



# NEW WESTMINSTER

**CORPORATION OF THE CITY OF NEW WESTMINSTER**

**CONTRACT No. NWIT-18-28**

**Tenth Avenue Roadway Lighting and Fibre  
Optic Infrastructure  
Twelfth Street to Twentieth Street**

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INVITATION TO TENDER

**CORPORATION OF THE CITY OF NEW WESTMINSTER**  
(THE OWNER)

**Contract: Tenth Avenue Roadway Lighting and Fibre Optic Infrastructure**

**Reference No: NWIT-18-28**

**The Owner invites tenders for:**

Retrofit and infill of all roadway lighting and installation of new fibre optic infrastructure on Tenth Avenue from Twelfth Street to Twentieth Street as specified in the Tender-Contract Documents, Specifications, and Drawings.

Copies of the Contract Documents are available for download from the City of New Westminister Purchasing site at:

<https://www.newwestcity.ca/business-and-economy/doing-business-with-the-city/request-for-bids-and-proposals-open>

Tenderers are responsible to check for all subsequent addendums/amendments on the City's Purchasing web page and/or BC Bid and respond according to the Invitation to Tender documents.

Tenders are scheduled to close at:

**Tender Closing Date: Thursday, December 6, 2018**

**Tender Closing Time: 3:00 pm (Local Time)**

At:

City of New Westminister City Hall – Main Information Desk  
511 Royal Avenue  
New Westminister, BC, V3L 1H9  
Attention: Purchasing Manager

A tender shall be accompanied by a Bid Bond (or Certified Cheque) in the amount of ten percent (10%) of the Tender Price payable to the Corporation of the City of New Westminister. The successful tenderer will be required to provide a Performance and Labour and Material Payment Bond each in the amount of fifty percent (50%) of the Tender Price. An Agreement of Surety to bond shall accompany the tender submitted.

Enquiries regarding this tender may be directed to:

**Heather Rossi, Intermediate Buyer**

City of New Westminister

email: [nwpurchasing@newwestcity.ca](mailto:nwpurchasing@newwestcity.ca)

The lowest or any Tender may not necessarily be accepted and the City will not be responsible for any cost incurred by the Tenderer in preparing the Tender. Tender award will be contingent on budget approval from the City of New Westminister Council.

# **INSTRUCTIONS TO TENDERERS**

Instructions to Tenderers, Part I

## INSTRUCTIONS TO TENDERERS – PART 1

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

### CORPORATION OF THE CITY OF NEW WESTMINSTER

(THE OWNER)

**Contract:** Tenth Avenue Roadway Lighting and Fibre Optic Infrastructure

**Reference No:** NWIT-18-28

**1.0 Introduction** 1.1 These Instructions apply to and govern the preparation of tenders for this *Contract*. The *Contract* is generally for the following work:

Retrofit and infill of all roadway lighting and installation of new fibre optic infrastructure on Tenth Avenue from Twelfth Street to Twentieth Street as specified in the Tender-Contract Documents, Specifications, and Drawings.

1.2 Direct all inquiries regarding the *Contract*, to:

**Heather Rossi, Intermediate Buyer**

City of New Westminster

511 Royal Ave, New Westminster, BC, V3L 1H9

email: [nwpurchasing@newwestcity.ca](mailto:nwpurchasing@newwestcity.ca)

**2.0 Tender Documents** 2.1 The tender documents, which a tenderer should review to prepare a tender, consist of all of the *Contract Documents* 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 *Contract Documents* include the drawings listed in Schedule 2 to the Agreement, entitled “List of *Contract Drawings*”, and Schedule 3 “Prime Contractor Designation”.

2.2 Portions of the Contract Documents are included by reference. Copies of these documents have not been included with the tender package. These documents are the Instructions to Tenderers - Part II, General Conditions, Specifications, and Standard Detail Drawings. They are those contained in the publication entitled “Master Municipal Construction Documents - General Conditions, Specifications, and Standard Detail Drawings”. Refer to Schedule 1 to the Agreement or, if not specified in Schedule 1, then the applicable edition shall be the most recent edition as of the date of the *Tender Closing Date*. All sections of this publication are by reference included in the *Contract Documents*.

Copies of the Master Municipal Construction Document (Platinum Edition) can be obtained at:

Support Services Unlimited  
 #102 – 211 Columbia Street  
 Vancouver, BC, V6A 2R5  
 604 681-0295

- 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 judgment 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.
- Addenda
- 2.4 Should addenda to the tender documents be required for any reason, it is the City's intention not to issue addenda during a period three (3) days prior to the Tender Closing date and time.
- 2.5 All Addenda become part of the Contract Documents.
- 2.6 Failure to acknowledge any Addendum may result in the disqualification of the Tenderer.
- 3.0 Submission of Tenders**
- 3.1 Tenders must be submitted in a sealed envelope, marked on the outside with the above *Contract* Title and Reference No., and must be received on or before:
- Tender Closing Time: 3:00 pm (Local Time)**
- Tender Closing Date: Thursday, December 6, 2018**
- Address: **City of New Westminster  
 Main Information Desk  
 511 Royal Avenue  
 New Westminster, BC V3L 1H9**
- Attention: **Purchasing Manager**
- 3.2 Late tenders will not be accepted or considered, and will be returned unopened.
- 3.3 Facsimile, electronic mail, or other unsealed bids will not be accepted.
- 3.4 The City will not open this Tender in public. The City will make the Tender results available to Tenderers within a reasonable period following the Tender Closing Date and Time.

**4.0 Additional Instructions to Tenderers**

**4.1 IT 5 (amend clause 5 as follows)**

**Add 5.3.6** Appendix 6 – Force Account Labour and Equipment Rates. Insert the hourly rates for Labour and Equipment including allowances for taxes, assessments, benefits, tools, overhead, and profit.

**Add 5.3.7** Appendix 7 – Declaration – Living Wage Employer

**Award**

**4.2 IT 15 (delete clause 15.1.1 and replace with):**

15.1.1 Reject any or all Tenders if the City determines, in its sole discretion and after appropriate investigation and evaluation, that:

- a) the comparable work references are, in the opinion of the City, unsatisfactory; **OR**
- b) information becomes available after Closing Time which significantly changes the scope or extent of the project; **OR**
- c) the Tender, or all of the Tenders, exceeds the available budget funds; **OR**
- d) less than three (3) Tenders are received.

**4.3 IT 15.5 (add clause 15.5 as follows)**

In exercising its discretion, the *Owner* will have regard to the information provided by the Tenderer in the Appendices to the Form of Tender as described under IT 5, and may also have regard to any information obtained by the *Owner* in evaluating such tender information, as well as the *Owner's* previous experience, if any, with the Tenderer. In exercising its discretion the *Owner* may consider, but is not limited to, the following criteria in addition to the Tender Price:

- a) the proven experience of the Tenderer, and any listed subcontractors to do the Work;
- b) the Tenderer's ability to complete the Work within the Preliminary Construction Schedule;
- c) the Tenderer's ability to work effectively with the *Owner*, its consultants and representatives;
- d) the Tenderer's ability to manage and do the work effectively using the named superintendent and submitted contractors and subcontractors;
- e) the Tenderer's history on other projects including with respect to quality of work, changes in the work, force account work, and the contract administration costs of the *Owner*;
- f) the nature of any legal proceedings undertaken the by Tenderer, or any officer or director of the Tenderer or affiliate of the Tenderer, directly (or indirectly through another corporation) against the *Owner* within the previous five years of the Invitation to Tenders;
- g) litigation and on-going unresolved claims;
  - a. in addition to any other provision of this tender document, and without limiting the City's discretion

under any other provision of this tender document, the City may, in its absolute discretion, reject a tender if:

- i. the Tenderer, or any officer or director of the Tenderer, is or has been engaged directly or indirectly in a legal action against the City in relation to any matter; or,
  - ii. the Tenderer has current unresolved extra work claims totalling in excess of \$100,000.00 beyond 90 days of contract substantial completion for any construction project with the City.
- b. in determining whether or not to reject a tender under this section, the City will consider whether the litigation or unresolved extra work claim is likely to affect the Tenderer's ability to work with the City, its employees, consultants and representatives and whether the City's experience with the Tenderer indicates an unusual risk the City will incur increased staff and legal costs in the administration of the contract if awarded to the Tenderer.

The *Owner* will, following receipt of an acceptable tender, issue in writing a *Notice of Acceptance* to the successful tenderer. This Notice will be given as soon as possible following the closing of tenders and, unless otherwise agreed to by the tenderer, not later than sixty (60) days following the Tender Closing Date.

**4.4 IT 15.6 (add clause 15.6 as follows)**

The *Owner* may, prior to and after Contract Award, negotiate changes to the scope of the Work, the type of materials, the specifications or any conditions with the low tenderer without having any duty or obligation to advise any other tenderer or to allow them to vary their Tender Prices as a result of such changes and the *Owner* shall have no liability to any other tenderer as a result of such negotiations or modifications.

The award of this *Contract* is subject to approval of the *Owner* and to the availability of sufficient funds to complete the Work. The City may delete certain portions of the Work if Tender Prices exceed the available budget.

**Prime Contractor Designation**

**4.5 IT 18 (add clause 18 as follows)**

Schedule 3 Prime Contractor Designation forms part of the Agreement.

**Freedom of Information**

**4.6 IT 19 (add clause 19 as follows)**

The City of New Westminster is subject to the Province of British Columbia *Freedom of Information and Protection of Privacy Act*. All documents will be received and held in confidence by the City



of New Westminster and the information will not be disclosed, except to the extent necessary for carrying out the City's purposes or as required by law.

## Living Wage Information

### 4.7 IT 20 (add clause 20 as follows)

Effective January 1, 2011, the City of New Westminster became a "Living Wage Employer" (see Form of Tender - Appendix 7). As such, the City has established a Living Wage Policy that requires all firms that are contracted by the City to provide services on City premises, to pay their employees, who perform said service on City property, a Living Wage as calculated by the Living Wage for Families Campaign. The current living wage rate for Metro Vancouver is \$20.91 per hour, assuming no benefits are provided by the employer.

In order to determine an employee's hourly rate with benefits the Living Wage for Families has created a Living Wage Calculator to assist with this determination. Please access the following website to determine your compatibility.

<http://www.livingwageforfamilies.ca/employers/living-wage-calculator/>

The City includes in all its competitive bid documents a Declaration referencing the City's expectations with regards to compliance of the Policy. **Completion and submission of the Declaration is required prior to Contract award** (see Form of Tender - Appendix 7).

In evaluating submissions, the City intends to rely on the Declaration provided by a Respondent and shall have no obligation or duty to investigate the truthfulness of the Declaration.

Please review the City's [Living Wage Page](#) for further information.

## Good Neighbour Protocol

### 4.8 IT 21 (add clause 21 as follows)

This policy is for City-led construction projects and works. The [Good Neighbour Protocol](#) (GNP) provides guidelines to minimize construction related impacts to residents and businesses.

The successful contractor will be required to adhere to the Good Neighbour Protocol.

Please review the City's Good Neighbour Protocol for further information

[http://www.newwestcity.ca/database/files/library/Good\\_Neighbour\\_Protocol\\_External\\_Dec\\_2015.pdf](http://www.newwestcity.ca/database/files/library/Good_Neighbour_Protocol_External_Dec_2015.pdf)

## Non-Road Diesel Engine Emissions Regulation

### 4.9 IT 22 (add clause 22 as follows)

All non-road diesel powered equipment that is 25 hp (19 kw) or greater must comply with Metro Vancouver's Non-Road Diesel

Engine Emissions Regulation Bylaw No. 1161, 2012 (the Bylaw). The Bylaw requires owners or operators of Tier 0 and Tier 1 non-road diesel engines to register, label, and pay fees in order to operate within Metro Vancouver. Please advise what Engine Tier your proposed equipment meets and if it complies with Metro Vancouver's Bylaw. Provide the engine registration number issued by Metro Vancouver if applicable. The City, at its discretion, may give preference to equipment that meets higher emission standards. To register your equipment call Metro Vancouver for assistance at 604-451-6655 or visit [www.metrovancouver.org/nonroaddiesel](http://www.metrovancouver.org/nonroaddiesel)

# FORM OF TENDER WITH APPENDICES

- Form of Tender
- Appendix 1: Schedule of Quantities and Prices
- Appendix 2: Preliminary Construction Schedule
- Appendix 3: Experience of Superintendent
- Appendix 4: Comparable Work Experience
- Appendix 5: List of Sub-Contractors
- Appendix 6: Force Account Labour and Equipment Rates
- Appendix 7: Declaration – Living Wage Employer

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**FORM OF TENDER**


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**CORPORATION OF THE CITY OF NEW WESTMINSTER**  
(THE OWNER)

**Contract:**                    **Tenth Avenue Roadway Lighting and Fibre Optic Infrastructure**

**Reference No:**            **NWIT-18-28**

**To Owner:**

**1                    WE, THE UNDERSIGNED:**

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

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**(Addenda, if any)**

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

**2                    ACCORDINGLY WE HEREBY OFFER**

- 2.1            to perform and complete all of the *Work* and to provide all the labour, equipment and material all as set out in the *Contract Documents*, in strict compliance with the *Contract Documents*; and
- 2.2            to achieve Substantial Performance of the *Work* on or before **March 4, 2019**; 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.

**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.

Tenderer's Initials \_\_\_\_\_

**5 WE AGREE:**

5.1 that this tender will be irrevocable and open for acceptance by the *Owner* for a period of sixty (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 in the amount of 50% of the Contract Price, issued by a surety licensed to carry on the business of surety ship in the Province of British Columbia, and in a form acceptable to the *Owner*;
- b) a Labour and Material Payment Bond in the amount of 50% of the Contract price, the Labour and Material Payment Bond must be a **Broad Form bond**, protecting all companies with a direct contract with the Principal or any sub-contractor of the Principal;
- c) a *Baseline Construction Schedule*, as provided by GC 4.6.1;
- d) a “clearance letter” indicating that the tenderer is in WorkSafeBC compliance;
- e) a copy of the insurance policies as specified in GC 24 indicating that all such insurance coverage is in place; and,
- f) proof of a valid City of New Westminster or MetroWest Inter-Municipal Business License

5.1.2 sign the Contract Documents as required by GC 2.1.2.

5.1.3 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

**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:

a) fail or refuse to deliver the documents as specified by paragraph 5.1.1 of this Form of Tender; or

b) 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* upon written notice to us, may 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:

a) the face value of the *Bid Security*; and

b) the amount by which our *Tender Price* is less than the amount for which the *Owner* contracts with another party to perform the *Work*.

Tenderer's Initials \_\_\_\_\_

7

**OUR ADDRESS is as follows:**

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Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail:: \_\_\_\_\_

Attention: \_\_\_\_\_

This Tender is executed this

\_\_\_\_\_ day of \_\_\_\_\_, 2018

*Contractor:*

---

(full legal name of corporation, partnership or individual)

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**(Authorized Signatory)**

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**(Authorized Signatory)**

Tenderer's Initials \_\_\_\_\_

**FORM OF TENDER – Appendix 1****SCHEDULE OF QUANTITIES AND PRICES**

(See paragraph 5.3.1 of the Instructions to Tenderers - Part II)

(All prices and *Quotations* including the *Contract Price* shall include all *Taxes*, but shall not include *GST*. *GST* shall be shown separately.)

**TENDER SUMMARY****BASE BID PRICING TABLE**

<b>ITEM#</b>	<b>ITEM</b>	<b>QTY</b>	<b>UNIT</b>	<b>UNIT PRICE</b>	<b>AMOUNT</b>
1	9m Davit Pole c/w Type C Base & 92W LED NXT Light Fixture	12	each	\$	\$
2	9m Davit Pole c/w Type C Base & 52W LED NXT Light Fixture	7	each	\$	\$
3	9m Davit Pole c/w Service Base & 92W LED NXT Light Fixture	2	each	\$	\$
4	Hydro-Vac around Trees	75	each	\$	\$
5	35 mm RPVC c/w street lighting conductors	1310	m	\$	\$
6	103 mm RPVC Fibre Optic conduit c/w tracer wire direct-buried	9	m	\$	\$
7	Fibre Optic Junction Box	1270	each	\$	\$
8	Trenching and Backfill in Boulevard	80	m	\$	\$
9	Trenching and Backfill on Road Crossing	1	m	\$	\$
10	Removals and disposals	1	lump sum	\$	\$
<b>TENDERED PRICE</b>					\$
<b>5% GST</b>					\$
<b>TOTAL TENDERED PRICE</b>					<b>\$</b>

Tenderer's Initials \_\_\_\_\_

**OPTIONAL PRICING TABLE**

<b>ITEM#</b>	<b>ITEM</b>	<b>QTY</b>	<b>UNIT</b>	<b>UNIT PRICE</b>	<b>AMOUNT</b>
1	Concrete base removal around gas line	2	each	\$	\$
<b>TENDERED PRICE</b>					\$
5% GST					\$
<b>TOTAL OPTIONAL PRICE</b>					<b>\$</b>

Tenderer's Initials \_\_\_\_\_



**FORM OF TENDER – Appendix 2**

**PRELIMINARY CONSTRUCTION SCHEDULE**

(See paragraph 5.3.2 of the Instructions to Tenderers - Part II)

Indicate schedule with bar chart with major item descriptions and time

ACTIVITY	CONSTRUCTION SCHEDULE											

Tenderer's Initials \_\_\_\_\_

**FORM OF TENDER – Appendix 3**

**EXPERIENCE OF SUPERINTENDENT**

(See paragraph 5.3.3 of the Instructions to Tenderers - Part II)  
Include name and contact information for references

Name: \_\_\_\_\_ Years' Experience: \_\_\_\_\_

Experience:

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Responsibilities: \_\_\_\_\_

References: \_\_\_\_\_

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Responsibilities: \_\_\_\_\_

References: \_\_\_\_\_

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Responsibilities: \_\_\_\_\_

References: \_\_\_\_\_

Tenderer's Initials \_\_\_\_\_

**FORM OF TENDER – Appendix 4**

**COMPARABLE WORK EXPERIENCE**

(See paragraph 5.3.4 of the Instructions to Tenderers - Part II – add additional pages as necessary)

Company / Owner's Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_

Email Address \_\_\_\_\_

Description of Work: \_\_\_\_\_

\_\_\_\_\_

Project Date: \_\_\_\_\_ Approximate Value: \_\_\_\_\_

Company / Owner's Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_

Email Address \_\_\_\_\_

Description of Work: \_\_\_\_\_

\_\_\_\_\_

Project Date: \_\_\_\_\_ Approximate Value: \_\_\_\_\_

Company / Owner's Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_

Email Address \_\_\_\_\_

Description of Work: \_\_\_\_\_

\_\_\_\_\_

Project Date: \_\_\_\_\_ Approximate Value: \_\_\_\_\_

Tenderer's Initials \_\_\_\_\_

**FORM OF TENDER – Appendix 5**

**LIST OF SUBCONTRACTORS**

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

<b>TENDER ITEM</b>	<b>TRADE</b>	<b>SUBCONTRACTOR NAME</b>	<b>PHONE NUMBER</b>

Tenderer’s Initials \_\_\_\_\_

**FORM OF TENDER – Appendix 6**

**FORCE ACCOUNT LABOUR AND EQUIPMENT RATES**

(See paragraph 4.1 – 5.3.6 of the Instructions to Tenderers - Part I)

<b>Labour and Equipment Classification</b>	<b>Hourly Rate</b>	<b>Overtime Rate</b>
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
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	\$ /hour	\$ /hour
	\$ /hour	\$ /hour
	\$ /hour	\$ /hour

Tenderer's Initials \_\_\_\_\_

**FORM OF TENDER – Appendix 7**

**DECLARATION – LIVING WAGE EMPLOYER**

(See paragraph 4.1 and paragraph 4.6 of the Instructions to Tenderers – Part I)



I, \_\_\_\_\_ as a duly authorized signing officer of

Company: \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_, confirm that all employees and sub-contractors under our contract with the City as outlined below, are paid not less than the “Living Wage” as calculated by the Living Wage for Families Campaign.

I understand that this requirement extends only to those employees and sub-contractors’ employees that perform work while on City premises and property for durations in excess of one continuous hour per occasion.

I understand that the City will conduct audits if and when notification of breach of this compliance is received by the City. I understand that in the event any breach of this declaration is found to be true, the City reserves the right to cancel its contract without penalty at any time once said authentication of the breach is made.

Contract Name: \_\_\_\_\_

Authorized Signatory:

Dated:

\_\_\_\_\_

\_\_\_\_\_

Tenderer’s Initials \_\_\_\_\_

# AGREEMENT

- Agreement
  - Schedule 1 – Schedule of Contract Documents
  - Schedule 2 – List of Drawings
  - Schedule 3 – Prime Contractor Designation

**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. )

BETWEEN *OWNER* AND *CONTRACTOR*

**This agreement** made in duplicate this

\_\_\_\_\_ day of \_\_\_\_\_, 2018

*Contract:* **Tenth Avenue Roadway Lighting and Fibre Optic Infrastructure**

Reference No. **NWIT-18-28**

BETWEEN:

The Corporation of the City of New Westminster  
511 Royal Avenue  
New Westminster, BC, V3L 1H9

(the "*Owner*")

AND:

(NAME AND OFFICE ADDRESS OF CONTRACTOR)

(the "*Contractor*")

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

**Article 1**

**The Work Start /  
Completion Dates**

- 1.1 The *Contractor* will perform all *Work*, 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 **March 4, 2019** subject to the provisions of the *Contract Documents* for adjustments to the *Contract Time*.
- 1.3 Time shall be of the essence of the *Contract*.



- Article 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*.
- Article 3**  
**Contract Price**
- 3.1 The price for the *Work* (“*Contract Price*”) shall be the sum in Canadian dollars of the following
- 3.1.1 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
- 3.1.2 all lump sums, if any, as listed in the *Schedule of Quantities and Prices*, for items relating to or incorporated into the *Work*; plus
- 3.1.3 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*.
- Article 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 0% 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.
- Article 5**  
**Rights and Remedies**
- 5.1 The duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.
- 5.2 Except as specifically set out in the *Contract Documents*, no action or failure to act by the *Owner*, *Contract Administrator* or *Contractor* shall constitute a waiver of any of the parties’ rights or duties

afforded under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach under the *Contract*.

**Article 6  
Notices**

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

The *Owner*:

**Corporation of the City of New Westminster  
511 Royal Avenue  
New Westminster, BC V3L 1H9**

Fax:

Attention:

The *Contractor*:

Fax:

Attention:

The *Contract Administrator*:

**Great Northern Engineering Consultants Inc.  
#202 – 8525 Baxter Place  
Burnaby, BC V5A 4V7**

Email: [Darcy.Metz@gnec.ca](mailto:Darcy.Metz@gnec.ca)

Phone: 778-827-1061

Attention: Darcy Metz

- 6.2 A communication or notice that is addressed as above shall be considered to have been received
- 6.2.1 immediately upon delivery, if delivered by hand; or
  - 6.2.2 immediately upon transmission if sent by fax and received in hard copy; or
  - 6.2.3 after five (5) Days from date of posting if sent by registered mail.
  - 6.2.4 immediately upon transmission if sent by email and received in electronic copy.
- 6.3 The *Owner* or the *Contractor*, at any time, may 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*.

**Article 7  
General**

- 6.4 The sender of a notice by fax assumes all risk that the fax is received in hard copy.
- 6.5 The sender of a notice by email assumes all risk that the email is received in electronic copy.
- 7.1 This *Contract* shall be construed according to the laws of British Columbia.
- 7.2 The *Contractor*, without the express written consent of the *Owner*, shall not, 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)

*Owner:*

Corporation of the City of New Westminster  
\_\_\_\_\_  
(FULL LEGAL NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL)

\_\_\_\_\_  
(AUTHORIZED SIGNATORY)

Patrick Shannon, SCMP  
Purchasing Manager  
\_\_\_\_\_  
(AUTHORIZED SIGNATORY)

**Schedule 1  
Schedule of Contract  
Documents**

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

Agreement, including all Schedules;

Schedule 3 – Prime Contractor Designation;

Supplementary General Conditions (if any);

General Conditions\*;

Supplementary Specifications (if any);

Specifications\*;

Supplementary Standard Detail Drawings (if any);

Standard Detail Drawings\*;

Executed Form of Tender, including all Appendices;

*Contract Drawings* listed in Schedule 2 to the Agreement – “List of *Contract Documents*”;

Instructions To Tenderers - Part I;

Instructions to Tenderers - Part II\*;

The following Addenda:

The following Enquiries and Responses:

**Schedule 2**  
**List of Contract Drawings**

<b>TITLE</b>	<b>DRAWING NO.</b>	<b>REVISION NO.</b>	<b>REVISION DATE</b>
STREET LIGHTING	STL-01	03	18.10.25
STREET LIGHTING	STL-02	03	18.10.25
STREET LIGHTING	STL-03	03	18.10.25
DETAILS	STL-04	03	18.10.25

**Schedule 3**  
**Prime Contractor Designation**

## Prime Contractor Designation

This Schedule forms part of the agreement between the Corporation of the City of New Westminster (the “City”) and \_\_\_\_\_ (the “Contractor) respecting NWIT-18-28 Tenth Avenue Roadway Lighting and Fibre Optic Infrastructure (the “Agreement”).

### 1. DEFINITIONS

1.1 In this Prime Contractor Designation schedule:

- (a) “**Agreement**” means the agreement entered into between the City and the Contractor on [date] in relation to retrofit and infill of all roadway lighting and installation of new fibre optic infrastructure on Tenth Avenue from Twelfth Street to Twentieth Street as specified in the Tender Documents, General Requirements, Specifications, and Drawings for the Project;
- (b) “**Hazardous Materials Report**” means a report prepared by a qualified person in accordance with s. 20.112 of the *OH&S Regulation*;
- (c) “**Owner**” means the City, which is the owner of the Project;
- (d) “**Project**” means NWIT-18-28 Tenth Avenue Roadway Lighting and Fibre Optic Infrastructure;
- (e) “**Project Manager**” means the City’s designate with responsibility to liaise with the Contractor for the purpose of managing, overseeing, coordinating or in any other way administering the Project

### 2. PRIME CONTRACTOR DESIGNATION

2.1 The Contractor agrees to assume the responsibilities of Prime Contractor for the Project, as set out in the *Workers Compensation Act* and the *OH&S Regulation*.

### 3. CONTRACTOR RESPONSIBILITIES AS PRIME CONTRACTOR

3.1 As Prime Contractor for the Project, the Contractor will:

- (a) ensure that the activities of employers, workers and other persons at the Project relating to occupational health and safety are coordinated; and
- (b) do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance at the Project with the *Workers Compensation Act* and the *OH&S Regulation*.

3.2 Without limiting the generality of the foregoing, the Contractor will:

- (a) prior to beginning demolition or construction work on the Project, meet with the Project Manager to review and complete the Pre-Job Meeting Form, to review and discuss the information in the City’s Known Hazards Form and the Contractor’s pre-work hazard identification documents, and to review and discuss the Hazardous Materials Report (if any);

- (b) conduct all necessary and appropriate inquiries of all relevant City staff and City records to ensure the Contractor is not missing any information from the City that is relevant to safety at the Project;
- (c) review, plan to address, and address all hazards identified in the City's Known Hazards Form, the Contractor's pre-work hazard identification documents, any Hazardous Materials Report, and any hazards or risk identified in the *Workers Compensation Act* or the *OH&S Regulation*;
- (d) maintain and make available the documents listed on the Pre-Job Meeting Form, as appropriate;
- (e) inform all other employers working on the Project that the Contractor is designated as the Prime Contractor for the Project;
- (f) establish and maintain a system or process that will ensure compliance with the *OH&S Regulation* when visitors (i.e. couriers, inspectors, suppliers, etc.) enter the Project, which shall include site orientation and hazard communication to such visitors by the Contractor or the Contractor's designate;
- (g) maintain a current list of persons that each employer at the Project has designated to be responsible for that employer's health and safety activities at the Project;
- (h) ensure appropriate first aid resources are available for workers at the Project at all times work is being performed, in accordance with and as required by the *OH&S Regulation*;
- (i) if required by the *OH&S Regulation*, submit a Notice of Project to WorkSafeBC in accordance with the *OH&S Regulation*, and comply with all requirements of the *OH&S Regulation* concerning the Notice of Project;
- (j) if required by the *OH&S Regulation*, the Contractor will appoint a Qualified Coordinator for the purpose of ensuring the coordination of health and safety activities for the Project, and the Contractor shall ensure that any Qualified Coordinator so appointed is qualified to perform the responsibilities of his or her position and carries out the roles and responsibilities of a Qualified Coordinator as set out in the *OH&S Regulation*;
- (k) provide the following information, in an always updated form, in a readily available location at the Project;
  - (i) the name of any Qualified Coordinator appointed to the Project;
  - (ii) a site drawing, which must be posted, showing project layout, first aid location, emergency transportation provisions, and the evacuation marshalling station; and
  - (iii) a set of construction procedures designed to protect the health and safety of workers at the Project, developed in accordance with the requirements of the *OH&S Regulation*;
- (l) immediately notify the City of the identity of any Qualified Coordinator appointed by the Contractor at the Project, from time to time.

#### **4. HAZARDOUS MATERIALS**

- 4.1 If during demolition or construction work on the Project the Contractor discovers or has reason to believe that there are hazardous materials at the Project that were not set out in any Hazardous Materials Report, the Contractor will;
- (a) immediately notify the Project Manager;
  - (b) take all reasonably appropriate measures to ensure the safety of workers at the Project; and
  - (c) take all reasonably appropriate measures to ensure the safety of the general public.

- 4.2 Upon notification by the Contractor of additional hazardous materials or suspected hazardous materials at the Project not set out in any Hazardous Materials Report, the City, in accordance with the *OH&S Regulation*, will obtain an updated Hazardous Materials Report, and will share such updated report with the Contractor. If the scope of work of the Project is changed as a result of the updated Hazardous Materials Report, the Project Manager will meet with the Contractor to discuss how the Project may be completed in a safe and cost effective manner.

## **5. GENERAL**

- 5.1 In the event of a conflict between the Agreement and the *Workers Compensation Act* or the *OH&S Regulation*, the legislative requirement(s) will apply.
- 5.2 If any part of this schedule is held to be unenforceable by a court or tribunal of competent jurisdiction, that part shall be severed and the remaining parts of this schedule shall remain in full force and effect.
- 5.3 If the Contractor violates any of the requirements of this schedule or of the *Workers Compensation Act* or the *OH&S Regulation*, the City may treat such violation as a breach of the Agreement resulting in possible termination or suspension of the Agreement and/or any other actions deemed appropriate at the discretion of the City.
- 5.4 No failure or delay by either party to this schedule in exercising any power, right or privilege provided in this schedule will operate as a waiver, nor will any single or partial exercise of such rights, powers or privileges preclude any further exercise of them or the exercise of any other right, power or privilege provided in this schedule.
- 5.5 This schedule may be terminated in accordance with the terms of the Agreement.



# **SUPPLEMENTARY GENERAL CONDITIONS**

- Supplementary General Conditions

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**SUPPLEMENTARY GENERAL CONDITIONS**


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## SUPPLEMENTARY GENERAL CONDITIONS

(TO BE READ WITH "GENERAL CONDITIONS" CONTAINED IN THE PLATINUM EDITION OF THE PUBLICATION  
"MASTER MUNICIPAL CONSTRUCTION DOCUMENTS" SPECIFIED IN "INSTRUCTIONS TO TENDERERS" IT - 2.2)

- |                                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DEFINITIONS</b>                                         | <b>1</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                            | 1.79         | <b><i>“(amend clause X.XX as follows)”</i></b> preceding a supplementary clause means this clause modifies or provides additional information or restrictions to the referenced clause in the Master Municipal Construction Documents Platinum Edition, Volume II.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                            | 1.80         | <b><i>“(add new clause X.XX as follows)”</i></b> preceding a supplementary clause means this clause provides additional requirements or information not found in the Master Municipal Construction Documents Platinum Edition, Volume II.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                            | 1.81         | <b><i>“(delete clause X.XX and replace as follows)”</i></b> preceding a supplementary clause means this clause replaces the referenced clause in the Master Municipal Construction Documents Platinum Edition, Volume II in its entirety.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <br><b>CONTRACTOR</b>                                      | <br><b>4</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Control of Work</b>                                     | 4.1          | 4.1.3 <b><i>(add clause 4.1.3 as follows)</i></b><br>The <i>Contractor</i> shall take precautions to reduce nuisance caused from mud or dust by clean-up, sweeping, sprinkling with water or other means as necessary to accomplish results satisfactory to the <i>Contract Administrator</i> . If the <i>Contractor</i> fails to maintain the site tidy or refuses to remove waste and debris as directed by the <i>Contract Administrator</i> , the <i>Owner</i> , at its own discretion, may proceed to clean the site, remove waste and debris from site, and deduct from any payment due the <i>Contractor</i> the cost of such cleaning or removing materials.                                                                                                                                                                                                                                                                                                                      |
| <br><b>Protection of Work,<br/>Property and the Public</b> | <br>4.3      | 4.3.1 <b><i>(Delete the following from the last sentence of G.C.4.3.1 as follows)</i></b><br>... except for damage, which, in the Performance of the Work, the <i>Contractor</i> could not reasonably avoid.<br><br>4.3.4 <b><i>(amend clause 4.3.4 as follows)</i></b><br>(1) expose and determine conclusively the location in the field all underground utilities and structures whether or not indicated on the <i>Contract Documents</i> as being at the <i>Place of the Work</i> . The <i>Contractor</i> shall also be responsible to consult with all utility corporations that provide electricity, communication, gas or other utility services in the area of the <i>Place of the Work</i> , to locate in three dimensions all underground utilities for which they have records. The <i>Contractor</i> shall also locate in three dimensions any other utilities or underground structures that are reasonably apparent in an inspection of the <i>Place of the Work</i> . The |

*Contractor* shall provide Fortis BC with three weeks' notice for relocation of any gas mains or services if it is required when crossing the gas lines.

(2) The *Contractor* shall contact BC One Call at least forty eight (48) hours prior to excavating to advise of the *Work*.

**4.3.6 (*Delete 4.3.6 entirely*)**

**4.3.7 (*add new clause 4.3.7 as follows*)**

The *Contractor* shall locate, mark, and protect from damage or disturbance, any and all stakes, survey pins, monuments and markers at the *Place of the Work*. All survey stakes, survey pins, monuments, or markers that are damaged or disturbed shall be made good following construction by a registered B.C. Land Surveyor. Such repairs shall become part of the *Work* and shall be at the *Contractor's* expense.

**4.3.8 (*add new clause 4.3.8 as follows*)**

*Contractor* to submit, fourteen (14) calendar days prior to the start of construction, a Traffic Management Plan (TMP) provided by a qualified traffic management company, and prepared in accordance with the "Traffic Control Manual for Work in Roadways". Road closures will not be allowed without prior approval from the City of New Westminster. The cost of the TMP will be incidental to payment of work described in other sections.

The *Contractor* shall ensure that single lane traffic movement is available in each direction at all times and shall minimize impact to on-street parking and pedestrian access to commercial and residential properties during working hours.

The *Contractor* shall carry out the work such that access to commercial and residential properties is maintained at all times. The *Contractor* shall provide a minimum one week advance written notice to all property owners prior to construction, and shall also provide a minimum two (2) working days' notice to individual property owners prior to commencing work affecting individual property access.

The *Contractor* shall give due notice to local police and fire department prior to beginning construction and shall comply in all respects with their requirements.

The *Contractor* shall comply with the requirements of the appropriate authority concerned with closure of 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 of the above

requirements will be deemed to be included in the *Contract Price*.

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. If half the street only is under improvement, the other half shall be conditioned and maintained as detour.

Where construction is to be carried out on highways or properties other than those of the *Owner* it shall be the responsibility of the *Contractor* to familiarize himself with the requirements of the owners or controllers of these properties which pertain to traffic safety or control of the construction operation and to carry out his work in accordance with these requirements.

## Construction Schedule

- 4.6 4.6.8 (*add new clause 4.6.8 as follows*)  
The *Contractor* may carry out the *Work* between 0700 h and 2000 h inclusive, Monday to Friday. The *Contractor* shall schedule their *Work* within these hours and will not be permitted to commence *Work* earlier than 0700 h and/or work later than 2000 h, except as authorized by the *Contract Administrator*.
- 4.6.9 (*add new clause 4.6.9 as follows*)  
The *Contractor* shall not schedule work that will require inspection beyond an eight-hour day without the *Contract Administrator's* prior approval. Any extra cost incurred by the *Owner* for work done outside of normal office hours may be deducted from the *Contractor's* monthly payments.
- 4.6.10 (*add new clause 4.6.10 as follows*)  
On the infrequent occasion that the *Contractor* finds it necessary to work on Saturday, Sunday or Statutory Holiday, the *Contractor* shall obtain the *Contract Administrator's* approval forty-eight (48) hours in advance. Work on Sundays or Statutory Holidays will also require the City's approval, with a minimum two weeks' notice. The *Contractor* shall also be charged a working day and may be charged the overtime inspection costs incurred by the *Owner*. Such costs shall be deducted from monthly progress payments.

## Survey Layout and As-Constructed Information

- 4.17 4.17.1 (*add new clause 4.17.1 as follows*)  
The *Contractor* is responsible for all survey required for construction layout and for record drawings associated with this contract. The *Contractor* shall be responsible for recording of all field survey information pertaining to the as-constructed drawings. The *Contractor* shall provide, at no

charge, a completed set of legible, marked-up as-constructed prints to the *Contract Administrator* on completion of the *Work*. The *Contractor* shall provide any additional information as requested to enable the *Contract Administrator* to prepare and submit as-constructed record drawings to the Municipality or the *Owner* for their records.

<b>City Industrial Health and Safety Program</b>	4.18	<p>4.18.1 (<i>add new clause 4.18.1 as follows</i>)</p> <p>4.18.1 All <i>Contractors</i> working for the City of New Westminster are required to be aware of the City's Industrial Health and Safety Program. It is the <i>Contractor's</i> responsibility to perform the job in compliance with the City's safety standards. The <i>Contractor</i> is responsible for the compliance of all employees for whom he is primarily responsible, with all WorkSafeBC Industrial Health and Safety Regulations, as well as all other applicable Regulations.</p>
<b>VALUATION OF CHANGES AND EXTRA WORK</b>	<b>9</b>	
<b>Valuation Method</b>	9.2.1	<p>9.2.1.1 (<i>add to clause</i>)</p> <p>; subject to final approval of available funding by the <i>Owner</i>.</p>
<b>Quantity Variations</b>	9.4	<p>9.4.1 (<i>delete clause 9.4.1 and replace as follows</i>)</p> <p>The <i>Contractor</i> shall hold firm all unit prices submitted in the <i>Schedule of Quantities and Prices</i> regardless of the increase or decrease in quantities.</p>
<b>CONCEALED OR UNKNOWN CONDITIONS</b>	<b>11</b>	
<b>Definition</b>	11.1	<p>11.1.1 (<i>delete 11.1.1 and substitute with the following</i>)</p> <p>A "Concealed or Unknown Conditions" is Hazardous Materials not disclosed in the <i>Contract Documents</i>.</p> <p>11.1.2 (<i>add the clause 11.1.2 as follows</i>)</p> <p>The <i>Contractor</i> bears the risk and liability for utilities and subsurface soil conditions. The <i>Contractor</i> acknowledges that it has not relied on accuracy of any information provided by the <i>Owner</i> in evaluating these risks. The <i>Contractor</i> acknowledges that it has full responsibility for locating utilities and has conducted its own investigation and has made allowance in the <i>Contract Price</i> for these risks.</p>
<b>DELAYS</b>	<b>13</b>	
<b>Delay by Owner or Contract Administrator</b>	13.1.1	<p>13.1.1 (<i>add to clause</i>)</p> <p>The <i>Owner</i> or <i>Contract Administrator</i> will not be liable for claims of delay caused by BC Hydro, TELUS, Fortis BC, Metro Vancouver, telecommunication companies, <i>Owner's</i></p>

forces, or other utility corporations arising out of or connected to the *Work*.

<b>Unforeseeable Market Conditions</b>	13.4.1	<b>Delete 13.4.1 entirely</b>
<b>PAYMENT</b>	<b>18</b>	
<b>Supporting Documentation</b>	18.2.2	18.2.2 ( <i>amend clause 18.2.2 as follows</i> ) If requested in writing by the <i>Owner</i> , the <i>Contractor</i> shall, as a precondition to the issuance of the <i>Payment Certificate</i> , provide a sworn declaration in the form of a signed and properly sealed CCDC 9A-2001 Statutory Declaration to the <i>Contract Administrator</i> that all amounts relating to the <i>Work</i> , due and owing as of the end of the month covered by the <i>Payment Certificate</i> to third parties including all subcontractors and suppliers, have been paid.
	18.2.3	18.2.3 ( <i>add clause 18.2.3 as follows</i> ) The <i>Owner</i> retains the right to obtain proof of payment, in the form of a signed and properly sealed CCDC 9A-2001 Statutory Declaration, of all sub-trades and material suppliers from the <i>Contractor</i> prior to making final payment.
<b>WORKERS COMPENSATION REGULATIONS</b>	21	
<b>Contractor is “Prime Contractor”</b>	21.2.1	<b>Delete “Substantial Performance” and Replace with “Total Performance”</b>
<b>INSURANCE</b>	<b>24</b>	
<b>Required Insurance</b>	24.1	24.1 ( <i>amend 24.1 as follows</i> ) 24.1.1 (1) Limits: \$5,000,000 inclusive per occurrence for bodily injury, death, and damage to property.  24.1.1(2) ( <i>add to 24.1.1(2) as follows</i> ) The following shall be named as additional insured on the Contract: <ul style="list-style-type: none"> <li>• Corporation of the City of New Westminster</li> <li>• Great Northern Engineering Consultants Inc.</li> </ul> 24.1.7 ( <i>add new 24.1.7 as follows</i> ) Should the <i>Contractor</i> neglect to obtain and/or maintain insurance as aforesaid, or deliver such policy or policies to the <i>Owner</i> , then the <i>Owner</i> shall obtain and/or maintain such insurance and the <i>Contractor</i> hereby appoints the <i>Owner</i> its true and lawful attorney to do all things necessary for this purpose. All monies expended by the <i>Owner</i> for Insurance premiums under the provisions of this clause shall be charged

to the *Contractor*.

**MAINTENANCE PERIOD 25**

**Correction of Defects 25.1**

25.1.4 (*add 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* and may be deducted from the Maintenance Security, or other holdbacks. The *Contractor* shall promptly pay any shortfall.

**Commencement of  
Maintenance Period 25.2**

25.2.2 (*amend clause 25.2.2 as follows*)

All warranties under this *Contract* commence from the date of *Substantial Performance* of the *Contract*, regardless of whether any *Subcontractor* achieves *Substantial Performance* of its Subcontract prior to *Substantial Performance* of the *Contract*.



# SUPPLEMENTARY SPECIFICATIONS

- Supplementary Specifications

## SUPPLEMENTARY SPECIFICATIONS

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City of New Westminster Supplementary Specifications are attached for reference and the contents included in the table of contents below.

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## City of New Westminster Supplemental Specifications - Fibre Optic Infrastructure

- 1 GENERAL**
- .1 Section 27 05 29 refers to those portions of the works that are unique to the supply and installation of fibre optic utility raceway infrastructure. This section must be referenced to and interpreted simultaneously with all other section pertinent to works described herein.
- 1.1 Related Work**
- |    |                                              |                  |
|----|----------------------------------------------|------------------|
| .1 | Traffic Control, Vehicle Access, and Parking | Section 01 55 00 |
| .2 | Concrete Reinforcement                       | Section 03 20 01 |
| .3 | Cast-in-Place Concrete                       | Section 03 30 53 |
| .4 | Precast Concrete                             | Section 03 40 01 |
| .5 | Roadway Lighting                             | Section 26 56 01 |
| .6 | Aggregates & Granular Materials              | Section 31 05 17 |
| .7 | Excavating, Trenching and Backfilling        | Section 31 23 01 |
| .8 | Hot-Mix Asphalt Concrete Paving              | Section 32 12 16 |
- 1.2 References**
- .1 Abbreviated standard specifications for testing, materials, fabrication and supply, referred to herein, are fully described in Section 01 42 00 – Reference Specifications, Site and Infrastructure.
- 1.3 Permits and Notification**
- .1 Obtain and pay for all necessary permits prior to commencing work. Refer to General Conditions, Clause 20, Laws, Notices, Permits, and Fees.
- .2 Supply a copy of each permit to Contract Administrator.
- .3 Obtain a road use permit for any road or boulevard closure.
- .4 Provide a traffic management plan for review and approval prior to construction.
- .5 Provide all site safety and traffic control works to meet applicable regulations and standards.
- .6 Provide minimum 72 hours' notice to BridgeNet prior to construction.
- .7 Provide minimum 7 working days' notice to city electrical department prior to cutting or trenching through existing traffic signal vehicle detector loops or loop leads.
- 1.4 Work Regulations**
- .1 Conduit and grounding/tracer wire work to conform to latest edition of Canadian Electrical Code (CEC) and any bulletins published by the BC Safety Authority.
- .2 Work to conform to all applicable regulations of WorkSafe BC.
- 1.5 Progress Reporting**
- .1 Construction progress report to be provided to engineer on a daily basis when work is underway.
- .2 Include description of work completed in daily report.
- .3 Photograph (digital) all new ducts, sleeves, conduits, pull-boxes, manholes, etc. prior to backfill and include in daily report.
- .4 Retain and provide full resolution photos at completion of work. Daily report may include reduced resolution photos.
- .5 Review proposed report format with engineer prior to construction for approval.
- 1.6 Record Drawings**
- .1 Provide mark-up information on Contract Drawings for all changes, additions, and deletions to reflect "as constructed" installation, including locations of equipment installed, per Section 01 33 01 – Project Record Documents.
- .2 Where dimensions are shown on the plan showing locations, they must be revised on the as-builts to reflect the actual as-built dimensions. Any revised locations of conduits or microducts must be noted by as many dimensions along their length as is necessary to fully derive the as-built location.
- .3 All information provided to Contract Administrator no later than 2 weeks after construction completion.
- .4 Notice of substantial completion will not be given until mark-ups are provided and deemed acceptable by the engineer.

## 1.7 Measurement and Payment

- .1 Supply and installation of fibre optic infrastructure will be paid as lump sum unless shown otherwise in schedule of quantities and prices.
- .2 Roadway lump sum price(s) include all labour, equipment and materials required to complete installation as shown on Contract Drawings.
  - .1 Lump sum price(s) include, where specified, pick-up, delivery and installation of all materials supplied by owner.
  - .2 Lump sum price(s) include all permits and fees for fibre optic infrastructure inspections, testing, and all other costs associated with fibre optic infrastructure work undertaken by others.
- .3 Where existing utilities and underground structures are found to be in locations different than as shown on Contract Drawings, refer to General Conditions, Clause 11, Concealed or Unknown Conditions.

## 1.8 Inspection

- .1 Refer to General Conditions, Clause 4.12, Inspections.
- .2 No payments made, use of installation, or certifications given shall be understood as acceptance of defective work.

## 2 PRODUCTS

### 2.1 General

- .1 Supply all products necessary for completion of project unless otherwise noted in Supplementary Specifications.
- .2 All products supplied to be new, and in accordance with Contract Documents.
- .3 Products to meet Canadian Electrical Code (CEC) requirements and CSA standards.
- .4 All similar products to be of one type and from one manufacturer.
- .5 Alternative products to be approved by the Contract Administrator prior to construction.

### 2.2 Underground Conduit

- .1 Rigid PVC Conduit (RPVC):
  - .1 Refer to Section 26 56 01.
  - .2 RPVC to be gray in colour.
- .2 DBII Conduit:
  - .1 Refer to Section 26 56 01 for RPVC.
  - .2 DBII conduit to be orange in colour.
- .3 Utilize gray RPVC or orange DB-II for all conduit installed by trenching methods. Utilize HDPE conduit for directional drill methods. Record type of conduit used on as-built mark-ups.
- .4 Ensure any new conduit corners are factory bends with minimum radii as follows:
  - .1 53 mm DBII / RPVC: 0.9m
  - .2 78 mm DBII / RPVC: 0.9m
  - .3 103 mm DBII / RPVC: 1.2 m

### 2.3 Splice Boxes and Large Pull Boxes

- .1 Splice Boxes and large pull-boxes will be supplied to the contractor at no cost.
- .2 Unless otherwise noted on drawings, splice boxes and large pull-boxes will be Synertech 2436-36.

### 2.4 Trench Marker Tape

- .1 Minimum 100 mm wide, minimum 2.5 mils thick, heavy duty polyethylene. Orange with black letters displaying: **"CAUTION - BURIED FIBER OPTIC LINE"**.

### 2.5 Tracer Wire

- .1 600V, #12 AWG, stranded copper type with green RW90 polyethylene insulation, to conform to CSA C22.2 No 38, 90°C.

### 2.6 Duct Tags

- .1 All permanent tags/labels must have a legible design life of 30 years minimum.

### 2.7 Conductor Connectors

- .1 Screw-on Type: Twist on solder-less connectors, with shell rated at 105°C. Size to suit conductor gauge and number of conductors.
- .2 Ground Clamp: Copper with bolt down compression connection.

## **2.8 Grounding Equipment**

### **2.9 Bell End Plugs**

### **2.10 Pull String**

### **2.11 In-Grade Box Lid Hold-Down Bolts**

## **3 EXECUTION**

### **3.1 General**

- .1 Utilize plate type ground electrodes to MMCD standard detail drawing E7.10.
  - .1 Utilize inflatable conduit plugs, Rayflate series or similar.
  - .1 Utilize 2,500 lbs pull strength polyester MuleTape or approved equal.
  - .1 Utilize special stainless steel pentagonal head type (Penta-Bolt).
- 
- .1 Ensure all permits and approvals obtained.
  - .2 Employ a land surveyor to locate and stake property corner references as required for layout.
  - .3 Layout and mark with paint and/or stakes the exact proposed locations of all works to be installed and notify the engineer immediately of any utility or other types of conflicts.
  - .4 Unless otherwise noted, review layout of work on site with engineer and city representative prior to commencing construction.
  - .5 All field changes must be approved by engineer or city representative.
  - .6 Confirm location of all works to be installed with Contract Administrator.
  - .7 Waste and material associated with the construction works shall not be permitted to accumulate, all debris to be removed from the construction site daily.

### **3.2 Other Utilities**

- .1 Utilities shown on drawings may not be accurate or complete. Utilize utility location services and pre-locate all utilities prior to commencing work. Utility location services to include at minimum:
  - a. BC One-Call
  - b. City of New Westminster GIS
  - c. DigShaw
  - d. Metro Vancouver
- .2 Hand-dig or hydro-vac excavate when digging in close proximity to any existing utilities or conduits.
- .3 Protect/avoid all existing utilities and signal/lighting conduits during construction.
- .4 Ensure all new microducts, conduits, and pull-boxes have minimum clearance of 1.0 m horizontal and 0.3 m vertical to other utilities, unless otherwise noted on drawings.

### **3.3 Environmental Protection**

- .1 Install tree protection fencing around all trees within work site prior to start of construction.
- .2 Do not damage tree roots. Hand-dig or hydro-vac excavate when digging within tree drip-line.
- .3 For hydro-vac excavating within tree drip-line, use spray pressure reduced sufficiently to avoid damaging tree roots.
- .4 Consult an arborist for any work within tree drip-lines for root system treatment requirements.
- .5 Take all necessary measures to prevent any sediment or harmful materials from entering catch basins or fish-bearing waterways (per D.F.O. and BC environmental regulations).
- .6 Install temporary factory-made catch-basin filters to prevent contamination of storm water system.

### **3.4 Conventional Trenching**

- .1 Backfill trenches in roads and sidewalks with granular import material only and compact per Section 31 23 01. No re-use of native material except if approved by city inspector.
- .2 Place double line of yellow or orange trench warning tape "caution - fibre optic" midway between surface and conduit or where concrete capped, on 25 mm layer of sand immediately above concrete.

### **3.5 Directional Drilling**

- .1 Install only continuous microducts and conduit by directional drill. Splice connections are not permitted to be pulled underground.
- .2 Following the completion of installation of all directional drilled microducts or conduits, verify depths at minimum 5 m intervals by radio-locating or daylighting and record the depth readings on the as-built plans at the corresponding locations. Arrange for the engineer to be on-site for the depth verification and if requested by the engineer, daylight up to one location per 50 m to confirm the readings are accurate and the equipment is calibrated.

### **3.6 Underground Conduit**

- .1 Install with minimum 600 mm from finished grade to top of conduit.
- .2 Notify the engineer immediately if there are any locations where the minimum specified cover or clearance is not possible.
- .3 Grout/seal around new conduit entering pull-boxes/manholes as required.
- .4 Blow finished conduits clean. Mandrel as required to clear any blockages.
- .5 Install pull string in each conduit.
- .6 Cap and seal all conduit stubs. Seal pull string penetrations with silicone.
- .7 Finish empty conduit inside pull-boxes/manholes with coupler and install bell-end and temporary plug. Grout around bell end to provide smooth transition to box surface.
- .8 Install tags at each end of conduit indicating conduit id and destination. Confirm labelling scheme with BridgeNet prior to installation of final tags.

### **3.7 Splice Boxes and Pull Boxes**

- .1 Install ground plate electrode and connect to tracer wire.
- .2 Clean all construction debris and residue from box prior to completion/handover.

### **3.8 Tracer Wire**

- .1 Connect all tracer wires in junction box to ground wire.
- .2 Refer to Section 26 56 01 for wire connection and sealing methods.
- .3 Attach any tracer wire connections to junction box support bar or similar attachment to ensure they are held upright at the top of the box.

### **3.9 Restoration**

- .1 Restore all roads, boulevards, sidewalks, curbs, etc. to original condition or better.
- .2 Restore full sidewalk panels if damaged or cut. Unless otherwise noted, no new joints are allowed in existing panels.
- .3 Restore all road markings in trenched areas with equivalent to what was existing (thermoplastic or paint).
- .4 Restore any damaged traffic signal loops or loop leads by replacing entire loop and lead (no splicing permitted in loop wires or loop lead wires). Loop restoration to be completed only by qualified sub-contractor approved by city electrical department.



## Attachment 1

### **Proposed Subdivision Control Amendment Bylaw No. 7908, 2017**

CORPORATION OF THE CITY OF NEW WESTMINSTER

BYLAW NO. 7908, 2017

A Bylaw to Amend Subdivision Control  
Bylaw No. No.7142, 2007

THE CITY COUNCIL of the Corporation of the City of New Westminster  
ENACTS AS FOLLOWS;

1. This Bylaw may be cited as "Subdivision Control Amendment Bylaw No.7908, 2017"
2. The Schedule "B" of Design Criteria Section 6 Lighting and Traffic Signals attached to Subdivision Control Bylaw No. 7142, 2007 is hereby repealed and the Schedule "B" of Design Criteria Section 6 Street Lighting and Traffic Signals attached hereto is hereby substituted therefor.
3. This Bylaw shall come into force on May 1, 2017.

GIVEN THREE READINGS this                      day of                      2017

ADOPTED and the Seal of the Corporation of the City of New Westminster affixed this  
day of                      2017.

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
CORPORATE OFFICER





## **6. STREET LIGHTING AND TRAFFIC SIGNALS**

### **6.1 General**

This document is intended to provide lighting and electrical criteria guidelines to aid in the design of street lighting in the City of New Westminster. The Consultant shall be fully knowledgeable with the Illuminating Engineering Society of North America (IESNA) standards and the most current edition of the Transportation Association of Canada (TAC) Guide for the Design of Roadway Lighting. The City intends to apply sections of these documents to outdoor lighting within the City as determined by the Director of Engineering.

In this document, the New Westminster Electrical Utility is referred to as the Supply Authority.

### **6.2 Visual and Environmental Issues**

Obtrusive light, light trespass, light pollution and environmental zones are key project design issues that will be considered by the City. Engineering Consultants and Architects will utilize luminaires and design techniques that will mitigate these issues. The City prefers fixtures that have full cut-off optics, but if a full cut-off optical system is not available in the selected fixture, then the Director of Engineering may consider the use of a partial cut-off optical system.

### **6.3 Codes, Rules and Permits**

For all projects, the Consultant shall:

- a) Comply with the rules of the latest edition of the Canadian Electrical Code and any bulletins published by the Electrical Safety Branch, of the Province of BC.
- b) Comply with the laws, rules and recommendations of agencies, including the Canadian Standards Association (CSA), the Supply Authority, Workers Compensation Board and regulatory City and governmental authorities.
- c) Construct the lighting and traffic signal system in accordance with the City approved edition of the Master Municipal Construction Documents (MMCD) and the City's Supplementary Specifications and Detail Drawings for lighting and traffic signals.
- d) Coordinate all works with the Supply Authority to ensure minimum clearances from their overhead and underground systems are achieved and exact service locations are confirmed.
- e) Have all submitted plans sealed by a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of British Columbia.

## 6.4 Illuminance Levels

Roadways, parking facilities, pedestrian walkways and bikeways shall be illuminated for safety and to produce accurate and comfortable nighttime visibility.

The City has standardized the illuminance method for its lighting designs. The recommended minimum average maintained horizontal illuminance levels, uniformity ratios and veiling luminance ratios used by the City are listed in the ANSI/IES RP-8-00 – National Standard Practice for Roadway Lighting. Luminance and small target visibility (STV) methods shall be used where a specific circumstance warrants their use. Use of these alternate methods must meet the approval of the Director of Engineering.

Tables in RP-8-00 to be referenced for roadway lighting are:

- Table 2: Illuminance Method - Recommended Values.
- Table 9: Recommended Illuminance for the Intersection of Continuously Lighted Urban Streets.

Tables in RP-8-00 to be referenced for pedestrian walkway and bikeway lighting are:

- Table 5: Recommended Values for High Pedestrian Conflict Areas.
- Table 6: Recommended Values for Medium Pedestrian Conflict Areas.
- Table 7: Recommended Values for Low Pedestrian Conflict Areas.
- Table 8: Recommended Values for the Pedestrian Portion of Pedestrian Vehicular Underpasses and Exclusive Pedestrian Underpasses.

Prior to starting a project, the Consultant shall verify the Road Classification (i.e. arterial, collector, local, etc.) and the Pedestrian Conflict Area Classification with the City.

The road classifications, illuminance levels, ratios, road and pedestrian conflict areas proposed for each roadway and pedestrian walkway/bikeway shall be listed in a table format on the design drawings.

The Consultant shall calculate all illuminance levels and ratios as noted under Section 6.8 Lighting Calculations. For calculations where the roadway surface is asphalt, R3 road surface classification shall be used and for calculations where the surface is concrete, R1 road surface classification shall be used. Refer to RP-8-00 – Table 1: Road Surface Classifications.

Parking facilities shall be illuminated in accordance with the IESNA RP-20-98 – National Standard Practice for Lighting of Parking Facilities.

Tables in RP-20-98 to be referenced are:

Table 1: Recommended Maintained Illuminance Values for Parking Lots.

Table 2: Recommended Maintained Illuminance Values for Parking Garages.

## 6.5 Light Pole Spacing

All poles shall be davit style, unless decorative poles are requested by the Director of Engineering. Davit pole heights shall be 7.5m and 9.0m. Taller poles, 11.0m or 13.5m high, can be use on arterial roadways only with the City's approval.

Poles along the roadway shall be located at the outer edges behind curb and gutter or edge of pavement, or in special circumstances, in the median of the street. Where median lighting is being considered, the lighting levels on any sidewalks shall be met or additional supplemental sidewalk lighting maybe required. The exact offset of the pole (behind curb, edge of pavement or sidewalk) is typically defined on City's Standard Detail Drawings.

Poles at intersections shall be located to accommodate intersections, property corners and pedestrian walkways. Spacing shall be governed by roadway width, road configuration and intersecting property lines. Generally, where possible, poles shall be located close to property lines and shall avoid being placed in front of residential windows. Poles shall be located at a minimum of 1.5m from the start/end of curb returns and at a minimum of 1.5m from the widest part of the driveway, including the flare.

Pole spacing patterns include staggered, opposite, one side and median mount arrangements, depending on the roadway classification and road geometrics. The pole arrangements shall generally be as follows:

- 1) Roads 8.5m and narrower – One sided spacing
- 2) Roads over 8.5m wide – Staggered or opposite spacing
- 3) One sided spacing may be allowed when power line clearances cannot be met
- 4) Poles can be located in medians if a clearance of 0.5m from the pole to curb face can be maintained and posted speed is 60 km/h or less. A minimum of 2 consecutive poles should be required before considering poles in median islands
- 5) Maintain clearances of 3.0 m from overhead primary power lines to luminaires

Where trees are proposed lights may have to be installed on davit arms which extend out over the roadway beyond the ultimate tree canopy. Additional pedestrian scale lighting may be required for the sidewalk. The proposed locations, spacing, pole height, arm length and frequency of the trees may also need to be adjusted in conjunction with the lighting pole spacing. The minimum

separation between poles and trees shall be 6.0m. The placement of poles shall have priority over the placement of trees.

## **6.6 Luminaires, Light Source and Smart City**

### Luminaires

The Consultant shall select the most effective IESNA luminaire distribution type (i.e.; Type 2, Type 3 etc.) and also meet the Roadway Lighting energy performance standard CAN/CSA-C653, Performance Standard for Roadway Lighting Luminaires, to suit the roadway geometrics. Cobra head luminaires shall be used for all roadway lighting applications with the exception of those defined by the Director of Engineering as Decorative Street Lighting areas (refer to Section 6.7). Cobra head roadway luminaires shall be Ministry of Transportation and Infrastructure recognized product.

The preferred operating voltage for the street lighting system is 120/240V, single phase, 3 wire. Alternate voltages must meet the approval of the Director of Engineering and the Supply Authority.

### Light Source

The light source for luminaires used on roadways, parking facilities, pedestrian walkways, bikeways, pedestrian crossings, pedestrian actuated traffic signals and decorative street lights shall be Light Emitting Diode (LED). High pressure sodium (HPS) may be required under certain circumstances as approved by the Director of Engineering.

### Smart City

Design of street lighting and controls shall consider future technological advances (e.g. Intelligent City fibre network, electrical vehicle charging stations, autonomous vehicle systems, etc.) and include opportunities to implement smart/intelligent city applications, as deemed appropriate.

For development projects requiring pedestrian walkway/bikeway lighting, the cost for the supply and installation of the lighting system shall be borne by the Developer. The Consultant shall ensure the compliance of these design criteria and consult the Director of Engineering for specific fixture type, colour and model number information.

## **6.7 Decorative Street Lighting**

The City has designated areas in which Decorative Street Lighting and other electrical features such as pole and tree receptacles and irrigation systems are utilized to enhance the streetscape. The City shall provide the Developer with generic details of the decorative lighting, the requirements for any other electrical features and a list of approved suppliers.

Decorative poles may be suitable for roadways not exceeding 11 m width. Where decorative poles are required, the poles and anchor bolts shall meet all applicable codes and standards.

The following details are required as part of the decorative lighting design:

- 1) Shop drawings of the street light poles proposed complete with pole design criteria
- 2) Signature and seal by the Professional Engineer, registered in the Province of B.C.
- 3) Detailed information and specifications of the luminaires proposed
- 4) Detailed information on pole accessories (decorative bases, banner arms, receptacles, etc.)
- 5) Drawings detailing assembled pole and luminaire units; and
- 6) Full size design drawings detailing the complete site installation.

## 6.8 Lighting Calculations

Lighting design requires a computer lighting design software or Visual Roadway and lighting supplier photometric files from lighting suppliers in the IESNA format. Typically luminaire photometric files are based on a lamp which can vary from actual lamp used in the test, provided it similar. This referred to as “relative” photometry. LED photometric files must be “absolute” which means the photometric file must be for the exact luminaire being tested.

The designer shall select luminaires with optical systems which efficiently light the interned area and properly illuminate the roadway and sidewalks as well as provide maximum spill light control beyond the sidewalk in order to reduce spill light and glare impacts on local residents. This shall be done by analyzing luminaire optical systems using the BUG method defined in Illuminating Engineering Society TM-15 Classification System for Outdoor Luminaires and Addendum A: Backlight, Uplight, and Glare (BUG) Ratings. The maximum nominal BUG rating of luminaires shall be B2-U1-G2 however lower BUG rating should be used where possible.

The designer shall apply Light Loss Factor to the lighting design. For LED's the Light Loss Factor (LLF) is a combination of several factors representing deterioration of the lamp and luminaire over their life-spans which is applied to a lighting design. Several individual factors combine to form the overall LLF. The LLF then is incorporated into the design calculations.

$$LLF = LLD \times LDD \times LATF$$

Where:

Lamp Lumen Depreciation (LLD) = 0.85.

Luminaire Dirt Depreciation (LDD) = 0.90

Luminaire Ambient Temperature Factor (LATF) = 1.04 (+10° C).

For LED's the range of LLF shall be 0.8.

Electrical design requirements include:

- 1) Allow for possibility of future expansion. Stub out conduit(s) at the last streetlight pole and / or into a temporary junction box at end of the development.
- 2) 1-75mm RPVC traffic signal interconnection conduit in conjunction with roadway lighting for all Arterial and Collector Roads. The conduit shall be common trenched with the street lighting system conduits.
- 3) All empty conduits shall have a 6 mm nylon pull string installed and capped ends.
- 4) Where required, include loads for pole receptacles (100 W/receptacle for LED's), tree lights, traffic signal controllers, electrical vehicle chargers (EVC) and other devices connected to the service panel.

## **6.9 Power Supply and Distribution**

The designer shall confirm voltage and locations of suitable power sources for the proposed lighting system. The designer shall confirm if a new service is required or an existing lighting system in the area is suitable for extension. Lighting systems are typically serviced from a 120/240 Volt single phase 3 wire system. Use of other voltages must meet City approval.

Services are to be "Underground Dip" type or will tie into a service box. The designer shall select a suitable service location based on availability and what meets the City standards and the electrical utility

The power supply shall feed into a service base containing panel boards, breakers, lighting contactor(s) and switch. The lighting is controlled by a single photocell located on a luminaire. The service base shall be located:

- 1) Off the roadway where not likely to be impacted by motor vehicles;
- 2) Where it will not be a hazard or obstruction to pedestrians;
- 3) Where it can be accessed for easy servicing;
- 4) To accommodate extension to future lights and other possible loads (i.e. EVC.)

Power distribution requirements include:

- 1) Wiring to be installed in minimum 35mm Rigid PVC conduit.
- 2) Wiring to be stranded copper with RW90 insulation.
- 3) Wiring to be colour coded per Canadian Electrical Code (CEC).
- 4) Conduit burial depth as per Canadian electrical codes.

Conduit alignments shall be designed to avoid tree roots.

## **6.10 Traffic Signals**

Traffic signal details are standardized throughout British Columbia to avoid potential confusion

to the travelling public, both local and visiting. They are defined in the BC Motor Vehicle Act. Items standardized include:

- Vertical mounted signal heads
- Left side secondary heads
- Order of signal indication.

The Standard Construction documents shall be used in conjunction with the B.C. Motor Vehicle Act Regulations - Division (23) Traffic Control Devices and the B.C. Motor Vehicle Act R.S.B.C. 1996, Chapter 318.

Refer to Part B - Traffic Signals of the most current edition of the Manual of Uniform Traffic Control Devices for Canada (MUTCD) for information on traffic signal specifications, concepts and terminology.

- 1) General locations of signal heads are as follows:
  - a. Primary: Mounted over the roadway which a vehicle is to enter
  - b. Secondary: Mounted to the left of the roadway which a vehicle is to enter
  - c. Auxiliary: Mounted to the right of the primary head, or other location to enhance visibility
  - d. Pedestrian: Mounted on the far side of the intersection in line with the painted crosswalk.
- 2) Traffic signal designs are highly specialized and shall therefore be prepared by a qualified Consultant recognized by the City. Prior to starting a traffic signal design the Consultant shall contact the City to confirm specific requirements of the signal, timing and coordination plans, operational requirements and specific issues or concerns.
- 3) In instances where the project capital costs are borne by the City, traffic signal controllers and specialty signal equipment shall be supplied by the City. The Consultant shall consult the City to determine exactly what equipment shall be supplied. In the case of private development projects requiring traffic signals, the cost for the design and the supply and installation of traffic controllers and specialty signal equipment shall be borne by the Developer. Traffic signal controllers and specialty signal equipment shall be supplied by the City at the Developer's cost. Traffic Engineering and timing/coordination plans shall be provided by the Developer and prepared by a qualified Consultant, recognized by the City.
- 4) If traffic signal control devices, pre-ducting of future traffic signal control devices or traffic signal communications conduit/cable are required for a proposed development, at the discretion of the Director of Engineering, these may be designed by City staff and their construction may be included with other City work related to the project. The City



requires the Developer to retain an electrical consulting firm to prepare the design drawings and the Consultant shall have sound knowledge of traffic signal design. All design and construction costs shall be the responsibility of the Developer.

- 5) All drawings submitted to the City for review and approval shall be sealed by a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of British Columbia.
- 6) All traffic signal pole standards and luminaries shall be confirmed with the Director of Engineering. Decorative traffic signal poles shall be used in designated areas, as directed by the Director of Engineering.
- 7) The City requires that every effort be made to incorporate the traffic signal controller cabinet/base into the architecture and/or the landscaping of the new development without losing sight of the need to have the cabinet located so that clear visibility can be maintained between the signalized intersection and the cabinet.

#### **6.11 Conduit**

Conduits shall generally be parallel or perpendicular to the roadway, and routed to run in a direct line between adjacent poles or junction boxes. The exception would be where existing trees conflict with the conduit run.

Street lighting conduits shall be minimum 30mm diameter RPVC. Signal conduits shall be minimum 50mm RPVC and minimum 25mm RPVC for loop stub-outs. Service conduits shall be minimum 50mm RPVC.

#### **6.12 Interconnect Conduit**

The Consultant shall confirm the requirements for and coordinate the design of a traffic signal interconnect system if required with the Director of Engineering. Traffic signals in close proximity to rail crossings require interconnection with the rail crossing controls to ensure maximum driver safety.

#### **6.13 Power Supply**

The designer shall confirm voltage and locations of suitable power sources for the proposed signal system. Signals systems are typically serviced from a 120/240 Volt single phase 3 wire system. Alternately, 120/208 volt 3 phase 4 wire systems may be used if necessary and if approved by the Director of Engineering.

#### **6.14 Uninterruptible Power Supplies (UPS's)**

UPS's shall be considered where potential power outage is a concern or the intersection is located in a high collision or high risk area. UPS's shall be installed on the back of the traffic controller cabinet. The use of UPS shall be confirmed with the Director of Engineering.

### **6.15 Junction Boxes**

Approved plastic junction boxes shall be used as follows:

- 1) Where the maximum number of 90° bends in a conduit run is exceeded.
- 2) Where branch conduit runs are required.
- 3) In conduit runs over 100m.
- 4) At service panels.

Approved junctions boxes shall be used for traffic signal installations only in the quadrant where the traffic controller is to be installed.

### **6.16 Conductors**

For the purpose of standardization and to accommodate future expansion, street lighting feeder conductors shall be No. 6 RW90 copper red, black, and white. The bonding conductor is to be No. 8 RW90 and green in colour. The use of alternate conductor sizes will require the approval of the Director of Engineering.

For traffic signal installations, multi-conductor cable shall be used. The cable shall run continuous from the traffic controller to each pole with no splices.

### **6.17 Service Equipment**

- 1) Electrical service shall be determined in consultation with the Supply Authority.
- 2) Street lighting systems are to be controlled with a lighting contactor and photocell in which case the photocell would be located on the luminaire nearest to the service panel. Under certain circumstances individual photocell located on each luminaire may be allowed. The use of lighting contactors shall meet the approval of the Director of Engineering.
- 3) Service panels for street lighting systems shall have a minimum of 60A – 2P breaker and shall be mounted in a service base as shown on the MMCD Standard Drawings. Traffic signal and street lighting systems shall be fed from the same service panel. The combination street lighting and traffic signal service panel shall have a minimum of 100A -2P main breaker, 2 x 60A –1P sub-breaker for street lighting and 1 x 40A –1P sub-breaker for traffic controller power. The service panel shall be mounted in a service base or on the side of a

streetlight pole or post located near the traffic controller; no signal equipment shall be mounted on the same pole as the service panel. Refer to MMCD Standard Drawings.

- 4) All services shall be 120/240V single phase, 3 wire system.

### **6.18 Concrete Bases**

When selecting pole base locations, search out proposed or existing utility locations and identify sensitive tree root zones to avoid conflicts. The pole base shall be positioned outside the drip line of trees proposed for retention. The Consultant shall coordinate the design with the Landscape Architect where applicable. The placement of poles shall have priority over the placement of trees.

- 1) The Consultant shall select a concrete base to suit the required pole from those shown in the MMCD Standard Drawings. Where a custom base is required to accommodate unusual soils conditions or to avoid underground utilities, the custom base design shall be sealed by a Professional Engineer and meet the approval of the Director of Engineering.
- 2) Avoid running more than two conduits into a streetlight pole base. Where required, a junction box shall be used. An exception to this requirement may be granted where the pole base functions as the service base. Additional conduit may be required to facilitate future technology.
- 3) Ground rods/plates shall be incorporated into each concrete base utilizing a 25mm RPVC conduit sleeve.
- 4) Spread footing shape bases may be required at poor soil area determined by the Consultant.