



District of Port Edward Subdivision and Development Servicing Bylaw



Bylaw No. 544, 2014



District of Port Edward

Subdivision and Development Servicing

Bylaw No. 544, 2014

This document was prepared for:

The District of Port Edward

PO Box 1100

Port Edward, BC V0V 1G0

By:

L&M Engineering Limited

1210 Fourth Avenue

Prince George, BC, V2L 3J4



**DISTRICT OF PORT EDWARD
SUBDIVISION AND DEVELOPMENT SERVICING BYLAW NO. 544, 2014**

TABLE OF CONTENTS	Page No.
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<i>Acknowledgements</i>	<i>i</i>
<i>Citation Pages</i>	<i>ii</i>

PART 1: ADMINISTRATION AND ENFORCEMENT 1

1.1	Application	1
1.2	Metric Dimensions	1
1.3	General Compliance	1
1.4	Approving Officer	1
1.5	Director of Public Works	2
1.6	Entry onto Land	2
1.7	Penalty	2
1.8	Exemptions	3
1.9	Application and Administration Fees	3
1.10	Latecomer Agreement	4
1.11	Park Land Acquisition	4
1.12	Protection of Existing Works	4

PART 2: INTERPRETATION 5

2.1	Master Municipal Construction Documents	5
2.2	Headings	5
2.3	Definitions	5
2.4	Bylaw Schedules	9

PART 3: SUBDIVISION AND DEVELOPMENT SERVICING 11

3.1	<u>Subdivision</u> Works and Services	11
3.2	Works and Services Required for a <u>Subdivision Application</u>	11
3.3	<u>Development</u> Works and Services	12
3.4	Works and Services Required for a <u>Development Application</u>	12
3.5	Works and Services Requirements	13
3.6	Highways Requirements	15
3.7	Sewage Collection and Disposal Requirements	15
3.8	Drainage and Storm Runoff Collection Requirements	15
3.9	Waterworks Requirements	16
3.10	Other Services	16
3.11	Rights-of-Way, Covenants and Easements	16
3.12	Applicant's Responsibility	17
3.13	Excess or Extended Services	20
3.14	Early Subdivision Registration	21



TABLE OF CONTENTS (continued)

Schedules

Schedule A - Subdivision and Development Requirements

Schedule B - Design and Construction Specifications (Including Cross Section Drawings)

Schedule C - Works and Services Agreements (Form "A" and Form "B")

Schedule D - Notice of Excess or Extended Services Agreement

Schedule E – Application for Driveway Access Permit



ACKNOWLEDGEMENTS

All Subdivisions and Developments within the District of Port Edward shall comply with the provisions of this Bylaw. The following persons are acknowledged for their contributions to this Subdivision and Development Servicing Bylaw:

District Council

Mayor Dave MacDonald

Councillor Christine MacKenzie

Councillor Dan Franzen

Councillor Knut Bjorndal

Councillor Murray Kristoff

District of Port Edward Staff

Ron Bedard, Chief Administrative Officer/Approving Officer

Polly Periera, Director of Administrative Services

Lorraine Page, Accounting Clerk

Kaitlyn Salm, Administrative Assistant

L&M Engineering and Planning

David McWalter, P.Eng, Project Manager

Ashley Elliott, BPI, Planner



THE CORPORATION OF THE DISTRICT OF PORT EDWARD

Subdivision and Development Servicing Bylaw No. 540, 2014

A Bylaw of the District of Port Edward to require the provision of works and services and to regulate the subdivision and development of land.

WHEREAS, pursuant to the provisions of the *Community Charter* and the *Local Government Act*, the District Council may by Bylaw delegate powers to municipal officers and employees;

AND WHEREAS, pursuant to the provisions of the *Local Government Act*, the District Council may by Bylaw require and set standards for Works and Services, require payment of fees and charges and require the provision of extended or excess services.

NOW THEREFORE, the District Council of the District of Port Edward, in open meeting assembled, hereby enacts as follows:

Citation

- 1.1 This Bylaw may be cited as "**The District of Port Edward Subdivision and Development Servicing Bylaw No. 544, 2014**".

Applicability

- 1.2 This Bylaw applies to the geographic area of the District of Port Edward and to all land, water, airspace, buildings and structures therein.

Repeal

- 1.3 Subdivision Bylaw No. 184, 1980 of the District of Port Edward, and all amendments thereto are hereby repealed.

Severability

- 1.3 The provisions of this Bylaw are severable. If any part of this Bylaw is for any reason held to be invalid by the decision of a court of competent jurisdiction, such decision shall not affect the validity of the remaining provisions of this Bylaw.



Schedules

1.5 The following schedules are attached to and form a part of this Bylaw:

- (1) Schedule A: Subdivision and Development Requirements
- (2) Schedule B: Design and Construction Specifications (Including Cross Section Drawings)
- (3) Schedule C: Works and Services Agreements
- (4) Schedule D: Notice of Excess or Extended Services Agreement
- (5) Schedule E: Application for Driveway Access Permit

READ a first time this __ day of ____, 2014

READ a second time this __ day of ____, 2014

READ a third time this __ day of ____, 2014

I hereby certify that the foregoing is a true and correct copy of Bylaw No. 544, 2014 cited as **“The District of Port Edward Subdivision and Development Servicing Bylaw No. 544, 2014”** as read a third time by the District Council for the District of Port Edward on: _____, 2014.

ADOPTED by Council this __ day of ____, 2014

Mayor, Dave Macdonald

Chief Administrative Officer, Ron Bedard



PART 1: ADMINISTRATION AND ENFORCEMENT

1.1 Application

- 1.1.1 This Subdivision and Development Servicing Bylaw applies to the geographic area of the District of Port Edward, and to all land, water, airspace, buildings and structures herein.

1.2 Metric Dimensions

- 1.2.1 Metric dimensions are used for all measurements in this Subdivision and Development Servicing Bylaw.

1.3 General Compliance

- 1.3.1 No person shall subdivide or develop, land within the District, except in accordance with the provisions of this Bylaw.
- 1.3.2 Nothing in this Bylaw, and no approval or permit given pursuant to this Bylaw, shall relieve any person from compliance with the provisions of any other enactment applicable to the subdivision or development of land within the District whether municipal, regional, provincial or federal.

1.4 Approving Officer

- 1.4.1 The **Approving Officer** appointed by the **District Council** pursuant to the provisions of the *Land Title Act* shall be responsible for the administration of portions of this Bylaw.
- 1.4.2 Pursuant to the provisions of the *Community Charter* and the *Local Government Act*, the **District Council** delegates to the **Approving Officer** its authority to exempt a **Parcel** from the statutory minimum **Highway Frontage** of ten percent of the perimeter of the **Parcel**.
- 1.4.3 The authority of the **District Council** to determine the portion of the cost of providing **Works and Services** that constitute an excess or extended service, to identify benefitting lands, to determine the amount of Latecomer Charges payable upon the **Development** of benefitting lands, and to prepare and to execute a Latecomer Agreement, is hereby delegated to the **Approving Officer**.
- 1.4.4 The **Approving Officer**, appointed by the **District Council**, shall be responsible for the following:
- Signing of all subdivision plans, including strata plans;
 - Collection of applicable fees for all **Subdivision** and **Development** Applications;



- Preparation of Latecomer Agreements;
- Determination of the amount of any park land to be provided;

1.5 Director of Public Works

- 1.5.1 The **Director of Public Works**, appointed by the **District Council** shall be responsible for administering portions of this Bylaw.

The **Director of Public Works** shall be responsible for the following:

- Approval of design drawings required for the provision of **Works and Services**;
- Administration of all **Works and Services Agreements**;
- Issuance of the **Substantial Completion Certificate**;
- Issuance of the **Construction Completion Certificate** for all completed **Works and Services Agreements**;
- Determination of the amount of **Security** required with respect to all **Works and Services Agreements**;
- Determination of the requirement for **Excess** or **Extended Services**;
- Issuance of the **Final Acceptance Certificate** at the end of the one year **Maintenance Period**; and
- Determination of the amount of the required **Maintenance Security**.

In any case where an aspect of the administration of this Bylaw does not fall within the authority granted to the **Approving Officer** under section 1.4 or the **Director of Public Works** under section 1.5, then such aspect shall, subject to any enactment to the contrary, be deemed to be the responsibility of the **Director of Public Works**.

1.6 Entry onto Land

- 1.6.1 Any **District Official**, including the **Approving Officer** and the **Director of Public Works**, may enter at all reasonable times upon any property or premises to ascertain whether the requirements of this Bylaw are being observed.
- 1.6.2 No person shall prevent or obstruct, or attempt to prevent or obstruct, the entry of any authorized person upon any property, as authorized by this Bylaw.

1.7 Penalty

- 1.7.1 Any person who violates any of the provisions of this Bylaw shall on summary conviction be liable to a penalty not exceeding Five Thousand Dollars (\$5,000.00), for each offence, plus the costs of prosecution. The penalties imposed under this section of the Bylaw



shall supplement and shall not substitute for any other remedy available in respect of this Bylaw.

1.8 Exemptions

1.8.1 Servicing requirements do not apply where a proposed **Subdivision** does not create any additional **Parcels** and only results in **Highway** or park dedication or an adjustment of boundaries between existing **Parcels**.

1.8.2 Servicing requirements do not apply where a proposed subdivision only creates a **Parcel** to be used solely for the purpose of:

- a community water or sewer system;
- a gas or oil transmission or distribution system;
- a radio or television receiving antenna;
- a telecommunication relay station;
- an automatic telephone exchange;
- an air navigational aid;
- an electrical substation or generating station; or
- a similar infrastructure facility; and

where the **Owner**, enters into a covenant with the **District**, registered in the Land Title Office that has the effect of preventing the land being used for any other purpose without the approval of the **District**.

1.9 Application and Administration Fees

1.9.1 An **Applicant** wishing to subdivide land or undertake **Development** on land within the **District** shall pay the following fees:

- a. A **Subdivision Application** fee upon requesting the **Approving Officer** to undertake a preliminary review of a **Subdivision** proposal of \$100.00 for each new **Lot**, or for each strata lot to be created by any proposed **Subdivision**. This fee is payable at the time of the initial **Subdivision Application**;
- b. An Examination Fee upon tendering the final **Subdivision** plan for the examination and approval of the **Approving Officer** of \$100.00 for each new **Lot**, or for each strata lot created on the **Subdivision** plan. This fee is payable prior to the signing of the plan of **Subdivision** by the **Approving Officer**;
- c. A **Works and Services** administration and inspection fee in the amount of Two Hundred Dollars (\$200.00) per subdivided **Lot**, which fee is payable prior to the **Approving Officer** signing the plan of **Subdivision**; and



- d. A **Development Application** Fee of \$1,000.00 upon making an **Application** for a **Building Permit** authorizing a **Development** for which this Bylaw requires **Works and Services**. This fee is payable prior to the issuance of the **Building Permit**.

1.10 Latecomer Agreement

- 1.10.1 If the **Applicant** intends to have the **Approving Officer** prepare a Latecomer Agreement, the **Applicant** must provide all background information and reports necessary to allow the **Approving Officer** to determine the excess or extended capacity of services that are provided, the lands that would benefit from the excess or extended services, the costs of providing the excess or extended services, and the charge payable for any future connection, including the **Applicant's Consulting Engineer's** estimate of the cost of the excess or extended services and the recommended term of a Latecomer Agreement.
- 1.10.2 The **Applicant's Consulting Engineer** shall provide certified actual costs for the excess or extended **Works and Services** that have been provided, if the Latecomer Agreement requires that such information be provided in order that the amount of latecomer charges may be calculated.
- 1.10.3 The rate of interest for all **Latecomer Agreements** shall be Bank of Canada Prime Rate plus 1%.

1.11 Park Land Acquisition

- 1.11.1 The **Council** of the **District** delegates to the **Approving Officer** the authority to determine whether the 5% park land required by the **Local Government Act** in relation to a **Subdivision** of land is to be provided in the form of land dedication or whether a cash payment is to be made, in accordance with the policies expressed in the **District's Official Community Plan** Bylaw. The **Approving Officer** shall determine the location of any park land to be provided.
- 1.11.2 A park land **Parcel** or an area dedicated as park on a **Subdivision** plan shall be serviced by the **Applicant** at no cost to the **District** with connections to the property line for water and sanitary sewer in the size up to, but not exceeding, 150mm for water and 200mm for sanitary sewer.

1.12 Protection of Existing Works

- 1.12.1 The **Applicant** shall take every precaution to avoid damage to existing **District** infrastructure, including roads, during the construction of new **Works and Services** which may be required for any **Subdivision** or **Development Application**. The **Owner** shall be liable for the repair or remediation of damage resulting from construction activity. The **Applicant** shall take all necessary measures to protect existing property and existing **District** infrastructure.



PART 2: INTERPRETATION

2.1 Master Municipal Construction Document

- 2.1.1 A reference in this Bylaw to the **MMCD** is a reference to the most current edition of the Master Municipal Construction Documents published by the Master Municipal Construction Documents Association, available at the time of **Subdivision** or **Development** and includes:
- the definitions of such terms used in the Master Municipal Specifications and Standard Detail Drawings as are set out in the General Conditions in Volume II;
 - the Municipal Infrastructure Design Guideline Manual; and
 - all documents supplemental to the Master Municipal Specifications, the Standard Detail Drawings and the relevant definitions set out in the General Conditions that are issued from time to time by the Association, but excludes all references to measurement and payment in the Master Municipal Specifications.

2.2 Headings

- 2.2.1 Headings for each section of this Bylaw are intended to organize the content and are to be used for reference purposes only.

2.3 Definitions

- 2.3.1 Unless otherwise defined in this Bylaw, words and expressions used in this Bylaw shall have the meaning assigned to them in the *Local Government Act*, the *Community Charter* and the *Interpretation Act*.
- 2.3.2 The following words, terms, and phrases, wherever they occur in this Bylaw, shall have the meaning assigned to them in the following table:

Term:	Definition:
A	
Applicant	Means an Owner , or a representative of the Owner , authorized in writing to make an Application for Subdivision or Development on the Owner's behalf.
Application	Means a written request by an Owner to Subdivide land or an Application for a Building Permit .
Approved Drawings	Means the design drawings sealed by the Applicant's Consulting Engineer and approved by the Director of Public Works which are to be used for construction of the Works and Services required under this Bylaw.



Term:	Definition:
Approving Officer	Means the person appointed by the Council of the District as Approving Officer , pursuant to the provisions of the <i>Land Title Act</i> .
Architect	Means a registered member in good standing of the Architectural Institute of British Columbia under the <i>Architects Act</i> .
B	
Building Permit	Means the required Permit that is issued by the District for all buildings as per the applicable building Bylaw.
C	
Construct	Or any variation thereof, when used with respect to Works and Services referred to in this Bylaw, includes build, erect, install, repair, alter, add, enlarge, move, locate, relocate, rebuild, upgrade, demolish, remove, excavate or shore.
Construction Completion Certificate	Means a certificate issued by the Director of Public Works under section 3.12.4 of this Bylaw.
Consulting Engineer	Means a Professional Engineer responsible for the design and construction supervision and certification of all Works and Services on behalf of the Owner .
Council	Means the elected Council of the District of Port Edward .
D	
Development	Means the construction of any structure on a Parcel requiring, under the Building Bylaw of the District , a Building Permit issued by a Building Inspector. The terms Develop and Developed have corresponding meanings.
Development Permit Area	A Development Permit Area (DPA) is a set of development regulations pertaining to a specific area as specified by the Official Community Plan
Director of Public Works	Means the person appointed by the Council of the District as Director of Public Works and includes any other District Official designated by the Director of Public Works to perform duties or exercise powers of the Director under this Bylaw.
District	Means the District of Port Edward.
Drainage System	Means a system of storm sewer pipes, manholes, catch basins, ditches, stormwater retention or detention facilities, outfalls and appurtenances for the collection and disposal of storm water.



Term:	Definition:
E	
Excess or Extended Services	Means Excess or Extended Services as defined in the Local Government Act.
F	
Final Acceptance Certificate	Means a certificate issued by the Director of Public Works under section 3.12.6 of this Bylaw.
Frontage	Means a boundary shared by the front Lot line of a Lot and a Highway , excluding a lane. On a corner Lot , the Frontage shall be considered to be the shorter of the Highway boundaries, regardless of the direction the buildings on the Lot are to face.
H	
Highway	Means any street, road, cul-de-sac, lane, bridge, viaduct and any other way open to public use, but does not include a private right-of-way on private property.
L	
Landscaping	Means any combination of trees, bushes, shrubs, plants, flowers, lawns, bark mulch, decorative boulders, decorative paving, foundations, sculptures, decorative fences and the like, not including paved parking areas, uncleared natural bush, undergrowth or uncontrolled weeds, arranged and maintained so as to enhance, and embellish the appearance of a Lot or to screen or mask use of a Lot .
Lot	Means a single Lot of land registered as such in the Land Title Office and shall include a strata Lot created by bare land strata subdivision, but does not include a strata Lot within a building strata plan.
M	
MMCD	Means the Master Municipal Construction Document.
Maintenance Period	Means the one year period, starting from the date of the issuance of the Construction Completion Certificate , during which the Owner is required to make repairs to any Works or Services that fail to perform as intended.
Maintenance Security	Means the Security required under section 3.12.5 of this bylaw. .



Term:	Definition:
O	
Owner	Means a person listed in the Land Title Office as the Owner of a Parcel .
P	
Parcel	Means any Lot , block or other area of land that is the subject of an Application .
Professional Engineer	Means a person who is registered or licensed to practice professional engineering in the Province of British Columbia under the provisions of the <i>Engineers and Geoscientists Act</i> .
S	
Security	Means cash, a certified cheque, or a clean, unconditional and irrevocable stand-by letter-of-credit that provides for automatic renewals, drawn in favour of the District on a Canadian chartered bank or other institution acceptable to a District Official .
Sewerage System	Means a system of pipes, manholes, treatment plants, pump stations, valve stations, discharges and appurtenances for the collection and disposal of sewerage.
Sidewalk	Means a portion of a Highway surfaced for pedestrian traffic.
Street Lighting	Means an overhead system of lights to illuminate Roadways, Sidewalks, Bicycle Paths and Pathways.
Subdivision	Means a Subdivision under the <i>Land Title Act</i> or the <i>Strata Property Act</i> other than a building strata Subdivision .
Substantial Completion Certificate	Means a certificate issued by the Director of Public Works under section 3.12.3 of this Bylaw.



Term:	Definition:
U	
Underground Wiring	Means a system or systems of wires, cables and appurtenances constructed under the surface of a Highway to provide electrical power or telecommunication services to a Parcel or to Street Lighting facilities.
W	
Waterworks System	Means a system of pipes, hydrants, pump stations, pressure reducing valve stations, reservoirs and appurtenances for the supply and distribution of water by the District .
Works and Services	Means Works and Services including Highways, Sidewalks , boulevards, boulevard crossings, transit bays, Street Lighting, Underground Wiring , water distribution systems including fire hydrants, sewerage collection and disposal systems, Drainage collection and disposal systems, and connections of all such systems to the systems operated by the District and includes Works and Services required to control Drainage , erosion and sediment related to construction of the foregoing.
Works and Services Agreement	Means an agreement between the Owner and the District for the construction and installation of Works and Services pursuant to the <i>Local Government Act</i> .

2.4 Bylaw Schedules

This Subdivision and Development Servicing Bylaw contains five (5) additional schedules:

- A - Subdivision and Development Requirements
- B - Design and Construction Specifications (Including Cross Section Drawings)
- C - Works and Services Agreements (Form “A” and Form “B”)
- D - Notice of Excess or Extended Services Agreement
- E – Application for Driveway Access Permit

Schedule “A” entitled “Subdivision and Development Requirements” provides a summary of the approval procedures and the drawing requirements and manual standards for all **Subdivision** and **Development** servicing work.

Schedule “B” entitled “Design and Construction Specifications (Including Cross Section Drawings)” sets out the design criteria and infrastructure standards to be used for the design of **Works and Services** required by this Bylaw.

Schedules “C” and “D” provide sample forms and notices as follows:



- Form “A” – Works and services agreement – Subdivision Servicing;
- Form “B” – Works and Services Agreement – Development Servicing; and
- Notice of Excess or Extended Services Agreement.

Schedule “E” Provides an application form for a driveway access permit.



PART 3: SUBDIVISION AND DEVELOPMENT SERVICING

3.1 Subdivision Works and Services

- 3.1.1 An **Applicant** who intends to subdivide land within the **District** is required to provide **Works and Services** in accordance with this Bylaw.
- 3.1.2 An **Applicant** who intends to subdivide land under the *Land Title Act* shall seek approval for **Subdivision** from the **Approving Officer**.
- 3.1.3 An **Applicant** who intends to subdivide land by the deposit of a strata plan in the Land Title Officer under the *Strata Property Act*, and the Bare Land Strata Regulation shall seek approval for **Subdivision** from the **Approving Officer**.
- 3.1.4 **Application** and administration fees for **Subdivisions** and **Developments** within the **District** are payable in accordance with Section 1.9 of this Bylaw.

3.2 Works and Services required for a Subdivision Application

- 3.2.1 **Works and Services** for a **Subdivision Application** must be provided, designed, located and constructed in accordance with this Bylaw and with design drawings and any supplementary specifications approved by the **Director of Public Works**.
- 3.2.2 An **Applicant** must provide **Works and Services** to serve every **Parcel** within a **Subdivision**, except for a *building strata Subdivision* under the *Strata Property Act*. Where, in the opinion of the **Approving Officer**, **Works and Services** may need to be provided to serve land beyond the **Subdivision**, they shall be extended across the full width of each **Parcel** and to the boundaries of the **Subdivision**. The **Approving Officer** may waive this requirement where it would require **Works and Services** to be provided across land designated on the **Subdivision** plan as a remainder of a **Parcel** being subdivided.
- 3.2.3 The **Applicant** shall provide design drawings and a construction schedule to the **Director of Public Works** for the approval of the required **Works and Services**.
- 3.2.4 The **Applicant** shall pay all required fees to the **District**.
- 3.2.5 If the **Applicant** has not completed the required **Works and Services** at the time of **Subdivision** approval, the **Applicant** shall enter into a **Works and Services Agreement** with the **District** (Substantially in the form set out in Schedule "C" as Form "A"). **Security** in the amount of 125% of the estimated value of uncompleted **Works and Services** shall be provided to the satisfaction of the **Director of Public Works**.



- 3.2.6 Upon completion of the required **Works and Services**, the **Applicant** shall submit the following information to secure **Subdivision** approval:
- a. Record drawings and documentation as required by the **Director of Public Works**;
 - b. A **Substantial Completion Certificate**, prepared by the **Applicant's Consulting Engineer**;
 - c. **Security** for any outstanding **Works and Services**, including the preparation of record drawings or documentation, in the amount of 125% of the cost of the outstanding **Works and Services** as determined by the **Applicant's Consulting Engineer** and accepted by the **Director of Public Works**;
 - d. Where applicable, evidence of compliance with the applicable enactments including the *Public Health Act*, the *Environmental Management Act* and the *Water Act* respecting private potable water systems, on-site sewerage disposal and works in or about a stream; and
 - e. When required by the **Approving Officer**, letters of acceptance of the **Works and Services** from utility providers.

3.3 **Development Works and Services**

- 3.3.1 An **Applicant** who intends to develop land anywhere within the **District** is required to provide **Works and Services** in accordance with this Bylaw.
- 3.3.2 An **Applicant** who intends to develop land anywhere within the **District** is required to apply for a **Building Permit** and to provide any required **Works and Services**
- 3.3.3 An **Applicant** who intends to develop land shall make a **Building Permit Application** to the Building Inspector in accordance with the Building Bylaw.
- 3.3.4 **Application** and processing fees are payable to the Building Inspector prior to the issuance of the **Building Permit**. Issuance of the **Building Permit** may only proceed when all **Development Permit** and **Building Permit Fees** have been paid in full.

3.4 **Works and services required for a Development Application**

- 3.4.1 When **Works and Services** are required within immediately adjacent highways, the **Applicant** shall provide the required **Works and Services**.
- 3.4.2 Design drawings and a construction schedule for the required **Works and Services**, required by the **Director of Public Works** for review prior to construction shall be prepared by the **Applicant's Consulting Engineer**, who shall be a **Professional Engineer**.
- 3.4.3 If the **Applicant** has not completed the required **Works and Services** at the time of the issuance of the **Building Permit**, the **Applicant** shall enter into a **Works and Services Agreement** with the **District** (Substantially in the form set out in Schedule "C" as Form "B"). **Security** in the amount



of 125% of the estimated value of uncompleted **Works and Services** shall be provided to the satisfaction of the **Director of Public Works**.

3.4.4 Unless the installation or construction of the **Works and Services** are performed by the **District**, under contract with the applicant, the **Applicant** shall submit the following at the time of issuance of the **Building Permit**:

- a. Record drawings and documentation;
- b. The **Applicant's Consulting Engineer's Substantial Completion Certificate**;
- c. **Security** for any outstanding **Works and Services**, including the preparation of record drawings or documentation, in the amount of 125% of the cost of the outstanding **Works and Services** as determined by the **Applicant's Consulting Engineer** and accepted by the **Director of Public Works**;
- d. Where applicable, evidence of compliance with the applicable enactments, including the *Public Health Act*, the *Environmental Management Act* and the *Water Act* respecting private potable water systems, on-site **Sewerage** disposal and works in or about a stream;
- e. When required by the **Director of Public Works**, letters of acceptance of the **Works and Services** from utility providers; and
- f. If requested by the Building Inspector or the **Director of Public Works**, a site grading plan, stormwater management plan, erosion control plan, sedimentation control plan and drawings showing provision for oil/water and sedimentation separators for **Drainage** systems, and water servicing drawings showing provision for water supply backflow prevention, all prepared by the **Applicant's Consulting Engineer**.

3.5 Works and Services Requirements

3.5.1 The required **Works and Services** to be provided by the **Applicant**, throughout the **District**, are listed in Table 1. All **Works and Services** must be provided, designed, located and constructed in accordance with this Bylaw.

3.5.2 The **Approving Officer** may require an **Applicant** to install **Works and Services** directly attributable to a **Subdivision** or a **Development** on that portion of a **Highway** immediately adjacent to the site being subdivided or developed up to the centre line of the **Highway**. Such **Works and Services** may include the upgrading or replacement of existing **Works and Services** that are of a lower standard than required by this Bylaw.

3.5.3 The **Approving Officer** may exempt an **Application** from all or part of the requirements of section 3.5.1 or require installation of **Works and Services** to a standard consistent with the prevailing standard of the street or with the standard of the street abutting adjacent properties, if:



- a. The Subdivision or Development abuts a Highway on which existing Works and Services are not in accordance with the standards set out in this Bylaw; and,
- b. In the opinion of the **Approving Officer**, any future **Subdivision, Development**, local improvement or **District** project are unlikely to result in an overall upgrading to those standards and it is desirable to preserve consistent streetscape and servicing levels by not introducing, or increasing, discontinuities.

3.5.4 Where Table 1 conflicts with the requirements of the Design and Construction Specifications (**Schedule 'B'**), the requirements contained in Schedule "B" shall govern.

3.5.5 References to **Parcel** Zoning in Table 1 shall be interpreted as references to zoning designations enacted in the **District's** Zoning Bylaw.

TABLE 1 WORKS AND SERVICES REQUIRED FOR SUBDIVISION AND DEVELOPMENT		
SECTION	WORKS & SERVICES REQUIRED	PARCEL ZONING
3.6	HIGHWAYS	
	Asphalt pavement surface	All zones
	Street information and street signage	All zones
	Curb and gutter and boulevard Landscaping	All R, RM, C and PI zones
	Underground electric power distribution, telecommunication and Street Lighting wiring	All R, RM, C and PI zones
3.7	Portland Cement Concrete Sidewalks and boulevard Landscaping	All R, RM, C and PI zones
	SEWAGE COLLECTION AND DISPOSAL	
	On-site private Sewerage disposal system	All A and M-3 zones
3.8	DRAINAGE AND STORM RUNOFF COLLECTION	
	District Sewerage collection and disposal system	All, R, RM, C, M-1, M-2 and PI zones
	Open channel Drainage system	All A, M-1, M-2, and M-3 zones
3.9	District storm sewer collection system	All R, RM, C and PI, zones
	WATERWORKS	
	One well per Parcel .	All A, and M-3 zones
	District water distribution and fire hydrant system	All R, RM, C, M-1, M-2 and PI zones

All **Works and Services** shall be designed and constructed in accordance with **Schedule 'B' - "Design and Construction Specifications"**.



3.6 Highways Requirements

- 3.6.1 All **Highways** provided by the **Applicant** where required as detailed in Table 1, shall be designed and constructed in accordance with the standards and specifications as defined in **Schedule 'B'– "Design and Construction Specifications"**.
- 3.6.2 The **Applicant** shall provide without compensation, land for **Highway** purposes in accordance with the *Local Government Act*, where the **District** requires road widths to meet the desired maximum as indicated in Section 3.6.3.
- 3.6.3 All dedicated **Highway** Right of Way (ROW) widths shall be as specified in **Schedule 'B'** of this Bylaw.
- 3.6.4 Maximum cul-de-sac length, measured from the connecting **Highway** as indicated in **Schedule 'B'** of this Bylaw, shall be as specified below:

TABLE 2 MAXIMUM CUL-DE-SAC LENGTHS	
Zoning	Maximum Length
All A zones	300.0 metres
All R, RM, and C zones	150.0 metres
Industrial zones	200.0 metres

3.7 Sewage Collection and Disposal Requirements

- 3.7.1 All **Sewerage** collection and disposal systems, where required as detailed in Table 1, shall be designed and constructed in accordance with **Schedule 'B'** of this Bylaw and all applicable Provincial and Federal enactments.
- 3.7.2 Where privately owned **Sewerage** facilities are allowed in Table 1, the facilities shall be designed and constructed in accordance with the requirements and performance criteria of the local Health Authority having jurisdiction.

3.8 Drainage and Storm Runoff Collection Requirements

- 3.8.1 All **Drainage** collection and disposal systems, where required as detailed in Table 1 shall be designed and constructed in accordance with **Schedule 'B'** of this Bylaw.
- 3.8.2 The design of **Drainage** management systems for the proposed **Development** or **Subdivision** and **Lot** grading drawings for each **Lot** created by **Subdivision** shall be prepared by a qualified **Professional Engineer** and to the satisfaction of the **Director of Public Works. Works and Services** required to incorporate the **Drainage** management system shall be installed by the



Applicant, to the satisfaction of the **Director of Public Works** prior to **Subdivision** approval or issuance of a **Building Permit**.

3.9 Waterworks Requirements

- 3.9.1 The **Waterworks** systems, where required as detailed in Table 1, shall be designed and constructed in accordance with **Schedule 'B'** of this Bylaw and the requirements of the *Drinking Water Protection Act* and the *Drinking Water Protection Regulation*.
- 3.9.2 Connections to the **District's** existing **Waterworks** facilities, and the use of **District** water for testing, disinfection and flushing purposes, shall be in accordance with the terms and conditions set out in the **Waterworks** Bylaw and **Schedule 'B'** of this Bylaw.
- 3.9.3 When connection to **District** watermains is required, or is requested by the **Applicant** and approved by the **Director of Public Works**, the **Development Parcels** or **Parcels** created by **Subdivision** shall be provided with a Waterworks system that meets the maximum-day water demand and fire protection requirements established in **Schedule 'B'** of this Bylaw, the British Columbia Building Code and all applicable fire code regulations.
- 3.9.4 Where privately owned **Waterworks** are acceptable to the **Director of Public Works** and provided by the **Applicant** as detailed in Table 1, the facilities shall be designed and constructed in accordance with the requirements of the *Drinking Water Protection Act* for the supply of potable water as determined and approved by the local Health Authority having jurisdiction.
- 3.9.5 The **Applicant's Consulting Engineer** shall verify and certify the quality and capacity of any private water distribution system or well.

3.10 Other Services

- 3.10.1 Other services that are integral parts of **Highways, Sewerage, Drainage** and **Waterworks** facilities, shall be designed by the **Applicant's Consulting Engineer** and provided by the **Owner** in accordance with the standards and specifications set out in **Schedule 'B'** of this Bylaw.

3.11 Rights-of-Way, Covenants and Easements

- 3.11.1 The **Applicant** shall pay for the cost of legal surveys, legal fees and registration of all rights-of-way, Covenants and Easements required by the **Approving Officer** for **Subdivision** or **Development**.
- 3.11.2 The **Applicant** shall provide, at no cost to the **District**, all land required for rights-of-way and easements required to accommodate a **Waterworks System**, a **Sewerage System**, a **Drainage System**, pedestrian walkways and trails, as determined by the **Approving Officer**.



- 3.11.3 Where it is not practical to service an individual **Parcel** from a **Highway**, the **Applicant** must grant, or acquire, easements for servicing of such **Parcels**, if acceptable to the **Approving Officer**, in favour of the benefitting **Parcel** and statutory rights-of-way in favour of the **District** enabling the **District** to provide services to the **Parcel** through the easement area. All such covenants and statutory rights-of-way shall be in a form acceptable to the **District** solicitor. No more than one **Parcel** shall be served by this means across any other single **Parcel**.
- 3.11.4 Rights-of-way and easement documents must be deposited and registered in the Land Title Office before the **Subdivision** plan is signed by the **Approving Officer** or before the **Building Permit** is issued. In the case of a **Subdivision** the **Applicant** may alternatively, provide a solicitor's undertaking, satisfactory to the **District** solicitor that the Subdivision plan and right-of-way documents shall all be deposited in the sequence required by the District solicitor and that, if that is not possible the **Subdivision** plan shall immediately be returned directly to the **Approving Officer**.
- 3.11.5 If **Works and Services** required in accordance with this Bylaw will cross an established easement or other right-of-way, the **Applicant** must, at his own expense before permission to proceed with construction is granted, obtain any modifications necessary to permit the construction, reconstruction, inspection, operation, repair, maintenance and use of the **Works and Services** under conditions acceptable to the **Approving Officer**.

3.12 Applicant's Responsibility

3.12.1 Design and Construction

- a. The **Applicant** must ensure that the **Applicant's Consulting Engineer**, and all sub-consultants and specialist firms, and all individuals assigned responsibility for components of the **Works and Services** perform all design work in accordance with this Bylaw.
- b. The **Applicant** must engage qualified contractor(s) to undertake the construction of the required **Works and Services**.
- c. The **Applicant** must ensure that its contractor(s) perform all **Works and Services** in accordance with this Bylaw and in accordance with the **Approved Drawings**.

3.12.2 Record Drawings and Documentation

- a. The **Applicant's Consulting Engineer** shall prepare and submit sealed infrastructure record drawings of all completed **Works and Services**. The as-constructed record drawings shall be sealed by the **Applicant's Consulting Engineer** certifying that all of the **Works and Services** have been installed to the standards and specifications prescribed by this Bylaw and approved by the **Director of Public Works**, and that the construction was completed under the **Applicant's Consulting Engineer's** direct supervision.



- b. The as-constructed record drawings shall be submitted within 180 days following the **Applicant's Consulting Engineer's** submission of the **Substantial Completion Certificate**. If the record drawings are not submitted, the **Works and Services** shall be considered deficient and **Security** in the amount required to prepare the record drawings may be held by the **Director of Public Works** until the record drawings are submitted. The **Director of Public Works** may, at any time after 180 days following submission of the **Substantial Completion Certificate**, draw upon the **Security** to have the record drawings prepared.
- c. The **Applicant's Consulting Engineer** shall submit to the **Director of Public Works** documentation prepared by him or other specialists, consultants and testing firms, prior to and during the installation of the **Works and Services**, including engineering reports, inspection reports, materials testing reports, **Lot** grading reports, environmental monitoring reports, design briefs, shop drawings, operation and maintenance manuals, and other reports, which provide a historical account of the installation and construction activities and support the **Applicant's Consulting Engineer's** certification of the **Works and Services** in accordance with this Bylaw.

3.12.3 Substantial Completion Certificate

- a. The **Applicant's Consulting Engineer** shall submit a **Substantial Completion Certificate** sealed by a Professional Engineer in a form acceptable to the **Director of Public Works** which:
 - i. Certifies that all of the **Works and Services** were installed to the standards and specifications prescribed by this Bylaw;
 - ii. Certifies that the necessary inspections, testing, cleaning of piping, disinfection of potable water systems, and other procedures as required, including approvals by regulatory Provincial and Federal agencies, have been conducted and that the **Works and Services** are safe and acceptable for public use;
 - iii. Certifies that the construction of the required **Works and Services** was completed under the **Applicant's Consulting Engineer's** direct supervision;
 - iv. Provides, to the satisfaction of the **Director of Public Works**, a description of any outstanding and deficient **Works and Services**;
 - v. Provides, to the satisfaction of the **Director of Public Works**, a cost estimate, sealed by a **Professional Engineer**, for any deficient or outstanding **Works and Services**; and
 - vi. Provides an executed **Works and Services Agreement** and **Security** in the amount of 125% for all outstanding and uncompleted **Works and Services**.



- b. Following review of the documentation submitted and any field investigations he may deem necessary, the **Director of Public Works** may acknowledge receipt and acceptance of the **Applicant's Consulting Engineer's Substantial Completion Certificate** by issuing a **Construction Completion Certificate**, the date of which shall mark the beginning of the **Maintenance Period**.

3.12.4 Construction Completion Certificate

- a. The **Construction Completion Certificate** shall be issued by the **Director of Public Works**.
- b. The date of issuance of the **Construction Completion Certificate** shall trigger the beginning of the one year **Maintenance Period**.
- c. The **Construction Completion Certificate** will not be issued by the **Director of Public Works** until the works are fully complete, or until **Security** in the amount of 125% of the value of uncompleted **Works and Services** has been provided to the **District**.
- d. The **Construction Completion Certificate** will not be issued until the required **Maintenance Security** has been provided to the **District**. The **Maintenance Security** should be taken at the beginning of the **Works and Services** and will be in the amount of 5% of the total value of all **Works and Services** provided.

3.12.5 Maintenance Period and Security

- a. The **Applicant** shall provide **Maintenance Security**, in the amount of 5% of the actual costs of the **Works and Services** certified by the **Applicant's Consulting Engineer** for all **Works and Services** provided and installed by the **Applicant**, for a period of one year from the date of issuance of the **Construction Completion Certificate** (the "**Maintenance Period**").
- b. The **Applicant** shall correct deficiencies in and make repairs to any **Works and Services** that do not continue to meet the minimum standards and specifications during the **Maintenance Period**.
- c. If the **Applicant** fails to make repairs within 30 days for non-emergency **Works and Services** from the date when requested to do so in writing by the **Director of Public Works**, or in the case of emergency situations, within two hours of receiving verbal notification of the emergency, then the **District** using its own forces or a contractor hired by the **District**, may make the necessary repairs and recover the cost by drawing down the **Maintenance Security**.
- d. The **Director of Public Works** may signify completion of the **Subdivision or Development Works and Services** requirement by issuing a **Final Acceptance Certificate** for all **Works and Services**, once the **Maintenance Period** is over and all **Works and Services**, in the judgement of the **Director of Public Works**, are performing as originally intended.



- e. Provided that the requirements of Section 3.12 are met, the **Maintenance Security** or any unused portion of it shall be released when the **Final Acceptance Certificate** is issued.
- f. If at the end of the **Maintenance Period** all or some of the **Works and Services** are not performing as originally intended, the **Director of Public Works** may extend the **Maintenance Period** for all or some of the **Works and Services**, until such time as all of the **Works and Services** are performing as originally intended. The **Maintenance Security** may be held over the extended **Maintenance Period**, and the **Director of Public Works** may proportionately reduce the amount of the **Security** at his discretion.
- g. At the end of all applicable **Maintenance Periods**, ownership of all **Works and Services** installed in the **District's Highways** or in statutory rights-of-way granted to the **District** shall vest in the **District**.

3.12.6 Final Acceptance Certificate

- a. Prior to the end of the one year **Maintenance Period**, the **District** will inspect the completed works to ensure that they are performing as designed and constructed. If the inspected works are performing satisfactorily, the **Director of Public Works** shall issue a **Final Acceptance Certificate**.
- b. If the **Works and Services** are deficient in any way, the **Applicant** shall be directed to make any repairs prior to the issuance of a **Final Acceptance Certificate**.
- c. The **Maintenance Security** will be released when the **Final Acceptance Certificate** is issued.

3.13 Excess or Extended Services

The **Approving Officer** may require the **Owner** to provide excess or extended services to provide access to, or service, land other than the land being subdivided or developed. If excess or extended services are required, the **Approving Officer** shall:

- i. Determine the proportion of the cost of providing the sanitary sewer, water, storm drain or **Highway** facilities that constitutes the excess or extended services;
- ii. Determine which part of the excess or extended services will benefit each of the **Parcels** of land that will be served by the excess or extended services;
- iii. Impose as a condition of an **Owner** connecting to or using the excess or extended services, a charge related to the benefit determined under paragraph 3.13 (ii);
- iv. Calculate the benefit to each **Parcel** including an annual interest adjustment;
- v. Execute an excess or extended services agreement on behalf of the **District** with the **Owner** who has provided the excess or extended services;
- vi. File a Notice of excess or extended services agreement at the Land Titles Office for each benefitting **Parcel** of land; and



- vii. Remit excess or extended services charges and accrued interest to the **Owner** in accordance with the excess or extended services agreement.

A charge for connecting to or using excess and extended services shall include interest calculated annually at the Bank of Canada Prime Rate plus 3% and payable from the period beginning when the excess or extended service was completed, up to the date the connection is made or the use begins, in accordance the *Local Government Act*.

3.14 Early Subdivision Registration

- 3.14.1 The early signing and registration of legal plans for **Subdivision Applications** is permitted, provided that **Security** in the amount of 125% of the value of all outstanding and uncompleted **Works and Services** has been provided to the **District**.
- 3.14.2 To facilitate the early **Subdivision** registration process, the **Applicant's Consulting Engineer** shall provide a detailed construction cost estimate of the total value of all outstanding **Works and Services**. The **Applicant** shall then provide **Security** in the amount of 125% of the calculated value, to the **District** prior to the signing of the legal plans by the **Approving Officer**.
- 3.14.3 The **Applicant** shall enter into a **Works and Services Agreement (Form "A" of Schedule "C")** with the **District** with respect to the execution and completion of the outstanding and uncompleted **Works and Services**.



District of Port Edward Subdivision and Development Servicing Bylaw No.544, 2014

Schedule "A"
Subdivision and Development
Requirements



District of Port Edward
Subdivision and Development Servicing Bylaw No. 544, 2014

Schedule A – SUBDIVISION AND DEVELOPMENT REQUIREMENTS

TABLE OF CONTENTS	Page No.
PART 1:DESIGN APPROVAL	1
1.1 General	1
1.2 Approval Procedures.....	1
PART 2:DESIGN DRAWING AND MAINTENANCE MANUAL STANDARDS	4
2.1 General	4
2.2 Title Block	4
2.3 Preparation of Design Drawings	4
2.4 Cover Sheet.....	5
2.5 Key Plan – at scale to fit, may be on cover sheet	5
2.6 Composite Utility Plan.....	5
2.7 Storm Water Management Plan	5
2.8 Lot Grading Plan.....	6
2.9 Road Works and Water Mains Plans	6
2.10 Storm and Sanitary Sewer Plans	7
2.11 Road Cross Section Plans	7
2.12 Street Lighting Plan	7
2.13 Drainage, Erosion and Sediment Control Plan	8
2.14 As-Constructed Drawings.....	8
2.15 Operation and Maintenance Manuals	9
PART 3: GENERAL REQUIREMENTS.....	10
3.1 Construction Requirements.....	10
3.2 Permission to Commence Construction.....	10
3.3 Pre-Construction Meeting.....	11
3.4 Survey Control	12



TABLE OF CONTENTS (continued)

3.5	Existing Utilities	12
3.6	Design Errors and Unknown Conditions	13
3.7	Materials	13
3.8	Hours of Works.....	13
3.9	Progress of Work	14
3.10	Equipment.....	14
3.11	Site Maintenance.....	14
3.12	Protection of Drainage Systems and Watercourses	15
3.13	Dewatering	15
3.14	Blasting	15
3.15	Inspections of Works and Services	15
3.16	Test Samples	16
3.17	Use of Fire Hydrants.....	16
3.18	Testing of Water and Sewer mains	16
3.19	Weather Conditions	16
3.20	Safety and Protection of Property and Works.....	17
3.21	Suspension of Works by the Director of Public Works.....	17
3.22	Use of Completed Works and Services	17
3.23	Releases at Completion of Works and Services	17
3.24	Completion of Works and Services	18
3.25	Maintenance Period	18
3.26	Notice of Final Acceptance.....	19
PART 4: SPECIFICATIONS.....		21
4.1	Master Municipal Specifications	21
4.2	Supplementary Specifications.....	21



PART 1: DESIGN APPROVAL

1.1 General

1.1.1 Introduction

- a. This schedule - **Schedule “A”** entitled “Subdivision and Development Requirements” provides a summary of the approval procedures and the drawing and manual standards for all **Subdivision** and **Development** servicing work.
- b. **Schedule “B”** entitled “Design and Construction Specifications” sets out the design criteria to be used for the design of **Works and Services** required under the Bylaw.

1.1.2 Design Criteria

- a. Where conditions arise which are not covered by **Schedule “A”** and **Schedule “B”**, the **Applicant's Consulting Engineer** shall consult with the **Director of Public Works** in order to confirm the appropriate design criteria, prior to commencing the design. In such cases, the **Applicant's Consulting Engineer** shall design the **Works and Services** to be functionally equivalent to those required under this Bylaw and which deviate as little as possible from the specifications contained in this Bylaw.

1.2 Approval Procedures

1.2.1 Conceptual Engineering Plans

- a. Conceptual engineering plans must be submitted for all proposed **Works and Services** before the **Approving Officer** completes a preliminary review of a **Subdivision Application**. Conceptual plans must show approximate road and pipeline grades, alignments, road widths, pipe size and depth where appropriate and location of all significant facilities, and be in sufficient detail to demonstrate the feasibility of the proposal. This requirement may be waived for **Subdivisions** only requiring service connections for individual **Parcels** to existing **District** systems having adequate capacity. Conceptual road alignment and trunk servicing plans shall conform to the Official Community Plan. Conceptual servicing plans may be required before a **Building Permit** can be issued. Upon completion of the preliminary review, the **Approving Officer** will issue a Preliminary Layout Review (PLR).

1.2.2 Design Drawings

- a. Design Drawings will not be accepted until an **Application** has been reviewed favourably by the **Approving Officer** for **Subdivision** or by the Building Inspector for a **Building Permit**, and all required fees have been submitted. The **Applicant's Consulting Engineer** shall arrange for all legal and/or topographic surveys,



geotechnical investigations, traffic impact studies, and any other investigations, including test pits if necessary to confirm the location of underground utilities, required to prepare the Design Drawings. The ***Applicant's Consulting Engineer*** shall be responsible for confirming the accuracy of any information about existing ***Works and Services*** or other ***District*** infrastructure provided by employees of the ***District***.

- b. The ***Applicant's Consulting Engineer*** shall perform all necessary calculations and field verifications to confirm that the proposed design of the ***Works and Services*** conforms to the Bylaw. Deviations from the preliminary requirements may be accepted, providing they accomplish the same purpose and are agreed to by the ***Director of Public Works***.

1.2.3 Submission of Final Design Drawings

- a. The ***Applicant's Consulting Engineer*** shall submit a minimum of two complete sets of sealed paper prints of the Final Design Drawings to the ***Director of Public Works*** for review. The submission shall conform to the minimum standards specified in Section 2 of this Schedule. An electronic copy of the drawings shall also be provided.
- b. The ***Applicant's Consulting Engineer's*** seal on the Final Design Drawings submitted for review and acceptance will certify that the design has been carried out in compliance with the Bylaw and in accordance with the best current acceptable engineering practices. Exceptions to general conformance shall be noted and documentation provided to explain the noted exceptions.

1.2.4 Unacceptable Design Drawings

- a. If any Design Drawings are not acceptable to the ***Director of Public Works***, one marked-up set of drawings will be returned to the ***Applicant's Consulting Engineer*** for correction and/or revision.

1.2.5 Resubmission of Design Drawings

- a. The ***Applicant's Consulting Engineer*** shall submit a minimum of two complete sets of sealed paper prints of the revised Design Drawings to the ***Director of Public Works*** for review plus additional prints of individual Design Drawings as may be required by the ***District*** for ancillary purposes. An electronic copy of the drawings shall also be provided.

1.2.6 Approvals of Other Agencies

- a. The ***Applicant's Consulting Engineer*** shall obtain all necessary approvals from all other agencies that may be involved and submit them to the ***District*** before the Design Drawings can be stamped as reviewed and accepted by the ***District***. These agencies may include, but are not necessarily restricted to, the Public Health Engineer, Federal and Provincial Fisheries, Ministry of Environment, the National



Energy Board, the Ministry of Transportation and Infrastructure, B.C. Hydro, and natural gas distribution and telephone companies. Where an **Application** to an agency must be made by the **District**, the **Applicant's Consulting Engineer** shall supply the **District** with the necessary copies of drawings and any other supporting information for the **Application**.

1.2.7 Acceptance of Design Drawings

- a. Upon notification that the Design Drawings are acceptable to the **Director of Public Works**, the **Applicant's Consulting Engineer** shall submit four complete sets of sealed paper prints. One set will be stamped as having been reviewed and accepted by the **District** and returned to the **Applicant**. The stamped drawings are the **Approved Drawings** as defined in this Bylaw.
- b. The **Director of Public Works** review of the Design Drawings is to check for general compliance with the Bylaw and the **Subdivision** requirements. The **Director of Public Works** approval does not certify the accuracy or appropriateness of the design nor transfer any responsibility for proper design to the **Director of Public Works** or the **District**. The **Applicant's Consulting Engineer** shall be fully responsible for the accuracy and suitability of the design and for its conformity to the Bylaw. Any design errors and/or omissions, shall be rectified at the cost of the **Applicant**.
- c. The stamping of the Design Drawings does not constitute **Subdivision** approval, nor does it permit construction, or any other work on site, to be commenced.

1.2.8 Other Utilities

- a. The **Applicant's Consulting Engineer** shall arrange for the coordination of the design, location and/or relocation of non-municipal utilities with the appropriate utility companies.



PART 2: DESIGN DRAWING AND MAINTENANCE MANUAL STANDARDS

PART 2:

2.1 General

- 2.1.1 All Design Drawings shall be on A1 size sheets, 594 mm x 841 mm outside dimensions, using a high grade tracing paper or polyester film. Plan/profile drawings shall have plan at top and profile shall be on a 2mm vertical x 20 mm horizontal grid.
- 2.1.2 All Design Drawings shall be prepared using computer assisted drafting programs.

2.2 Title Block

- 2.2.1 All Design Drawings shall include name and address, telephone and fax number of **Applicant's Consulting Engineer**; **Owner's** name; drawing title; drawing number; **District** project number; date of drawing; scale; **Professional Engineer's** seal; and drawing revision information including date of revision.

2.3 Preparation of Design Drawings

- 2.3.1 All plans and profiles shall be drawn to metric scales and dimensions shall be in metres.
- 2.3.2 Plan views shall show the boundaries of existing and proposed roads and properties, existing and proposed lot numbers and dimensions to the nearest 0.01 m (existing taken from registered legal plans), existing house numbers and all registered and proposed rights of way; location and elevation of all survey monuments, permanent and temporary bench marks; and a north arrow. Names of existing streets shall be indicated outside of the road boundaries. Offsets of existing and proposed services shall be shown to the nearest 0.1 m.
- 2.3.3 Elevations on profiles shall be geodetic and rounded to the nearest 0.005 m. The starting chainage station 1 + 00 shall coincide with an accented vertical line on the grid and line up vertically with the 1 + 00 station on the plan view. Chainage stations shall be a maximum of 20 m intervals and rounded to the nearest 0.1 m.
- 2.3.4 Reference numbers to the appropriate supplementary or **MMCD** specification or detail drawing shall be noted, and, if none apply, specifications or details are to be shown on the drawings of the appropriate works or utility.
- 2.3.5 Clearance between all water, sanitary sewer, storm sewer and other utility mains where they cross each other shall be shown on the drawings.



- 2.3.6 All symbols on the drawings shall be as shown on **MMCD** Standard Detail Drawings G1 to G3.
- 2.3.7 A complete set of engineering Design Drawings shall, unless the **Director of Public Works** specifically waives any requirement, include the following in the sequence and with the information listed.

2.4 Cover Sheet

- 2.4.1 The Cover Sheet shall include the following information:
- All title block information;
 - Index of drawings in set;
 - Legal description of the land and adjacent properties; site plan showing proposed subdivision layout with lot numbers, proposed future phases and all adjacent existing and proposed roads at a scale to fit; and
 - Location plan.

2.5 Key Plan – at scale to fit, may be on cover sheet

- 2.5.1 The Key Plan shall include the following information:
- Subdivision layout with lot numbers; and
 - Outline boundaries of each drawing in set with drawing number.

2.6 Composite Utility Plan

- 2.6.1 The Composite Utility Plan shall be prepared at a scale of 1:1000 or 1:500 and shall include the following information:
- All proposed Works and Services including water, sanitary and storm sewers, electrical, telephone, gas, street-lighting, non-standard service connections, appurtenances such as hydrants, valves, manholes, catch basins, transformers, and community mail boxes complete with all offsets, locations and dimensions;
 - Rights of way and easements including widths, covenant boundaries.

2.7 Storm Water Management Plan

- 2.7.1 The Storm Water Management Plan shall be prepared at a scale of 1:1000 and shall include the following information:
- Location plan of complete watershed at scale to fit;
 - Post-development contour lines at 1 m intervals for slopes less than 20%, otherwise 2.0 m intervals, showing match to pre-development contours which must extend 30 m beyond the site legal boundary;
 - Directional arrow on each lot indicating the prevailing post-development slope of the land;



- d. The proposed minor (10-year return) storm sewer system with inlet and outlet structures, and connections to existing, drainage systems;
- e. Proposed major (100-year return) post-development flood routes, with connections to existing drainage systems, shown by arrows and indicating whether piped or overland;
- f. Storm detention/infiltration facilities;
- g. Legend;
- h. Applicable general notes;
- i. Design table with information for each segment of proposed main including catchment area in hectares, run-off coefficients, time of concentration, rainfall intensity, major and minor flow volume, pipe size, slope and capacity both existing and proposed.

2.8 Lot Grading Plan

- 2.8.1 The Lot Grading Plan shall be prepared at a scale of 1:1000 or 1:500 and shall include the following information:
- a. Pre-development ground contours in dashed lines extending 30 m beyond site boundary;
 - b. Post-development ground contours in solid lines;
 - c. Post-development elevations at corners of each proposed lot;
 - d. Drainage swales and easement and right of way boundaries;
 - e. Catch basins and lawn basins with rim elevations;
 - f. Storm and sanitary sewer service locations and elevations at property boundary;
 - g. Retaining walls integral to lot grading design;
 - h. Areas of cut and fill deeper than 1.5 m deep;
 - i. Building envelope in accordance with the Zoning Bylaw and the minimum basement elevation on each lot.

2.9 Road Works and Water Mains Plans

- 2.9.1 The Road Works and Water Mains Plans may be on the same plan and profile, 1:250 or 1:500 horizontal and 1:25 or 1:50 vertical, and shall include the following information:
- a. Existing and/or proposed elevations and locations of:
 - b. The centre line of proposed and/or existing roadways;
 - c. Proposed and existing edge of pavement, curbs and gutters and sidewalks;
 - d. All surface features which may affect proposal including walls, poles, trees, hedges, etc.;
 - e. All curves at appropriate arc locations;
 - f. All existing and proposed catch basins including lid elevations;
 - g. Beginning and end of curve, arc length and design details of vertical and horizontal curves;
 - h. Profile of existing ground and proposed road centre and gutter lines;



- i. All existing and proposed water main appurtenances including valves, hydrants, bends, tees, tie-in points, test points, blow offs, air valves etc.;
- j. Full existing and proposed pipe on profile and all valves and fittings with chainages;
- k. All water main crossover points with sewers and other utilities, including clearance and protection details; and
- l. Size, class, type, length and slope of each continuous water main pipe section;
- m. Location of service connections and size if non-standard;
- n. Details and location of non-standard thrust blocks or other restraint devices.

2.10 Storm and Sanitary Sewer Plans

2.10.1 The Storm and Sanitary Sewer Plans may be on the same plan and profile, 1:250 or 1:500 horizontal and 1:25 or 1:50 vertical, and shall include the following information:

- a. All existing and proposed sewer main appurtenances including cleanouts, inspection chambers, manholes, catch basins, etc. and the major flood route on plan;
- b. Service connection location and elevations at the property line;
- c. Basement and crawl space elevations of existing buildings and average ground elevation and Minimum Building Elevation (MBE) of other parcels;
- d. Minor and major storm system hydraulic grade lines on profile;
- e. Full pipe and chainages and invert of each appurtenance on profile;
- f. Rim elevations of all manholes, catch basins and cleanouts;
- g. The size, class, type, length, slope and capacity of each continuous pipe section;
- h. All crossover points with other sewers, water mains and utilities including clearance and protection details; and
- i. Storm detention system, information calculations and construction details, if not provided on a storm water management plan.

2.11 Road Cross Section Plans

2.11.1 The Road Cross Section Plans shall be prepared at a scale of 1:100 horizontal and 1:50 vertical, and shall include the following information:

- a. Proposed and existing cross-sections every 20 m to 10 m beyond property line;
- b. Proposed elevations at centre line, gutter or edge of pavement, and property lines; and
- c. Additional sections required for steep cuts or fills.

2.12 Street Lighting Plan

2.12.1 The Street Lighting Plan shall be prepared at a scale of 1:500 and shall include the following information:



- a. Design criteria table showing location, land use, road classification, illumination level in average lux, minimum illumination level on roadway in lux, uniformity ratios (average: minimum), maximum pole spacing in meters, pole arrangement (staggered, opposite, one side only) and spacing;
- b. Plan showing street lights and ducts and all underground services, curbs, sidewalks, property lines, and surface features which may affect proposal including walls, poles, trees, hedges, etc;
- c. Mounting height and type of lamp standard including finish (paint, galvanized etc.);
- d. Make, model, wattage and type of luminaire;
- e. Phases, lighting load in VA, receptacle loads, main and branch breaker sizes, numbers of luminaires on each circuit;
- f. Location of proposed service bases, ducts and hydro service boxes; and
- g. Offset and chainages of each lamp standard and offset of ducts.

2.13 Drainage, Erosion and Sediment Control Plan

2.13.1 The Drainage, Erosion and Sediment Control Plan shall be prepared at a scale of 1:500 and shall include the following information:

- a. Pre-development contours and drainage boundaries;
- b. Post-development contours and drainage boundaries;
- c. Type of existing vegetation;
- d. Boundaries between different soil types;
- e. Critical erosion areas;
- f. Limits of clearing and grading;
- g. Top and bottom of cut and fill slopes;
- h. swales, interceptor trenches and ditches, cut-off trenches, storm sewers and ditches, water courses, inlets, outlets all with grades and dimensions, direction of flow and details of diverting off-site run-off around cleared and disturbed areas;
- i. Location of stormwater management facilities.
- j. Location and details of temporary and permanent erosion control measures;
- k. Temporary and permanent sediment control measures including sections and details of traps, ponds, filters, inlet and outlet stabilization, silt fabric fences;
- l. Construction equipment and vehicle entrance locations, dimensions of rock surfaced vehicle entrances to minimize tracking of soil off site with thickness and size of rock, wash down areas;
- m. Proposed phasing of the plan in relation to the sequence of clearing and construction.

2.14 As-Constructed Drawings

2.14.1 As-Constructed Drawings shall consist of all the **Approved Drawings** accurately updated to reflect actual construction recorded in accordance with **MMCD**, as amended by the supplementary specifications. If requested, one complete set of As-



Constructed Drawing prints and one set of Mylars shall be provided to the **District** sealed by the **Applicant's Consulting Engineer**. In addition, an electronic drawing file for all **Works and Services** provided on a CD ROM shall be submitted to the **District** as Official Records. The preferred format for Electronic drawings is in an ESRI Shape File.

Alternatively, a spatially referenced AutoCAD drawing will be accepted. In both cases, the drawings should be spatially projected using NAD83 projection and the UTM (zone 10) coordinate system.

2.15 Operation and Maintenance Manuals

- 2.15.1 Operation and Maintenance Manuals must be provided for all pump stations, pressure reducing stations, reservoirs, water intakes, disinfection and water treatment plants, sewage treatment plants and outfalls, stormwater management facilities, major drainage systems and any other **Works and Services** for which the **Director of Public Works** requires them.
- 2.15.2 Three copies of each Operation and Maintenance Manual must be provided in accordance with **MMCD** as amended by the supplementary specifications and, in addition, contain, as appropriate:
- Design criteria;
 - As constructed shop drawings;
 - Test reports;
 - Equipment layout drawings;
 - Electrical, control, and alarm wiring diagrams;
 - Operating instructions for all equipment including manufacturers data and service manuals;
 - Maintenance instructions for all equipment, including frequency of maintenance tasks;
 - Maintenance diary;
 - Equipment data sheets;
 - Spare circuit cards for critical components;
 - Certified head/capacity curves for pumps;
 - Equipment part lists and list of suppliers;
 - Emergency operating procedures.
 - The maintenance manuals must be in sturdy D type three ring binders with the name of the facility on the cover. Manuals must contain a table of contents with each section identified by a plasticized, labeled divider.



PART 3: GENERAL REQUIREMENTS

PART 3:

3.1 Construction Requirements

- 3.1.1 All **Works and Services** shall be constructed in accordance with the Bylaw and **Approved Drawings** and any project specific supplementary specifications approved by the **Director of Public Works**. Where there is an inconsistency or conflict between documents, they shall govern and take precedence in the following order:
- The **Approved Drawings**;
 - Any project specific supplementary specifications approved in writing by the **Director of Public Works**;
 - The Design and Construction Specifications (including Cross Section Drawings) set out in **Schedule 'B'** of this Bylaw;
 - These General Requirements;
 - All other parts of this Bylaw;
 - MMCD** Specifications;
 - MMCD** Standard Detail Drawings.
- 3.1.2 Everything required to be designed and constructed by the **Owner** in these General Requirements and in the specifications shall be done entirely at the cost of the **Owner**.

3.2 Permission to Commence Construction

- 3.2.1 No excavation, placement of fill, construction or installation of any kind, other than required for site investigation, may be undertaken on the **Subdivision** or **Development** site until Permission to commence construction has been issued by the **Director of Public Works**.
- 3.2.2 Before the **Director of Public Works** issues permission to commence construction, the Design Drawings must be stamped by the **Director of Public Works** as approved (the **Approved Drawings**) and the following provided:
- The name of the contractor(s) to be employed by the **Applicant** for installation and construction of the works and a summary of the projects completed by the contractor(s) that are similar in scope nature and value to the works;
 - The name of the site superintendent who will supervise the construction of the **Works and Services** and be on-site at all times throughout its progress and who will represent the **Applicant** and his contractor during the **Owner's** absence;
 - Registered rights of way for **Works and Services** across lands owned by other parties;



- d. Amendments to existing, registered, rights of way and easements in favour of other parties to permit the construction of the required **Works and Services** in accordance with the Bylaw and the **Approved Drawings**;
- e. A copy of the notice of project to Work Safe BC of the proposed construction and installation of the **Works and Services** naming the **Applicant's** contractor as the prime contractor in accordance with the Occupational Health and Safety Regulation;
- f. Approvals for crossings of provincial **Highways**, railway tracks, high pressure gas distribution mains, oil pipelines, B.C. Hydro and any other rights-of-way;
- g. A construction permit from the Regional Public Health Engineer for the installation of any **Waterworks**;
- h. Documentation to confirm that the **Applicant** submitted a notification **Application** as required under the *Water Act* to the Ministry of Environment (MOE) at least 45 days prior to any scheduled in stream work such as installation of bridges, culverts, pipeline crossings and storm water outfalls and a notification response letter from the MOE including any project specific terms and conditions if received during the 45 day waiting period;
- i. An approval pursuant to the *Water Act* issued by the MOE for any project involving the temporary use or diversion of water from a stream;
- j. A license pursuant to the *Water Act* issued by MOE for any project involving the permanent use, storage or diversion of water from a stream;
- k. Documentation to confirm that the **Applicant** has notified MOE that work is proposed in an Environmentally Sensitive Area, other than in or near a stream and the response (if any) from MOE;
- l. A permit for disposal, including burying or dumping, of any solid or liquid wastes on-site issued under the *Waste Management Act* by MOE;
- m. An authorization under the *Fisheries Act* issued by Fisheries and Oceans Canada for projects which have the potential to cause harmful alteration, disruption or destruction of fish habitat or to cause harm to fish, such as installation of a culvert, removal of streamside vegetation or other works in or about a stream; and
- n. Any other approvals, licences, authorizations, permits or equivalent required by the **District**.

3.3 Pre-Construction Meeting

Before commencing construction of the **Works and Services**, the **Applicant** together with the **Applicant's Consulting Engineer** and the **Applicant's** prime contractor(s) shall attend a Pre-Construction Meeting with the **Director of Public Works**. The **Owner** shall then submit schedules as follows:



- a. A construction schedule showing the completion dates of the various parts of the **Works and Services**;
 - b. A maintenance and monitoring schedule and methodology and reporting procedure for the Drainage, Erosion and Sediment Control Plan;
 - c. The nature and frequency of proposed site meetings and site inspections to determine whether the **Works and Services** are being constructed in accordance with the Bylaw and **Approved Drawings**;
 - d. The nature and frequency of proposed field and laboratory testing, including video inspection, of workmanship, materials and equipment.
- 3.3.2 The names, qualifications and emergency and regular contact information of the site superintendent, inspectors and any independent inspection and testing agencies must also be submitted at this time.
- 3.3.3 These schedules and submittals will be subject to acceptance by the **Director of Public Works**.
- 3.3.4 Some variation in theses schedules necessitated by unforeseen conditions or circumstances is acceptable, but the average rate of progress of each portion of work and the level of inspection and testing shall be maintained in close conformity with the schedule.

3.4 Survey Control

- 3.4.1 Survey Control necessary for installation of the **Works and Services** shall be the responsibility of the **Applicant**. The Survey Control shall be carried out accurately and every care taken to avoid cumulative errors. All work shall be constructed to the lines and grades shown on the **Approved Drawings**.
- 3.4.2 Survey Controls and/or installed **Works and Services** may be checked by the **Director of Public Works** at any time but such checks shall not relieve the **Owner** of responsibility for the installation of services to the alignments shown on the **Approved Drawings**.

3.5 Existing Utilities

- 3.5.1 At the commencement of construction, the **Applicant** shall expose existing underground utilities under the supervision of the **Director of Public Works** appointed representative to confirm the alignment, elevation and pipe material shown on the **Approved Drawings** with particular attention to proposed tie-in and crossing points.



3.6 Design Errors and Unknown Conditions

- 3.6.1 Any errors, inconsistencies or omissions discovered in the design and any discrepancies discovered in the location of existing utilities, whether or not they affect the design, shall immediately be reported to the **Director of Public Works**.
- 3.6.2 If, as a result of errors, inconsistencies or omissions in design or of the discovery of previously unknown or concealed conditions, it becomes necessary, or in the opinion of the **Director of Public Works** desirable, to make any change in the design, installation of the affected works shall be stopped pending the **Applicant's Consulting Engineer's** revision of the **Approved Drawings** and their acceptance by the **Director of Public Works**.
- 3.6.3 The **Applicant** shall, if necessary, reconstruct any **Works and Services** previously installed by the **Applicant** or others or pay for the **District** or utility company to reconstruct their existing works, in a manner satisfactory to the **Director of Public Works** and in conformance with the Bylaw.

3.7 Materials

- 3.7.1 All Materials required for the **Works and Services** shall be supplied by the **Applicant** and shall conform to the requirements of the Bylaw and construction drawings.
- 3.7.2 The **Applicant** shall notify the **Director of Public Works** of the source or sources of Materials to be supplied. Such notifications shall be given sufficiently far in advance of delivery to enable the **Director of Public Works** to make inspection of the Materials at the source.
- 3.7.3 Any Materials which, in the opinion of the **Director of Public Works**, do not conform to the requirements of the Bylaw, or are unsuitable for the purposes, for which they are intended, shall be rejected. Unless otherwise specified, all Materials shall be new. Rejected Materials shall not be incorporated into the required works and shall be replaced by the **Owner** at his/her own expense with Materials approved by the **Director of Public Works**.
- 3.7.4 The **Applicant** shall be responsible for all Materials and store them safely until incorporated into the **Works and Services**.

3.8 Hours of Works

- 3.8.1 Unless otherwise approved by the **Director of Public Works**, the **Applicant** shall not execute any work requiring the **District's** inspection outside the reasonable working hours of 7:00 am – 7:00 pm seven days per week.



3.9 Progress of Work

- 3.9.1 The **Applicant** shall perform his/her work on each section of the **Works and Services** continuously until completion.
- 3.9.2 For sanitary sewer and storm sewer mains, the term "section" shall mean that portion of the work from manhole to manhole, inclusive.
- 3.9.3 For watermain, the term "section" shall mean that portion of the work between any adjacent line valves.
- 3.9.4 For roadway, sidewalk, curb and gutter, the term "section" shall mean that portion of the work between intersections.

3.10 Equipment

- 3.10.1 All equipment used and methods employed in the carrying out of the work shall be subject to the approval of the **Director of Public Works**. Machines with steel tracks, cleats, lugs, flat steel pads, grousers or other gripping devices which may cause damage to any roadworks will not be allowed on asphaltic pavements, curbs or sidewalks at any time. Care must be taken where heavy rubber-tired units are turning so that no damage occurs to the pavement.
- 3.10.2 All equipment must be in good working order and inspected to ensure there is no leakage of any contaminants.

3.11 Site Maintenance

- 3.11.1 The **Applicant** shall at all times maintain the **Subdivision** or **Development** site and any other affected and adjacent lands free from accumulations of waste materials, debris and rubbish and not unreasonably encumber them with materials or equipment. Accumulations of waste materials which might constitute a fire hazard will not be permitted.
- 3.11.2 The **Applicant** shall keep roads, lanes and walks affected by the work clean and free of all materials and unlicensed equipment at all times. Debris and mud, which is tracked or otherwise, deposited onto areas outside the construction site, and any spills, must be promptly cleaned up. Roadways shall be cleaned every day unless otherwise approved by the **Director of Public Works**.
- 3.11.3 Dust preventatives shall be used on temporary haul roads when a dust nuisance is being created. Water may be used to control dust when a road is open to public access, when vehicular traffic is light and sediment control measures are in place.
- 3.11.4 Clean up shall be a continuing process from the start of the work until the certificate of acceptance is issued. If dust, mud and other debris are not kept under control to the



satisfaction of the **Director of Public Works**, the **District** will take the necessary steps to undertake the work and all costs incurred will be charged to the **Applicant**.

3.12 Protection of Drainage Systems and Watercourses

- 3.12.1 The **Applicant** shall ensure that no prohibited material, or water containing any prohibited material, directly or indirectly enters the storm **Drainage** system or any watercourse and that the drainage, erosion and sediment control works are monitored, operated and maintained in order to function in accordance with their design.
- 3.12.2 Prohibited material means any sediment, earth, construction or excavation wastes, cement, concrete, pesticides, fertilizers, waste oil or any material or substance which is a "hazardous product", "contaminant", "toxic substance", "deleterious substance", "special waste", "dangerous good" or "reportable substance" identified or described in or defined by any applicable statute, regulation or law, including other bylaws of the **District** or that may constitute a hazard to the health of humans or animals or that may be detrimental to the environment.
- 3.12.3 All **Drainage** facilities, including affected existing works, shall be maintained during construction and the **Maintenance Period** and accumulations of sediment removed without flushing downstream.

3.13 Dewatering

- 3.13.1 The **Applicant** shall ensure that excavations are continuously Dewatered and take all possible precautions necessary to prevent flotation of any pipe or structure.
- 3.13.2 If well pointing is used to Dewater excavations, pumping shall be continued until backfilling operations have been completed. Thereafter, pumping shall be gradually stopped for the portions backfilled to allow a gradual rise in the water table level.

3.14 Blasting

- 3.14.1 All applications for a Blasting Permit shall be directed to the District Office. The **Director of Public Works**, in giving permission for Blasting, does not assume responsibility for resulting injury, loss of life or damage, and such consent shall not be constructed as approval of the methods employed by the **Applicant** in blasting. Any damage caused by blasting shall be repaired by the **Applicant** at his/her own expense.

3.15 Inspections of Works and Services

- 3.15.1 The **Applicant's Consulting Engineer** shall provide full inspection services to ensure compliance with the Bylaw and the Approved Drawings. The **Applicant's Consulting Engineer** shall give the **Director of Public Works** 24 hours advance notice of inspections at the following stages:



- a. Prior to covering of each underground utility and service connection;
- b. At the completion of subgrade preparation;
- c. At the completion of base compaction;
- d. Prior to curbing and sidewalk construction;
- e. Prior to paving.

3.16 Test Samples

3.16.1 The **Applicant** shall supply representative samples of material as and when requested by the **Director of Public Works** for the purpose of testing, at no cost to the **District**.

3.17 Use of Fire Hydrants

3.17.1 Before operating any fire hydrant the **Applicant** shall:

- a. Obtain the **Director of Public Works** written approval;
- b. Keep such approval at the construction site as proof that permission has been obtained;
- c. Give the **Director of Public Works** a minimum of 48 hours prior notice of the times and dates when the use of such hydrants will take place;
- d. Present a valid test certificate for a reduced pressure principle backflow prevention device conforming to AWWA C511.

3.17.2 Any fire hydrants so used shall only be opened and closed by the **Applicant** in accordance with any conditions of the approval

3.18 Testing of Water and Sewer mains

3.18.1 Testing of all newly constructed water, sanitary or storm sewer mains shall be completed prior to connection to existing **District** mains.

3.18.2 Testing of water and sanitary sewer service connections to the property line shall be done after road base construction.

3.19 Weather Conditions

3.19.1 If the **Director of Public Works** determines that weather conditions may prevent proper completion of any portions of the **Works and Services**, the **Owner** shall stop work on those portions, except to undertake any work necessary to protect them, and shall not re-commence until permission is received from the **Director of Public Works**. The **Applicant** shall have no claim against the **District** for such weather delays.



3.20 Safety and Protection of Property and Works

- 3.20.1 The **Applicant** shall take all reasonable precautions to prevent injury to persons, to avoid damage to adjacent property and to avoid or minimize damage to completed and partly complete **Works and Services** and survey monuments.
- 3.20.2 If, in the opinion of the **Director of Public Works**, a potential safety hazard or risk of property damage or, in the case of work on public land, significant inconvenience to the **District** or the public may result from the **Applicant's** work, the **Director of Public Works** may require the **Applicant** to undertake corrective action upon such notice as deemed appropriate. If the **Director of Public Works** considers there is immediate danger or some other emergency situation, corrective action may be taken by the **District** without notice being sent to the **Applicant**, and all related expenses shall be charged to the **Applicant**.
- 3.20.3 Any damage to **District** property resulting from the activities of the **Applicant** or the **Applicant's** workers, agents or contractors shall be reinstated by the **District** at the cost of the **Applicant** unless otherwise approved by the **Director of Public Works**. Reinstatement includes the supply and installation of new materials where existing material is deemed unsuitable for re-use by the **Director of Public Works** and any necessary retesting and disinfection.
- 3.20.4 If survey monuments, property stakes and pins, or benchmarks are damaged or disturbed, the **Applicant** shall employ a British Columbia Land Surveyor to re-establish them.

3.21 Suspension of Works by the Director of Public Works

- 3.21.1 The **Director of Public Works** may suspend the work, or any part of it, at any time on written notice to the **Applicant** for reasons of public health or safety; or for non-compliance with federal, provincial, **District** or other legislation, bylaws regulations or codes.

3.22 Use of Completed Works and Services

- 3.22.1 The **District** has the right to take possession of any completed portion of the **Works and Services**, but such possession shall not be deemed acceptance of the **Works and Services**.

3.23 Releases at Completion of Works and Services

- 3.23.1 On completion of construction and installation of the **Works and Services** on, or affecting, private property, including rights of way and easements, the **Applicant** must obtain from each affected property owner a formal release in writing verifying that all work and clean-up has been completed to their satisfaction and that the property



Owner has no further claim on the **Applicant** or the **District** in connection with the work. In the case of a dispute, the **Director of Public Works** decision shall be final.

3.24 Completion of Works and Services

- 3.24.1 On Completion of **Works and Services**, except for boulevard **Landscaping** and work that must be adjusted after completion of paving, all portions shall be inspected by the **Applicant** and the **Applicant's Consulting Engineer**. **Works and Services** not constructed in accordance with the Bylaw and the **Approved Drawings** shall not be accepted. The **Applicant** shall, at his/her own expense correct any fault, defect or damage from any cause whatsoever which may prejudicially affect the strength, durability or appearance of any section of the **Works and Services**.
- 3.24.2 All existing signs and posts, curbing, sidewalks, drainage ditches and culverts, shrubs, fences and other surface features that have been removed, damaged or disturbed by the construction process shall be restored or replaced by the **Applicant** to a condition equivalent or better than that which existed before the work began.
- 3.24.3 The **Applicant** shall ensure all new and affected downstream catchbasins, manholes, and sewers are cleaned and made free from all granular, asphaltic, silt and other debris immediately after the **Works and Services** have been completed.
- 3.24.4 After correction of any defects and deficiencies, the **Applicant's Consulting Engineer** shall submit the releases referred to in 3.23.1 and all test results, video inspection tapes and reports and a copy of a certificate of inspection from the provincial electrical inspector that the street lighting system is approved. The **Applicant's Consulting Engineer** shall then request an inspection by the **Director of Public Works**.
- 3.24.5 If the **District** is not satisfied with the submissions or that all defects and deficiencies have been corrected, the **Director of Public Works** will issue a defects and deficiencies list and may require that all or a portion of said section of the **Works and Services** be removed and subsequently reconstructed in accordance with the Bylaw and the **Approved Drawings**. The **Applicant's Consulting Engineer** must resubmit any additional test and video inspection results when corrections have been made.
- 3.24.6 When of the opinion that the requirements of this section have been satisfactorily completed, the **Director of Public Works** will issue a **Construction Completion Certificate**.

3.25 Maintenance Period

- 3.25.1 The **Maintenance Period** shall commence on the date of issuance of the notice of **Construction Completion Certificate** except that the **Maintenance Period** for any work completed, or deficiencies or defects corrected, after the **Construction Completion**



Certificate is issued will commence from the date the **Director of Public Works** accepts such completion or remedial work.

- 3.25.2 The **Maintenance Period** will be for one year from the date of commencement or until, the **Works and Services** within a **Subdivision** have been completed and the **Subdivision** plan has been registered in the Land Title office, whichever is later.
- 3.25.3 Any remaining restoration on public land shall be completed no later than twenty working days following issuance of the **Construction Completion Certificate** otherwise the **District** may complete the restoration and charge the cost to the **Applicant**.
- 3.25.4 Within two months of the **Construction Completion Certificate** being issued, the **Applicant's Consulting Engineer** shall deliver to the **Director of Public Works** all remaining project record documents including complete sets of as-constructed drawings and operation and maintenance manuals all in accordance with this Bylaw. Within three weeks of receiving the **Director of Public Works'** comments on these records, the **Applicant's Consulting Engineer** shall deliver final corrected sets to the **Director of Public Works**
- 3.25.5 As soon as possible after completion, and in any case before the **Construction Completion Certificate** is issued, the **Applicant** shall remove or otherwise dispose of all rubbish, surplus or discarded material, falsework, forms, temporary structures and all equipment and machinery, and shall leave the work in a clean and tidy condition.
- 3.25.6 The **Applicant** shall promptly correct any defects, imperfections, settlement, damage, acts of vandalism, or deficiencies in the **Works and Services** that appear during the **Maintenance Period**, regardless of cause, and shall notify the **Director of Public Works** when they have been corrected.
- 3.25.7 The **Applicant** shall ensure that roadways, sidewalks and walkways are kept clean and free of dirt and debris during the **Maintenance Period** and continue to maintain the drainage, erosion and sediment control works.
- 3.25.8 Not more than one month prior to the expiry of the **Maintenance Period**, the **Applicant** shall flush all sanitary sewers and storm sewers, and conduct a video inspection and repair any deficiencies which become evident.

3.26 Notice of Final Acceptance

- 3.26.1 A Notice of Final Acceptance will be issued by the **Director of Public Works** upon expiration of the **Maintenance Period** provided all deficiencies and defects, except for normal wear and tear, have been remedied to his or her satisfaction and all requirements of this Bylaw have been met.



- 3.26.2 The ***Applicant*** shall continue to be fully responsible for the condition of ***Works and Services*** until such time that the Notice of Final Acceptance has been issued.



PART 4: SPECIFICATIONS

PART 4:

4.1 Master Municipal Specifications

- 4.1.1 The **Master Municipal Construction Documents (MMCD)** is incorporated into this Bylaw, and where there is any inconsistency between the **MMCD** and this Bylaw including the supplementary specifications and detail drawings in Section 4.2 of **Schedule 'A'**, the Bylaw, supplementary specifications and detail drawings shall govern the matter.

4.2 Supplementary Specifications

- 4.2.1 Delete or replace as follows except where required otherwise in subsequent Sections:
- replace "Contract Administrator" with "**Applicant's Consulting Engineer**" except in **MMCD** Specification 01570;
 - in **MMCD** 01570 replace "Contractor Administrator" with **Director of Public Works**;
 - replace "Contractor" with "**Applicant**";
 - replace "Contract Documents" with "this Bylaw and the **Approved Drawings**";
- 4.2.2 In place of all provisions regarding "Inspection and Testing" in the **MMCD**, the following is substituted:
- "Testing must be carried out in accordance with the General Requirements in **Schedule 'B'** or as otherwise required by the **Director of Public Works**".
 - "The source and material characteristics of granular products and asphalt must be approved as meeting the required specifications by an independent testing agency based on their own tests prior to receipt of the materials on site".
 - "Concrete mix design and constituents must be confirmed and approved prior to delivery by an independent testing agency, and periodic sampling of the mix must be carried out in accordance with CAN 3 A23".
 - "Testing of the compaction of fill and asphalt and the strength of in-situ concrete must be undertaken by an independent, competent agency specialized in such testing as required by the **Applicant's Consulting Engineer** to satisfy his responsibility for review and interpretation".
 - "Testing carried out by the **Applicant's** contractor must be undertaken in the presence of the **Applicant's Consulting Engineer** who shall confirm the results".
 - "All test and reports shall be submitted to the **Applicant's Consulting Engineer** for review and interpretation to determine if the **Works and Services** have been constructed in accordance with the Bylaw and the **Approved Drawings**".
- 4.2.3 The Cross Section Drawings attached to **Schedule 'B'** are incorporated into this Bylaw as supplements to **MMCD**.



District of Port Edward
Subdivision and Development Servicing Bylaw No. 544, 2014

Schedule B – DESIGN AND CONSTRUCTION SPECIFICATIONS
(Including Cross Section Drawings)

TABLE OF CONTENTS	Page No.
PART 1: WATER DISTRIBUTION SYSTEM	1
1.1 Water Demand and Pressure	1
1.1.1 Water System Extensions	1
1.1.2 Design Flow.....	1
1.1.3 Fire Demand	1
1.1.4 Design Calculations.....	2
1.1.5 Water Pressure.....	3
1.2 Pipelines and Appurtenances	3
1.2.1 Pipe Diameter	3
1.2.2 Pipe Material	3
1.2.3 Looping	3
1.2.4 Location	4
1.2.5 Cover.....	4
1.2.6 Line Valves	4
1.2.7 Hydrants	5
1.2.8 Thrust Restraint.....	5
1.2.9 Grade	5
1.2.10 Air Valves	6
1.2.11 Test Points and Disinfection	6
1.2.12 Service Connections	6
1.2.13 Service Connection Pipe	7
1.2.14 Fire Line Connections	7
1.2.15 Connections to Existing Mains.....	7
1.3 Reservoirs.....	7
1.3.1 Pre-Design Requirements.....	7



1.3.2	Reservoir Capacity	8
1.3.3	Reservoir Design	8
1.4	Pump Stations	9
1.4.1	General	9
1.4.2	Pre-Design Requirements	10
1.4.3	Pump Station Design	10
1.5	Pressure Regulating Valve Stations	11
1.5.1	General	11
1.5.2	Pre-Design Requirements	11
1.5.3	Design Requirements	11
a)	PRV Building	12
b)	Pressure Regulating Valves	12
c)	Controls	12
d)	Air Valves	12
e)	Pressure Gauges	13
f)	Miscellaneous Equipment	13
g)	SCADA Requirements	13
1.6	Construction Permit	13
1.6.1	General	13
PART 2:	SANITARY SEWER SYSTEM	14
2.1	Gravity Sewers	14
2.1.1	Analysis and Sewage Flows	14
2.1.2	Peaking Factor	14
2.1.3	Infiltration and Inflow	14
2.1.4	Design Flows	15
2.1.5	Hydraulic Calculations	15
2.1.6	Pipe Material and Minimum Pipe Diameter	15
2.1.7	Velocity and Pipe Grade	16
2.1.8	Sewer Depth	16
2.1.9	Curvilinear Sewers	16
2.1.10	Sewer Location	17
2.1.11	Manholes	17
2.1.12	Hydraulic Losses Through Manholes	18



2.1.13	Service Connections	18
2.2	Sewage Pump Stations	19
2.2.1	General	19
2.2.2	Pump Station Design	20
2.2.3	Testing of Pump Stations.....	22
2.3	Forcemains	23
2.3.1	Pipe Sizing.....	23
2.3.2	Velocities	23
2.3.3	Pipeline	23
2.3.4	Air Relief Valve Assembly	24
2.3.5	Connections to Manholes.....	24
PART 3:	STORM DRAINAGE SYSTEM	25
3.1	Stormwater Management Plan	25
3.1.1	General	25
3.2	Storm Water Management System.....	26
3.2.1	Minor System	26
3.2.2	Major System.....	26
3.3	Building Elevation and Lot Grading	26
3.3.1	Minimum Building Elevation	26
3.3.2	Lot Grading	27
3.4	Design Criteria	27
3.4.1	Design Flows	27
3.4.2	Rainfall Intensity/Duration/Frequency (IDF) Curves	29
3.4.3	Rainfall Return Frequency	29
3.4.4	Time of Concentration.....	29
3.4.5	Runoff Coefficient (for Rational Formula)	30
3.4.6	Hydraulic Calculations	32
3.4.7	Pipe Material and Minimum Pipe Diameter.....	32
3.4.8	Velocity and Pipe Grade	33
3.4.9	Sewer Depth	33
3.4.10	Curvilinear Sewers.....	33
3.4.11	Manholes.....	34
3.4.12	Hydraulic Losses Through Manholes.....	34



3.4.13	Sewer Location	35
3.4.14	Pipe Joints.....	35
3.4.15	Catchbasins.....	35
3.4.16	Perforated Drains	36
3.4.17	Swales	36
3.4.18	Ditches and Culverts.....	36
3.4.19	Inlet and Outlet Structures.....	37
3.4.20	Major System Routing and Design	37
3.4.21	Runoff Controls.....	38
3.4.22	Water Quality Control	39
3.5	Natural Watercourses	39
PART 4:	Roadworks	41
4.1	General	41
4.1.1	Road Classifications and Cross Sections	41
4.1.2	Cul-de-Sac.....	42
4.2	Alignment.....	43
4.2.1	General	43
4.2.2	Vertical Curves at Intersections.....	43
4.2.3	Cross Slopes and Superelevation.....	44
4.3	Intersections	44
4.3.1	General	44
4.3.2	Curb Returns and Intersection Radii.....	44
4.3.3	Corner Cuts.....	44
4.4	Curbs, Gutters, Sidewalks, Shoulders	45
4.4.1	Curb and Gutter.....	45
4.4.2	Sidewalks	45
4.4.3	Wheelchair Ramps.....	45
4.4.4	Shoulders.....	45
4.5	Driveways.....	45
4.5.1	Driveway Numbers, Width and Location.....	45
4.5.2	Driveway Requirements	46
4.6	Clearances	46
4.6.1	Horizontal Clearances.....	46



4.6.2	Vertical Clearances	46
4.7	Pavement Structure	46
4.7.1	General	46
4.7.2	Pavement Structure.....	47
4.7.3	Sidewalks, Walkways and Driveways	48
4.8	Bridges	48
4.8.1	General	48
4.9	Walkways and Trails.....	49
4.9.1	Walkways.....	49
4.9.2	Trails.....	49
PART 5:	STREET LIGHTING SYSTEM	50
5.1	General	50
5.2	Pole Location.....	50
5.3	Transition Lighting.....	50
5.4	Maximum Number of Luminaires per Service	50
5.5	Clearances to Overhead Electrical Lines	51
5.6	Street Light Poles	51
5.7	Conduit.....	51
5.8	Luminaires.....	52
5.9	Stubs for Future Servicing.....	52
5.10	Pre-Ducting for Future Servicing.....	52
5.11	Luminaire Requirements	53
5.12	Service Connection	54
5.13	Street Light Bases.....	54
5.14	Pull Pits	55
5.15	Conductors and Conduit.....	55
PART 6:	OTHER UTILITIES.....	57
6.1	GENERAL	57



CROSS SECTION DRAWINGS

- A.** Urban Residential
- B.** Urban Commercial
- C.** Industrial



PART 1: WATER DISTRIBUTION SYSTEM

1.1 Water Demand and Pressure

1.1.1 Water System Extensions

Water system extensions shall be designed in accordance with any applicable master **Waterworks** plan that has been adopted by the **District** and any applicable computerized model of the **District** water system. A hydraulic network analysis shall be required and shall be approved by the **Director of Public Works**.

1.1.2 Design Flow

The design flow for watermains shall be based on the following:

- a. Peak Hour Demand: 1,500 litres per capita per day for residential areas, and 162,000 litres per hectare per day for commercial, institutional and industrial areas; or
- b. Maximum Day Demand plus Fire Demand: 950 litres per capita per day for residential areas, and 108,000 litres per hectare per day for commercial, institutional and industrial areas plus the applicable fire demand at a location where the pressure drop would be most critical.
- c. Notwithstanding the above criteria, where zoning or a **Development Permit** determines a specific type of commercial, institutional or industrial land use, water demand should be based on the Fire Underwriter's Survey data for the type of use taking into account the greatest water demand that may be required for the permitted use on any part of the land.

1.1.3 Fire Demand

- a. Fire demands shall be based on the 1999 edition of the Insurance Bureau of Canada's publication "Water Supply for Public Fire Protection - A Guide to Recommended Practice". However, the fire demands so determined shall not be less than the minimum fire demands shown overleaf corresponding to the various **Developments**:



- b. Buildings not protected by an automatic fire sprinkler system:

<u>Type of Development</u>	<u>Minimum Fire Demand</u>
Single & Two Family Dwellings	60 litres/sec
2 Storey Multi-Family	90 litres/sec
3 Storey Multi-Family	120 litres/sec
Commercial Buildings	150 litres/sec
Institutional Buildings	150 litres/sec
Industrial Buildings	150 litres/sec

- c. If buildings are protected with automatic sprinkler systems protecting the entire building, the minimum fire demand may be reduced to the greater of:

- The minimum fire flow calculated in accordance with the “Water Supply for Public Fire Protection” allowing for automatic fire sprinklers; or
- The minimum flow required to support the optimum functioning of the automatic fire sprinkler systems plus all other water requirements for firefighting purposes in the **Subdivision** or the **Development**.

If a water main is extended, it must be sized to meet the higher of the minimum fire flow required for either the existing buildings or for the land use permitted by the Zoning Bylaw on each property adjacent to the extension.

1.1.4 Design Calculations

Use the Hazen-Williams Formula:

$$Q = CD^{2.63} S^{0.54} / 278,780$$

where: Q = Rate of flow in litres per second
D = Nominal pipe diameter in mm
S = Slope of hydraulic grade line in m/m
C = Roughness coefficient 120 for all pipes sizes



1.1.5 Water Pressure

The water distribution system shall be designed to supply water at pressures within the following ranges:

Minimum pressure at peak hour demand	= 300 kPa
Maximum pressure at low demand	= 1,035 kPa
Minimum pressure at the fire test location under Peak day demand excluding hydrant losses	= 140 kPa

1.2 Pipelines and Appurtenances

1.2.1 Pipe Diameter

- a. Minimum sized distribution water mains shall be 200 mm in Single & Two-Family Residential areas, and 250mm in Multi-Family residential, Institutional, Commercial & Industrial areas.
- b. Minimum size for watermain in cul-de-sacs shall be 150mm.
- c. Fire hydrant connections shall be 150 mm.

1.2.2 Pipe Material

- a. C900 PVC pipe is required for all watermain installations
- b. PVC Pipe shall be pressure class 150
- c. Fittings shall be cast iron
- d. All fasteners (bolts, nuts, rods) shall be stainless steel

1.2.3 Looping

- a. All watermain shall be looped, at a minimum spacing of 150m, except in cul-de-sacs of less than 150 m in length, using statutory rights-of-way where necessary.
- b. All dead-end watermain, whether permanent or temporary, shall be provided with a blow-off assembly. Blow-offs for 200 mm or larger watermain require special design.
- c. All new watermain shall be constructed to the extremity of all new subdivisions and developments to facilitate future water system extensions.



1.2.4 Location

- a. Watermains shall generally be located in dedicated road right-of-ways in accordance with the appropriate road cross section drawing forming part of this Bylaw.
- b. Watermains on private property must be centred in a registered statutory right of way in favour of the **District** with a minimum width of 6.0 m. Where a pipeline is located close to the boundary of a property, the right of way and access shall be entirely on one side of the boundary.
- c. Watermains shall be separated from sanitary and storm sewers and services by a minimum distance of 3.5 m horizontally. Where they cross, watermains must be above sanitary and storm sewers and services with a minimum of 0.5 m vertical clearance. If the above conditions are impractical, appropriate measures must be taken as approved by the Health Authority's Public Health Engineer.
- d. A pipeline crossing under a watercourse or under a structure must be encased in concrete. A pipeline crossing under an arterial **Highway** or railway may be required to be inside an encasing pipe.

1.2.5 Cover

All watermains and water service connections shall be buried with a minimum depth of cover of 1.2 m below finished grade, within the **District** right-of-way.

1.2.6 Line Valves

- a. Line valves shall be located:
 - At pipe junctions with a minimum of 3 valves at "X" junctions and 2 valves at "T" junctions;
 - Not more than 150 m apart in single family residential areas and 100 m apart in multi-family, commercial and industrial areas;
 - So that not more than one hydrant is isolated; and
 - Such that interruptions to water supply to adjoining properties is minimized if a section of watermain has to be isolated.
- b. Valve boxes shall be Terminal City type or approved equal, as determined by the **Director of Public Works**.



- c. Gate valves of the same diameter as the nominal pipe size shall be used for watermains up to and including 300 mm diameter. On watermains 450 mm and larger, gate valve sizes may be one size smaller than the nominal pipe size.
- d. Butterfly valves with mechanically assisted operating gear boxes may be substituted for gate valves 450 mm diameter and larger.

1.2.7 Hydrants

- a. Hydrants are to be Terminal City Hydrants (or approved equal, as determined by the **Director of Public Works**) to AWWA C 502 with drain ports plugged at the factory and all nuts and bolts exposed to soil to be stainless steel.

Fire hydrants shall generally be located at street intersections and spaced:

- Not more than 120 m apart, for single family and two family residential areas, and not more than 100 m apart for multi-family residential, commercial and industrial areas;
- In accordance with the 1999 edition of "Water Supply for Public Fire Protection A Guide to Recommended Practice" published by the Insurance Bureau of Canada; and
- Installed 2.5 meters from the property line, to allow sufficient space for the underground utilities (BC Hydro, Citytel and Fortis).

Final location of hydrants is subject to approval of the municipal Fire Chief.

1.2.8 Thrust Restraint

Concrete thrust blocks or other restraining devices approved by the **Director of Public Works** shall be provided at bends, tees, wyes, reducers, plugs and caps. The size of thrust blocks shall not be less than the minimum required for the maximum pressure and the type of soil and shall be clearly specified on the Design Drawings. Allowance may be required for future excavation in the vicinity.

1.2.9 Grade

Watermains larger than 200 mm or without service connections shall be installed to a designed straight grade between deflection points, minimizing the number of high points, and the elevations recorded.

The minimum grade shall be 0.1%. Grades in excess of 20% require anchorage, joint restraints, trench dams and trench **Drainage**. For watermain grades in excess of 20%, the **Director of Public Works** will require the submission of a geotechnical report.

Where watermain grades are in excess of 20%, the pipe shall be suitably anchored.



1.2.10 Air Valves

Air valves shall be installed at all summits, and at abrupt changes in vertical grade from steep to flat sections, on all mains of 200 mm or larger except where the difference in elevation between the summit and low point is less than 600 mm or where active service connections are suitably located to dissipate entrapped air. The air valves shall be double acting air release and vacuum valves sizes according to normal and extreme operating conditions expected.

1.2.11 Test Points and Disinfection

Locations of all test points for the purpose of hydrostatic pressure testing and disinfection shall be shown on the design drawings. Test points shall be installed at locations which ensure complete disinfection of the newly constructed main. There should be at least one test point installed beside a line valve on each section of watermain between adjacent valves. Test points shall consist of minimum size of 19 mm Corporation Stop. A corporation stop installed for an air valve may be used as a test point or a bleed point but not for flushing purposes.

1.2.12 Service Connections

The minimum size of a residential water service connection shall be 20 mm. The maximum size of a water service connection to a single family residential dwelling shall be 25 mm. Service connections larger than 50 mm diameter shall be connected to the watermain with a tee, gate valve, water meter and check valve. The minimum depth of cover on water service connections including the goose neck shall be 1.2m. All water service connections shall extend to the front property line of each **Parcel**.

Service connections shall be installed perpendicular to the road centre line at the approximate centre of each lot allowing for proper separation of service taps on the watermain. Connections must cross above sanitary and storm sewers with a minimum of 0.5 m vertical clearance. Water service connections may be buried in the same trench as sewer service connections in accordance with the requirements of Health Authority's Public Health Engineer.

All water service connections shall be provided with a corporation valve, adjacent to the watermain and also a curb stop, and service box riser at the property line.

All water services between 20 and 25mm diameter shall be type "K" copper or municipal tubing.

The **Director of Public Works** may require that services be insulated near the storm main crossing to prevent freezing.

Water service connections may be installed in a common trench with a sanitary sewer service connection provided that a minimum separation of 300mm is maintained.



1.2.13 Service Connection Pipe

Service connection pipe between 30 mm and 75 mm diameter shall be polyethylene to AWWA C901, pressure class 160 tubing certified to CSA B137.1.

1.2.14 Fire Line Connections

Fire line connections shall be sized for the fire protection system anticipated to be necessary for each **Parcel** in accordance with National Fire Protection Association standards. Fire line connections shall be terminated at the property line with a valve.

1.2.15 Connections to Existing Mains

Connections to existing **Waterworks** system shall be made by the **Owner**. Prior to connection to existing mains, the **Owner** shall provide to the **Director of Public Works** an accurate sketch of the constructed main, showing location and elevations of all fittings and thrust blocks or restraining devices. If connections are permitted to be made by the **Owner** they must be made in the presence of the **Applicant's Consulting Engineer** and a representative of the **Director of Public Works**. The **Owner** must make all necessary arrangements with the **District** to schedule work to prevent construction delays. A minimum 48 hours advance notice must be given.

1.3 Reservoirs

1.3.1 Pre-Design Requirements

A pre-design report must be submitted and must be approved by the **Director of Public Works** before detailed design is commenced. The pre-design report must address the following and provide schematics as appropriate:

- existing and future pressure zone boundaries;
- existing and future service areas;
- siting and access;
- overflow and **Drainage**;
- existing and future capacity requirements;
- reservoir cleaning;
- water quality;
- control and rate of filling;
- security of supply;
- aesthetics;
- neighbourhood impact;
- geotechnical and seismic considerations;
- appropriate heating and insulation measures for all pipes and controls.



1.3.2 Reservoir Capacity

Reservoir capacity shall be not less than the greater of:

- the one day average annual consumption for the service area, or
- the total storage requirement A+B+C where:

A = Fire storage to meet the Fire Underwriters Survey Guidelines with not less than the fire flows for the highest fire demand in the service area as specified in this Schedule.

B = Equalization Storage of 25% of maximum day demand of service area.

C = Emergency Storage of 25% of A + B.

1.3.3 Reservoir Design

The following design requirements shall apply to water storage reservoirs.

1. Reservoirs to be reinforced concrete or bolted steel.
2. If required reservoir volume is greater than 2,300,000 litres, 2 cells required each with half the total required volume and capable of being drained and filled independently. If reservoir volume is less than 2,300,000 litres, 1 cell is sufficient.
3. Each reservoir cell to have an access opening in the roof for cleaning and maintenance with minimum dimension of 900 mm x 900 mm.
4. Ventilation pipes or openings sized for appropriate intake and exhaust air volumes during filling and drawing the reservoir.
5. Floors to slope to a sump at a minimum 2% grade.
6. An outside perimeter drain and under floor sub-drain to collect and drain leakage in separate drain pipes to an inspection manhole which may be connected to an overflow pipe provided suitable measures are incorporated to prevent surcharging.
7. An interior wall ladder from roof access to floor. Any exterior ladder to be completely vandal proof and not allow unauthorized personnel onto the roof. All ladders to meet WCB regulations and have fall arrest equipment where required.
8. Separate inlet and outlet pipes to be provided and designed to provide effective circulation.
9. The overflow drains to be sized to carry the maximum pump discharge, and be connected to an acceptable point of discharge.
10. Telemetry compatible with and to the same standards as the ***District*** system.



11. Reservoir controls to consist of 0-100%, indicating level transmitters, either pressure or ultra-sonic.
12. Backup high and low level alarms.
13. The ***Applicant's Consulting Engineer*** to review the need for re-chlorination based on demand forecasts.
14. The reservoir valve chamber design shall incorporate:
 - all valving associated with reservoir;
 - door from grade or an access hatch of the same type as for the reservoir roof and large enough to permit safe removal of largest single piece of equipment;
 - lifting beams and hoists where necessary to enable removal of equipment or components;
 - heat and light where necessary;
 - ventilation to meet WCB regulations;
 - all control wiring junction boxes;
 - a sump and drain with FRP grating in valve chamber floor;
 - valves and piping to be clearly labeled;
 - modulating control (altitude) valve if more than one reservoir is in the same zone, or if the reservoir is supplied by gravity. The altitude valve shall be by Clayton Valve or Singer Valve (or approved equal) and the design shall be submitted for approval.
15. The reservoir must be cleaned and disinfected to AWWA standards.
16. ***Landscaping*** and fencing of the reservoir shall conform to the requirements of the ***District's Zoning Bylaw***.
17. Two metre high perimeter fencing is to be provided, and the fencing shall be black chain link.

1.4 Pump Stations

1.4.1 General

Pump stations shall be designed with no fewer than two duty pumps to meet peak maximum day demand with the largest pump out of service and balancing storage on line. Alternatively, if balancing storage is not on line, pump station capacity shall meet peak hour demand with the largest pump out of service, and stand-by power shall be provided to allow the greater of maximum day demand plus fire flow or peak hour demand during a power outage.

Utility services to the station shall be underground. Auxiliary power for emergency use shall be provided.



A list of all materials and equipment shall be submitted to the **Director of Public Works** for approval. The pump station building shall be a concrete block building with a concrete foundation, and shall have a roof designed for the District's climatic conditions.

1.4.2 Pre-Design Requirements

A pre-design report must must be submitted and must be approved by the **Director of Public Works** before detailed design is commenced. The pre-design report must address the siting of the pump station and all design considerations and provide schematics as appropriate.

1.4.3 Pump Station Design

The following design requirements shall apply to all pump stations.

1. Three-phase power for 10 HP, or larger, pumps.
2. Electrical phase loss protection.
3. Motors to be energy efficient.
4. Hour meters are required on each pump.
5. Ammeters on each pump.
6. Pumps to start and stop individually. Start and stop to be based on water levels in control reservoir; automatic alternation of pump sequence.
7. Programmable Logic Controller (PLC) and telemetry system, compatible with the **District** Supervisory Control and Data Acquisition (SCADA) system. The controller to be capable of communicating utilizing Modbus protocol.
8. A complete range of pressure flow, temperature and entry sensors with telemetry consistent with the **District** SCADA system.
9. Control valves to minimize starting and stopping surges.
10. A recording flow meter at each pump station to record instantaneous and total flows; 4-20 mA connected to PLC.
11. Recording suction and discharge pressure gauges at each pump station and 4-20 mA transmitters connected to the PLC.
12. A high pressure (discharge) override stop plus alarm, and low pressure (discharge) override stop plus alarm. All alarms to interface with the SCADA system.
13. The control panel to have a lamp test button and include an alarm bypass button.
14. Station piping to include a sample point for water quality testing.
15. **Drainage** provided for all pump stations.
16. Building to be sized with adequate room for operation and maintenance.
17. Adequate labelling.



Landscaping shall be provided in accordance with the **District's Zoning Bylaw**.

Two metre high perimeter fencing shall be required, and shall be black chain link.

18. A security system and alarm for protection against vandalism and theft, as per District requirements
19. The pump station to be provided with all manufacturers' recommended spares.
20. A wall mounted spare fuse box shall contain all spares for station.

1.5 Pressure Regulating Valve Stations

1.5.1 General

A pressure reducing station is required wherever a pipeline connects different pressure zones. The need for, and siting of, a pressure reducing station must be reviewed by the **Director of Public Works**.

1.5.2 Pre-Design Requirements

A pre-design report must must be submitted and approved by the **Director of Public Works** before detailed design is commenced. The pre-design report must address the following and provide schematics as appropriate.

- The location should be outside of the traveled portion of a street if possible;
- pressure zones, water main looping and maximum pressures;
- proposed and ultimate flows;
- energy efficiency;
- back up supply to each zone;
- fire flows;
- description of PRV equipment, valves and controls;
- location of existing utilities including proximity of sewer for drain connection and telephone connection point for telemetry communication, if required;
- schematic for monitoring and control instrumentation;
- appropriate heating and insulation measures for all pipes and controls;
- schematic diagram showing access for personnel, vehicles and service and retrieval equipment;
- schematic drawing for landscaping and fencing;
- description of security features; and
- floor and top elevations.

1.5.3 Design Requirements

The following design requirements shall apply to all pressure regulating valve stations.



a) **PRV Building**

The PRV Building shall be a concrete building which is to be constructed and heated as per the B.C. Building Code.

Adequate floor area must be provided for operation and maintenance.

b) **Pressure Regulating Valves**

Pressure regulating valves shall be complete with valve position indicator assembly or approved equal.

Two or more pressure regulating valves shall be required to serve low and high flow conditions and to provide redundancy for valve maintenance. The **Director of Public Works** shall approve the pressure settings for both low flow and high flow conditions.

Each pressure regulating valve shall have approved resilient seat gate valves as mainline isolation valves. Isolation valves must have hand wheels and extensions for valve operation from the surface.

Basket type strainers are to be provided at each pressure regulating valve.

c) **Controls**

Control lines shall be stainless steel. Control line tube fittings shall be stainless steel (single ferrule) fittings with Molybdenum coated nuts or approved equals.

Control line isolating valves must be provided for pressure regulating valves which are 100 mm and larger. Isolating valves must be 304 stainless steel, full port, and two piece body ball valves.

Victaulic couplings shall be used for easy disassembly of pipe sections without damaging gaskets.

d) **Air Valves**

Double acting combination air/vacuum valves shall be installed both upstream and downstream of pressure regulating valves.



e) **Pressure Gauges**

Pressure gauges are to be stainless steel case, brass internals, liquid filled, ¼ inch MPT bottom mount or approved equal and are to be installed upstream downstream of pressure regulating valves.

f) **Miscellaneous Equipment**

Approved flow meters and pressure transducers, with adequate straight length sections of upstream and downstream pipe, are to be installed, if required, in accordance with the manufacturer's specifications.

g) **SCADA Requirements**

Equipment shall be installed compatible with the ***District's*** Supervisory Control and Data Acquisition (SCADA) system.

A 75 mm PVC conduit must be installed for SCADA provisions terminating with a junction box adjacent to the PRV station.

1.6 **Construction Permit**

1.6.1 **General**

Design drawings for extensions of the ***District's*** water distribution system must be submitted to the Northern Health Authority's (NHA) Public Health Engineer following review by the ***Director of Public Works***. The drawings will not be accepted and stamped by the ***Director of Public Works*** until a Construction Permit has been issued by the Public Health Engineer.



PART 2: SANITARY SEWER SYSTEM

2.1 Gravity Sewers

2.1.1 Analysis and Sewage Flows

Sewer system extensions shall be designed in accordance with any applicable master **Sewerage** plan that has been adopted by the **District** and any applicable computerized model of the **District** sanitary sewer system. A system analysis shall be required, and shall be approved by the **Director of Public Works**.

Average Dry Weather Flows shall be:

Residential	375 l/cap/day
Commercial and Institutional	35,000 l/ha/day
Industrial	32,000 l/ha/day

Notwithstanding the above criteria, where zoning or a **Development** permit requires a specific type of commercial, institutional or industrial land use, average dry weather sewage flow may be based on generally accepted data for the permitted use taking into account the greatest sewage flow that may be generated by the permitted use of any part of the land.

2.1.2 Peaking Factor

The peaking factor shall be determined from the **Harmon Formula**:

$$H = \frac{18+P}{4+P}$$

Where:

H	=	Peaking Factor
P	=	Square Root of Population in thousands

2.1.3 Infiltration and Inflow

Average infiltration and inflow rate shall be 0.17 l/s/ha.

For existing systems, flows shall be based on actual measured peak wet weather flows if they exceed these criteria and if immediate remedial measures to the existing systems



are not proposed. If there are inadequate measured flows to determine actual peak wet weather flows, a rate of 0.17 l/s/ha shall be used for all pipes.

2.1.4 Design Flows

Design flow = Average Dry Weather Flow x Peaking Factor + Infiltration and Inflow.

2.1.5 Hydraulic Calculations

Design flows shall be calculated using the Manning's Formula

$$Q = \frac{A * R^{2/3} * S^{1/2}}{n}$$

Where:

Q =	Pipe flow in cubic meters per second
A =	Cross-sectional area of the pipe in square metres
R =	Hydraulic radius in metres
S =	Slope of hydraulic grade in metres/metre
N =	Manning's coefficient of roughness as follows:
0.013	all smooth pipes
0.024	corrugated steel pipe (unpaved)
0.020	gravel lined channels
0.013	concrete or asphalt lined channels
0.050	natural streams and grassed channels
0.018	paved roadways
0.03	grassed boulevards and swales
0.04 to 0.10	irregular or treed channels.

Pipes shall be designed to carry design flows with pipes flowing at full depth.

Pipelines shall not have a smaller diameter than upstream pipes regardless of grade.

2.1.6 Pipe Material and Minimum Pipe Diameter

Minimum Diameter Mainline sanitary sewer 200 mm

Minimum Diameter sanitary service connection 100 mm

All sanitary sewer mains and all sanitary sewer service connections shall consist of PVC pipe.



2.1.7 Velocity and Pipe Grade

Gravity sewers shall have minimum velocity of 0.6 m/s at peak dry weather flow.

Where velocities may exceed 6 m/s, provision must be made for protection against scouring of pipes.

Terminal sections of mainline sewers between the last two manholes of each lateral shall have a minimum grade of 1%.

The minimum grade for sanitary sewer service connections shall be 2%.

Pipe grades in excess of 15% require anchorage, joint restraints, trench dams and trench **Drainage**, and if required by the **Director of Public Works** a geotechnical report.

2.1.8 Sewer Depth

Mains and services shall be of sufficient depth to:

- Permit gravity service connections to existing basements;
- Properly service all of the tributary lands upstream of the proposed sanitary sewer extension point;
- Prevent freezing;
- Clear other underground utilities;
- Prevent damage from live surface loading.

The minimum cover on all sanitary sewer mains and sanitary sewer service connections shall be 1.2 m.

The maximum bury shall be 4.5 m from finished grade. Where it is not possible to provide gravity **Drainage** from a downhill building envelope to the street sewer at that depth, additional mainline storm sewers shall be installed below the building envelopes on rights-of-way.

2.1.9 Curvilinear Sewers

Curvilinear sewers shall be avoided wherever possible. Where joint deflection is permitted, maximum joint deflection shall be 50% of that recommended by the pipe manufacturer.

A constant radius must be maintained throughout the curve.

Minimum radius shall be 60 m for pipes up to 600 mm in diameter.



Only one vertical or one horizontal curve shall be permitted between manholes.

Horizontal curves must parallel the street centre line.

The minimum design velocity shall be 0.9 m/s.

The mid-point and quarter points of the curve must be located by survey and the offsets shown on the record drawings. Elevations must be shown at 5.0 m stations for vertical curves.

2.1.10 Sewer Location

Sanitary sewer mains shall, whenever reasonably possible, be located in dedicated roads in accordance with the appropriate road Cross Section Drawings forming part of this Bylaw. Typically sanitary sewer mains shall be located 4.5m from the edge of the road right-of-way.

Sanitary sewers may be laid in a common trench with storm sewers, but a minimum clearance of 0.3 m must be maintained between pipes and conflict avoided at service connections, manholes and utility crossings.

Sewers on private property must be centred in a registered statutory right of way, with a minimum width of 6.0 m, in favour of the **District**. A sanitary and a storm sewer located 1.0 m apart may share a right of way. Access constructed to support 9.0 tonne loading must be provided for maintenance vehicles and equipment. Where a pipeline is located close to the boundary of a property, the right of way and access shall be entirely on one side of the boundary.

A pipeline crossing under a watercourse, or under a structure, must be encased in a schedule 40 steel pipe. A pipeline under a road or railway may be required to be inside a carrier pipe.

2.1.11 Manholes

The maximum distance between manholes shall be 120 m for sewers up to 375 mm diameter and 150 m for sewers 450 mm and larger

Manholes shall be located at every pipe size change, every line or grade change which cannot be accommodated by the allowable radius of curvature, at each end of curvilinear sewers and at every intersecting sewer other than residential service connections up to 150 mm. The upper end of the proposed sanitary sewer where



further extension of the sewer is not feasible shall be terminated with a standard benched manhole.

Manhole locations must not conflict with curbs, gutters or **Sidewalks**, and, where possible, shall be located out of the of the wheel path of normal traffic flow.

At manholes where future sanitary sewer extensions are likely, one pipe length shall be extended beyond the manhole with the end capped and marked as stub for future extension.

Horizontal changes of direction greater than 90° are not permitted in a manhole.

2.1.12 Hydraulic Losses Through Manholes

Hydraulic losses through manholes shall be minimized.

The crown of the downstream pipe shall not be higher than that of the upstream pipe.

Minimum drop in invert levels through manholes shall be:

- Straight run - no drop required
- Deflections up to 45° - 20 mm drop
- Deflections 45° to 90° - 30 mm drop

Where intersecting sewers are not designed to meet crown-to-crown, an inside ramp, outside ramp or outside drop type manhole shall be provided in accordance with **MMCD** Standard Detail Drawing S3. The type of manhole with all pipe sizes and invert elevations shall be shown on the design drawings. Inside drop manholes as shown on Standard Detail Drawing S4 will be permitted only when specified by the **Director of Public Works** or the **Approving Officer** and will be considered only where a tie-in to an existing manhole using an outside drop is considered undesirable or not feasible.

2.1.13 Service Connections

Sanitary sewer service connections shall be installed perpendicular to the road centre line at the approximate centre of each property. Connections shall be installed with inspection chambers as shown on **MMCD** Standard Detail Drawings S7 and S9. All new sanitary sewer service connections shall extend to the front property line of each **Parcel**.

Every existing property abutting an extension of the sanitary sewer system shall be provided with a minimum of one sanitary sewer connection. Additional service



connections may be required by the **Director of Public Works**. The **Applicant's Consulting Engineer** shall send a registered letter to the **Owners** of each such property to ensure that new sanitary sewer service connections are installed at locations acceptable to the property **Owner**. Copies of the correspondence shall be forwarded to the **Director of Public Works** for record purposes.

With the exception of sanitary sewer service connections in the turnaround area of cul-de-sacs, service connections shall be aligned, as near as is practical, perpendicular to the mainline sewer. Within a turnaround area, sanitary sewer service connections shall be connected to the terminal manhole whenever possible.

Sanitary sewer service connections for industrial properties, and from any property requiring a connection greater than two pipe sizes smaller than the main, must enter the main at a manhole. Sanitary sewer service connections entering manholes shall not be in an adverse direction to the flow in the mainline sewer nor shall the crown of the service connection be at a lower elevation than the crown of the highest mainline sewer.

The invert of the sanitary sewer service connection at property line shall be at least 1.2 m below finished grade.

Sanitary sewer service connections shall have a minimum diameter of 100mm.

The **Director of Public Works** may require that services be insulated near the storm main crossing to prevent freezing.

2.2 Sewage Pump Stations

2.2.1 General

The use of sanitary lift stations is to be minimized and alternative collection system arrangements utilized to avoid lift stations where it is practical to do so. Any proposed use of lift stations must receive prior approval from the **Director of Public Works**.

All pump stations shall be package systems using duplex submersible Flygt pumps in a concrete barrel unless otherwise approved by the **Director of Public Works**. Sanitary lift stations should normally be located outside of the minimum required road dedication

The **Applicant's Consulting Engineer** shall submit a pre-design report that addresses all design considerations for approval prior to commencing detailed design.



The location and layout of a sewage pump station must include an assessment of the following basic design considerations:

- ultimate flows of the designated catchment;
- type of station and impact on neighbours;
- proximity of receiving sewers, water mains, and adequate power supply;
- soil conditions;
- maximum flood and groundwater elevations and station uplift design;
- construction dewatering requirements;
- construction access;
- maintenance access;
- aesthetics, noise, odour control and *Landscaping* requirements;
- provision of security against vandalism and theft;
- minimizing energy requirements;
- standby power and its compatibility;
- convenience of operation and maintenance;
- safety for operators and the public;
- capital costs and operation and maintenance costs;
- Landscaping and fencing provisions, in accordance with the ***District's Zoning Bylaw***.

The ***Applicant's Consulting Engineer*** shall submit all design calculations to the ***Director of Public Works*** for review. A list of all materials and equipment shall be submitted to the ***Director of Public Works*** for review and approval.

2.2.2 Pump Station Design

The following design requirements shall apply to all pump stations:

Barrels shall be concrete and minimum 2140 mm diameter.

Pumps shall be:

- capable of passing solids up to 75 mm in size;
- equipped with hour meters;
- easily removed for maintenance;
- operate with a motor running at 1750 RPM;
- operate on a 347/600 volt electrical source (pump motors over 5 HP are to be 600 volt 3 phase type);
- pumps able to operate alternately and independently of each other;
- pumps able to meet maximum flow condition with one pump in failure mode;



- designed so that each pump does not cycle more than the manufacturers recommended maximum starts per hour, with one pump in failure mode;
- one pump shall include an automatic flush valve.

Minimum storage between the high level alarm and the start of overflow must be the more critical of:

- minimum 1 hour in wet well at average wet weather flow;
- minimum 1 hour in wet well and influent pipes at peak wet weather flow.

A gate valve is required on the influent line and a plug valve on each pump discharge. The valves must be outside the station and be complete with square operating nut and nelson box.

Check valves shall be ball lift check valves.

Stations are to have a magnetic flow meter complete with ultrasonic cleaner or the PLC programmed to calculate and record flows based on a change in wet well levels.

The control building must be designed to contain all control and telemetry equipment and all power equipment.

A Programmable Logic Controller (PLC) and telemetering system, compatible with the **District's** Supervisory Control and Data Acquisition (SCADA) system must be provided. The controller must be capable to communicate utilizing Modbus protocol.

The station must be complete with a Uninterruptible Power Supply (UPS) to serve all alarms and controls.

The pump control panel must incorporate an operator interface.

The panel must have a lamp test button.

An hour meter must be built into the panel for each pump.

An ammeter must be provided for each pump.

All stations require an explosion-proof supply fan, for ventilation in a confined space. The fan must have an adjustable speed drive set to operate continuously at 10 air changes per hour and a high speed setting for intermittent operation (minimum 20 air changes per hour). A screened exhaust vent must also be provided.



The entrance must be above ground level but, in no case, more than 300 mm above the ground. An explosion-proof light with a protective cover must be located in a suitable location in the station and the light is to be activated by the entrance cover.

Access into the station shall be by an aluminum ladder. The location of the ladder must not interfere with the removal and installation of the pumps, etc. The ladder must be designed to extend and lock at least 600 mm above the station entrance. A platform is to be provided above the high water level float to permit wet well access. The platform is to be a fibreglass (FRP) grating and meet WCB standards.

All equipment must be CSA approved and have at least a one year guarantee for parts and labour.

The area around the station and all associated equipment or building, must be asphalted. The size of the area is to be determined by the requirements for maintenance.

The wet well bottom must be benched to direct all solids into the pump suction. The influent line must be located tangentially to the wet well to encourage scouring of the wet well.

Stations are to be designed to allow removal of pumps using a hoist truck with boom.

Two metre high perimeter fencing is to be provided and the fencing shall be black chain link.

Landscaping shall be provided in accordance with the **District's Zoning Bylaw**.

2.2.3 Testing of Pump Stations

Wet well chambers must be tested for exfiltration by filling the chamber to the underside of the roof slab with water. The test duration shall be a minimum of three hours. No leakage shall be permitted.

In areas of high groundwater tables, the **Director of Public Works** may require an infiltration test. No leakage is permitted.

Lift stations shall be tested using water. Stations must be tested through the operating range to verify emergency float operation, pumps, controls, alarms, backup power and manual operation.

A noise level test is required to confirm that the pumping station and any standby power equipment can operate quietly, particularly in residential areas.



2.3 Forcemains

2.3.1 Pipe Sizing

Size forcemains using Hazen-Williams formula:

$$Q = CD^{2.63} S^{0.54} / 0.00374$$

Where:

- Q = Rate of flow in litres per second
- D = Internal pipe diameter in metres
- S = Slope of hydraulic grade line in metres/metre
- C = Friction coefficient
- = 120 for all pipes acceptable as sewage forcemains

Minimum diameter of forcemains shall be 100 mm.

2.3.2 Velocities

Under normal operating conditions the following velocities are required:

Minimum = 0.75 m/s

Maximum = 2.50 m/s

2.3.3 Pipeline

High density polyethylene pipe shall be used for force mains.

An encasing pipe shall be used for force mains under creeks and under ***Provincial Highways***.

A tracer wire shall be installed for the purpose of locating a force main.

All force mains shall be designed to prevent damage from superimposed loads or from water hammer or column separation phenomena.

Ductile iron pipe and fittings are not permitted.

Steel pipe is not permitted.



2.3.4 **Air Relief Valve Assembly**

An air relief valve assembly shall be placed in high points in the forcemain to prevent air locking.

2.3.5 **Connections to Manholes**

The direction of the forcemain entering the receiving manhole shall not be in an adverse direction to the flow in the mainline sewer. The crown of the forcemain shall not be at an elevation higher than the crown of the highest mainline sewer.



PART 3: STORM DRAINAGE SYSTEM

3.1 Stormwater Management Plan

3.1.1 General

Unless a **Subdivision** or **Development** is within an area subject to, and meets the requirements of, a watershed or integrated stormwater management plan adopted by the **District**, a stormwater management plan shall be submitted in accordance with this Section except for:

- a **Subdivision** of land with an area of less than 1.0 ha;
- a **Subdivision** of land into single or two family **Parcels** all of which each exceed 0.4 ha; or
- a **Development** on an area of land less than 1000 m².

A stormwater management plan shall include a statement describing how the following criteria and any requirements for stormwater quality control are to be achieved.

Discharge rates from **Subdivision** and **Development** sites shall be restricted as follows:

- a. Post-development peak rate of runoff shall not exceed the pre-development peak rate of runoff for the 10-year design storm except that a higher rate of runoff may be approved by the **Director of Public Works** if the downstream **Drainage** system and watercourses have the capacity to carry a greater rate of runoff meeting the requirements of b), c) and d).
- b. Downstream detrimental impacts shall not be increased. Where peak flow rates or volumes are increased and will cause detrimental impacts, provisions for downstream improvements must be provided.
- c. Increases in peak storm flows and volumes to the major watercourses and receiving waters shall be minimized. Any potential increase in storm flows and volumes shall be analyzed for fish bearing watercourses and watercourses presently close to full capacity.
- d. The number of stormwater control facilities shall be minimized. Where detention is used, off-stream storage is to be provided where possible rather than on-stream storage within a watercourse. Detention facilities designed for flow control shall account for the effects of multiple storms that do not allow the detention facility to empty completely between storms. Where single-event models are used to



determine the volume of detention facilities designed for flow control, a factor of safety shall be used to account for the effects of sequential storms. The factor of safety shall be 1.1 for **Development** sites with a post-development impervious cover of 20%, and shall increase linearly to a factor of safety of 1.5 for **Development** sites with a post-development impervious cover of 100%. Alternatively, continuous models may be used to check for the effects of multiple storms.

- e. Groundwater infiltration may be used where site-specific studies determine that this practice is appropriate.

3.2 Storm Water Management System

The stormwater management system shall consist of the following components:

3.2.1 Minor System

The minor system shall consist of pipes, gutters, catch basins, driveway culverts, open channels, watercourses and stormwater management facilities designed to convey flows of a 10 year return frequency. A piped minor system may be enlarged to accommodate major flows.

3.2.2 Major System

The major system shall consist of the route followed by storm runoff when the capacity of the minor system is exceeded. The system shall consist of surface flood paths, roadways, roadway culverts and watercourses designed to carry flows of a 100 year return frequency. A piped minor system may be enlarged to accommodate major flows.

3.3 Building Elevation and Lot Grading

3.3.1 Minimum Building Elevation

The Minimum Building Elevation (MBE) is the lowest permissible elevation for the floor slab or underside of floor joists above a crawl space. A crawl space is space between a floor and the underlying ground with a maximum height of 1.2 m to the underside of the joists and must not be used for storage of goods or equipment that may be damaged by flooding. The MBE must be at least 0.3 m above the hydraulic gradeline of the 100 year major **Drainage** system or the flood construction levels established in the **District's Zoning Bylaw**.



3.3.2 Lot Grading

Parcels shall be graded at a minimum of 1% to ensure surface water is drained away from the building envelope and from neighbouring **Parcels**. Where it is not possible to prevent surface **Drainage** toward neighbouring **Parcels**, swales must be provided to divert water to lawn drains connected to the municipal **Drainage** system or to a natural water course.

3.4 Design Criteria

3.4.1 Design Flows

Design flows shall be calculated using the Rational Method or one or more of the approved Hydrograph Methods. Regardless of the method chosen, the effects of frozen ground and of rain on snow must be taken into account when estimating runoff flows and runoff coefficients.

Rational Method

The Rational Method shall only be used for the design of minor systems with storms of 1 in 10 year return serving a watershed of 8 ha or less and only if the **Director of Public Works** is of the opinion that the downstream minor and major **Drainage** systems have adequate capacity. The Rational Formula is:

$$Q = 0.0278CIA$$

Where:

Q = Peak Flow in cubic metres per second

A = Drainage catchment area in ha.

I = Rainfall intensity in mm/hr

C = Runoff coefficient

The rainfall intensity for the Rational Method should be determined using the appropriate rainfall IDF curve with the duration equal to the Time of Concentration calculated as indicated by Section 3.4.4.

Hydrograph Methods

Hydrograph Methods are applicable to the design of complex minor **Drainage** systems, storage calculations, major **Drainage** systems and the integrated design of minor and major systems. **Drainage** designs using Hydrograph Methods require computer models capable of modeling the hydrologic characteristics of the watershed and of generating



flow hydrographs from each subcatchment for a critical storm or a series of storms and routing the hydrographs through the **Drainage** network pipes, channels and storage facilities.

The following programs may be used for the applications indicated:

- OTTHYMO: Suitable for preliminary design of rural and urban areas, especially where backwater and surcharge effects are not significant. Also suitable for generating design flows in cases where pipes are being designed using manual methods.
- HYDSYS: Suitable for design of systems with no surcharge or backwater effects.
- EPA SWMM RUNOFF and EXTRAN: Suitable for detailed evaluation of the operation of **Drainage** networks and storage facilities.
- QUALHYMO and SWMM TRANSPORT: Suitable for evaluating the performance of storage facilities over long winter wet weather periods.
- Other stormwater management models which have been calibrated with actual rainfall-runoff measurements in adjacent municipalities and approved by the **Director of Public Works**.

Whenever possible, modeling results shall be calibrated using observed rainfall and flow data from the design watershed or a similar watershed. Sensitivity of the model predictions to variations of key parameters shall be tested and the findings used to develop realistic and conservative models.

Post-development hydrographs shall be generated at key points of the major **Drainage** systems for a 10-year and 100-year design storm with durations of 2, 6, 12 and 24 hours for each **Development** condition. A different range of storm durations may be appropriate, subject to approval by the **Director of Public Works**. This will identify the critical storm event to be used in designing the system component. The storm durations that generate the critical peak flow may be different from the durations that generate the critical storage volume. Systems may require analysis for sequential storm events or modeling with a continuous rainfall record.

Detailed designs shall include maximum hydraulic gradelines (HGLs) of the minor and major systems plotted on profiles of the minor system components and compared with minimum building elevations (MBE) to demonstrate flood protection.



Modelling results are to be submitted to the **Director of Public Works** in a report containing at least the following information:

- Plans showing catchment and subcatchment boundaries, slopes, soil conditions, land uses and flow control facilities.
- Name and version of modeling program(s).
- Parameters and simulation assumptions.
- Design storm details.
- Pre-development and post-development hydrographs.

3.4.2 Rainfall Intensity/Duration/Frequency (IDF) Curves

IDF curves and other information on precipitation that may be obtained from the Atmospheric Environment Service of Environment Canada shall be used for design purposes.

3.4.3 Rainfall Return Frequency

The following return frequencies shall be used for design:

Minor Systems – 10 year return

Major Systems - 100 year return

3.4.4 Time of Concentration

The following formula shall be used for time of concentration:

$$TC = Ti + Tt$$

Where:

TC = Time of concentration (minutes)

Ti = Inlet time (minutes)

Tt = Travel time in channels and pipes based on Manning's
Formula (minutes)

Inlet or Overland Flow Time (Ti)

Typical inlet times for urban areas are as follows:

Single Family Lot	10 minutes
/Industrial/Institutional	5 minutes
Multi-Family Lot	8 minutes
Commercial	



The inlet time (Ti) for larger areas can be calculated using following:

$$T_i = \frac{3.26 (1.1 - C)L^{0.5}}{S^{0.33}}$$

Where:

Ti = Inlet time (minutes)

C = Runoff coefficient (see above)

L = Travel distance (metres). With a maximum of 300 metres

S = Slope of travel path (%)

Travel Time (Tt)

The travel time (Tt) in sewers, ditches, channels or watercourses can be estimated using the Modified Manning formula:

$$T_t = \frac{L N}{60 R^{0.667} S^{0.5}}$$

Where:

Tt = Travel time (minutes)

L = Length of flow path in metres

N = Manning roughness coefficient as follows:

0.050 Natural channels

0.030 Excavated ditches

0.013 Pipe and concrete lined channels

R = Hydraulic radius (area/wetted perimeter) in metres

S = Slope in metres/metre

3.4.5 Runoff Coefficient (for Rational Formula)

The following runoff coefficients are for use with the Rational Formula. These coefficients are for general application only. Design values are subject to verification by the designer and approval by the **Director of Public Works**.

Higher values may be applicable in those areas which experience rainfall during the winter when the ground is frozen. These values may reach 0.80 to 0.95.



Land Use	Percent Impervious	Runoff Coefficient	
		5/10 Year Storm	100 Year Storm
Suburban Residential (Lots >04. ha)	20	0.35	0.40
Low Density Residential	40	0.50	0.55
Medium Density Residential	65	0.60	0.65
High Density Residential	78	0.70	0.75
Commercial	90	0.80	0.85
Industrial	90	0.80	0.85
Institutional (e.g. Schools)	80	0.75	0.80
Parks/Grasslands	20	0.20	0.30
Cultivated Fields	30	0.30	0.40
Woodlands	5	0.10	0.30

An adjustment factor (AF) is to be applied to the runoff coefficient to reflect variations in soil permeability and slope.

<u>Soil Type and Slope</u>	<u>AF</u>
Sandy soil with flat slope (up to 5%)	0.9
Sandy soil with steep slope (over 5%)	1.0
Clayey soil with flat slope (up to 5%)	1.0
Clayey soil with steep slope (over 5%)	1.1
Rock	1.1

The above runoff coefficient adjustment factors are for general application. Design values are subject to verification by the ***Applicant's Consulting Engineer*** and approval by the ***Director of Public Works***.



3.4.6 Hydraulic Calculations

Storm Sewers, Open Channels, Swales and Roadways

Use Manning's Formula

$$Q = \frac{A * R^{2/3} * S^{1/2}}{n}$$

Where:

Q = Pipe flow in cubic meters per second

A = Cross-sectional area of the pipe in square metres

R = Hydraulic radius in metres

S = Slope of hydraulic grade in metres/metre

N = Manning's coefficient of roughness as follows:

0.013	all smooth pipes
0.024	corrugated steel pipe (unpaved)
0.020	gravel lined channels
0.013	concrete or asphalt lined channels
0.050	natural streams and grassed channels
0.018	paved roadways
0.03	grassed boulevards and swales
0.04 to 0.10	irregular or treed channels.

Culverts

Applicable inlet control or outlet control methods in accordance with the latest editions of:

- "Handbook of Steel **Drainage** and **Highway** Construction Products", by American Iron and Steel Institute.
- "Handbook of Concrete Culvert Pipe Hydraulics", by Portland Cement Association.

3.4.7 Pipe Material and Minimum Pipe Diameter

Mainline Sewers (PVC)	250 mm
Culverts (csp) - crossing roads	600 mm
- crossing industrial driveways	600 mm
- crossing other driveways	300 mm
Catchbasin leads (PVC)	200 mm
Service connections (PVC)	150 mm



All new culvert installations require approval by the **Director of Public Works** with respect to grade, location and alignment.

Steel pipe is not permitted.

3.4.8 Velocity and Pipe Grade

Minimum velocity for storm sewers shall be 0.6 m/s at half or full flow.

Where velocities may exceed 6 m/s, provision must be made for protection against scouring of pipes.

Terminal sections of mainline sewers between the last two manholes of each lateral shall have a minimum grade of 1%.

Pipe grades in excess of 15% require anchorage, joint restraints, trench dams and trench **Drainage**, and if required by the **Director of Public Works** a geotechnical report.

3.4.9 Sewer Depth

Mains and services shall be of sufficient depth to:

- connect to street catchbasins;
- properly service all of the tributary lands upstream of the proposed storm sewer extension point;
- clear other underground utilities;
- prevent damage from live surface loading.

The minimum cover of storm sewer mains and storm sewer services shall be 1.2 m.

Where it is not possible for runoff from roofs, driveways and other hard surfaces to drain to the street, the **Director of Public Works** may require additional mainline storm sewers to be installed on right-of-way to collect such runoff.

3.4.10 Curvilinear Sewers

Curvilinear sewers shall be avoided wherever possible.

Where joint deflection is permitted, maximum joint deflection shall be 50% of the maximum recommended by pipe manufacturer.

Minimum radius shall be 60 m for pipes up to 600 mm diameter.



A constant radius must be maintained throughout the curve.
Only one vertical or one horizontal curve shall be permitted between manholes.

Horizontal curves must parallel the street centre line.

Minimum design velocity shall be 0.9 m/s.

The mid-point and quarter points of the curve must be located by survey and the offsets shown on the record drawings. Elevations must be shown at 5.0 m stations for vertical curves.

3.4.11 Manholes

The maximum distance between manholes shall be 120 m for sewers up to 375 mm diameter and 150 m for sewers 450 mm and larger.

Manholes shall be located at every pipe size change, every line or grade change which cannot be accommodated by the allowable radius of curvature, at each end of curvilinear sewers and at every intersecting sewer (not including service connections). The upper end of the proposed storm sewer where further extension of the sewer is not feasible shall be terminated with a standard 1050 mm benched manhole.

Manhole locations must not conflict with curbs, gutters or ***Sidewalks***, and, where possible, shall be located out of the wheel path of normal traffic flow.

At manholes where future storm sewer extensions are likely, one pipe length shall be extended beyond the manhole with the end capped and marked as stub for future extension.

3.4.12 Hydraulic Losses Through Manholes

The following criteria shall be used to minimize hydraulic losses through manholes:

The crown of the downstream pipe shall not be higher than that of the upstream pipe.

Minimum drop in invert levels through manholes shall be:

- straight run = no drop required
- deflections up to 45° = 20 mm drop
- deflections 45° to 90° = 30 mm drop



Where intersecting sewers are not designed to meet crown-to-crown, an inside ramp, outside ramp or outside drop type manhole shall be provided as shown in accordance with **MMCD** Standard Detail Drawing S3. The type of manhole with all pipe sizes and invert elevations shall be shown on the design drawings. Inside drop manholes as shown on **MMCD** Standard Detail Drawing S4 will be permitted only when specified by the **Director of Public Works** and will, whenever reasonably possible, be considered only where a tie-in to an existing manhole using an outside drop type is considered undesirable or not feasible.

3.4.13 Sewer Location

Alignment of mainline storm sewers shall, whenever reasonably possible, be close to the road centerline.

Storm sewers on private property must be centred in a registered statutory right of way, with a minimum width of 6.0 m, in favour of the **District**. A sanitary and a storm sewer located not less than 1.0 m apart may share a right of way. Access constructed to support 9.0 tonne loading must be provided for maintenance vehicles and equipment. Where a pipeline is located close to the boundary of a property, the right of way and access shall be entirely on one side of the boundary.

A pipeline crossing under a watercourse, or under a structure, must be encased in concrete. A pipeline under a road or railway may be required to be inside a carrier pipe.

3.4.14 Pipe Joints

All storm sewer pipe joints shall be installed complete with gaskets except where the pipe is specifically designed to intercept subsurface **Drainage**. In this case, the pipe shall be installed using drain rock and filter fabric in accordance with the **MMCD** Specifications.

3.4.15 Catchbasins

Catchbasins shall be installed in accordance with **MMCD** Standard Detail Drawing S11 and shall be provided at regular intervals along roadways, at intersections, and at all low points. Double catchbasins, side inlet type, shall be provided at the low point of all downhill cul-de-sacs, each sized for the maximum tributary area.

With the exception of catchbasin leads in the turnaround area of cul-de-sacs, catchbasin leads shall be aligned, as near as is practical, perpendicular to the mainline storm sewer.



Catchbasins shall be spaced to drain a maximum area of 500 m² of right-of-way on road grades up to 4% and 400 m² of right-of-way on grades in excess of 4%.

Catchbasin grates shall be set 25 mm below the concrete gutterline. Where curb and gutter installation is not required, catchbasins and the immediately surrounding asphaltic pavement shall be shaped to form a dished apron around the catchbasin grate.

3.4.16 Perforated Drains

Perforated drains shall be installed below the subgrade and behind the curb to allow positive **Drainage** of the subbase and base gravels. These perforated drains are to be connected to the storm sewer via catchbasins.

3.4.17 Swales

Swales to prevent runoff to neighbouring properties shall be at least 150 mm deep, 1.5 m wide, at a 1% minimum grade and lined with turf on 100 mm of topsoil or protected from erosion in some other way acceptable to the **Director of Public Works**. Velocities shall be limited to 1 m/s. Swales shall be protected by 1.8 m wide registered easements in favour of upstream properties.

3.4.18 Ditches and Culverts

Depth

For ditches adjacent to roadways, inverts shall be a minimum of 1.0 m below road surface and the depth of water at design flows shall not exceed 1.0 m.

Shape, Grade and Velocity

Ditches shall be trapezoidal shaped having maximum side slopes of 1 Horizontal: 1 Vertical and have a flat bottom width of at least 0.5 m.

The minimum grade of a ditch shall be 0.5%. The maximum velocity in an unlined ditch shall be 1 m/s. Higher velocities may be permitted where soil conditions are suitable or where erosion protection has been provided. On steep slopes, grade control structures shall be used.

Ditch Right-of-Way

Minimum right-of-way width for a ditch not adjacent to a roadway shall be 5.0 m. Ditch right-of-way shall be sufficiently wide to provide a 2.5 m access road for maintenance vehicles in addition to the width required for the ditch.



Ditches less than 10 m in length shall be enclosed unless otherwise directed.

Culverts

Culverts across roads and driveways shall be a minimum depth of 0.3 m provided that pipe has been designed to withstand deadload and H-20 **Highway** loads with impact factor of 1.5 and have a maximum length of 15m.

Culverts shall have a minimum diameter as per section 3.4.7.

3.4.19 Inlet and Outlet Structures

General

The structural, dimensional and erosion protection requirements for inlet and outlet structures shown on **MMCD** Standard Detail Drawings S13 and S14 are minimum requirements. The **Applicant's Consulting Engineer** shall verify that these minimum requirements are adequate for any proposed inlet and outlet structures shown on the design drawings and, if necessary, shall provide additional or alternative inlet and/or outlet structures on the design drawings.

Special designs will be required for inlet and/or outlet structures which are substantially different than those shown on the **MMCD** Standard Detail Drawings.

Trash Screens and Safety Grillages

Trash screens and safety grillages as shown on **MMCD** Standard Detail Drawing S13 shall be installed at inlets and outlets respectively for all storm sewer pipes over 250 mm in diameter.

Safety Handrails

Handrails as shown on the **MMCD** Standard Detail Drawings shall be installed at inlets and outlets where the depth to the channel bottom exceeds 1.5 m.

3.4.20 Major System Routing and Design

All major flows shall have specifically designed flow routes located within municipal rights-of-way. The major flow routing shall normally be along roads and in natural water courses with:

- Hydraulic Grade Level (HGL) at least 300 mm below the Minimum Building Elevation (MBE) of adjacent buildings;
- maximum flow depth on roadways of 300 mm;
- road grades on major flow routes designed to accommodate and control the flow at intersections;



- no flooding of private property;
- overflow routes at all sags and low points in roadways and other surface flow routes; and
- major flood routes provided for down-slope cul-de-sacs.

Design must consider flow velocities and the potential requirement for erosion control measures.

Where major flows cannot be routed entirely along the road system, municipal rights-of-way must be provided.

Road intersections on a major flow route must be designed to allow flows to pass over the cross street.

Where major flow routes cannot be provided overland, the minor system shall be increased in size to accommodate the major flows. Major flows across private properties shall be contained within a piped system.

3.4.21 **Runoff Controls**

Stormwater detention requires:

- design release rates. The extent of any necessary oversizing shall depend on the capacity of the downstream **Drainage** system.
- a suitable location with sufficient area and volume.
- a restricted outlet designed to maintain the discharge to the downstream **Drainage** system at a pre-determined rate of the pre-development run-off (for a ten year return period).
- Parking Lot Ponding - paved parking lots may be used as storage except where doing so will result in danger to persons or property, or unreasonably interfere with the convenient use of the parking lot. The allowable depth is a function of safety and convenience to the users. Depths not exceeding 150 mm are generally acceptable. Flow control chambers housing a relatively maintenance free flow control device complete with an emergency release spillway shall be used in conjunction with this storage.
- Dry Detention Basin - a dry detention basin shall be designed as an off-stream facility, where reasonably possible. The basin shall have minimum freeboard of 0.3 m and a maximum depth of 1.0 m. The maximum side slope shall be 4 horizontal to 1 vertical. Flow control chambers as detailed in above shall be required.



- Underground Storage – underground storage facilities include tanks and oversized pipes, with outlet controls. Cross sections and inlet and outlet locations shall be designed to minimize maintenance requirements. Structural design of underground storage facilities shall be required to accommodate traffic loading. Maintenance access shall be provided to all underground storage facilities.
- Wet Detention Ponds – wet detention ponds are intended to provide detention storage and maintain a permanent minimum water level. Minimum catchment area of 20 ha to limit number of ponds. Overflow elevations to be coordinated with Minimum Building Elevations (MBEs).
- Subsurface Disposal – subsurface disposal is intended to provide detention storage plus quality improvements plus groundwater recharge. Subsurface disposal is suitable for high permeability soils with low groundwater elevation. Subsurface disposal facilities are suitable for low detention volumes only. Subsurface discharge of contaminated water is prohibited, and in all cases, a geotechnical investigation shall be required.

3.4.22 Water Quality Control

A water quality control plan may be required as part of the stormwater management plan by the **Director of Public Works** where there are reasonable grounds to anticipate discharge of contaminants to the **Drainage** system.

A Water Quality Inlet or Coalescing Plate Separator shall be required to treat the runoff from all impervious surfaces at fuel transfer stations and other operations where there is a risk of spills of petroleum hydrocarbons.

Where structural facilities for contaminant removal are required and single event runoff models are used, facilities shall be designed to treat the runoff volume resulting from the 24-hour storm with a 6-month return frequency, unless specified otherwise by the **Director of Public Works**. The 6-month, 24-hour storm can be estimated as 70% of the 2-year, 24 hour storm.

Where continuous runoff modelling is used, contaminant removal facilities shall be designed to treat 90% of the runoff volume in an average year.

3.5 Natural Watercourses

All proposals for **Works and Services** affecting natural watercourses shall be forwarded by the **Applicant's Consulting Engineer** to the following Federal and Provincial government agencies:



1. Federal Fisheries and Oceans
2. Provincial Ministry of Environment
3. Provincial Ministry of Agriculture
1. Provincial Waste Management Branch
2. Provincial Ministry of Forests, Lands and Natural Resource Operations
3. Provincial Fisheries and Aquaculture Branch

Should siltation control other than or additional to the requirements set out herein be required by the above agencies, details of the proposed works shall be shown on the design drawings and shall be installed as part of the works.

Natural watercourses shall be retained to the greatest extent possible.



PART 4: Roadworks

4.1 General

4.1.1 Road Classifications and Cross Sections

Highways are classified according to their intended use. Arterial **Highways**, under the administration of the Province of British Columbia are for the use of through traffic and are not intended to provide direct access to individual **Parcels** of land or to local **Highways**. Collectors are intended to link local streets to each other and to arterial **Highways**, but may provide direct access to individual **Parcels**. Local **Highways** provide direct access to individual **Parcels** of land and connect to other local **Highways** and to collector **Highways**.

The only arterial **Highway** currently in the District of Port Edward is **Highway** 599R. Direct access from individual **Parcels** and local **Highways** may not be permitted and the **Owner** of abutting land may be responsible for dedicating and constructing a **Frontage** road at the direction of the Ministry of Transportation and the **Approving Officer**.

Collector roads are designated on the Official Community Plan.

Roads and lanes shall be designed to the minimum right of way and pavement widths for the appropriate classification in accordance with **Table 1 – Road Cross Section Criteria**.

Where a subdivision borders on the shore of a body of water, access shall be provided in accordance with the requirements of the **Land Title Act**.

Intersections shall be minimized, with a minimum spacing of 70m between intersections. Intersecting streets shall intersect at right angles, wherever possible with a minimum intersection angle of 70°.



Table 1
Road Cross Section Criteria

Land Use	Classification	Minimum ROW Width of PL to PL (m)	Minimum Pavement Width ¹ (m)	Number of Sidewalks
URBAN STANDARD – CURB, GUTTER & SIDEWALKS				
Residential Multi-family	All Roads	20	10	2 ²
Residential One & Two Family	Collector	25	10	1
	Local	20	8	1
	Cul-de-Sac	20	8	1
Commercial	All	20	10	2
	Frontage Road	20	10	1
Industrial	All Roads	25 ³	10	nil

Section Criteria:

- ¹ Pavement width is measured curb to curb except on roads built to rural standards.
- ² Where one or two family use is on the opposite side of a local street from other land use, a side walk is only required opposite to the one or two family use.
- ³ Road right of way (ROW) width may be reduced for industrial roads if storm drains are installed in accordance with the Bylaw.

4.1.2 Cul-de-Sac

The maximum length of a cul-de-sac, in residential and commercial areas, measured between the edge of the intersecting through road and the centre of the cul-de-sac turn around shall not exceed 150 m.

Cul-de-sac turn-arounds shall be circular with a curb radius of 15 m in residential areas, 16.0m in industrial areas and in commercial areas and with an additional 2.0 m right of way radius.

Cul-de-sacs less than 90 m long from the edge of pavement of the intersecting through road in single and two family residential areas may have other types of turnaround in accordance with the 1999 edition of the "Geometric Design Guide for Canadian Roads" published by the Transportation Association of Canada (TAC) .



4.2 Alignment

4.2.1 General

Roadway alignment standards shall be in accordance with this sub-section and **Table 2 – Design Parameters** and otherwise with the 1999 edition of "Geometric Design Guide for Canadian Roads" published by the Transportation Association of Canada (TAC).

Table 2
Design Parameters

Classification	Design Speed Min Km/h	Min Radius m	Max Grade %
Collector	60	120	8
Minor Collector	50	110	8
Local	50	80	10
Cul-de-Sac	40	60	10
Lane	20	10	10

The minimum longitudinal grade of all roads at the gutter shall be 0.5%.

At intersections, the grade of the higher classification road shall apply, but the maximum shall be 2% less than the maximum in **Table 2 – Design Parameters** for the length of the stopping distance. The grade of the minor road shall be adjusted to suit but the maximum grade change at an intersection shall be 6%.

4.2.2 Vertical Curves at Intersections

Providing the minor intersecting street is marked with STOP signs, the K values for the minor street may be as shown in **Table 3 – K Values at Intersections**.

Table 3
K Values at Intersections

Classification	Crest Curves		Sag Curves	
	Minimum	Desirable	Minimum	Desirable
Collector	4	6	4	6
Local	2	4	2	4



4.2.3 Cross Slopes and Superelevation

The standard cross slope is 2.5% with the crown at the centreline of the pavement. In adverse topography, the cross slope may be increased to a maximum of 4% and the crown may be located no closer than 2.5 m from the high side curb or edge of pavement.

Superelevation of up to 4% is permitted on arterial roads; none is permitted on local roads.

4.3 Intersections

4.3.1 General

The minimum spacing for tee intersections is 60 m. Streets shall intersect within 20° of the perpendicular.

4.3.2 Curb Returns and Intersection Radii

Minimum radii of curb returns and edge of travelled road lanes at industrial intersections shall be:

- between lanes and streets 3.0 m*
- between single and two family residential local streets 9.0 m
- between two industrial streets and between industrial and all other streets 12.0 m
- between other local streets 9.0 m
- single and two family residential local to collector 9.0 m
- other local or collector to collector 10.0 m

*except between lanes and residential local streets which shall have driveway let downs and no curb returns.

4.3.3 Corner Cuts

Parcel corners at intersections, except with lanes and industrial roads, shall be cut so there is a minimum 4 m distance to property line from the curb face or edge of pavement of an existing or proposed road or to a road that could be built in accordance with this Bylaw whichever is closer to the property. Industrial road intersections shall have corner cut-offs up to 6.5 m if required to accommodate corner curvature, utilities



and ditches, or, in the opinion of the **Director of Public Works** may be required for such purposes in future.

4.4 **Curbs, Gutters, Sidewalks, Shoulders**

4.4.1 **Curb and Gutter**

Barrier type curb and gutter shall be installed on all streets. Rollover curb may be used on single and two family residential local streets.

4.4.2 **Sidewalks**

Sidewalks shall be constructed adjacent to the curb with a 2% cross fall towards the gutter. **Sidewalk** width (not including width of curb) shall be a minimum of 1.8 m in commercial areas and within one block on the main approaches to schools and public recreational buildings and a minimum width of 1.5 m elsewhere in residential areas. **Sidewalks** are not required within the turnaround area of a cul-de-sac.

Sidewalks shall be concrete. No asphalt sidewalks are permitted.

4.4.3 **Wheelchair Ramps**

Wheelchair ramps from **Sidewalks**, medians and traffic islands shall be constructed at all intersections, where a separate walkway intersects a road and at any mid-block crosswalk.

4.4.4 **Shoulders**

Industrial roads shall have 1.0 m wide gravel shoulders on either side of the paved travel surface.

4.5 **Driveways**

4.5.1 **Driveway Numbers, Width and Location**

Only one driveway is permitted for single or two family residential **Parcels** except on corner lots where driveways may be permitted on each street. The minimum and maximum driveway widths across the boulevard for single and two family **Parcels** are 3.5 m and 6.0 m respectively. For other land uses, the minimum width of driveway shall be 4.5 m for one way access and 6.5 m for two-way access, and the maximum width of driveway shall be 11.0 m.



Driveways shall not be located closer to the lot corner at an intersection than 5.0 m in residential areas and 12.0 m in other areas.

4.5.2 Driveway Requirements

Driveways shall not cross the boulevard at a grade steeper than 12%.

Driveways shall be constructed to match the existing roadway. In areas where curb and gutter exists, the driveway shall match the existing concrete curb and gutter. In areas where there is ditch **Drainage**, the driveway shall match the edge of the existing asphalt roadway, and a culvert of minimum 600 mm diameter shall be installed to match the existing ditch grades.

Each new driveway shall require the submission of an “**Application** for Driveway Access Permit” in the form attached to this Bylaw as Schedule “E”, to the **Director of Public Works** for approval. The Director of Public Works shall issue a driveway access permit upon being satisfied that the proposed driveway meets the requirements of this Bylaw.

The driveway structure within the **District** boulevard shall have a minimum driveway depth of 600 mm, and shall be compacted to 100% standard proctor density.

4.6 Clearances

4.6.1 Horizontal Clearances

Signs shall be placed in accordance with the 1999 edition of the "Manual of Uniform Traffic Control Devices for Canada" published by TAC.

4.6.2 Vertical Clearances

Vertical clearances to communications and guy wires shall be 5.0 m. and to electrical conductors up to 90,000 V shall be 5.5 m. Clearances for higher voltages shall be determined by BC Hydro.

4.7 Pavement Structure

4.7.1 General

Pavement design shall be based on:

- Past history of successful pavement in adjacent similar areas;



- For new roads or a complete reconstruction of existing roads, any method included in 1997 edition of "Pavement Design and Management Guide" published by TAC; or
- For existing roads that only require an overlay, any method included in the 2000 edition of "Manual MS-17 Asphalt Overlays for **Highway** and Street Rehabilitation" published by the Asphalt Institute.

Pavement design shall include consideration of subgrade soil type, frost susceptibility, moisture conditions and subgrade **Drainage** provisions.

Minimum design life is to be 20 years.

4.7.2 Pavement Structure

Regardless of the method used for pavement structure design, pavement thickness shall at least be equal to the minimum thickness in **Table 4 – Minimum Pavement Structure** unless an alternative, functionally equivalent design is prepared and certified by a **Professional Engineer** specializing in geotechnical engineering and experienced in road design and construction.

In all cases a **Professional Engineer's** report shall be provided confirming the proposed pavement structure is adequate and appropriate to the circumstances.

Subgrade soils classified under the unified soil classification system as ML, MH, CH, OH and Pt shall be completely replaced with higher classification soils or treated in accordance with the recommendations of a geotechnical engineer.

The subgrade shall be scarified to a depth of 300 mm for the full width of the pavement structure.

Where existing pavements are to be overlaid, the minimum overlay thickness is twice the maximum aggregate size, but in no case less than 25 mm for local streets and 40 mm for collectors.

The base under road shoulders shall be as specified for the adjacent paved section, and 19 mm shouldering aggregate the same thickness as the asphalt course shall be placed on top.



Table 4
Minimum Pavement Structure

Classification and Land Use	Road Structure
Trails	50 mm AC surface course 100 mm base course
Residential Lanes	50 mm AC surface course 75 mm base course 250 mm subbase
Residential Local Streets	65 mm AC surface course 100 mm base course 300 mm subbase
Commercial and all Collector Streets	75 mm AC surface course 100mm base course 400 mm subbase
Industrial	100 mm AC surface course 100 mm base course 400 mm subbase

4.7.3 Sidewalks, Walkways and Driveways

All **Sidewalks**, trails and driveways shall be constructed of Portland cement concrete in accordance with the applicable MMCD Standards.

4.8 Bridges

4.8.1 General

All bridge design shall be in accordance with CAN/CSA-S6 "Design of **Highway** Bridges" published by the Canadian Standards Association.

Roadway bridges shall be designed to the minimum loading specified in the British Columbia Ministry of Transportation and Infrastructure Bridge Engineering Sketch Number BCL-625-1.



4.9 Walkways and Trails

4.9.1 Walkways

Urban walkways shall be constructed in accordance with **MMCD** Standard Detail Drawing C10. The minimum width of any walkway shall be 3.0m.

4.9.2 Trails

Notwithstanding 4.9.1, trails forming part of, or connecting to, a network adopted by Council shall be constructed with a minimum of a 2.0 m width of asphalt in accordance with **Table 4 – Minimum Pavement Structure**.



PART 5: STREET LIGHTING SYSTEM

5.1 General

The design of **Street Lighting** systems shall conform to ANSI/IES RP-8-00 "American National Standard - Practice for Roadway Lighting" and installation of lights and **Underground Wiring** shall be in accordance with the Canadian Electrical Code, all bulletins issued by the BC Electrical Safety Branch and Provincial Inspection Amendments.

Street lights in industrial zones will be leased by the **District** from BC Hydro and for these industrial installations, the remainder of Section 5 does not apply.

The design shall be sealed and certified as being in accordance with the Bylaw by a **Professional Engineer** practicing electrical engineering and experienced in roadway lighting design.

5.2 Pole Location

On all roads, lighting shall be staggered on both sides of road.

Spacing of lights shall allow intersection and pedestrian walkways to be adequately lit.

Pole locations shall avoid conflict with driveways, fire hydrants and underground services.

5.3 Transition Lighting

Where connecting roadways have different requirements for levels or types of illumination, the spacing of poles shall change gradually to suit the change of levels of illumination.

5.4 Maximum Number of Luminaires per Service

The number of luminaries shall not exceed 20 for each electrical service.

Where the number of luminaries does not exceed 6 and there is no potential for extension of the circuit, a 120 volt single phase mini-service may be installed.



5.5 Clearances to Overhead Electrical Lines

Minimum clearances between street light poles and overhead electrical lines shall comply with all requirements of B.C. Hydro and Power Authority and the *Workers Compensation Act*.

5.6 Street Light Poles

Poles shall be davit type and set-back as indicated on the road Cross Section Drawings, forming part of Schedule "B" of this Bylaw. Poles shall be octagonal, tapered, hot-dip galvanized steel, zinc chromate primed at the factory and painted after erection with the **District's** standard colour and in accordance with **MMCD** Specification 16550.3.6. Luminaires in residential areas shall be at a maximum height of 7.5m.

Street light poles shall be of galvanized steel construction. Provision for the installation of a receptacle for seasonal lighting shall be made before radius of davit. Poles shall be bonded to ground by means of a compression connector and fastened in an area readably accessible for inspection, and maintenance. Looping bonding conductor around stud of bonding bolt is not acceptable.

Provision shall be made to allow for 1 duplex receptacle at the lower terminus of the davit radius to allow for an electrical connection of decorative lighting.

Where street light poles are to be installed on **Frontage** roads provision shall be made to accommodate the hanging seasonal lighting, and for suspending flower arrangements. The final surface finish on the street light pole assembly shall be continuous and uniform. Poles shall be set-back as indicated on the road cross section drawings. Poles shall be octagonal, tapered, primed at the factory and painted after erection with the **District's** standard colour and in accordance with **MMCD**. Luminaires in residential areas shall be at a maximum height of 7.5m. Hand hole covers shall be secured with a tamper proof type bolt to prevent unauthorized access.

5.7 Conduit

Nominal sizes of conduits for use in **Street Lighting** systems shall be:

- 50 mm for conduit between the service pole base and B.C. Hydro's service box; and
- 32 mm for all other conduits between pole bases.

Conduit shall be 1.0 m deep in the same trench as power, telephone and CTV.



5.8 Luminaires

Luminaires shall be 120/240 volt high pressure sodium with one photoelectric cell per circuit and a maximum of 150W.

Luminaires are to be of the LED lamp type. A copy of approved manufacturers of LED luminaires shall be obtained from the **District**. This approved manufacturers list is subject to change at the discretion of the **District**. Luminaire lens shall be of glass construction, and flat where installed on **Frontage** roads. Polycarbonate may be used in areas where dropped refractor lens are required.

Model and specifications of LED luminaires shall be reviewed, and approved by the **District**. The maximum number of luminaires per service shall be the calculated value of the total sum of the luminaries' assembly current draw and any line impedance that may be considered an inductive load on the service. The maximum loading shall be no more than 70% of the maximum rated ampacity of the electrical service.

5.9 Stubs for Future Servicing

A stub for future extension shall be provided at all temporary terminal street light poles.

5.10 Pre-Ducting for Future Servicing

In areas where road paving is required, provisions shall be made for future extensions of the power distribution system to the opposite side of the roadway by providing ducts and fish-wires across the roadway before the roadway is paved and terminating in a junction box.

TABLE 1
MINIMUM STANDARDS FOR LIGHTING FOR URBAN ROADS

	1~2 family urban lots	Multi- family	Commercial and Institutional	Industrial
Local	4	7	9	4
Collector	6	9	12	6
Arterial	9	13	17	10



Table 1 – Minimum Standards for Lighting Urban Roads specifies the minimum Illuminance in lux for average illumination on the roadway when light source is at lowest output and luminaire in dirtiest condition. Uniformity ratios of lighting shall be 3:1 average to minimum except 6:1 average to minimum on local roads in single family residential areas. On roads of pavement width 10.5 m or wider, lights shall be staggered on both sides of road. Lights shall be located so as to ensure intersection and pedestrian walkways are adequately lit. Where roads have different land uses on each side, the higher of the applicable levels of lighting shall be provided.

5.11 Luminaire Requirements

1. The top of the enclosures shall be provided with a leveling surface.
2. The enclosure shall be provided with an adjustable slip fitter mounting assembly designed to accommodate a 60 mm O.D. Tennon.
3. A hand operable, front-positioned latch shall be provided for releasing the refractor assembly.
4. The enclosure shall be equipped with a "knock-out" twist lock receptacle for a photo-electric controller when requested.
5. The refractor shall be constructed of high impact resistant polycarbonate.
6. The optical system shall provide a lampholder of mogul screw base design and pulse rated for High Pressure Sodium Operation.
7. The lampholder shall be easily adjustable to obtain the required I.E.S. Specifications.
8. The reflector shall be specular alzak aluminum and be filtered and gasketed to prevent the entrance of dust and corrosive atmosphere.
9. The ballast shall have Class "H" (180°C) rated transformer insulation and it shall regulate the lamp output wattage within the applicable ANSI Trapezoid with a plus or minus 5% change in input voltage and provide a minimum lagging power factor correction of 90%. The ballast shall be supplied complete with a starting aid common to both 100 and 150 Watt ballast and be of single screw mounting design. All electrical components shall be factory pre-wired and inter-connected using insulated "push-on" connectors. No "wire-nut" type connectors shall be used. The capacitors shall be non-PCB, and be of such design that the survival rate shall be not less than 90% after 60,000 hours of operation.
10. Photo-cell units shall be cadmium sulfide thermal delay type, for 120 or 240 volts operation. Load rating shall be minimum 1000 volt-amperes. The units shall have a built-in surge protector and lightning arrestor. A twist-lock base shall be provided for mounting onto the service pole luminaire.



5.12 Service Connection

The main electrical supply from utility to streetlight shall be to a panel board enclosed in a suitable approved base as outlined in **MMCD**. Direct connection of utility to a street light pole without approved service panel is not acceptable. The use of interposing, or secondary poles shall be minimized where possible. Where practicable overhead dips shall be from primary poles of utility in a manner similar to **MMCD**.

Panel board shall bear the mark of CSA approval. Wiring and control shall adhere to that of **MMCD**.

Grounding of **Street Lighting** service shall be achieved with two approved copper clad grounding electrode with a minimum of #6AWG Cu mechanically connected to each electrode by means of a compression fitting, or thermite weld or other similar means. Plate style electrodes are not permitted to be used in street light installations. Fittings for connection of grounding conductor to grounding electrodes of screw type are not an acceptable means of mechanical connection. One copper clad grounding electrode will be considered as acceptable if installed in a precast base that is designed to accommodate grounding electrode(s). Grounding electrodes shall be tested for impedance and the results recorded and submitted to the **District** or its representative. A **District** representative shall perform a test on the service grounding electrode, and an Ohmic value of 5 or less is acceptable.

5.13 Street Light Bases

Bases shall be of precast construction as outlined CE 1.3, furnished with 52 mm rigid PVC conduit. In situ (SonoTube or Spread Footing) bases are not permissible.

When installing precast concrete bases, the excavation shall be performed in such a manner as not to disturb more than 300 mm under the desired elevation to the bottom of the base.

The **District** may request results from compaction tests depending on the supporting soil whereon the precast concrete base is to be installed.

Installation of screw piled is permissible in areas where required compaction is not possible. Screw piles shall be a minimum of 150 mm diameter, and 4.5 m minimum in length. A record of final torqued values of screw piles installed for supporting street light assemblies is to be submitted to the **District** or its representative. An approved adapter plate design shall be manufactured to mechanically mate the street light to the top of the screw pile. The design of the adapter assembly shall be approved by the **District** prior to installation. Steel shims shall be used to level and balance the street



light assembly, and when a desirable position of the street light assembly is achieved, a weld may be used to secure the position of the base of the street light pole to the adapter plate of the piling.

5.14 Pull Pits

Pull Pits may be of plastic or concrete construction, and are to be installed in a manner to optimize **Drainage** away from conductor splices therein. Lids of pull pits shall be of steel construction. Where pull pit lid bolts are constructed of a conductive material, they must be bonded to ground. Conduits entering pull pits must have a bell end or other similar fitting to minimize contact of conductors to sharp edges. When pull pits are installed in areas where vegetation such as grass is present, pull pit shall protrude 50 mm above grade.

5.15 Conductors and Conduit

Conductors shall be a minimum of #8AWG RW90 Cu, or #6AWG RW90Al between street lights. Conductors from panel boards and on load side of inline fuses may be #12RW90 Cu. Armoured cables shall not be used in **Street Lighting** installations.

Underground Wiring shall be in accordance with current CEC, and all bulletins issued by the BCSA. Conductors shall be a minimum of #8AWG RW90 Copper, or #6AWG RW90 Aluminum or sized to minimize voltage drop under full load to 2% from the point of connection to the utility.

Split bolts or other mechanically similar terminations shall be used to splice conductors and be fastened with a torque wrench in accordance with Table D6 of the Canadian Electrical Code (CEC). Rubber self-fusing tape shall be used to electrically insulate these terminations, and be installed in such a manner as to eliminate any sharp edges of the termination assembly.

Fuse holders shall be readily accessible in each hand hole of street light poles. Inline fusing must be installed between the line and load conductors to provide a means of disconnection at each pole, and shall be housed in approved rubberized boots.

Split bolts or other mechanically similar terminations shall be used to splice conductors, and torqued to Table D6 of CEC. Rubber or self-fusing tape shall be used to adequately electrically insulated termination. Bonding termination may be left uninsulated. Where conductor splices are subject to direct contact with water, only termination rated for contact with water shall be used. In areas where road paving is required, provision shall be made for future extensions of the power distribution system to the opposite side of the roadway by providing ducts and include a pull string across the roadway before the



roadway is paved and terminating in a junction box. Conduits in underground installations shall be of PVC and a minimum size of 53 mm between bases, and to service equipment. Each conduit shall be furnished with a nylon pull string upon completion of the installation.

Conduits shall be installed in accordance with Table 53 of the CEC. Table 53 of the CEC shall be used for burial requirements of conduits.

Burial tape marked "Buried Cable" shall be installed no more than 150 mm below finished grade. Where underground conduits issue into pull pits, or other such junctions they shall have a terminal adapter with a suitable bushing installed prior to the installation of conductors. Where a conduit transitions from underground to above grade, it shall be installed in such a manner as to allow 150 mm of linear expansion. This will be achieved through the installation of an approved expansion adapter. In areas where road paving is required, provision shall be made for future extension of the power distribution system to the opposite side of the roadway by providing ducts furnished with a nylon pull string across the roadway before the roadway is paved and terminating in a junction box.



PART 6: OTHER UTILITIES

6.1 GENERAL

Underground Wiring is required to serve all properties except within areas zoned for industrial use.

Gas pipelines shall be installed on both sides of each street in a 0.8 m wide corridor. The corridor shall abut the property line except that where a utility right of way is required by the **Director of Public Works** it shall abut the side of the right of way furthest from the dedicated road.

The duct bank for all underground power, telephone and CTV, and power poles in industrial areas, shall be installed immediately adjacent to the gas line corridor except on **Frontage** roads.

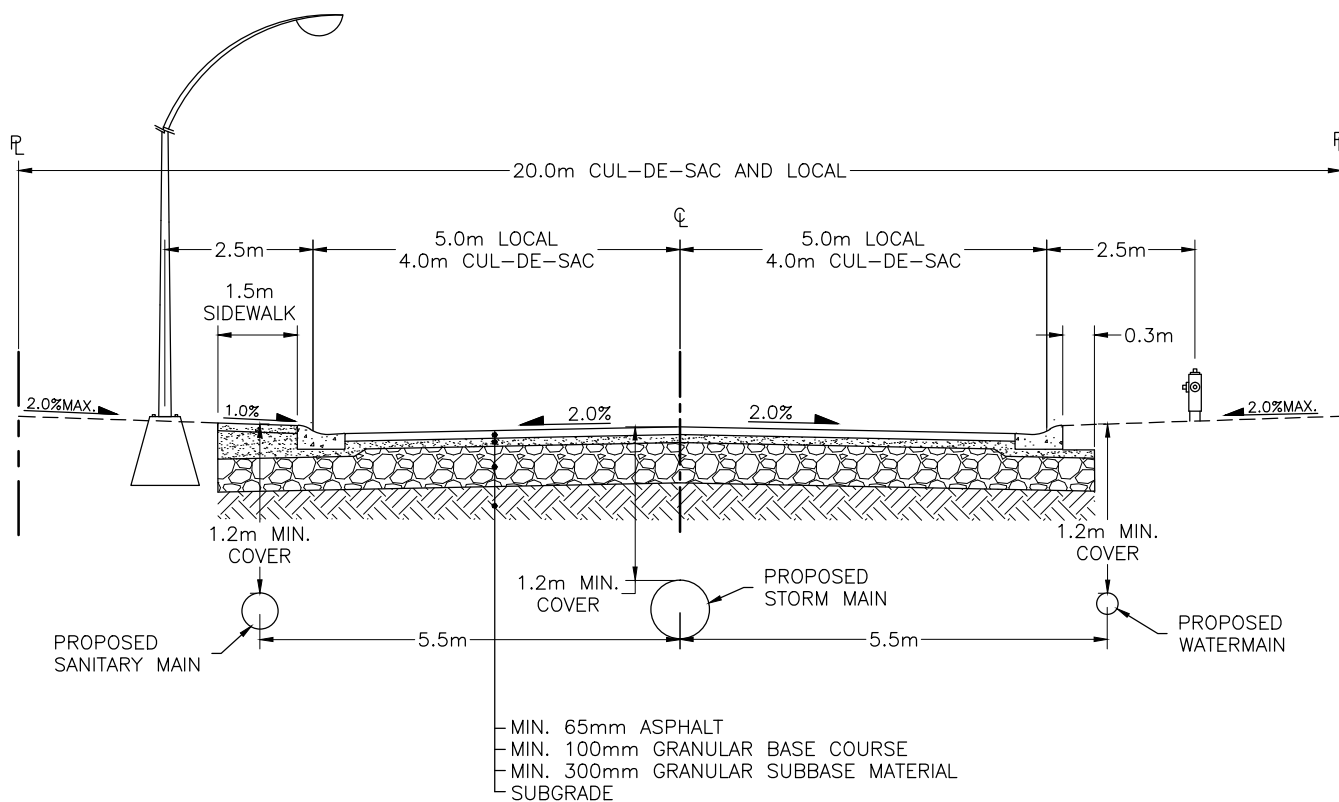
The **Applicant's Consulting Engineer** shall arrange for the coordination of the design, location and/or relocation of non-municipal utilities with the appropriate utility companies and ensure that the approved utility drawings are compatible with the **District's** requirements.

The **Applicant's Consulting Engineer** shall submit all utility company drawings to the **District** for the **Director of Public Works** review prior to construction.

Underground Wiring ducts and natural gas pipelines shall be constructed in accordance with the applicable specifications of the respective utility company and in accordance with applicable **MMCD** General Requirements and Supplementary Conditions and Specifications concerning environmental protection, traffic control, excavation, trenching, backfilling and surface finish.



DISTRICT OF PORT EDWARD URBAN RESIDENTIAL



NOTE:

1. DEPTH OF GRANULAR SUBBASE MAY BE ADJUSTED TO RECOMMENDATION OF GEOTECHNICAL ENGINEERING REPORT APPROVED BY DIRECTOR OF PUBLIC WORKS.
2. STORM SEWERS TO BE INSTALLED ONLY WHERE REQUIRED.
3. THIS CROSS SECTION IS ALSO APPLICABLE FOR RESIDENTIAL ROADS ADJACENT TO MULTI-FAMILY DEVELOPMENT SITES.

LATEST REVISION:

03/2014

SCALE:

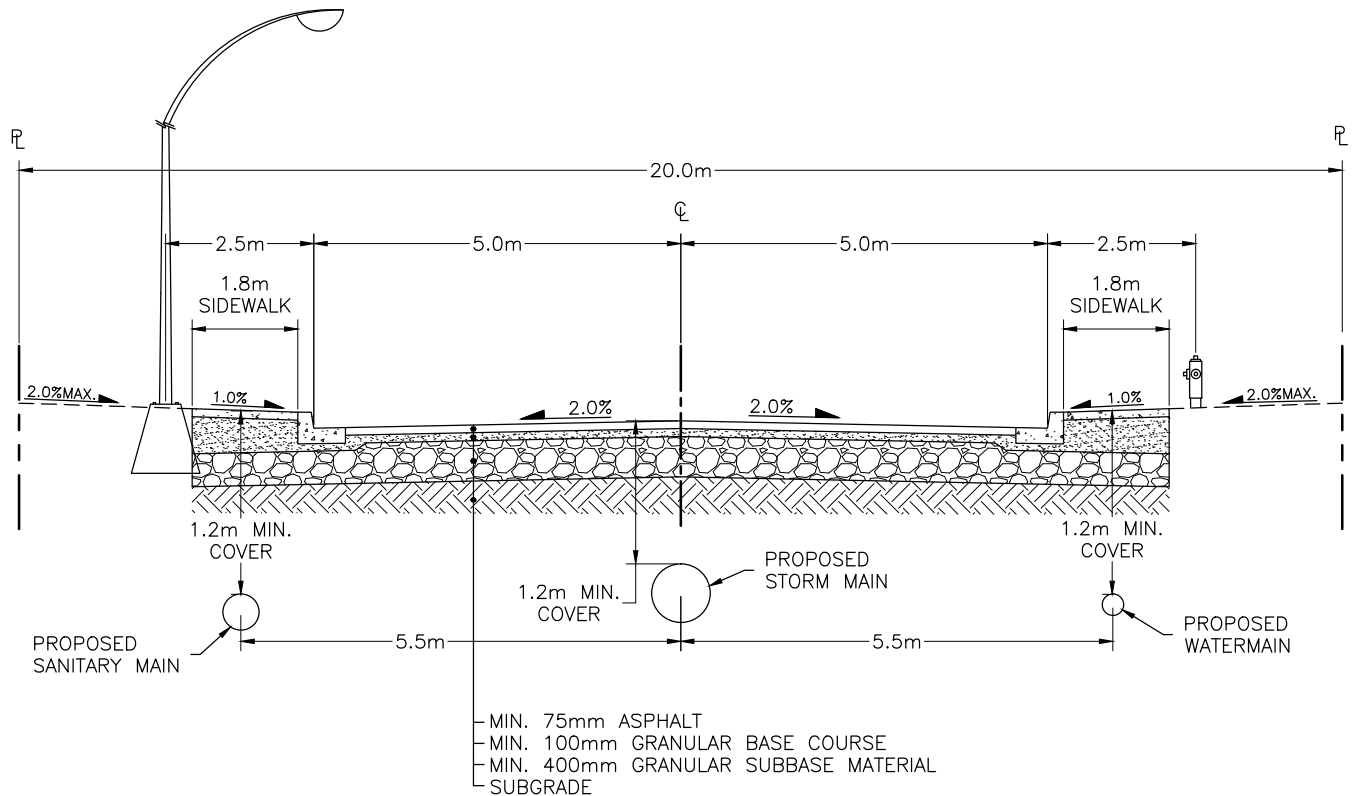
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DRAWING NUMBER:

A



DISTRICT OF PORT EDWARD URBAN COMMERCIAL



NOTE:

1. DEPTH OF GRANULAR SUBBASE MAY BE ADJUSTED TO RECOMMENDATION OF GEOTECHNICAL ENGINEERING REPORT APPROVED BY DIRECTOR OF PUBLIC WORKS.
2. STORM SEWERS TO BE INSTALLED ONLY WHERE REQUIRED.
3. THIS CROSS SECTION IS ALSO APPLICABLE FOR RESIDENTIAL ROADS ADJACENT TO MULTI-FAMILY DEVELOPMENT SITES.

LATEST REVISION:

03/2014

SCALE:

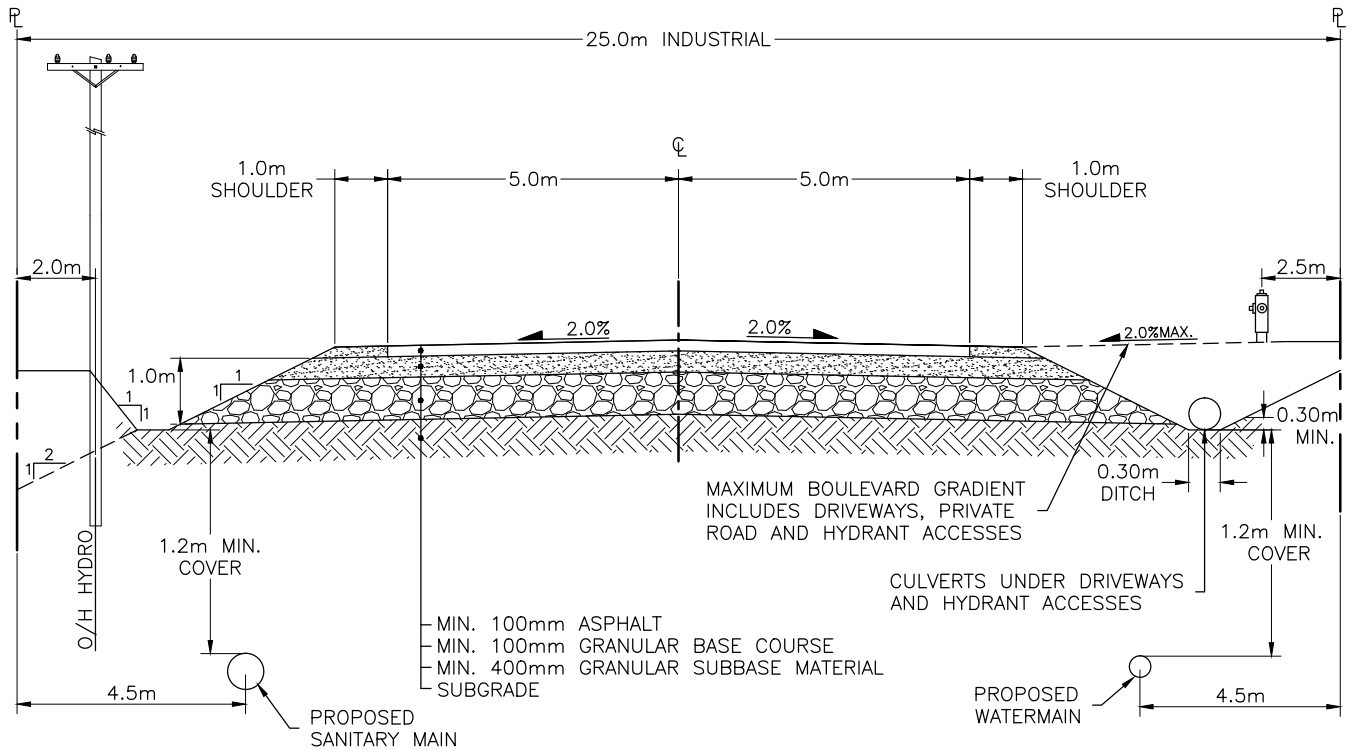
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DRAWING NUMBER:

B



DISTRICT OF PORT EDWARD INDUSTRIAL



NOTE:

1. DEPTH OF GRANULAR SUBBASE MAY BE ADJUSTED TO RECOMMENDATION OF GEOTECHNICAL ENGINEERING REPORT APPROVED BY DIRECTOR OF PUBLIC WORKS.

LATEST REVISION:

03/2014

SCALE:

N.T.S.

DRAWING NUMBER:

C



District of Port Edward Subdivision and Development Servicing Bylaw No.544, 2014

Schedule "C"
Works and Services Agreements
Form "A" – Subdivision Servicing
Form "B" – Development Servicing

FORM A



FORM 'A' WORKS AND SERVICES AGREEMENT – SUBDIVISION SERVICING

THIS AGREEMENT dated for reference the ____ day of _____, 2

BETWEEN:

District of Port Edward
PO Box 1100
Port Edward, BC V0V 1G0

AND:

(the “**Owner**”)

WHEREAS:

- A. The **Owner** is the registered **Owner** of land within the **District** legally described as:

(collectively, the “Land”);
- B. The **Owner** has applied to subdivide the Land in accordance with the proposed **Subdivision** plan, a reduced copy of which is attached as Schedule “A” (the “**Subdivision** Plan”), and the **Owner** has requested approval of the **Subdivision** Plan prior to the construction and provision of the **Works and Services** which are required in relation to the proposed **Subdivision**;
- C. By this **Works and Services** Agreement, the **Owner** agrees to construct and provide certain **Works and Services** as required by the **Director of Public Works**, and as required by the **District’s Subdivision and Development Servicing Bylaw**, with all **Works and Services** to be in accordance with the drawings, standards and specifications referenced in this Agreement and in accordance with the applicable bylaws of the **District**;
- D. By this Agreement, the **Owner** agrees to provide **Security** for completion of the **Works and Services**, resulting from the proposed **Subdivision**.

NOW THEREFORE in consideration of \$1.00 paid to the **Owner** by the **District** and other good and valuable consideration, receipt and sufficiency of which are acknowledged, the **Owner** covenants and agrees with the **District** as follows:

1. INTERPRETATION

- 1.1 In this Agreement, unless otherwise defined, words and phrases shall have the meanings assigned to them in the **District’s Subdivision and Development Servicing Bylaw**.

2. COMMENCEMENT OF CONSTRUCTION

- 2.1 At the latest, the **Owner** must begin construction of the **Works and Services** within 60 days of the date of approval of the **Subdivision** Plan by the **Approving Officer**.

3. TIME FOR COMPLETION

- 3.1 The **Owner** shall, at the **Owner's** cost, substantially complete, and obtain a **Construction Completion Certificate** for the **Works and Services** by the _____.
(Date)

4. OWNER'S OBLIGATIONS

- 4.1 In undertaking the Works, the **Owner** shall:
- (a) construct, install and maintain the **Works and Services** in accordance with this Agreement and all applicable statutes, regulations, orders, codes, laws, bylaws, permits, resolutions and other enactments;
 - (b) without limiting clause (a) above, construct, install and maintain the **Works and Services** in compliance with all environmental legislation and in such a manner that the **Owner** does not discharge or permit the discharge of any contaminant, and promptly remove any contamination in conformance with the *Environmental Management Act*;
 - (c) promptly discharge from the title to land owned or held by the **District** any builders lien or related charge under the *Builders Lien Act* related to this Agreement, the **Works and Services**, or the **Owner's** construction, installation or maintenance of the **Works and Services**;
 - (d) not begin the construction of any portion of the **Works and Services** on a **Highway**, park or other **District** land, without advising the **Approving Officer** at least five business days before beginning that portion of the work;
 - (e) strictly adhere to the **Approved Drawings** (which are deemed to form part of this Agreement) and obtain the prior written approval of the **Director of Public Works** for any changes to the approved plans for the **Works and Services**;
 - (f) not engage any employee or contractor in the construction of the **Works and Services** who, in the reasonable opinion of the **Director of Public Works**, is unfit, incapable or unskilled;
 - (g) ensure that a competent superintendent is on site at all times during the construction and installation of the **Works and Services**, with the authority to act on behalf of the **Owner** and capable of speaking, reading and writing the English

language, and any explanations, orders, instructions, directions and requests given by the **District** to such superintendent shall be deemed to have been given to the **Owner**; and

- (h) if any defects become apparent in any of the **Works and Services** at any time prior to the issuance of the **Construction Completion Certificate**, within a reasonable time after notice by the **District** cause such repairs or replacement as required to be done, and if the **Owner** defaults, or any emergency exists, the **Director of Public Works** may have the repairs or replacements carried out and the cost of which shall be recovered as set out in this Agreement.

5. ESSENTIAL SERVICES

- 5.1 At all times after any building construction has begun on any **Parcel** within the proposed **Subdivision**, the **Owner** shall ensure that every **Parcel** where building construction is underway is provided with:

- (a) **Highway** access which is sufficient for fire trucks and other emergency vehicles; and
- (b) Water service which is sufficient for firefighting purposes.

- 5.2 Where the installation of the **Works and Services** will result in the temporary disruption of **District** or non-**District** services to surrounding residents (e.g., sewer, water, road access, electricity, telephone, etc.), the **Owner** will notify the **Director of Public Works** and the affected residents at least 24 hours in advance so as to reduce any inconvenience. The timing of the advance notification shall be extended to at least 48 hours in advance when the length of the disruption will be longer than 3 hours.

6. SECURITY

- 6.1 As the **Security** for the performance of all the terms and conditions in this Agreement (other than the **Owner's** obligations to maintain the **Works and Services**), the **Owner** shall deposit with the **District**, prior to approval of the **Subdivision** Plan

- (a) cash or a certified cheque, or
- (b) a Letter of Credit (the "Letter of Credit")

in an amount totaling _____ (collectively, the "**Security**").
(Dollar Amount)

- 6.2 Every Letter of Credit provided under this Agreement, whether provided as **Security** for construction of the **Works and Services** or for maintenance of the **Works and Services**, shall be an unconditional, irrevocable, standby letter of credit, valid for a minimum of

one year and automatically renewing, issued by a Canadian chartered bank, with partial draws allowed, not requiring any documentation for draws, subject to terms acceptable to the **District**.

- 6.3 The **Owner** shall ensure that every Letter of Credit is replaced not less than 14 days prior to the expiry date of the Letter of Credit and if the **Owner** fails to do so, the **District** may draw upon the Letter of Credit.
- 6.4 The **District** may draw upon a Letter of Credit provided pursuant to this Agreement at any time and may hold or use the proceeds in accordance with this Agreement.
- 6.5 The **District** is not required to pay interest to the **Owner** on any **Security** which the **District** may hold pursuant to this Agreement.
- 6.6 The amount of the **Security** may be reduced at any time at the **District's** discretion, with the written approval of the **Director of Public Works**.

7. USE AND RETURN OF SECURITY

- 7.1 If construction of the **Works and Services** has not begun within the time specified in this Agreement or, the **Works and Services** are not completed within the time allowed by Section 3, or the **Works and Services** are not provided in accordance with the standards set out in this agreement and the **District's Subdivision and Development Servicing Bylaw**, the **District** may without notice to the **Owner**, undertake and complete those **Works and Services** at the cost of the **Owner**, and for that purpose may expend the **Security** in whole or in part.
- 7.2 The **District** may undertake **Works and Services** referred to in Section 7.1 either by itself or by contractors employed by it. The **District** shall be under no obligation to complete those **Works and Services** and may undertake those **Works and Services** in whole or in part, in the **District's** discretion as to extent and timing of completion.
- 7.3 If there are insufficient monies included in the **Security** to complete the **Works and Services**, the **Owner** shall pay the amount of the insufficiency to the **District** forthwith upon receipt of the **District's** invoice for that amount, whether or not the **District** has then completed the balance of the **Works and Services**.
- 7.4 If the **District** undertakes all or part of the **Works and Services**, the cost of those **Works and Services** which is payable by the **Owner** shall include the **District's** actual costs of construction plus the costs of engineering, supervision, legal, tendering, survey, other professional services, interest and all other costs reasonably required for completion of those **Works and Services**, together with an administration fee of ten percent (10%) of such total costs.

7.5 If the **Owner** completes the **Works and Services** or if the **District's** costs in constructing all or part of the **Works and Services** are less than the amount of the **Security**, then the **Security** or the unused part of it shall be returned to the **Owner** by the **District**, not less than 60 days after issuance of the **Construction Completion Certificate** with respect to the **Works and Services**.

7.6 Any return of **Security** shall be made to the **Owner**, despite any change in the ownership of the Land.

8. ENTRY ON LAND

8.1 The **Owner** authorizes the **District**, its agents and contractors to enter upon the Land at any time as may be necessary or convenient for the carrying out of this Agreement, including without limitation for the purpose of inspecting or undertaking the **Works and Services**.

9. STANDARDS OF WORK

9.1 Without limiting the construction standards in Section 4, the Works shall be provided and constructed to a standard which is sufficient for their intended purpose and shall be completed in accordance with generally accepted engineering practice and to the satisfaction of the **District** and meeting the standards of the **District's Subdivision & Development Servicing Bylaw**.

9.2 If the **Works and Services** are in any way defective or do not operate in a satisfactory manner, the **Owner** shall, at the expense of the **Owner**, modify and reconstruct the **Works and Services** immediately so that the **Works and Services** are fully operational and function in accordance with the **District's Subdivision & Development Servicing Bylaw** standards, where applicable, and to the satisfaction of the **Director of Public Works**.

10. DEBRIS REMOVAL

10.1 In the event that any material or debris is left upon any **Highway** or park land or other public property or property owned by the **District** during or after the construction of the **Works and Services**, the **District** may remove the material or debris at the expense of the **Owner**, the cost of such removal to be determined by the **Director of Public Works**.

11. OWNER'S CONSULTING PROFESSIONALS AND CONTRACTORS

11.1 The **Owner** warrants and represents that the **Works and Services** have been designed by a Consulting Professional.

- 11.2 The **Owner** acknowledges that the **District** has relied on cost estimates prepared by one or more Consulting Professionals in establishing the amount of the **Security** and that the **Owner** has so advised the Consulting Professionals prior to submission of those estimates to the **District** by the **Owner**.
- 11.3 At all times during the construction and provision of the **Works and Services**, the **Owner** shall retain one or more Consulting Professionals to oversee the completion of the **Works and Services**.
- 11.4 Any explanations, orders, instructions, directions and requests given by the **District** to the Consulting Professional shall be deemed to have been given to the **Owner**.
- 11.5 Upon completion of the **Works and Services** and prior to issuance of the **Construction Completion Certificate**, the **Owner's** Consulting Professional shall certify in writing that the **Works and Services** have been constructed in accordance with the approved plans for the **Works and Services**.
12. **DRAWINGS**
- 12.1 The **Owner** shall submit to the **District** final as-built drawings sealed by a Consulting Professional, including 2 complete sets of prints, and 1 set of all drawings in electronic digital form, of all the **Works and Services** as constructed and as approved by the **District**, before issuance of the **Construction Completion Certificate**.
13. **CONSTRUCTION COMPLETION CERTIFICATE**
- 13.1 When the **Owner's** Consulting Professional indicates to the **Owner** that the **Works and Services** are fully operational, the **Owner** shall submit an application for **Construction Completion Certificate**, signed the **Owner's** Consulting Professional(s), to the **Director of Public Works**. The **Director of Public Works** may inspect the **Works and Services** to determine whether there are any deficiencies in relation to the **Works and Services** which must be remedied prior to issuance of the **Construction Completion Certificate**. If deficiencies are apparent to the **Director of Public Works**, the application will be returned to the **Owner** unsigned with a report detailing the deficiencies to be addressed by the **Owner**.
- 13.2 Upon completion of the **Works and Services** to the satisfaction of the **District**, payment to the **District** of any amount owing under this Agreement, compliance with Sections 11.5, 12.1, and provision of **Maintenance Security** under Section 14, a **Construction Completion Certificate**, signed by the **Director of Public Works** shall be issued by the **District**.

- 13.3 The **Construction Completion Certificate** shall indicate thereon the date when the **Owner** may apply for a **Final Acceptance Certificate**, being no less than one year after the date of issuance of the **Construction Completion Certificate**.

14. MAINTENANCE PERIOD

- 14.1 The **Owner** shall:

- (a) prior to the issuance of the **Construction Completion Certificate**, deposit with the **District** the sum of _____ in cash or by Letter of Credit as **Security** for performance of the **Owner's** maintenance obligations under this section with respect to the **Works and Services** (the "**Maintenance Security**");
- (b) forthwith remedy any defects in any **Works and Services** appearing within the **Maintenance Period** applicable to those **Works and Services** (excluding defects caused by reasonable wear and tear, negligence of the **District** and acts of God) and any resulting damage to other **Works and Services** or property, including, without limiting the foregoing:
 - (i) failure of, or damage to, underground utilities resulting from defective materials or improper installation;
 - (ii) settlement of culverts or ditches;
 - (iii) grading, graveling, repairs and/or replacement of road and lane surfaces including access roads;
 - (iv) adjustments and repairs to water mains, hydrants, service lines and valves and valve operating mechanisms including the casings enclosing these mechanisms;
 - (v) repairs, replacements and adjustments to sewer mains, services, manholes, manhole frames and covers;
 - (vi) repairs, replacements and adjustments to street lighting fixtures and appurtenances; and
 - (vii) repairs to any other public utility or component thereof deemed the **Owners** responsibility by the **Director of Public Works**;
- (c) during the **Maintenance Period**, flush and clean out the sanitary sewer and storm sewer in the area of the **Works and Services** as required by the **Director of Public Works**. The cost of removing obstructions caused by gravel, rocks, or silt other than that deposited from sewage, shall be borne by the **Owner**. All

blocked sewers attributable to faulty construction related to the **Works and Services** shall be corrected at the expense of the **Owner**. Prior to the issuance of the **Final Acceptance Certificate**, the **Director of Public Works** and Services may carry out, at the cost of the **District**, an additional video inspection of all sanitary and storm sewer lines. Should the video inspection show any defects these are to be remedied by the **Owner** and the **Owner** shall carry out, at his cost, any further video inspections necessary to prove that defects are corrected. The **Director of Public Works** will not issue a **Final Acceptance Certificate** until he is satisfied that defects are remedied;

- (d) be responsible for adjusting all hydrants, valve boxes and service valve boxes to established grades as they are developed, and maintaining valves and appurtenances in operating condition until such time as the **Director of Public Works** issues a **Final Acceptance Certificate** for the **Works and Services**; and
- (e) warrant the road base and asphalt surface and all of the other utilities from one year following the date of issuance of the **Construction Completion Certificate**. Such warranty period may be extended by the **Director of Public Works** in his/her sole discretion when compaction test results or other documented observations indicate substandard construction. In such event, the **Maintenance Period** may be extended for a period of up to one year following remediation of the substandard construction.

14.2 During the **Maintenance Period**, the **District** shall, subject to an agreement with the **Owner** to the contrary, operate and maintain those parts of those **Works and Services** which are within a **Highway, District** easement or statutory right of way. Any costs attributable to any deficiency or defect in the **Works and Services** or failure of the **Works and Services** to operate normally shall be the responsibility of the **Owner**.

14.3 The Parties agree that the **Maintenance Period** will be automatically extended if the **Final Acceptance Certificate** is not issued by the **District** by the one-year anniversary of the date of issuance of the **Construction Completion Certificate**, until the **Director of Public Works** is satisfied that the **Owner** has met all its responsibilities under this Agreement. The **Owner's** responsibility in respect of the **Maintenance Period** will terminate on the date of issuance of the **Final Acceptance Certificate**. No releases from liability of any kind will be given by the **District** until all repairs or replacements required by the **Director of Public Works** have been made.

15. **USE OF MAINTENANCE SECURITY**

15.1 If the **Owner** fails to remedy any defect in the **Works and Services** as required under this Agreement or pay for any damage resulting from the construction of the **Works and Services**, the **District** may deduct from the Maintenance **Security** the cost of repairing

the **Works and Services**, remedying any defect or paying for any damage, and sections 7.2 through 7.4 of this Agreement shall apply.

16. FINAL ACCEPTANCE CERTIFICATE AND RETURN OF MAINTENANCE SECURITY

- 16.1 No later than two months before the date indicated on the **Construction Completion Certificate** for **Owner** application for **Final Acceptance Certificate**, the **Owner** and the **Director of Public Works**, will jointly inspect the **Works and Services**. Any damage or defect in the **Works and Services** noted by the **Director of Public Works** shall be corrected by the **Owner**, in conjunction with the **Owner's** Consulting Professional(s), to the satisfaction of the **Director of Public Works**. Once any and all damage or defect has been corrected by the **Owner**, the **Owner** may submit an application for **Final Acceptance Certificate**, signed by the **Owner's** Consulting Professional(s). If defects or deficiencies in the **Works and Services** are still apparent to the **Director of Public Works**, the application will be returned to the **Owner** unsigned with a report of the defects and deficiencies listed and with a statement of the length of time in which the defects and deficiencies shall be corrected by the **Owner** at its expense.
- 16.2 After receipt of application under Section 16.1, the **District** shall provide the **Owner** with a **Final Acceptance Certificate** with respect to the **Works and Services** upon satisfactory completion by the **Owner** of all of the covenants and conditions in this Agreement, including but not limited to completion of all Deficiencies in the **Works and Services** and keeping the **Works and Services** in complete repair for the **Maintenance Period**.
- 16.3 Upon expiry of the **Maintenance Period**, the **District** shall return to the **Owner** any unused maintenance **Security** held by the **District** pursuant to Section 14, and Sections 7.5 and 7.6 of this Agreement shall apply to the extent applicable.

17. USE OF SECURITY TO REMEDY BREACHES

- 17.1 If the **District** incurs any costs in correcting any breach of the **Owner's** obligations under this Agreement (including breaches other than non-completion of the **Works and Services**) and those costs are not paid by the **Owner** within 30 days of receipt of the **District's** invoice, the **District** may recover those costs from the **Security** or any other **Security** held by the **District** pursuant to this Agreement, and Section 7.4 applies.

18. INDEMNIFICATION AND INSURANCE

- 18.1 The **Owner** shall indemnify and save harmless the **District**, and its officers, employees, **Council** members, contractors and agents (the "**District Officials**") from and against all claims, actions, proceedings, damages, fees, costs, liabilities, remediation of contamination costs, expenses (including actual fees of professional advisors), fines, penalties and other harm of any kind whatsoever, despite negligence on the part of the **District** and/or any of the **District Officials**, and whether related to death, bodily injury,

property loss, property damage, property contamination, or consequential loss or damage, suffered or incurred by the **District** and/or any of the **District** Officials at any time, directly or indirectly, arising from, resulting from, connected with or related to:

- (a) any breach or default of the **Owner** under this Agreement;
- (b) any incident or occurrence on or about the Land;
- (c) any wrongful act, omission or negligence of the **Owner** or its members, shareholders, directors, officers, employees, agents, volunteers, contractors, subcontractors, tenants, lessees, licensees, customers, invitees or others for whom it is responsible in law;
- (d) damage to any property during the construction or provision or maintenance of the **Works and Services**;
- (e) liens, non-payment for labour or materials, Workers' Compensation assessments, employment insurance, federal or provincial tax, or union dues check off; or
- (f) the construction or provision, maintenance or repair of the **Works and Services** by the **Owner**, including defects in the **Works and Services** and non-repair of the **Works and Services**.

This indemnity shall survive any conclusion or other termination of this Agreement, in relation to any matter arising prior to expiry of the **Maintenance Period** applicable to the **Works and Services** in question.

18.2 The **Owner** shall take out and maintain at all times from commencement of construction and installation of the **Works and Services** until the **Director of Public Works** issues a **Final Acceptance Certificate** with respect to all of the **Works and Services**:

- (a) comprehensive general liability insurance against claims for bodily injury (including death) and property damage or loss arising from its carrying out the construction and installation of the **Works and Services** (including failure to properly carry out or negligence in carrying out the **Works and Services**), with the **District** as an additional insured, in an amount of not less than \$3,000,000.00 combined single limit per claim and with a per claim deductible of not more than \$5,000.00; and
- (b) builder's risk insurance, insuring the **Works and Services** against loss or damage to the full replacement cost of the **Works and Services**, and if the **District** elects to complete the **Works and Services** as provided in this Agreement, the **Owner** is

conclusively considered to have assigned the benefit of that insurance, and all proceeds of it, to the **District**.

The **Owner** must provide the **Director of Public Works** with proof in writing of insurance before commencing the **Works and Services** and at other reasonable times during the term of this Agreement. The insurance must contain a waiver or subrogation clause in favour of the District, and a provision requiring the insurer to give the **District** 30 days prior written notice before any alteration or cancellation of the policy is effective.

19. OWNER'S RISK

- 19.1 The **Owner** acknowledges and agrees that the **Owner** relies exclusively on its own expertise and the **Owner's** Consulting Professionals and contractors and that the **District** does not, by its approvals, inspections or acceptance of the **Works and Services**, warrant or represent that the **Works and Services** are in compliance with any enactment or warrant the quality, fitness for purpose, adequacy or safety of the **Works and Services**.

20. NO REPRESENTATIONS

- 20.1 The **Owner** acknowledges that the **District** has made no representations, covenants, warranties, guarantees, promises or agreements with the **Owner** with regard to the subject matter of this Agreement, other than those expressly made in this Agreement.

21. DISTRICT PROPERTY IN WORKS

- 21.1 Upon issuance of a **Construction Completion Certificate**, if the **Works and Services** are on a **Highway**, park or other land owned by the **District** (but subject to an easement to the contrary) or if an easement or statutory right of way agreement with the **District** so provides, the **Works and Services** shall become the property of the **District**, free and clear of any claim by the **Owner** or any person claiming through the **Owner**, without payment of any further compensation or consideration.

22. TERMINOLOGY

- 22.1 Wherever the singular or the masculine are used in this Agreement, they shall be interpreted as meaning the plural or the feminine or body corporate where the context requires.

23. BINDING EFFECT

- 23.1 This agreement shall enure to the benefit of and be binding upon the parties hereto, their respective successors and permitted assigns. Subject to the terms of an approved assignment under Section 4, the **Owner's** obligations and rights under this Agreement shall continue in effect notwithstanding any transfer of title to all or part of the Land.

24. SALE OF LAND

- 24.1 The **Owner's** obligations and rights under this Agreement shall not be assigned without the written consent of the **District**, such consent not to be unreasonably withheld, provided the assignee is the **Owner** of the Land and the **Owner** pays the **District** an assignment consent fee of \$500.
- 24.2 In the event that the **Owner** proposes to transfer any part of the Land, prior to the issuance of a **Final Acceptance Certificate**, prior to the transfer the **Owner** shall:
- (a) obtain from the transferee an agreement in writing in favour of and in a form acceptable to the **District** under which the Transferee agrees to perform the obligations of the **Owner** under, and to be bound by, the terms and conditions of this Agreement; and
 - (b) where a portion of the **Works and Services** is to be located, obtain the transferee's written consent to entry by the **District** on that part of the Land, for the purposes of this Agreement.

25. NO PUBLIC LAW DUTY

- 25.1 Wherever in this Agreement the **District** is required or entitled to exercise any discretion in the granting of consent or approval, or is entitled to make any determination, take any action or exercise any contractual right or remedy, the **District** may do so in accordance with the provisions of this Agreement and no public law duty, whether arising from the principles of procedural fairness or the rules of natural justice, shall have any application.

26. GOVERNING LAW

- 26.1 This Agreement will be governed and construed in accordance with the laws in force in the Province of British Columbia.

27. FURTHER ACTS

- 27.1 The **Owner** shall execute and deliver to the **District** such agreements or other documents and do such other things as may be required by the **District** at any time and from time to time in order to evidence or give effect to the terms, conditions, intent and meaning of this Agreement

28. TIME OF THE ESSENCE

- 28.1 Time is of the essence of this agreement.

29. NOTICE

- 29.1 Any notice or other communication required or contemplated to be given or made by any provision of this Agreement shall be given or made in writing and either by facsimile transmission or electronic mail (and in either case shall be deemed to be received when delivered, to an email address or fax number first approved in writing for such purpose by the receiving party) or mailed by prepaid registered mail in any Canada Post Office (and if so mailed, shall be deemed to be delivered on the fifth business day following such mailing, except that, in the event of interruption of mail service notice shall be deemed to be delivered only when actually received by the party to whom it is addressed), so long as the notice is addressed, as follows:

to the **Owner** at the address on the second page of this Agreement

and to the **District** at:

District of Port Edward

PO Box 1100

Port Edward, BC V0V 1G0

Attention: **Approving Officer**

or to such other mailing address as a party from time to time notifies the other party in writing.

30. FORCE MAJEURE

- 30.1 All obligations of the parties shall be suspended so long as the performance of such obligation is prevented, in whole or in part, by reason of labour dispute, fire, act of God, unusual delay by common carriers, earthquake, act of the elements, riot, civil commotion or inability to obtain necessary materials on the open market, and the period in which any party is required to perform any such obligation is extended for the period of such suspension. The impact of the **Owner's** financial circumstances upon the **Owner's** ability to perform this Agreement does not suspend the **Owner's** obligations under this Agreement.

31. NO WAIVER

- 31.1 No provision of this Agreement is to be considered to have been waived by a party unless the waiver is expressed in writing by the party. The waiver by a party of any breach by another party of any provision is not to be construed as or constitute a waiver of any further or other breach.

32. NO EFFECT ON LAWS OR POWERS

- 32.1 This Agreement does not:

- (a) affect or limit the discretion, rights, duties or powers of the **District** under any enactment or at common law, including in relation to the use or **Subdivision** of the Land;

- (b) affect or limit any enactment relating to the use or **Subdivision** of the Land; or
- (c) relieve the **Owner** from complying with any enactment, including in relation to the use or **Subdivision** of the Land.

33. **SEVERABILITY**

- 33.1 If any provision of this Agreement is held to be unenforceable by a court, that provision shall be severed from the remainder of this Agreement and the remainder shall continue in effect.

34. **AUTHORITY**

- 34.1 The **Owner** hereby represents and warrants to the **District** that it has the capacity to enter into this Agreement and fulfill its obligations under it, and that all resolutions and other corporate requirements have been duly passed, and that those signing this Agreement on its behalf have been duly authorized to do so.

35. **AMENDMENTS**

- 35.1 No amendment to this Agreement shall be effective unless it is made in writing and is duly executed on behalf of both parties.

36. **SCHEDULES**

- 36.1 The following schedules are annexed to and form part of this Agreement:

Schedule "A"	Approved Subdivision Plan
Schedule "B"	Approved Drawings

37. **ACKNOWLEDGMENT**

The **Owner** acknowledges having read and fully understood all the terms and conditions of this Agreement and confirms that this Agreement has been entered voluntarily.

IN WITNESS WHEREOF the parties have executed this agreement on the dates set out below.

DATED the _____ day of _____, 2

District of Port Edward, by its authorized signatories:

Mayor:

Corporate Officer:

DATED the _____ day of _____, 2

[NAME OF OWNER], by its authorized signatory(ies):

Name:

Name:

FORM B



FORM 'B' WORKS AND SERVICES AGREEMENT – DEVELOPMENT SERVICING

THIS AGREEMENT dated for reference the ____ day of _____, 2____, ,

BETWEEN:

District of Port Edward
PO Box 1100
Port Edward, BC V0V 1G0 (the “**District**”)

AND:

(the “**Owner**”)

WHEREAS:

A. The **Owner** is the registered **Owner** of land within the **District** legally described as:

(collectively, the “Land”);

- B. The **Owner** has applied to construct a building on the Land in accordance with Building Permit No. _____ (the “Building Permit”) a copy of which is attached as **Schedule “A”**, and the Owner has requested issuance of the **Building Permit** prior to the construction and provision of the **Works and Services** which are required in relation to the proposed building;
- C. By this **Works and Services** Agreement, the **Owner** agrees to construct and provide certain **Works and Services** as required by the **Director of Public Works**, and as required by the **District’s Subdivision and Development Servicing Bylaw**, with all **Works and Services** to be in accordance with the drawings, standards and specifications referenced in this Agreement and in accordance with the applicable bylaws of the **District**;
- D. By this Agreement, the **Owner** agrees to provide **Security** for completion of the required **Works and Services**, resulting from the proposed **Development**

NOW THEREFORE in consideration of \$1.00 paid to the **Owner** by the **District** and other good and valuable consideration, receipt and sufficiency of which are acknowledged, the **Owner** covenants and agrees with the **District** as follows:



FORM B

1. INTERPRETATION

- 1.1 In this Agreement, unless otherwise defined, words and phrases shall have the meanings assigned to them in the ***District's Subdivision and Development Servicing Bylaw***.

2. COMMENCEMENT OF CONSTRUCTION

- 2.1 At the latest, the **Owner** must begin construction of the **Works and Services** within 60 days of the date of approval of the **Development** Plan by the **Approving Officer**.

3. TIME FOR COMPLETION

- 3.1 The **Owner** shall, at the **Owner's** cost, substantially complete, and obtain a **Construction Completion Certificate** for the **Works and Services** by the _____
(Date)

4. OWNER'S OBLIGATIONS

- 4.1 In undertaking the Works, the **Owner** shall:
- (a) construct, install and maintain the **Works and Services** in accordance with this Agreement and all applicable statutes, regulations, orders, codes, laws, bylaws, permits, resolutions and other enactments;
 - (b) without limiting clause (a) above, construct, install and maintain the **Works and Services** in compliance with all environmental legislation and in such a manner that the **Owner** does not discharge or permit the discharge of any contaminant, and promptly remove any contamination in conformance with the *Environmental Management Act*;
 - (c) promptly discharge from the title to land owned or held by the **District** any builders lien or related charge under the *Builders Lien Act* related to this Agreement, the **Works and Services**, or the **Owner's** construction, installation or maintenance of the **Works and Services**;
 - (d) not begin the construction of any portion of the **Works and Services** on a **Highway**, park or other **District** land, without advising the **Approving Officer** at least five business days before beginning that portion of the work;
 - (e) strictly adhere to the **Approved Drawings** (which are deemed to form part of this Agreement) and obtain the prior written approval of the **Approving Officer** for any changes to the approved plans for the **Works and Services**;

FORM B



- (f) not engage any employee or contractor in the construction of the **Works and Services** who, in the reasonable opinion of the **Approving Officer**, is unfit, incapable or unskilled;
- (g) ensure that a competent superintendent is on site at all times during the construction and installation of the **Works and Services**, with the authority to act on behalf of the **Owner** and capable of speaking, reading and writing the English language, and any explanations, orders, instructions, directions and requests given by the **District** to such superintendent shall be deemed to have been given to the **Owner**; and
- (h) if any defects become apparent in any of the **Works and Services** at any time prior to the issuance of the **Construction Completion Certificate**, within a reasonable time after notice by the **District** cause such repairs or replacement as required to be done, and if the **Owner** defaults, or any emergency exists, the **Approving Officer** may have the repairs or replacements carried out and the cost of which shall be recovered as set out in this Agreement.

5. ESSENTIAL SERVICES

- 5.1 At all times after any building construction has begun on any **Parcel** within the proposed **Development**, the **Owner** shall ensure that every **Parcel** where building construction is underway is provided with:
 - (a) **Highway** access which is sufficient for fire trucks and other emergency vehicles; and
 - (b) water service which is sufficient for firefighting purposes.
- 5.2 Where the installation of the **Works and Services** will result in the temporary disruption of **District** or non-**District** services to surrounding residents (e.g., sewer, water, road access, electricity, telephone, etc.), the **Owner** will notify the **Director of Public Works** and the affected residents at least 24 hours in advance so as to reduce any inconvenience. The timing of the advance notification shall be extended to at least 48 hours in advance when the length of the disruption will be longer than 3 hours.



FORM B

6. SECURITY

6.1 As the **Security** for the performance of all the terms and conditions in this Agreement (other than the **Owner's** obligations to maintain the **Works and Services**), the **Owner** shall deposit with the **District**, prior to the issuance of a **Building Permit**.

(a) cash or a certified cheque, or

(b) a Letter of Credit (the "Letter of Credit")

in an amount totaling _____ (collectively, the "**Security**").
(Dollar Amount)

6.2 Every Letter of Credit provided under this Agreement, whether provided as **Security** for construction of the **Works and Services** or for maintenance of the **Works and Services**, shall be an unconditional, irrevocable, standby letter of credit, valid for a minimum of one year and automatically renewing, issued by a Canadian chartered bank, with partial draws allowed, not requiring any documentation for draws, subject to terms acceptable to the **District**.

6.3 The **Owner** shall ensure that every Letter of Credit is replaced not less than 14 days prior to the expiry date of the Letter of Credit and if the **Owner** fails to do so, the **District** may draw upon the Letter of Credit.

6.4 The **District** may draw upon a Letter of Credit provided pursuant to this Agreement at any time and may hold or use the proceeds in accordance with this Agreement.

6.5 The **District** is not required to pay interest to the **Owner** on any **Security** which the **District** may hold pursuant to this Agreement.

6.6 The amount of the **Security** may be reduced at any time at the **District's** discretion, with the written approval of the **Approving Officer**.

7. USE AND RETURN OF SECURITY

7.1 If construction of the **Works and Services** has not begun within the time specified in this Agreement or, the **Works and Services** are not completed within the time allowed by Section 3, or the **Works and Services** are not provided in accordance with the standards set out in this agreement and the **District's Subdivision and Development Servicing Bylaw**, the **District** may without notice to the **Owner**, undertake and complete those **Works and Services** at the cost of the **Owner**, and for that purpose may expend the **Security** in whole or in part.



FORM B

- 7.2 The **District** may undertake **Works and Services** referred to in section 7.1 either by itself or by contractors employed by it. The **District** shall be under no obligation to complete those **Works and Services** and may undertake those **Works and Services** in whole or in part, in the **District's** discretion as to extent and timing of completion.
- 7.3 If there are insufficient monies included in the **Security** to complete the **Works and Services**, the **Owner** shall pay the amount of the insufficiency to the **District** forthwith upon receipt of the **District's** invoice for that amount, whether or not the **District** has then completed the balance of the **Works and Services**.
- 7.4 If the **District** undertakes all or part of the **Works and Services**, the cost of those **Works and Services** which is payable by the **Owner** shall include the **District's** actual costs of construction plus the costs of engineering, supervision, legal, tendering, survey, other professional services, interest and all other costs reasonably required for completion of those **Works and Services**, together with an administration fee of ten percent (10%) of such total costs.
- 7.5 If the **Owner** completes the **Works and Services** or if the **District's** costs in constructing all or part of the **Works and Services** are less than the amount of the **Security**, then the **Security** or the unused part of it shall be returned to the **Owner** by the **District**, not less than 60 days after issuance of the **Construction Completion Certificate** with respect to the **Works and Services**.
- 7.6 Any return of **Security** shall be made to the **Owner**, despite any change in the ownership of the Land.

8. ENTRY ON LAND

- 8.1 The **Owner** authorizes the **District**, its agents and contractors to enter upon the Land at any time as may be necessary or convenient for the carrying out of this Agreement, including without limitation for the purpose of inspecting or undertaking the **Works and Services**.

9. STANDARDS OF WORK

- 9.1 Without limiting the construction standards in section 4, the Works shall be provided and constructed to a standard which is sufficient for their intended purpose and shall be completed in accordance with generally accepted engineering practice and to the satisfaction of the **District** and meeting the standards of the **District's Subdivision & Development** Servicing Bylaw.
- 9.2 If the **Works and Services** are in any way defective or do not operate in a satisfactory manner, the **Owner** shall, at the expense of the **Owner**, modify and reconstruct the **Works and Services** immediately so that the **Works and Services** are fully operational



FORM B

and function in accordance with the ***District's Subdivision & Development*** Servicing Bylaw standards, where applicable, and to the satisfaction of the ***Director of Public Works***.

10. DEBRIS REMOVAL

- 10.1 In the event that any material or debris is left upon any ***Highway*** or park land or other public property or property owned by the ***District*** during or after the construction of the ***Works and Services***, the ***District*** may remove the material or debris at the expense of the ***Owner***, the cost of such removal to be determined by the ***Director of Public Works***.

11. OWNER'S CONSULTING PROFESSIONALS AND CONTRACTORS

- 11.1 The ***Owner*** warrants and represents that the ***Works and Services*** have been designed by a Consulting Professional.
- 11.2 The ***Owner*** acknowledges that the ***District*** has relied on cost estimates prepared by one or more Consulting Professionals in establishing the amount of the ***Security*** and that the ***Owner*** has so advised the Consulting Professionals prior to submission of those estimates to the ***District*** by the ***Owner***.
- 11.3 At all times during the construction and provision of the ***Works and Services***, the ***Owner*** shall retain one or more Consulting Professionals to oversee the completion of the ***Works and Services***.
- 11.4 Any explanations, orders, instructions, directions and requests given by the ***District*** to the Consulting Professional shall be deemed to have been given to the ***Owner***.
- 11.5 Upon completion of the ***Works and Services*** and prior to issuance of the ***Construction Completion Certificate***, the ***Owner's*** Consulting Professional shall certify in writing that the ***Works and Services*** have been constructed in accordance with the approved plans for the ***Works and Services***.

12. DRAWINGS

- 12.1 The ***Owner*** shall submit to the ***District*** final as-built drawings sealed by a Consulting Professional, including 2 complete sets of prints, and 1 set of all drawings in electronic digital form, of all the ***Works and Services*** as constructed and as approved by the ***District***, before issuance of the ***Construction Completion Certificate***.

13. CONSTRUCTION COMPLETION CERTIFICATE

- 13.1 When the ***Owner's*** Consulting Professional indicates to the ***Owner*** that the ***Works and Services*** are fully operational, the ***Owner*** shall submit an application for ***Construction Completion Certificate***, signed by the ***Owner's*** Consulting Professional(s), to the ***Director of***

FORM B



Public Works. The **Director of Public Works** may investigate the **Works and Services** to determine whether there are any Deficiencies in relation to the **Works and Services** which must be remedied prior to issuance of the **Construction Completion Certificate**. If Deficiencies are apparent to the **Director of Public Works**, the application will be returned to the **Owner** unsigned with a report detailing the Deficiencies to be addressed by the **Owner**.

- 13.2 Upon completion of the **Works and Services** to the satisfaction of the **District**, payment to the **District** of any amount owing under this Agreement, compliance with Sections 11.5, 12.1, and provision of **Maintenance Security** under Section 14, a **Construction Completion Certificate**, signed by the **Director of Public Works** shall be issued by the **District**.
- 13.3 The **Construction Completion Certificate** shall indicate thereon the date when the **Owner** may apply for a **Final Acceptance Certificate**, being no less than one year after the date of issuance of the **Construction Completion Certificate**.

14. MAINTENANCE PERIOD

- 14.1 The **Owner** shall:

- (a) prior to the issuance of the **Construction Completion Certificate**, deposit with the **District** the sum of _____ in cash or by Letter of Credit as **Security** for performance of the **Owner's** maintenance obligations under this section with respect to the **Works and Services** (the "**Maintenance Security**");
- (b) forthwith remedy any defects in any **Works and Services** appearing within the **Maintenance Period** applicable to those **Works and Services** (excluding defects caused by reasonable wear and tear, negligence of the **District** and acts of God) and any resulting damage to other **Works and Services** or property, including, without limiting the foregoing:
 - (i) failure of, or damage to, underground utilities resulting from defective materials or improper installation;
 - (ii) settlement of culverts or ditches;
 - (iii) grading, graveling, repairs and/or replacement of road and lane surfaces including access roads;
 - (iv) adjustments and repairs to water mains, hydrants, service lines and valves and valve operating mechanisms including the casings enclosing these mechanisms;
 - (v) repairs, replacements and adjustments to sewer mains, services, manholes, manhole frames and covers;

FORM B



- (vi) repairs, replacements and adjustments to street lighting fixtures and appurtenances; and
 - (vii) repairs to any other public utility or component thereof deemed the **Owners** responsibility by the **Director of Public Works**;
- (c) during the **Maintenance Period**, flush and clean out the sanitary sewer and storm sewer in the area of the **Works and Services** as required by the **Director of Public Works**. The cost of removing obstructions caused by gravel, rocks, or silt other than that deposited from sewage, shall be borne by the **Owner**. All blocked sewers attributable to faulty construction related to the **Works and Services** shall be corrected at the expense of the **Owner**. Prior to the issuance of the **Final Acceptance Certificate**, the **Director of Public Works** and Services may carry out, at the cost of the **District**, an additional video inspection of all sanitary and storm sewer lines. Should the video inspection show any defects these are to be remedied by the **Owner** and the **Owner** shall carry out, at his cost, any further video inspections necessary to prove that defects are corrected. The **Director of Public Works** and Services will not issue a **Final Acceptance Certificate** until he is satisfied that defects are remedied;
- (d) be responsible for adjusting all hydrants, valve boxes and service valve boxes to established grades as they are developed, and maintaining valves and appurtenances in operating condition until such time as the **Director of Public Works** issues a **Final Acceptance Certificate** for the **Works and Services**; and
- (e) warrant the road base and asphalt surface and all of the other utilities from one year following the date of issuance of the **Construction Completion Certificate**. Such warranty period may be extended by the **Director of Public Works** in his/her sole discretion when compaction test results or other documented observations indicate substandard construction. In such event, the **Maintenance Period** may be extended for a period of up to one year following remediation of the substandard construction.
- 14.2 During the **Maintenance Period**, the **District** shall, subject to an agreement with the **Owner** to the contrary, operate and maintain those parts of those **Works and Services** which are within a **Highway, District** easement or **District** statutory right of way. Any costs attributable to any Deficiency or defect in the **Works and Services** or failure of the **Works and Services** to operate normally shall be the responsibility of the **Owner**.
- 14.3 The Parties agree that the **Maintenance Period** will be automatically extended if the **Final Acceptance Certificate** is not issued by the **District** by the one-year anniversary of the date of issuance of the **Construction Completion Certificate**, until the **Director of Public Works** is satisfied that the **Owner** has met all its responsibilities under this Agreement. The **Owner's** responsibility in respect of the **Maintenance Period** will

FORM B



terminate on the date of issuance of the **Final Acceptance Certificate**. No releases from liability of any kind will be given by the **District** until all repairs or replacements required by the **Director of Public Works** have been made.

15. USE OF MAINTENANCE SECURITY

- 15.1 If the **Owner** fails to remedy any defect in the **Works and Services** as required under this Agreement or pay for any damage resulting from the construction of the **Works and Services**, the **District** may deduct from the **Maintenance Security** the cost of repairing the **Works and Services**, remedying any defect or paying for any damage, and sections 7.2 through 7.4 of this Agreement shall apply.

16. FINAL ACCEPTANCE CERTIFICATE AND RETURN OF MAINTENANCE SECURITY

- 16.1 No later than two months before the date indicated on the **Construction Completion Certificate** for **Owner** application for **Final Acceptance Certificate**, the **Owner** and the **Director of Public Works**, will jointly inspect the **Works and Services**. Any damage or defect in the **Works and Services** noted by the **Director of Public Works** shall be corrected by the **Owner**, in conjunction with the **Owner's** Consulting Professional(s), to the satisfaction of the **Director of Public Works**. Once any and all damage or defect has been corrected by the **Owner**, the **Owner** may submit an application for **Final Acceptance Certificate**, signed by the **Owner's** Consulting Professional(s). If defects or deficiencies in the **Works and Services** are still apparent to the **Director of Public Works**, the application will be returned to the **Owner** unsigned with a report of the defects and deficiencies listed and with a statement of the length of time in which the defects and deficiencies shall be corrected by the **Owner** at its expense.
- 16.2 After receipt of application under section 16.1, the **District** shall provide the **Owner** with a **Final Acceptance Certificate** with respect to the **Works and Services** upon satisfactory completion by the **Owner** of all of the covenants and conditions in this Agreement, including but not limited to completion of all Deficiencies in the **Works and Services** and keeping the **Works and Services** in complete repair for the **Maintenance Period**.
- 16.3 Upon expiry of the **Maintenance Period**, the **District** shall return to the **Owner** any unused **Maintenance Security** held by the **District** pursuant to section 14, and sections 7.5 and 7.6 of this Agreement shall apply to the extent applicable.

17. USE OF SECURITY TO REMEDY BREACHES

- 17.1 If the **District** incurs any costs in correcting any breach of the **Owner's** obligations under this Agreement (including breaches other than non-completion of the **Works and Services**) and those costs are not paid by the **Owner** within 30 days of receipt of the **District's** invoice, the **District** may recover those costs from the **Security** or any other **Security** held by the **District** pursuant to this Agreement, and Section 7.4 applies.



FORM B

18. INDEMNIFICATION AND INSURANCE

18.1 The **Owner** shall indemnify and save harmless the **District**, and its officers, employees, **Council** members, contractors and agents (the "**District Officials**") from and against all claims, actions, proceedings, damages, fees, costs, liabilities, remediation of contamination costs, expenses (including actual fees of professional advisors), fines, penalties and other harm of any kind whatsoever, despite negligence on the part of the **District** and/or any of the **District Officials**, and whether related to death, bodily injury, property loss, property damage, property contamination, or consequential loss or damage, suffered or incurred by the **District** and/or any of the **District Officials** at any time, directly or indirectly, arising from, resulting from, connected with or related to:

- (a) any breach or default of the **Owner** under this Agreement;
- (b) any incident or occurrence on or about the Land;
- (c) any wrongful act, omission or negligence of the **Owner** or its members, shareholders, directors, officers, employees, agents, volunteers, contractors, subcontractors, tenants, lessees, licensees, customers, invitees or others for whom it is responsible in law;
- (d) damage to any property during the construction or provision or maintenance of the **Works and Services**;
- (e) liens, non-payment for labour or materials, Workers' Compensation assessments, employment insurance, federal or provincial tax, or union dues check off; or
- (f) the construction or provision, maintenance or repair of the **Works and Services** by the **Owner**, including defects in the **Works and Services** and non-repair of the **Works and Services**.

This indemnity shall survive any conclusion or other termination of this Agreement, in relation to any matter arising prior to expiry of the **Maintenance Period** applicable to the **Works and Services** in question.

18.2 The **Owner** shall take out and maintain at all times from commencement of construction and installation of the **Works and Services** until the **Director of Public Works** issues a **Final Acceptance Certificate** with respect to all of the **Works and Services**:

- (a) comprehensive general liability insurance against claims for bodily injury (including death) and property damage or loss arising from its carrying out the construction and installation of the **Works and Services** (including failure to properly carry out or negligence in carrying out the **Works and Services**), with the **District** as an additional insured, in an amount of not less than \$3,000,000.00

FORM B



combined single limit per claim and with a per claim deductible of not more than \$5,000.00; and

- (b) builder's risk insurance, insuring the **Works and Services** against loss or damage to the full replacement cost of the **Works and Services**, and if the **District** elects to complete the **Works and Services** as provided in this Agreement, the **Owner** is conclusively considered to have assigned the benefit of that insurance, and all proceeds of it, to the **District**.

The **Owner** must provide the **Director of Public Works** with proof in writing of insurance before commencing the **Works and Services** and at other reasonable times during the term of this Agreement. The insurance must contain a waiver or subrogation clause in favour of the **District** and a provision requiring the insurer to give the **District** 30 day's prior written notice before any alteration or cancellation of the policy is effective.

19. OWNER'S RISK

- 19.1 The **Owner** acknowledges and agrees that the **Owner** relies exclusively on its own expertise and the **Owner's** Consulting Professionals and contractors and that the **District** does not, by its approvals, inspections or acceptance of the **Works and Services**, warrant or represent that the **Works and Services** are in compliance with any enactment or warrant the quality, fitness for purpose, adequacy or safety of the **Works and Services**.

20. NO REPRESENTATIONS

- 20.1 The **Owner** acknowledges that the **District** has made no representations, covenants, warranties, guarantees, promises or agreements with the **Owner** with regard to the subject matter of this Agreement, other than those expressly made in this Agreement.

21. DISTRICT PROPERTY IN WORKS

- 21.1 Upon issuance of a **Construction Completion Certificate**, if the **Works and Services** are on a **Highway**, park or other land owned by the **District** (but subject to an easement to the contrary) or if an easement or statutory right of way agreement with the **District** so provides, the **Works and Services** shall become the property of the **District**, free and clear of any claim by the **Owner** or any person claiming through the **Owner**, without payment of any further compensation or consideration.

22. TERMINOLOGY

- 22.1 Wherever the singular or the masculine are used in this Agreement, they shall be interpreted as meaning the plural or the feminine or body corporate where the context requires.



FORM B

23. BINDING EFFECT

- 23.1 This agreement shall enure to the benefit of and be binding upon the parties hereto, their respective successors and permitted assigns. Subject to the terms of an approved assignment under Section 24, the **Owner's** obligations and rights under this Agreement shall continue in effect notwithstanding any transfer of title to all or part of the Land.

24. SALE OF LAND

- 24.1 The **Owner's** obligations and rights under this Agreement shall not be assigned without the written consent of the **District**, such consent not to be unreasonably withheld, provided the assignee is the **Owner** of the Land and the **Owner** pays the **District** an assignment consent fee of \$500.
- 24.2 In the event that the **Owner** proposes to transfer any part of the Land, prior to the issuance of a **Final Acceptance Certificate**, prior to the transfer the **Owner** shall:
- (a) obtain from the transferee an agreement in writing in favour of and in a form acceptable to the **District** under which the Transferee agrees to perform the obligations of the **Owner** under, and to be bound by, the terms and conditions of this Agreement; and
 - (b) where a portion of the **Works and Services** is to be located, obtain the transferee's written consent to entry by the **District** on that part of the Land, for the purposes of this Agreement.

25. NO PUBLIC LAW DUTY

- 25.1 Wherever in this Agreement the **District** is required or entitled to exercise any discretion in the granting of consent or approval, or is entitled to make any determination, take any action or exercise any contractual right or remedy, the **District** may do so in accordance with the provisions of this Agreement and no public law duty, whether arising from the principles of procedural fairness or the rules of natural justice, shall have any application.

26. GOVERNING LAW

- 26.1 This Agreement will be governed and construed in accordance with the laws in force in the Province of British Columbia.

27. FURTHER ACTS

- 27.1 The **Owner** shall execute and deliver to the **District** such agreements or other documents and do such other things as may be required by the **District** at any time and



FORM B

from time to time in order to evidence or give effect to the terms, conditions, intent and meaning of this Agreement

28. TIME OF THE ESSENCE

28.1 Time is of the essence of this agreement.

29. NOTICE

29.1 Any notice or other communication required or contemplated to be given or made by any provision of this Agreement shall be given or made in writing and either by facsimile transmission or electronic mail (and in either case shall be deemed to be received when delivered, to an email address or fax number first approved in writing for such purpose by the receiving party) or mailed by prepaid registered mail in any Canada Post Office (and if so mailed, shall be deemed to be delivered on the fifth business day following such mailing, except that, in the event of interruption of mail service notice shall be deemed to be delivered only when actually received by the party to whom it is addressed), so long as the notice is addressed as follows:

to the **Owner** at the address on the second page of this Agreement

and to the **District** at:

District of Port Edward
PO Box 1100
Port Edward, BC V0V 1G0
Attention: **Approving Officer**

or to such other mailing address as a party from time to time notifies the other party in writing.

30. FORCE MAJEURE

30.1 All obligations of the parties shall be suspended so long as the performance of such obligation is prevented, in whole or in part, by reason of labour dispute, fire, act of God, unusual delay by common carriers, earthquake, act of the elements, riot, civil commotion or inability to obtain necessary materials on the open market, and the period in which any party is required to perform any such obligation is extended for the period of such suspension. The impact of the **Owner's** financial circumstances upon the **Owner's** ability to perform this Agreement does not suspend the **Owner's** obligations under this Agreement.



FORM B

31. NO WAIVER

31.1 No provision of this Agreement is to be considered to have been waived by a party unless the waiver is expressed in writing by the party. The waiver by a party of any breach by another party of any provision is not to be construed as or constitute a waiver of any further or other breach.

32. NO EFFECT ON LAWS OR POWERS

32.1 This Agreement does not:

- (a) affect or limit the discretion, rights, duties or powers of the **District** under any enactment or at common law, including in relation to the use or **Development** of the Land;
- (b) affect or limit any enactment relating to the use or **Development** of the Land; or
- (c) relieve the **Owner** from complying with any enactment, including in relation to the use or **Development** of the Land.

33. SEVERABILITY

33.1 If any provision of this Agreement is held to be unenforceable by a court, that provision shall be severed from the remainder of this Agreement and the remainder shall continue in effect.

34. AUTHORITY

34.1 The **Owner** hereby represents and warrants to the **District** that it has the capacity to enter into this Agreement and fulfill its obligations under it, and that all resolutions and other corporate requirements have been duly passed, and that those signing this Agreement on its behalf have been duly authorized to do so.

35. AMENDMENTS

35.1 No amendment to this Agreement shall be effective unless it is made in writing and is duly executed on behalf of both parties.

36. SCHEDULES

36.1 The following schedules are annexed to and form part of this Agreement:

Schedule "A"	Approved Building Permit
Schedule "B"	Approved Drawings



FORM B

37. ACKNOWLEDGMENT

The **Owner** acknowledges having read and fully understood all the terms and conditions of this Agreement and confirms that this Agreement has been entered voluntarily.

IN WITNESS WHEREOF the parties have executed this agreement on the dates set out below.

DATED the _____ day of _____, 2

District of Port Edward, by its authorized signatories:

Mayor:

Corporate Officer:

DATED the _____ day of _____, 2

[NAME OF OWNER], by its authorized signatory(ies):

Name:

Name:



**District of Port Edward
Subdivision and Development Servicing
Bylaw No.544, 2014**

**Schedule "D"
Notice of Excess or Extended
Services Agreement**



REGULATIONS AND FORMS

Notice of Excess or Extended Services Agreement

The following form has been prepared by the Land Title Office and approved for use by the Ministry of Community Services.

Local Government Act

(Part 26)

NOTICE OF EXCESS OR EXTENDED SERVICES AGREEMENT

To: Registrar of Titles
Address

TAKE NOTICE that the land described below is subject to an excess or extended service agreement entered into between:

(Issuing Authority – Name of Local Government)
And

(Name, address and occupation of landowner)

PARTICULARS OF AGREEMENT

Legal Description of Land Affected:

Expiry Date _____

FURTHER PARTICULARS OF THE AGREEMENT MAY BE OBTAINED FROM THE
ISSUING AUTHORITY.

AND FURTHER TAKE NOTICE that you are hereby authorized to cancel the notation of the filing of this notice against the title to the land affected by it on or after its expiration without further application from us and we consent to a cancellation of the notation on the basis of effluxion of time.

Dated: _____

NAME OF LOCAL GOVERNMENT
by _____

Designated Municipal Officer
(Imprint of Official Seal)



**District of Port Edward
Subdivision and Development Servicing
Bylaw No.544, 2014**

**Schedule "E"
Application for Driveway
Access Permit**



DISTRICT OF PORT EDWARD

APPLICATION FOR DRIVEWAY ACCESS PERMIT

I, _____, being the owner/agent, apply for a driveway access permit as shown on the attached site plan and staked at/on:

LOT _____ BLK _____ PLAN _____ DL _____

SITE ADDRESS: _____

I agree to construct a driveway access in conformance with the District of Port Edward Subdivision and Development Servicing Bylaw requirements, and conditions set out in the attached sketch. I further agree to indemnify the District from any and all claims, demands, actions, suits or other proceedings by anyone, made or brought against the District by reason of, or arising out of the work covered in this application. I further agree to maintain the driveway access in good condition and repair.

NO CONSTRUCTION IS TO COMMENCE PRIOR TO SITE INSPECTION AND ISSUANCE OF A PERMIT TO CONSTRUCT

Signature _____ (Owner/Agent) Date _____

Address _____

Name of Owner/Agent (if different) _____

Please contact the Chief Administrative Officer with any questions

PERMIT TO CONSTRUCT A DRIVEWAY ACCESS

Permission has been granted to construct a driveway access to the above referenced property in accordance with the following conditions:

ALL CONSTRUCTION TO CONFORM TO THE ATTACHED DRIVEWAY SKETCH. OWNER/AGENT IS TO ENSURE THE ROAD BOULEVARD IS MAINTAINED IN GOOD CONDITION THROUGHOUT BUILDING CONSTRUCTION PERIOD.

OWNER/AGENT CALLS FOR INSPECTION OF DRIVEWAY GRADE PREPARATION

Signature: _____ DATE _____

INSPECTION – DRIVEWAY GRADE PREPARATION:

Date of Inspection: _____ Approved: _____

Not Approved: _____