<b>PVC Pipe, Mainline Profile</b>	Delete 2.3	
<b>2.6</b>	<b>Service Connections</b>	Delete 2.6.1 and replace with the following	Storm service connections to be PVC DR 28 150 mm diameter minimum or as specified on <i>Contract Drawings</i> .
		Delete 2.6.8.1	
		Delete 2.6.8.2 and replace with the following	Connections to PVC pipe to be made with a performed wye fitting where mainline pipe is 300 mm diameter or smaller. For connections to PVC mainline pipe larger than 300 mm diameter an insertable tee for PVC pipe is permitted.

**STORM SEWERS**

		Add 2.6.8.3	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. The joint shall provide a minimum seal of 90 kPa on concrete and polyethylene pipe, and 190 kPa on PVC pipe.
<b>2.9</b>	<b>Granular Pipe Bedding and Surround Material</b>	Delete 2.9.3	Pipe bedding shall be 19 mm clear crushed rock or as approved by the <i>Contract Administrator</i> and the City.
<b>3.0</b>	<b>EXECUTION</b>		
<b>3.8</b>	<b>Connections to Existing Mainline Pipe</b>	Delete 3.8.3 and replace with the following	<p>For new connections to existing, smooth wall or profile, mainline sewers 300 mm and smaller, shall be made by removal of the section of the main and replacement with a preformed PVC wye fitting complete with stubs and double hub PVC couplings for PVC mains and approved shear band couplings for other mainline materials.</p> <p>For new connections to existing mainline greater than 300 mm, use of insertable tee will be permitted.</p>
<b>3.10</b>	<b>Service Connection Installation</b>	Delete 3.10.3 replace with the following	Inspection chambers shall be provided on all storm service connections as per Standard Detail Drawing S7. If inspection chamber is located in driveway, lane, or paved surface, Series 37 Brooks concrete box with lid shall be installed as per Standard Detail Drawing S9.
<b>3.12</b>	<b>Inspection and Testing</b>		The contractor shall video inspect completed storm sewers under 900 mm in diameter and all service connections following completion of the installation. The video inspection report shall be in a form specified by the Contract Administrator and the City. Copies of the video DVD and written report shall be forwarded to the Contract Administrator and the City. Refer to Section 33 01 30.1 and 33 01 30.1S CCTV Inspection of Pipelines.
<b>3.16</b>	<b>Permanent Capping of Service Connections</b>	Add 3.16.1	Permanent capping of existing storm sewer connections to be completed as per Coquitlam Standard Detail Drawing COQ-S18.
		Add 3.16.2	<p>A trenchless method of permanently capping a service may be required on an arterial road or on a road which has been paved within 5 years, as directed by the Manager.</p> <p>The trenchless technology used to cap the service must be approved by the Manager.</p>

**END OF SECTION**

PIPE CULVERTS

1.5      **Measurement      and**      Delete 1.5.2 and  
            **Payment**                replace with the  
   following

Payment for all work under this Section and as shown on Contract Drawings will be as described under individual payment items in Schedule of Quantities and Prices.

Payment for pipe culvert includes saw cutting pavement where necessary, excavation, disposal of surplus excavated material, supply of all pipe, fittings, couplers and related materials, fusing of HDPE pipe, cleaning, all surface restoration, tie-ins and all other work and material necessary to complete the installation as shown on the Contract Documents and specified under this Section.

Pipe bedding shall be 19 mm clear crushed rock or as approved by the *Contract Administrator* and the City.

Payment for 19mm clear crushed and road mulch, for bedding and import backfill, will be incidental.

Measurement for pipe culverts will be made horizontally from end to end of the culvert after the work has been completed.

Add 1.5.7 as following

Payment for removal and disposal for all types and sizes of pipe culverts will include complete off-site disposal and restoration of all surfaces as shown on Contract Drawings.

END OF SECTION

**1.0 GENERAL**

**1.1 Related Work**

Add 1.1.6

Hot Mix Asphalt Concrete  
Pavement

Section 32 12 16

Add 1.1.7

Portland Cement Concrete  
Paving

Section 32 13 13

**1.5 Measurement and  
Payment**

Delete 1.5.1.1 and  
replace with the  
following

Payment for manhole includes supply and installation of base, lid, slab, concrete riser, concrete barrel, donut ring, concrete frame, metal frame, cover, ladder rung and all components to complete the manhole from specified invert to finishing level. Payment includes base preparation, all in-situ concrete work, manhole preparation to accommodate new sewer installation, all labor, material, equipment and necessary work for installing the manhole as shown on Contract Drawing and as described on Standard Detail Drawing S1 and S2.

Payment includes all labor, material and equipment required for benching of manhole.

Payment for imported trench backfill will be made under Section 31 23 01S – Sub-section 1.10.9.

Delete 1.5.2 and  
replace with the  
following

Payment includes supply and installation of new catchbasin/lawnbasin as described in Schedule of Quantities and Prices including catch basin base, concrete barrel, concrete riser, pvc concrete stub, donut ring, H20 concrete frame/lid, metal frame, top & side inlet and grate, aluminum trapping hood and all labor, material and equipment required to complete the work from specified invert to finishing level and as per Standard Detail Drawing MMCD S11, S12 and COQ S11A. Payment includes excavation, disposal of surplus excavated material, bedding, native or import backfill, base preparation, catchbasin preparation to accommodate catchbasin connection, installation all in-situ concrete work, all labor, material, equipment and necessary work for installing the catchbasin.

Catch basin lead work will be made under Section 33 40 01S – Clause 1.6.5.

Delete 1.5.3 and  
replace with the  
following

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, Manhole Frames & Covers and Lids of Castings as part of the operation for asphaltic concrete paving.

No Payment will be made for adjusting Valve Boxes, Monument Boxes, Gas valve boxes, Lawn Drains, Cleanouts and Inspection Chambers, these adjustments will be treated as incidental work unless otherwise specified.

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



1. Manhole frames and lids replacement & adjustment 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 finish grade, temporary asphalt ramping or patching and all other incidental work.

Unit Price for adjustments to each manhole includes adjusting manholes to the asphalt base lift and then to the asphalt final lift (finish grade).

2. Water Valve Box replacements will be defined as supplying and installing a new Nelson Type Terminal City 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. Adjustment includes all the Work and re-using the existing water valve box and lid.

Catchbasins frame and lid replacement will be defined as setting as supplying and installing a new catchbasin frame & lid to the correct elevation. Adjustments shall include jackhammering, removal of the existing grating and frame and all other incidental work. Payment includes excavation, disposal, removal of concrete bricks, removal or addition of 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. Adjustment includes all the Work and re-using the existing frame and lid. Catch basin lead work is considered to be incidental to payment for catch basin lead work described in other sections.

The use of Steel/Metal Casting Risers Rings will not be accepted to adjust manholes or water valves to the final asphalt elevation.

## 2.0 PRODUCTS

### 2.1 Materials

Add 2.1.7.3

Any frame and cover assembly creating a point load on the concrete riser rings will not be permitted.

Delete 2.1.12 and replace with the following

Catchbasin lids manufactured to ASTM C478M

Delete 2.1.16.2

Delete 2.1.17

## 3.0 EXECUTION

### 3.1 Excavation and Backfill

Add 3.1.2

For manholes, when base gravels are complete, excavate for grade rings and manhole frame assembly. Do not disturb the compacted road base beyond the excavation requirement.

3.3	Manhole Installation	Delete 3.3.12.2 and replace with the following	Allowable products are precast concrete risers and cast-in-place form system. Individual riser heights shall be 50mm, 75mm, or 100mm.
		Delete 3.3.12.5 and replace with the following	Proper layer of grout between the spacers, covering the entire surface of the rings, should be utilized.
		Delete 3.3.15 and replace with the following	Install drop structures as shown on the contract drawings to Coquitlam Standard Detail Drawing COQ-S4 and Standard Detail Drawing S3. Maximum allowable inside ramp shall be 250 mm invert to invert.
		Delete 3.3.17 and replace with the following	Ensure frames conform to design contour of pavement or existing surface. Manhole lids left raised in preparation for overlay paving shall have a rubberized protector ring or asphalt ramp. The use of riser rings for adjusting manhole frames will not be permitted.
3.5	Catchbasin Installation	Delete 3.5.1 and replace with the following	Install catchbasins as shown on Coquitlam Standard Detail Drawings COQ-S11A, COQ-S11B and Standard Detail Drawing S11, to general standards and installation procedures described under 3.3 of this Section.

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 01 55 00S.

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 Hours of Work and Traffic Restrictions for this project are identified in **Appendix 1** of this document. A Road and Sidewalk Closure Permit form application must be submitted to City's Traffic Operation Division five (5) working days prior to start of work.
- .2 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 2** 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 [www.coquitlam.ca/closure](http://www.coquitlam.ca/closure).

1.4 Measurement and Payment

- .1 For this Contract, payment for all work performed under this section, unless included in the Schedule of Quantities and Prices shall be treated as incidental work, including a Traffic Management Plan (TMP), Traffic Control Persons (TMP), traffic markings & all temporary traffic signs, devices as required for traffic & pedestrian safety; and all other items described in the Section 01 55 00S.

**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.
- .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 five (5) minutes in duration; for occasional interruption of traffic for construction activities if traffic volumes permit. These delays shall be coordinated with available breaks in the traffic flow.
- .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                  | <p>.1 A copy of the approved <u>current</u> Traffic Plan must be held on site by both the Site Superintendent as well as the person/company responsible for the traffic control implementation.</p> <p>.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.</p> |
| 3.2 | Road and Sidewalk Closure Permits     | <p>.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.</p>                            |
| 3.3 | Traffic Control Personnel & Equipment | <p>.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.</p> <p>.2 There must be sufficient Traffic Control Persons (TCPs) on site to appropriately and safely direct traffic in all sections of the Work.</p>   |
| 3.4 | Signage                               | <p>.1 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.</p>  |

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                              | .1 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 | .1 The Contractor shall minimize any abrupt changes in roadway elevation left exposed to traffic during both working and non-working hours.<br>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        | .1 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          | .1 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 Minimum of Single Lane Traffic in each direction must be accommodated at all times or as approved by Contractor Administrator.   |
|     |                                   | .2 A City of Coquitlam 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 and Lane Closure Permit must be held on site by both the Site Superintendent and the person/company responsible for the traffic control implementation.

- .3 Access to private parking lots must be maintained for residents, mail/parcel delivery vehicles, and garbage and recycling vehicles. Pedestrian access shall also be maintained.
- .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.
- .5 There is an elementary school located on Schoolhouse Street. Contractor should make arrangements to accommodate pedestrian movements as well as manage increased traffic at drop off and pick up times.

## **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 <a href="http://www.coquitlam.ca">www.coquitlam.ca</a> and can be found under <b>Residents, Transit &amp; Transportation, Trucking Routes</b> . |
| 5.2 Road Specific Considerations      | .1 Ensure that Traffic Management Plan accommodates businesses (including schools) and residences during construction activities.  |
| 5.3 Work stoppage due to traffic      | .1 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 or creating unreasonable delays         |
| 5.4 Construction Activity and Signage | .1 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

- .1 The Contractor is required to provide, one week prior to start of work, stationary signs at intersections, one in each direction, to inform traffic of existing and anticipated conditions at entry points of the street to be worked on, locations for these signs will be provided by the Contract Administrator.

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.

**APPENDIX 1**  
**CONTRACT HOURS OF WORK and TRAFFIC RESTRICTIONS**

<b>1.0</b>	<b>GENERAL</b>	
1.1	Contract Number	81832-Phase 1
1.2	Contract Name	Cedar Drive Upgrades - Phase 1: Partington Creek Conveyance Improvements
1.3	Contract Limits	As shown on the Contract Drawings
<b>2.0</b>	<b>ROAD SECTION</b>	
2.1		<p>.1 Residential property accesses in this area must be accommodated in the work operations.</p> <p>.2 <b>Minimum of Single Lane Alternating Traffic</b> on all roads must be accommodated at all times during construction, unless otherwise authorized by the Contract Administrator or defined by time of day lane closure restrictions.</p> <p>.3 The work should be scheduled such that garbage and recycling trucks can pass for collection. In case of any access problems the Contractor will be required to move garbage &amp; recycling bins.</p> <p>.3 Where there are 2 driveway accesses to a property, only one may be closed at a time.</p>
<b>3.0</b>	<b>HOURS OF WORK</b>	
3.1	Allowable Hours of Work	<p>.1 Unless there are other contract restrictions for work times, work can be performed during the normal weekday working hours of <b>07:00 hrs to 19:00 hrs.</b></p>
		<p>.2 Work is allowable on Saturdays but is restricted to <b>09:00 hrs to 17:00 hrs.</b></p>
		<p>.3 No work is allowed on Sundays or statutory holidays without specific permission arranged through the Contract Administrator.</p>
<b>4.0</b>	<b>OPERATIONS</b>	
4.1	Truck Routes	<p>.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 <a href="http://www.coquitlam.ca">www.coquitlam.ca</a> and can be found under <b>Residents/Transit &amp; Transportation/Trucking Routes.</b></p>

APPENDIX 2



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](mailto:trafficoperations@coquitlam.ca)

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

~~Permit Fee: \$75.00 (Effective February 1, 2019)~~

~~Payment Methods: [Click Here](#) and if approved, payment options will be emailed to the applicant.~~

Application Date:

City Project 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  
☐ Curb/Outside Lane ☐ Centre/Inside Lane ☐ Right Turn Lane ☐ Left Turn Lane ☐ Cycling Lane ☐ Sidewalk  
☐ Single Lane Alternating Traffic ☐ Full Closure

Road/Street Name:   
Location Description:

Date & Time Information: Dates:    
Starting Ending  
Hours:    
Starting Ending

Purpose:

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

Will this closure disrupt: Garbage/Recycling Routes or Pick Up? ☐ Yes ☐ No If yes, the Applicant will need to assist the contractor and/or contact the City's Environmental Services Group. [www.coquitlam.ca/trashtalk](http://www.coquitlam.ca/trashtalk)

**Traffic Control Plan\*:**

(a) Traffic Management Manual for Work on Roadways Figure Number \_\_\_\_\_, or  
(b) A Traffic Control Plan (*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.

**Application Checklist**

- ☐ Permit Fee
- ☐ Prime Contractor Designation Letter
- ☐ City of Coquitlam Certificate of Insurance
- ☐ Traffic Control Plan or Traffic Management Manual for Work on Roadways Figure Number \_\_\_\_\_
- ☐ Coast Mountain Bus Company (Phone: 778-593-5774 | Email: [special.events@coastmountainbus.com](mailto:special.events@coastmountainbus.com)) contacted regarding impact to bus routes and bus stops
- ☐ City of Coquitlam Environmental Services Group (Phone: 604-927-3500 | Email: [wastereduction@coquitlam.ca](mailto:wastereduction@coquitlam.ca)) contacted regarding impact to garbage/recycling routes and pick up

**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

***Appendix B -  
Environmental Approvals &  
Authorizations***

## **Appendix B**

### **Contract No. 81832-Phase 1 Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements**

1. The Fisheries Act. Authorization under paragraphs 34.2(2)b and 35(2)(b) of the Fisheries Act
2. Water Sustainability Act – Change Approval under Water Sustainability Act – Section 11(1) Changes In and About a Stream
3. City of Coquitlam – Watercourse Protection Development Permit (23 118057 DP)



## Paragraphs 34.4(2)(b) and 35(2)(b) *Fisheries Act* Authorization

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### Authorization issued to

City of Coquitlam (*hereafter referred to as the "Proponent"*)

Attention to: Nadeem Kazmi

3000 Guildford Way  
Coquitlam, BC V3B 7N2

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### Location of Proposed Project

Nearest community:	Coquitlam
Municipality:	City of Coquitlam
Province:	British Columbia
Name of watercourse:	Partington Creek
UTM Coordinates:	Between 10U 519940 m E 5459588 m N and 10U 520547 m E 5460066 m N

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### Valid Authorization Period

This Authorization remains in force from the **Date of Issuance** until **December 31, 2036**.

Please note that this Authorization may contain more specific timing requirements and limitations. These are set out in the Conditions of Authorization section.

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### Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

- The installation of new sanitary and water main infrastructure, which includes in-line and off-line sediment ponds; infilling of agricultural ditches; and riparian vegetation removal; associated with the realignment and raising of Cedar Drive in Coquitlam, BC.

The project is described in the following documents, hereafter referred to as the "Project Plan":

- Partington Creek Conveyance and Off-channel Habitat Project – *Fisheries Act Authorization Application Form* dated December 17, 2021, prepared by ISL Engineering and Land Services. (ISL); and
- *Rev.02 Supplementary Report* dated August 17, 2023, prepared by ISL.



**Description of Authorized works, undertakings or activities likely to result in the harmful alteration, disruption, or destruction (HADD) of fish habitat:**

The works, undertakings, or activities associated with the proposed project described above, that are likely to result in the harmful alteration, disruption, or destruction of fish habitat, are:

- Construction of an in-line sediment pond within Partington Creek (the Creek);
- Construction of an off-line sediment pond adjacent to the Creek; and
- Infilling of three (3) agricultural ditches located directly south of the Creek.

**The authorized works, undertakings, or activities are likely to result in the following impacts to fish and fish habitat:**

Partington Creek:

- Harmful alteration, disruption or destruction (HADD) of not more than 915 m<sup>2</sup> of aquatic habitat below the high-water mark, comprised of an in-line sediment pond within the Creek (315 m<sup>2</sup>) and an off-line sediment pond adjacent to the Creek (600 m<sup>2</sup>); and
- HADD of not more than 7,700 m<sup>2</sup> of riparian habitat above the high-water mark.

Agricultural Ditches:

- HADD of not more than 2,066 m<sup>2</sup> of aquatic habitat below the high-water mark, comprised of infilling two (2) non-fish bearing ditches (1,250 m<sup>2</sup>) and one (1) seasonally fish-bearing ditch (810 m<sup>2</sup>); and
- HADD of not more than 2,060 m<sup>2</sup> of riparian habitat above the high-water mark.

The works, undertakings, or activities associated with the proposed project described above, are not expected to result in death of fish provided that avoidance and mitigation measures described in the Project Plan and outlined in the Conditions of Authorization below are effectively implemented. Any death of fish resulting from this project should be demonstrated to have been unavoidable or accidental. DFO should be notified immediately in such circumstances via an email to [DFO.PACViolations-InfractionsPAC.MPO@dfompo.gc.ca](mailto:DFO.PACViolations-InfractionsPAC.MPO@dfompo.gc.ca) and to Observe, Record, Report at 1-800-465-4336 or [DFO.ORD-ONS.MPO@dfo-mpo.gc.ca](mailto:DFO.ORD-ONS.MPO@dfo-mpo.gc.ca).

**Conditions of Authorization**

The above-described works, undertakings or activities must be carried on in accordance with the following conditions.

1. **Conditions that relate to the period during which the works, undertakings or activities can be carried on:**

The works, undertakings or activities are authorized to be carried on during the following period:

**FROM: Date of Issuance                      TO: December 15, 2025**

If the Proponent cannot complete the works, undertakings or activities during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above period. An application for amendment, suspension or cancellation of the Authorization should be submitted to DFO.

The periods during which other conditions of this Authorization must be complied with are provided in their respective sections below.

**2. Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat:**

- 2.1 Qualified Environmental Professional: The Proponent shall retain an appropriately Qualified Environmental Professional (QEP) to implement measures and standards to avoid and mitigate impacts to fish and fish habitat. The QEP shall monitor the implementation of the conditions of this authorization and shall be onsite at all times during all works, undertakings or activities below the high-water mark of fish bearing watercourses. The QEP shall ensure the measures and standards to avoid and mitigate impacts to fish and fish habitat are effective, and that no additional harm to fish and fish habitat occurs other than what is authorized herein.
- 2.2 The Proponent shall adhere to all designs and avoidance and mitigation measures outlined in the Project Plan for the protection of fish and fish habitat. In the event of a conflict between those measures and the conditions of this Authorization, the conditions of this Authorization shall prevail.
- 2.3 Works, undertakings or activities below the high-water mark of fish bearing watercourses shall be conducted during the least risk to fish work window. The least risk to fish work window is between **August 1 to September 15 of any given year.**
- 2.4 The QEP shall conduct a fish salvage(s) in fish bearing watercourses in advance of all works, undertakings or activities below the high water mark. Use low impact salvage methods such as minnow trapping and seining before using higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.
- 2.5 Sediment and erosion control: Sediment and erosion control measures must be in place and shall be monitored and maintained, such that the release of sediment is minimized or avoided at the location of the authorized works, undertakings, or activities.
- 2.6 The QEP shall carry out routine quantitative water quality monitoring (e.g., turbidity, total suspended solids) to detect increased suspended sediment within and in areas adjacent to the project footprint, during in-water works, or at any time that sediment is observed entering or being re-suspended from the project site and/or project activities and provide direction on appropriate corrective actions as needed (e.g., suspend works, maintain erosion and sediment control measures, etc.).
- 2.7 All equipment and machinery working on site shall be in good working order, maintained free of fluid leaks, invasive species, and noxious weeds.
- 2.8 Biodegradable hydraulic fluids shall be used in all equipment working in or near water.
- 2.9 Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
- 2.10 Land-based equipment is to work in the dry (i.e., from above the high-water mark, or the dry portion of the watercourse), whenever practicable.
- 2.11 Weather forecasts shall be monitored, and avoidance and mitigation measures adhered to and upgraded as needed (e.g., in advance of forecasted large precipitation events).

2.12 Measures related to the placement of materials below the high-water mark of watercourses where there is potential for fish presence or downstream fish presence:

- 2.12.1 Conduct works in the dry or in isolation of flowing water.
- 2.12.2 A QEP shall be on-site prior to start-up and for the duration of all material placement.
- 2.12.3 Material placed shall be inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.
- 2.12.4 Upon completion of the works, unimpeded fish passage is to be maintained for all species and life stages naturally present in the system at the times they are expected to use the habitat.
- 2.12.5 Material stockpile locations must be placed at an appropriate distance from any watercourse and be monitored to prevent the release of sediment into adjacent fish and fish habitat.

2.13 Contingency measures: Additional measures shall be put in place if the monitoring required in Section 3 below indicates that the measures and standards to avoid and mitigate impacts to fish and fish habitat are not successful.

2.14 Dates by which these measures and standards shall be implemented: The measures and standards to avoid and mitigate impacts to fish and fish habitat in Section 2 of this Authorization shall be implemented prior to the initiation of works, undertakings or activities.

**3. Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat:**

3.1 Monitoring of avoidance and mitigation measures: The Proponent shall retain a QEP to monitor the implementation of avoidance and mitigation measures referred to in Section 2 of this Authorization and report to DFO **within 90 days of completion** of all authorized works, undertakings or activities, and indicate whether the measures and standards to avoid and mitigate impacts to fish and fish habitat were conducted in accordance with the conditions of this Authorization. This shall be done by:

- 3.1.1 Demonstration of implementation and effectiveness of mitigation measures: This shall include, at a minimum, the following:
  - 3.1.1.1 A description of the completed authorized works, undertakings or activities, including dimensions (e.g., area, elevation, slope, etc.) and materials used;
  - 3.1.1.2 A comparison of the completed authorized works, undertakings, or activities with the design dimensions or engineering design drawings provided in the documents listed in the Project Plan;
  - 3.1.1.3 A summary of the fish salvaged. The information summarized shall include dates, number and species of individuals salvaged, holding and handling time, water temperature (watercourse and any fish holding containers), the location of salvage and relocation, and the nature of any effects on salvaged fish (death, sub-lethal harm, etc.); and
  - 3.1.1.4 Providing dated photographs and inspection reports to demonstrate implementation and results of effectiveness monitoring of mitigation measures and standards

described above, to limit the impacts to fish and fish habitat to what is authorized herein.

3.1.1.5 Contingency measures: Providing details of any contingency measures that were followed to prevent impacts greater than those covered by this Authorization in the event that mitigation measures were not effective.

3.1.1.6 As-builts: The Proponent shall provide DFO with georeferenced 'as-built' drawings and geospatial polygons that accurately represents the completed HADD footprint(s). Geospatial polygon data should be collected using WGS 1984 to four (4) decimal places (e.g., 28.5234°N, 80.6830°W). Geospatial polygon data must be supplied in Shape File (.shp, .shx, .dbf) format and .xml or .kmz format. In addition, the following data must also be supplied in an Excel file (i.e., metadata):

- HADD area per habitat type;
- Date when the HADD is completed;
- Brand name and model of the GPS unit used, the coordinate system used, and guaranteed accuracy of the GPS unit.

3.1.1.7 Report Submission: All required reports, geospatial polygons (Shape files), and Excel files are to be submitted to [ReferralsPacific@dfo-mpo.gc.ca](mailto:ReferralsPacific@dfo-mpo.gc.ca) with reference to DFO File Number: 21-HPAC-01506.

#### 4 **Conditions that relate to offsetting**

4.1 Letter of Credit: As the beneficiary of the Letter of Credit (Bank of Nova Scotia Letter of Credit Number: OSB83321VAN) provided to DFO as part of the application for this Authorization, DFO may draw upon funds available to cover the costs of implementing and maintaining the offsetting measures required to be implemented under this Authorization. This also includes the use of funds to complete monitoring measures included in Section 5 of this Authorization, in instances where the Proponent fails to implement these required measures.

4.2 Scale and description of the offsetting measures: The offsetting measures shall be on-site construction of not less than 1,535 m<sup>2</sup> of aquatic habitat within the Creek; creation of not less than 3,970 m<sup>2</sup> of off-channel aquatic habitat connected to the Creek; and 17,310 m<sup>2</sup> of riparian habitat along the Creek. The offsetting measures shall be carried out in accordance with the measures set out in the Proponent's offsetting plan, described in the Project Plan.

4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting measures: Construction of the offsetting measures (i.e., creation of aquatic habitat and riparian planting) shall be completed by **December 15, 2025**. The Proponent shall retain a QEP to conduct monitoring of the fish habitat offsetting measures for a period of ten (10) years post-completion of the offsetting described herein. The final monitoring report is due by **December 31, 2035**, at the end of the ten (10) year monitoring period (e.g., if offsetting is delayed or additional monitoring is deemed required to meet the conditions of this Authorization).

The Proponent will be considered to have met the requirements of this Authorization as it pertains to fish habitat offsetting measures according to the criteria described in the Proponent's offsetting plan and the specific criteria listed below:

##### Instream Habitat:

4.3.1 The large woody debris cluster(s) and boulder placement(s) are structurally stable with no indication of destabilization, movement, deterioration, slumping, or pockets of erosion;

- 4.3.2 The Creek substrate, pool habitat(s), and riffle habitat(s) are stable, with no wash-out, erosion or sedimentation issues;
- 4.3.3 The Creek remains consistent with the areas (footprints) and elevations as described in the as-built drawings;
- 4.3.4 Fish passage is maintained through the off channel during all flow conditions; and
- 4.3.5 Water quality (temperature, dissolved oxygen, and instream flow/discharge), as well as depth measurements (bankfull depth and wetted depth) align with those anticipated by design.

Riparian Habitat:

- 4.3.6 The riparian planting area is stable, with no erosion or sedimentation issues;
- 4.3.7 Invasive species are actively managed throughout the monitoring period, to a percent surface cover of no more than 5% in the riparian offsetting area; and
- 4.3.8 Survivorship of planted vegetation (overstory and understory) is at least 80%, by the end of the monitoring period. Plants must be healthy, and the dimensions of the riparian area shall be consistent with those of the as-built drawings. Maintenance shall be undertaken as required throughout the monitoring period, including irrigation and additional replacement planting with native species to address mortality.

- 4.4 Contingency measures: If the results of monitoring as required in Section 5 of this Authorization indicate that the offsetting measures will not be completed and/or will not meet the criteria in Condition 4.2 and 4.3 by **December 15, 2025**, the Proponent shall provide a written description of all deficiencies to DFO by **December 31, 2025**. The Proponent shall further retain a QEP to implement contingency offsetting measures and a monitoring plan, which is to be submitted to DFO by **January 31, 2026** for review and approval. The Proponent shall implement the contingency measures and associated monitoring measures for the deficient offsetting, and as set out in Section 5 of this Authorization, to ensure the implementation of the offsetting measures is completed and/or functioning as required by this Authorization.

- 4.4.1 Scale and description of contingency measures: The contingency offsetting measures shall be approved by DFO, in an amendment to this Authorization, prior to implementation. Final determination of the suitability and sufficiency of the contingency measures to offset for the harmful alteration, disruption or destruction of fish habitat, account for time lag, and/or to meet the offsetting criteria as outlined in Condition 4.2 and 4.3 of this Authorization, is at the discretion of DFO.

- 4.4.2 Monitoring measures to ensure contingency offsetting is completed and/or functioning as required: Contingency offsetting measures shall be monitored per the requirements described in the DFO approved contingency offsetting measures.

- 4.5 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

5 **Conditions that relate to monitoring and reporting of implementation of offsetting measures (described in Section 4):**

5.1 Schedule(s) and criteria: The Proponent shall retain a QEP to monitor the implementation and effectiveness of offsetting measures according to the timeline and criteria below:

5.1.1 Per Table 13 of the Project Plan, monitoring shall be conducted at a minimum of once annually for ten (10) years post construction, at a time that allows for the criteria described in Condition 4.3 of this Authorization to be assessed.

5.2 Reporting of offsetting measures: The QEP shall report to DFO on whether the offsetting measures were implemented and functioning according to the conditions of this Authorization by providing the following information to DFO:

5.2.1 Offsetting Construction: **Within 90 days** of the completion of offsetting construction, provide a written assessment to DFO on whether the offsetting measures were constructed in accordance with the conditions of this Authorization. The report(s) shall include, at a minimum, the following:

5.2.1.1 Geo-referenced 'as-built' drawing(s) of the completed offsetting measures, which shall include the elevation of offsetting components as well as bathymetry and areal footprints;

5.2.1.2 A description of the completed offsetting measures, including dimensions (e.g., area, elevation, slope, etc.), material(s) used, and the species, quantity, and density of planted vegetation;

5.2.1.3 A comparison of the completed offsetting measures with the proposed offsetting measures described in Condition 4.2 of this Authorization;

5.2.1.4 An assessment of the stability (e.g., signs of potential erosion, failure, movement, or other physical alteration that may affect stability) of the offsetting measures;

5.2.1.5 Geo-referenced and dated photographs of the offsetting areas pre-, during, and post-offset construction;

5.2.1.6 Establishment of fixed photo points that will be used to document changes of the offsetting measures over time;

5.2.1.7 Details of riparian offsetting planting species assemblage, density, and total planted areas (reported in m<sup>2</sup>);

5.2.1.8 A summary of the effectiveness of mitigation measures and standards implemented during construction of the offsetting measures; and

5.2.1.9 Recommendations as to whether additional offsetting measures are required to meet the requirements of the offsetting measures.

5.2.2 Offsetting Effectiveness: The QEP shall report to DFO on the effectiveness of the offsetting measures according to the conditions of this Authorization. Habitat Offsetting Effectiveness Monitoring Reports are required for each year of monitoring following completion of all offsetting measures per the monitoring schedule in Condition 5.1 of this Authorization. The Year 1 monitoring period shall be determined upon completion of the offsetting measures.

The reports are to be submitted to DFO by **December 31** of each monitoring year, and shall include, at a minimum, the following:

- 5.2.2.1 Updates to the geo-referenced 'as-built' drawing(s) delineating the area of the offsetting measures, including bathymetry and areal footprints, if there have been any changes to the offsetting habitats;
- 5.2.2.2 A description of the methods used to assess the habitat offsetting measures;
- 5.2.2.3 An assessment of the success (e.g., growth, density, survivorship, and functionality) of the offsetting measures (to date) in accordance with the criteria listed in Condition 4.2, 4.3 and the monitoring schedule listed in Condition 5.1 of this Authorization.
- 5.2.2.4 An assessment of the stability of the offsetting measures, identifying any signs of potential erosion, accretion, failure, movement, or other physical alteration that may affect stability;
- 5.2.2.5 Geo-referenced and dated photographs or video documenting the offsetting measures for the respective monitoring period (including at fixed photo points to document changes over time);
- 5.2.2.6 Identification of any effectiveness concerns related to the offsetting measures and a description of any remedial measures taken; and
- 5.2.2.7 The final Offsetting Effectiveness Monitoring Report (Year 10) shall include an evaluation of whether the offsetting measures undertaken counterbalance the authorized impacts to fish and fish habitat, as indicated by the achievement of all the measures described in Condition 4.2 and 4.3.

### 5.3 Other monitoring and reporting conditions for offsetting:

- 5.3.1 Provide georeferenced 'as-built' drawings and geospatial polygons that accurately represents the completed offsetting footprints. Geospatial polygon data should be collected using WGS 1984 to four (4) decimal places (e.g., 28.5234°N, 80.6830°W). Geospatial polygon data must be supplied in a Shape File (.shp, .shx, .dbf) format and .xml or .kmz format.

In addition to the geospatial polygons, the following metadata must also be supplied in an Excel (.xlsx) file format:

- Area (in m<sup>2</sup>) of offset per habitat type, based on depth during high and low water seasons (i.e. riparian, off-channel habitat);
- Date offsetting was completed, date and nature of any maintenance works completed, and date monitored; and
- Brand name and model of the GPS unit, the coordinate system used, and guaranteed accuracy of the GPS unit.

- 5.4 Report submission: All required reports, geospatial polygons (Shape files), and Excel files are to be submitted to [ReferralsPacific@dfo-mpo.gc.ca](mailto:ReferralsPacific@dfo-mpo.gc.ca), with reference to DFO File Number: 21-HPAC-01506.

## 6 Conditions that relate to reporting and engagement with Indigenous Groups:

- 6.1 In recognition of the importance of the health of the aquatic environment in the local area and associated fisheries resources to Indigenous Groups for cultural and subsistence reasons, documents, monitoring reports, plans and notifications submitted to DFO under Conditions 3, 4 and 5 of this Authorization must be shared concurrently by the Proponent with DFO and potentially affected Indigenous Groups who have requested them.
- 6.2 The Proponent shall adhere to the commitments made with Kwikwetlem First Nation regarding collaboration and involvement related to this Authorization. This may include, but is not limited to, working with the Kwikwetlem Guardian Program.

### Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this Authorization and for all design, safety, and workmanship aspects of all the works associated with this Authorization.

The holder of this Authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*, R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein. This Authorization does not purport to release the applicant from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This Authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

This Authorization does not permit the killing, harming, harassment, capture or taking of individuals of any aquatic species listed under the *Species at Risk Act* (SARA) (s. 32 of the SARA), or the damage or destruction of residence of individuals of such species (s. 33 of the SARA) or the destruction of the critical habitat of any such species (s. 58 of the SARA).

At the date of issuance of this Authorization, no individuals of aquatic species listed under the *Species at Risk Act* (SARA) were identified in the vicinity of the authorized work(s), undertaking(s) or activity(ies).

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption, or destruction of fish habitat. Such notifications should be directed to [DFO.PACViolations-InfractionsPAC.MPO@dfo-mpo.gc.ca](mailto:DFO.PACViolations-InfractionsPAC.MPO@dfo-mpo.gc.ca) and to Observe, Record, Report at 1-800-465-4336 or [DFO.ORB-ONS.MPO@dfo-mpo.gc.ca](mailto:DFO.ORB-ONS.MPO@dfo-mpo.gc.ca).

The failure to comply with any condition of this Authorization constitutes an offence under Paragraph(s) 40(3)(a) of the *Fisheries Act* and may result in charges being laid under said Act.

A copy of this Authorization should be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The Authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.



This Authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this Authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this Authorization shall advise DFO in advance.

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**Date of Issuance:** December 21, 2023

**Approved by:** Chambers, Susan  
Digitally signed by  
Chambers, Susan  
Date: 2023.12.21  
15:14:32 -08'00'

Susan Chambers  
Regional Director General  
Pacific Region  
Fisheries and Oceans Canada



November 2, 2023

Approval Number: 2008929

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

Sent via email: [mzaborniak@coquitlam.ca](mailto:mzaborniak@coquitlam.ca)

Dear City of Coquitlam,

Re: Change Approval - Changes In and About a Stream on Partington Creek at Cedar Drive

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A Change Approval for the above application has been granted and a *Water Sustainability Act* Section 11(1) Changes In and About a Stream Approval document verifying this is attached.

This Change Approval does not authorize entry onto private or Crown owned land. Permission of the affected landowner must be obtained and should be in writing for your protection.

You are reminded of your commitment to have Kwikwetlem First Nation involved in archaeological investigations for this project and use of the Kwikwetlem Guardians program during project works.

This Approval does not constitute authority of any other agency. The holder of this Approval shall have the necessary permits from other agencies concerned prior to the commencement of the works authorized herein. The permit holder is required to adhere to all other applicable Provincial and Federal Regulations.

A copy of this Approval (and associated plans/drawings listed on this Approval) must be available for inspection, upon request, at any location where the authorized changes in and about a stream are being undertaken.

This Approval requires the oversight of an appropriately Qualified Professional. For the purposes of this authorization, that professional must be registered with one of the five professional regulatory bodies named under the *Professional Governance Act* of British Columbia. They must be in good standing and acting under that professional regulatory

body's code of ethics and subject to disciplinary action by that professional regulatory body.

The holder of this Approval shall ensure that any proposed development and/or changes do not impact traditional or special sites in accordance with the *Heritage Conservation Act* or the ability of First Nation community members to participate in traditional activities on the land and water.

Archaeological sites (both recorded and unrecorded) are protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch. The holder of this Approval must advise everyone who will be involved in ground-disturbance and construction that if archaeological materials are encountered, activities must be halted, and the Archaeology Branch contacted at 250-953-3334 for direction.

Section 105 of the *Water Sustainability Act* gives the recipient of this notice the right to appeal my decision. You may file an appeal within 30 days of the date indicated on this letter. Information on filing an appeal can be found on the Environmental Appeal Board website at <http://www.eab.gov.bc.ca/>.

If you have any questions or concerns regarding the document issued or the content of this letter, please contact the South Coast Office at [WaterActReferrals.LowerMainland@gov.bc.ca](mailto:WaterActReferrals.LowerMainland@gov.bc.ca).

Sincerely,



Barbara Sutherland  
Assistant Water Manager

pc: David Neufeld | ISL Engineering and Land Services Ltd. | [dneufeld@islengineering.com](mailto:dneufeld@islengineering.com)  
Kristen Endacott | Ministry of Forests | [kristen.endacott@gov.bc.ca](mailto:kristen.endacott@gov.bc.ca)  
People of the River Referral Office (PRRO)  
Katzie First Nation  
Kwikwetlem First Nation  
Musqueam Nation  
Seabird Island  
Shxw'ow'hamel First Nation



November 2, 2023

Approval Number: 2008929

## **APPROVAL**

*WATER SUSTAINABILITY ACT* - Subsection 11(1)  
(Changes in and about a stream)

### **CITY OF COQUITLAM**

is hereby authorized to make changes in and about a stream as follows:

- (a) The names of the streams are Partington Creek and three drainage ditches (Ditches 1, 2 and 3) that flow to DeBoville Slough.
- (b) The changes to be made in and about the stream are:
  - 1. Realignment of Cedar Drive and creation of multi-use path within existing alignment.
  - 2. Isolation and temporary bypass of Partington Creek.
  - 3. Construction of one in-line sediment pond within Partington Creek.
  - 4. Construction of one off-line sediment pond adjacent to Partington Creek.
  - 5. Widen and deepen a 262-metre-long section of Partington Creek (Main channel Station 0+005 – 0+270).
  - 6. Construction of an approximately 600 metre long by 20 metre wide off-channel habitat (Off-channel Station 0+020 – 0+605) to provide enhanced rearing habitat for salmonids.
  - 7. Installation of nine (9) total concrete box culverts designed to facilitate fish passage and to connect flows of Partington Creek to the off-channel habitat.
  - 8. Installation of a 99.9 meter long 600 millimeter diameter Reinforced Concrete Culvert for bypass during maintenance.
  - 9. Infill of a portion of Class B agricultural ditches.
  - 10. Enhancement of Class B ditches converting them to Class A habitat.
  - 11. Infill of a portion of Class AO agricultural ditches.
  - 12. Enhancement of Class AO ditch converting them to Class A habitat.
  - 13. Removal of riparian areas within alignments of new Cedar Drive roadway, multi-use path, and service road near sediment pond.

14. Restoration planting of native riparian vegetation surrounding the in-line sediment pond, off-channel and Cedar Drive.
15. Installation of proposed 450 millimeter diameter PVC gravity sewer main to cross Partington Creek for the proposed development sanitary service connection at property #4189.
16. At northern extent of project, at Gilley's Trail, install an outlet structure within the off-channel connected to a new 600 millimeter concrete storm main, tie-in with existing storm main at Gilley's Trail.
17. Construction of maintenance access roads for future maintenance within the in-line and off-line sediment ponds.

All works shall occur within municipal road right-of-way allowance dedicated as Cedar Drive.

- (c) The location of the works are at the following coordinates, as provided by the applicant: 49.2908100, -122.7212400.
- (d) The works authorized in this Approval shall be completed on or before September 15, 2026.
- (e) All works associated with the Effectiveness Monitoring Plan, as outlined in clause (aa) below, shall be completed by December 1, 2036, ten years after the works are completed.
- (f) Work in the stream and stream channel shall occur only during the period of August 1 to September 15.
- (g) All works shall be completed within the designed project footprint and in accordance with the following documents. Any major changes to the design must be submitted to the Water Manager for written authorization.
  1. Fisheries Act Authorization Supplemental Information Report, dated June 2022, prepared by ISL Engineering and Land Services Ltd.
  2. "21-HPAC-01506 Response to Conveyance and Off-channel Habitat, Partington Creek, Coquitlam – Application for a Fisheries Act Authorization [Cedar Drive Relocation Project] – Application Incomplete", dated November 2022, prepared by ISL Engineering and Land Services Ltd.
  3. Environmental Management Plan Cedar Drive/Partington Creek Upgrades and Off-Channel Enhancement Habitat, dated May 2022, prepared by ISL Engineering and Land Services Ltd.
  4. Cedar Drive Upgrades – Stormwater Modelling Technical Memorandum, dated April 21, 2022, prepared by ISL Engineering and Land Services Ltd.
  5. Archaeological Resource "Chance Find Management Protocol" (CFMP) Field Manual, dated November 15, 2021, prepared by Antiquus Archaeological Consultants Ltd.

6. "Partington Creek Enhancement Habitat", Drawings 43 through 49 of 54, dated May 11, 2022, prepared by ISL Engineering and Land Services Ltd.
  7. Monitoring program for Project 21-HPAC-01506 (Partington Creek in Coquitlam), dated February 2023, prepared by ISL Engineering and Land Services Ltd.
- (h) The holder of this Approval must provide as-built drawings post-construction within 60 days of completion of the works. The drawings must include all modifications made from the initial drawings during the construction process and include justification for the modifications. The drawings must be labelled with this Approval file number and labelled in the subject line of the email and submitted to [SouthCoastWSAReporting@gov.bc.ca](mailto:SouthCoastWSAReporting@gov.bc.ca).
- (i) All work shall be carried out in accordance with the Provincial "Requirements and Best Management Practices for Making Changes In and About a Stream in B.C." (2022). The Provincial guidance document can be found at the following link: <https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/working-around-water/wsa-cias-requirements-bmps.pdf>
- (j) The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall:
1. Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.
  2. Where applicable, assist in the isolation of the stream prior to the commencement of works.
  3. Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.
  4. Supervise all instream works authorized under this Approval.
  5. When the works involve temporary diversions to isolate the work site,
    - i) Monitor all diversion works daily to ensure pumps and flow bypasses are in proper working condition;
    - ii) Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and
    - iii) Ensure fish are prevented from entering the works.
  6. When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,
    - i) Attend the site prior to conducting any instream works to complete fish and wildlife search and salvage(s);

- ii) Obtain any permits needed prior to undertaking the salvage(s); and
  - iii) Inspect the extraction area for fish stranding at least once after water levels have declined.
7. Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate must be on site during all phases of construction in and around the stream to ensure this component is upheld.
  8. Report any spills including detailed information such as time of day, staff involved, nature, cause, and degree of spill, recovery process deployed, and agencies notified.
  9. In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, an appropriately Qualified Professional must immediately mitigate the situation. Within 48 hours, each incident must be reported to the Water Manager at [SouthCoastWSAReporting@gov.bc.ca](mailto:SouthCoastWSAReporting@gov.bc.ca) with the Approval number in the subject line. The incident report shall describe mitigation measures employed and a rationale as to why works have resumed, or the next steps required before works may resume. The holder of this Approval must follow the advice of the appropriately Qualified Professional.
- (k) Work must be carried out during favourable weather and low flow.
- (l) Upon commencement of the project, the work shall be pursued to completion as quickly as possible.
- (m) All proposed works shall be completed in isolation of the stream flows.
- (n) All equipment and machinery used in or near the stream channel:
1. Must be in good operating condition and free of leaks, excess oil, and grease;
  2. Must have a spill containment kit readily accessible on-site. All staff must be trained in handling and applying a spill kit appropriately to any spills/incidents;
  3. Refueling must occur a minimum of 30 metres away from all streams; and
  4. Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and are readily or inherently biodegradable.
- (o) Any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities must be reported to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.
- (p) Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the

work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Requirements and Best Management Practices for Making Changes In and About a Stream in B.C. " (2022) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the Province of British Columbia, 1993).

- (q) Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines>) and/or the applicable Local Government Bylaw(s).

Water quality monitoring must be conducted by an appropriately Qualified Professional or a designate Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements are to be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24-hour period.

- (r) All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.
- (s) Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.
- (t) The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding. The works shall not result in depressions that have the ability to trap fish and other aquatic life.
- (u) All temporary works shall be removed on completion of the project, and the stream channel restored to its natural condition.
- (v) Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.
- (w) The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200-



year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).

- (x) Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.
- (y) The holder of this Approval shall apply for a water licence prior to completion of works issued under this approval for the long-term operation and maintenance of constructed sediment ponds.
- (z) To address the instream and riparian impacts associated with the project, the holder of this Approval must, under the supervision of an appropriately Qualified Professional, create a minimum of 3970 square meters of instream off-channel habitat and enhancement of 1535 square metres of instream habitat within Partington Creek and creation of 17310 square metres of riparian habitat along Partington Creek that is consistent with the Ministry's Environmental Mitigation Policy and Procedures and will form part of the Habitat Compensation Plan.
- (aa) The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. This includes the monitoring and maintenance of works, and implementation of any adaptive management measures.

The effectiveness monitoring term required for this Approval is 10 consecutive years following the completion of construction. Effectiveness Monitoring Reports must be submitted by December 1 of each calendar year for the duration of monitoring to [SouthCoastWSAReporting@gov.bc.ca](mailto:SouthCoastWSAReporting@gov.bc.ca). The reports and subject line of the email must be labelled with this Approval file number.

The reports must include:

1. Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole

guards, respectively. Additional watering may be required during sustained hot and dry periods.

2. Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.
3. Seasonal observation records of fish and amphibian presence, including species composition and periodicity, time of year monitoring took place, and assessment of if and how the observations meet target values for that stream.
4. Assessment of fish stranding (direct observations of stranding, or potential stranding sites) within the newly constructed channel. Where stranding is, or is suspected to be, a problem, an appropriately Qualified Professional must provide solutions which are to be implemented by the holder of this Approval and described in the reports.
5. Summary detailing the monitoring, maintenance, and implementation of any adaptive management measures undertaken, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.
6. Water quality monitoring including but not limited to temperature, pH, and Dissolved Oxygen.
7. Monitoring of water levels including water depth, water flow and discharge.

The final monitoring report must include a signed statement from the appropriately Qualified Professional outlining the rationale for concluding monitoring or, if applicable, the next steps required before restoration works are considered functioning as intended. The holder of this Approval must follow the advice of the appropriately Qualified Professional.

Sincerely,



Barbara Sutherland  
Assistant Water Manager



February 1, 2024

Our File: 08-3060-20/23 118057 DP/1

Doc #: 5173702.v1

Nadeem Kazmi  
Contract Administrator, Engineering & Public Works  
City of Coquitlam  
3000 Guildford Way,  
Coquitlam, BC V3B 7N2

Via email: [nkazmi@coquitlam.ca](mailto:nkazmi@coquitlam.ca)

Dear Nadeem Kazmi:

**RE: Signed Cedar Drive Road Upgrade Project – Watercourse Protection Development Permit  
(23 118057 DP)**

City staff have authorized issuance of Development Permit 23 118057 DP, a signed copy of which is enclosed for your information and records. A copy of the validated Performance Agreement will be provided under separate cover.

The land must be developed in accordance with the plans described in the attached Permit. Any proposed changes to the development require the submission of revised plans and are to be reviewed by City staff.

Under Section 4 of the Development Permit, the City may approve minor variations that do not substantially alter the work referred to in Section 3 of the Permit. Submission of plans on any proposed alterations must be made before they are carried out on-site.

A Notice of Permit will be registered with the Land Title Office.

If you require further information with regard to the above, please contact me at 604-927-3413 or [hohndorf@coquitlam.ca](mailto:hohndorf@coquitlam.ca).

Yours truly,

A handwritten signature in black ink that reads "Hagen Hohndorf". The signature is written in a cursive, flowing style.

Hagen Hohndorf, R.P.Bio.  
Environmental Coordinator

HH/Attach.

# ***Appendix C - Environmental Management Plan***



City of Coquitlam

Environmental Management Plan for Tender

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Cedar Drive Upgrades: Phase 1 Partington Creek  
Conveyance Improvements Project

April 2024





ISL Engineering and Land Services Ltd. is an award-winning full-service consulting firm dedicated to working with all levels of government and the private sector to deliver planning and design solutions for transportation, water, and land projects.





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## LIST OF SCHEDULES

Schedule 1 – DFO Authorization

Schedule 2 – MWLRS Change Approval

Schedule 3 - City of Coquitlam's Stream and Drainage System Protection Bylaw No. 4403, 2013

Schedule 4 – Sample Project Contact List

Schedule 5 – Reference Sample Spill Response Plan and Flowchart

Schedule 6 – Spill Reporting Regulation List of Reportable Quantities





## 1.0 Environmental Management Plan Purpose

The enclosed Environmental Management Plan (EMP) represents the City of Coquitlam's and Designer's (ISL Engineering and Land Services Ltd. (ISL) environmental commitments associated with the Cedar Drive Upgrades – Phase 1: Partington Creek Conveyance Improvements Project (PCCIP).

Phase 1 of the PCCIP involves the following instream and off-channel construction components:

- Site isolation and bypass
- Removal of existing channelized streams and ditches
- Excavation of off channel segments
- Installation of stream and drainage culverts
- Installation of streambed and boulder
- Installation of LWD and CWD
- Slope stabilization
- Riparian vegetation restoration
- Maintenance and watering

The EMP outlines expectations for the Contractor's delivery of environmental impact mitigation, construction impact mitigation, and offset construction by the Contractor. The EMP cites regulatory Change Approvals and Authorizations issued for the project and also cites well-known best management practices (BMPs) for instream and near-stream work.

Phase I of the PCCIP requires instream work within fish-bearing ditches and channelized streams south of Partington Creek. Key mitigatory measures have been developed to minimize impacts to the fisheries resource have been incorporated within the engineering and landscape design for environmental protection, mitigation and/or Offsetting. The provisions of the EMP are supplemental to MMCD Environmental Specifications and as such are Contractor 'mandatories'; the EMP forms part of the contract documents for this project. The Contractor must read and understand the environmental obligations contained within the EMP and consequently the Contract.

Prospective Contractors are advised to **carefully review this EMP** before they submit responses to the tender, to ensure they have adequately captured environmental protection, impact mitigation and offsetting requirements for this project.





## 2.0 Project Background

The PCCIP consists of conveyance improvements within and adjacent to Lower Partington Creek in Coquitlam, BC (**Figure 1**). Future project phases will also include road and infrastructure improvements associated with the relocation of Cedar Drive.

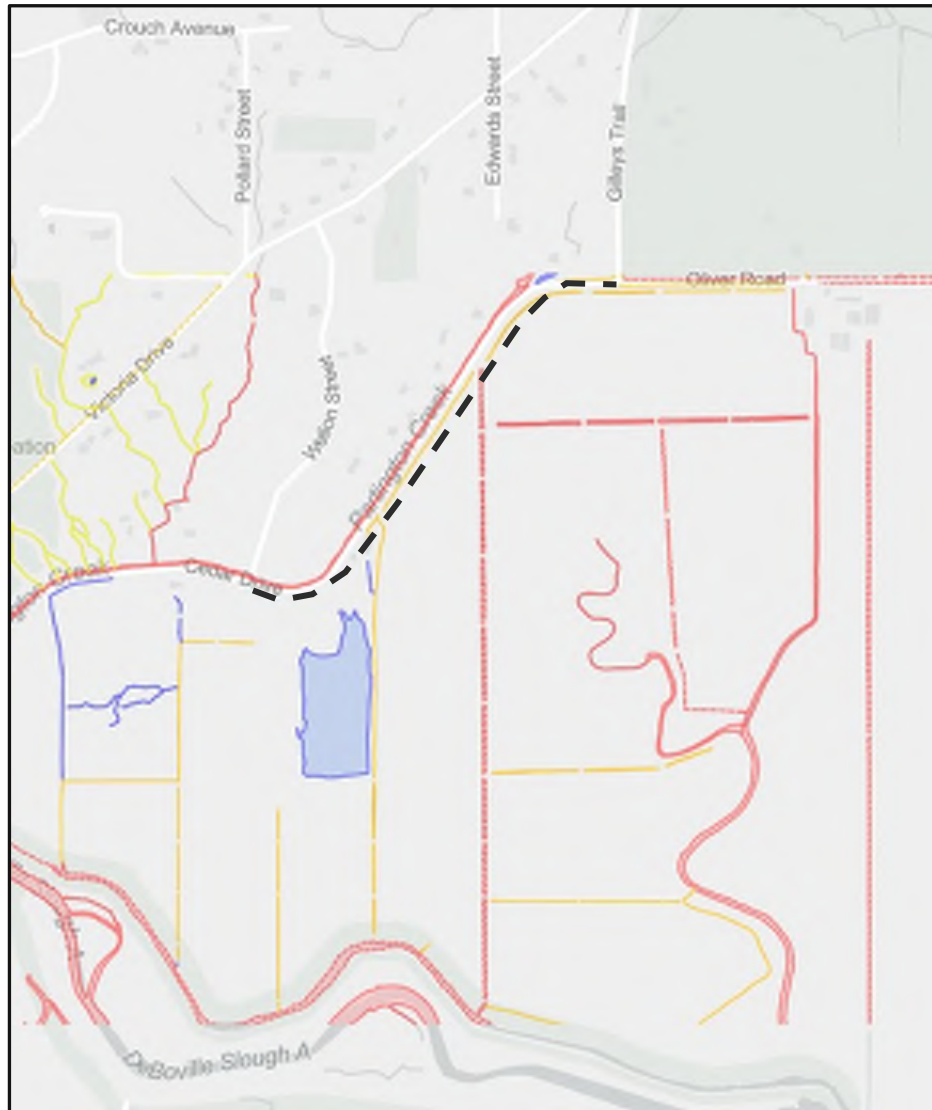


Figure 1. Key map showing the general location of the proposed Partington Creek Conveyance Improvements Project (Source City of Coquitlam QtheMap, 2024).

A key fish protection measure will be to complete site isolation and instream works during the specified instream work window (August 1 to September 15) utilizing known best practices for mitigating construction related impacts to fish, wildlife and vegetation habitats. Non-instream project components may be undertaken outside of the specified work window.

Partington Creek is a fish-bearing stream that drains into the Pitt River via DeBoville Slough. The stream supports salmonids (including coho, chum, rainbow trout and cutthroat trout). Ditches and channelized streams south of Cedar Drive are known to support fish during certain times of the year and otherwise were considered by the



province and DFO to provide fish habitat. The Fisheries Act, provincial Water Sustainability Act, Wildlife Act and Environmental Management Act apply to activities associated with this phase.

### 3.0 Project Environmental Approvals and Permits

- Fisheries and Oceans Canada (DFO) has issued an Authorization for this Project (**Schedule 1**), as the project is considered to result in harmful alteration disruption or destruction (HADD) of fish habitat.
- The Ministry of Forests (but currently referenced as the Ministry of Water Land Resource Stewardship [MWLRS], has issued a Change Approval for this project per Section 11 of the Water Sustainability Act (**Schedule 2**).

The project needs to be constructed in a manner that prevents erosion and sediment deposition that otherwise meets discharge criteria set out in the City of Coquitlam's "Stream and Drainage System Protection Bylaw No. 4403, 2013" (**Schedule 3**).

- The Contractor must review the Authorization issued by DFO to understand the environmental protection and mitigation requirements they are required to deploy to meet Authorization conditions: 1, 2.2, 2.3, 2.5, 2.7, 2.8, 2.9, 2.1, 2.11, 2.12, 4.3.1, 4.3.2, 4.3.3, 4.3.5, 4.3.6, 4.3.7, 4.3.8.
- The Contractor must review the Change Approval issued by the province to understand the environmental protection and mitigation requirements they are required to deploy to meet conditions: f, l, k, l, m, n, o, p, r u, x,
- Where there are differences in interpretation of the Change Approval and/or Authorization conditions and this EMP, the conditions of the Change Approval and Authorization will supercede those within this EMP.
- The regulatory approvals listed above, and the information within this EMP and regulatory submissions made on behalf of the project outline the minimum mitigative measures and BMP's for addressing construction related impacts.

### 4.0 Contractor's Instream Work Window

- Instream works under this contract will be completed per the timing windows set out in the DFO Authorization and WSA Change Approval, that is between the periods of August 1st to September 15.
- The Contractor should not rely on a fish window extension when planning their instream work schedule and instream work beyond September 15<sup>th</sup> as this may not be approved by the regulatory agencies.

### 5.0 Environmental Monitoring and Reporting

A qualified, experienced, Environmental Monitor (EM) will be provided by Owner for the project.

- The Contractor **is not required** to provide their own EM for this project.
- Prior to any work on the site a second field pre-construction meeting will be held amongst the EM, Contract Administrator, and Contractor's Site Supervisor (or Foreman) and to walk the site and identified site specific risks, schedule, and constraints.
- Environmental Monitoring will be full-time during any instream activities, and during any sensitive near-stream activity. Otherwise, part-time periodic monitoring will be undertaken.



- The EM will:
  - Complete a Contractor Environmental Orientation Record form signed by both the Contractor and EM.
  - Be provided by the City of Coquitlam, the authority to modify or halt any construction activity if deemed necessary for protection of fish and wildlife populations or their habitats.
  - Complete requisite nesting bird surveys.
  - Identify whether the Contractor's mitigatory measures meet the requirements of environmental regulatory Authorizations, Change Approvals, this EMP and applicable environmental best practices (BMP's).
  - Ensure that applicable best practices for erosion and sediment control are deployed consistent with the City of Coquitlam's Stream and Drainage System Protection Bylaw No. 4403, 2013.
  - Report to the environmental regulatory agencies with jurisdiction as required by the Ministry of Water Land Natural Resource Stewardship, and Fisheries and Oceans Canada (DFO).
  - Report environmental incidents or non-compliance to the Contract Administrator (CA), Contractor Site Supervisor, and external agencies with jurisdiction.
  - Require that the Contractor have on site all documentation regarding environmental mitigation and environmental approvals (i.e. this EMP must be kept on site with any environmental approvals issued for the project).
  - Provide written field inspection memoranda to the Contractor's Site Supervisor and CA. These will indicate whether work is compliant with the regulatory approvals EMP, and CoQ ESC bylaw.
  - At the completion of this project, the EM will complete and submit a copy of a post construction report consistent with the recommended standard format to the CA, MWLRS, and City. The report will document that construction has been completed and will document any difficulties encountered during the project.
  - Not consider the project to be complete and in compliance with best practices for mitigating the works if there are any outstanding proposed mitigative measures.

## 6.0 Fish Salvage/Fish Isolation Fencing

- Fish salvage will be provided by ISL. The Contractor **is not required** to retain a qualified environmental professional (QEP) to complete fish salvages prior to instream or near-stream works.
- The Contractor will provide 10 days advance notice to the CA, of the date that they intend to commence instream work. The CA will notify the fish salvage crew when notice by Contractor is given.
- ISL will install fish fencing upstream and downstream of instream work areas, and then fish will be removed from the work area.
- The fish salvage crew will issue a written report to the Contractor indicating the fish species and numbers of fish 'salvaged' by their operations, and outlining whether the fish salvage is complete.



- The Contractor must not commence instream works until fish salvage is complete.
- The Contractor must not undertake any work that will disturb this isolation fish fencing.
- Re-installation of fish fencing damaged inadvertently by the Contractor and fish fence debris removal is the responsibility of the Contractor throughout the duration of site isolation.
- Should the contractor lose site isolation (due to storms or by damaging the fish fence) the Contractor will be responsible for the costs associated with procuring a QEP to repeat the fish salvage.

## 7.0 Contractor's Bypass Requirements

- All instream works, are to be completed "in the dry"; that is in isolation of flowing water.
- A full stream bypass /sump needs to be designed, developed and deployed by the Contractor concurrent with site isolation, and fully maintained throughout the duration of a particular phase of instream works.
- Bypass directs clean water from upstream of the site, around the worksite, discharging this same water to the stream channel immediately downstream of the isolated site to maintain downstream flows and to prevent dewatering of fish-bearing habitat.
- In conditions of zero discharge, the Contractor may not have to install a bypass, but will need to have bypass materials on hand in the event of inclement weather leading to a dry ditch or channel surcharging.
- Where used, the bypass discharge location must be adequately armored or otherwise protected so that the channel bed is not scoured or disrupted or the banks not eroded.
- The Contractor is wholly responsible for developing and maintaining a bypass system in functioning condition throughout the period the watercourse will be bypassed; the isolated site must not be allowed to flood when the Contractor is offsite (i.e. overnight and weekends).
- Should the Contractor adopt a pump based bypass system, fish screen mesh minimum opening on the pump intake will be not less than 2.54 mm.
- Fish screen size and method of affixing to the bypass intake must permit adequate water throughput.
- The Contractor is responsible for maintaining the pump system in working order and cleaning intake screens.
- The Contractor must ensure that they have adequate bypass capacity to bypass flow for the duration of work at a specific location and address contingencies such as rainfall and pump malfunction.
- Flooding of the works due to inadequate bypass provisions is not acceptable, and daily shutdown allowing the worksite to flood is also prohibited.
- Should the Contractor's bypass system fail and this loss of bypass functionality results in an environmental incident (discharge of turbid water, death of fish, alteration of downstream fish habitat) then the Contractor is solely responsible for all costs associated with assessing, cleaning, mitigating, restoring that fish habitat along



with costs associated with addressing DFO Director's Order, Orders by a Fisheries Officer, or a provincial Conservation Officer.

- The Contractor would also be responsible for penalties that may be administered under the project contract provisions.
- The Contract Administrator will accept no claims from the Contractor for direct or indirect costs associated with the loss of site isolation during the project. A failure to plan, with the resultant loss of site isolation, is not the basis for Changed Condition claims.

## 8.0 Contractor's Site Isolation Requirements

The Contractor is responsible for installing quality, functioning site isolation upstream and downstream of culverts to control water entry and egress from the constructed off-channel features.

- The site isolation technique utilized must be "substantially leak free".
- "Substantially leak free" will be defined using two parameters:

1. Water passing through, around or under the isolation barrier	< 100 litres/minute
2. Water turbidity discharged from the isolated work site to fish habitat	< 25 NTU

- If one or both of these parameters cannot be met, then the EM will have the authority to shut-down the works, and direct the Contractor to make adjustments to site isolation.
- Should the Contractor lose site isolation and the loss of site isolation result in an environmental incident (discharge of turbid water, death of fish, alteration of downstream fish habitat) then the Contractor is solely responsible for all costs associated with assessing, cleaning, mitigating, restoring that fish habitat along with costs associated with addressing DFO Director's Orders or Orders by a Fisheries Officer or provincial Conservation Officer.
- The Contractor would also be responsible for their loss of profit associated with penalties that may be administered under the project contract provisions. The Contract Administrator will accept no claims from the Contractor for direct or indirect costs associated with the loss of site isolation during the project.

## 9.0 Contractor's Trash-Pumping Requirements

- During excavation within the isolated worksite, it is likely that subsurface water or water that leaks through the isolation wall will accumulate within the work zone.
- The water accumulating in the work site is usually very turbid, and cannot be discharged to streams or ditches as they may contain fish or may connect to fish habitat.
- This water needs to be removed from the worksite before it accumulates to depth and floods the works.
- A 'trash pump' is usually deployed to draw this sediment-laden water from the work site and dispose of the sediment-laden water in a manner that prevents discharge of sediment-laden water to fish habitat.
- The Contractor must plan and prepare a viable means of controlling and/or treating sediment-laden trash water. **Sediment laden water cannot be discharged back into Partington Creek, ditches or channelized streams.**



- Techniques for the effective control of sediment laden water from a trash-pump system may include:
  - Construction of an appropriately sized sediment control basin or dewatering basin (onsite or with approval of adjacent landowners).
  - Getting permission from landowners to pump sediment-laden water to dry areas well away from Partington Creek.
  - Use of sediment sacks with flocculants.
  - Use of portable sediment treatment systems (i.e. Stormguard, Storm-tech, Filter-tech etc.),
  - Use of other systems the Contractor will warrant as being effective.
- The City's Stream and Drainage System Protection Bylaw Number 4403, 2013 prohibits discharge of sediment laden water exceeding 25 NTU during normal weather conditions and 100 NTU within 24 hours of a significant rain event (where a significant rain event is  $\geq 25$  mm rain/24 hours)
- The Contractor will be required to modify their trash-pump sediment control system in the event that discharge to fish habitat exceeds 25 NTU.
- Notwithstanding the 25 NTU discharge requirements set out in the City's bylaw, should turbid water from the trash-pump system exceed 100 NTU at its point of discharge to fish habitat, an Environment Incident will be deemed to have occurred.
- Should such an Environmental Incident occur, the incident will immediately be reported to the CA and Contractor's Site Supervisor and pumping ceased until situation is mitigated.
- The Contractor would be responsible for their loss of profit associated with deductions that may be administered under the project contract provisions. The Contract Administrator will accept no claims from the Contractor for direct or indirect costs associated with exceedances of turbidity thresholds.
- The Contractor's costs or schedule delays associated with a shutdown of this kind will be the sole responsibility of the Contractor.
- The local shutdown will not be lifted until the trash-pump discharge is brought into compliance with the Contract and this EMP.

## 10.0 Contractor's Erosion and Sediment Control Requirements

### 10.1 Erosion and sediment control discharge limits

Per City's Stream and Drainage System Protection Bylaw Number 4403, 2013, discharge limits for the project are the following:

- Turbidity cannot exceed 25 Nephelometric Turbidity Units (NTUs) under normal weather conditions,
- Turbidity cannot exceed 100 NTUs during and 24 hours after a Significant Rainfall Event (25mm or greater of rainfall within 24 hours).
- pH values must remain within 6.5 to 8.0 throughout development.





## 10.2 Erosion and Sediment Control General Requirements

A reference Erosion and Sediment Control Plan has been prepared for the project and is included in the Contract drawings. To meet the City's bylaw discharge requirements the Contractor shall employ the following measures consistent with the ESC Plan:

- Obtain sufficient quantities of polyethylene sheeting and sandbags necessary to cover exposed cutslopes and secure that material from wind.
- Leave undisturbed native vegetation wherever possible.
- Stabilize all disturbed slopes, watercourse banks, and ground surfaces that may contribute sediment-laden water into sensitive fish habitats during precipitation events.
- Complete construction in a manner that will prevent the release of sediment or sediment-laden waters to the watercourses, ditches, and swales draining to fish habitat.
- Install rock access pad(s) will be installed and maintained at all egress points from unpaved terrain to asphalt.
- Avoid tracking of sediments to roads.
- Sweep the roads daily to prevent accumulation of sediment.
- Ensure that ESC control materials and labour required to install the measures is onsite, available for deployment prior to the commencement of rain.
- Repair ESC measures immediately if any damage occurs such that erosion and sediment control is compromised.
- Complete work as quickly as possible once started.
- Maintain effective erosion and sediment control measures throughout the construction period until revegetation of disturbed areas is achieved.
- Suspend work during substantial rainfall. The Contractor will establish rainfall shutdown guidelines prior to the commencement of construction.
- Prevent debris from entering ditches or streams that have not been isolated from flowing water.

## 11.0 The Contractor's Non-Hazardous Waste Handling Requirements

- The Contractor will supply trash cans for the disposal of crew generated wastes.
- These locations will be developed and identified in the field.
- There will be no disposal of solid wastes into sumps, ditches, streams, culverts, road edges or private property.
- Littering is prohibited and monitoring for this activity will be on-going throughout the project.
- There will be no onsite burial of anthropogenic works.
- Waste will be disposed of at an licensed dump facilities.



## 12.0 The Contractor's Requirements to Minimize Dust and Air Pollution

- The Contractor will control dust generation throughout the project on an as-needed basis.
- Dust control will be through the application of water from a truck-mounted unit.
- Water application must not be so heavy such that it floods the road surface and leads to the discharge of sediment-laden water to ditches and streams that provide fish habitat.
- The Contractor will avoid excessive vehicle idling.
- Personal vehicles; light diesel truck must not be left unoccupied and idling for more than 1 minute.
- Heavy machinery must not be left unoccupied and idling for more than 5 minutes.

## 13.0 Contractor's Hydrocarbon Wastes and Fuel Spill Mitigation Measures

- The Contractor will prepare a Spill Response Plan for review by the Contract Administrator/Owner's Environmental at least 14 days prior to construction.
- The Spill Response Plan (SRP) must include a Project Contact List similar to that shown in **Schedule 4** and include an Incident Response and flow chart similar to that shown in **Schedule 5**.
- The SRP must include provisions to:
  - Store fuel and hydrocarbon-based lubricants in designated storage areas >30 m from streams and ditches.
  - Prevent the discharge of hydrocarbons (oils, fuel, grease, lubricants, anti-freeze), concrete, grouts, construction wastes, or other deleterious substances to fish habitat or to the ground.
  - Prevent oil, grease, or any other substances deleterious to aquatic life from entering any watercourse, ditch, or storm sewer.
  - Avoid damaging buried infrastructure (**CALL BEFORE YOU DIG**)
  - Avoid refueling within 30 m of a stream or ditch.
  - Ensuring refueling attendants maintain a hand on the refuelling hose at all times (i.e. ensuring attendants do not lock the hose and attend to other matters while refueling operations are underway).
  - Inspect equipment and machines that are utilized onsite will be delivered to the site in clean, good operating condition.
  - Provide dedicated waste receptacles for hydrocarbons and lubricant fouled waste material, concrete, and other potentially deleterious wastes.
  - Provide secondary containment for fuel and chemical containers with 125% capacity of the primary storage container.
  - Deploy drip trays beneath machinery to catch drips and leaks.
  - Deploy spill containment, control and clean-up materials in the event of a spill.
  - Act quickly and effectively should a spill occur.





- Report per the Environmental Management Act - Spill Reporting Regulation (**Schedule 6**)
- Restock spill kits within 48 hours of a spill.
- The SRP must be posted on the board or near the refueling facility.
- The Contractor is wholly responsible for costs associated with clean-up of spills originating from their equipment or work practices and with any regulatory penalties, orders or charges stemming from a spill originating from their equipment or work processes.

## 14.0 Contaminated Soil Management Requirements and Contractor's Soil Management Responsibilities

Soil was not sampled and tested for potential concern, as risks of encountering contaminants associated with existing agricultural use were thought to be low. None-the-less, during Phase 1 construction the contractor may encounter soil contaminated by historic anthropogenic activities and/or soil contaminated by naturally elevated metals, salts and organics.

- Some contaminant constituents are associated with visual or olfactory cues which can help identify risk.
- During excavation, the EM and Contractor will independently assess the removed fill material for visual or olfactory indicators of contamination, including:
  - Dark, wet, or oily soil that is accompanied by an unnatural odor,
  - Soil with an unnatural color, texture, or smell that is indicative of the presence of contaminants,
  - Debris or buried containers that may have contained chemicals or hazardous materials (i.e. steel drums, automotive parts, tanks, or barrels).
- If suspect soil with olfactory or visual cues of contamination are encountered, excavation should cease at that location until the EM is able to categorize the material with respect to whether it is waste material, material suitable for reuse onsite or material suitable for transport and reuse on another parcel with appropriate land use designation.
- The Contractor would not be responsible for costs associated with categorization of this material. The Contractor would not be responsible for costs associated with disposal of Industrial Use Standard (IL+) soil. This material would be covered under Contract provisions for Concealed or Unknown Conditions.

However, not all contaminants can be identified by visual or olfactory means. Excavation of the off-channel and deactivation of existing buried utilities is likely to create the potential for generating excess spoil that has no overt evidence of contamination (i.e. no obvious olfactory or visual cues). The Contractor is responsible for identifying offsite recipient location(s) that will accept soils up to the (IL), for soils which may have to be transported offsite. The Contractor may also identify recipient sites that will accept donor soils that that fall within the Agricultural Use Standard (AL).

- If excess material is to be hauled offsite for disposal at a recipient site, then the Contractor is responsible for retaining a Qualified Professional (Engineer, Geoscientist, Rostered



Professional) who specializes in contaminated soil categorization, management and transportation of contaminated soil, that cannot be identified as 'suspect' by visual or olfactory cues.

- The categorization of soil, handling, transport, reporting and disposal required by the Contractor's recipient sites must be in accordance with the BC Environmental Management Act (EMA) and its Regulations (Contaminated Sites Regulation; Hazardous Waste Regulation), as well as the Workers Compensation Act.
- Suspect material identified by the Contractor's QP, may be categorized in situ or ex situ. For ex-situ testing, soil would need to be stockpiled on polyethylene sheeting (6 mil or greater) at least 15 metres from ditches, drainages and catchbasins.
- Each stockpile needs to be fully covered to prevent transport of pollutants from the stockpile to the environment. The plastic sheeting needs to be weighted to prevent the cover from being blown off during windy weather.
- Irrespective of whether the Contractor's QP uses in-situ, ex-situ categorization methods, the Contractor's QEP will be responsible for undertaking their work in compliance with legislative requirements, established Guidance Documents and established Protocols to develop a statistically defensible categorization program.
- The Contractor's QP will need to maintain records of contaminants, soil, volumes, classification, disposal records, chain of custody, and any Notices or Instruments with which they have responsibility.
- Japanese knotweed is present on the site, but has been treated with herbicide in advance. The Contractor needs to identify a disposal site that will accept soil that has had knotweeds growing in and around it, but which have had advanced treatment to kill the knotweed.

## 15.0 Contractor's Hazardous Material Management

The following measures need to be implemented by the Contractor prior to and / or during the works.

- All materials must be properly stored, contained and labelled in accordance with relevant acts and regulations.
- In the event of a hydrocarbon spill the absorbent materials or soils saturated with oil (> 3% by mass) or gasoline are classified as Hazardous Waste. The Contractor's SRP must document the procedure for categorizing and disposing of Hazardous Waste generated by their activities at the site.
- If any hazardous materials are generated at the site, the material must be labeled in accordance with the Transportation of Dangerous Goods (TDG) regulations.
- The *BC Hazardous Waste Regulations* and the federal *Transportation of Dangerous Goods Regulation* must be adhered to with respect to storage, transportation, and disposal of hazardous wastes.



- Should the Contractor generate hazardous wastes through any activity, process or malfunction associated with project construction, the Contractor is responsible for identifying licensed facilities who will accept that waste and transporting that waste to the licensed facility. Costs associated with managing and transporting of hazardous wastes generated by the Contractor's activities are the sole responsibility of the Contractor.



## Schedule 1

### DFO Authorization





## Paragraphs 34.4(2)(b) and 35(2)(b) *Fisheries Act* Authorization

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### Authorization issued to

City of Coquitlam (*hereafter referred to as the "Proponent"*)

Attention to: Nadeem Kazmi

3000 Guildford Way  
Coquitlam, BC V3B 7N2

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### Location of Proposed Project

Nearest community:	Coquitlam
Municipality:	City of Coquitlam
Province:	British Columbia
Name of watercourse:	Partington Creek
UTM Coordinates:	Between 10U 519940 m E 5459588 m N and 10U 520547 m E 5460066 m N

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### Valid Authorization Period

This Authorization remains in force from the **Date of Issuance** until **December 31, 2036**.

Please note that this Authorization may contain more specific timing requirements and limitations. These are set out in the Conditions of Authorization section.

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### Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

- The installation of new sanitary and water main infrastructure, which includes in-line and off-line sediment ponds; infilling of agricultural ditches; and riparian vegetation removal; associated with the realignment and raising of Cedar Drive in Coquitlam, BC.

The project is described in the following documents, hereafter referred to as the "Project Plan":

- Partington Creek Conveyance and Off-channel Habitat Project – *Fisheries Act Authorization Application Form* dated December 17, 2021, prepared by ISL Engineering and Land Services. (ISL); and
- *Rev.02 Supplementary Report* dated August 17, 2023, prepared by ISL.

**Description of Authorized works, undertakings or activities likely to result in the harmful alteration, disruption, or destruction (HADD) of fish habitat:**

The works, undertakings, or activities associated with the proposed project described above, that are likely to result in the harmful alteration, disruption, or destruction of fish habitat, are:

- Construction of an in-line sediment pond within Partington Creek (the Creek);
- Construction of an off-line sediment pond adjacent to the Creek; and
- Infilling of three (3) agricultural ditches located directly south of the Creek.

**The authorized works, undertakings, or activities are likely to result in the following impacts to fish and fish habitat:**

Partington Creek:

- Harmful alteration, disruption or destruction (HADD) of not more than 915 m<sup>2</sup> of aquatic habitat below the high-water mark, comprised of an in-line sediment pond within the Creek (315 m<sup>2</sup>) and an off-line sediment pond adjacent to the Creek (600 m<sup>2</sup>); and
- HADD of not more than 7,700 m<sup>2</sup> of riparian habitat above the high-water mark.

Agricultural Ditches:

- HADD of not more than 2,066 m<sup>2</sup> of aquatic habitat below the high-water mark, comprised of infilling two (2) non-fish bearing ditches (1,250 m<sup>2</sup>) and one (1) seasonally fish-bearing ditch (810 m<sup>2</sup>); and
- HADD of not more than 2,060 m<sup>2</sup> of riparian habitat above the high-water mark.

The works, undertakings, or activities associated with the proposed project described above, are not expected to result in death of fish provided that avoidance and mitigation measures described in the Project Plan and outlined in the Conditions of Authorization below are effectively implemented. Any death of fish resulting from this project should be demonstrated to have been unavoidable or accidental. DFO should be notified immediately in such circumstances via an email to [DFO.PACViolations-InfractionsPAC.MPO@dfompo.gc.ca](mailto:DFO.PACViolations-InfractionsPAC.MPO@dfompo.gc.ca) and to Observe, Record, Report at 1-800-465-4336 or [DFO.ORD-ONS.MPO@dfo-mpo.gc.ca](mailto:DFO.ORD-ONS.MPO@dfo-mpo.gc.ca).

**Conditions of Authorization**

The above-described works, undertakings or activities must be carried on in accordance with the following conditions.

**1. Conditions that relate to the period during which the works, undertakings or activities can be carried on:**

The works, undertakings or activities are authorized to be carried on during the following period:

**FROM: Date of Issuance                      TO: December 15, 2025**

If the Proponent cannot complete the works, undertakings or activities during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above period. An application for amendment, suspension or cancellation of the Authorization should be submitted to DFO.

The periods during which other conditions of this Authorization must be complied with are provided in their respective sections below.

**2. Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat:**

- 2.1 Qualified Environmental Professional: The Proponent shall retain an appropriately Qualified Environmental Professional (QEP) to implement measures and standards to avoid and mitigate impacts to fish and fish habitat. The QEP shall monitor the implementation of the conditions of this authorization and shall be onsite at all times during all works, undertakings or activities below the high-water mark of fish bearing watercourses. The QEP shall ensure the measures and standards to avoid and mitigate impacts to fish and fish habitat are effective, and that no additional harm to fish and fish habitat occurs other than what is authorized herein.
- 2.2 The Proponent shall adhere to all designs and avoidance and mitigation measures outlined in the Project Plan for the protection of fish and fish habitat. In the event of a conflict between those measures and the conditions of this Authorization, the conditions of this Authorization shall prevail.
- 2.3 Works, undertakings or activities below the high-water mark of fish bearing watercourses shall be conducted during the least risk to fish work window. The least risk to fish work window is between **August 1 to September 15 of any given year.**
- 2.4 The QEP shall conduct a fish salvage(s) in fish bearing watercourses in advance of all works, undertakings or activities below the high water mark. Use low impact salvage methods such as minnow trapping and seining before using higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.
- 2.5 Sediment and erosion control: Sediment and erosion control measures must be in place and shall be monitored and maintained, such that the release of sediment is minimized or avoided at the location of the authorized works, undertakings, or activities.
- 2.6 The QEP shall carry out routine quantitative water quality monitoring (e.g., turbidity, total suspended solids) to detect increased suspended sediment within and in areas adjacent to the project footprint, during in-water works, or at any time that sediment is observed entering or being re-suspended from the project site and/or project activities and provide direction on appropriate corrective actions as needed (e.g., suspend works, maintain erosion and sediment control measures, etc.).
- 2.7 All equipment and machinery working on site shall be in good working order, maintained free of fluid leaks, invasive species, and noxious weeds.
- 2.8 Biodegradable hydraulic fluids shall be used in all equipment working in or near water.
- 2.9 Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
- 2.10 Land-based equipment is to work in the dry (i.e., from above the high-water mark, or the dry portion of the watercourse), whenever practicable.
- 2.11 Weather forecasts shall be monitored, and avoidance and mitigation measures adhered to and upgraded as needed (e.g., in advance of forecasted large precipitation events).

2.12 Measures related to the placement of materials below the high-water mark of watercourses where there is potential for fish presence or downstream fish presence:

- 2.12.1 Conduct works in the dry or in isolation of flowing water.
- 2.12.2 A QEP shall be on-site prior to start-up and for the duration of all material placement.
- 2.12.3 Material placed shall be inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.
- 2.12.4 Upon completion of the works, unimpeded fish passage is to be maintained for all species and life stages naturally present in the system at the times they are expected to use the habitat.
- 2.12.5 Material stockpile locations must be placed at an appropriate distance from any watercourse and be monitored to prevent the release of sediment into adjacent fish and fish habitat.

2.13 Contingency measures: Additional measures shall be put in place if the monitoring required in Section 3 below indicates that the measures and standards to avoid and mitigate impacts to fish and fish habitat are not successful.

2.14 Dates by which these measures and standards shall be implemented: The measures and standards to avoid and mitigate impacts to fish and fish habitat in Section 2 of this Authorization shall be implemented prior to the initiation of works, undertakings or activities.

**3. Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat:**

3.1 Monitoring of avoidance and mitigation measures: The Proponent shall retain a QEP to monitor the implementation of avoidance and mitigation measures referred to in Section 2 of this Authorization and report to DFO **within 90 days of completion** of all authorized works, undertakings or activities, and indicate whether the measures and standards to avoid and mitigate impacts to fish and fish habitat were conducted in accordance with the conditions of this Authorization. This shall be done by:

- 3.1.1 Demonstration of implementation and effectiveness of mitigation measures: This shall include, at a minimum, the following:
  - 3.1.1.1 A description of the completed authorized works, undertakings or activities, including dimensions (e.g., area, elevation, slope, etc.) and materials used;
  - 3.1.1.2 A comparison of the completed authorized works, undertakings, or activities with the design dimensions or engineering design drawings provided in the documents listed in the Project Plan;
  - 3.1.1.3 A summary of the fish salvaged. The information summarized shall include dates, number and species of individuals salvaged, holding and handling time, water temperature (watercourse and any fish holding containers), the location of salvage and relocation, and the nature of any effects on salvaged fish (death, sub-lethal harm, etc.); and
  - 3.1.1.4 Providing dated photographs and inspection reports to demonstrate implementation and results of effectiveness monitoring of mitigation measures and standards



described above, to limit the impacts to fish and fish habitat to what is authorized herein.

3.1.1.5 Contingency measures: Providing details of any contingency measures that were followed to prevent impacts greater than those covered by this Authorization in the event that mitigation measures were not effective.

3.1.1.6 As-builts: The Proponent shall provide DFO with georeferenced 'as-built' drawings and geospatial polygons that accurately represents the completed HADD footprint(s). Geospatial polygon data should be collected using WGS 1984 to four (4) decimal places (e.g., 28.5234°N, 80.6830°W). Geospatial polygon data must be supplied in Shape File (.shp, .shx, .dbf) format and .xml or .kmz format. In addition, the following data must also be supplied in an Excel file (i.e., metadata):

- HADD area per habitat type;
- Date when the HADD is completed;
- Brand name and model of the GPS unit used, the coordinate system used, and guaranteed accuracy of the GPS unit.

3.1.1.7 Report Submission: All required reports, geospatial polygons (Shape files), and Excel files are to be submitted to [ReferralsPacific@dfo-mpo.gc.ca](mailto:ReferralsPacific@dfo-mpo.gc.ca) with reference to DFO File Number: 21-HPAC-01506.

#### 4 **Conditions that relate to offsetting**

4.1 Letter of Credit: As the beneficiary of the Letter of Credit (Bank of Nova Scotia Letter of Credit Number: OSB83321VAN) provided to DFO as part of the application for this Authorization, DFO may draw upon funds available to cover the costs of implementing and maintaining the offsetting measures required to be implemented under this Authorization. This also includes the use of funds to complete monitoring measures included in Section 5 of this Authorization, in instances where the Proponent fails to implement these required measures.

4.2 Scale and description of the offsetting measures: The offsetting measures shall be on-site construction of not less than 1,535 m<sup>2</sup> of aquatic habitat within the Creek; creation of not less than 3,970 m<sup>2</sup> of off-channel aquatic habitat connected to the Creek; and 17,310 m<sup>2</sup> of riparian habitat along the Creek. The offsetting measures shall be carried out in accordance with the measures set out in the Proponent's offsetting plan, described in the Project Plan.

4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting measures: Construction of the offsetting measures (i.e., creation of aquatic habitat and riparian planting) shall be completed by **December 15, 2025**. The Proponent shall retain a QEP to conduct monitoring of the fish habitat offsetting measures for a period of ten (10) years post-completion of the offsetting described herein. The final monitoring report is due by **December 31, 2035**, at the end of the ten (10) year monitoring period (e.g., if offsetting is delayed or additional monitoring is deemed required to meet the conditions of this Authorization).

The Proponent will be considered to have met the requirements of this Authorization as it pertains to fish habitat offsetting measures according to the criteria described in the Proponent's offsetting plan and the specific criteria listed below:

##### Instream Habitat:

4.3.1 The large woody debris cluster(s) and boulder placement(s) are structurally stable with no indication of destabilization, movement, deterioration, slumping, or pockets of erosion;

- 4.3.2 The Creek substrate, pool habitat(s), and riffle habitat(s) are stable, with no wash-out, erosion or sedimentation issues;
- 4.3.3 The Creek remains consistent with the areas (footprints) and elevations as described in the as-built drawings;
- 4.3.4 Fish passage is maintained through the off channel during all flow conditions; and
- 4.3.5 Water quality (temperature, dissolved oxygen, and instream flow/discharge), as well as depth measurements (bankfull depth and wetted depth) align with those anticipated by design.

Riparian Habitat:

- 4.3.6 The riparian planting area is stable, with no erosion or sedimentation issues;
- 4.3.7 Invasive species are actively managed throughout the monitoring period, to a percent surface cover of no more than 5% in the riparian offsetting area; and
- 4.3.8 Survivorship of planted vegetation (overstory and understory) is at least 80%, by the end of the monitoring period. Plants must be healthy, and the dimensions of the riparian area shall be consistent with those of the as-built drawings. Maintenance shall be undertaken as required throughout the monitoring period, including irrigation and additional replacement planting with native species to address mortality.

- 4.4 Contingency measures: If the results of monitoring as required in Section 5 of this Authorization indicate that the offsetting measures will not be completed and/or will not meet the criteria in Condition 4.2 and 4.3 by **December 15, 2025**, the Proponent shall provide a written description of all deficiencies to DFO by **December 31, 2025**. The Proponent shall further retain a QEP to implement contingency offsetting measures and a monitoring plan, which is to be submitted to DFO by **January 31, 2026** for review and approval. The Proponent shall implement the contingency measures and associated monitoring measures for the deficient offsetting, and as set out in Section 5 of this Authorization, to ensure the implementation of the offsetting measures is completed and/or functioning as required by this Authorization.

- 4.4.1 Scale and description of contingency measures: The contingency offsetting measures shall be approved by DFO, in an amendment to this Authorization, prior to implementation. Final determination of the suitability and sufficiency of the contingency measures to offset for the harmful alteration, disruption or destruction of fish habitat, account for time lag, and/or to meet the offsetting criteria as outlined in Condition 4.2 and 4.3 of this Authorization, is at the discretion of DFO.

- 4.4.2 Monitoring measures to ensure contingency offsetting is completed and/or functioning as required: Contingency offsetting measures shall be monitored per the requirements described in the DFO approved contingency offsetting measures.

- 4.5 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

5 **Conditions that relate to monitoring and reporting of implementation of offsetting measures (described in Section 4):**

5.1 Schedule(s) and criteria: The Proponent shall retain a QEP to monitor the implementation and effectiveness of offsetting measures according to the timeline and criteria below:

5.1.1 Per Table 13 of the Project Plan, monitoring shall be conducted at a minimum of once annually for ten (10) years post construction, at a time that allows for the criteria described in Condition 4.3 of this Authorization to be assessed.

5.2 Reporting of offsetting measures: The QEP shall report to DFO on whether the offsetting measures were implemented and functioning according to the conditions of this Authorization by providing the following information to DFO:

5.2.1 Offsetting Construction: **Within 90 days** of the completion of offsetting construction, provide a written assessment to DFO on whether the offsetting measures were constructed in accordance with the conditions of this Authorization. The report(s) shall include, at a minimum, the following:

5.2.1.1 Geo-referenced 'as-built' drawing(s) of the completed offsetting measures, which shall include the elevation of offsetting components as well as bathymetry and areal footprints;

5.2.1.2 A description of the completed offsetting measures, including dimensions (e.g., area, elevation, slope, etc.), material(s) used, and the species, quantity, and density of planted vegetation;

5.2.1.3 A comparison of the completed offsetting measures with the proposed offsetting measures described in Condition 4.2 of this Authorization;

5.2.1.4 An assessment of the stability (e.g., signs of potential erosion, failure, movement, or other physical alteration that may affect stability) of the offsetting measures;

5.2.1.5 Geo-referenced and dated photographs of the offsetting areas pre-, during, and post-offset construction;

5.2.1.6 Establishment of fixed photo points that will be used to document changes of the offsetting measures over time;

5.2.1.7 Details of riparian offsetting planting species assemblage, density, and total planted areas (reported in m<sup>2</sup>);

5.2.1.8 A summary of the effectiveness of mitigation measures and standards implemented during construction of the offsetting measures; and

5.2.1.9 Recommendations as to whether additional offsetting measures are required to meet the requirements of the offsetting measures.

5.2.2 Offsetting Effectiveness: The QEP shall report to DFO on the effectiveness of the offsetting measures according to the conditions of this Authorization. Habitat Offsetting Effectiveness Monitoring Reports are required for each year of monitoring following completion of all offsetting measures per the monitoring schedule in Condition 5.1 of this Authorization. The Year 1 monitoring period shall be determined upon completion of the offsetting measures.

The reports are to be submitted to DFO by **December 31** of each monitoring year, and shall include, at a minimum, the following:

- 5.2.2.1 Updates to the geo-referenced 'as-built' drawing(s) delineating the area of the offsetting measures, including bathymetry and areal footprints, if there have been any changes to the offsetting habitats;
- 5.2.2.2 A description of the methods used to assess the habitat offsetting measures;
- 5.2.2.3 An assessment of the success (e.g., growth, density, survivorship, and functionality) of the offsetting measures (to date) in accordance with the criteria listed in Condition 4.2, 4.3 and the monitoring schedule listed in Condition 5.1 of this Authorization.
- 5.2.2.4 An assessment of the stability of the offsetting measures, identifying any signs of potential erosion, accretion, failure, movement, or other physical alteration that may affect stability;
- 5.2.2.5 Geo-referenced and dated photographs or video documenting the offsetting measures for the respective monitoring period (including at fixed photo points to document changes over time);
- 5.2.2.6 Identification of any effectiveness concerns related to the offsetting measures and a description of any remedial measures taken; and
- 5.2.2.7 The final Offsetting Effectiveness Monitoring Report (Year 10) shall include an evaluation of whether the offsetting measures undertaken counterbalance the authorized impacts to fish and fish habitat, as indicated by the achievement of all the measures described in Condition 4.2 and 4.3.

### 5.3 Other monitoring and reporting conditions for offsetting:

- 5.3.1 Provide georeferenced 'as-built' drawings and geospatial polygons that accurately represents the completed offsetting footprints. Geospatial polygon data should be collected using WGS 1984 to four (4) decimal places (e.g., 28.5234°N, 80.6830°W). Geospatial polygon data must be supplied in a Shape File (.shp, .shx, .dbf) format and .xml or .kmz format.

In addition to the geospatial polygons, the following metadata must also be supplied in an Excel (.xlsx) file format:

- Area (in m<sup>2</sup>) of offset per habitat type, based on depth during high and low water seasons (i.e. riparian, off-channel habitat);
- Date offsetting was completed, date and nature of any maintenance works completed, and date monitored; and
- Brand name and model of the GPS unit, the coordinate system used, and guaranteed accuracy of the GPS unit.

- 5.4 Report submission: All required reports, geospatial polygons (Shape files), and Excel files are to be submitted to [ReferralsPacific@dfo-mpo.gc.ca](mailto:ReferralsPacific@dfo-mpo.gc.ca), with reference to DFO File Number: 21-HPAC-01506.

## 6 Conditions that relate to reporting and engagement with Indigenous Groups:

- 6.1 In recognition of the importance of the health of the aquatic environment in the local area and associated fisheries resources to Indigenous Groups for cultural and subsistence reasons, documents, monitoring reports, plans and notifications submitted to DFO under Conditions 3, 4 and 5 of this Authorization must be shared concurrently by the Proponent with DFO and potentially affected Indigenous Groups who have requested them.
- 6.2 The Proponent shall adhere to the commitments made with Kwikwetlem First Nation regarding collaboration and involvement related to this Authorization. This may include, but is not limited to, working with the Kwikwetlem Guardian Program.

### Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this Authorization and for all design, safety, and workmanship aspects of all the works associated with this Authorization.

The holder of this Authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*, R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein. This Authorization does not purport to release the applicant from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This Authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

This Authorization does not permit the killing, harming, harassment, capture or taking of individuals of any aquatic species listed under the *Species at Risk Act* (SARA) (s. 32 of the SARA), or the damage or destruction of residence of individuals of such species (s. 33 of the SARA) or the destruction of the critical habitat of any such species (s. 58 of the SARA).

At the date of issuance of this Authorization, no individuals of aquatic species listed under the *Species at Risk Act* (SARA) were identified in the vicinity of the authorized work(s), undertaking(s) or activity(ies).

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption, or destruction of fish habitat. Such notifications should be directed to [DFO.PACViolations-InfractionsPAC.MPO@dfo-mpo.gc.ca](mailto:DFO.PACViolations-InfractionsPAC.MPO@dfo-mpo.gc.ca) and to Observe, Record, Report at 1-800-465-4336 or [DFO.ORB-ONS.MPO@dfo-mpo.gc.ca](mailto:DFO.ORB-ONS.MPO@dfo-mpo.gc.ca).

The failure to comply with any condition of this Authorization constitutes an offence under Paragraph(s) 40(3)(a) of the *Fisheries Act* and may result in charges being laid under said Act.

A copy of this Authorization should be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The Authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

This Authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this Authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this Authorization shall advise DFO in advance.

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**Date of Issuance:** December 21, 2023

**Approved by:** Chambers, Susan  
Digitally signed by  
Chambers, Susan  
Date: 2023.12.21  
15:14:32 -08'00'

Susan Chambers  
Regional Director General  
Pacific Region  
Fisheries and Oceans Canada



## **Schedule 2**

### Water Sustainability Act Change Approval





November 2, 2023

Approval Number: 2008929

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

Sent via email: [mzaborniak@coquitlam.ca](mailto:mzaborniak@coquitlam.ca)

Dear City of Coquitlam,

Re: Change Approval - Changes In and About a Stream on Partington Creek at Cedar Drive

A Change Approval for the above application has been granted and a *Water Sustainability Act* Section 11(1) Changes In and About a Stream Approval document verifying this is attached.

This Change Approval does not authorize entry onto private or Crown owned land. Permission of the affected landowner must be obtained and should be in writing for your protection.

You are reminded of your commitment to have Kwikwetlem First Nation involved in archaeological investigations for this project and use of the Kwikwetlem Guardians program during project works.

This Approval does not constitute authority of any other agency. The holder of this Approval shall have the necessary permits from other agencies concerned prior to the commencement of the works authorized herein. The permit holder is required to adhere to all other applicable Provincial and Federal Regulations.

A copy of this Approval (and associated plans/drawings listed on this Approval) must be available for inspection, upon request, at any location where the authorized changes in and about a stream are being undertaken.

This Approval requires the oversight of an appropriately Qualified Professional. For the purposes of this authorization, that professional must be registered with one of the five professional regulatory bodies named under the *Professional Governance Act* of British Columbia. They must be in good standing and acting under that professional regulatory



body's code of ethics and subject to disciplinary action by that professional regulatory body.

The holder of this Approval shall ensure that any proposed development and/or changes do not impact traditional or special sites in accordance with the *Heritage Conservation Act* or the ability of First Nation community members to participate in traditional activities on the land and water.

Archaeological sites (both recorded and unrecorded) are protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch. The holder of this Approval must advise everyone who will be involved in ground-disturbance and construction that if archaeological materials are encountered, activities must be halted, and the Archaeology Branch contacted at 250-953-3334 for direction.

Section 105 of the *Water Sustainability Act* gives the recipient of this notice the right to appeal my decision. You may file an appeal within 30 days of the date indicated on this letter. Information on filing an appeal can be found on the Environmental Appeal Board website at <http://www.eab.gov.bc.ca/>.

If you have any questions or concerns regarding the document issued or the content of this letter, please contact the South Coast Office at [WaterActReferrals.LowerMainland@gov.bc.ca](mailto:WaterActReferrals.LowerMainland@gov.bc.ca).

Sincerely,



Barbara Sutherland  
Assistant Water Manager

pc: David Neufeld | ISL Engineering and Land Services Ltd. | [dneufeld@islengineering.com](mailto:dneufeld@islengineering.com)  
Kristen Endacott | Ministry of Forests | [kristen.endacott@gov.bc.ca](mailto:kristen.endacott@gov.bc.ca)  
People of the River Referral Office (PRRO)  
Katzie First Nation  
Kwikwetlem First Nation  
Musqueam Nation  
Seabird Island  
Shxw'ow'hamel First Nation



November 2, 2023

Approval Number: 2008929

## **APPROVAL**

*WATER SUSTAINABILITY ACT* - Subsection 11(1)  
(Changes in and about a stream)

### **CITY OF COQUITLAM**

is hereby authorized to make changes in and about a stream as follows:

- (a) The names of the streams are Partington Creek and three drainage ditches (Ditches 1, 2 and 3) that flow to DeBoville Slough.
- (b) The changes to be made in and about the stream are:
  - 1. Realignment of Cedar Drive and creation of multi-use path within existing alignment.
  - 2. Isolation and temporary bypass of Partington Creek.
  - 3. Construction of one in-line sediment pond within Partington Creek.
  - 4. Construction of one off-line sediment pond adjacent to Partington Creek.
  - 5. Widen and deepen a 262-metre-long section of Partington Creek (Main channel Station 0+005 – 0+270).
  - 6. Construction of an approximately 600 metre long by 20 metre wide off-channel habitat (Off-channel Station 0+020 – 0+605) to provide enhanced rearing habitat for salmonids.
  - 7. Installation of nine (9) total concrete box culverts designed to facilitate fish passage and to connect flows of Partington Creek to the off-channel habitat.
  - 8. Installation of a 99.9 meter long 600 millimeter diameter Reinforced Concrete Culvert for bypass during maintenance.
  - 9. Infill of a portion of Class B agricultural ditches.
  - 10. Enhancement of Class B ditches converting them to Class A habitat.
  - 11. Infill of a portion of Class AO agricultural ditches.
  - 12. Enhancement of Class AO ditch converting them to Class A habitat.
  - 13. Removal of riparian areas within alignments of new Cedar Drive roadway, multi-use path, and service road near sediment pond.

14. Restoration planting of native riparian vegetation surrounding the in-line sediment pond, off-channel and Cedar Drive.
15. Installation of proposed 450 millimeter diameter PVC gravity sewer main to cross Partington Creek for the proposed development sanitary service connection at property #4189.
16. At northern extent of project, at Gilley's Trail, install an outlet structure within the off-channel connected to a new 600 millimeter concrete storm main, tie-in with existing storm main at Gilley's Trail.
17. Construction of maintenance access roads for future maintenance within the in-line and off-line sediment ponds.

All works shall occur within municipal road right-of-way allowance dedicated as Cedar Drive.

- (c) The location of the works are at the following coordinates, as provided by the applicant: 49.2908100, -122.7212400.
- (d) The works authorized in this Approval shall be completed on or before September 15, 2026.
- (e) All works associated with the Effectiveness Monitoring Plan, as outlined in clause (aa) below, shall be completed by December 1, 2036, ten years after the works are completed.
- (f) Work in the stream and stream channel shall occur only during the period of August 1 to September 15.
- (g) All works shall be completed within the designed project footprint and in accordance with the following documents. Any major changes to the design must be submitted to the Water Manager for written authorization.
  1. Fisheries Act Authorization Supplemental Information Report, dated June 2022, prepared by ISL Engineering and Land Services Ltd.
  2. "21-HPAC-01506 Response to Conveyance and Off-channel Habitat, Partington Creek, Coquitlam – Application for a Fisheries Act Authorization [Cedar Drive Relocation Project] – Application Incomplete", dated November 2022, prepared by ISL Engineering and Land Services Ltd.
  3. Environmental Management Plan Cedar Drive/Partington Creek Upgrades and Off-Channel Enhancement Habitat, dated May 2022, prepared by ISL Engineering and Land Services Ltd.
  4. Cedar Drive Upgrades – Stormwater Modelling Technical Memorandum, dated April 21, 2022, prepared by ISL Engineering and Land Services Ltd.
  5. Archaeological Resource "Chance Find Management Protocol" (CFMP) Field Manual, dated November 15, 2021, prepared by Antiquus Archaeological Consultants Ltd.

6. "Partington Creek Enhancement Habitat", Drawings 43 through 49 of 54, dated May 11, 2022, prepared by ISL Engineering and Land Services Ltd.
  7. Monitoring program for Project 21-HPAC-01506 (Partington Creek in Coquitlam), dated February 2023, prepared by ISL Engineering and Land Services Ltd.
- (h) The holder of this Approval must provide as-built drawings post-construction within 60 days of completion of the works. The drawings must include all modifications made from the initial drawings during the construction process and include justification for the modifications. The drawings must be labelled with this Approval file number and labelled in the subject line of the email and submitted to [SouthCoastWSAReporting@gov.bc.ca](mailto:SouthCoastWSAReporting@gov.bc.ca).
- (i) All work shall be carried out in accordance with the Provincial "Requirements and Best Management Practices for Making Changes In and About a Stream in B.C." (2022). The Provincial guidance document can be found at the following link: <https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/working-around-water/wsa-cias-requirements-bmps.pdf>
- (j) The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The Qualified Professional shall:
1. Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.
  2. Where applicable, assist in the isolation of the stream prior to the commencement of works.
  3. Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.
  4. Supervise all instream works authorized under this Approval.
  5. When the works involve temporary diversions to isolate the work site,
    - i) Monitor all diversion works daily to ensure pumps and flow bypasses are in proper working condition;
    - ii) Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the "Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater" (Fisheries and Oceans Canada, 2020); and
    - iii) Ensure fish are prevented from entering the works.
  6. When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians,
    - i) Attend the site prior to conducting any instream works to complete fish and wildlife search and salvage(s);

- ii) Obtain any permits needed prior to undertaking the salvage(s); and
  - iii) Inspect the extraction area for fish stranding at least once after water levels have declined.
7. Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate must be on site during all phases of construction in and around the stream to ensure this component is upheld.
  8. Report any spills including detailed information such as time of day, staff involved, nature, cause, and degree of spill, recovery process deployed, and agencies notified.
  9. In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, an appropriately Qualified Professional must immediately mitigate the situation. Within 48 hours, each incident must be reported to the Water Manager at [SouthCoastWSAReporting@gov.bc.ca](mailto:SouthCoastWSAReporting@gov.bc.ca) with the Approval number in the subject line. The incident report shall describe mitigation measures employed and a rationale as to why works have resumed, or the next steps required before works may resume. The holder of this Approval must follow the advice of the appropriately Qualified Professional.
- (k) Work must be carried out during favourable weather and low flow.
  - (l) Upon commencement of the project, the work shall be pursued to completion as quickly as possible.
  - (m) All proposed works shall be completed in isolation of the stream flows.
  - (n) All equipment and machinery used in or near the stream channel:
    1. Must be in good operating condition and free of leaks, excess oil, and grease;
    2. Must have a spill containment kit readily accessible on-site. All staff must be trained in handling and applying a spill kit appropriately to any spills/incidents;
    3. Refueling must occur a minimum of 30 metres away from all streams; and
    4. Must use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and are readily or inherently biodegradable.
  - (o) Any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities must be reported to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.
  - (p) Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care shall be exercised during all phases of the

work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances. All control measures must meet or surpass the Provincial "Requirements and Best Management Practices for Making Changes In and About a Stream in B.C. " (2022) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the Province of British Columbia, 1993).

- (q) Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines>) and/or the applicable Local Government Bylaw(s).

Water quality monitoring must be conducted by an appropriately Qualified Professional or a designate Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements are to be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24-hour period.

- (r) All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.
- (s) Site preparation and construction of the works is to be carried out from the banks of the stream, thus minimizing disturbance to the stream.
- (t) The holder of this Approval shall ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding. The works shall not result in depressions that have the ability to trap fish and other aquatic life.
- (u) All temporary works shall be removed on completion of the project, and the stream channel restored to its natural condition.
- (v) Vegetation along the banks of the stream shall be disturbed as little as possible. All disturbed areas must be restored using native vegetation that is suitable for the site conditions.
- (w) The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200-

year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).

- (x) Rock used as riprap shall be clean of any substances deleterious to aquatic life and shall be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works shall be clean of any substances deleterious to aquatic life.
- (y) The holder of this Approval shall apply for a water licence prior to completion of works issued under this approval for the long-term operation and maintenance of constructed sediment ponds.
- (z) To address the instream and riparian impacts associated with the project, the holder of this Approval must, under the supervision of an appropriately Qualified Professional, create a minimum of 3970 square meters of instream off-channel habitat and enhancement of 1535 square metres of instream habitat within Partington Creek and creation of 17310 square metres of riparian habitat along Partington Creek that is consistent with the Ministry's Environmental Mitigation Policy and Procedures and will form part of the Habitat Compensation Plan.
- (aa) The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. This includes the monitoring and maintenance of works, and implementation of any adaptive management measures.

The effectiveness monitoring term required for this Approval is 10 consecutive years following the completion of construction. Effectiveness Monitoring Reports must be submitted by December 1 of each calendar year for the duration of monitoring to [SouthCoastWSAReporting@gov.bc.ca](mailto:SouthCoastWSAReporting@gov.bc.ca). The reports and subject line of the email must be labelled with this Approval file number.

The reports must include:

1. Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole

November 2, 2023

Job Number: 118928  
File Number: 2008929

guards, respectively. Additional watering may be required during sustained hot and dry periods.

2. Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.
3. Seasonal observation records of fish and amphibian presence, including species composition and periodicity, time of year monitoring took place, and assessment of if and how the observations meet target values for that stream.
4. Assessment of fish stranding (direct observations of stranding, or potential stranding sites) within the newly constructed channel. Where stranding is, or is suspected to be, a problem, an appropriately Qualified Professional must provide solutions which are to be implemented by the holder of this Approval and described in the reports.
5. Summary detailing the monitoring, maintenance, and implementation of any adaptive management measures undertaken, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.
6. Water quality monitoring including but not limited to temperature, pH, and Dissolved Oxygen.
7. Monitoring of water levels including water depth, water flow and discharge.

The final monitoring report must include a signed statement from the appropriately Qualified Professional outlining the rationale for concluding monitoring or, if applicable, the next steps required before restoration works are considered functioning as intended. The holder of this Approval must follow the advice of the appropriately Qualified Professional.

Sincerely,



Barbara Sutherland  
Assistant Water Manager





**Schedule 3**  
City of Coquitlam Stream and Drainage System  
Protection Bylaw No. 4403, 2013.





## BYLAW NO. 4403, 2013

Consolidated with amendments in Bylaw Nos. 4606, 2015; 5273, 2022

**NOTE: This is a consolidation for convenience purposes only and does not have the force of law.**

A Bylaw to protect the stream and drainage systems in the City of Coquitlam

### WHEREAS:

- A. The *Community Charter*, S.B.C. 2003, c. 26 (the “*Community Charter*”) authorizes Council to regulate, prohibit and impose requirements in relation to the protection of the natural environment;
- B. The *Community Charter* authorizes Council to prohibit a person from fouling, obstructing or impeding the flow of a stream, creek, waterway, waterworks, ditch, drain or sewer;
- C. The *Community Charter* authorize Council to require works and services for drainage collection and disposal; and
- D. Council deems it in the best interests of the environmental well-being of the community that streams, creeks, waterways, watercourses, ditches, drains and sewers are protected from pollution, obstructions, sediment, and sediment laden water,

NOW THEREFORE, the Council of the City of Coquitlam, in open meeting lawfully assembled, ENACTS AS FOLLOWS:

### 1 Name of Bylaw

This Bylaw may be cited for all purposes as the “Stream and Drainage System Protection Bylaw No. 4403, 2013”.

### 2 Interpretation

- 2.1 In this Bylaw, unless the context otherwise requires, the following words have the following meanings:

**CITY** means the City of Coquitlam;

**CONSTRUCTION** means erecting buildings and structures, and installing or repairing services, utilities and other engineering works, and includes but is not limited to, clearing, grading, excavating, filling, soil deposition or removal, landscaping, and land development, but does not include an activity that will not result in the disruption of any soil;

**DEVELOPMENT** means a subdivision or any *Construction* for which a building permit, conservation permit, development permit or tree cutting permit is required and shall also include the demolition of a building or structure where a demolition permit is required;

**DEVELOPER** means an owner, as defined in the Local Government Act, R.S.B.C. 1996, c. 323, who subdivides land, or applies for a building permit, conservation permit, development permit, tree cutting permit, demolition permit and includes a duly authorized representative of the Owner;

**DRAINAGE SYSTEM** means any natural, designed, constructed or installed system or network of streams, creeks, waterways, watercourses, waterworks, ditches, drains or sewers located in the City on private or public property that conveys, or is capable of conveying, drainage or runoff.

**DELETERIOUS SUBSTANCE** has the same meaning as defined in the *Fisheries Act*, R.S.C. 1985, c. F-14, as amended.

**EROSION AND SEDIMENT CONTROL (ESC) FACILITIES** means all erosion and sediment control works, measures, facilities and methods constructed, installed or employed to reduce the likelihood of sediment and sediment laden water reaching the *Drainage System* during all stages of *Development*.

**EROSION AND SEDIMENT CONTROL (ESC) PLAN** means the specifications, drawings, plans, phased *Development* schedules and design calculations of a Professional Engineer or Certified Professional in Erosion and Sediment Control in accordance with Schedule B of this Bylaw.

**EROSION AND SEDIMENT CONTROL (ESC) SUBMISSION FORM** means the documentation and related submission requirements in the format prescribed for that purpose by the *Manager*.

**EROSION AND SEDIMENT CONTROL (ESC) SUPERVISOR** means a *Qualified Professional* who is experienced in implementing *ESC Plans* and who is responsible for the inspection and monitoring of *ESC Facilities* to ensure these are installed and maintained in accordance with the *ESC Plan*, and if necessary, are modified during *Development* to ensure compliance with the requirements of this Bylaw;

**MANAGER** means the General Manager of Engineering and Public Works or his or her designates;

**PRE-DEVELOPMENT APPROVAL** means *City* acceptance to proceed with *Development* following an on site meeting involving City staff, the *ESC Supervisor* and the *Developer*;

**QUALIFIED PROFESSIONAL** means an individual, whether acting alone or together with another Qualified Professional, who:

- (a) is registered, in good standing, and acting under the Code of Ethics, of one or more of the following professional organizations: Association of Professional Engineers and Geoscientists of BC; Association of BC Forest Professionals; College of Applied Biology; Applied Science Technologists and Technicians of BC; BC Institute of Agrologists; EnviroCert International (Certified Professional in Erosion and Sediment Control); or BC Society of Landscape Architects,
- (b) is registered, in good standing, and acting under the Code of Ethics of the Erosion and Sediment Control Association of British Columbia,
- (c) has an area of expertise that is recognized in the field of Erosion and Sediment Control as one that is acceptable for the purpose of providing all or part of the design, inspection and monitoring of *ESC Facilities*; and
- (d) is acting within their area of expertise;

**REAL-TIME MONITORING FACILITIES** means the facilities described in Schedule “D”.

**SIGNIFICANT RAINFALL EVENT** means any precipitation event, which meets or exceeds the intensity of 25 mm per 24 hour period;

**TURBIDITY** means the measurement of the suspended particulate matter in water, which affects the clarity or degree of transparency of the water by interfering with the passage of a beam of light through the water. Turbidity values are generally reported in Nephelometric Turbidity Units (NTU);

**WASTE** has the same meaning as defined in the *Environmental Management Act*, S.B.C 2003, c. 53, as amended.

### 3 Prohibition of Discharge

- 3.1 No person shall obstruct or impede the flow of the *Drainage System*.
- 3.2 No person shall place, store, transport or dispose of any *Waste* or *Deleterious Substance* in such manner, so as to permit the likely escape of the materials into the *Drainage System*, or any part of it.
- 3.3 No person shall cause or permit to be released, directly or indirectly into the *Drainage System* any *Waste* or *Deleterious Substance*.

- 3.4 Without limiting the generality of s.3.3, no person shall cause or permit to be released, directly or indirectly into the *Drainage System* any sediment, earth, *Construction* or excavation wastes, cement, concrete, or other substances, which when mixed with water, will result in:
- 3.4.1 a pH value outside the range of 6.5 to 8.0; or
  - 3.4.2 a discharge exceeding a Turbidity level of 25 NTU, except during and for 24 hours following a Significant Rainfall Event a discharge exceeding 100 NTU.
- 3.5 If during any *Construction* work, any *Waste, Deleterious Substance*, or water that exceeds the limits outlined in s.3.4, is being released directly or indirectly into the *Drainage System*, or otherwise impedes the *Drainage System* as described in s.3.1, the *Developer* performing the work must immediately notify the *City*, as well as the appropriate Federal and Provincial agencies.

#### **4 Erosion and Sediment Control (ESC) Requirements**

- 4.1 Every person who proposes to carry out *Development* under a building permit for single family or duplex residential dwellings shall first before carrying out any *Development* on the land:
- 4.1.1 submit a completed and signed *ESC Submission Form* in the format prescribed for that purpose by the *Manager*;
  - 4.1.2 submit a non-refundable Infrastructure Inspection Fee as specified in the City of Coquitlam *Fees and Charges Bylaw, No. 4338, 2012* as amended; and
  - 4.1.3 install the minimum *ESC Facilities* identified in Schedule A, and ensure these are maintained in good working order during all phases of *Development*.
- 4.2 Every person who proposes to carry out *Development* other than Section 4.1 shall first before carrying out any *Development* on the land:
- 4.2.1 submit to the *City* a completed and signed *ESC Submission Form* in the format prescribed for that purpose by the *Manager*, accompanied by:
    - 4.2.1.1 an *ESC Plan* in accordance with Schedule “B” and, if applicable, Schedule “D” of this Bylaw, and to the acceptance of the *Manager*;
    - 4.2.1.2 a certified cost estimate for the *ESC Facilities* design, installation, monitoring, and maintenance;

- 4.2.1.3 a non-refundable Administration and Inspection Fee as specified in the City of Coquitlam *Subdivision and Development Servicing Bylaw, No. 3558, 2003* as amended; and
- 4.2.1.4 security deposit in accordance with Section 7;
- 4.2.2 post on the land, advisory signage, in the format prescribed for that purpose by the *Manager*; and
- 4.2.3 obtain *Pre-Development Approval* from the *Manager*.
- 4.2.4 install the *ESC Facilities* identified in an approved *ESC Plan* including, but not limited to, the minimum *ESC Facilities* identified in Schedule A, and ensure these are maintained in good working order during all phases of *Development*.
- 4.2.5 for *Developments* identified in Section 1 Application of Schedule “D”, install the *Real-Time Monitoring Facilities* and ensure these are maintained in good working order during all phases of *Development*.
- 4.3 Notwithstanding the provisions of Sections 4.1 and 4.2, in the case of *Development* under a building permit for single family or duplex residential dwellings, the *Manager* may require a *Developer* to comply with one or more of the requirements of Section 4.2 where the *Manager* considers this necessary for the protection of the *Drainage System*.

## **5 Exemptions From Erosion and Sediment Control (ESC) Submission Requirements**

- 5.1 The *Manager* may waive one or more of the requirements of section 4.2 where in the opinion of the *Manager* the proposed *Development* is in response to an emergency, or can be shown to the *Manager’s* satisfaction to have no negative impact on the *Drainage System*.

## **6 Erosion and Sediment Control (ESC) Implementation, Monitoring and Maintenance Requirements**

- 6.1 Every person who proposes to carry out *Development* is responsible to ensure the site is in compliance with the Bylaw for the duration of *Development*, which includes ensuring that all *ESC Facilities* and *Real-Time Monitoring Facilities* are constructed, installed, implemented, and maintained for the duration of *Development*.
- 6.2 Where the requirements of section 4.2 apply, the *Developer* must:
  - 6.2.1 appoint an *ESC Supervisor* who is a *Qualified Professional* trained in implementing *ESC Plans*;
  - 6.2.2 ensure the *ESC Supervisor* implements an *ESC Plan* that has been prepared in accordance with Schedule B of this Bylaw;

- 6.2.3 ensure the *ESC Supervisor* conducts the inspection, monitoring and maintenance of the *ESC Facilities* in accordance with Schedule C of this Bylaw;
  - 6.2.4 immediately notify the *City* and cease *Development*, if for any reason the *ESC Supervisor's* services are terminated or withdrawn, until a replacement *ESC Supervisor* is appointed;
  - 6.2.5 where *Real-Time Monitoring Facilities* are required pursuant to this Bylaw, ensure the *ESC Supervisor* conducts the inspection and monitoring of the *Real-Time Monitoring Facilities* in accordance with Schedule "D" of this Bylaw; and
  - 6.2.6 where *Real-Time Monitoring Facilities* are required pursuant to this Bylaw, ensure the *Real-Time Monitoring Facilities* provider conducts the inspection, maintenance and monitoring of the *Real-Time Monitoring Facilities* in accordance with Schedule "D" of this Bylaw.
- 6.3 Notwithstanding the provisions of Section 4.2.5 the *Manager* may require the installation of *Real-Time Monitoring Facilities* at any *Development* where one or more of the following conditions are met and the *Manager* considers this necessary for the protection of the *Drainage System*:
- 6.3.1 on 2 or more occasions, water with a turbidity level greater than 25 NTUs has been discharged into the *Drainage System* when a *Significant Rainfall Event* has not occurred during the preceding 24 hours;
  - 6.3.2 on 2 or more occasions, water with a turbidity level greater than 100 NTUs has been discharged into the *Drainage System*; or,
  - 6.3.3 on 2 or more occasions, water with a pH outside the range of 6.5 to 8.0 has been discharged into the *Drainage System*.

## **7 Erosion and Sediment Control (ESC) Security Requirements**

- 7.1 The *Manager* may require a security deposit in an amount of 110% of the certified *ESC Facilities* design, installation, monitoring and maintenance cost or \$5,000, whichever is greater, to secure the full and proper compliance with the provisions of this Bylaw.
- 7.2 If the amount of the security deposit is insufficient for the *City* to complete the remedial work, the *Developer*, will pay any deficiency to the *City* on demand.
- 7.3 When the *Developer* complies with the provisions of this Bylaw the *City* will return the security deposit at such a time as the *ESC Supervisor* provides the *City* with written notice that all *Development* at the site is complete, the site is stable and under control, and no longer poses a threat to the *Drainage System*, and the *ESC Facilities* have been removed to the acceptance of the *Manager*.

## **8 Remedial Action**

- 8.1 If any person is carrying on any *Construction* work or any activity in contravention of this Bylaw, and which in the opinion of the *Manager* is causing or is likely to result in contravention of this Bylaw, then the *Manager* may order the immediate suspension of all or any portion of such *Construction* work or other activity by posting a notice to that effect at the place where the construction work or other activity is ongoing.
- 8.2 In addition to the authority of the *Manager* under section 8.1, the *Manager* may direct that steps be taken to prevent further contravention of this Bylaw. The *Manager* shall send a copy of the written notice to the owner of the land where the *Construction* or activity is occurring at the owner's address as it appears on the records of the Land Title Office, or other last known address.
- 8.3 If in the opinion of the *Manager* immediate steps should be taken to prevent the likely or ongoing contravention of this Bylaw, or if the *Manager* is not satisfied that the owner, or other responsible person, has taken appropriate steps to mitigate the damages, then the *City* may enter onto the property to take such steps as are necessary in the circumstances. The *Manager* must provide written notice of the actions taken or proposed.

## **9 Offence**

- 9.1 Every person who violates any provision of this Bylaw, or who causes, permits or allows any act or thing to be done in violation of this Bylaw, or who neglects to or refrains from doing anything required to be done by any provision of this Bylaw, is guilty of an offence against this Bylaw and each day that a violation continues is deemed to be a separate offence against this Bylaw.
- 9.2 Every person who violates a provision of this Bylaw, or who causes, permits, or allows an act or thing to be done in violation of a provision of this Bylaw, or who neglects or refrains from doing anything required by a provision of this Bylaw, is guilty of an offence and is liable, upon summary conviction, to a fine not exceeding the maximum set out in the *Offence Act*, R.S.B.C. 1996, c. 338, as amended.

## **10 Severance**

- 10.1 The provisions of this Bylaw are intended to be severable and, should any part of this Bylaw be found to be invalid by a court of competent jurisdiction, the finding of invalidity will not affect the validity of the remainder of this Bylaw.

## **11 Repeal and Transition**

- 11.1 The *City of Coquitlam Sediment Control Bylaw No. 2929, 1995* is repealed in its entirety.
- 11.2 The *City of Coquitlam Stream and Drainage System Protection Bylaw No. 3447, 2001* is repealed in its entirety.



- 11.3 Notwithstanding section 11.2 of this Bylaw, the *City of Coquitlam Stream and Drainage System Protection Bylaw No. 3447, 2001* will continue to apply to *Development* work for which a permit, permission or approval of the *City* was required, and for which an application was received by the *City*, prior to the date of final adoption of this Bylaw.

READ A FIRST TIME this 29<sup>th</sup> day of July, 2013.

READ A SECOND TIME this 29<sup>th</sup> day of July, 2013.

READ A THIRD TIME this 29<sup>th</sup> day of July, 2013.

GIVEN FOURTH AND FINAL READING and the Seal of the Corporation affixed this 9<sup>th</sup> day of September, 2013.

\_\_\_\_\_ MAYOR

\_\_\_\_\_ CLERK

# Schedule “A”

## Topic                                      Erosion & Sediment Control (ESC) Submission Requirements

The ESC provisions of the **Stream and Drainage System Protection Bylaw No. 4403, 2013** (the Bylaw) focus on preventing or minimizing the erosion of sediment, earth or soil from *Development* sites and the resulting discharge to the *Drainage System*. There are two categories of *Development*:

1.        Single family and duplex residential.
2.        All other.

The submission requirements for these two types of *Development* are detailed in the table below.

Submission Requirement	Single Family/Duplex Residential, Demolition	All Other
ESC Submission Form	✓	✓
<i>ESC Plan</i>		✓
<i>ESC Facilities</i> cost estimate		✓
ESC Pre-Development Approval Form (Completed at site with City staff)		✓
ESC security deposit in accordance with Bylaw		✓

### Mandatory ESC Facilities

The following *ESC Facilities* from the City publication *Erosion & Sediment Control Best Management Practices* must be implemented and maintained in good working order for all *Development* sites:

- Clean Water Management (gutters and downspouts for single family/duplex sites) ;
- Access/Egress Controls;
- Perimeter Control Measures;
- Temporary drainage swale and sump;
- Storm Inlet Protection (where storm inlets exist);
- Disturbed Surfaces Protection ; and
- Paved Surfaces Sweeping/Maintenance.

The above list represents the minimum *ESC Facilities* for all *Development* sites, but it is the *Developer's* responsibility to include any, and all, *ESC Facilities* that are necessary to ensure compliance with the Bylaw.

# Schedule “B”

## Topic                      Erosion & Sediment Control (ESC) Plan Requirements

An *ESC Plan* submitted to the City must:

- be designed, signed and sealed by a Professional Engineer (P.Eng.), registered and in good standing with the Association of Engineers and Geoscientists of B.C., or a Certified Professional in Erosion and Sediment Control (CPESC) registered and in good standing with EnviroCert International;
- be reviewed and signed by the *ESC Supervisor*;
- conform to the City’s design submission requirements outlined in Schedule A, Part I of **Subdivision and Development Servicing Bylaw No. 3558, 2003**, as amended;
- consist of a multi-stage plan that shows the measures for erosion and sediment control during the following phases (where applicable):
  1. land clearing, grubbing and grading;
  2. the installation of services or infrastructure;
  3. the building construction;
  4. the maintenance period;
- include all mandatory minimum ESC Facilities as noted in Schedule “A”, as well as the following information:
  1. location(s) of limits of disturbance for each phase of development;
  2. anticipated soil type in all areas to be disturbed and at all depths to be excavated;
  3. proposed measures to ensure that any existing ground cover is maintained as long as practicably possible, that work is staged to prevent erosion whenever possible, and that exposed soils are placed under non-erosive cover as soon as possible;
  4. proposed measures to address the erosion and sediment control requirements for clearing limits, cover measures, perimeter protection, traffic area stabilization (including detailed design of any necessary wheel washes), sediment retention, surface water control and dust control, with source controls being the primary method of erosion and sediment control;
  5. location of all proposed ESC Facilities to be implemented on site, including site access locations, sediment ponds and any necessary wheel wash facilities;

## Schedule “B”

6. the design calculations, installation specifications and maintenance requirements for each ESC Facility;
7. for ESC Plans utilizing treatment chemicals, technical specifications including ecological toxicity data from the treatment chemical manufacturer and specifications for the location of treatment and general deployment;
8. the proposed methods to restore disturbed areas following the completion of development (where applicable, application rates and specifications for mulch must be clearly defined);
9. all other details pertaining to the proposed development, describing how the ESC Facilities will meet the criteria set out in Section 3 of the Stream and Drainage System Protection Bylaw No. 4403, 2013;
10. locations of property line(s) and other legal designations of the subject property or properties;
11. location(s) of existing underground services, as well as any proposed connections to existing services from the site;
12. location(s) of existing drainage infrastructure and the proposed measures to protect it;
13. location(s) of existing and proposed watercourses, ditches, swales or other bodies of water within 50m of the site boundaries, along with the proposed protection measures;
14. location(s) of existing and proposed buildings, including residential buildings or ancillary buildings or structures;
15. existing and proposed contours and relevant spot elevations;
16. the name, address and telephone number of the ESC Supervisor;
17. location(s) of water quality monitoring site(s); and
18. the proposed monitoring and inspection schedule.

# Schedule “C”

## Topic                                      Responsibilities of the Erosion & Sediment Control (ESC) Supervisor

### 1. ESC Supervisor Qualifications

The *ESC Supervisor* is defined by the **Stream and Drainage System Protection Bylaw No. 4403, 2013** (the Bylaw) as a *Qualified Professional* who is experienced in implementing *ESC Plans* and ESC best management practices. While the *ESC Supervisor* is the person responsible for site inspections, monitoring and reporting, a suitably qualified individual acting under the direction of the *ESC Supervisor* can conduct site monitoring and inspections. The *ESC Supervisor* must, however, sign off on all correspondence with the City and be ultimately responsible to identify and address ESC issues as they arise.

### 2. ESC Supervisor Responsibilities

The primary duties of the *ESC Supervisor* are:

- a) assisting the Professional Engineer (P.Eng.) or Certified Professional in Erosion and Sediment Control (CPESC) in preparing the *ESC Plan* and acknowledging/signing the *ESC Plan*;
- b) attending the pre-*Development* meeting held with the City;
- c) inspecting, maintaining, monitoring and reporting on the *ESC Facilities*, which include, but are not limited to:
  - monitoring/inspecting the site to ensure *ESC Facilities* are implemented according to the *ESC Plan*, through all phases of *Development*;
  - advising the Engineer/CPESC and/or *Developer* of any ESC deficiencies and/or corrective actions required to adapt to changing site conditions or unforeseen problems that arise regarding erosion and sediment control;
  - requiring the suspension of *Development* based on pending or existing weather conditions or based on unusual, unacceptable or inappropriate *Development* practices to ensure compliance with the Bylaw; and
  - coordinating the removal of *ESC Facilities* with site decommissioning.
- d) maintaining a logbook of all inspections, and making the logbook available to the City upon request; and
- e) delivering written notice to the City’s assigned Engineering Inspector and Environmental Services Division staff when all *Development* at the site is completed, the site is stable and under control and no longer poses a threat to the Drainage System and the *ESC Facilities* may be safely removed

## Schedule “C”

### 3. Inspection, Monitoring and Reporting Frequency

Regular and ongoing inspections of *ESC Facilities* and adhering to the *ESC Plan* are crucial to compliance with the Bylaw. To ensure that the prescribed *ESC Facilities* remain effective, regular inspections and maintenance must be conducted through all phases of *Development*. Site inspections must include daily visual checks that target critical areas on and off the site as per the **Daily Site Inspection Checklist** available from the City’s website. The *ESC Supervisor* must ensure that copies of the checklists are kept on site and made available for inspection by City staff. Under the guidance of the *ESC Supervisor*, daily inspections may be conducted by suitably qualified on-site personnel (such as the site superintendent or designate).

In addition to the daily site inspections, water quality monitoring by the *ESC Supervisor*, or suitably qualified designate, of the site discharge, as well as assessments of the condition and performance of *ESC Facilities* must be conducted and reported to the City’s Environmental Services Division at the minimum regular intervals noted in Table C-1, below. Summary reports shall include a review of *ESC Facilities* implemented and any deficiencies observed, maintenance undertaken, or recommendations of adaptive measures to ensure compliance with the approved *ESC Plan*. A summary table of in-situ monitoring results and/or laboratory analysis results must be also be included in the submitted report (see **ESC Site Monitoring Report Template** available from the City’s website).

Table C-1. Monitoring and Reporting Frequencies.

	Minimum monitoring frequency	Minimum reporting frequency
Wet season (October 15 to May 15)	Weekly	Bi-weekly
Dry season (May 16 to October 14)	Bi-weekly	Monthly
<i>Significant Rainfall Events</i>	48 hours prior to event; During and within 24 hours of event	Within 7 days of event

Although the Bylaw requires post-event monitoring after a *Significant Rainfall Event*, spot checks should be conducted during these events to evaluate *ESC Facility* performance under storm flow conditions when the likelihood of deficiencies is more prevalent. If a *Significant Rainfall Event* is forecast (via Environment Canada or other) or anticipated, the *ESC Supervisor* must, 48 hours prior to the event, conduct an onsite *ESC Facilities* review meeting with the *Developer* and site superintendent and document this meeting using the **Significant Rainfall Event Planning Checklist** available from the City’s website.

## Schedule “C”

### 4. Inspection and Monitoring Parameters

#### a) Turbidity (NTUs)

Water turbidity will be used as an in-situ indicator for the level of sediment concentration within site storm water discharge. As per section 3.4 of the Bylaw, no person shall cause or permit the discharge into the *Drainage System*, either directly or indirectly, of water which has a turbidity level greater than 25 NTUs. Where a *Significant Rainfall Event* has occurred within the preceding 24 hours, water with a turbidity level greater than 25 NTUs may be discharged into the drainage system during a 24 hour grace period provided that no discharge into the drainage system may exceed 100 NTUs. Monitoring locations shall be based on the designated monitoring locations in the approved *ESC Plan*.

#### b) pH

Concrete works or the use of recycled concrete aggregate (RCA) can result in very alkaline (high pH) site runoff. As per section 3.4 of the Bylaw, no person shall cause or permit the discharge into the Drainage System, either directly or indirectly, of water which has a pH value outside of 6.5 – 8.0. Monitoring locations shall be based on the designated monitoring locations in the approved ESC Plan.

#### c) Water Quality Sampling Locations

Water quality monitoring locations should appropriately reflect site discharge at the down stream boundary of the Development site and be independent of drainage ditches that convey off site storm water flows. If the primary point of discharge is piped flow or if there is a potential for storm water flows conveyed off-site as piped flow, then water quality sampling must be conducted of flows as they leave the site.

#### d) ESC Facilities: Installation and Condition

The ESC Supervisor is required to conduct visual inspections to ensure that all ESC Facilities are installed in accordance with the approved ESC Plan. The inspections should identify any installation deficiencies that could impair the ESC Facilities performance and notify the Developer or designate to remedy the deficiency. Time and date-stamped photos must be taken for inclusion in the monitoring report.

#### e) ESC Facilities: Maintenance and Performance

It is the responsibility of the ESC Supervisor to identify any maintenance issues that need addressing whereby the effectiveness of the ESC Facilities is likely to be compromised. Likewise it is up to the discretion of the ESC Supervisor to evaluate whether or not the installed ESC Facilities are capable of meeting the ESC requirements of the ESC Plan and ensure that measures are undertaken to mitigate any potential deficiencies in the ESC Facilities.

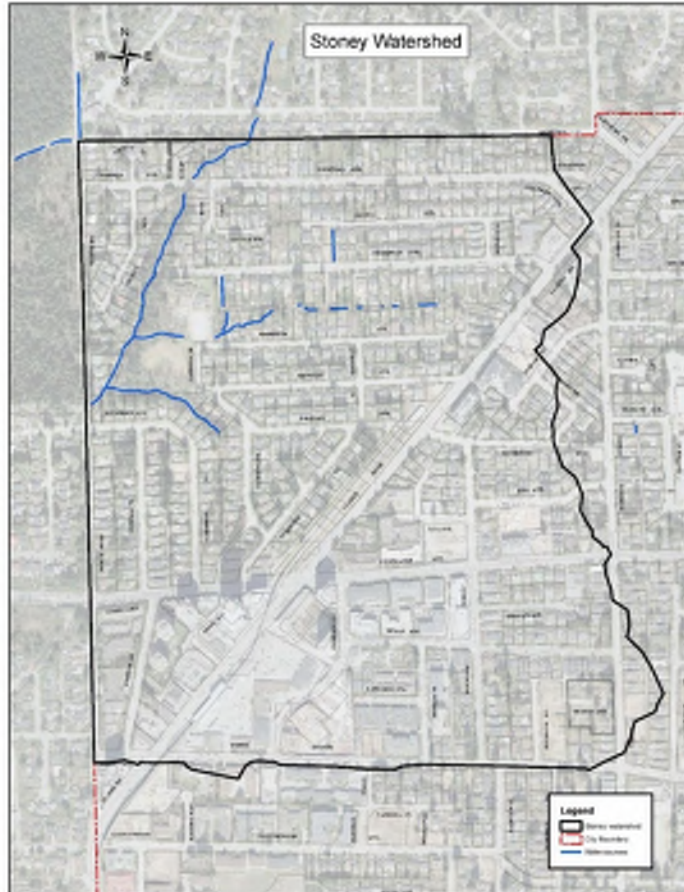
# Schedule “D”

## Topic

## Real-Time Monitoring Facilities

### 1. Application

- 1.1. The requirements in this Schedule “D” apply to *Developments* within the Stoney Creek watershed shown outlined in bold on the following map:



- 1.2. Notwithstanding the provisions of section 1.1 the requirements of Schedule “D” do not apply to the following *Developments*:
- 1.2.1. *Developments* that only require a demolition permit as defined in The City of Coquitlam Building Bylaw No. 3598, 2003, as amended or replaced from time to time; and,
  - 1.2.2. The following *Developments* as defined in the City of Coquitlam Zoning Bylaw No. 3000, 1996, as amended or replaced from time to time:
    - *Triplex Residential*
    - *Fourplex Residential*
    - *Multiplex Residential*



# Schedule “D”

## 2. ***Real-Time Monitoring Facilities* for Construction Site Discharge Water Quality**

### 2.1. **Variations of these Requirements**

- 2.1.1. Minor variations or alternates to these requirements are permitted at the discretion of the *Manager*.

### 2.2. **ESC Plans**

- 2.2.1. Where this Schedule “D” applies, the *ESC Plan* must include all *Real-Time Monitoring Facilities* required by this Schedule “D” including but not limited to the following:

- The location of all *Real-Time Monitoring Facilities* on site;
- Drawings and schematics detailing all *Real-Time Monitoring Facilities*;
- Any Notification Limits or Shut Off Limits required in addition to the minimum requirements listed in Section 2.5 Notification and Shut Off Limits;
- The design calculations, installation specifications and maintenance requirements for the *Real-Time Monitoring Facilities*; and,
- Timing for installation and removal of the *Real-Time Monitoring Facilities*.

### 2.3. ***Real-Time Monitoring Facility* Design, Operation and Maintenance**

- 2.3.1. *Real-Time Monitoring Facilities* must be designed by a *Qualified Professional*;
- 2.3.2. *Real-Time Monitoring Facilities* must be installed, operated, calibrated and maintained in accordance with the designer’s and manufacturer’s recommendations as described in documented Standard Operating Procedures supplied by the *Real-Time Monitoring Facilities* provider. The *City* may require that a copy of these procedures is provided to the *City*, a copy must be available for inspection on site.
- 2.3.3. Date and time-stamped administrative activity logs including maintenance, parts replacement, calibrations and other servicing must be kept available for inspection on site or made available to the *City* and *ESC Supervisor* through the dashboard.
- 2.3.4. The *ESC Supervisor* must carry out the responsibilities described in Schedule “C” and must also:
- complete routine inspections of the *Real-Time Monitoring Facilities* in accordance with the Standard Operating Procedures;
  - compare data collected during monitoring under Schedule “C” to data provided by the *Real-Time Monitoring Facilities*, investigate any discrepancies outside the limits of accuracy for any analysis, and take any remedial action required to ensure accuracy of the data collected by routine monitoring and by the *Real-Time Monitoring Facilities*.

## Schedule “D”

### 2.4. Water Quality Parameters

2.4.1. *Real-Time Monitoring Facilities* must provide monitoring of at least the following water quality parameters:

- pH;
- turbidity measured in NTU or FNU;
- temperature measured in °C;
- discharge flow rate measured in cubic metres per second or litres per second;
- cumulative discharge volume measured in cubic metres or litres; and,
- recirculation flow rate measured in cubic metres per second or litres per second.

2.4.2. The *Real-Time Monitoring Facilities* must obtain and report on local rainfall data from an accredited source which will provide data to the system allowing for shut off in the event that turbidity exceeds limits linked to *Significant Rainfall Events*.

2.4.3. The water quality parameters listed in Section 2.4.1 will be sampled no less frequently than once every 45 seconds.

### 2.5. Notification and Shut Off Limits

2.5.1. The *Real-Time Monitoring Facilities* will provide automated SMS and email notifications to the *City*, the *ESC Supervisor* and appropriate site staff whenever the following notification limits are reached and at any additional limits specified by the *ESC Plan*:

Parameter	Notification Limit
pH	When pH is less than 6.5; and, When pH is above 8.0
Turbidity	No Significant Rainfall Event and turbidity is greater than 25 NTU for 60 seconds; and Turbidity is greater than 100 NTU for 60 seconds
Valve State	The discharge valve is closed for 60 minutes
Data Transmission	No data transmission for one or more sensors for 15 minutes

2.5.2. The Notification Limits for a particular *Development* may be changed at the discretion of the *Manager*;

2.5.3. The *Real-Time Monitoring Facilities* will automatically shut off discharge and recirculate the storm water for further treatment whenever the following shut of limits are reached and at any additional limits specified by the *ESC Plan*:

## Schedule “D”

Parameter	Shut Off Limit
pH	When pH is below 6.5 for 5 min; and When pH is above 8.0 for 5 min
Turbidity	No Significant Rainfall Event and turbidity is greater than 25 NTU for 5 mins; and Turbidity is greater than 100 NTU for 5 mins
Power Failure	In the event of a power failure to the <i>Real-Time Monitoring Facilities</i> or the <i>ESC Facilities</i> , the discharge shut off valve must close automatically and remain closed until full functioning is restored

- 2.5.4. The *Manager* may require that the Shut Off Limits be changed in the event that these limits do not ensure that the *ESC Facilities* are able to treat the storm water to the extent that it complies with the requirements of this Bylaw and any other applicable legislation.

### 2.6. Data Sharing Capabilities

- 2.6.1. The *Real-Time Monitoring Facilities* will include a cloud-based data sharing dashboard that provides the following information and capabilities to the *City* and the *ESC Supervisor*:
- Real-time and historical data for all monitored water quality parameters and rainfall data;
  - historical data must be available from the start of the *Development* to such time as the *Manager* or their designate grants permission for the removal of the *Real-Time Monitoring Facilities*;
  - the dashboard must also allow for the download of all data related to the *Development* to pdf or excel format;
  - the dashboard must show the notification limits and shut off limits in use at all times
  - the dashboard must show the maintenance record and any other periods during which the *Real-Time Monitoring Facilities* are not operational.



## Schedule 4

### Sample Project Contact List



## Project Contact List

CONTACT	NAME	OFFICE #	CELL/PAGER #	24 HOUR #
Contractor	TBD	TBD	TBD	TBD
Site Supervisor/Foreman	TBD	TBD	TBD	TBD
Contract Administrator	TBD	TBD	TBD	TBD
Environmental Monitor ISL	Mackaylen Bickle	604-371-0091		
Environmental Lead ISL	David Neufeld	604-371-0091	604-347-5246	604-347-5246
Responsible Authority Fisheries and Oceans Canada (DFO)	-	-		
Ministry of Water Land Resource Stewardship (MWLRS)				
Emergency Management BC	-	-	-	<b>1-800-663-3456</b>
TBD = To be determined after award				



## Schedule 5

### Sample Reference Spill Response Procedure



## Reference Spill Response Procedures

### INCIDENT

If a spill of fuel, oils, lubricants or other harmful substances occurs at the site, the following procedures will be implemented.

Spill Response Steps

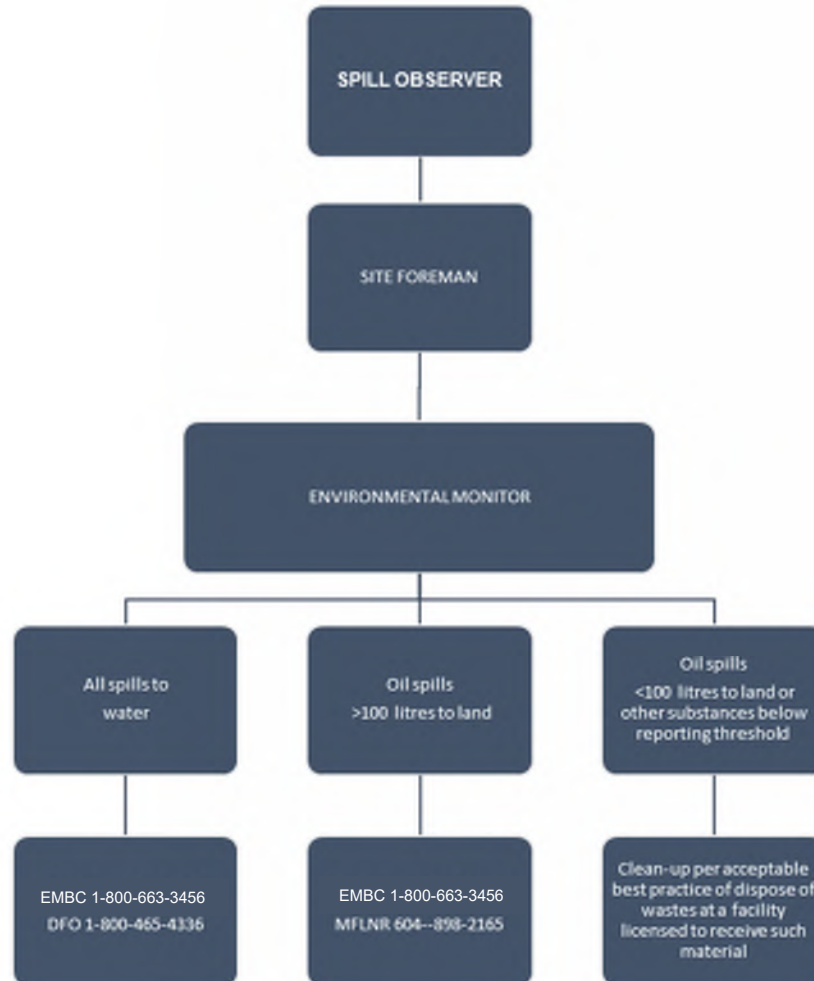
1. **ENSURE SAFETY**
2. **STOP THE FLOW** (when possible)
3. **SECURE THE AREA**
4. **CONTAIN THE SPILL**
5. **NOTIFY/REPORT** (PEP 1-800-663-3456)
6. **CLEAN-UP**

(Circumstances may dictate another sequence of events)

1. **ENSURE SAFETY**
  - Ensure Personal, Public, and Environmental Safety
  - Wear appropriate Personal Protective Equipment (PPE)
  - Never rush in, always determine the product spilled before taking action
  - Warn people in immediate vicinity
  - Ensure **no ignition sources** if spill is of a flammable material
2. **STOP THE FLOW** (when possible)
  - Act quickly to reduce the risk of environmental impacts
  - Close valves, shut off pumps or plug holes/leaks, set containers upright
  - Stop the flow of the spill at its source
3. **SECURE THE AREA**
  - Limit access to spill area
  - Prevent unauthorized entry onto site
4. **CONTAIN THE SPILL**
  - Block off and protect ditches, drains and culverts
  - Prevent spilled material from entering drainage structures (ditches, culverts, drains)
  - Use spill sorbent material to contain spill
  - If necessary, use a dike, berm or any other method to prevent any discharge off site
  - Make every effort to minimize contamination
  - Contain as close to the source as possible
5. **NOTIFY/REPORT**
  - Notify Site Supervisor and EM (or alternate) of incident (provide spill details)
  - When necessary, the first external call should be made to (see spill reporting requirements):  
**Environmental Management BC (EMBC) 1-800-663-3456 (24 hours)**
  - Provide necessary spill details to other external agencies (see spill reporting requirements)



### Spill Reporting Notification Chart







## **Schedule 6**

### Spill Reporting Regulation List of Reportable Quantities



Should there be a spill of materials or products that exceed the thresholds in the table below, the EM will report to Emergency Management BC per the Spill Reporting Regulation. An Environmental Incident will be deemed to have occurred and the procedures set out in Section 7 and in Schedule 3 will be instituted.

Substances as defined in the Federal Regulations or Hazardous Waste Regulation (HWR)	Quantity
Class 1, Explosives as defined in section 2.9	≤50 kg, if the substance poses a danger to public safety
Class 2.1, Flammable Gases, other than natural gas, as defined in section 2.14 (a)	10 kg
Class 2.2 Non-flammable and Non-toxic Gases as defined in section 2.14 (b)	10 kg
Class 2.3, Toxic Gases as defined in section 2.14(c)	5 kg
Class 3, Flammable Liquids as defined in section 2.18	100 L
Class 4, Flammable Solids as defined in section 2.20	25 kg
Class 5.1, Oxidizing Substances as defined in section 2.24 (a)	50 kg or 50 L
Class 5.2, Organic Peroxides as defined in section 2.24 (b)	1 kg or 1 L
Class 6.1, Toxic Substances as defined in section 2.27 (a)	5 kg or 5 L
Class 8, Corrosives as defined in section 2.40	5 kg or 5 L
Class 9, Miscellaneous Products, Substances or organisms as defined in section 2.43	25 kg or 25 L
Leachable toxic waste as defined in section 1 of the HWR	25 kg or 25 L
Waste containing PAH's as defined in section 1 of the HWR	5 kg or 5 L
Waste asbestos as defined in section 1 of the HWR	50 kg
Waste oil as defined in section 1 of the HWR	100 L
Waste that contains a pest control product as defined in section 1 of the WWR	5 kg or 5 L
PCB wastes as defined in section 1 of the HWR	25 kg or 25 L

- Notwithstanding the reportable quantities list above, all spills to water are reportable.

***Appendix D -  
Archaeological Chance Find  
Procedures***

# **ARCHAEOLOGICAL RESOURCE “CHANCE FIND MANAGEMENT PROTOCOL” (CFMP) FIELD MANUAL**

**For Land-Altering Activities to be Conducted on Cedar  
Drive (Cedar Sanitary Pump Station and Gilleys Trail)**

**Prepared for:**

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

**Prepared by:**



**ANTIQUUS ARCHAEOLOGICAL CONSULTANTS LTD.**  
**23021 – 132 Avenue,**  
Maple Ridge, B.C.,  
V4R 0A8

**November 15, 2021**

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## **KEY AGENCY AND PERSONNEL CONTACT INFORMATION**

Agency or Company	Main Contact Person	Phone Number/ Email Address
<b>*Antiquus Archaeological Consultants Ltd.</b>	<b>Mike Rousseau</b> (Senior Archaeologist)	604-467-3497 antiquus@shaw.ca
<b>Archaeology Branch, Victoria</b>	<b>Paula Thorogood</b> (Manager of Archaeological Operations, Archaeology Branch)	250-953-3334 Paula.Thorogood@gov.bc.ca
	<b>Ryan Blackburn</b> (Project Officer, Archaeology Branch)	(236) 478-2545 Ryan.S.Blackburn@gov.bc.ca
<b>Kwikwetlem First Nation</b>	<b>Nicole Oakes</b> (KFN Archaeologist)	(778)-886-8200 nicole@brownoakesarch.com fieldwork@kwikwetlem.com
<b>City of Coquitlam</b>	Nadeem Kazmi (Project Manager)	(604) 927 3517 nkazmi@Coquitlam.ca
<b>ISL Engineering Inc.</b>	Kevin Terness (Senior Engineer)	(604) 629 2696 kterness@islengineering.com
<b>General Contractor (TBD)</b>	TBD	TBD

**\*Note:** Agencies/Companies presented in **red** should be contacted immediately following an encounter with any suspected archaeological deposits.

A list of additional local qualified consulting archaeologists is presented in the online website sponsored by the “BC Association of Professional Archaeologists” (BCAPA).

## 1.0 INTRODUCTION

This chance find management protocol (CFMP) document manual provides a guideline to follow in case archaeological materials are uncovered on a worksite without an experienced archaeological monitor present. ***Machine operators and any personnel involved with land-altering activities that have direct visual contact with the ground during construction should become familiar with the content of this manual, and keep a copy handy when engaging in any ground disturbances caused by heavy machinery.***

Archaeological materials such as lithic (stone) tools, worked fauna (animal bones), and preserved basketry are non-renewable resources that can provide valuable information about local First Nation cultural heritage. Even small disturbances to a site can destroy the context needed to properly assess how people may have lived in a specific area many hundreds or thousands of years ago. The scientific and educational information we receive from a single site can never be replicated, and is highly significant to First Nation communities, archaeologists, the BC Provincial Government, and the general public. Any development activities that include ground alterations have the potential to adversely impact archaeological materials. This could even include areas that have been significantly disturbed in the past, or areas with imported construction fill that was transported from a different archaeological site.

***We appreciate your company's cooperation in ensuring that any suspected fortuitous cultural materials that may be uncovered by ground disturbances are managed and handled properly.***



**Figure 1.** Construction in progress within an archaeological site.



## 2.0 **FIRST NATIONS CULTURAL HERITAGE**

Since the widespread colonization of British Columbia in the mid 19<sup>th</sup> century, there has been continued destruction of indigenous culture, language and traditional ways of life. Today, the protection of First Nation Cultural Heritage plays a vital and meaningful role in rebuilding First Nation identity through knowledge, education and respect.

Indigenous Cultural Heritage is a broad term that encompasses traditional knowledge and archaeological materials to form meaningful ideas about First Nation collective identity. Cultural Heritage consists of things that can be seen and studied (like the artifacts collected in archaeological studies), and intangible traditional knowledge (like oral history, songs, and dance). There are over 200 individual First Nation groups in British Columbia alone, and each has a unique cultural heritage.

By equipping companies such as yours with the resources and education to properly identify and manage chance archaeological finds in the workplace, we can continue to contribute important information towards reconstructing past indigenous cultural heritage traits and histories, and where possible, preserve valuable archaeological deposit so that they remain intact into the future. Archaeological resources are very fragile and non-renewable, and once they are disturbed, their information value is severely lessened.



**Figure 2.** Small carved stone bowl found during construction monitoring at a site in 2018.



### 3.0. **GENERAL CHANCE FIND PROTOCOL PROCEDURE**

*It is the responsibility of the site supervisor to ensure that the procedures outlined below are done according to the standards and procedures outlined in this document.* It is important for all on-site workers to be familiar with, and understand the importance of this protocol and what archaeological materials and deposits look like (see Figures 3 to 10). In some situations, it may be prudent to have an archaeologist meet with the machine operators and management personnel prior to the start of construction to go through the expected protocol procedure. If there are any questions regarding the content of this CFMP, please contact Antiquus Archaeological Consultants Ltd. *If any obvious cultural/archaeological materials are encountered, or their presence is suspected, please follow the guidelines below.*

- 1. STOP ALL LAND-ALTERING WORK** in the vicinity that the cultural materials were uncovered (within immediate 20 m diameter area), cease all land-alterations. This includes heavy vehicle traffic. Secure the discovery location to prevent any further disturbance.
- 2. CONTACT MANAGEMENT & ARCHAEOLOGISTS.** Immediately contact the on-site construction property superintendent, and then phone a consulting archaeologist (e.g., Antiquus Archaeological Consultants Ltd. The archaeological consultant will get in touch with relevant First Nation agencies, the Archaeology Branch, and local RCMP and Coroner if necessary. Relevant agency and personnel contact information is presented on page 3.
- 3. LEAVE MATERIALS WHERE YOU FIND THEM.** If possible, record the location of cultural materials you find with GPS and take pictures. Do not remove any artifacts, surrounding sediments or previously removed backfill.

Once the following steps have been completed, an archaeologist and local First Nation representatives will arrange to inspect the suspected cultural material as soon as possible to determine if an archaeological site has indeed been uncovered. *If the suspected archaeological materials are confirmed to be archaeological, the consultant, in consultation with local First Nation community members, will determine the extent and significance of the findings. Management strategies will then be discussed and formulated by the consultant, the Archaeology Branch and local First Nation agencies.* Management and mitigative options will then be presented to the client for consideration. *If any observed suspected cultural materials are found to be non-archaeological by the attending archaeologist, land-altering work can then resume as normal without further delay.*

## 4.0 **PRE-CONTACT ANCESTRAL REMAINS PROTOCOL**

If any ancestral human remains are encountered on the worksite, it is extremely important to follow proper procedures to ensure remains are treated with respect and care no matter if they are intact or not. Human bones buried for prolonged periods may vary through shades of white, tan/beige, yellow/orange, and sometimes orange in colour; most limb and appendage elements are long and straight; most bones are fairly large compared to most other common indigenous and domesticated mammals (except cows and horses); and human bones are more likely to be intact, and tightly clustered in a small area (maximum of 1.5 m in diameter). Skulls and lower jaws are, of course, very distinctive, and in most cases are easily identified by the average person.

*If human remains are suspected to be recent (i.e., non-archaeological), this is no longer an archaeological concern and the RCMP and forensic experts must be called to the site.*

- 1. STOP ALL LAND-ALTERING WORK** within at least 50 meters of where the human remains were uncovered. If possible, stop *all* work within job site until an archaeologist has assessed the remains and discussions have been made with local First Nation agencies.
- 2. REPORT TO MANAGEMENT AND ARCHAEOLOGIST.** Immediately contact the site superintendent, and phone the consulting archaeologist who will get in touch with relevant First Nation agencies, clients, the Archaeology Branch, and RCMP if necessary. Contact information is presented on page 3.
- 3. DO NOT DISTURB THE REMAINS.** Do not remove or handle any of the suspected remains, surrounding sediments, or previously removed backfill. Restrict access to the find.

Once these steps have been completed, the archaeological consultant and local First Nation representatives will visit and closely inspect the suspected ancestral remains. *The Archaeology Branch will be notified to discuss the situation and further management and required permitting for the encounter. Formulation and implementing appropriate management strategies will depend greatly on a combination of local First Nation Ancestral Remains Policies, and the BC Archaeology Branch's Found Human Remains Policy.* Due to the sensitivity and detailed management procedures associated with Ancestral Remains, schedule and funding extensions should be anticipated.

## 5.0 ARCHAEOLOGICAL AND CULTURAL HERITAGE RESOURCES IN B.C.

An archaeological site is defined by the B.C. Archaeology Branch as “...the physical evidence of how and where people lived in the past” (<https://www2.gov.bc.ca>). There are over 50,000 known archaeological sites in B.C., with more newly recorded every year. Many people assume these sites can only be found in the remote and untouched areas of B.C. However, cultural materials have been found almost everywhere. Sites have been frequently recorded under highways, under industrial buildings and even in the backyards of typical suburban residences, albeit in a disturbed state. Most sites are located in raised and well-drained localities near sources of water, notably along rivers and beside lakes and streams. Some sites are small, being only about 2 m in diameter, and village sites can extend for several kilometers along the Fraser River.

All archaeological sites predating 1846 are automatically protected by the **Heritage Conservation Act** (see Section 8.0). Disturbance and investigation of archaeological sites must be carried out under the appropriate Archaeology Branch and local First Nation permits. Permit applications are usually completed by archaeological consultants on behalf of their clients.



**Figure 3.** Significant archaeological village site deposits (dark soil) found under a deconstructed industrial building in Maple Ridge (Photo Credit: Antiquus, 2000).



## 6.0 TYPICAL ARCHAEOLOGICAL SITE TYPES AND CULTURAL MATERIALS IN SOUTHWEST B.C.

The following section will serve as a reference guide, briefly outlining several common types of archaeological sites and cultural materials that *may* be exposed during your company's land-altering activities.

- (1) **Isolated, scattered and clustered buried lithics and artifacts such as lithic (stone) tools, lithic waste flake scatters**, found either as isolated artifact finds or as low to high density scatters of lithic tools or lithic waste flakes (the by-product of lithic tool production) may be encountered and exposed during land-altering activities. Typical lithic material types found at sites in this area includes siliceous metasediments, cherts, basalt, dacite, andesite, quartzite and other similar types of material.



**Figure 4.** Some of the more obvious artifacts that may be seen during disturbances are projectile points. Used as spears, knives, or perforators, they are an interesting find and quite recognizable. They are important tools in dating archaeological sites because projectile points changed in design throughout the years.



**Figure 5.** Sometimes archaeological lithics can look like gravel crush. These bipolar core fragments often look like rocks you might see on the side of the road. To the discerning eye, the specific crushing and flaking is indicative of intentional flake and tool production.



**Figure 6.** Complete and fragmented bone and antler harpoon points. Rare, but significant finds. Usually found beside bodies of water as they were used as fishing tools.



**Figure 7.** Additional examples of utilized flakes and chipped stone tools that may be encountered during ground excavations. A good indication that you are looking at a lithic or a waste flake is if you notice sharp, chipped edges, and ripples (from impact of hammer stone) along the bottom (ventral) side of the stone flake.



**Figure 8.** Examples of larger ground stone tools. If you notice a cobble with obvious battering on one or more sides, or evidence of grinding and rounding along the sides, this may in fact be a tool.



**(2) Buried archaeological “features”** (e.g., dark-stained mottled and lensed soils containing artifacts and other cultural materials, hearths and fire-pits, food storage and processing pits, dwelling foundations and floor deposits, scatters of fire-altered rock, etc.) that become exposed in the stratigraphy during the course of machine activities. These features are often conspicuous by their “non-natural” appearance, and association with dark-stained organic-rich soil horizons, lithic artifacts and faunal remains.



**Figure 9.** Archaeological features such as hearths or house floors, are evident in the stratigraphy (Antiquus 2000).



### **(3) Culturally Modified Trees:**

*“A CMT is a tree that has been altered by aboriginal people as a part of their traditional use of the forest. There are many kinds of CMTs in British Columbia. Examples include trees with bark removed, stumps and felled logs, trees tested for soundness, trees chopped for a pitch, etc.” – CMT Handbook, 2001*

Archaeological CMTs are old-growth trees that have bark or planks stripped away. CMTs also originate from post-contact, historic sources. Dendrochronological techniques can be used to find out the exact date the bark was stripped from the tree. The tree will automatically be protected by the Heritage Conservation act if it dates to, or before, 1846.

**Figure 10.** Example of a CMT. (Antiquus 2020)

## 7.0 REPORTING

When archaeological deposits are encountered during development and an appropriate management plan has been formulated, discussed and undertaken, the consulting archaeologist is responsible for recording all related information and producing a report on the cultural materials uncovered during land-altering activities. Once completed, the consulting archaeologist will submit copies to all stakeholders and may recommend further management actions and any additional required permits.

## 8.0 LEGISLATION

The Heritage Conservation Act (HCA) legally protects all sites that predate 1846 on private and Crown Lands. *As of March 2019, people are legally required to report discoveries of specified sites of objects with potential heritage value.* Enforcement and Compliance may be called if archaeological sites are knowingly disturbed or vandalized. Additional information concerning legislation and archaeological resources is provided in the link below:

[https://www.bclaws.ca/civix/document/id/complete/statreg/96187\\_01](https://www.bclaws.ca/civix/document/id/complete/statreg/96187_01)

*It is important for all development companies attempt to read and understand this legislation if they perform any type of ground alterations within a known site or area deemed to have medium or greater archaeological site potential.*

## 9.0 REFERENCES

Archaeology Branch (1999). Found Human Remains. On file with the Archaeology Branch, Victoria, B.C. From [http://www.tca.gov.bc.ca/archaeology/policies/found\\_human\\_remains.htm](http://www.tca.gov.bc.ca/archaeology/policies/found_human_remains.htm)

Archaeology Branch (2010). Heritage Conservation Act (RSBC 1996). On file with the Ministry of Tourism, Culture, and the Arts, Victoria, BC. From [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96187\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96187_01) BCAPA (BC Association of Professional Archaeologists) (2010). Archaeology in British Columbia. From <http://www.bcapca.bc.ca/archaeology.htm>

Tsleil-Waututh Nation Archaeological Chance Finds Management Guideline  
2020 Tsleil-Waututh Nation



# ***Appendix E - Water Meter Specifications***

# CITY OF COQUITLAM

## **WATER METER SPECIFICATIONS**

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**February, 2022**

**CITY OF COQUITLAM  
WATER METER SPECIFICATIONS**

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**1. Preamble**

The following specifications detail the City's requirements for the installation of meters on City water service connections.

An applicant is responsible for the supply and installation of meters and associated piping, chambers and equipment on metered water service connections. The City must accept the installation prior to activation of the service.

The specifications identifies acceptable meter types, location and installation requirements.

**2. Definitions**

**ANSI:** American National Standards Institute.

**ASTM:** American Society for Testing and Materials.

**AWWA:** American Water Works Association

**Activation:** Opening of the service valve to permit the flow of water.

**Applicant:** A person, company or agency that makes application for a water service connection from the City water system as required by the City's Water Distribution Bylaw.

**Engineer:** A professional engineer registered in the province of British Columbia practicing in the field of Civil or Mechanical Engineering.

**FM:** Factory Mutual Engineering and Research Organization, a research and testing agency accepted by the Insurance Industry.

**NSF:** NSF International

**ULC:** Underwriters' Laboratories of Canada, a research and testing agency accepted by the Insurance Industry.

**Water Distribution Bylaw:** Refers to the City of Coquitlam Water Distribution Bylaw 4428 as amended.

**3. Services to be Metered**

The Water Distribution Bylaw identifies service connections that require meters. This includes but is not limited to all property intended for commercial, industrial, institutional, agricultural, and public. All service connections to such properties including fire and domestic services shall have meters.

Fire service rated combined fire/domestic meters are allowed only in existing water systems when replacing the existing meters and not allowed in new developments; new developments must have separate fire and domestic lines as per drawing WM -1.

#### **4. Location of Meters**

Meters shall be placed at the interface between the City and private water system. In most circumstances the interface occurs at the property line of the site. The meter and meter box, vault or chamber shall be located entirely on private property unless approved otherwise by the City.

Where a City water main is within private property in a right-of-way, place the meter and box, vault or chamber at the right-of-way boundary line, and outside the right-of-way.

Where possible locate meters in landscaped areas, free of obstructions. If unavoidable, meters may be placed in pedestrian path areas or parking stalls. If the meter is placed in a parking stall, the pit-radio transceiver should be placed in a smaller box where it may be easily accessed and off parking stalls (refer drawing WM-7). Meters must not be located in driveways or roadways/highways.

Vaults and chambers should be placed in proximity to the site drainage system to permit installation of a gravity drain from the vaults and chambers.

#### **5. Meter Types**

There are three types of cold-water meters accepted for use by the City. These are positive displacement, turbine and compound types. The meters must be radio-read meters coupled with a radio transceiver unit that will function with the City's current Advanced Metering Infrastructure (AMI) system.

The actual meter or combination of meters accepted for use must accurately account for the total water use of the property serviced. All meters must be new. Used or reconditioned meters are not accepted.

**Positive Displacement** meters are to be either nutating disk or oscillating piston type to AWWA C-700. Meters are to have a lead free bronze (NSF/ANSI 61, Annex G and Annex F) case with cast iron or plastic frost protection cover. Meters 38mm and 50mm in size are to have oval two bolt flanged ends.

Acceptable positive displacement type meters are:

- Sensus SR11 coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver
- Neptune T-10 coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver

\* *Equivalent means the radio transceiver unit that is compatible with City's current AMI system.*

Neptune R900i meters are **not** accepted.

**Turbine** meters are to conform to the AWWA C-701 class II. All turbine meters are to have lead free bronze (NSF/ANSI 61, Annex G and Annex F), stainless steel or ductile iron with epoxy coating cases and flanged connections. 38mm and 50 mm sizes are to have oval two bolt flanges. Meters are to have horizontal turbines.

Individual turbine meters are acceptable only in applications involving continuous high flows such as dedicated irrigation systems or some industrial processes.

**Use of turbine meters requires City approval.**

Acceptable turbine type meters are:

- Sensus OMNI R<sup>2</sup>, T<sup>2</sup> coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver
- Neptune HP coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver

*\* Equivalent means the radio transceiver unit that is compatible with City's current AMI system.*

**Compound** meters are to conform to AWWA C-702. All compound meters are to have lead free bronze (NSF/ANSI 61, Annex G and Annex F), stainless steel or ductile iron with epoxy coating cases and flanged connections. Meters 50mm in diameter are to have oval two bolt flanges.

Acceptable compound meters are:

- Sensus OMNI C<sup>2</sup> coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver
- Neptune TRU/FLO coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver with Double Pair wire

*\* Equivalent means the radio transceiver unit that is compatible with City's current AMI system.*

## 6. Registers

All meters are to have direct reading, sealed absolute encoder registers. The unit of measure shall be cubic meters. Registers must be new. Used or reconditioned registers are not acceptable. All registers shall be programmed to read all digits left of the decimal place (minimum 5 digits).

Acceptable encoder registers for indoor use are:

- Sensus Electronic Register+; Omni Register+
- Neptune Procoder Register

Acceptable encoder registers for pit installations are:

- Sensus Electronic Register+ WP (waterproof), Omni Register+
- Neptune Procoder Register

## 7. Meter Selection

The type or combination of types of meters to be used for recording water consumption from a service connection must accurately record consumption over the expected range of flow. The meter size selected shall ensure pressure losses are within acceptable limits and provide long meter life.

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The following Table 1 provides a guide for acceptable meter types and sizes for a range of uses and flows.

**Table 1: Meter Flow Ranges**

WATER USE	LAND USE	SIZE		ACCEPTABLE METER TYPE	Flow (L/s)	
		mm	in		Operating Range	Maximum Continuous
Domestic	Commercial	16	5/8	Displacement	0.032 - 1.26	1.26
	Institutional	19	3/4	Displacement	0.047 - 1.89	1.89
	Industrial	25	1	Displacement	0.063 - 3.16	3.16
		38	1 1/2	Displacement*	0.032 - 6.31	6.31
		50	2	Displacement*	0.032 - 12.62	12.62
		75	3	Compound	0.032 - 28.39	28.39
		100	4	Compound	0.063 - 63.09	63.09
		150	6	Compound	0.095 - 126.18	126.18
		200	8	Compound	0.252 - 170.34	170.34
		250	10	Compound	0.316 - 252.36	252.36
Irrigation/ Bulk Water Use	Agricultural	38	1 1/2	Turbine	0.079-12.62	10.09
	Golf Courses	50	2	Turbine	0.095-15.77	12.62
	Parks	75	3	Turbine	0.158-41.01	31.55
	Some Industrial	100	4	Turbine	0.189-78.86	63.09
	Uses	150	6	Turbine	0.252-157.73	126.18
		200	8	Turbine	0.316-220.82	220.82
		250	10	Turbine	0.379-347.00	347.00

\* Displacement refers to Positive displacement meter type or approved equal

Conversion Factors: l/sec to USGPM multiply by 15.850

L/sec to IGPM multiply by 13.198

## **8. Dedicated Fire Services**

Fire service connections are to be metered to detect unauthorized use. Provide all fire services with a double detector check valve in combination with an appropriately sized "tattle-tale" positive displacement radio type meter and double check valve on a bypass. Install "tattle-tale" meters in accordance with these specifications.

## **9. Combined Fire Domestic Services**

All new water service connections to the municipal water system shall have a separate fire line and domestic service pipe, unless approved otherwise by the City.

Where the City approves the use of a combined domestic and fire service, an FM approved ULC listed meter assembly shall be installed to measure all flows. The meter assembly shall include a strainer, check valve, an approved type meter and a smaller approved domestic meter on a bypass. The meter set shall be factory assembled. All meters must be radio type as per this specifications.

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Acceptable preassembled fire meter sets are:

- Neptune HP Protectus III, coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver
- Sensus OMNI F<sup>2</sup> (FireLine) with check valve and smaller (domestic) meter on a bypass and coupled with 510M (non-pit) / 520M (pit) or equivalent\* radio transceiver.
- Neptune C&I Mach 10 meter coupled with 510 DP/520 DP wired or touch (3-wire) **(use of this meter to be approved by the City)**

*\* Equivalent means the radio transceiver unit that is compatible with City's current AMI system.*

## 10. Installation Requirements

Installation requirements are summarized on the following Table 2 and illustrated on the appended typical installation drawings.

**Table 2: Installation Requirements**

Size mm	Type	By Pass*		Strainer Required	Strainer Type	Chamber		
		Required	Size			Type	Size mm	Model
16x19	Displacement	No	-	No	-	Meter Box	300x500	Brooks 37
19-25	Displacement	No	-	No	-	Meter Box	425x750	Brooks 66
38-50	Displacement	Yes	25 mm	No	-	Meter Box	560x860	AEC 5686
75	Compound	Yes	50 mm	Yes	Straight	Vault	1200x2000	AEC 2121
100	Compound	Yes	50 mm	Yes	Straight	Vault	3260x1760	AEC 3151
150	Compound	Yes	50 mm	Yes	Straight	Vault	3260x1760	AEC 3151
150	Combined	Yes	50mm	Yes	FM/UL	Vault	3260x1760	AEC 3151
100-150	Detector Check /Fire	No	-	No	-	Vault	1200x2000	AEC 2121
200	Detector Check /Fire	No	-	No	-	Vault	3260x1760	AEC 3151

*\* A bypass is not required for dedicated irrigation meters.*

The applicant's Engineer must design installations for meters not shown on the above table.

### **Installation and Piping Requirements:**

Install meters horizontally with register casings plumb, facing upward. Where installed in a meter box, center meter in box.

All connecting piping, valves and fittings shall be equal to the diameter of the meter for a distance of at least 5 pipe diameters up and down stream of the meter.



Where required, install strainers immediately upstream of the meter using a flanged connection. Strainers shall be of the same manufacturer and size as the meter. Exceptions must be approved by the City.

Provide isolation valves upstream and downstream of the meter to allow removal of meter and strainer cases. Install a valve on bypass. Provide a lock wing on the operating nut of bypass valves 50mm and smaller.

For all compound and turbine meter installations provide a straight section of horizontal pipe, 5 pipe diameters in length, between the strainer and the upstream isolating valve. Do not install elbows, bends, non-concentric reducers, check valves, backflow preventers and/or pressure reducing valves within 10 pipe diameters upstream or 5 pipe diameters downstream of a meter.

An assembly with a Neptune brand meter without a strainer requires a minimum of 8-pipe-diameters of straight run pipe upstream of the meter.

Provide a test point for all meters 75mm in diameter and larger. In the absence of a test plug on the meter case, install a testing tee with a 50mm diameter threaded nipple and cap, between the meter and the downstream isolating valve.

For meters 75mm in diameter and larger provide a mechanical flange adapter on the downstream side of the meter to provide flexibility for meter and strainer case removal.

Support all meters, valves and bypasses within chambers with adjustable pipe stands. Bricks, concrete or wood blocking are not acceptable means of support.

Vaults and chambers require drain connection to a storm drainage system. Where a gravity connection to the storm system is not available, the City may approve one of the following options:

- Installation of an electric sump pump
- Installation of a rock pit. A Professional Engineer specializing in geotechnical designs must design rock pits
- Installation of a hydraulic sump ejector assembly.

**Radio Installation:**

The required number of radio transceiver units must be installed according to the manufacturers' specifications. In non-traffic areas mount radio transceiver in the chamber lid in accordance with the manufacturer's instructions. Where the lid is in a traffic area, mount the radio transceiver unit in a meter box cover/lid with recessed-hole that will have the radio transceiver head flushed with the meter box cover/lid or in an adjacent Brooks 37 Box as shown in drawing WM-7.

Remote wiring connections shall be either factory or field sealed to ensure connections are water proof. Field seals shall be in accordance with the manufacturers' instructions. The wire/cable used to connect the meter and the radio transceiver must be supplied by or purchased from the meter manufacturer and has sufficient length, including slack, to be able to open or remove the lid/hatch without snapping, removing, or separating the wire/cable.

For inside meter installations, where approved by the City, locate wall mounted radio transceivers about 1.6 metres above grade in clearly accessible location. Wiring radio transceiver to outside building and wall installation must comply to manufacturers' specifications.

## **11. Materials**

### **Pipe**

**Copper Pipe:** Copper pipe to be Certified Type K soft copper to ASTM B 88m.

All copper tubing joints are to be compression type or Victualic. Acceptable compression fittings are McDonald "T", James Jones "Super Grip", Ford "Quick Joint" or Mueller "110". Soldered joints are not permitted

**Red Brass Pipe:** Red Brass pipe to meet AWWA C-800.

Red brass joints to be threaded to ANSI B1.20.1.

**Steel Pipe:** Steel pipe is to meet AWWA C-200, electrically welded. Steel to ASTM A36. Epoxy coat the interior and exterior of all steel pipe and fabrications to AWWA C-210 or AWWA C-213.

Steel pipe joints are to be flanged to AWWA C-208 or made with mechanical couplers, mechanical flange adapters, and "Uniflange" or "EZ Flange" style adapters.

**Stainless Steel Pipe:** Stainless steel pipe is to be Schedule 10S, dual certified 304 series stainless steel.

Grooved ends to be roll grooved per Victaulic Standard Groove specifications.

### **Fittings**

**Brass:** Brass fittings to 75mm to meet AWWA C-800. All fitting joints to be compression type, threaded to ANSI B1.20.1, flanged or Victualic. Acceptable compression fittings are specified in the latest edition of the City's MMCD supplemental specifications and approved products list.

**Steel:** Steel fittings are acceptable in sizes 75mm and larger. Fabricated steel fittings to meet AWWA C-208 and AWWA C-207. Epoxy coat steel fittings to AWWA 210 or AWWA-213. All fitting connections shall be shop welded, flanged or Victualic. Flange dimensions and drilling are to be ANSI B16.1

**Stainless Steel:** Welded stainless steel fittings to be Class 150 weld-neck or slip-on type with continuous weld.

All grooved fittings to be Schedule 10S, 304 series stainless steel. Couplings to be Victaulic Style 489.

**Valves**

All valves are to be suitable for buried service. Valves on domestic service connections up to 50mm in diameter shall be bronze ball or cylinder corporation style valves meeting AWWA C-800. Valves shall have rubber o-ring seals. Connections shall be threaded, compression type or flanged. Actuation is to be by a tee-head style operating nut. Provide a lock wing on the tee-head and case for all bypass valves (locking mechanisms on levers are not acceptable).

Valves on domestic service connections 75mm to 250mm in diameter are to be cast iron, resilient seat, NRS gate valves to AWWA C-509 with flanged ends. Stem seal to be o-ring type. Actuation of buried valves or valves in vaults shall be by a standard 50mm square operating nut. Valves within person entry chambers shall be operated by hand wheel.

Provide a Nelson style valve box over buried valves.

Fire service valves within vaults or chambers shall be resilient seat, OS&Y gate valves to AWWA 509.

**Detector Check Valves**

Double detector check valves are to comply with AWWA C-510. Detector check valves for fire service use must be FM approved and ULC listed.

**Flange Adapters**

Mechanical Flange adapters for 50mm to 200mm sizes shall be to AWWA C219.

Connections between flanged fittings and steel piping may be made with "Uni-flange" or "EZ-flange" adapters.

**Bolts and Nuts**

Bolts and nuts are to be stainless steel to ASTM F-593 and F-594. Rolled threads, fit and dimension to AWWA C-111.

**Meter Setters**

Setters are permitted only for water meters 50 mm or smaller and must be same size as the water service connection.

For 19 mm and 25 mm services, setters must be equipped with a full port inlet ball valve and dual check valve on outlet.

For 38 mm and 50 mm services, the setter shall be equipped with a full port inlet ball valve and full port outlet ball valve to facilitate in-situ testing of the meter. Further, the setter shall have a bypass valve with a lock wing.

All setters must meet NSF 61 Annex F/G requirements.

**Meter Boxes**

The box, vault or chamber shall be precast concrete to the dimensions provided in Table 3. Vaults shall be design for boulevard (off road) use with static H-20 loading. Chambers shall be designed for roadway use with H-20 loading or deep installations. The minimum headroom for chambers shall be 1.9 meters for worker entry.

Boxes shall have galvanized steel or aluminum lids capable of withstanding H-20 static loads (for off road). Lids shall include a “bolt down” capability. Cast iron lids require City approval.

Vaults sized 1200 x 2000 shall have two hinged aluminum lids providing an 800mm x 1700mm opening. Vaults sized 1760 x 3260 shall have three hinged aluminum lids providing an 820mm x 2590mm opening. Vault lids shall be capable of withstanding H-20 static loading. Lids shall include a “bolt down” capability.

Lids for chambers shall be 1200mm x 1200mm square split hinged aluminum. Chamber lids shall be capable of withstanding H-20 loading. Lids shall include a “bolt down” capability.

Lids for boxes, vaults and chambers shall be predrilled and with a recessed hole for transceiver unit installation. Where this is not feasible follow drawing WM-7.

Where the depth from the top of the lid frame to the chamber floor exceeds 0.6 meters, provide an aluminum ladder securely fastened to the chamber floor and wall. Ladders shall have a telescoping aluminum post fixed to the ladder to enable safe worker entry or exit (Bilco LadderUP Safety Post LU4 or approved equal). The access hatch must be sized for a worker to enter or exit with confined space gear/clothing.

Damp proof the exterior surfaces of all vaults and chambers by applying an asphalt emulsion coating. Make construction joints water tight with an appropriate sealant.

An area of at least 1.0 metre horizontal around the meter box, vault or chamber shall be free of major landscaping or objects, including shrubs, trees, retaining or other types of walls, fences, gates, tracks, poles, etc., to facilitate maintenance of the meter assembly.

Where the meter is approved by the City to be installed within a building / utility room, the installation should be within a reasonable distance of a floor drain, which must be suitably sized to accept the flows associated with meter testing and/or maintenance. The meter should be installed a minimum of 600 mm above the floor. A space of at least 1.0 metre horizontal and 1.0 metre vertical from the meter assembly shall be free of obstruction to allow for convenient servicing / maintenance and testing of the meter. No electrical, mechanical, or water-sensitive equipment should be placed or installed under the meter assembly or in an area where splash or flow from the meter assembly could occur during servicing / maintenance or testing of the meter.

Acceptable boxes, vaults and chambers are listed in Table 3 below:

**Table 3: Meter chambers**

Type	Size (mm)	Model*	Lid / Hatch Size (mm)
Boxes	300x500	Brooks 37	300x450 galv. steel (cast iron with City approval)
	425x750	Brooks 66	450x750 galv. Steel (cast iron with City approval)
	560x860	AE Concrete 5686	630x940 aluminum
Vaults	1200x2000	AE Concrete 2121	2 – 880x880 aluminum
	1760x3260	AE Concrete 3151	3 – 880x880 aluminum
Chambers	1760x3260	AE Concrete 3152	2 – 600x1200 aluminum

\* Specified or equivalent product

## **12. Inspection Procedure**

A request for water service connection is initiated by an application for a Plumbing Permit through the City's Development Services Department.

The Applicant's Engineer shall determine from the City whether the service connection requires a meter and shall select the appropriate meter type for the intended use in accordance with the City's Water Meter Specifications. Plans submitted as part of the Plumbing Permit Application must indicate the meter size, type and chamber location. The plans shall also indicate the expected range of flows and the average expected flow for the proposed installation.

For non-typical meter installations, or for meters of 200mm diameter and larger, the applicant's Engineer must provide detailed drawings giving complete details of the installation.

The City Development Services Department will inspect the meter installation to ensure conformance to this specification and the B.C. Plumbing Code.

Upon approval of the installation by the Plumbing Inspector, the developer is to call the City Engineering and Public Works Department at 604-927-3500 to lock the bypass valve where applicable, take the initial meter reading and activate the service connection. All factory tags and labels are to remain on the meter until the City Public Works department removes them.

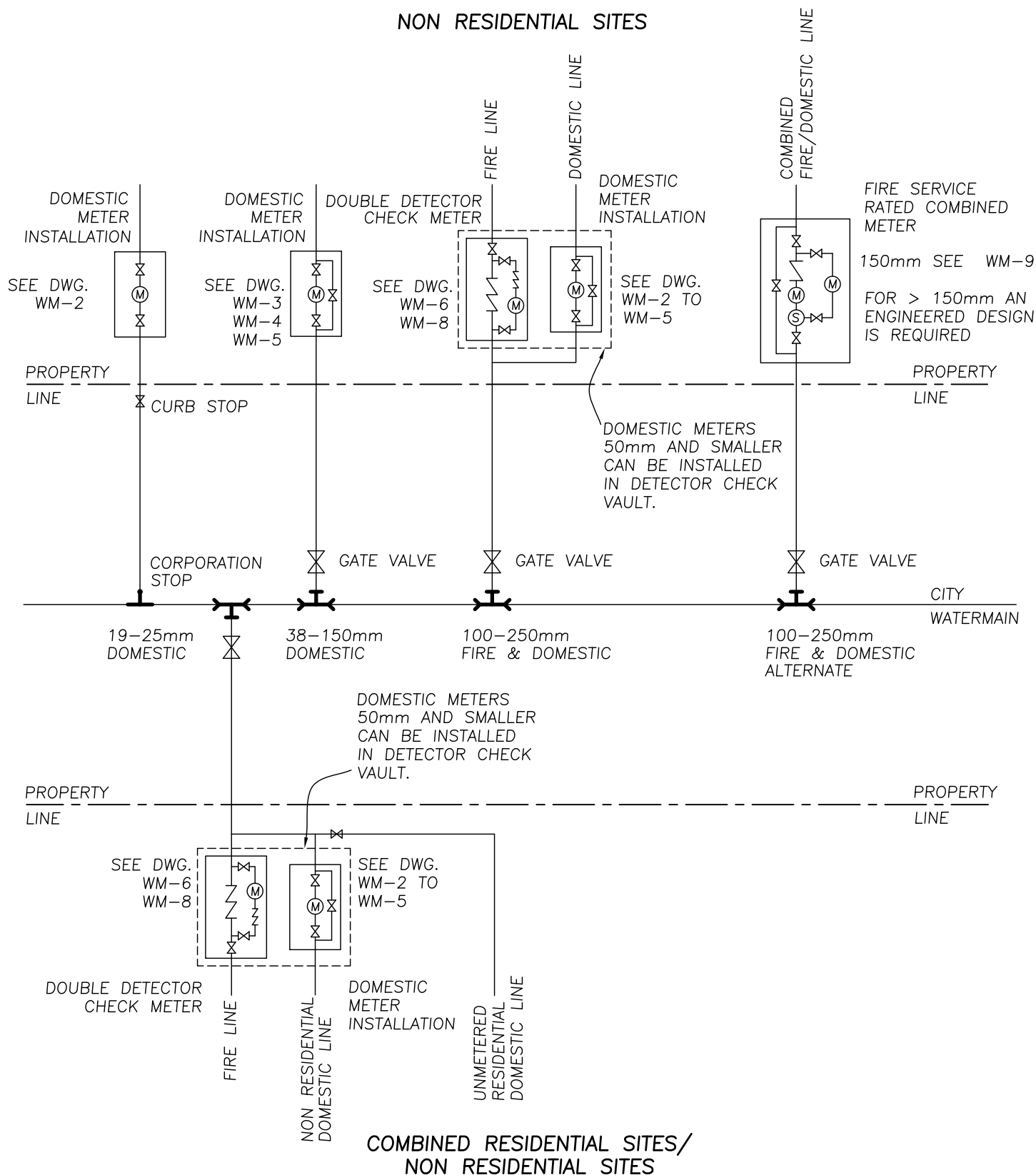
## **13. Water Service During Construction**

Water service connections required during construction phase of a development project generally be unmetered per the latest applicable *Water Distribution Amendment Bylaw*, however at the discretion of the City a meter may be required. Meters installed on such service connections are to conform to the requirements of this specifications – unless variations approved by the City - and the meter to be in place prior to the activation of the service. Only City Engineering Department personnel may deactivate such a service or remove the meter. Contact the City Engineering Customer Service Desk at 604-927-3500.



Water Meter Specifications  
**Typical Installation Drawings**

## NON RESIDENTIAL SITES



PLOTTED: 1-Dec-21

TYPICAL SERVICE INSTALLATION

DATE: DEC/2021  
DRAWN: REY  
SCALE: N.T.S.

DRAWING NUMBER:

WM-1



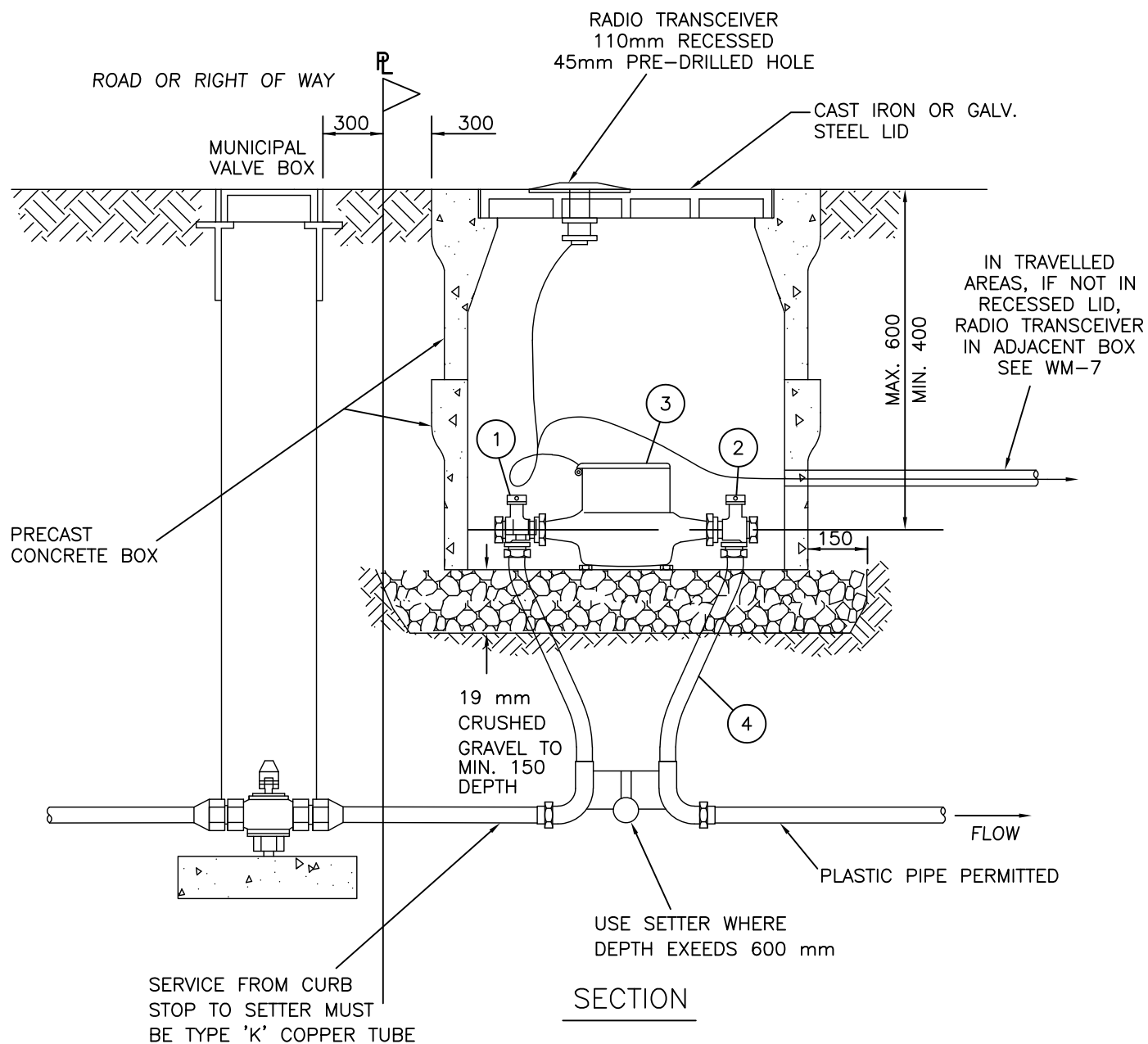


<u>No.</u>	<u>DESCRIPTION</u>
1	INLET BALL VALVE (FULL PORT)
2	DUAL CHECK VALVE (IN SETTER)
3	TYPE K COPPER SPOOL PIECE IN PLACE OF METER

1. THIS DRAWING SHOULD BE REVIEWED WITH WATER METER SPECIFICATIONS DOCUMENT.
2. REFER TO SECTION 33 11 01 FOR DETAILED SPECIFICATIONS.

- ## 16mmø - 25mmø METER SETTER INSTALLATION

DRAWING NUMBER:  
COQ-W2m



## METER BOXES

16 mm	METER	-	BROOKS 37
16x19 mm	METER	-	BROOKS 37
19 mm	METER	-	BROOKS 66
25 mm	METER	-	BROOKS 66

## No.

## DESCRIPTION

1	INLET BALL VALVE (FULL PORT)
2	DUAL CHECK VALVE (IN SETTER)
3	APPROVED METER
4	APPROVED METER SETTER

Note: This drawing should be reviewed with water meter specifications document.

**16mmø – 25mmø POSITIVE  
DISPLACEMENT METER INSTALLATION**

DATE: 01 DEC/2021

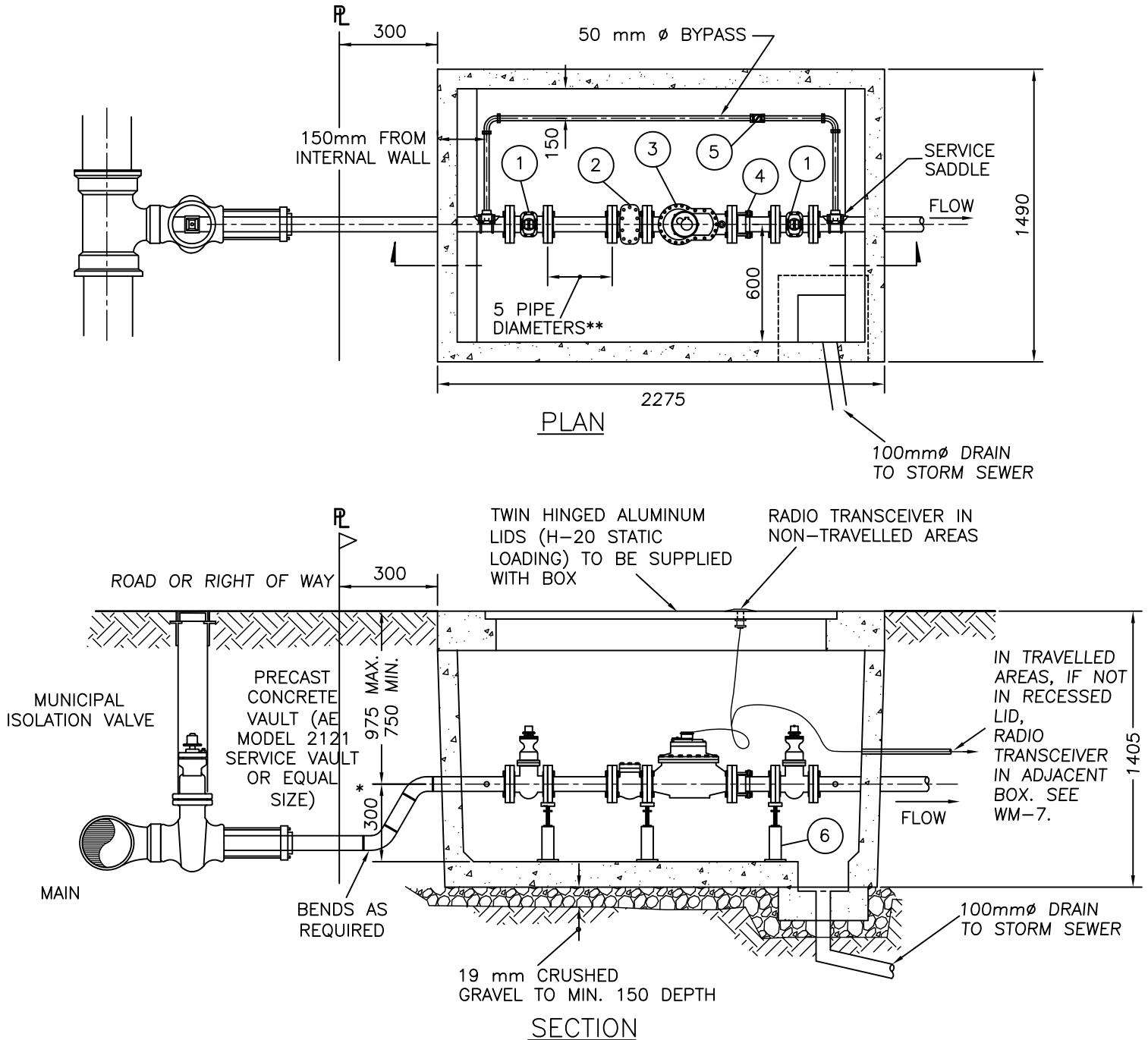
DRAWN: REY

SCALE: N.T.S.

DRAWING NUMBER:

**WM-2**





## NOTES:

1. THIS DRAWING SHOULD BE REVIEWED WITH WATER METER SPECIFICATIONS DOCUMENT.
2. PIPE TO BE TYPE K COPPER, BRASS, EPOXY COATED WELDED STEEL OR SS.
3. REFER DISTANCES IN WATER METER SPECIFICATIONS DOCUMENT.
4. CONNECTIONS:  
BRASS: IPT  
COPPER: COMPRESSION OR VICTAULIC. NO SOLDER PERMITTED  
STEEL: FLANGED, "UNIFLANGE", OR "EZ FLANGE" OR VICTAULIC

No.	DESCRIPTION
1	GATE VALVE (ISOLATION)
2	STRAINER
3	APPROVED METER
4	MECHANICAL FLANGE ADAPTOR
5	BYPASS BALL VALVE WITH LOCKWING
6	ADJUSTABLE PIPE STANDS

**75mm $\phi$  COMPOUND  
METER INSTALLATION**

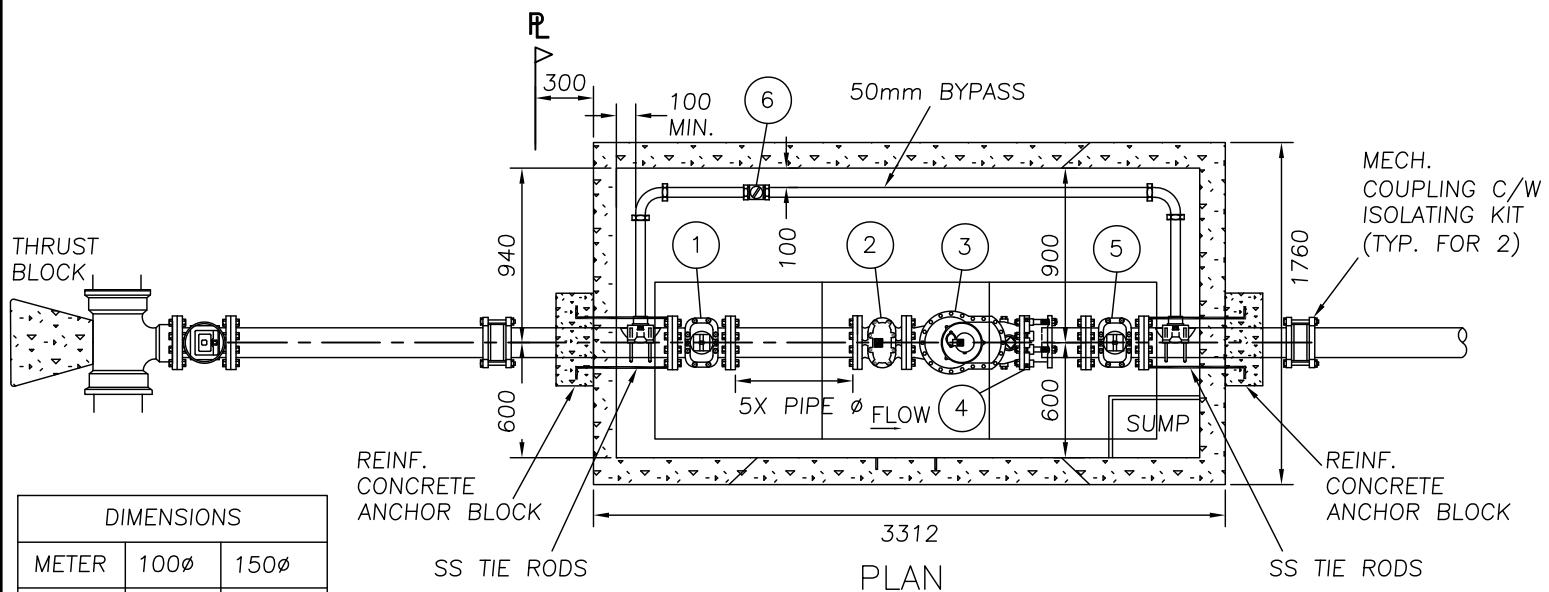
DATE: 01 DEC/2021

DRAWN: REY

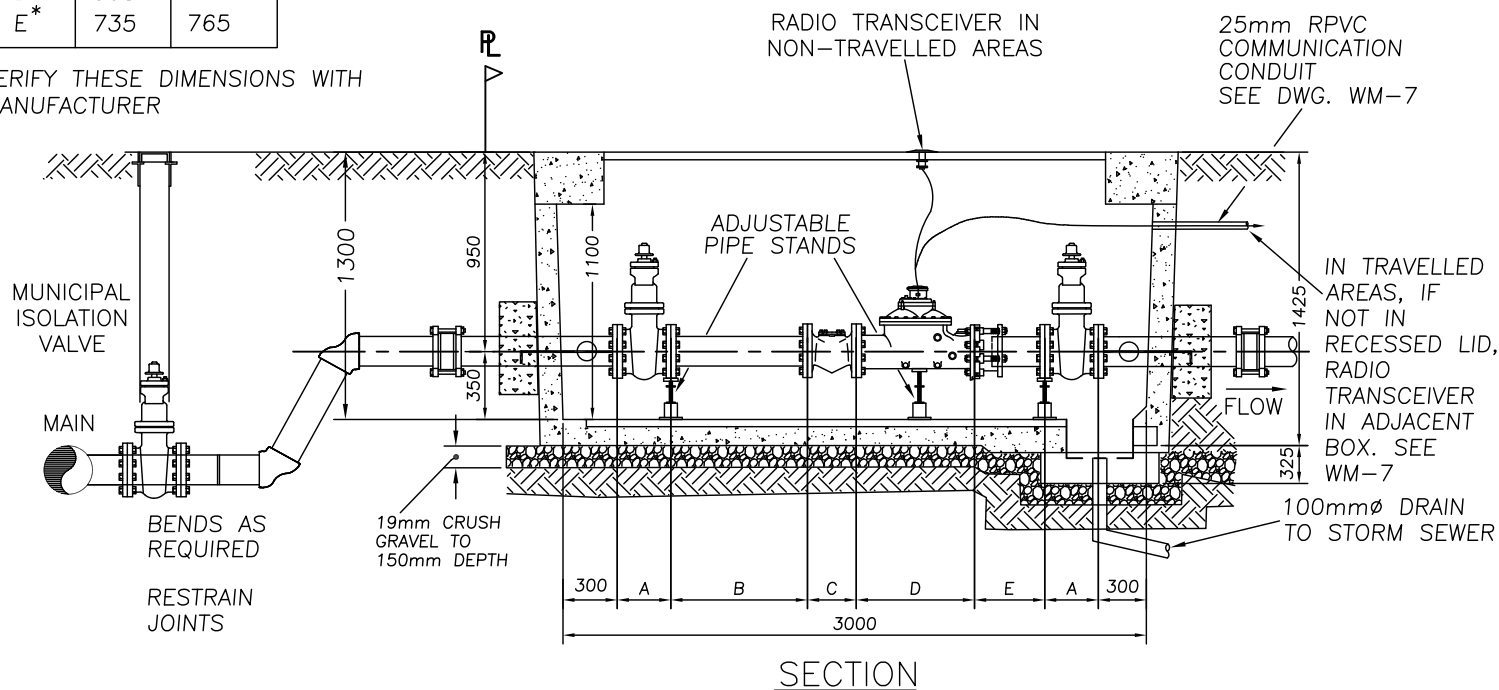
SCALE: N.T.S.

DRAWING NUMBER:

**WM-4**



\* VERIFY THESE DIMENSIONS WITH MANUFACTURER



### NOTES:

PIPE: TO BE TYPE K COPPER, BRASS, EPOXY COATED WELDED STEEL OR SS.

### CONNECTIONS:

BRASS: IPT

COPPER: COMPRESSION OR VICTAULIC. NO SOLDER PERMITTED

STEEL: FLANGED, "UNIFLANGE", "EZ FLANGE" OR VICTAULIC

### CHAMBER:

AE CONCRETE MODEL 3151 VAULT OR EQUAL SIZE

No.	DESCRIPTION
1	UPSTREAM RESILENT SEAT GATE VALVE
2	STRAINER
3	APPROVED METER
4	MECHANICAL FLANGE ADAPTOR
5	DOWNSTREAM RESILENT SEAT GATE VALVE
6	BYPASS BALL VALVE WITH LOCKWING

**100mmØ – 150mmØ  
COMPOUND METER INSTALLATION**

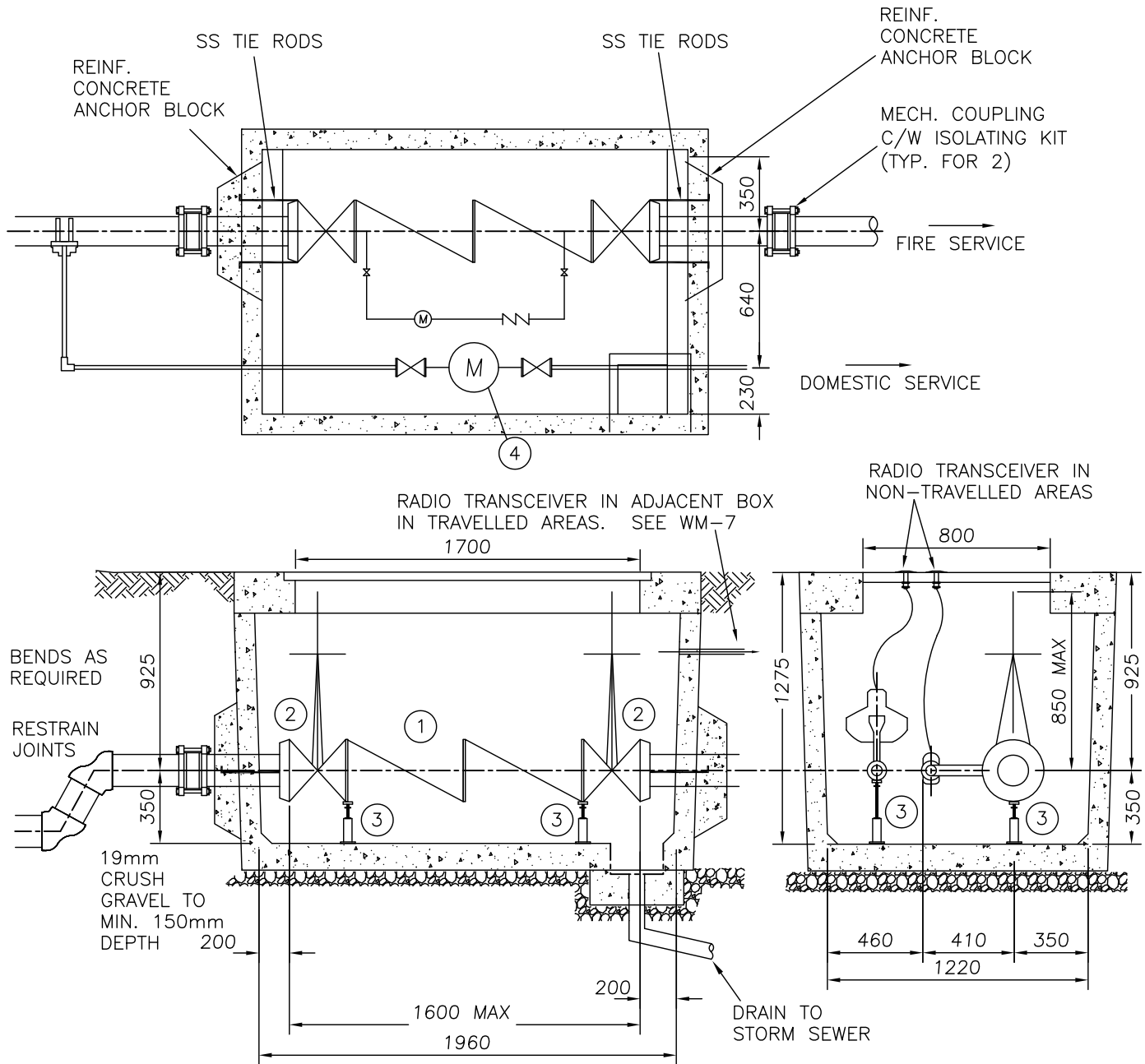
DATE: 01 DEC/2021

DRAWN: REY

SCALE: N.T.S.

DRAWING NUMBER:

**WM-5**



### NOTES

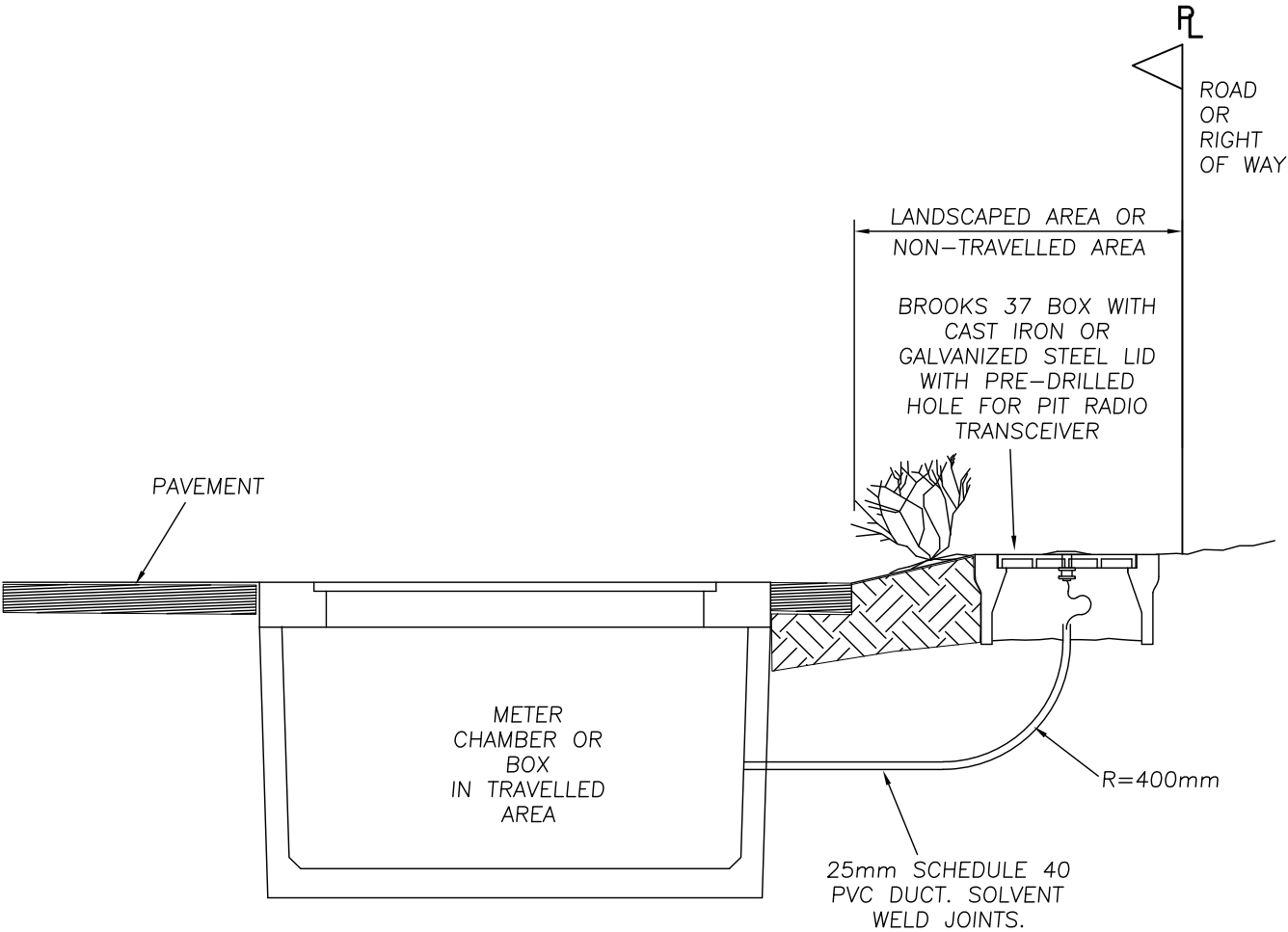
1. THIS DRAWING SHOULD BE REVIEWED WITH WATER METER SPECIFICATIONS DOCUMENT.
2. PIPE: TO BE TYPE K COPPER, BRASS, EPOXY COATED WELDED STEEL OR SS.
3. CONNECTIONS:  
BRASS: IPT  
COPPER: COMPRESSION OR VICTAULIC. NO SOLDER PERMITTED  
STEEL: FLANGED, "UNIFLANGE", "EZ FLANGE" OR VICTAULIC
4. AS PER BC BUILDING CODE 3.2.4.9.1), 2) & 3), VALVE HANDWHEELS CONTROLLING THE FIRE WATER SERVICE SHALL BE ELECTRICALLY SUPERVISED AND MONITORED.
5. VAULT: AE CONCRETE MODEL 2121 OR EQUAL SIZE

No.	DESCRIPTION
1	FM APPROVED ULC LISTED DOUBLE DETECTOR CHECK ASSEMBLY CW 2 OS & Y GATE VALVES, TEST COCKS, APPROVED METER AND BY PASS.
2	"UNIFLANGE" OR "MEGA LUG" FLANGE ADAPTORS.
3	ADJUSTABLE PIPE STANDS.
4	50mm AND SMALLER DOMESTIC METER. METERS > 50mm REQUIRE SEPARATE VAULT.

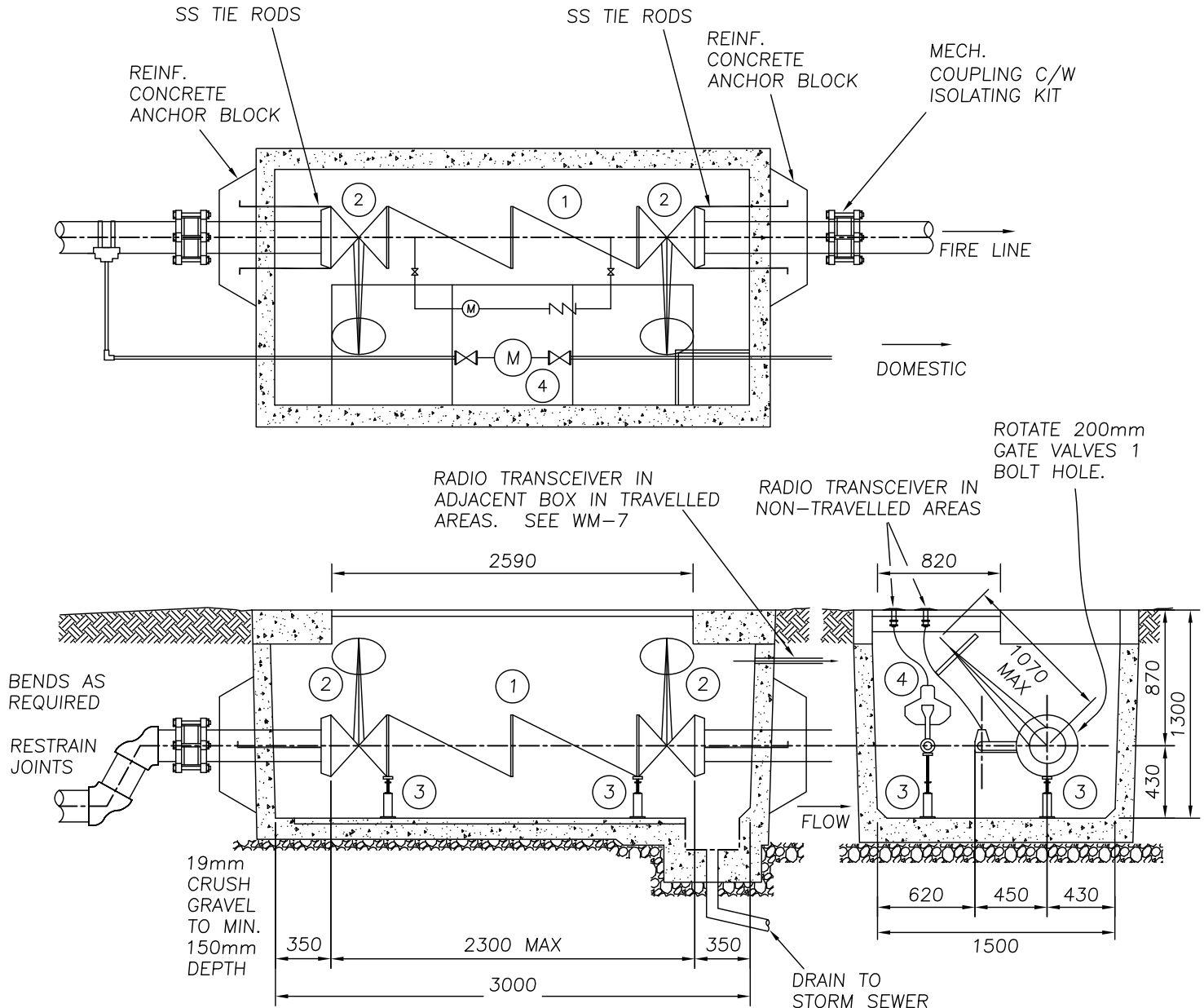
**SEPARATE DOMESTIC METER AND 100mm  
- 150mm FIRE SERVICE WITH DOUBLE  
DETECTOR CHECK VALVE INSTALLATION**

DATE: 01 DEC/2021  
DRAWN: REY  
SCALE: N.T.S.

DRAWING NUMBER:  
**WM-6**



PIT RADIO TRANSCEIVER INSTALLATION IN TRAVELLED AREAS	DATE:	01 DEC/2021	DRAWING NUMBER:  WM-7
	DRAWN:	REY	
	SCALE:	N.T.S.	



## NOTES

1. THIS DRAWING SHOULD BE REVIEWED WITH WATER METER SPECIFICATIONS DOCUMENT.
2. PIPE: TO BE TYPE K COPPER, BRASS, EPOXY COATED WELDED STEEL OR SS.
3. CONNECTIONS:  
BRASS: IPT  
COPPER: COMPRESSION OR VICTAULIC. NO SOLDER PERMITTED  
STEEL: FLANGED, "UNIFLANGE", "EZ FLANGE" OR VICTAULIC
4. AS PER BC BUILDING CODE 3.2.4.9.1), 2) & 3), VALVE HANDWHEELS CONTROLLING THE FIRE WATER SERVICE SHALL BE ELECTRICALLY SUPERVISED AND MONITORED.
5. VAULT: AE CONCRETE MODEL 2121 OR EQUAL SIZE

## No.

## DESCRIPTION

- 1 FM APPROVED ULC LISTED DOUBLE DETECTOR CHECK ASSEMBLY C/W 2 OS & Y GATE VALVES, TEST COCKS, APPROVED METER AND BY PASS.
- 2 "UNIFLANGE" OR "MEGA LUG" FLANGE ADAPTORS.
- 3 ADJUSTABLE PIPE STANDS.
- 4 DOMESTIC METERS 50mm WITH LOW BYPASS SETTER. METERS > 50mm REQUIRE SEPARATE VAULT.

SEPARATE FIRE/DOMESTIC LINES  
METER INSTALLATION

DATE: 01 DEC/2021

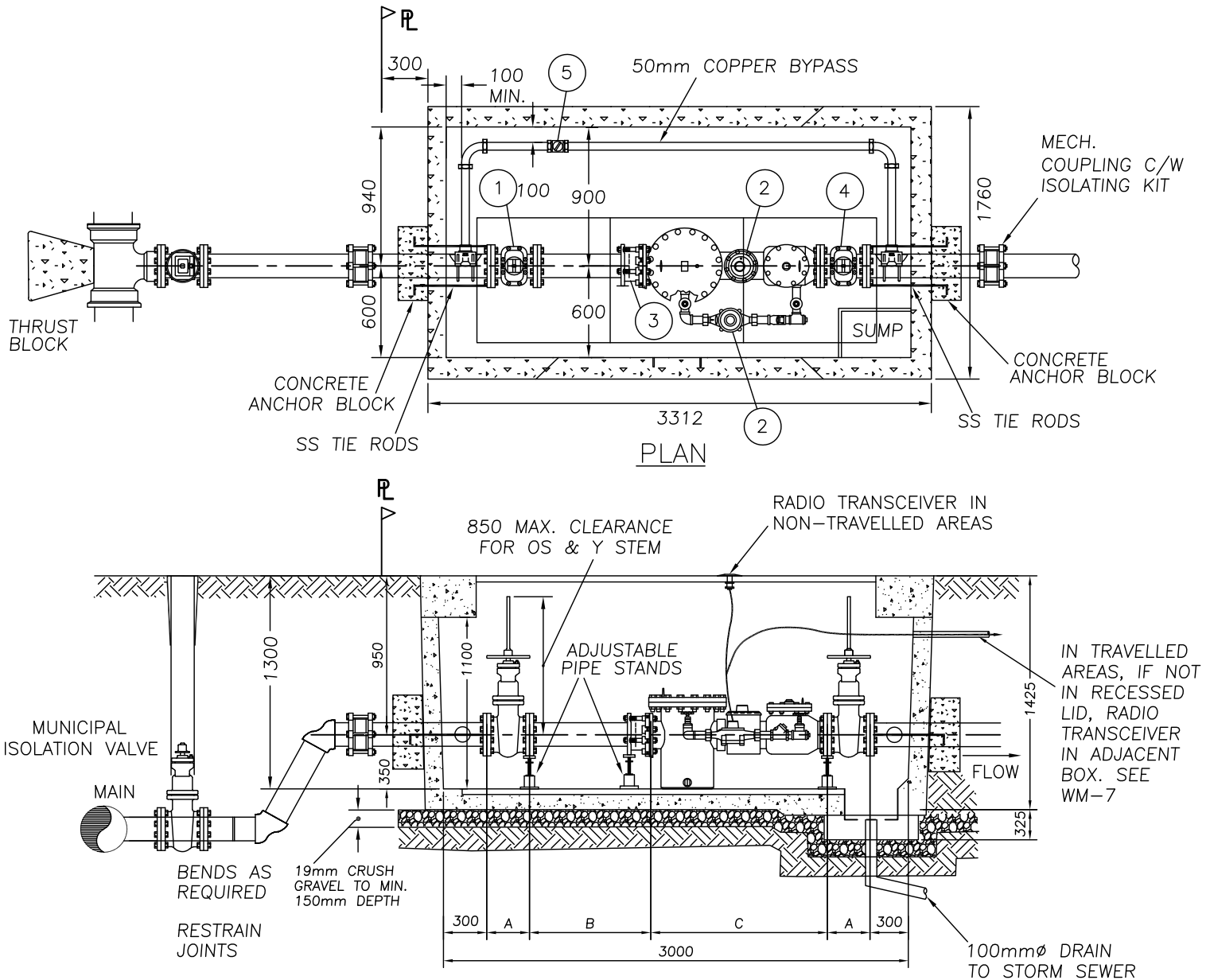
DRAWN: REY

SCALE: N.T.S.

DRAWING NUMBER:

WM-8





No.	DESCRIPTION
1	UPSTREAM RESILIENT SEAT GATE VALVE (OS & Y)
2	APPROVED FIRE SERVICE METER
3	MECHANICAL FLANGE ADAPTOR
4	DOWNSTREAM RESILIENT SEAT GATE VALVE (OS & Y)
5	BYPASS BALL VALVE WITH LOCKWING

### NOTES

- THIS DRAWING SHOULD BE REVIEWED WITH WATER METER SPECIFICATIONS DOCUMENT.
- PIPE: TO BE TYPE K COPPER, BRASS, EPOXY COATED WELDED STEEL OR SS.
- CONNECTIONS:  
BRASS: IPT  
COPPER: COMPRESSION OR VICTAULIC. NO SOLDER PERMITTED  
STEEL: FLANGED, "UNIFLANGE", "EZ FLANGE" OR VICTAULIC
- AS PER BC BUILDING CODE 3.2.4.9.1), 2) & 3), VALVE HANDWHEELS CONTROLLING THE FIRE WATER SERVICE SHALL BE ELECTRICALLY SUPERVISED AND MONITORED.
- VAULT: AE CONCRETE MODEL 2121 OR EQUAL SIZE

DIMENSIONS	
METER	150Ø
A	267
B	723
C*	1143

\* VERIFY THESE DIMENSIONS WITH MANUFACTURER

## 150mmØ COMBINED FIRE/DOMESTIC METER INSTALLATION

DATE: 01 DEC/2021

DRAWN: REY

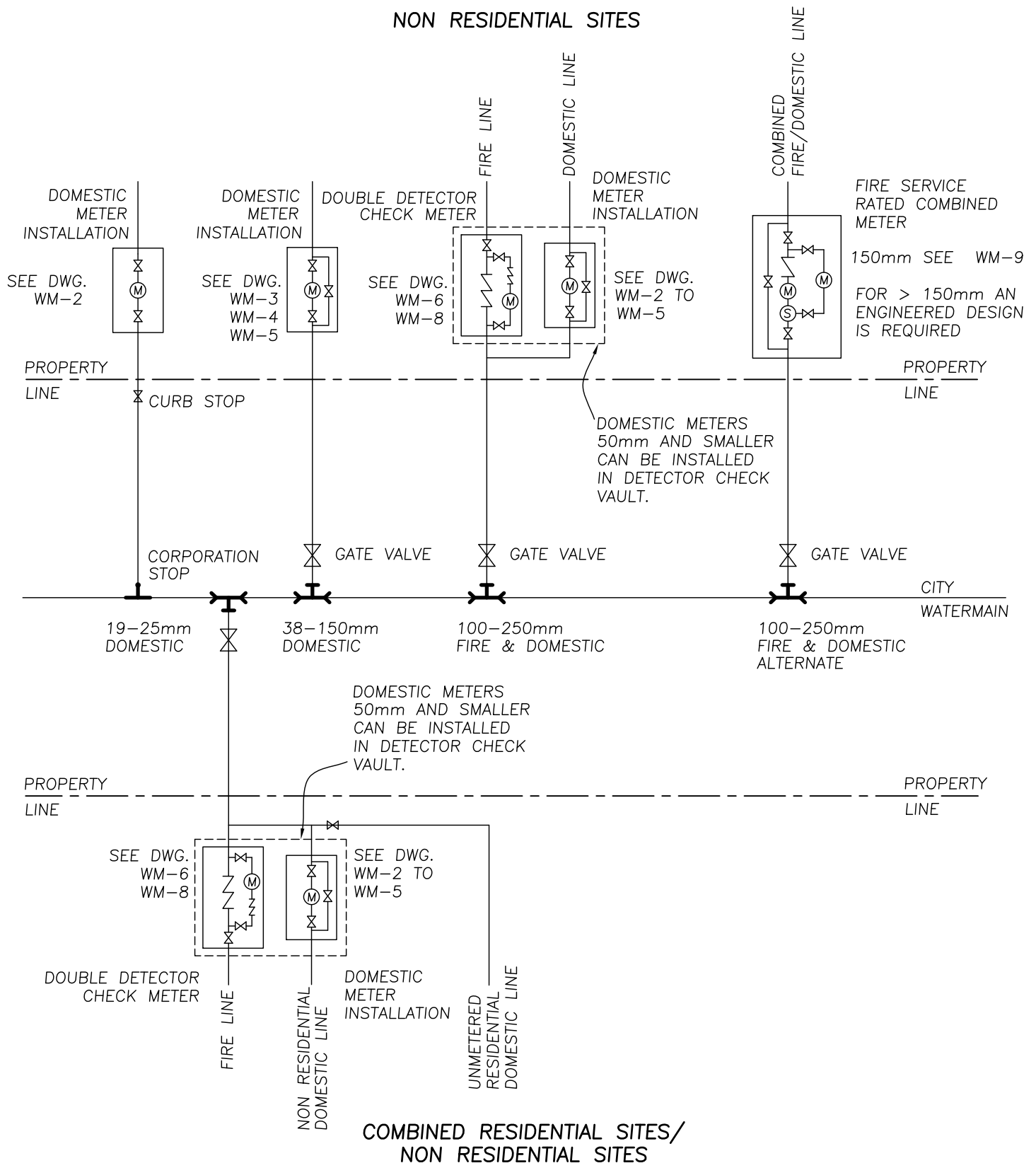
SCALE: N.T.S.

DRAWING NUMBER:

**WM-9**

***Appendix F -  
Standard Detail Drawings & Park  
Development Standards***

### NON RESIDENTIAL SITES



PLOTTED: 1-Dec-21

### TYPICAL SERVICE INSTALLATION

DATE: DEC/2021  
 DRAWN: REY  
 SCALE: N.T.S.

DRAWING NUMBER:

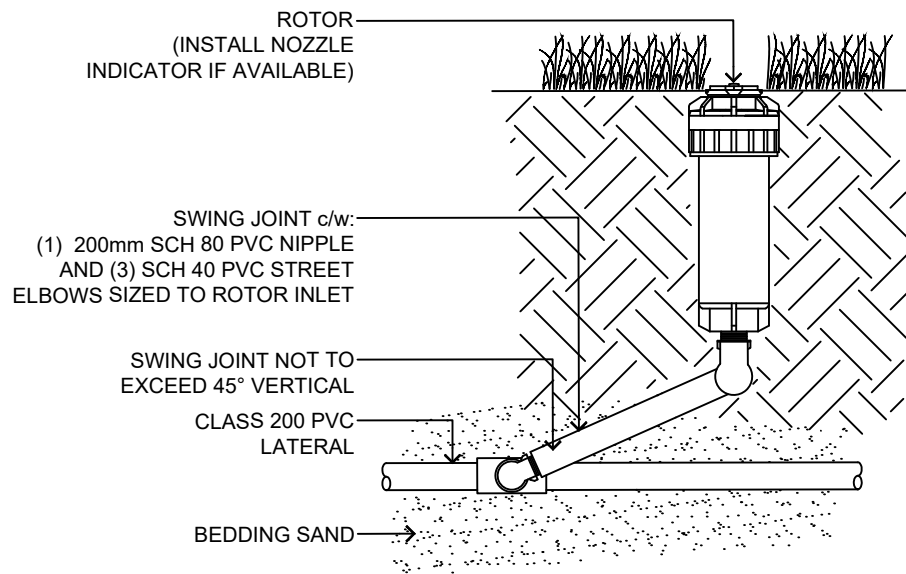
### WM-1

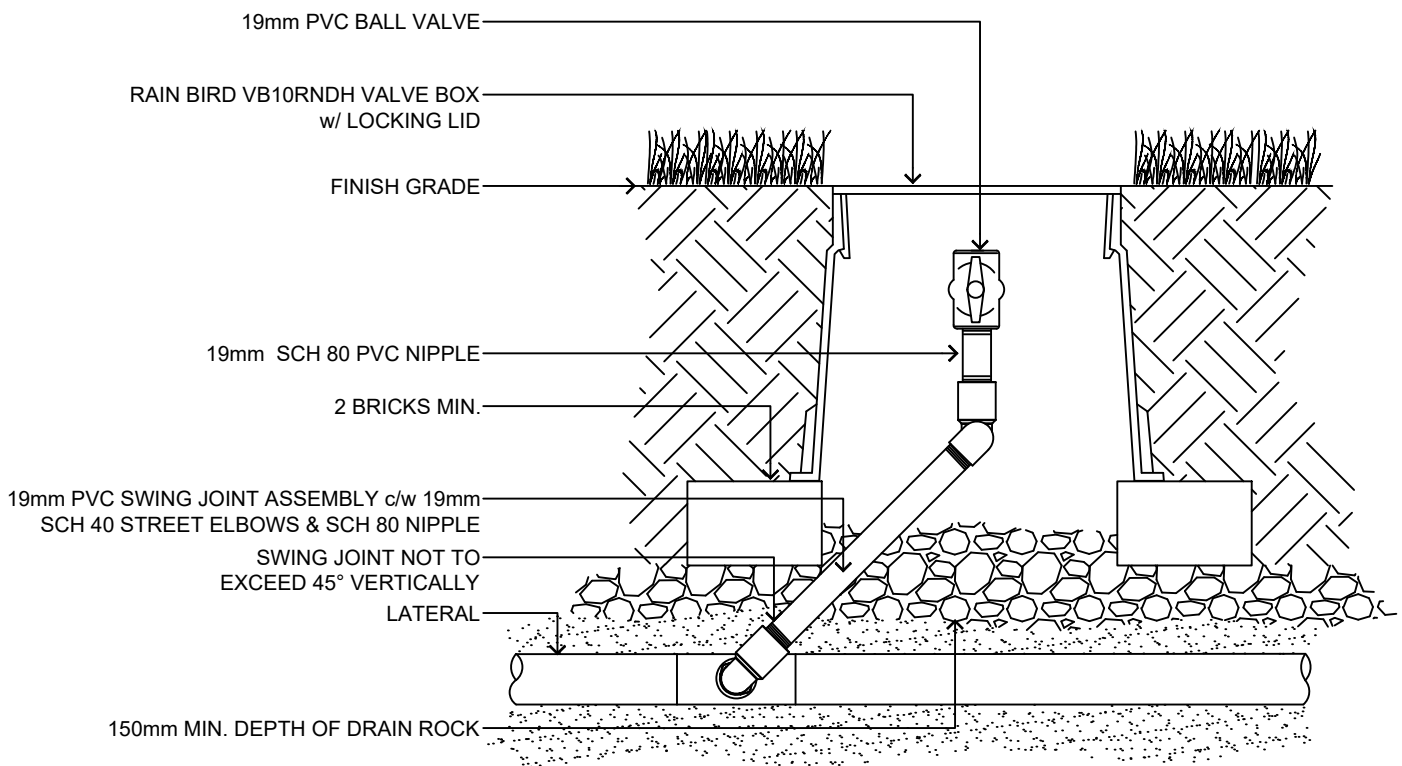
## PLAN

## SECTION

NOTES:  
ALL FIELD JOINTS TO BE THREADED OR COMPRESSION.  
ALL PIPE TO BE BRASS OR COPPER TUBE.  
MANUFACTURED SETTERS MAY HAVE SOLDERED JOINTS.

WM-3



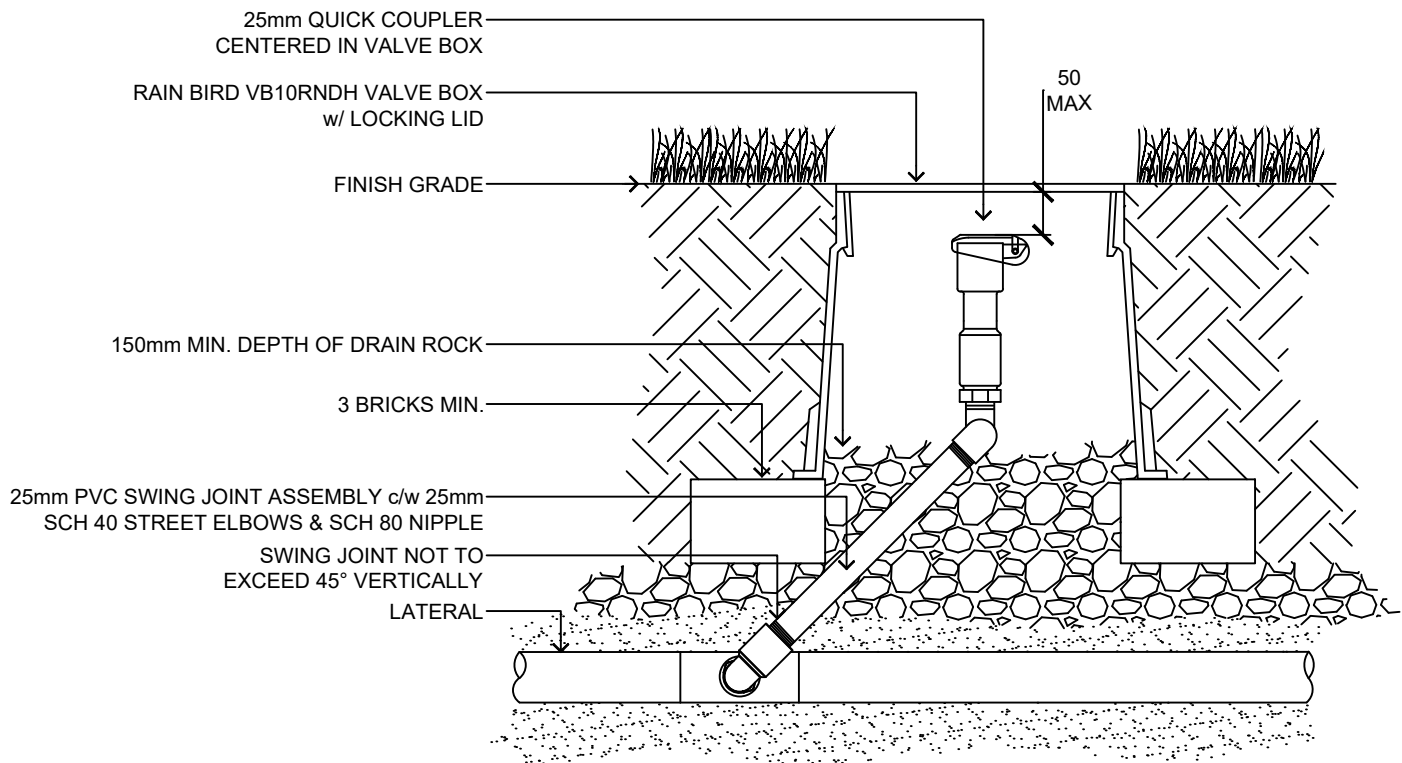


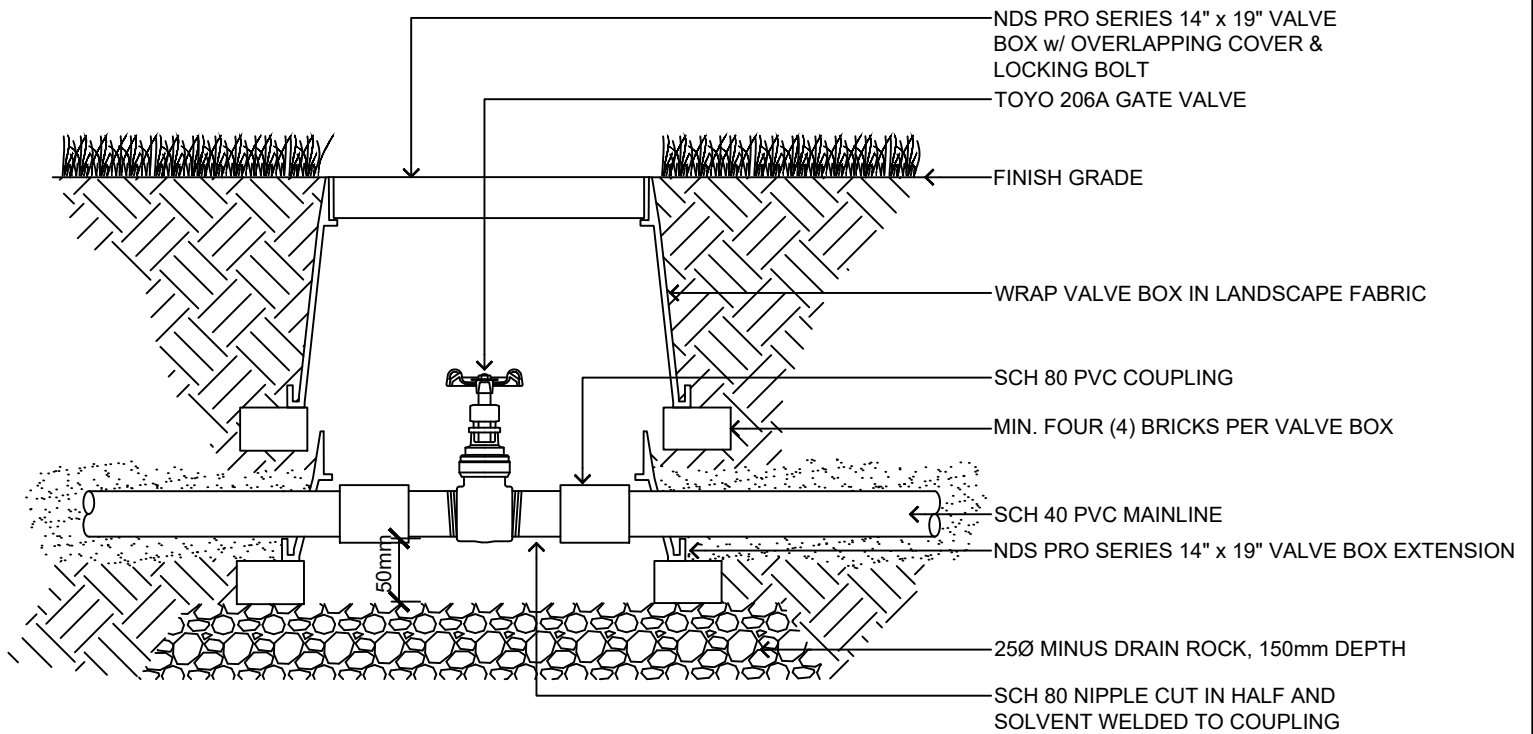
SCALE N.T.S.

REV 30/11/2018

FLUSH VALVE ASSEMBLY

DETAIL NO: PRC-ID-05



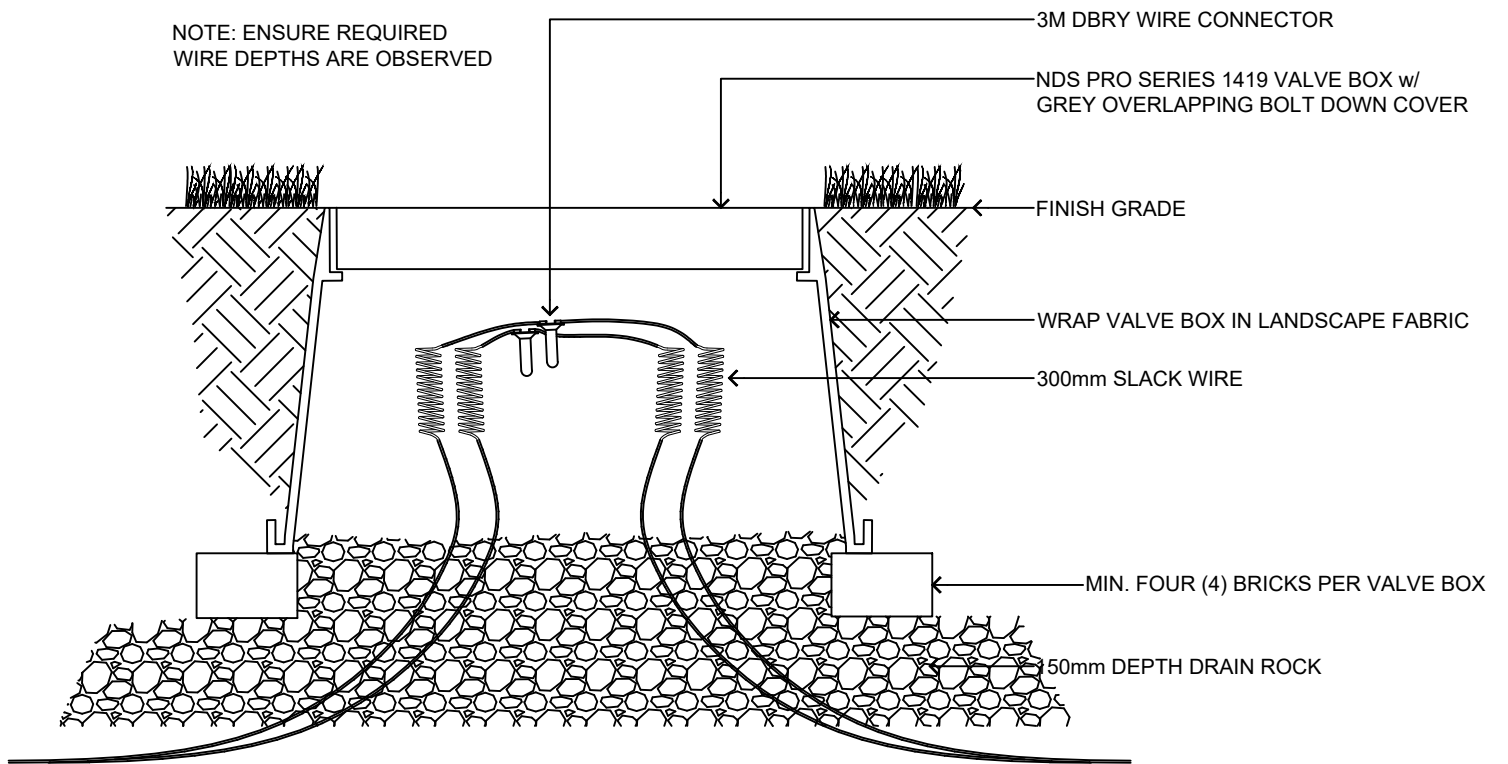


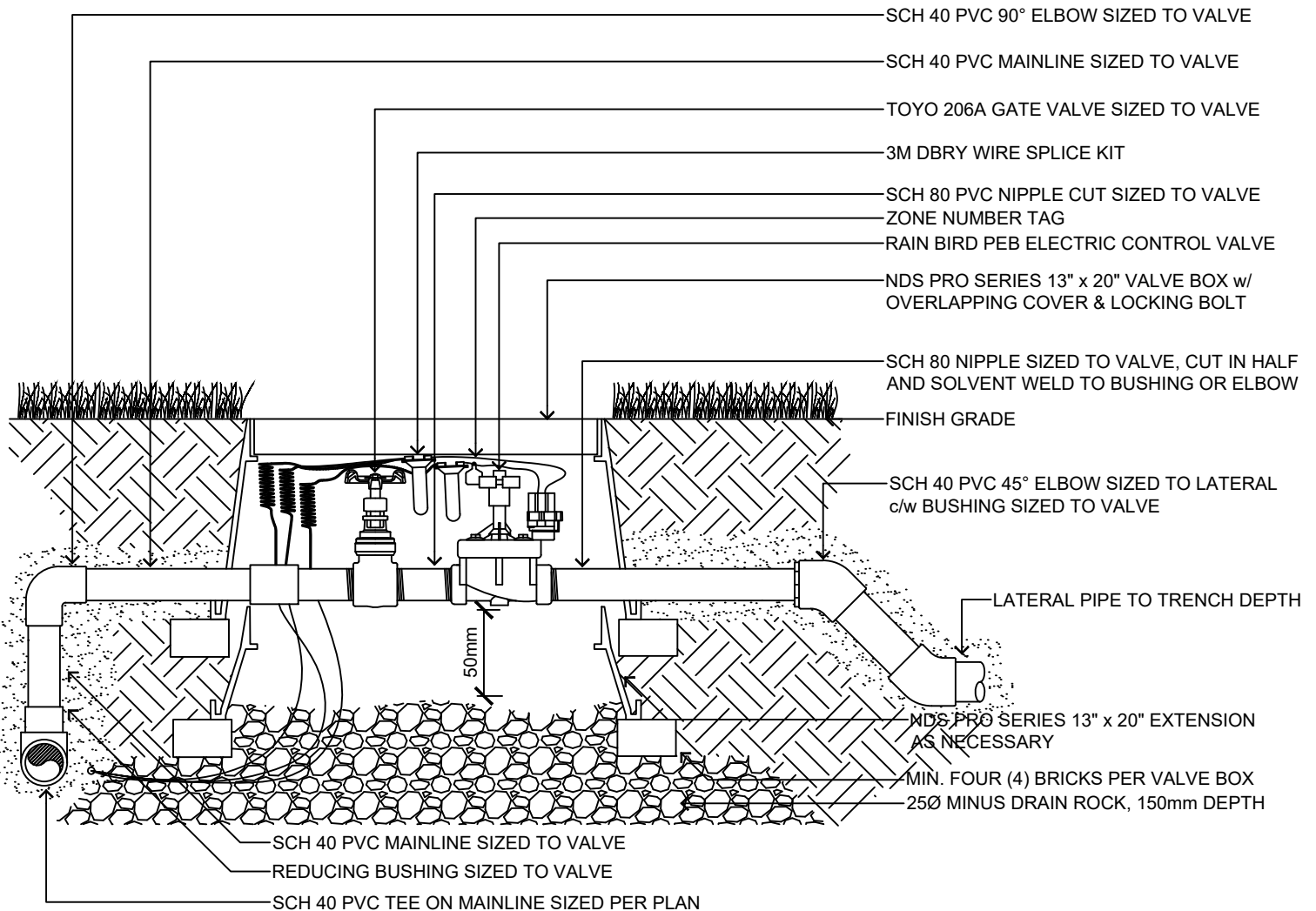
SCALE N.T.S.

REV 30/11/2018

**GATE VALVE**  
 DETAIL NO: PRC-ID-07







## NOTE:

- CENTER VALVE IN VALVE BOX
- DO NOT INSTALL VALVE OVER MAINLINE
- MAINTAIN 50mm GAP BETWEEN BOTTOM OF VALVE & TOP OF DRAIN ROCK
- WRAP VALVE BOX IN LANDSCAPE FABRIC TO PREVENT INGRESS OF MATERIAL

SCALE N.T.S.

REV 30/11/2018

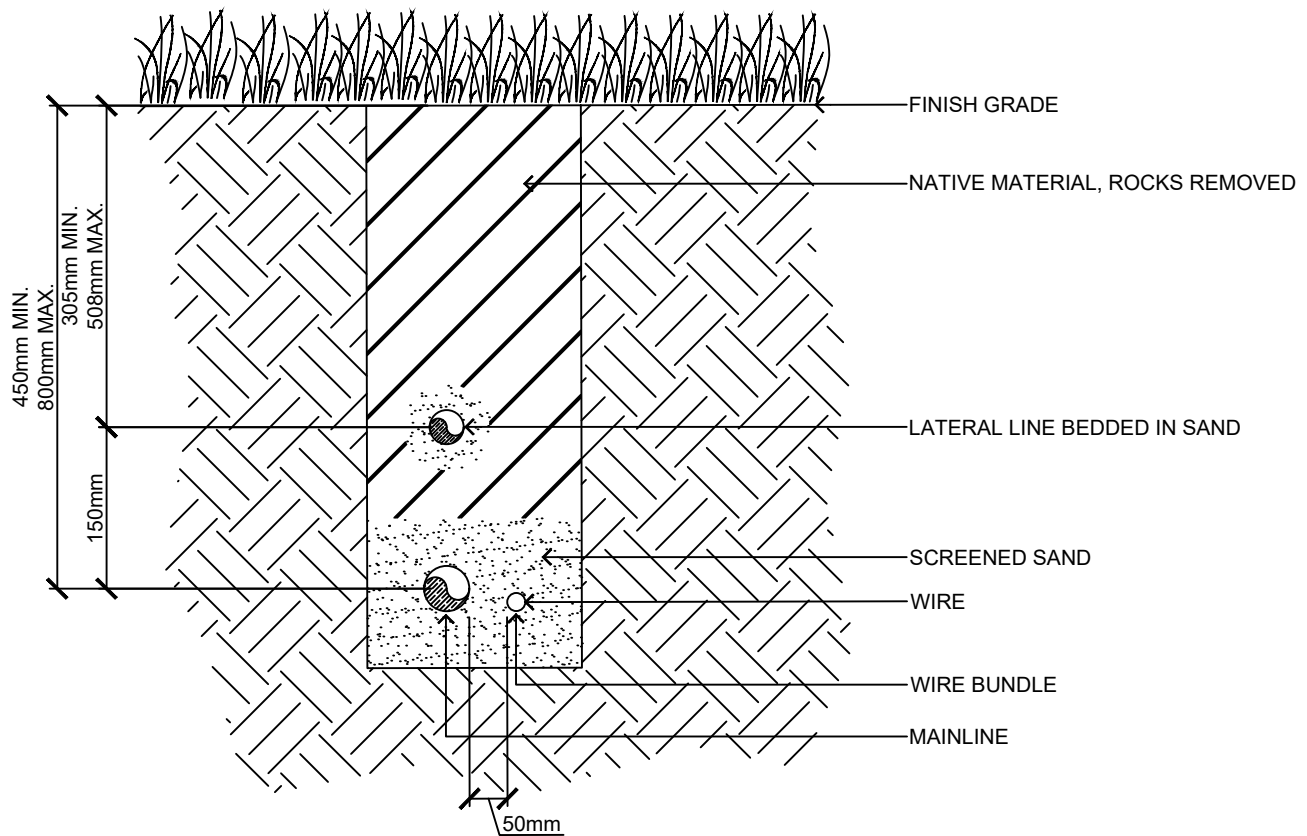
38mm TO 50mm ELECTRIC CONTROL VALVE

DETAIL NO: PRC-ID-10

- CENTER VALVE IN VALVE BOX
- DO NOT INSTALL VALVE OVER MAINLINE
- OPERATING FLOW RANGE: 0.3 TO 20 gpm
- MAINTAIN 50mm GAP BETWEEN BOTTOM OF VALVE & TOP OF DRAIN ROCK
- WRAP VALVE BOX IN LANDSCAPE FABRIC TO PREVENT INGRESS OF MATERIAL

REV 30/11/2018

DETAIL NO: PRC-ID-11

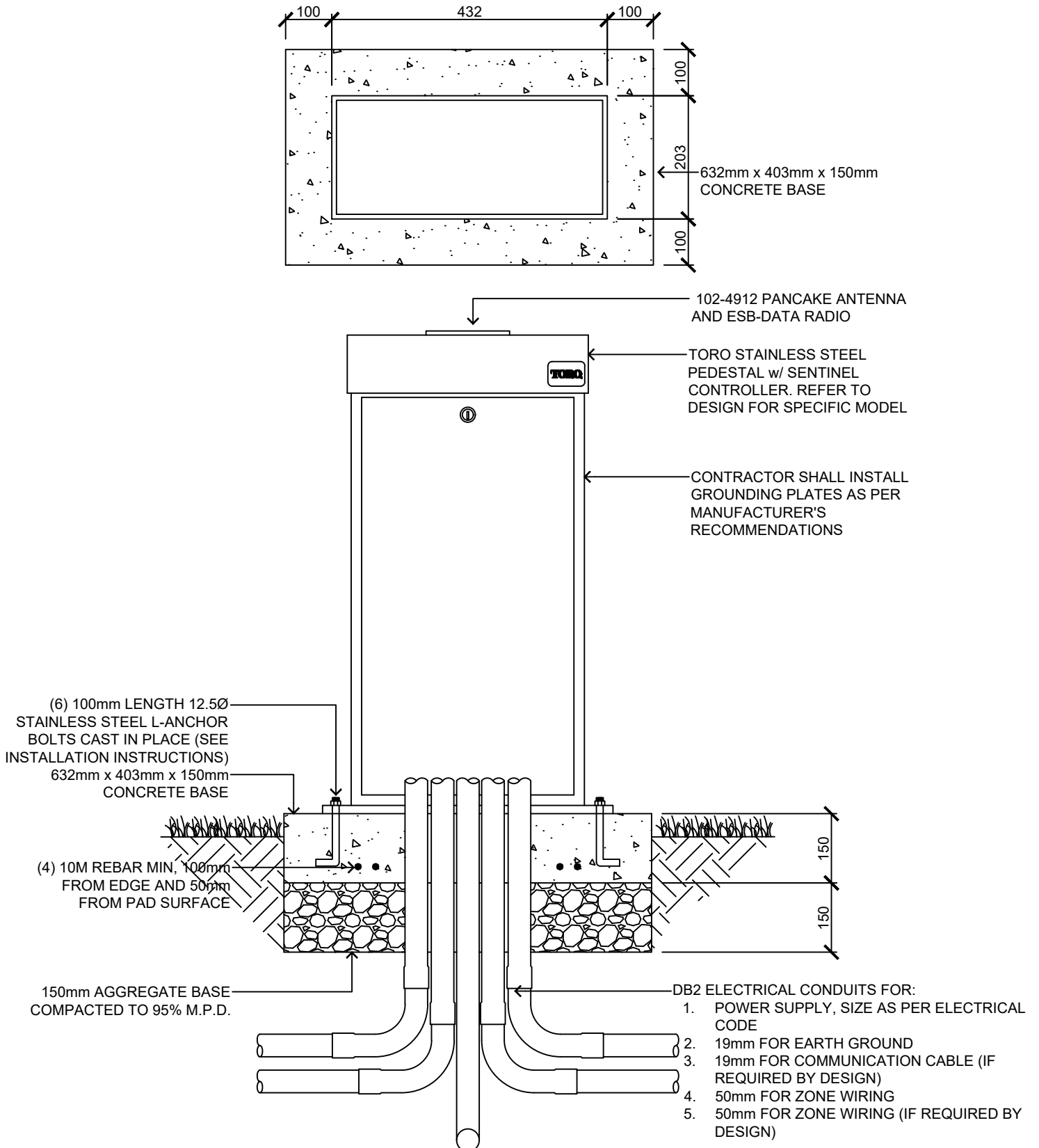


SCALE N.T.S.

REV 30/11/2018

TRENCH SECTION

DETAIL NO: PRC-ID-12

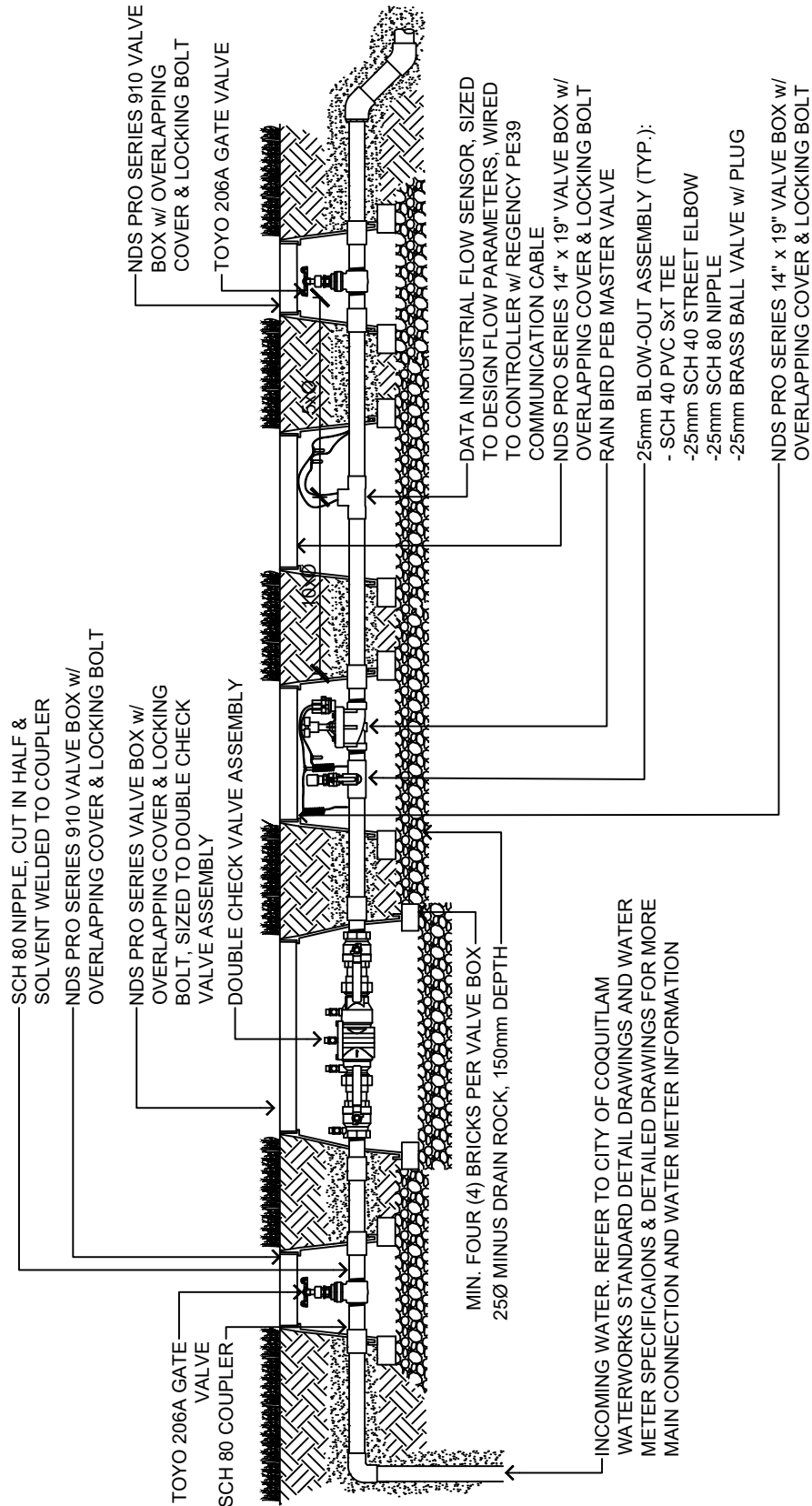


SCALE N.T.S.

REV 30/11/2018

## IRRIGATION CONTROLLER - PEDESTAL MOUNT

DETAIL NO: PRC-ID-15



SCALE N.T.S.

REV 30/11/2018

25mm TO 50mm POINT OF CONNECTION

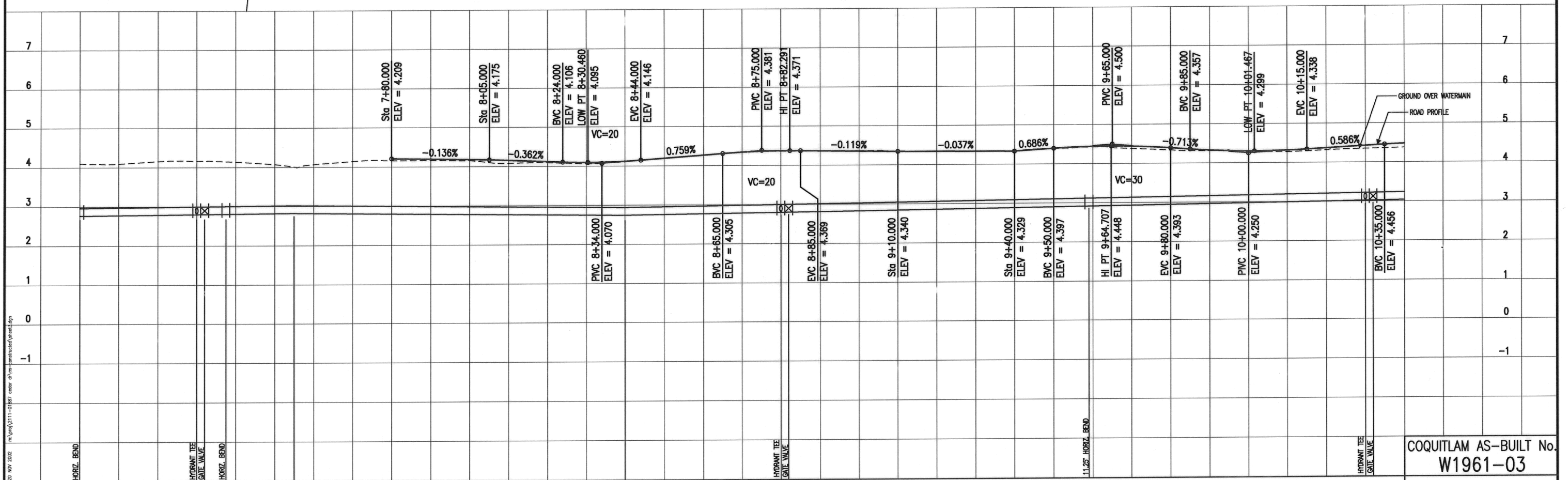
DETAIL NO: PRC-ID-18

# ***Appendix G - As-Built Drawings***

<b><u>MATERIAL LIST</u></b>	
PIPE	PACIFIC STATE D.I. C350-50
HYDRANTS	TC P20 SLIDE GATE
SADDLES	SMITH BLAIR
FITTINGS	BRASS - MUELLER CAST - AGS
GATE VALVES	MUELLER

NOTES:

1.) ALL WATERMAINS AND APPURTENANCES ARE DUCTILE IRON CLASS 50.



COQUITLAM AS-BUILT No.  
W1961-03

WATERMAIN INVERTS,  
LENGTHS AND GRADES

CHAINAGE

355.00m - 200mm DIA D.I. W/M C/W  
 ← "FIELD LOC" GASKETS AND POLYETHYLENE  
 ENCASMENT @ 0.110%

85.00m - 200mm DIA D.I. W/M C/W  
"FIELD LOC" GASKETS AND POLYETHYLENE  
ENCASEMENT @ -0.100%

230.00m - 200mm DIA D.I. W/M C/W "FIELD LOC" GASKETS AND POLYETHYLENE ENCASEMENT @ 0.150%

7+00.0000	7+20	7+37.48	7+40
-----------	------	---------	------

7+80	8+00	8+20
------	------	------

	9+00
	9+20
	9+40
	9+59
	9+60
	9+80

[illegible]

INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

THIS DRAWING HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES. McELHANNY CONSULTING SERVICES LTD., ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS ACCEPT NO RESPONSIBILITY TO ANY OTHER PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, FOR LOSS OR LIABILITY INCURRED AS A RESULT OF THEIR USE OF THESE DRAWINGS.

**BENCHMARKS**  
All elevations refer to Coquiltam  
Monument No.: 77H4118  
Elevation 3.811 m.

 **McElhanney**  
McElhanney Consulting  
Services Ltd.  
13160-88 Ave., Surrey, B.C. V3W 3K3  
Tel. (604)596-0391 Fax(604)596-8853

PROFESSIONAL  
OF  
E. Y. M. HO  
BRITISH  
COLUMBIA  
ENGINEER

**CITY OF COQUITLAM**  
3000 GUILDFORD WAY, COQUITLAM, BC V3B 7N2 TEL. 604-927-3000 FAX: 604-927-3015

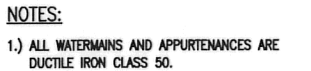
**CEDAR DRIVE WATERMAIN**  
VICTORIA DRIVE TO GILLEY'S TRAIL  
COQUITLAM, B.C.

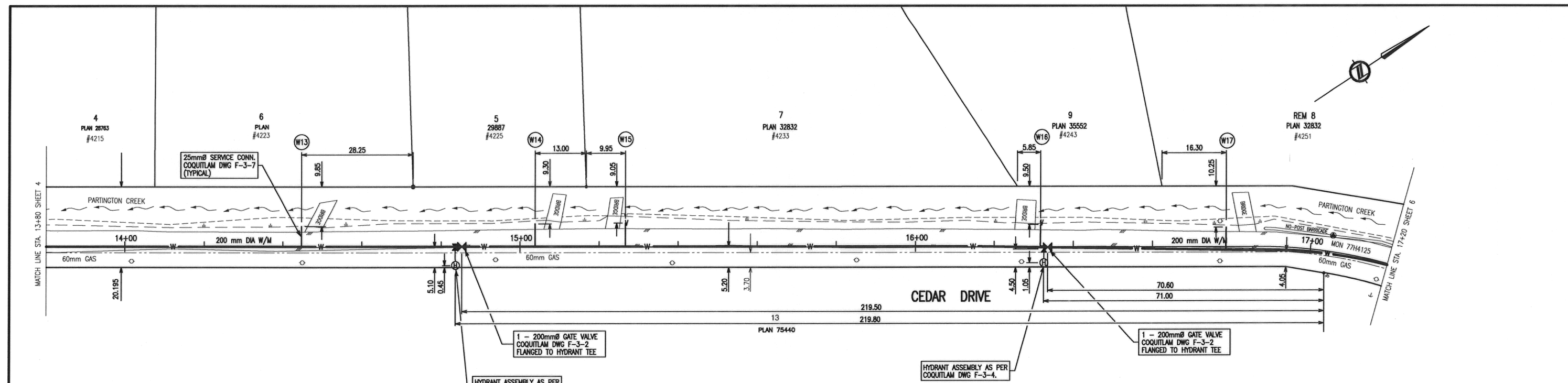
Scale	Horiz. 1: Vert. 1:
Drawn	LRP/HS
Checked	
Designed	G.S.
Checked	
Approved	E.H.

500	City Project No.	<b>C 96845-1</b>
5	City Drawing No.	
	Job No.	<b>2111-01887-0</b>
	Date	<b>APRIL 2002</b>

Drawing No.	3
of 6	
Revision	2



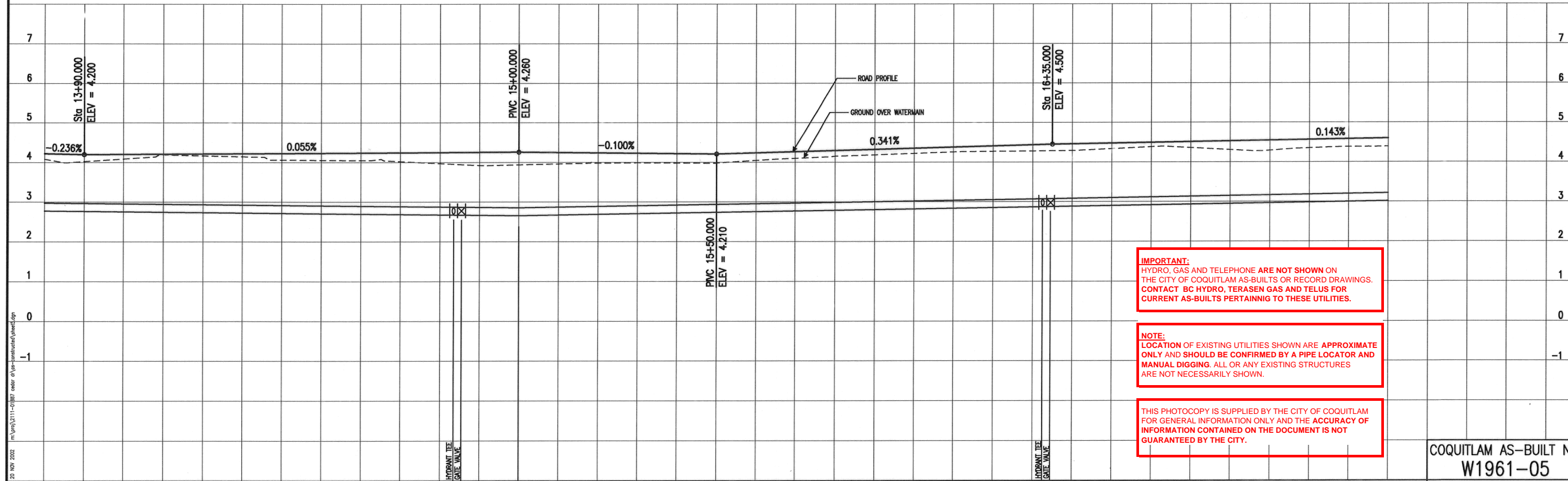




**MATERIAL LIST**

PIPE	PACIFIC STATE D.I. C350-50
HYDRANTS	TC P20 SLIDE GATE
SADDLES	SMITH BLAIR
FITTINGS	BRASS - MUELLER CAST - AGS
GATE VALVES	MUELLER

**NOTES:**  
1.) ALL WATERMAINS AND APPURTENANCES ARE DUCTILE IRON CLASS 50.



**IMPORTANT:**  
HYDRO, GAS AND TELEPHONE ARE NOT SHOWN ON THE CITY OF COQUITLAM AS-BUILT OR RECORD DRAWINGS. CONTACT BC HYDRO, TERASEN GAS AND TELUS FOR CURRENT AS-BUILT PERTAINING TO THESE UTILITIES.

**NOTE:**  
LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY A PIPE LOCATOR AND MANUAL DIGGING. ALL OR ANY EXISTING STRUCTURES ARE NOT NECESSARILY SHOWN.

THIS PHOTOCOPY IS SUPPLIED BY THE CITY OF COQUITLAM FOR GENERAL INFORMATION ONLY AND THE ACCURACY OF INFORMATION CONTAINED ON THE DOCUMENT IS NOT GUARANTEED BY THE CITY.

COQUITLAM AS-BUILT No.  
W1961-05

WATERMAIN INVERTS, LENGTHS AND GRADES

CHAINAGE

430.00m - 200mm DIA D.I. W/M C/W "FIELD LOC" GASKETS AND POLYETHYLENE ENCASMENT @ 0.100%

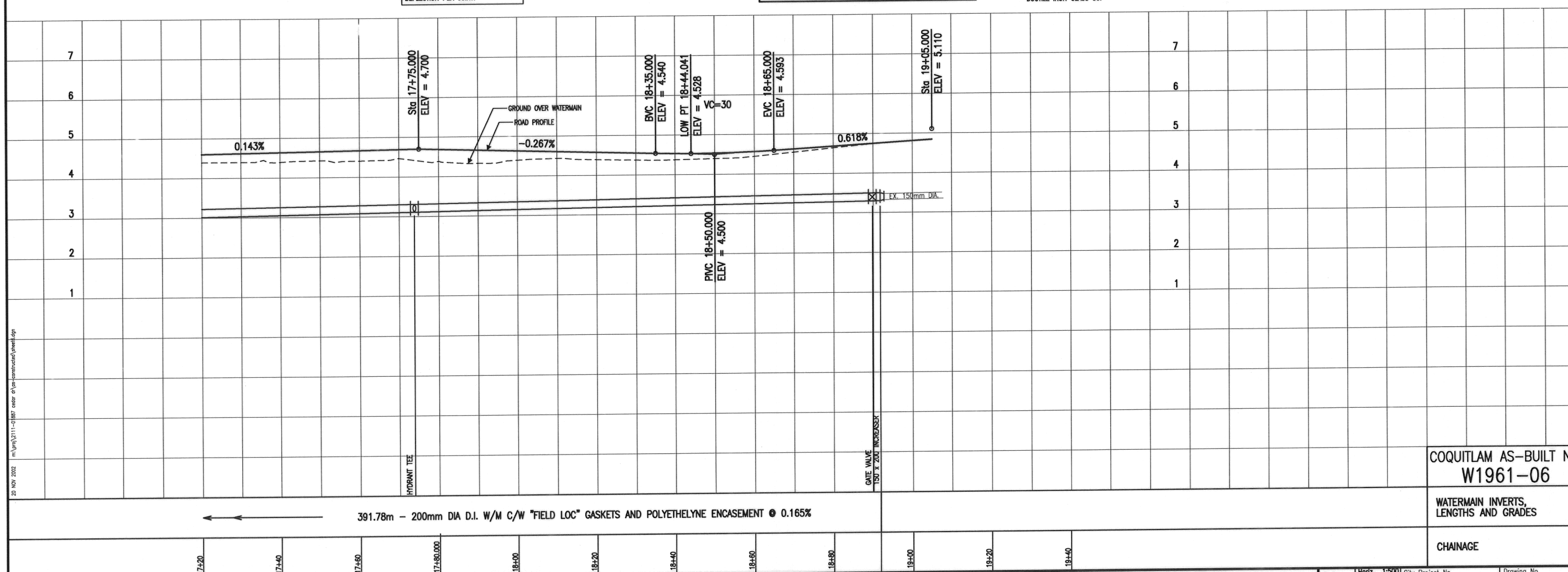
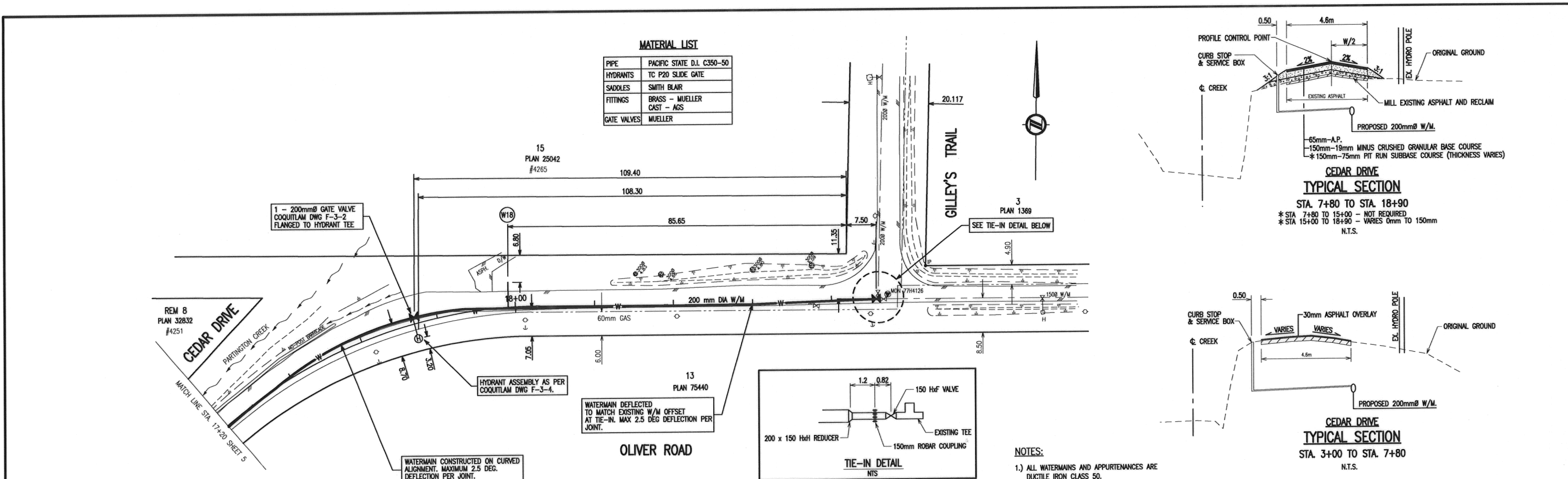
391.78m - 200mm DIA D.I. W/M C/W "FIELD LOC" GASKETS AND POLYETHYLENE ENCASMENT @ 0.165%

13+80	14+00	14+20	14+40	14+60	14+80.000	15+00.000	15+20	15+40	15+60	15+80	16+00	16+20.000	16+40	16+60	16+80	17+00	17+20
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<p>2 10/31/02 AS CONSTRUCTED SURVEY SUPPLIED BY CITY OF COQUITLAM M.Z. G.S.</p> <p>1 04/06/02 REVISED TO CITY REQUIREMENTS. H.S. G.S.</p>	<p>LEGAL DESCRIPTION OF PROPERTY</p> <p>BENCHMARKS</p> <p>All elevations refer to Coquitlam Monument No.: 77H4118 Elevation 3.811 m.</p>	<p><b>McElhanney</b></p> <p>McElhanney Consulting Services Ltd.</p> <p>13160-88 Ave., Surrey, B.C. V3W 3K3</p> <p>Tel. (604)596-0391 Fax(604)596-8853</p>	<p><b>CITY OF COQUITLAM</b></p> <p>3000 GUILDFORD WAY, COQUITLAM, BC V3B 7N2 TEL. 604-927-3000 FAX: 604-927-3015</p> <p><b>CEAR DRIVE WATERMAIN</b></p> <p>VICTORIA DRIVE TO GILLEY'S TRAIL</p> <p>COQUITLAM, B.C.</p>	<p>Scale: 1:500</p> <p>Drawn: LRP/HS</p> <p>Checked: G.S.</p> <p>Designed: G.S.</p> <p>Approved: E.H.</p>	<p>City Project No. C 96845-1</p> <p>City Drawing No.</p> <p>Job No. 2111-01887-0</p> <p>Date APRIL 2002</p>	<p>Drawing No. 5</p> <p>of 6</p> <p>Revision 2</p>
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				INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.		LEGAL DESCRIPTION OF PROPERTY						CITY OF COQUITLAM 3000 GUILDFORD WAY, COQUITLAM, BC V3B 7N2 TEL. 604-927-3000 FAX: 604-927-3015		Scale Vert. 1:50 Horiz. 1:50		City Project No. C 96845-1		Drawing No. 6	
				THIS DRAWING HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES. McELHANNEY CONSULTING SERVICES LTD., ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS ACCEPT NO RESPONSIBILITY TO ANY OTHER PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, FOR LOSS OR LIABILITY INCURRED AS A RESULT OF THEIR USE OF THESE DRAWINGS.		BENCHMARKS All elevations refer to Coquitlam Monument No. 77H4118 Elevation 3.811 m.		McElhanney Consulting Services Ltd. 13160-88 Ave., Surrey, B.C. V3W 3K3 Tel. (604)596-0391 Fax(604)596-8853				CEDAR DRIVE WATERMAIN VICTORIA DRIVE TO GILLEY'S TRAIL COQUITLAM, B.C.		Drawn LRP/HS		City Drawing No.			
2	10/31/02	AS CONSTRUCTED SURVEY SUPPLIED BY CITY OF COQUITLAM		M.Z.	G.S.									Checked					
1	04/06/02	REVISED TO CITY REQUIREMENTS.		H.S.	G.S.									Designed G.S.		Job No. 2111-01887-0		of 6	
No.	Date	Revision		Dr	Ch									Checked		Date		Revision	
														Approved E.H.		APRIL 2002		2	