VILLAGE OF PEMBERTON

BYLAW No. 677, 2011

A bylaw to regulate the subdivision and development of land

WHEREAS pursuant to Section 938 of the *Local Government Act a* Council may, by bylaw, provide regulations and requirements for the provision of works and services in respect to the subdivision of land including minimum subdivision and servicing standards.

AND WHEREAS it is deemed desirable to regulate the subdivision and development of land to promote safe and orderly development of the Village;

NOW THEREFORE, the Council of the Village of Pemberton, in open meeting assembled, **ENACTS AS FOLLOWS**:

1. CITATION

This Bylaw may be cited as "Village of Pemberton Subdivision and Development Control Bylaw No. 677, 2011."

2. BYLAW

SECTION 1.0 - PREFACE

1.1 Purpose

The purpose of this Bylaw is to regulate the subdivision and development of land, and to require the provision, design, and construction of works and services including highways. Such regulation is intended to provide orderly, safe and aesthetically pleasing development; to preserve the established amenities of the Village; and to ensure that subdivisions and developments are appropriately serviced and best suited to the use over the long term for which they are intended.

1.2 Organization

This Bylaw is organized into sections dealing with the following subjects:

Section One	Preface
Section Two	Definitions and Interpretation
Section Three	Administration
Section Four	Land Dedications - Subdivision
Section Five	Works and Services Required

This Bylaw has four schedules.

1.3 Bylaw Schedules

Attached to and hereby made an integral part of the Bylaw are the following schedules:

Schedule A	Level of Works and Services
Schedule B	Design Criteria and Standard Drawings
Schedule C	Servicing Agreement
Schedule D	Standard Forms

SECTION 2 – DEFINITIONS AND INTERPRETATION

2.1 Definition

In this Bylaw, unless the context otherwise requires, the following words and terms shall have the meanings hereinafter assigned to them:

"Applicant"	means a person applying for the approval of a subdivision or building permit.
"Approving Officer"	means a person appointed by the Village Council to act as Approving Officer pursuant to the provisions of the *Land Title Act* and *Local Government Act*.
"Construction Inspector"	means a person who, under the direction of the Village, inspects the construction of the works and services.
"Construction Schedule"	means a schedule indicating the planned start and completion dates of the major activities involved in installing the works and services.
"Consulting Engineer"	means a professional engineer, registered and in good standing with the Association of Professional Engineers and Geoscientists of British Columbia, and who is employed or retained by a consulting engineering firm.

“Developer”	means the party or contractor who has the authority to act on behalf of and represent the Owner in carrying out works and services under this Bylaw.
“Develop or Development”	means a Subdivision or activity that requires a development or building permit.
“Estimated Cost”	means the total cost of constructing works and services estimated by the Owner’s Consulting Engineer and approved by the Village Official.
“Excess or Extended Services”	has the meaning defined in by the *Local Government Act*.
“Final Acceptance Certificate (FAC)”	means the written document as set out in Schedule D of this Bylaw by which the Village confirms that the Developer has fulfilled the warranty obligations and all other requirements of this Bylaw in relation to works and services.
“Final Subdivision Approval”	means the approval granted by the Approving Officer when all relevant requirements of this Bylaw, the *Local Government Act*, the *Land Title Act*, any other relevant bylaws and legislation have been fulfilled.
“Highway”	has the meaning defined in the *Community Charter as* **"highway"** includes a street, road, lane, bridge, viaduct and any other way open to public use, other than a private right of way on private property;.
“Lane”	means a highway abutting the rear of a lot.
“Latecomer”	means an Owner of Benefiting Lands who wishes to connect to or use Excess or Extended Services prior to the expiration of a Latecomer Agreement to which the Benefiting Lands are subject; provided that a Latecomer who makes an Application for Subdivision Approval, with respect to the Benefiting Lands will also be considered an “Owner” of a Parcel or proposed Parcel for the purpose of this bylaw.
“Latecomer Agreement”	means an agreement between the Owner and the Village in the form defined by the Village as set out in Schedule C, as referred to in the *Local Government Act*.
“Latecomer Charges”	means those charges determined and imposed by the Village in accordance with Section 504 of this Bylaw.

“MMCD”	means the Master Municipal Construction Document published by the Master Municipal Construction Documents Association, most current edition.
“Owner”	means the registered Owner in the records of the Land Title Office of the site being subdivided or their duly authorized agent.
“Roads Classification Map”	means the map schedule prepared by the Village and is contained within the current Official Community Plan that identifies the classification of roads within the Village.
“Subdivide or Subdivision”	means the division of land into two or more parcels, whether by plan, apt descriptive words or otherwise.
“Village Engineer”	means the person or company appointed, from time to time, by the Village Council as the engineer for the Village or his duly authorized representative.
"Village"	means the Village of Pemberton.
“Village Official”	means Approving Officer or other duly authorized representative of the Village.
“Works and Services”	means any work, service or utility which is required by this Bylaw and includes highways, sidewalks, boulevards, boulevard crossings, transit bays, street lighting, wiring, electrical and communication distribution systems, water supply and distribution systems, fire hydrant systems, sewage collection, stations and disposal systems, drainage collection and disposal systems and such other infrastructure or systems should be require by this bylaw in connection with the subdivision of land.
“Zone”	means zone as created by Village of Pemberton Zoning Bylaw

Unless otherwise defined herein, any word or expression in this bylaw shall be the same meaning as any similar word or expression in the *Local Government Act*, the Village of Pemberton Zoning Bylaw, or any regulation or schedule pursuant thereto and in case of conflict the *Local Government Act* shall prevail.

2.2 Interpretation

a) In this Bylaw whenever words are used implying the subdividing or subdivision of land, those words shall be deemed to refer to the division of land into two or more parcels, whether by plan or by metes and bounds description or by a re-plotting scheme or otherwise.

b) Where the text refers to the word “subdivision” it shall be deemed that the requirements also apply to “developments”, where applicable, which may not involve the subdivision of land.

SECTION 3 - ADMINISTRATION

3.1 Compliance with Bylaw

No person shall subdivide or undertake development of land in the Village of Pemberton except in compliance with the provisions of this Bylaw.

3.2 Authority to Enter Lands

The Village Official is hereby authorized to enter at all reasonable times upon any property or premises to inspect same in connection with their duties under this Bylaw and to ascertain whether the provisions of this Bylaw are being complied with.

3.3 Applicants Responsibility, Other Legislation

Nothing in this Bylaw shall relieve the applicant from the responsibility to seek out and comply with legislation applicable to his undertaking. Neither the granting of a permit nor the issuance of any plans, specifications or documents or any inspection made by any municipal employee shall in any way relieve the applicant from full responsibility of all requirements.

3.4 Severability

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

SECTION 4 – LAND DEDICATION – SUBDIVISION

4.1 Highway Allowances

a) When the applicant proposes a highway allowance in a plan of subdivision, the Village Official will consider the sufficiency of the highway allowance by determining the road classification. Road classifications shall be based on a hierarchy of roads integrated into the existing or proposed adjoining road pattern, and are determined in relation to land use, configuration of the land, the classification of the existing or approach highway.

b) The applicant shall provide, without compensation:

   (1) For the purpose of a highway within the subdivision, land up to 25 metres in width; or

   (2) For the purpose of widening a highway that borders or is within the subdivisions, land up to 10 metres in width.

c) Additional dedication may be required at intersections with arterial roads in order to provide traffic turn-lane channelization, or wide radius curbs.

d) Additional dedication may be required to accommodate emergency egresses and turnarounds, trails, utility transformer pads and other appurtenances.

4.2 Exceptions to Highway Standards

In a subdivision where the road layout is such that a highway or a portion thereof serves or will serve the adjoining properties outside the subdivision, the Village Official may allow the dedication and construction of new half-roads along the perimeter of the subdivision, provided, however, the following conditions are satisfied:

a) There is sufficient highway dedication to provide for two-way traffic flow, sidewalk, street lights, and drainage collection system.

b) Additional pavement width is needed at the intersection of lanes in order to provide turn radius, and may be needed at intersections with arterial roads in order to provide traffic turn lane channelization.

4.3 Emergency Access

Where required by the Village Official, an emergency access shall be provided in accordance with the standards given in Section 6.0 of Schedule B to this Bylaw.

4.4 Parkland Dedication at Subdivision

a) The applicant shall satisfy the requirements of the Village Official with respect to the provision of parkland in accordance with the requirements of the *Local Government Act* and the policies of the Village Official Community Plan.

b) Where the Village Official determines that the applicant shall pay cash-in-lieu of parkland dedication, the amount to be paid shall be equivalent to 5% of the market value of all the land proposed for subdivision in accordance with provisions of the *Local Government Act*.

4.5 Exceptions to Parkland Dedication

In accordance with the *Local Government Act*, parkland dedication does not apply:

a) to subdivision of fewer than three (3) additional lots; or
b) to subdivisions where the smallest lot being created is larger than two (2) hectares; or
c) to the consolidation of existing parcels: or
d) to a subdivision of fewer than three (3) additional lots would be created if the parcel proposed to be subdivided was itself created by subdivision within the past five (5) years.

4.6 Water Course Dedication

For the purposes of the preservation, installation or maintenance of water courses and drainage ways, statutory rights-of-way or other forms of dedication of a width to be determined by the Village Official and in accordance with Provincial and Federal legislation, shall be deposited in the Land Title Office and shall run with the land.

SECTION 5 – WORKS AND SERVICES REQUIRED

5.1 Servicing Requirements – General

a) Except as herein provided, no person shall subdivide or develop land except in conformity with the relevant requirements of this Bylaw and, except as herein specifically provided, all works and services required to be constructed and installed shall be completed at the expense of the developer.

b) Unless otherwise approved by a Development Permit, or a Development Variance Permit, issued by the Council pursuant to the *Local Government Act*, servicing shall be as set out this Bylaw and all construction and installation shall be carried out in conformity with requirements of Schedule B to this Bylaw.

c) Notwithstanding anything contained in this Bylaw, works and services on highways immediately adjacent to lands being subdivided or the lands being developed:

(1) shall only be required if they are directly attributable to the subdivision; or building permit; and
(2) shall not include any works or services included in the calculations used to determine Development Cost Charges payable on the subdivision of the land, or on the approval of a building permit, unless the owner of the land being subdivided agrees to provide such works or services, and in such case the cost of such works or services shall be deducted from the applicable class or classes of Development Cost Charges that would otherwise be payable in connection with the subdivision or the building permit.

d) The Owner of any lands which are proposed to be subdivided or developed shall provide each parcel of land within the proposed subdivision or development with:

(1) Roads
All existing highways immediately adjacent to lands being subdivided or developed and all new highways within or required in connection with a proposed subdivision or development shall be dedicated and cleared to the full width as set out in Schedule A hereto, which forms part of this Bylaw, and shall be graded, drained, surfaced and otherwise constructed in accordance with the standards contained in Schedule B.

(2) Sidewalks, Boulevards, Street Lighting
Sidewalks, boulevards and ornamental street lighting on all highways in and immediately adjacent to the lands in accordance with the standards contained in Schedule B hereto.

(3) Water Distribution System
A water distribution system including the standard service connection, which shall be constructed in accordance with the standards contained in Schedule B, and shall be connected by trunk water mains to an existing community water system.

(4) Sanitary Sewage System
A sanitary sewage collection and disposal system including the standard service connection, constructed in accordance with the standards contained in Schedule B, and the sewerage system shall be connected by trunk sewer mains to an existing community sanitary sewerage system.

(5) Storm Drainage Collection System
A storm drainage collection system including the standard service connection, constructed in accordance with the standards contained in Schedule B, and the drainage system shall be connected by trunk drainage mains to an existing drainage system of the Village.

5.2 Statutory Rights-Of-Way

For the purpose of the installing or maintaining works and services, statutory rights-of-way shall be provided where necessary and shall be deposited in the Land Title Office and shall run with the land. It is the responsibility of the applicant to negotiate and secure any Rights-of-Way or Easements deemed necessary to the application and to process the legal documentation to its finalization at Land Titles Office, and pay all costs including:

a) B.C. Land Surveyor costs
b) Legal fees
c) Registration costs and fees including Land Titles Office fees.

The Village Official may require the Applicant to provide a lawyer's or notary's undertaking satisfactory to the Village's solicitor to ensure registration of these documents is completed.

5.3 Excess or Extended Capacity

a) The Village may require that all or parts of the water, sewage, drainage and highway systems required in conjunction with a subdivision or building permit provide excess or extended service. In that case the Village shall proceed in accordance with the provisions of the *Local Government Act, Section 939*.

b) Pursuant of the *Local Government Act, Section 939 (8)*, interest charged annually shall be the commercial prime rate of interest plus two percent.

5.4 Strata Development Standards

All private roads within or required in connection with a proposed subdivision development, Bare Land Strata Plan, Phased Strata Plan or the conversion of a previously occupied building into Strata Lots shall:

a) be provided with adequate storm sewer drainage;
b) be constructed to a loading standard of at least H-20 as specified by the regulations of the American Association of State Highway Officials;
c) be cleared to a width of at least 7.0 metres with a paving width of 7.0 meters except where they provide frontage to residential, commercial or industrial building units, in which case they shall be cleared to a width of at least 9.0 metres;
d) have a paved surface of at least 6.0 metres in width;
e) have a centre-line radius of turn of not less than 12 metres;
f) have an overhead clearance of not less than 5 metres;
g) have a maximum centre-line grade of 15% and a maximum change of grade of 8% over a minimum distance of 15 metres;
h) have paved turnaround facilities as required by the Village of Pemberton Fire Department for any dead-end portion of the highway which exceeds 90 metres in length;
i) Be located and aligned to the satisfaction of the Village Official;

j) be connected to a public highway; and
k) Street lights within the strata are required pursuant to this Bylaw, and must also be dark-sky friendly.

All systems within a strata plan shall be built in accordance with the applicable costs including but not limited to the BC Building Code, the Health Act, the Canadian Electrical Code, the Canadian Gas Association Standards, the Safe Drinking Water Regulations, and the Sewage Disposal Regulations. Where these codes do not provide standards, construction shall be in accordance with MMCD and good engineering practice.

5.5 Exceptions to Servicing Requirements

a) Works and Services Existence

Without limiting the generality of Section 501, the applicant will not be required to provide a particular work or service where that particular work or service exists to the standards required in Schedule B to this Bylaw.

b) Subdivisions for Specific Purpose

The works and services requirements of this Bylaw do not apply to a subdivision which creates only:

1. a highway dedication;
2. park land;
3. a parcel for the installation of public utilities and related structures and equipment;
4. a consolidation or a lot line adjustment, in which the number of buildable lots is not increased and the land use regulations permit only single-family or two family dwellings.

c) Development Variance Permits

Council may approve Development Permits to vary the requirements of this Bylaw to establish special standards for works and services.

d) Works and Services Impractical to Build

Where, in the opinion of the Village Official;

(1) it is not practical to build all or part of the required works and services until a project of greater scope can be arranged: and

(2) the work or service is not immediately required for the subdivision or the building: the Applicant may not be required to build the part so identified by the Village Official. Instead the applicant may provide the Village with security in the form of cash or Letter of Credit in an amount, accepted by the Village Official, to equal the cost of designing, constructing and providing the work or service plus 20%. The funds

will be placed by the Village in an interest bearing reserve until they are used to provide the said work or service.

5.6 Levels of Works Services Requirement

Refer to Schedule A – Level of Works and Services

3. OFFENCE AND PENALTY

Any person who contravenes any of the provisions of this Bylaw may be subject to fines specified in the Village's Bylaw for municipal tickets as authorized under Part 8, Division 3 of the *Community Charter*, S.B.C 2003, Chap. 26..

Any person who violates a provision of this Bylaw commits an offence punishable on summary conviction and shall be liable to a fine of not less than Two Thousand ($2,000) Dollars and not more than Ten Thousand ($10,000) Dollars for each day on which an offence exists or is continuing, together with such costs as a court of competent jurisdiction may order. For the purposes of enforcing any judgment of a court or collecting any fine levied hereunder, the provisions of the *Offence Act*, R.S.B.C. 1996 c. 338, as amended, shall apply.

Any person who contravenes any of the provisions of this Bylaw may have proceedings brought against them in Supreme Court to enforce, or prevent or restrain the contravention of any provision of this Bylaw.

Any development application contravening any of the provisions of this Bylaw may be denied, deferred, given further review or required to be amended by Council.

4. REPEAL

The following Bylaw is hereby repealed: "Village of Pemberton Subdivision and Servicing Bylaw No. 219, 1989" and all amendments thereto are hereby repealed.

READ A FIRST TIME this 20 day of December, 2011.

READ A SECOND TIME this 20 day of December, 2011.

READ A THIRD TIME this 1st day of May, 2012.

RESCINDED THIRD READING this 5th day of June, 2012.

READ A THIRD TIME AS AMENDED this 5th day of June, 2012.

ADOPTED this 19th day of June, 2012.

_____ _____

Mayor Corporate Officer

SCHEDULE A

SUBDIVISION AND DEVELOPMENT CONTROL BYLAW NO. 677, 2011

LEVEL OF WORKS AND SERVICES

VILLAGE OF PEMBERTON

SUBDIVISION AND DEVELOPMENT CONTROL BYLAW NO. 677, 2011
LEVEL OF WORKS AND SERVICES

The levels of works and services to be provided in subdivisions shall conform to the following table for the various zones as set out in the Village of Pemberton Zoning Bylaw No. 466, 2001 and amendments thereto.

	ZONE										
Description	**RS**	**RT**	**RC**	**MHP**	**C**	**M**	**P**	**PR**	**A**	**AP**	**CD**
1. Water Service											
Village Service	R	R	R	R	R	R	R	R	NA	R	R
2. Sanitary Service											
Village Service	R	R	R	R	R	R	R	R	A	R	R
3. Drainage											
Enclosed Pipe System	R	R	R	R	R	R	R	NA	NA	R	R
Open Channel (Ditch)*	NA	NA	NA	NA	NA	NA	NA	A	A	NA	NA
4. Highways											
Collector/Local Curbs & Gutter	R	R	R	R	R	R	R	R	NA	R	R
5. Sidewalks											
Both Sides	NA	NA	NA	NA	R	NA	R	R	NA	NA	NA
One Side	R	R	R	RA	NA	R	NA	NA	NA	NA	R
6. Street Lighting	R	R	R	R	R	R	R	R	A	A	R
7. Non-Municipal Services											
Power; Underground	R	R	R	RA	R	R	R	R	NA	R	R
Power; Overhead	NA	NA	NA	NA	NA	NA	NA	NA	A	NA	NA
Telephone; Underground	R	R	R	RA	R	R	R	NA	NA	R	R
Telephone; Overhead											
Cablevision; Underground	R	R	R	RA	R	R	R	NA	NA	R	R
Cablevision; Overhead											

**Open Channel (Ditches) shall be considered for Hillside subdivisions in accordance Village design criteria and standard drawings*

Definitions:
R - means required
RA - means required if available in the Village
A - means allowed/required where a higher level of service is not required

Zone:
RS - Single and Two Family Unit
RT - Multi-family
RC - Mixed Use
MHP - Mobile Home Park
PR - Parks and Recreation
CD – Comprehensive Development
C - Commercial
M - Industrial
P - Civic Uses
A – Agriculture
AP – Airport

SCHEDULE B

SUBDIVISION AND DEVELOPMENT CONTROL BYLAW NO. 677, 2011

DESIGN CRITERIA AND SPECIFICATION

SCHEDULE B
GENERAL INDEX- BYLAW 677, 2011

1.0 GENERAL INFORMATION

1.1 INTRODUCTION

Schedule B of the Subdivision and Development Control Bylaw and identifies the Design Criteria, Specifications and Standard Drawings acceptable to the Village.

1.2 SCOPE AND USE OF THIS MANUAL

Schedule B is prepared for providing guidelines to the Developer and the development industry in the design of engineering servicing facilities and systems to be incorporated in the utilities infrastructure of the Village.

It is intended to provide a minimum design criteria and standard for proposed works. The onus is on the Developer to ensure that their designs meet accepted engineering principles and are adequate for the site conditions and their accepted uses.

1.2.1 MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (MMCD), CURRENT EDITION

The provisions of the Bylaw are to be applied in conjunction with the Master Municipal Construction Documents, most current edition, which otherwise apply to all Works and Services constructed within the Village.

Where the provisions of this Bylaw are in conflict with the Master Municipal Specifications, the provisions of this Bylaw take precedence, unless otherwise agreed to in writing by the Village Official.

1.2.2 MASTER MUNICIPAL CONSTRUCTION DOCUMENT, DESIGN GUIDELINE MANUAL CURRENT EDITION

The provisions of this Bylaw are to be applied in conjunction with the Master Municipal Design Guideline Manual, most current edition, which otherwise applies to all Works and Services constructed within the Village.

Where the provisions of this Bylaw are in conflict with the Master Municipal Design Guideline manual, the provisions of this Bylaw take precedence, unless otherwise agreed to in writing by the Village Official.

2.0 DESIGN CRITERIA

2.1 INTRODUCTION

The purpose of this section is to outline the minimum standards and requirements the Village will accept in the design and As-Built submissions for engineering work(s).

It is the specific intent of the Village to require quality submissions for design and As-Built submissions. It is recommended that whenever engineering works are required or proposed, the Consulting Engineer arrange for a pre-design meeting to ensure compliance with the latest Village standards, specifications and policies.

Incomplete or substandard submissions will be returned to the Consulting Engineer without comment on the drawings and with a short letter of explanation as to why the drawings are being returned. A subsequent re-submission which remains incomplete or sub-standard will result in a request to meet with the Consulting Engineer, the Developer and the Village Official.

Where a question arises, please contact the Village Official for clarification.

All submissions shall reflect and comply with the following:

2.1.1 All applicable requirements of this Bylaw.

2.1.2 All applicable requirements of the Village, including but not limited to:
i) Official Community Plan
ii) The existing Zoning Bylaw(s)

2.1.3 Be designated and dimensioned in Standard Metric units.

2.2 SURVEY INFORMATION

All surveys shall be conducted in a safe manner so as not to create a nuisance to traffic or the public at large. The permission of the registered owner is required before entering private property.

All elevations shall be from Geodetic Datum.

Originating benchmarks and integrated survey monuments shall be noted on all plans as well as those to be established in the work.

Copies of legible field notes shall be made available to the Village upon request.

Centre lines (or offset lines) are to be marked and referenced in the field and all chainage shall be keyed to the legal posting.

All existing items such as manholes, catch basins, fire hydrants, poles, electrical and communication kiosks, lift stations, driveways, servicing kiosks, lift stations, driveways,

existing dwellings, fences, trees, hedges, unusual ground conditions and other features identified by the Village Official shall be noted should they exist.

Where applicable, cross sections will be required. The section shall include centreline, edge of pavement or gutter line, edge of shoulder, ditch invert, top of ditch, property line, and an existing ground elevation inside property line.

2.3 DRAWING SUBMISSION

All drawings shall be prepared in metric, on standard A1 sheets, in accordance with the following requirements and all other applicable requirements of this Bylaw.

All drawings shall be signed and sealed by a Professional Engineer registered in British Columbia.

All drawings shall clearly identify the works in sufficient detail.

A complete set of Engineering Design drawings shall include, in the following sequence:

2.3.1 Cover Sheet

The Cover Sheet shall note the Consulting Engineer's name, the Developer's name, the Village project number, if applicable, the legal description of the lands involved, a site plan at a 1:5000 scale, and an index.

The site plan shall note all proposed roads and the proposed subdivision layout. The cover sheet may be utilized to show the drainage catchment area.

General notes should be located on this sheet.

2.3.2 Key Plan

The Key Plan shall be at a 1:500 scale and shall note all proposed services, including street lighting. If more than one sheet is required, note the westerly or southerly portion first and identify as Key Plan "A" with additional plans noting "B" and "C", etc.

2.3.3 Storm Water Management Plan

The Storm Water Management Plan shall be 1:500 scale and identified as per key plan system if more than one sheet is required.

2.3.4 Water

Plan and profile drawings shall show all grades, inverts, curves, radii, valves, hydrants, bends, and other features. The scale shall be 1:500 for plans and 1:50 for profile. The full pipe shall be shown for the watermain on the profile. All cross over points with sewers shall be noted and where the separation between the invert of the watermain and the top of any sewer is less than 0.5m, the watermain shall be protected in accordance with Ministry of Health requirements.

2.3.5 Storm Sewers

Plan and profile drawings shall show grades, inverts, manholes, catch basins, and other features. The scale shall be 1:500 for Plan and 1:50 for profile. Symbols to denote the service connection elevation at the property line shall be shown on the profile plan, as well as the minor and major system hydraulic grade lines. The full pipe shall be shown on the profile.

2.3.6 Sanitary Sewers

Plan and profile drawings shall show grades, inverts, manholes, and other features. The scale shall be 1:500 for Plan and 1:50 for profile. Symbols to denote the service connection elevation at the property line shall be shown on the profile plan. The full pipe shall be shown on the profile.

2.3.7 Roads

Plan and profile drawings shall show all driveways, alignments and grades. The scale shall be 1:500 for plans and 1:50 for profiles.

2.3.8 Road Cross Sections

Road cross-sections shall be scaled at 1:100 horizontal and 1:50 vertical and shall note the existing ground elevation, the proposed elevations of the road centreline, the curb and gutter (or road edge) and property lines. Cross-sections are required at 20.0m intervals. Additional sections may be required where excessive cuts or fills are involved.

2.3.9 Ornamental Street Lighting Plan

Ornamental Street Lighting plans shall be a plan view (1:500) of the street lighting proposal designed, signed and sealed by a Professional Engineer. There shall be General Notes included on the Plan noting reference(s) to the Village Standards and Specifications and the appropriate design criteria. Generally, street lights shall be located at all intersections and within 1 m of the property lines. Any street lighting plan(s) should be accompanied with the photometric calculations.

2.3.10 Construction Details

Construction Details shall show a proposal for construction which are not covered or specifically detailed in the Village Standards and Specifications. Where there is a Village Standard, it is expected to refer to the Drawing Number. It is not necessary to include or provide drawings for work(s) for which there is a Village Standard Drawing.

The Consulting Engineer's seal and signature shall be noted on sheets of design submissions. Failure to do so will result in the Plans being returned without comment. The Consulting Engineer's seal and signature shall infer that the works as proposed are structurally sound, comply with the applicable design criteria of this Bylaw, and good engineering practice.

2.3.11 Notwithstanding the previously detailed requirements, the following additional information is to be noted in design submissions:

i) the size, grade, inverts, and type of material on profile sections;
ii) the locations, off-sets, curvatures, size and identification of the mains noted on the Plan sections;
iii) the clearance between mains at cross-over points;
iv) all existing structures, including houses, sheds, fences, wells, septic tanks and fields, shall be shown on the appropriate drawings(s), with a notation indicating their fate (i.e. to be removed, filled, etc.).
v) in rural subdivisions, with an open ditch drainage system, note the size of (future) driveway culverts required to conform to the design.

2.3.12 The first complete design submission shall consist of:

i) three complete sets of drawings;
ii) two extra key plans;
iii) soils report (to verify road structure design);
iv) photometries (lighting calculations) for street lighting plans if specifically requested by the Village Official;
v) all applicable utility calculations (water, sanitary, storm sewer) when specially requested by the Village Official;
vi) any additional design briefs identified as necessary by the Village Official.

2.3.13 Subsequent design submissions requiring changes to the previous submission shall consist of:

i) three complete sets of drawings;
ii) a complete construction cost estimate;
iii) all submissions subsequent to first submission shall have highlighted with yellow any changes made by the Consulting Engineer which are in addition to "Red Line" changes required by the Village;.
iv) items 'Red Lined" must be addressed by the Consulting Engineer. Failure to do so will result in submissions being returned.

2.3.14 The final submission for Village acceptance shall consist

i) three complete sets of drawings;
ii) digital copies of design drawings in pdf and AutoCAD (latest version) format.

2.4 CONSTRUCTION ESTIMATE CALCULATION

The construction estimate shall be broken down in a format as defined in MMCD.

Note: Hydro and telephone cost estimates are required and the estimated costs are to be included in the bond required under the Subdivision Servicing Agreement. These items and costs will be reviewed and amended where or if necessary.

2.5 SERVICE CONNECTION CARDS

The Consulting Engineer will provide service connection cards for each development where available. These cards are to indicate clearly and accurately, the location, depth and size, and material of construction, of each Village utility connection. The Village project number shall be required on all cards. Service Connection Cards are considered part of the As-Built submission and shall be provided in paper copy in addition to pdf and AutoCAD (latest version) format.

2.6 AS-BUILT SUBMISSIONS

The following procedures shall be followed in the submission of As-Built drawings for Village acceptance.

2.6.1 The Consulting Engineer shall submit two complete sets of paper prints, including hydro, telephone and cable As-Built, except for the road cross-section sheet(s), and a complete set of Service Connection Cards for Village review.

2.6.2 One marked-up set of the As-Built paper prints will be returned to the consultant for revision. If there are minor changes, it may be requested that the prints with the revisions noted, be submitted for Village acceptance. If there are numerous amendments, it is likely that the Consulting Engineer will be requested to resubmit two sets of revised paper prints for a second review.

2.6.3 When the Village is satisfied with the As-Built submission, the Consulting Engineer will be requested to submit the following:

i) A digital copy of the AutoCAD (latest version) files containing the As-Built drawings.
ii) A digital pdf files containing As-Built drawings signed and sealed by the Professional Engineer.
iii) Two sets of paper prints with the following certification:

The signature and seal by the Professional Engineer who supervised the required inspections. One set will be returned to the Consulting Engineer upon acceptance by the Village.

2.6.4 The Village shall receive all documentation in 2.6.3 prior to issuing Substantial Completion for the project unless otherwise approved by the Village Official.

3.0 WATER SYSTEM

3.1 GENERAL

3.1.1 The water distribution system design should be prepared under the direction of a design professional who has the appropriate experience and is registered with the Association of Professional Engineers and Geoscientists of British Columbia.

3.1.2 Consulting Engineers retained by the Owner to design the works and services must consult with the Village Official to determine what existing information may be of assistance to them.

3.1.3 The water system design is to be done utilizing a calibrated water model acceptable to the Village unless the system design, as determined by the Village Official, is not complex.

3.2 PER CAPITA DEMAND

Table 3.1 – Per Capita Demand	
Average daily domestic flow	455 litres/capita/day
Maximum daily domestic flow	910 litres/capita/day
Peak hour domestic flow	1820 litres/capita/day

3.2.1 The design criteria noted in Table 3.1 must be used for most applications. Where the flow characteristics of the development area are substantially different, the criteria may be modified.

3.2.2 Non-residential demand are defined by MMCD.

3.3 FIRE FLOW DEMAND

3.3.1 Fire flow demand calculations are defined by MMCD.

3.3.2 Where a difference arises between MMCD's minimum requirement and the "Water Supply for Public Fire Protection 1999", published by Fire Underwriters Survey, the more stringent requirements shall take precedence.

3.4 WATER DISTRIBUTION SYSTEM PIPE FORMULA

3.4.1 The system shall be designed to provide day to day domestic supply and demand flows for fire protection.

3.4.2 Design computations for water distribution systems will be based on the Hazen-Williams formula.

3.5 WATER PRESSURE

3.5.1 The design criteria noted in this subsection must be used except where the flow characteristics of the development area are substantially different, the criteria may be modified to take into account the differences.

3.5.2 The water system must be designed to provide gravity flow domestic water at the design building main floor elevation on each parcel in accordance with Table 3.2.

Table 3.2 – Design Pressures	
Minimum pressure at peak demand	300 kPa (44 psi)
Maximum allowable pressure	850 kPa* (123 psi)
Minimum pressure for Fire Flow plus Max Day Demand	150 kPa (22 psi)

*Subject to approval from the Village Official, the maximum allowable pressure may be increased to 1035 kPa (150 psi) for systems with multiple pressure zones.

3.6 HYDRAULIC NETWORK CONSIDERATION

3.6.1 Watermains must be looped wherever possible. Where dead ends are unavoidable, and approved by the local authority, blow-offs or blow-downs should be provided. In no instance shall a permanent dead end exceed 150m in length. Blow-off and blow-down sizes are:

50mm dia. for 100mm and 150mm dia. watermains
100mm dia. for 200mm dia. and larger watermains

3.6.2 Where practical, and approved by the Village, a hydrant may serve a secondary role as a blow-off.

3.6.3 Where the water system network is inadequate, installation of supplementary mains may be required and may necessitate the provision of rights-of-way in favor of the Village.

3.6.4 In residential areas, water mains servicing fire hydrants must be 150mm diameter or larger.

3.6.5 Water mains in commercial/industrial/institutional areas shall be designed to take into account anticipated demands and fire flows, and the minimum allowable size is 200mm.

3.6.6 The minimum allowable design velocity under fire flow conditions should be 3.5 m/sec.

3.7 MINIMUM DEPTH OF COVER

3.7.1 The cover over any domestic water main or service must not be less than 1.8m.

3.8 MINIMUM CLEARANCE

3.8.1 At all locations, there must be a minimum lineal horizontal clearance of 1m between the water main and other existing or proposed underground services or open ditches, except sanitary sewer and storm drains.

3.8.2 A minimum horizontal clearance of 3m must be maintained between the water main and a sanitary sewer or storm drain, or where this is not possible, the clearance shall be in accordance with the Ministry of Health regulations.

3.8.3 Where it is necessary for the water main to cross other underground services, the crossing must be made at an angle greater than 20 degrees horizontal.

3.8.4 The design drawings must indicate whether the water main passes over or under other underground services it is crossing.

3.9 HORIZONTAL ALIGNMENT AND CORRIDORS

3.9.1 Water mains must be normally designed to be parallel to the road centerline.

3.9.2 Water mains must be located within the designated corridor normally in the road right-of-way or a dedicated easement as indicated in the applicable Standard Drawings of the typical cross section for that road.

3.9.3 Curved mains will not be permitted.

3.9.4 Water main extensions shall extend to and terminate at the furthest property line of the last lot it services complete with a blow down.

3.9.5 When the utility is required to cross private land(s), the right-of-way must be surfaced and graded accordingly to allow access for Village maintenance vehicles to repair or replace the utility line and be a minimum of 3.0m wide.

3.10 VERTICAL ALIGNMENT

3.10.1 Water mains must be designed to minimize high points in the main. Where a high point is unavoidable, either a hydrant or air release valve should be installed at that point.

3.10.2 A fire hydrant or blow down must be installed at low points in the water main.

3.11 VALVES

3.11.1 In general, valves must be located as follows:

a) In intersections, in a cluster at the pipe intersection or at the project property lines, to avoid conflicts with curbs and sidewalks;
   i) 4 valves at “X” intersection
   ii) 3 valves at “T” intersection

b) Not more than 200m apart for single family residential areas;
c) Must be at both ends of a utility right-of-way;
d) It is possible to isolate a section of water main by operating no more than 4 valves;
e) In locations and at a frequency so that not more than one hydrant is out of service when a section of the main line is turned off;
f) Additional valving may be required due to phasing of subdivision development.

3.11.2 Butterfly valves with gear operators will be allowed in mains larger than 300mm.

3.12 HYDRANTS

3.12.1 The Consulting Engineer must consider the existing and intended use in the area, and ensure that adequate spacing is provided in accordance with the Standard Hydrant Distribution Table in the "Water Supply for Public Fire Protection 1999", published by Fire Underwriters Survey. Preferred locations at intersection corner cuts.

3.12.2 Hydrants must be located so that the spacing is never greater than 150m in single family residential areas and not more than 90m from a building.

3.12.3 The design and location of the hydrants must not conflict with existing or proposed street lights, power poles, transformers or driveways, etc.

3.12.4 In mid-block locations, fire hydrants shall be located at the property lines projects

3.12.5 Hydrant access provisions may be required and placed strategically and shall be reviewed and approved by the Village Official.

3.12.6 Hydrant type are to be approved by the Village Official and be red in colour.

3.13 AIR VALVES

3.13.1 The general application of the three types of air valves must be:

a) Air/Vacuum valves for filling or discharging mains and preventing negative pressures.
b) Air release valves at high points for small air release during normal operation.
c) Combination valves for combination air/vacuum and air release valves.

3.13.2 Combination air valves must be installed at the summit of all mains 250mm diameter and larger, except where the difference in grade between the summit and valley is less than 600mm.

3.14 BLOW OFFS

3.14.1 Blow-offs or hydrants are required at the dead ends of all water mains.

3.15 THRUST RESTRAINT

3.15.1 Concrete thrust blocking and/or adequate joint restraining devices must be provided at bends, tees, wyes, reducers, plugs, caps, valves, hydrants and blow-offs.

3.16 SERVICE CONNECTIONS

3.16.1 Service connection size should be calculated on the basis of the designated land use including sprinkler systems and/or on-site hydrants, where applicable. In any case, the minimum size is 19mm.

3.16.2 Each service should have a shut-off located within 300mm of the property line on the public side. Each connection of 100mm diameter or larger required a check valve at the property side of the shut-off.

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3.16.3 Main stops must be staggered and not less than 2.0m apart, along the main line.

3.16.4 The preferred location of the curb stop at the end of each service pipe is located 0.3m offset from the property line, on the road right-of-way, and at the center of each lot. Where such location will conflict with other services, the location may be revised with the approval of the Village.

3.16.5 Services and curb stops must have a minimum cover of 1.8m and curb stops must be no deeper than 2.0m.

3.16.6 All meters shall be supplied and installed by the Developer under the direct supervision of the Village staff and shall be in a location easily accessible to the Village at all times for the purposes of emergency, reading and/or maintenance activities. All water service connections require individual water meters per the standard detail drawing VOP-W11. Strata developments shall be serviced with a single water meter.

3.17 RESERVOIR

Reservoir design criteria is defined in MMCD

3.18 PUMP STATIONS

Pump Station design criteria is defined in MMCD

3.19 PRESSURE REDUCING STATIONS

Pressure Reducing Station design criteria is defined MMCD

3.20 MANUALS

3.20.1 Supply (3) copies of operating and maintenance manuals:

3.20.2 Bind contents in a three-ring, hard covered, plastic jacketed binder, name of facility to be embossed onto binder cover and spine.

3.20.3 Each section shall be separated from the preceding section with a plasticized cardboard divider with a tab denoting contents of the section.

3.20.4 Digital copies of all reports are required.

3.20.5 Contents to include:

a) Title sheet, labeled “Operation and Maintenance Instructions”, and containing project name and date.
b) List of contents.
c) Reviewed shop drawings of all equipment.
d) Equipment list showing all model and serial numbers.
e) All equipment manufacturers’ manuals.
f) As-built drawings of all mechanical, electrical, control and alarm installations, including a digital PDF and AutoCAD (latest version) format are required.
g) Full description of system operation including: design points, designed pump and system curves, ultimate capacity, area served and any relevant design criteria relevant to the operation of the system.
h) Full description of entire mechanical, electrical and alarm system operation.
i) Names, addresses and telephone numbers of all major sub-contractors and suppliers.
j) Commissioning report showing pressures, flows, current draw for all possible operating conditions.

3.20.6 All SCADA programming shall be provided to the Village in digital format.

3.21 FACILITY ACCESS

Paved vehicular access must be provided to all reservoirs and pump stations. The minimum standard must be as for an emergency access road with curbing and drainage provisions as may be required. In any case, the maximum facility access grade shall not exceed 12%.

4.0 SANITARY SYSTEM

4.1 GENERAL

4.1.1 The sanitary sewage collection system design should be prepared under the direction of a Consulting Engineer who has the appropriate experience and is registered with the Association of Professional Engineers and Geoscientists of British Columbia.

4.1.2 Consulting Engineers retained by the Developer to design the works and services must consult with the Village Official to determine what existing information may be of assistance to them.

4.1.3 The sanitary sewer system is to be designed using a calibrated sanitary sewer model acceptable to the Village Official, unless the Village Official determines the system is not complex.

4.2 DESIGN FLOWS

4.2.1 The sanitary sewer system must be designed based on the following criteria:

a) Residential Average Domestic Flow Rate = 410 litres/capita/day
b) Commercial Average Flow Rate = 22,500 litres/day/hectare
b) Infiltration rate = 0.17 l/s/ha
d) The design flows shall be calculated using MMCD methodology.
e) Peak flows shall be calculated using MMCD methodology.

4.3 PIPE FLOW FORMULAS

4.3.1 Gravity Sewers: shall be calculated using MMCD methodology.

4.3.2 Force Main Sewers: shall be calculated using MMCD methodology.

4.4 MINIMUM PIPE DIAMETER

4.4.1 The minimum permitted size of pipe is:

a) 200mm diameter mains.
b) 100mm diameter – services and force mains.

4.5 MINIMUM VELOCITIES

4.5.1 The minimum velocity must be 0.6 m/s.

4.5.2 There is no maximum velocity; however, consideration must be given to scour problems and the dynamic loading on manholes where flow exceeds 3.0 m/s.

4.5.3 Anchoring must be incorporated where the grade(s) of the sewer is/are 15% or greater in accordance with MMCD Drawing G8.

4.6 MINIMUM GRADE

4.6.1 The grade of any sewer is governed by the minimum velocity requirement of 0.6 m/s.

4.6.2 The last end section of a main that will not be extended in the future must have a minimum grade of 1.0% where 200mm diameter pipe is proposed.

4.6.3 Forcemain grades are as indicated for Water Distribution

4.7 MINIMUM DEPTH AND COVER

4.7.1 The minimum depth of the sewer main (from the finished surface of the road or grade to the top of the pipe) must be suitable to service the basement(s) of adjacent properties are required in the “Service Connection” section.

4.7.2 The absolute minimum cover over a pipe must be 1.0m (measured from the finished surface to the top of pipe) or comply with manufacturer's recommendations.

4.7.3 The depth of the sewer must be sufficient to provide "gravity flow" service connections to both sides of the roadway and must allow for future extension(s) to properly service all of the upstream tributary lands for ultimate development.

4.8 ALIGNMENT AND CORRIDORS

4.8.1 Sanitary sewers must be located within the road right-of-way as noted in the applicable Standard Drawing Typical Cross Section for that road.

4.8.2 When the utility is required to cross private land(s), the right-of-way shall have a minimum width of 3.0m. Where both storm and sanitary sewers are located within a single right-of-way, the minimum width shall be 5.0m. In either case, the right-of-way shall be surfaced and graded accordingly to allow access for Village maintenance vehicles to repair or replace the utility.

4.8.3 Sewer main extensions shall extend to and terminate at the furthest property line of the last lot is services.

4.9 CURVED SEWER

4.9.1 Subject to meeting manufacturer's specifications, horizontal and vertical curves are permitted and will require a constant offset and/or must be uniform throughout the curve.

4.9.2 The design velocity must exceed 0.9m/s and the curve midpoint and two ¼ points are to be located by survey and shown on the as-constructed drawings with an elevation and offset of the invert at each point.

4.10 MANHOLES

4.10.1 Manholes are required at:

a) Every change of pipe size
b) Every change in grade, except as indicated in the Curved Sewers section
c) Every change in direction, except as indicated in the Curved Sewers section
d) Downstream end of curved sewers
e) Every pipe intersection except for 100mm and 150mm service connections and junctions with trunk sewers 900mm diameter and larger
f) Upstream end of every sewer line
g) Every future pipe intersection
h) 150mm maximum spacing

4.10.2 In all cases a manhole is required at the upper end of a sewer for flushing and cleaning.

4.10.3 Sanitary manhole rim elevations in off road areas must be designed to be above the adjacent storm manhole rim elevation.

4.11 HYDRAULIC LOSSES ACROSS MANHOLES

4.11.1 The following criteria must be used:

a) The crown of the downstream pipe must not be higher than the crown of the upstream pipe.
b) Minimum drop in invert levels across manholes:
   i) Straight run – 5mm drop
   ii) Deflections up to 45 - 20mm drop max.
   iii) Deflection 45 to 90 - 30mm drop min.
c) Drop manhole and ramp structures to follow MMCD standard.
d) All benching shall be designed to prevent any solid deposition or flow disruption.

4.12 SERVICE CONNECTIONS

Each and every legal lot and each unit of a residential duplex shall be provided with a separate service connection and shall conform to MMCD standards.

Connections are to serve all plumbing by gravity. Building elevations should be established accordingly.

4.12.1 Size

a) Pipe size to accommodate peak design flow.
b) Minimum pipe sizes are as indicated in Section 4.4.1.

4.12.2 Location and Depth

a) Connections to large lots are to be located at the lower portion of each lot. For urban developments, location of connection to follow the Standard Drawings.
b) Other depth requirements are as indicated for storm sewer mains.

4.12.3 Grade

Minimum grade from property line to storm sewer main:

a) 100mm diameter pipe: 2.0%
b) 150mm diameter pipe: 1.0%
c) Larger sizes: Grade based on minimum velocity of 0.75 m/s

4.12.4 Details

Use standard wye fittings for connections to new mains. For connections to existing mains, use wye saddles or insertable tees.

Connections exceeding 30m in length will be treated as mains.

a) Service connections may be permitted into manholes if:
    i) The connection is not oriented against the flow in the main,
    ii) Manhole hydraulic requirements are met.
    iii) Manholes are required on service connections larger than 250mm diameter
b) Inspection chambers are required on residential connections unless the service is less than 2.5m long and connect to a manhole.
c) Inspection chambers to MMCD standards and shall include a backflow prevention devise.
d) Sanitary inspection chamber lids to be red in colour.
e) Have a minimum diameter of 100mm except for industrial/commercial which shall have minimum diameter of 150mm

4.13 SANITARY LIFT STATIONS

Lift Station Design Criteria is defined by MMCD.

4.14 FORCE MAIN

4.14.1 In conjunction with sanitary pumping facilities, the following criteria must be noted in the design of force main systems. Design computations for force mains must be made using a C value appropriate for the type of pipe. The Hazen Williams formula must be used.

4.14.2 Velocity

a) At the lowest pump delivery rate anticipated to occur at least once per day, a minimum cleansing velocity of 1.0m/sec should be maintained. Maximum velocity should not exceed 2.5 m/sec.

4.14.3 Air Relief Valves

a) An automatic air relief valve must be placed at high points in the force main to prevent air locking.

4.14.4 Termination

a) Force mains should enter the gravity sewer system at a point not more than 600mm above the flow line of the receiving manhole. An outside drop pipe must be incorporated.

4.14.5 Size

a) The minimum size for force mains is 100mm in diameter.

4.14.6 Materials

a) With the exception of valve, the material selected for force mains must meet the standards specified for water mains and must adapt to local conditions such as character of industrial wastes, soil characteristics, exceptionally heavy loadings, abrasion and similar problems.
b) Valves used on force mains shall be plug valves sufficient for long term use in a corrosive environment.

4.14.7 Loads and Transient Pressures.

a) All force mains must be designed to prevent damage from superimposed loads, or from water hammer or column separation phenomena.

5.0 STORM SYSTEM

5.1 GENERAL

5.1.1 Storm Drainage System refers to the piped network. Storm Drainage Systems shall be designed, analyzed and approved in accordance with Standard Engineering Practices.

5.1.2 Run-off flows from the subdivision must be limited to the five year return period pre-developed runoff condition.

5.1.3 Consulting Engineers retained by the Owner to design the works and services must consult with the Village Official to determine what existing information may be of assistance to them.

5.1.4 All developments require a storm drainage plan.

5.1.5 The presence of an existing municipal drainage system does not mean or imply there is adequate capacity to receive the proposed design flows, nor does it indicate that the existing system pattern is acceptable to the Village.

5.1.6 Existing facilities which are undersized or inadequate to accept additional drainage must be defined for upgrading to accommodate the appropriate subdivision design flows. Alternative drainage proposals may be considered.

5.2 STORMWATER MANAGEMENT PLAN

5.2.1 A stormwater management plan is required for all developments larger than 3.0ha. The stormwater management plan should be designed based on the principles contained MMCD Design Guideline and in the Stormwater Planning Guidebook for British Columbia dated May 2002 (or latest revision).

5.2.2 Where a Subdivision or Development is phased, an overall Stormwater Management Plan shall be submitted upon application for the first phase and shall govern the Subdivision or Development of subsequent phases

5.2.3 Unless otherwise noted, a Stormwater Management Plan is not required agricultural (0.40 ha and over) developments.

5.2.4 Developments larger than 5 hectares require both minor and major system designs.

5.3 MINOR AND MAJOR SYSTEMS

5.3.1 Each drainage system must consider the following stormwater analysis of runoff components:

a) The minor system consists of drainage works, pipes and ditches, which convey flows of a 10 year return frequency, with no pipe surcharging.

b) The major system exceeds the capacity of the minor system and consists of surface runoff paths, roadways and water courses which convey flows of a 100 year return frequency. Major runoff path routing is required wherever surface overland flows are anticipated. Creeks regulated by the Ministry of Water, Lands & Air Protection may require design to a 200 year flood.

5.4 DRAINAGE DESIGN METHODS AND FLOWS

5.4.1 Storm drainage systems must be designed using conventional methods (pipes, culverts, etc.) and Stormwater Management techniques (lot grading, detention, etc.) unless otherwise demonstrated to the Village through engineering study that an alternative method is more effective in operation and maintenance.

5.4.2 The Owner must provide to the Village all calculations and plans pertinent to the design of the proposed drainage system. All designs must take into consideration post-development upstream flows.

5.4.3 It must be shown that all existing or downstream drainage facilities are capable of handling the projected increase in drainage created by any development.

5.4.4 Stormwater must be directed to an acceptable discharge point such as a lake, a major creek, a ditch or trunk main with adequate capacity.

5.4.5 The lot grading plan shall show all existing and proposed elevations at lot corners, flow paths, and how overland drainage that runs through the development or from lot to lot will be controlled.

5.4.6 All storm drainage system elements servicing areas larger than 10 hectares must be designed using computer modeling software approved by the Village Official.

5.4.7 For developments where the tributary areas are less than 10 hectares, and detention facilities are not involved, the Rational formula may be used.

5.4.8 The Rational method shall be used to calculate minor storm flows. The formula – $Q = CAi / 360$ shall apply where:

Q = runoff peak (m3/s).
C = runoff coefficient for particular ground surfaces.
A = area of tributary drainage area (ha).
i = rainfall intensity (mm/hr.).

5.4.9 Runoff coefficients (C) for storm sewer design shall be assumed to be values as provided in MMCD.

5.4.10 Manning's equation must be used for gravity storm sewer pipe design with roughness coefficients defined in Table 5.1.

Table 5.1 – Manning's Roughness Coefficients	
Pipe	*Roughness Coefficient (n)*
Concrete	0.013
PVC	0.011
Corrugated Metal Pipe – Unpaved	0.024-0.033
25% Paved	0.021-0.024
100% Paved	0.013
Overland Flow	
Smooth Asphalt	0.012
Asphalt or Concrete Paving	0.014
Rubble or riprap	0.030
Earth	0.030
Dense Turf	0.035
Dense Shrubbery	0.040

5.4.11 Drainage Areas

a) The entire tributary drainage area for the storm drainage systems under design must be delineated according to the topography of the land and include all other contributing areas.
b) It is the Consulting Engineer's responsibility to ensure that they obtain true and accurate elevations for the development of the site.

5.4.12 Runoff Coefficient Adjustment Factor

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

5.4.13 Rainfall Return Frequency

The rainfall intensity for the Rational Method should be determined using the rainfall IDF curve included in the Standard Drawings.

a) Minor System Design = 10 year return period
b) Major System Design = 100 year return period
c) 200 year return period where required by the Ministry of Environment

5.4.14 Time of Concentration

The time of concentration is the time required for the runoff to flow from the most remote part of the catchment area under consideration to the design node. The time of concentration shall be calculated as outlined in MMCD.

5.5 MINIMUM AND MAXIMUM VELOCITIES

5.5.1 The minimum velocity for pipes flowing full, or half full, must be 0.6 m/s.

5.5.2 Where steep grades result in velocities exceeding 6.0 m/s, consider measures to prevent pipe erosion and movement.

5.5.3 Where drainage discharge enters a natural watercourse or stream the maximum velocity is 1.0 m/s.

5.6 MINIMUM PIPE DIAMETER

5.6.1 The minimum pipe diameter shall be as shown in Table 5.2.

Table 5.2 – Minimum Pipe Diameter

Description	*Minimum Pipe Diameter (mm)*
Storm Drainage Main	250
Culverts: - Crossing Roads - Crossing Driveways	 450 300
Catch Basin Leads/*Double CB*	200/*250*
Service Connections: - Residential - Commercial/Industrial	 100 150

5.7 MINIMUM GRADE

Minimum grades of storm sewers are as required to obtain the minimum velocity.

5.8 MINIMUM DEPTH OF COVER

5.8.1 Subject to the correct pipe loading criteria storm sewers should be of sufficient depth to:

a) Minimum cover without concrete encasement or detailed analysis is 1.0m
b) Permit gravity service to all tributary areas
c) Clear other underground utilities.
d) Prevent damage from surface loading.

5.9 HORIZONTAL ALIGNMENT AND CORRIDORS

5.9.1 Except as noted in 5.9.2, storm sewer mains must be located within the right-of-way.

5.9.2 When the utility is required to cross private land(s), the right-of-way shall have a minimum width of 3.0m. Where both storm and sanitary sewers are located within a single right-of-way, the minimum width shall be 5.0m.

5.10 CURVED PIPES

5.10.1 Subject to meeting manufacturer's specifications, horizontal and vertical curves are permitted and will require a constant offset and/or must be uniform throughout the curve.

5.10.2 Increase minimum grades by 20% throughout curved sections of pipe and in any case, the minimum design velocity shall be 0.9 m/s.

5.10.3 The curve midpoint and two points are to be located by survey and shown on the as-built drawings with an elevation and offset of the invert at each point.

5.11 MANHOLES

5.11.1 Manholes are required at the following locations and as outlined in MMCD:

a) Every change in pipe size
b) Every change in grade, except as indicated in the Curved Pipes section
c) Every change in direction, except as indicated in the Curved Pipes section
d) Every pipe intersection except for 100mm and 150mm service connections, catch basin connections and junctions with trunk sewers 900mm diameter and larger.
e) Upstream end of every sewer line.
f) 150m maximum spacing for pipes smaller than 900mm diameter
g) 250m maximum spacing for pipes 900mm diameter and larger.

5.11.2 Sump Manholes

Where ditches, swales or other open channels discharge into a storm sewer system, the initial connecting manhole shall be of a sump type unless this provision is provided by the receiving inlet structure.

5.12 HYDRAULIC LOSSES IN MANHOLES

5.12.1 The following criteria must be used:

a) The crown of the downstream pipe must not be higher than the crown of the upstream pipe.
b) Minimum drop in invert levels across manholes as outlined in MMCD

5.12.2 Exterior drop manholes must be installed in accordance with MMCD Standard Detail Drawing S3 where the invert elevation difference exceeds 600mm.

5.13 SERVICE CONNECTIONS

Each and every legal lot and each unit of a residential duplex shall be provided with a separate service connection.

Connections are to serve the perimeter (foundation) drains of all buildings by gravity. Building elevations should be established accordingly. Pumped connections may be permitted if requested prior to sewer design and if appropriate covenants are provided.

5.13.1 Size

a) Pipe size to accommodate peak design flow.
b) Minimum pipe sizes are as indicated elsewhere.

5.13.2 Location and Depth

a) Connections to large lost are to be located at the lower portion of each lot. For urban developments, location of connection to follow the standard drawings.
b) The connection elevation at the property line is to be above the minor system HGL.
c) Other depth requirements are as indicated for storm sewer mains.

5.13.3 Grade

Minimum grade from property line to storm sewer main:

a) 100mm diameter pipe: 1.5%
b) 150mm diameter pipe: 1.0%
c) Larger sizes: Grade based on minimum velocity of 0.75 m/s

5.13.4 Details

Use standard wye fittings for connections to new mains. For connections to existing mains, use wye saddles or insertable tees.

Connections exceeding 30m in length will be treated as mains.

a) Service connections may be permitted into manholes if:
    i) The connection is not oriented against the flow in the main.
    ii) Manhole hydraulic requirements are met.
    iii) Manholes are required on service connections larger than 250mm diameter.
b) Inspection chambers are required on residential connections unless the service is less than 2.5m long and connect to a manhole.
c) Inspection chambers to MMCD standards. Stormwater inspection chambers to be green in colour.
d) Have a minimum diameter of 100mm except for industrial/commercial which shall have minimum diameter of 150mm.

5.14 TEMPORARY CLEAN OUTS

5.14.1 Temporary clean outs may be provided at terminal sections of a main provided that:

a) Future extension of the main is designed as an overall phased development.
b) Clean outs are not considered a permanent structure.

5.15 CATCH BASINS

Catch basin design criteria is defined in MMCD.

5.16 DITCHES, CULVERTS AND INLET/OUTLET STRUCTURES

5.16.1 Ditches adjacent to roadways must conform to the following criteria;

a) Maximum depth should be established based on width of right-of-way, slopes and traffic safety criteria.
b) Minimum grade is 0.5%.
c) Maximum velocity is 1.0 m/s (unlined ditch) – see also 5.16.2.
d) Side slope shall be = 1.5:1 maximum

5.16.2 Ditching, swales or natural drainage courses exceeding 6% require a properly designed ditch cross section that will control erosion taking into account soil type, water flow and velocity. The design should include geo-fabric, use of layered graded granular material of increasing coarseness and rip rap.

5.16.3 The minimum right-of-way width for a ditch must be 5.0m where the ditch crosses private property. The ditch must be offset in the right-of-way to permit a 3.0m wide access for maintenance vehicles. Additional right-of-way may be required to facilitate the ditch and the access. The top of the ditch adjacent to the property line must be a minimum 1.0m away from the property line.

5.16.4 The design of structures where culverts or ditches form part of the storm system must consider level access to hydrants, transformers and driveways. The culvert must be installed at the same grade as the ditch.

5.16.5 The MMCD Standard Drawings for inlet and outlet structures must be used in the design of these facilities.

5.16.6 Swales shall be a maximum 150mm deep. All swales are to be lined with turf on a minimum 100mm of topsoil. Swales required for lot grading conformity shall be located on a 3.0m easement where accepting drainage of adjacent lots.

5.17 FRENCH DRAINS

5.17.1 The use of French drains shall be permitted where the topography and soil conditions are proven adequate to the acceptance of the Village. A soils report will be required to support the design.

5.18 EROSION AND SEDIMENT CONTROL

5.18.1 The Consulting Engineer will be required to demonstrate how work will be undertaken and completed so as to prevent the release of silt, raw concrete and concrete leachate, and other deleterious substances into any ditch, storm drain, watercourse or ravine. Construction and excavation wastes, overburden soil or other deleterious substances must be disposed of or placed in such a manner as to prevent their entry into any water course, ravine, storm drain system, or restrictive covenant area.

5.18.2 Should siltation or erosion controls be required, details of the proposed works are to be included in the approved drawings and must be installed as part of the works.

5.18.3 All siltation control devices must be situated to provide ready access for cleaning and maintenance.

5.18.4 Proposed siltation control structures must be maintained throughout the course of construction and to the end of the maintenance period (final acceptance). Changes in the design of the structure will be required if the proposed structure is found to be inadequate.

5.19 NATURAL WATERCOURSES

5.19.1 All proposals for works affecting natural watercourses must be forwarded (by the Consulting Engineer retained by the Owner to design the Works) to the appropriate Provincial Government Agencies.

5.20 RUNOFF CONTROLS

Runoff controls are required to meet the objectives indicated in the sections entitles Storm Water Management and Discharge Rates and Quality of MMCD.

Location the maintenance options for control facilities as well as types of storage for the purpose of controlling discharge rates are defined in MMCD.

6.0 ROAD

6.1 GENERAL

6.1.1 All road classifications and designations for vertical and horizontal alignment elements will be designed utilizing information contained in this section and in compliance with:

a) The current edition of the Transportation Association of Canada – Geometric Design Guide for Canadian Roads.

6.1.2 Consulting Engineers retained by the Owner to design the works and services must consult with the Village to determine what existing information may be of assistance to them.

6.2 ROAD CLASSIFICATIONS

6.2.1 Prior to commencing detailed design, the Consulting Engineer must consult with the Village with respect to classification, section, parking and bicycle lane requirements for all streets in or adjacent to the subdivision or development or other road improvements required due to the Development.

6.2.2 Table 6.1 summarizes the general requirements for each road classification which shall be read in conjunction with the Standard Drawings.

6.3 DESIGN PARAMETERS

6.3.1 Design Speed

Unless otherwise accepted, roadways shall be designed to the following minimum standards as specified in the Transportation Association of Canada, Geometric Design Guide for Canadian Road Manual:

Arterial Ministry of Transportation and Highways Standards
Collector 50 km/hr.
Local 50 km/hr.

6.3.2 Cross Section Elements

All right-of-way and roadway widths shall be as outlined in Table 6.1, Right-of-way and Roadway Widths.

Table 6.1 – Road Cross Section Elements		
Road Classification	*Minimum Right-of-Way Width (m)*	*Minimum Asphalt Width (m)*
Arterial: Controlled by BCMoTI	25.0	15.0
Collector – Industrial	25.0	12.3
Collector - Industrial	20.0	12.3
Local Street	20.0	9.5
Limited Local Street	18.0	8.5
Cul-de-Sac - entrance	18.0	8.5
- terminus	15.0m radius	11.5m radius
Walkways	3.0	2.5

The Developer shall either dedicate sufficient right-of-way to cover road embankments. Where a cut or fill slope exceeds 1.5m in vertical height, additional right-of-way may be required.

For details of cross-sectional elements refer to the Standard Drawings.

6.4 HORIZONTAL ALIGNMENT

6.4.1 All horizontal alignment elements shall be designed in accordance with the Alignment and Lane Section of the current edition of the Transportation Association of Canada Geometric Design Guide for Canadian Roads.

6.5 VERTICAL ALIGNMENT

6.5.1 All vertical alignment elements shall be designed in accordance with the Alignment and Lane Section of the current edition of the Transportation Association of Canada Geometric Guide for Canadian Roads.

6.5.2 Vertical curves shall be designed to provide safe stopping sight distances.

6.5.3 Vertical curves shall be provided at all grade changes greater than 1%.

6.5.4 Vertical curve length is calculated by the equation L = KA where:

L = the length of the vertical curve in metres.
K = a constant related to lines and geometry of a parabolic curve.
A = is the algebraic difference in grades in percent.

6.5.5 Minimum K values for vertical curve design shall be as shown in the current edition of the Transportation Association of Canada Geometric Guide for Canadian Roads

6.5.6 Maximum road grades shall conform to MMCD and are generally as shown in Table 6.2.

Table 6.2 – Maximum Roadway Grades

Roadway Classification	*Maximum Grade*
Collector	12%
Local	10%
Cul-de-sac (uphill)	10%
Cul-de-sac (downill)	8%
Cul-de-sac (through bulb)	7%
Lanes	12%

6.6 CUL-DE-SACS

6.6.1 Cul-de-sac bulbs shall be used to terminate “no exit” roads and shall have adequate pavement radii to ensure emergency or operations vehicle access.

6.6.2 Maximum length of cul-de-sac streets to be 150m as measured from the edge of the intersecting through road to the centre of the cul-de-sac bulb when there is no alternate access from the bulb, and 210m when there is alternate access (e.g. emergency access road) is provided.

6.6.3 Roads must be constructed to the end of the furthest property line of the last lot being built. If the road is to continue in the future then a temporary turn around complete with barrier posts must be constructed. The temporary turn around must be constructed to allow maintenance vehicles and garbage trucks to turn around or as approved by the Village Official.

6.7 ROAD CROSS SECTIONS

6.7.1 Roads shall be centre line crowned with a minimum slope of 2% (maximum 4%) to the gutter or edge of minimum shoulder.

6.7.2 Offset from centre line crown may be considered where topography or property access grades are a factor.

6.7.3 Super-elevation should be used as indicated in the TAC Geometric Design Guide.

6.8 ROAD WORKS STRUCTURE

6.8.1 The minimum road works structure is as shown in Table 6.3 below. Each road structure is to be designed based on site specific soil conditions and traffic loadings. The road works structure must be confirmed as acceptable during construction by a qualified Geotechnical Engineer.

Table 6.3 – Road Structure			
Road Classification	*Compacted Sub-Base Thickness (mm)*	*Compacted Base Thickness (mm)*	*Compacted Asphalt Thickness Lower/Upper Course (mm)*
Arterial	BCMoTI Standards	BCMoTI Standards	BCMoTI Standards
Collector			
- Urban	300	150	45/40
- Industrial	300	150	60/40
Local			
- Urban	300	100	45/40
- Industrial	300	150	40/60
Limited Local	300	100	40/35
Lane	300	100	40/35

6.9 INTERSECTIONS

6.9.1 Intersections are to be designed as close as possible to right angles with a maximum variation of 20 degrees.

6.9.2 Cross-slopes at intersections shall follow TAC Geometric Design Guide.

6.9.3 The minimum spacing between intersections is:

a) Along Collector Streets – 60m.
b) Along Local Streets, 4 Way Intersections – 60m.
c) Along Local Streets, 3 Way Intersections – 40m.

6.9.4 Roundabouts are to be designed with the BC MoT Supplement to TAC Geometric Design Guide is currently the best reference for the design of roundabouts in BC.

6.10 CURB RETURN RADII

6.10.1 Minimum curb return radii to conform to MMCD standards and shall be provided at all intersections.

6.10.2 The minimum property corner cut shall follow MMCD standard.

6.11 DRIVEWAYS/CROSSOVERS

6.11.1 All lots must be provided with a practical access driveway.

6.11.2 Driveway grades are to be set such that minimum cover over utilities within the boulevard is maintained.

6.11.3 Beyond the back of curb (or road edge in the absence of a curb) and property line the maximum driveway grade is 10%.

6.11.4 Number of Driveways

a) Urban Residential Areas:
   i) One driveway per road frontage
   ii) Second driveway permitted for corner lot if driveway not on an Arterial road
   iii) Where residential lot abuts roads of different classifications, the principal driveway should access the road of the lower classification
b) Commercial, Industrial, Institutional, Comprehensive and Multifamily Development:
   i) Upon demonstrated need, the Village may approve more than one access.

6.11.5 Driveway Location and Widths

a) Urban Residential Areas
   Driveways located on corner lots should be at least 5.0m from the lot corner nearest the intersection. Provision of adequate sight distance should be considered in accordance with TAC Geometric Design Guidelines.
   Minimum and maximum widths of urban residential driveways are 6.0 and 9.0m respectively
b) Commercial, Industrial, Institutional, Comprehensive and Multifamily Development
   Driveways to corner lots should be located no closer than 12.0m from the property line of the adjoining road. Provision of adequate sight distance should be considered in accordance with TAC Geometric Design Guidelines.
   The minimum width of a driveway to a property having one or more accesses is 6.0mfor one way access and 7.5m for two way access with a maximum of 9.0m.
   Where a corner lot adjoins roads of different classifications, the principal driveway should access from the road of the lower classification, except for commercial sites where access may be provided for both roads, subject to the Village approval.

6.12 WHEELCHAIR RAMPS

6.12.1 Wheelchair ramps must be provided at all intersection curb returns as an integral part of the sidewalk or to link walkways and crosswalks.

6.12.2 All wheelchair and letdown ramps shall have a gutter lip that is flush with the gutterline to facilitate unobstructed movement of wheeled devices.

6.13 WALKWAYS/SIDEWALKS

6.13.1 Concrete sidewalks must be provided as follows on roads in or adjacent to subdivisions in accordance with Section 5 – Works and Services Required of this Bylaw, as being within the zone specified. Refer to standard road drawings for and MMCD sidewalk widths.

6.13.2 The maximum gradient for sidewalk shall match the adjoining roadway grade. Concrete stairs are to be installed where required to suit the terrain of the site, when the grade exceeds 12%.

6.13.3 Retaining walls shall be installed for walkways as required to suit the site topography. The design shall be specific to the situation and must be certified by a professional engineer.

.13.4 Paved walkways shall be a minimum of 2.0m wide and shall be designed to provide minimal elevation interference with adjacent lots.

6.14 BOULEVARDS/STREETSCAPES

6.14.1 Boulevards shall be defined as any landscaped area within the road right-of-way.

6.14.2 A minimum grade of 2% must be maintained from the property line to the back of curb, back of walk, or to the back side of a ditch.

6.14.3 The design of boulevards and streetscape improvements shall consider the items listed below. In determining which items are to be included, consideration will be given to the road classification of the street and the zoning of adjacent properties including but not limited to the following:

a) Concrete sidewalk.
b) Trees, shrubs and other plant materials.
c) Grass and other ground cover vegetation.
d) Paving stones in a variety of materials.
e) Areas allocated for snow storage.

6.14.4 Street Trees:

a) Road design standards provide adequate room for tree planting and landscaping within the right-of-way.
b) The planting of trees on all new Village residential roads shall be a requirement of all subdivisions.
c) The developer shall prepare and submit to the Village a Landscaping Plan for review and approval. The Landscaping Plan shall show tree planting locations and species.
d) Trees to be planted along streets typically shall be:
    i) Randomly spaced to provide one tree in front of each lot and a separation dependent upon the species but typically 7 to 12m apart.
e) Trees shall not be planted within:
    i) 6m from street intersections, and crosswalks – protect sight lines.
    ii) 6m from street lighting – protect illumination.
    iii) 3m from utility poles, junction boxes, vaults.
    iv) 2m from catch basins, driveways, utility services, hydrants and manholes.
    v) No underground utilities to pass directly under the rootball.

vi) When selecting tree species near overhead power lines, the designer shall ensure that the canopy of the mature tree will maintain the minimum distances as required by Electrical Regulations.
vii) Consideration should be given in locating trees within the boulevards to avoid obstructing traffic signs, driveways, and sight lines.
viii) The view corridor of main windows or patios.

6.15 TRAFFIC CONTROL DEVICES

6.15.1 Traffic signs are to be designed in accordance with the current edition of the Transportation Association of Canada Manual of Uniform Traffic Control Devices for Canada.

6.15.2 Crosswalks to be designed in accordance with the current edition of the Province of British Columbia Ministry of Transportation and Infrastructure - Pedestrian Crossing Control Manual.

6.15.3 Traffic Paint Markings to be designed in accordance with the current edition of the Province of British Columbia Ministry of Transportation and Infrastructure – Pavement Markings Manuals.

6.15.4 Traffic calming measures shall be employed as appropriate and at the direction and approval of the Village Official to maximize road safety and are to be designed in accordance with the current edition of the Transportation Association of Canada "Canadian Guide to Neighbourhood Traffic Calming".

6.16 HILLSIDE STANDARDS

6.16.1 General

a) Hillside areas are lands that in their natural state have a slope angle of 10% or greater for a minimum horizontal distance of 10 metres.
b) Shall provide pedestrian and cyclist connectivity.
c) Shall provide opportunities for snow storage.

6.16.2 Roads

Subject to approval by the Village, maximum grades may be increased to 2% greater than those shown in Table 6.2.

6.16.3 Cul-de-Sac Streets and Hillside Emergency Accesses

a) Cul-de-sac
   i) ROW: min 15.0m radius;
   ii) Radius to edge of paved surface: min 10.25m radius;
   iii) Alternative types of street turnarounds will be considered for use based on site;
   iv) Specific topographic conditions. In certain circumstances; reduced cul-de-sac radii or hammer head type turnarounds will be permitted;

v) Cul-de-sac streets may exceed the maximum length as specified by the Village of Pemberton - mid-block turnarounds should be considered in this situation;

vi) A secondary emergency access must be provided for all public cul-de-sac streets that are in excess of the maximum length as specified by the Village of Pemberton;

vii) Cul-de-sac Roads are designed to be permanent, must be provided at the closed end with an area designed to permit safe and adequate space for the turning of motor vehicles;

viii) At road intersections cul-de-sac must be constructed with an approach grade of not greater than 3% for a distance of not less than 15 m from the adjacent edge of asphalt of the major road;

ix) The draining grade around the outside curb of a cul-de-sac must be not less than 0.5% and not greater than 5.0%. Longitudinal gradients of cul-de-sac bulbs shall not exceed 5.0%;

x) When a cul-de-sac is at the bottom of a hill, the longitudinal gradient of the first 50m of roadway uphill from the cul-de-sac bulb shall not exceed 5.0%. The maximum longitudinal gradient for the rest of the hill shall not exceed 10%;

xi) When a cul-de-sac is at the top of a hill, the longitudinal gradient for the roadway downhill from the cul-de-sac must not exceed 12.0%;

xii) Gutter elevations on curb returns and cul-de-sacs must be shown on the drawings at the beginning, one-quarter points and end of curb returns and at 7.50 m intervals around cul-de-sacs;

xiii) A turn-around or a second point of access is required on roads longer than 100 m. The maximum length of a permanent cul-de-sac shall be 200 m. Where it is part of a temporary and/or staged development, this maximum length may be 400 m. Cul-de-sac lengths greater than 200 m may be considered by the Village Official;

xiv) Major flood routes must be provided on down slope cul-de-sacs;

xv) Snow storage areas must be provided in close proximity;

b) Hillside Emergency Access

Guidelines for emergency access roads at long cul-de-sacs include the following:

i) Maximum grade: 15%

ii) Minimum right-of-way and roadway width: 6.0m.

iii) Minimum paved width: 4.5m.

iv) Removable bollards to prevent access by non-emergency vehicles.

v) Pavement structure equivalent to local road.

vi) Shared use with pedestrian walkway or bikeway.

c) Cross-section Elements

Refer to MMCDA Design Guideline Manual – Hillside Road Cross-Section Elements.

d) Alignments

Refer to MMCDA Design Guideline Manual – Hillside Road Alignment Standards.

6.17 EMERGENCY ACCESS

6.17.1 Maximum grade is 10%

6.17.2 Right-of-way width to be a minimum of 6.0m

6.17.3 Minimum paved width to be 4.5

6.17.4 Restricted non-emergency vehicles' access through the use of removable restriction posts per MMCD standard drawing C12.

7.0 ELECTRICAL DISTRIBUTION DESIGN STANDARDS

7.1 Electrical Distribution and Service

This section applies to the review and approval process for all shallow electrical utilities in a new residential sub-division.

7.1.1 General Requirements

a) The Village's review and approval process shall begin with submission of shallow electrical utilities notification and approval documents by the Developer, including,
   i. Hydro
   ii. Telephone
   iii. Cable
b) All power wiring and communications cabling in new sub-division shall be underground. In areas with existing over-head electrical utilities, these shall be transitioned to an underground system for all new developments. All developments shall be required to construct on-parcel ducting and in-building provisions for underground connections to power and communications utilities l.
c) Developer shall be required to submit a copy of service agreements, including proof of payment, for all electrical utilities, noting any non-compliance issues as required.
d) Developer shall be required to submit three (3) copies of engineering drawings, depicting the proposed alignments and locations for the underground electrical cables, junction or pull boxes, transformer vaults, pad-mount transformers, above-ground switching cubicles, electrical pedestals and other electrical distribution appurtenances. The Village shall issue an approval for construction, prior to any on-site work.

7.1.2 Design Requirements

a) The design of underground electrical utilities shall conform in general to the Canadian Electrical Code as revised and adopted by the Province of British Columbia, as well as to the specific requirements of the electrical utilities. The designer shall adhere to the stricter standards, in the event of conflict among various design standards.
b) All electrical utilities shall be installed in accordance with the standard road cross sections.

c) The minimum separation between underground electrical ducts / cables must be acceptable to the respective electrical utilities. A minimum horizontal clearance of 1.0 m shall be maintained between underground electrical utilities and street lighting wiring.
d) All underground ducts / cables shall be laid in a straight line at a constant offset and a uniform grade. At the curved road allowance, the ducts / cables may be laid on a horizontal curve at a constant offset. The ducts / cables at road-way crossings shall be laid in a straight line at right angles to the center-line of the road-way.
e) All electrical surface and sub-surface appurtenances shall be designed and located so as not to interfere with other street fixtures such as hydrants, catch basins, driveways and other Village utilities. Electrical appurtenances must not be located directly above water mains or water service connections.
f) Developer shall submit as-built record drawings depicting exact locations of:
    i. All buried cables and underground ducts
    ii. All surface and sub-surface appurtenances
    iii. All underground splicing and pull chambers

8.0 STANDARD DETAILED DRAWINGS

Use Table 8.1 to determine the status of the Standard Detail Drawings contained in the MMCD. For the most part the Village adopts them however there are some that are deleted and some that the Village has added for further clarification.

Table 8.1

Drawing Number	Drawing Name	Reference
GENERAL DETAILS		
G0	DRAWING INDEX – GENERAL DETAILS	MMCD
G1	GENERAL LEGEND FOR CONTRACT DRAWINGS	MMCD
G2	LEGEND FOR MATERIALS	MMCD
G3	LEGEND FOR STREET LIGHT AND TRAFFIC SIGNAL DRAWINGS	MMCD
G4	UTILITY TRENCH	MMCD
G5	PAVEMENT RESTORATION	MMCD
G6	CONCRETE ENCASEMENT FOR WATERMAIN/SEWER SEPARATION	MMCD
STORM AND SANITARY SEWERS		
S0	DRAWING INDEX – STORM AND SANITARY SEWERS	MMCD
S1	STANDARD AND SUMP MANHOLES	MMCD
S2	STANDARD MANHOLE CONNECTION DETAILS	MMCD
S3	MANHOLE CONNETION DETAILS-DROP AND RAMP TYPE	MMCD
S4	INSIDE DROP MANHOLE	MMCD
S5	PRECAST RISER MANHOLE	MMCD
S6	SEWER CLEANOUT	MMCD
S7	SANITARY SEWER SERVICE CONNETION	MMCD
S8	STORM SEWER SERVICE CONNECTION	MMCD
S9	INSPECTION CHAMBER FOR 100 TO 200 SANITARY SEWER CONNECTION	MMCD
S10	INSPECTION CHAMBER FOR 250 TO 375 STORM SEWER CONNECTION	MMCD
S11	TOP INLET CATCH BASIN	MMCD
S12	LAWN DRAINS	MMCD
S13	STORM SEWER INLET WITH SAFETY GRILLAGE	MMCD
S14	CONCRETE BLOCK ENDWALL	MMCD
S15	DRIVEWAY CULVERT WITH CONCRETE BLOCK ENDWALLS	MMCD
VOP - S16	VILLAGE OF PEMBERTON IDF CURVE	VILLAGE

WATERWORKS

W0	DRAWING INDEX – WATERWORKS	MMCD
W1	TYPCIAL THRUST BLOCK ARRANGEMENTS	MMCD
W2a	WATER SERVICE CONNECTION – SERVICE BOX ***DELETE***	MMCD
W2b	WATER SERVICE CONNECTION – VALVE BOX ***DELETE***	MMCD
W2c	METER INSTALLATION FOR 19 AND 25MM SERVICE CONNECTIONS ***DELETE***	MMCD
W2d	METER INSTALLATION FOR 38 AND 50 SERVICE CONNECTIONS ***DELETE***	MMCD
W3	GATE VALVE INSTALLATION	MMCD
W4	FIRE HYDRANT INSTALLATION	MMCD
W5	TEST POINT INSTALLATION	MMCD
W6	AIR VALVE ASSEMBLY – 25 AND 50MM VALVES	MMCD
W7	AIR VALVE ASSEMBLY – 100MM VALVE CT	MMCD
W8	BLOW OFF FOR WATERMAIN	MMCD
W9	BLOW DOWN CHAMBER	MMCD
W10	WATERWORKS CHAMBER DRAIN	MMCD
VOP - W11	METER INSTALLATION FOR 19 AND 25MM SERVICE CONNECTIONS	VILLAGE

CONCRETE AND MISCELLANEOUS DETAILS

C0	DRAWING INDEX – CONCRETE AND MISCELLANEOUS DETAILS	MMCD
C1	CONCRETE SIDEWALK, INFILL AND BARRIER CURB	MMCD
C2	CONCRETE SIDEWALK AND BARRIER CURB	MMCD
C3	CONCRETE SIDEWALK AND ROLLOVER CURB	MMCD
C4	CONCRETE CURB – NARROW BASE	MMCD
C5	CONCRETE BARRIER CURB – WIDE BASE	MMCD
C6	CONCRETE MEDIAN CURB AND INTERIM CURBS	MMCD
C7	DRIVEWAY CROSSING FOR BARRIER CURBS	MMCD
C8	WHEELCHAIR RAMP FOR SIDEWALK, INFILL AND BARRIER CURB	MMCD
C9	WHEELCHAIR RAMP FOR SIDEWALK AND BARRIER CURB	MMCD
C10	CONCRETE WALKWAY	MMCD
C11	BICYCLE BAFFLE	MMCD
C12	REMOVABLE RESTRICTION POST	MMCD
C13	CHAIN LINK FENCE FOR WALKWAY	MMCD
C14	HANDRAIL FOR CONCRETE RETAINING WALL	MMCD
CE1.1	CONCRETE BASE INDEX	MMCD
CE1.2	TYPE A AND B SONOTUBE CONCRETE BASES	MMCD
CE1.3	TYPE C, C1, C2 & C3 TRAPEZOIDAL SHAPE CONCRETE BASES	MMCD
CE1.4	TYPE C, C1, C1 & C3 TRAPEZOIDAL SHAPE CONCRETE BASES	MMCD

CE1.5	TYPE C4 & C5 SPREAD FOOTING SHAPE CONCRETE BASES	MMCD
CE1.6	TYPE C4 & C5 SPREAD FOOTING CONCRETE BASES	MMCD
CE1.7	TYPE C4 & C5 SPREAD FOOTING CONCRETE BASES	MMCD
CE1.8	TYPE E2 TRAPEZOIDAL SHAPE CONCRETE BASE	MMCD
CE1.9	TYPE E2 TRAPEZOIDAL SHAPE CONCRETE BASE	MMCD
CE.10	TYPES F1, L1 & S1 SPREAD FOOTING SHAPE CONCRETE BASES	MMCD
CE1.11	TYPES F1, L1 & S1 SPREAD FOOTING SHAPE CONCRETE BASES	MMCD
CE1.12	TYPES F1, L1 & S1 SPREAD FOOTING SHAPE CONCRETE BASES	MMCD
CE1.13	TYPES F2, L2 & S2 TRAPEZOIDAL SHAPE CONCRETE BASES	MMCD
CE1.14	TYPES F2, L2 & S2 TRAPEZOIDAL SHAPE CONCRETE BASES	MMCD
CE1.15	1” DIAMETER ANCHOR BOLTS	MMCD
CE1.16	ANCHOR BOLT CAGE FOR TYPE 6, 7 AND S POLES	MMCD
CE1.17	ANCHOR BOLT CAGE FOR TYPE L POLES	MMCD
CE1.18	CONCRETE BASE FOR POST MOUNTED FLASHER LUMINAIRE (PRECAST)	MMCD
CE1.19	POLE BASE INSTALLATION DETAILS	MMCD
CE1.20	POLE BASE INSTALLATION DETAILS	MMCD

ROADWORKS

VOP – R01	ARTERIAL STREET	VILLAGE
VOP – R02	COLLECTOR STREET	VILLAGE
VOP – R03	LOCAL STREET	VILLAGE
VOP – R04	LIMITED LOCAL STREET	VILLAGE
VOP – R05	LANE	VILLAGE
VOP – R06	STANDARD CUL-DE-SAC	VILLAGE
VOP – R07	HILLSIDE STANDARD – COLLECTOR STREET	VILLAGE
VOP – R08	HILLSIDE STANDARD – LOCAL STREET	VILLAGE

ELECTRICAL

E1.1	TYPE M (NEMA CABINET) CONCRETE CONTROLLER BASE	MMCD
E1.2	TYPE P (NEMA CABINET) CONCRETE CONTROLLER BASE	MMCD
E1.3	MODEL 170 CONCRETE CONTROLLER BASE	MMCD
E1.4	CONTROLLER INSTALLATION (FOR TYPE P & M CABINETS)	MMCD
E1.5	CONTROLLER INSTALLATION (FOR MODEL 170 CABINETS)	MMCD
E1.6	TYPE F CONTROLLER PEDESTAL	MMCD
E1.7	TYPE F CONTROLLER PEDESTAL	MMCD
E2.1	ROUND PLASTIC JUNCTION BOXES	MMCD
E2.4	LARGE CONCRETE JUNCTION BOXES	MMCD
E2.5	CONCRETE VAULT	MMCD
E2.2	TYPE 37 AND 66 CONCRETE JUNCTION BOXES	MMCD

E2.3	LARGE CONCRETE JUNCTION BOXES	MMCD
E2.6	CONCRETE VAULT	MMCD
E3.1	UNDERGROUND CONDUIT IN PAVED AREAS	MMCD
E3.2	UNDERGROUND CONDUIT IN NON-PAVED AREAS	MMCD
E4.1	LUMINAIRE POLE (TYPE 2 SHAFT) ***DELETE***	MMCD
E4.2	LUMINAIRE POLE (TYPE 2 CHAFT) ***DELETE***	MMCD
E4.3	SIGNAL POLE (TYPE 1 SHAFT)	MMCD
E4.4	SIGNAL POLE (TYPE 1 SHAFT)	MMCD
E4.5	SIGNAL POLE (TYPE 3 SHAFT)	MMCD
E4.6	SIGNAL POLE (TYPE 3 SHAFT)	MMCD
E4.7	SIGNAL POLE (TYPE 6 SHAFT)	MMCD
E4.8	SIGNAL POLE (TYPE 6 SHAFT)	MMCD
E4.9	SIGNAL POLE (TYPE 7 SHAFT)	MMCD
E4.10	SIGNAL POLE (TYPE 7 SHAFT)	MMCD
E4.11	SIGNAL POLE (TYPE S SHAFT)	MMCD
E4.12	SIGNAL POLE (TYPE S SHAFT)	MMCD
E4.13	SIGNAL POLE (TYPE S SHAFT)	MMCD
E4.14	SIGNAL POLE (TYPE L SHAFT)	MMCD
E4.15	SIGNAL POLE (TYPE L SHAFT)	MMCD
E4.16	SIGNAL POLE (TYPE L SHAFT)	MMCD
E4.17	SIGNAL POSTS (TYPE 4, 4A AND 5 SHAFTS)	MMCD
E4.18	SIGNAL POSTS (TYPE 4, 4A AND 5 SHAFTS)	MMCD
E4.19	POST TOP LUMINAIRE POLES ***DELETE***	MMCD
E4.20	POST TOP LUMINAIRE POLES ***DELETE***	MMCD
E4.21	SERVICE BASE ***DELETE***	MMCD
E4.22	POLE ACCESSORIES ***DELETE***	MMCD
E5.1	POST TOP SIGNAL HEAD MOUNTING	MMCD
E5.2	SIDE POLE SIGNAL HEAD MOUNTING (METHOD 1)	MMCD
E5.3	SIDE POLE SIGNAL HEAD MOUNTING (METHOD 2)	MMCD
E5.4	SIDE POLE SIGNAL HEAD MOUNTING (METHOD 3)	MMCD
E5.5	OVERHEAD SIGNAL HEAD MOUNTING (SPRING CUSHION END HANGER METHOD)	MMCD
E5.6	OVERHEAD SIGNAL HEAD MOUNTING (SPRING CUSHION MID HANGER METHOD)	MMCD
E5.7	OVERHEAD SIGNAL HEAD MOUNTING (PLUMPIZER METHOD)	MMCD
E5.8	OVERHEAD SIGNAL MOUNTING (PLUMBIZER METHOD)	MMCD
E5.9	OVERHEAD SIGNAL HEAD MOUNTING (ADJUSTABLE BRACKET METHOD)	MMCD
E5.10	OVERHEAD SIGNAL HEAD MOUNTING ON POLE ARM (BALL HANGER METHOD)	MMCD
E5.11	OVERHEAD SIGNAL HEAD MOUNTING ON (BALL HANGER METHOD)	MMCD
E5.12	AUDIBLE SIGNALS	MMCD
E6.1	PEDESTRIAN PUSHBUTTON WITH SEPARATE SIGN	MMCD
E6.2	PEDESTRIAN PUSHBUTTON WITH INTEGRAL SIGN	MMCD

E6.3	PEDESTRIAN PUSHBUTTON POST	MMCD
E7.1	UNDERGROUND DIP SERVICE	MMCD
E7.2	SERVICE PANEL IN SERVICE BASE (MOUNTING DETAILS)	MMCD
E7.3	SERVICE PANEL IN SERVICE BASE (MOUNTING DETAILS)	MMCD
E7.4	60A STREETLIGHTING AND 100A STREET LIGHT/TRAFFIC SIGNAL SERVICE PANEL IN SERVICE BASE (PANEL DETAILS)	MMCD
E7.5	60A (120/240V) STREET LIGHTING SERVICE PANEL IN SERVICE BASE (WIRING DIAGRAM)	MMCD
E7.6	100A (120/240V) TRAFFIC SIGNAL/STREET LIGHTING SERVICE PANEL IN SERVICE BASE (WIRING DIAGRAM)	MMCD
E7.7	100A TRAFFIC SIGNAL/STREETLIGHTING SERVICE PANEL ON POLE (MOUNTING DETAILS)	MMCD
E7.8	100A TRAFFIC SIGNAL/STREETLIGHTING SERVICE PANEL ON POLE (MOUNTING DETAILS)	MMCD
E7.9	100A (120/240V) TRAFRFIC SIGNAL/STREETLIGHTING SERVICE PANEL (WIRING DIAGRAM)	MMCD
E7.10	SERVICE GROUND PLATE INSTALLATION DETAIL	MMCD
E7.11	LUMINAIRE WIRING IN POLE HANDHOLE ***DELETE***	MMCD
E7.12	SIGNAL CABLE WIRING IN POLE HANDHOLE	MMCD
E7.13	SIGNAL CABLE COLOUR CODE SAMPLE (ONTARIO SPEC METHOD)	MMCD
E7.14	MINIMUM CLEARANCES TO OVERHEAD POWERLINES	MMCD
E7.15	POLE MOUNTED RECEPTABLE	MMCD
E7.16	TELEPHONE DEMARCATION ENCLOSURE MOUNTING DETAILS ON CONTROLLER OR POLE	MMCD
E7.17	TELEPHONE CONDUIT ON UTILITY POLE	MMCD
E7.18	CONDUIT TIE-IN TO TELEPHONE VAULT, MANHOLE JUNCTION BOX	MMCD
E8.1	TYPCIAL DETECTOR DOOP TYPES	MMCD
E8.2	DETECTOR LOOPS	MMCD
E8.3	DETECTOR LOOPS	MMCD
E8.4	DETECTOR LOOP TO SHIELDED CABLE SPLICES	MMCD
E8.5	DETECTOR LOOP PROCEDURES AND RULES	MMCD
E8.6	DETECTOR LOOP PROCEDURES AND RULES	MMCD
E8.7	TYPICAL LAYOUT FOR DIAMOND AND ROUND TRAFFIC SIGNAL DETECTOR LOOPS	MMCD
E8.8	PRE-FORMED DIAMOND DETECTOR LOOP INSTALLATION DETAILS	MMCD
E8.9	PRE-FORMED DIAMOND DETECTOR LOOP INSTALLATION DETAILS	MMCD
E9.1	FLASHER LUMINAIRE AND SIGNS ON PERFORATED STEEL TUBING	MMCD
E9.2	FLASHER LUMINAIRE AND SIGNS ON PERFORATED STEEL TUBING	MMCD
E9.3	FLASHER LUMINAIRE AND SIGNS ON STEEL POLE	MMCD
E9.4	FLASHER LUMINAIRE AND SIGNS ON STEEL POLE	MMCD
E10.1	OVERHAD EXTRUDED ALUMINUM AVANCE WARNING SIGN ASSEMBLY DETAILS	MMCD
E10.2	OVERHEAD EXTRUDED ALUMINUM ADFANCE WARNING SIGN INSTALLATION DETAILS	MMCD
E10.3	OVERHEAD EXTRUDED ALUMINUM ADVANCE WARNING SIGN	MMCD

	INSTALLATION DETAILS	
E10.4	OVERHEAD EXTRUDED ALUMINUM SIGN INSTALLATION DETAILS	MMCD
E10.5	OVERHEAD EXTRUDED ALUMINUM SIGN INSTALLATION DETAILS	MMCD
E10.6	OVERHEAD EXTRUDED ALUMINUM SIGN ASSEMBLY DETAILS	MMCD
E10.7	OVERHEAD EXTRUDED ALUMINUM SIGN ASSEMBLY DETAILS	MMCD
E10.8	OVERHEAD EXTRUDED ALUMINUM SIGN ASSEMBLY DETAILS	MMCD
E10.9	OVERHEAD EXTRUDED ALUMINUM SIGN LUMINAIRE INSTALLATION DETAILS	MMCD
E10.10	JUNCTION BOX INSTALLATION DETAILS ON SIGN ARMS	MMCD

Village of PEMBERTON

TITLE: I.D.F CURVE

VILLAGE OF PEMBERTON

STANDARD STORM DRAWINGS

APPR.

DATE: NOV. 2011

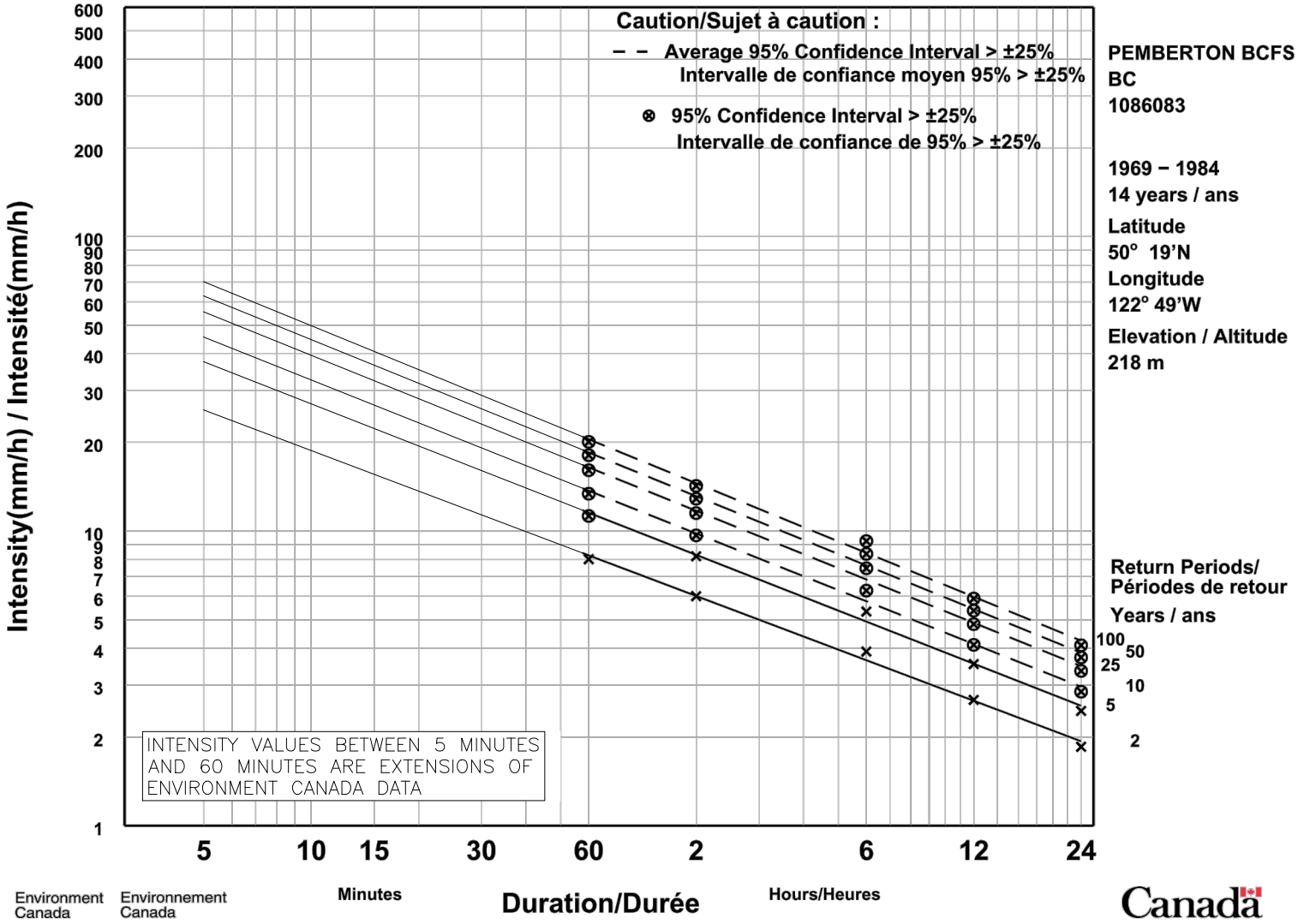
SCALE: N.T.S.

DWG. NO: VOP-S16

Short Duration Rainfall Intensity–Duration–Frequency Data

2011/05/17

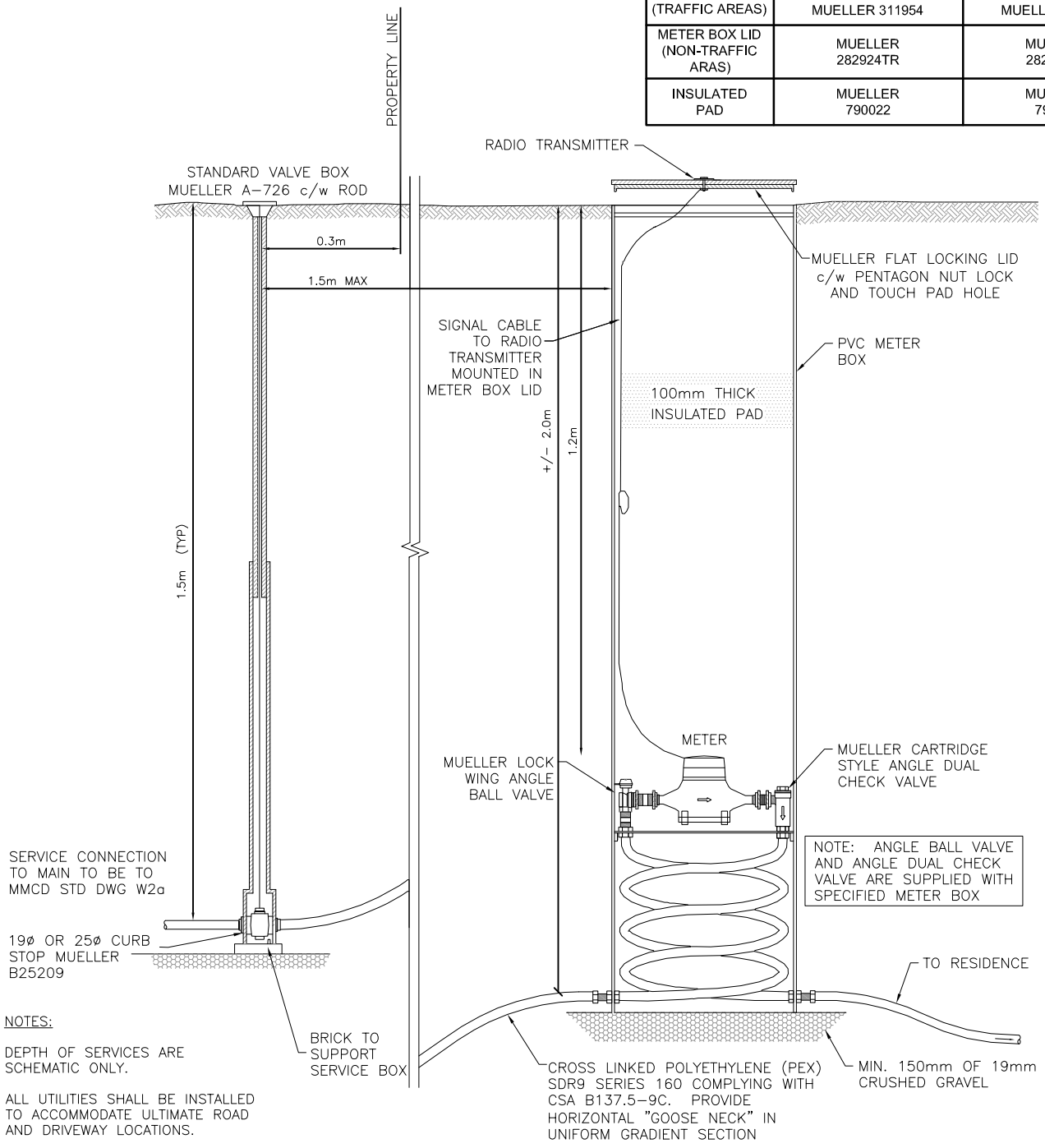
Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée



Environment Canada Environnement Canada

Canada

ITEM	19ø (¾") SERVICE	25ø (1") SERVICE
METER	SENSUS iPERL c/w MXU PIT RADIO READ SYSTEM	SENSUS iPERL c/w MXU PIT RADIO READ SYSTEM
METER BOX	MUELLER 203CS1548FSBS	MUELLER 330CS1848FSBS
METER BOX LID (TRAFFIC AREAS)	COMPOSITE H20 RATED MUELLER 311954	COMPOSITE H20 RATED MUELLER 311955
METER BOX LID (NON-TRAFFIC ARAS)	MUELLER 282924TR	MUELLER 282925TR
INSULATED PAD	MUELLER 790022	MUELLER 790153



NOTES:

DEPTH OF SERVICES ARE SCHEMATIC ONLY.

ALL UTILITIES SHALL BE INSTALLED TO ACCOMMODATE ULTIMATE ROAD AND DRIVEWAY LOCATIONS.

AT THE DISCRETION OF THE APPROVING OFFICIAL, THE LOCATION OF WORKS MAY BE VARIED WHERE WARRANTED BY TOPOGRAPHY OR PREVIOUS INSTALLATION OF OTHER WORKS.

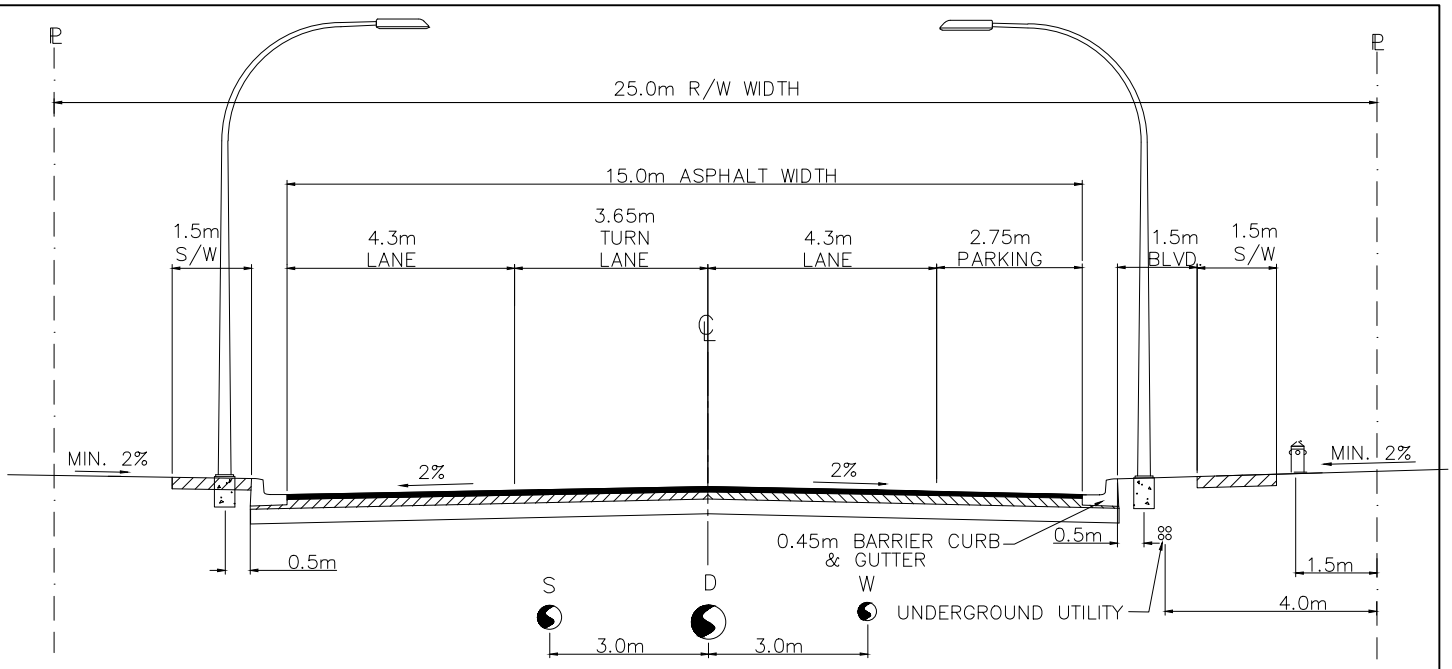
Village of PEMBERTON

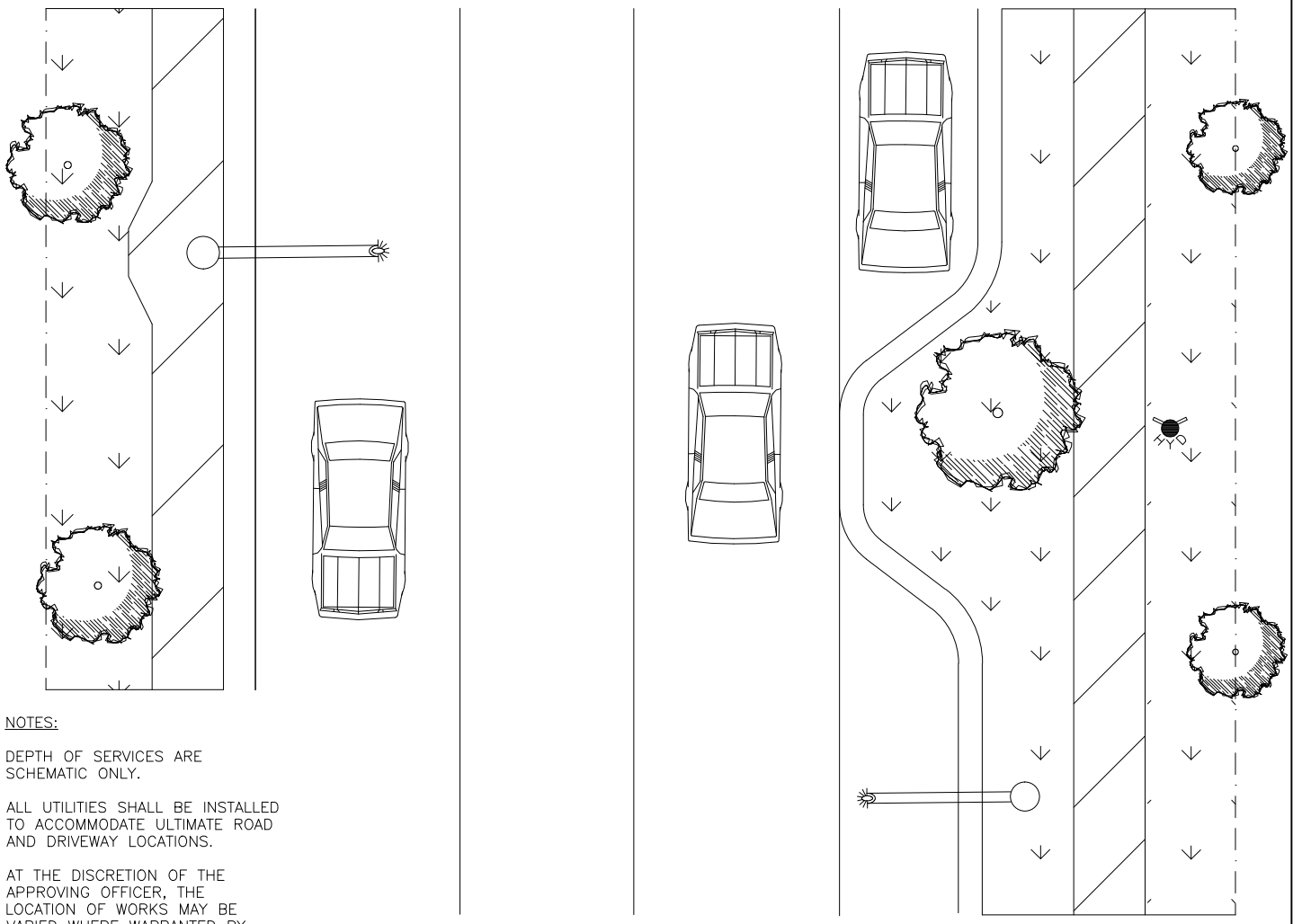
19mm AND 25mm METER VAULT

VILLAGE OF PEMBERTON

STANDARD WATER DRAWINGS

APPR.	DATE: NOV. 2011
SCALE: N.T.S.	DWG. NO: VOP-W11





NOTES:

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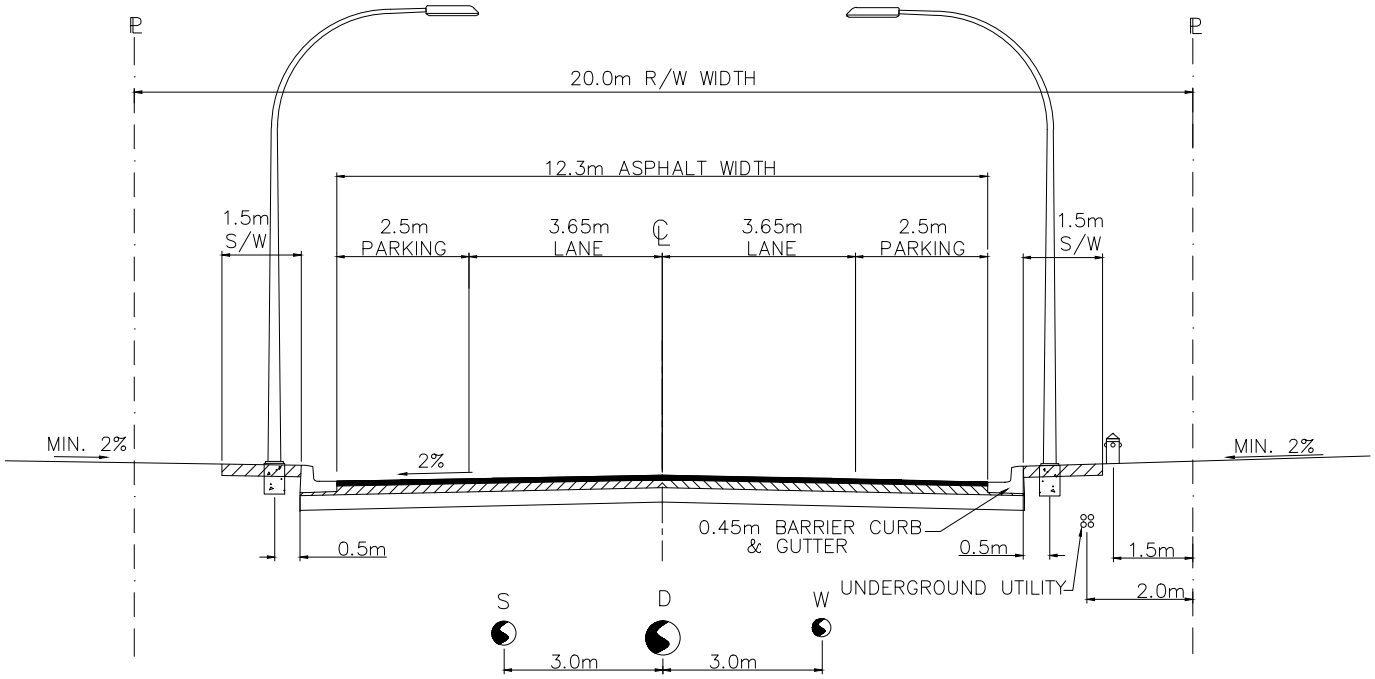
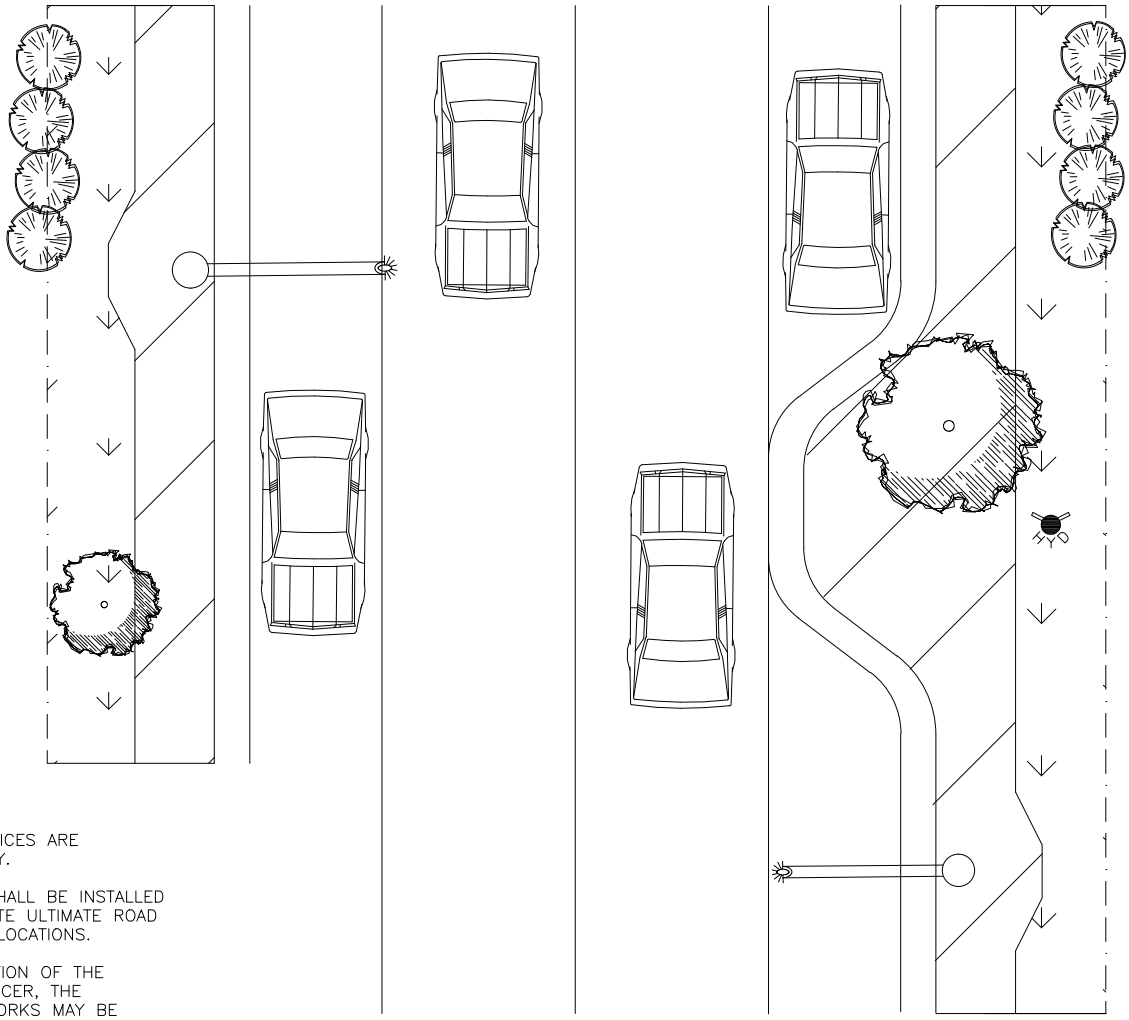
Village of PEMBERTON

ARTERIAL STREET
URBAN UNDIVIDED
25.0m RIGHT OF WAY

VILLAGE OF PEMBERTON	
STANDARD ROAD CROSS SECTION	
APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R01





NOTES:

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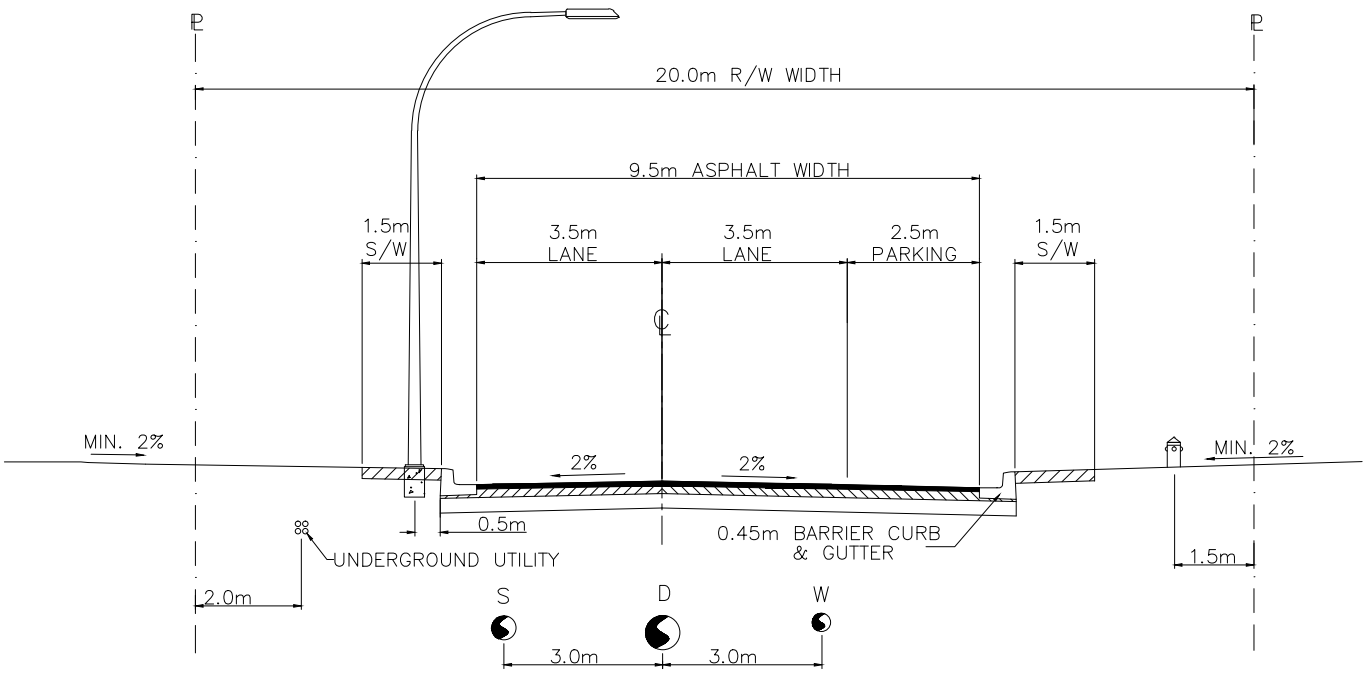
Village of PEMBERTON

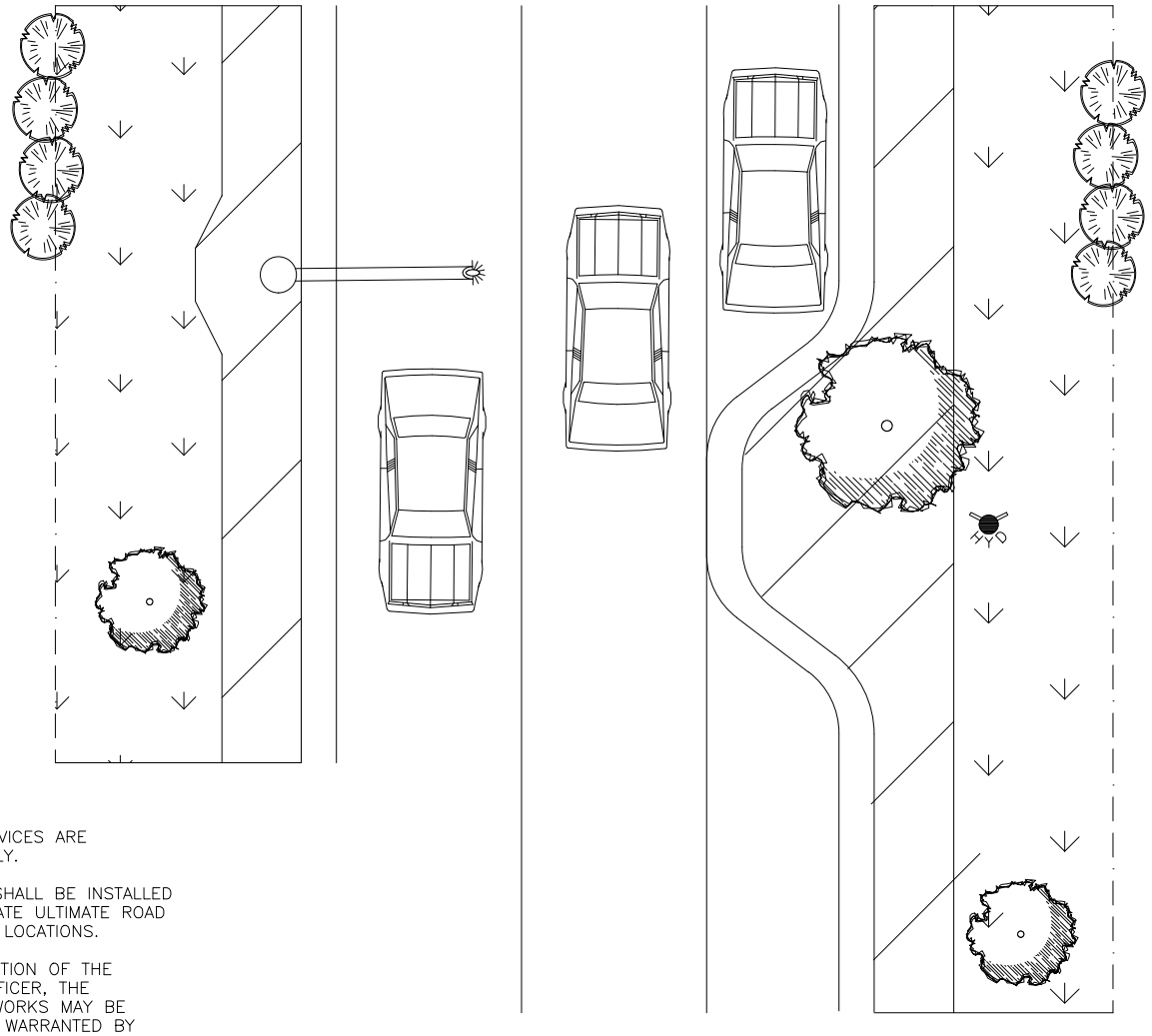
COLLECTOR STREET
20.0m RIGHT OF WAY

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R02





NOTES:

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AT THE DISCRETION OF THE APPROVING OFFICER, THE LOCATION OF WORKS MAY BE VARIED WHERE WARRANTED BY TOPOGRAPHY OR PREVIOUS INSTALLATION OF OTHER WORKS.

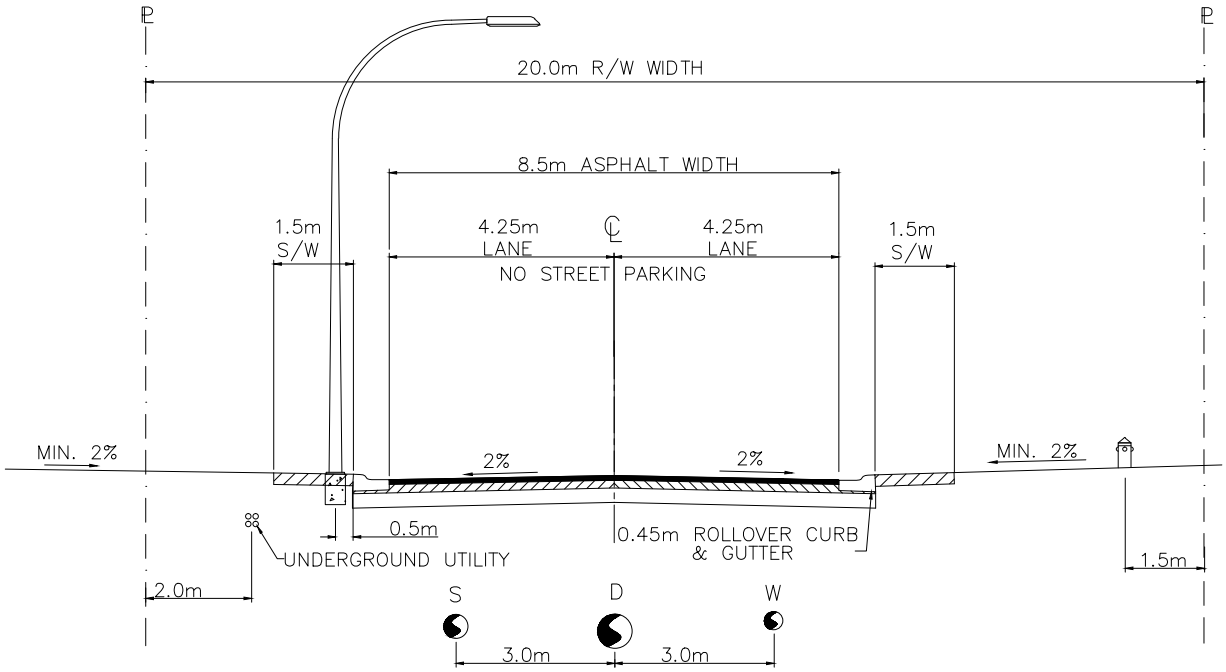
Village of PEMBERTON

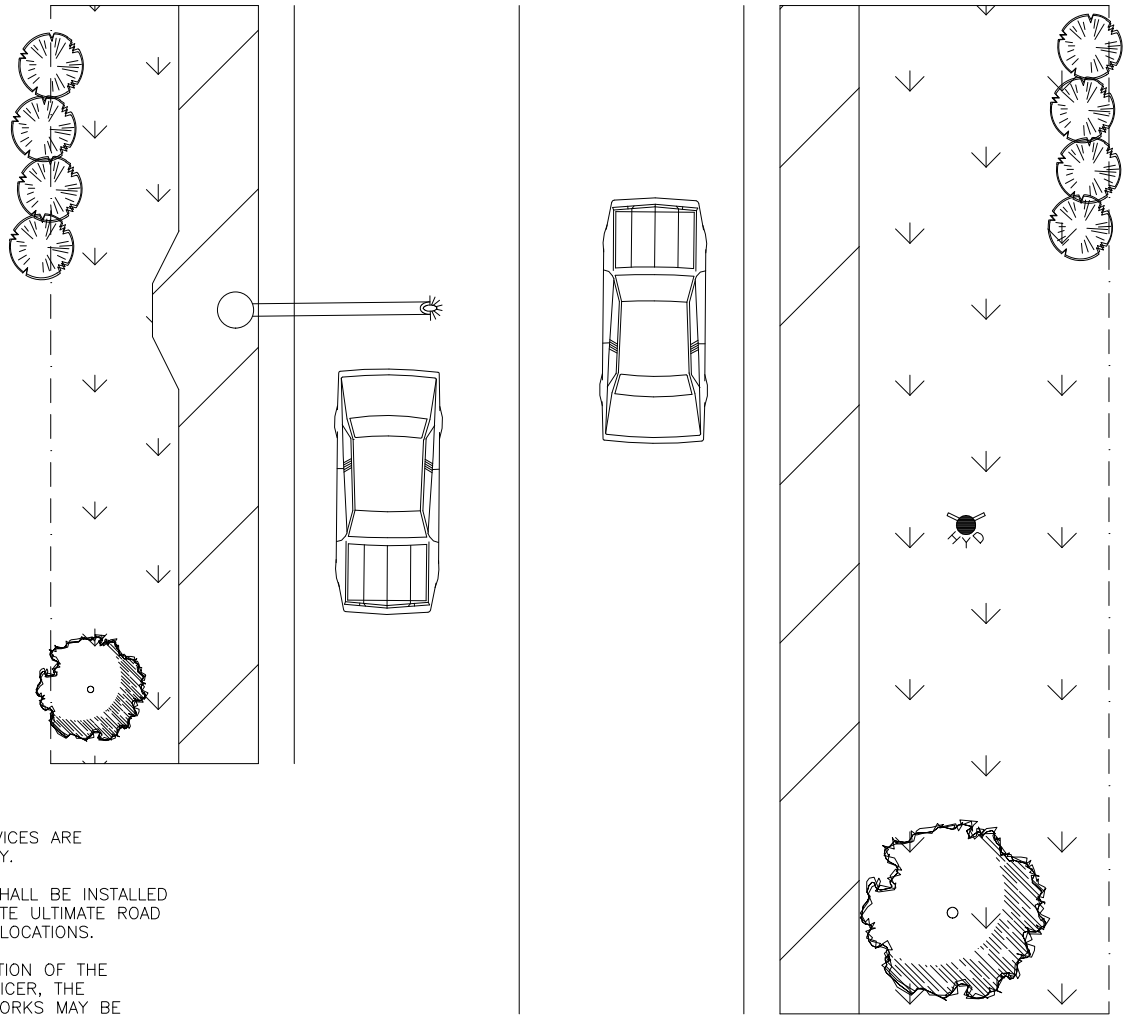
LOCAL STREET
20.0m RIGHT OF WAY

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R03





NOTES:

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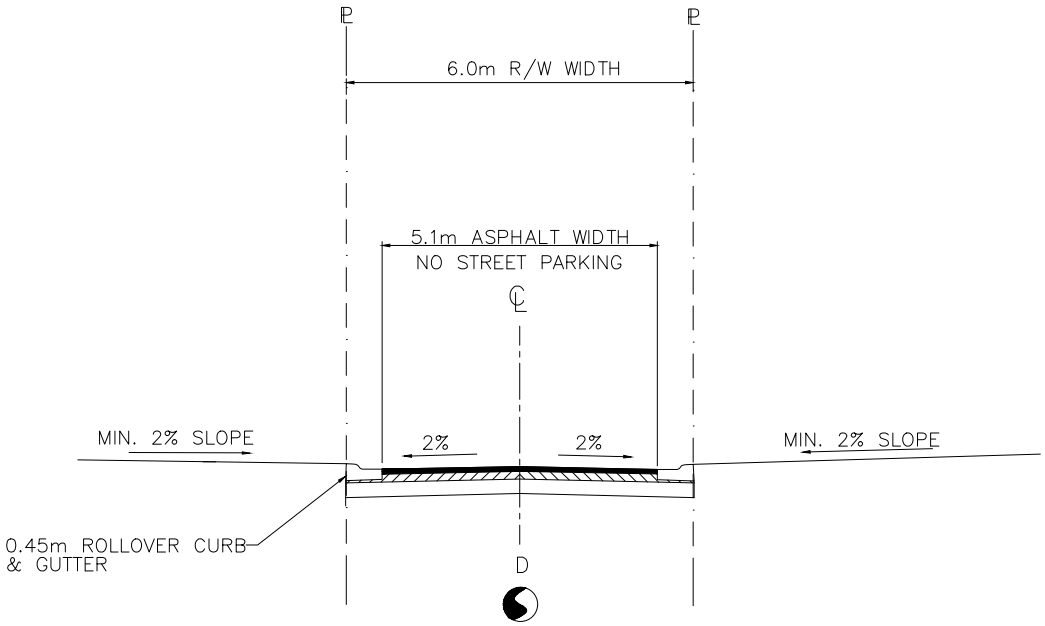
Village of PEMBERTON

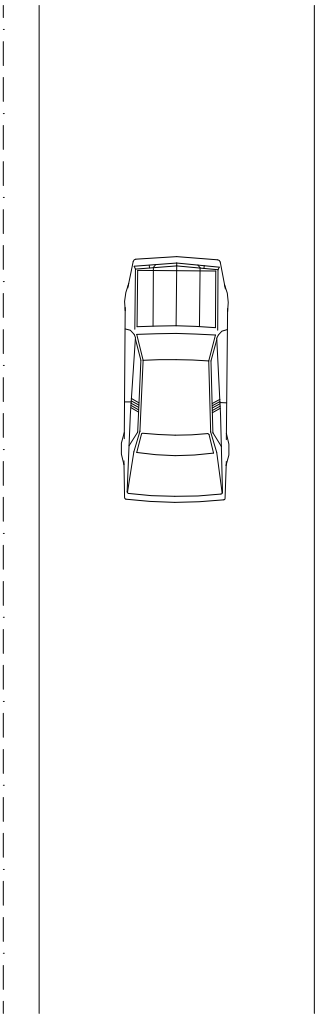
LIMITED LOCAL STREET
20.0m RIGHT OF WAY

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R04





NOTES:

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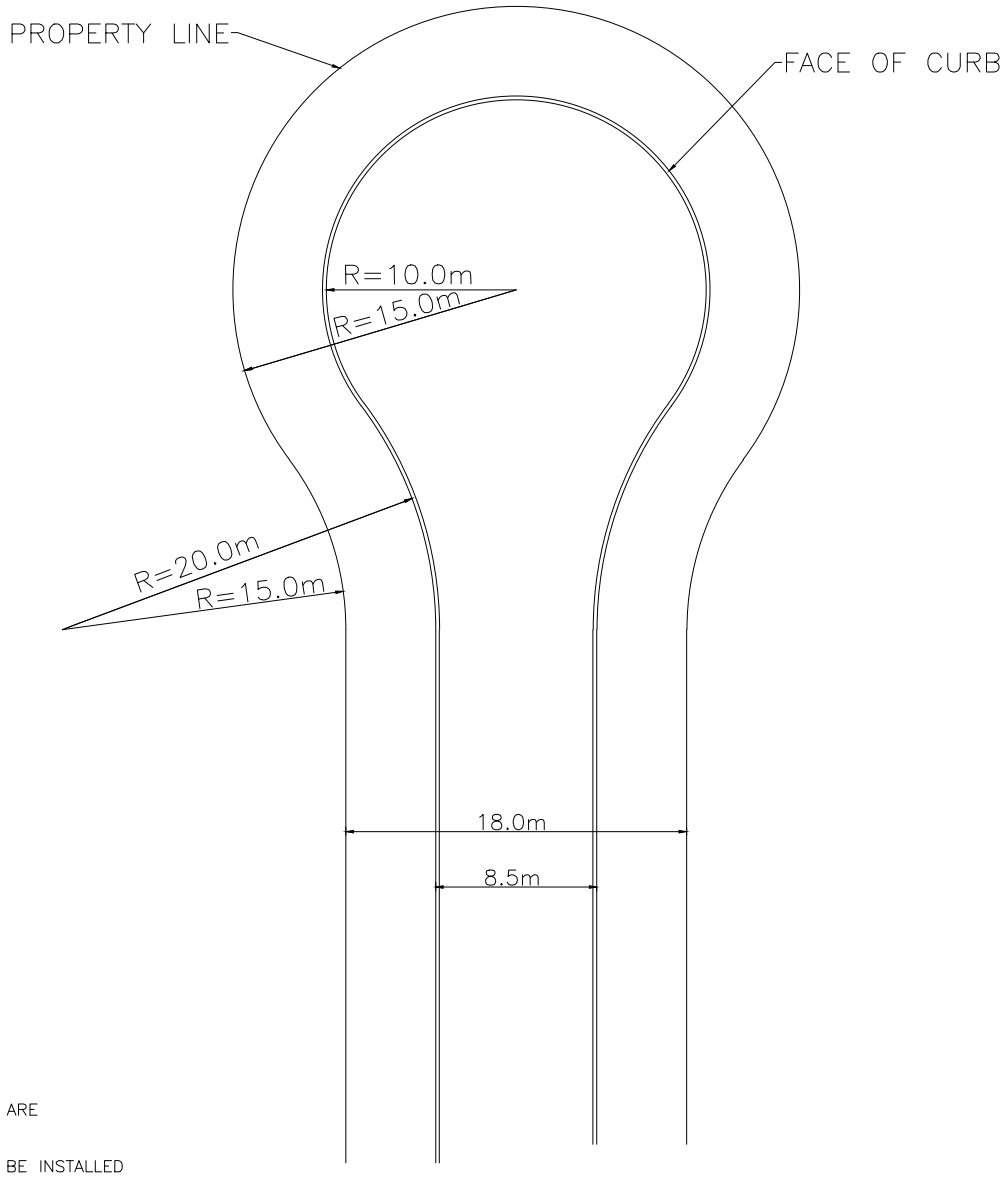
Village of PEMBERTON

LANE
6.0m RIGHT OF WAY

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R05



NOTES:

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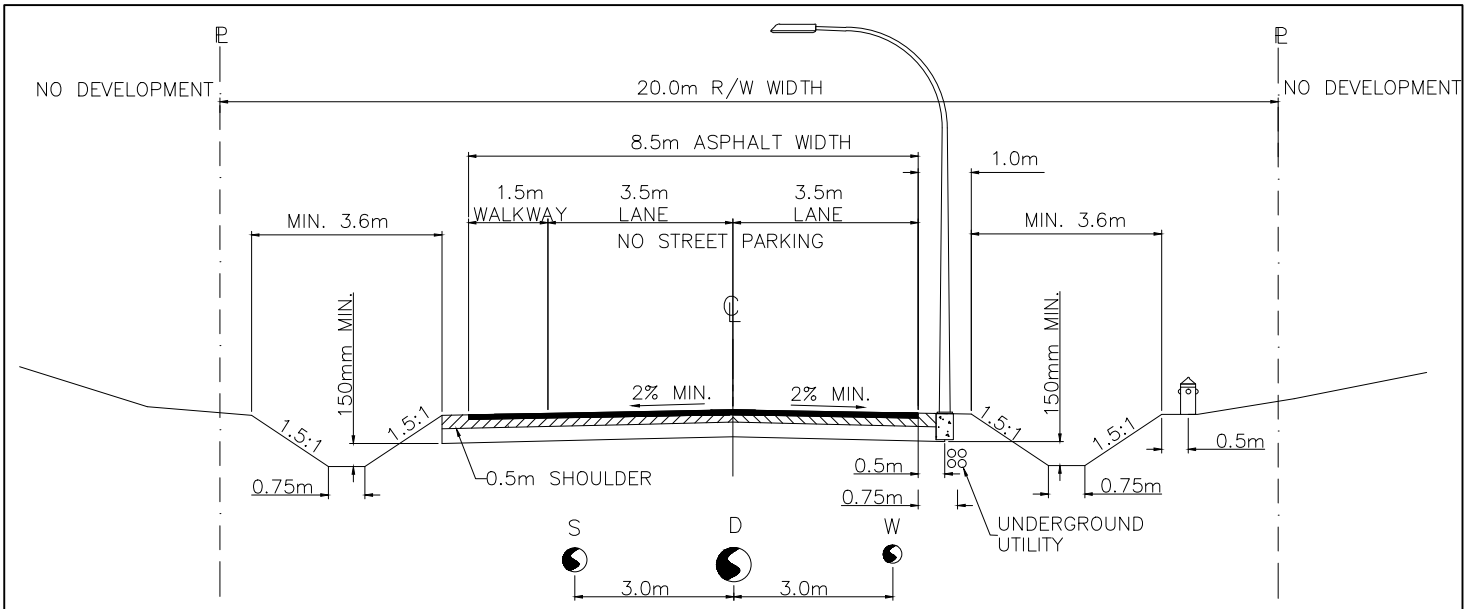
Village of PEMBERTON

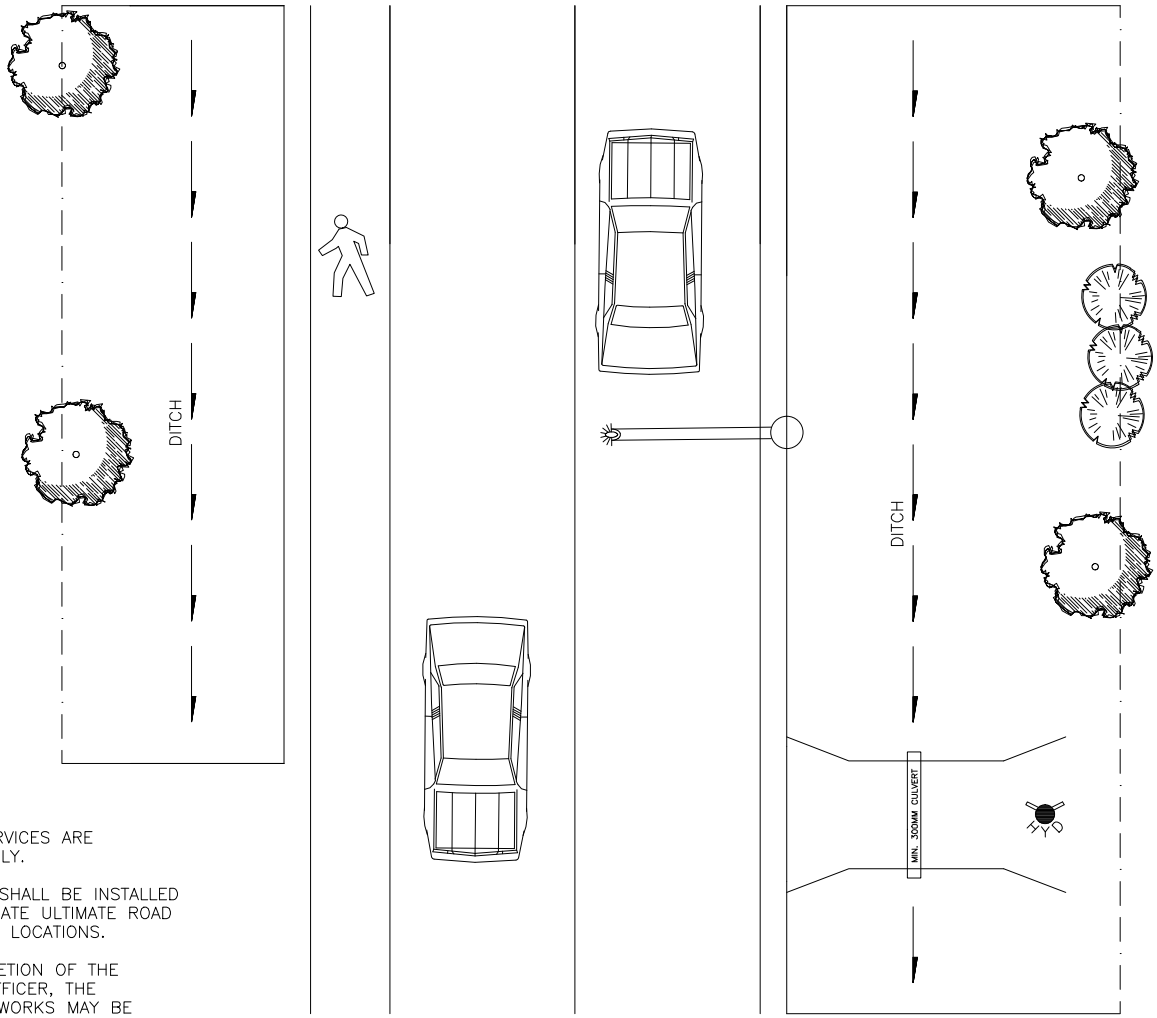
STANDARD CUL DE SAC URBAN RESIDENTIAL 18.0m RIGHT OF WAY

VILLAGE OF PEMBERTON

STANDARD ROAD DRAWINGS

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R06





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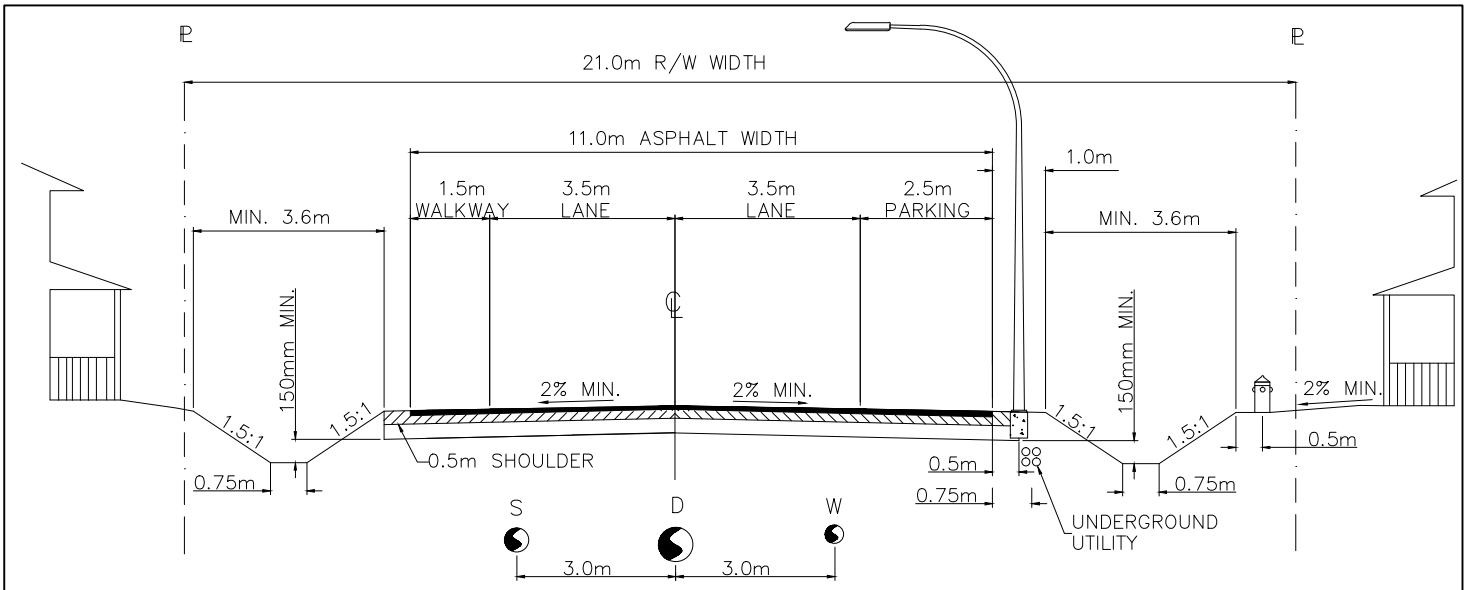
Village of PEMBERTON

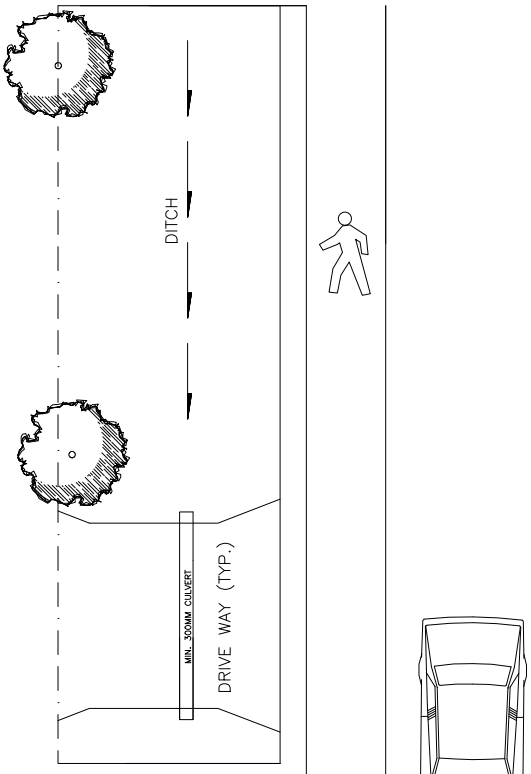
HILLSIDE STANDARD COLLECTOR STREET

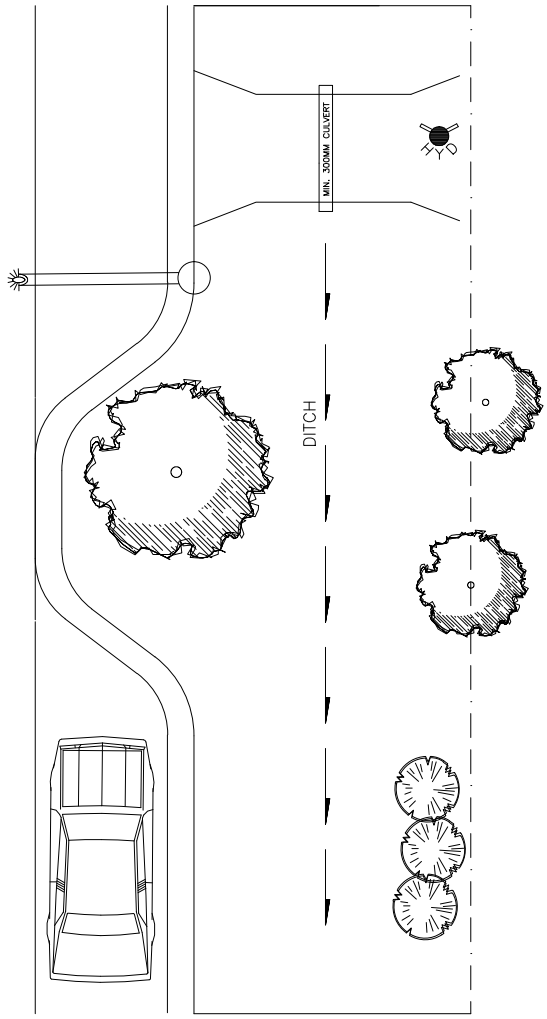
VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R07







NOTES:

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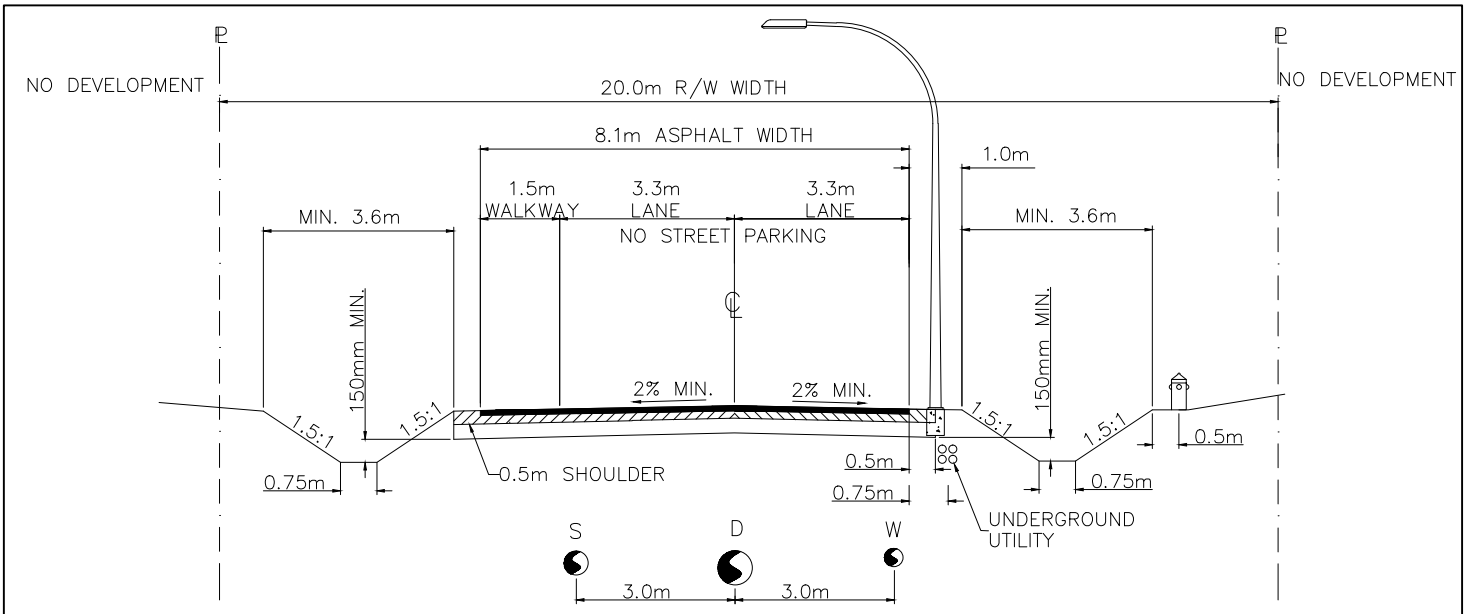
Village of PEMBERTON

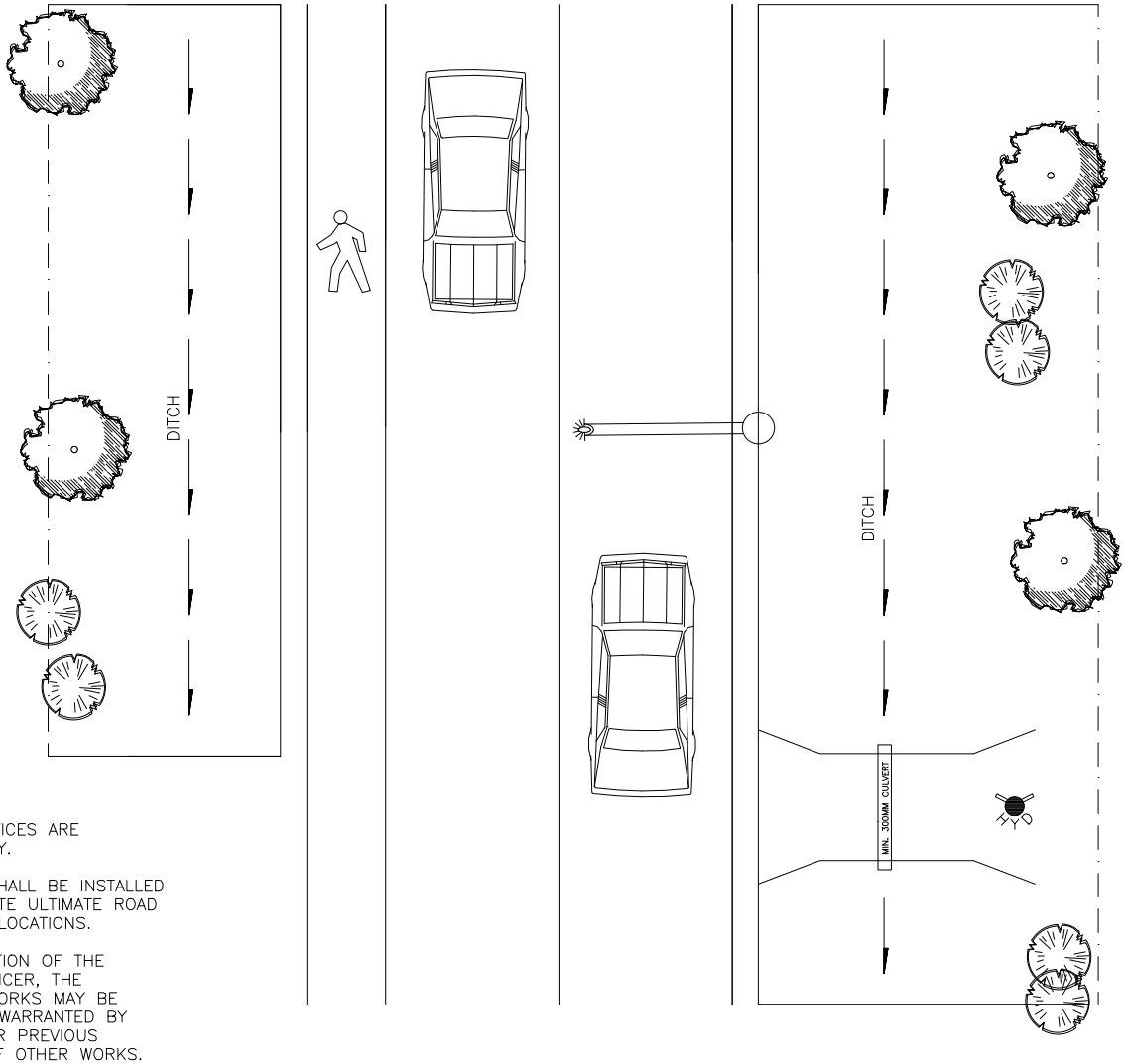
HILLSIDE STANDARD COLLECTOR STREET

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R08





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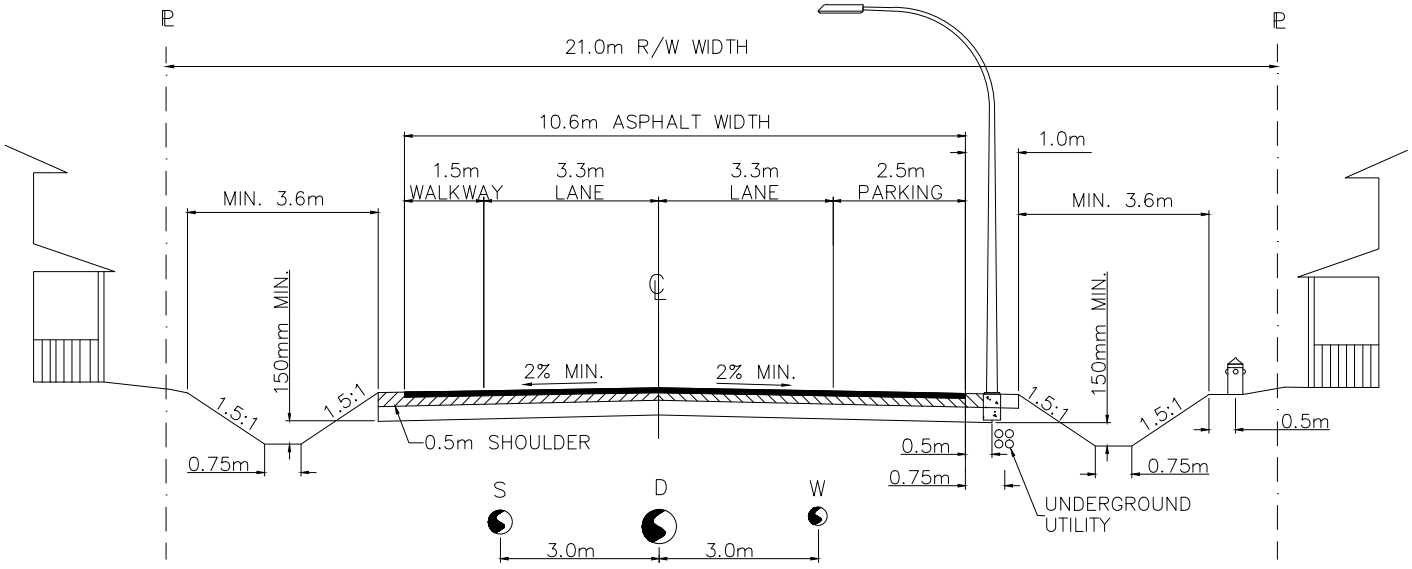
Village of PEMBERTON

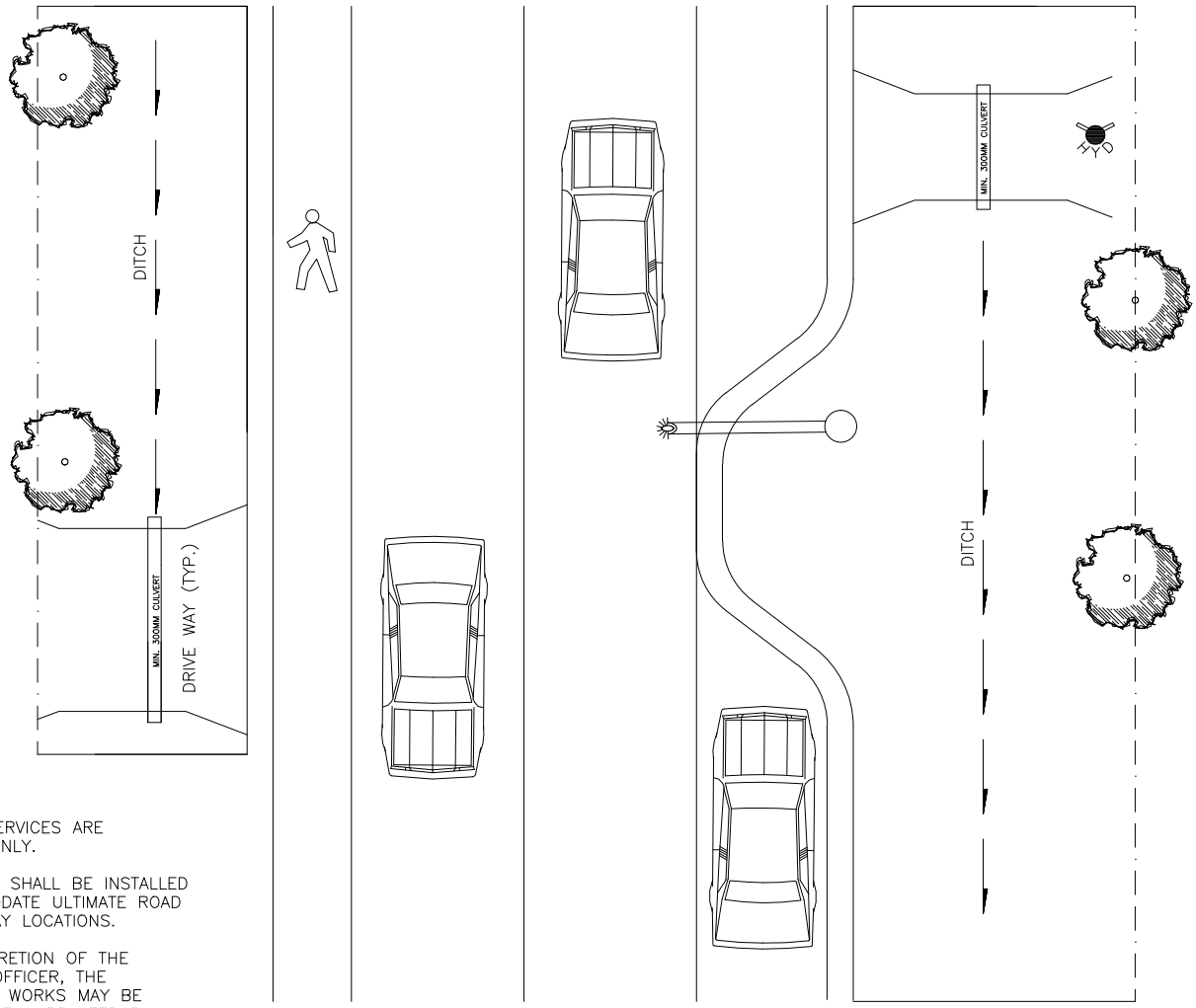
HILLSIDE STANDARD LOCAL STREET

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R09





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Village of PEMBERTON

HILLSIDE STANDARD LOCAL STREET

VILLAGE OF PEMBERTON

STANDARD ROAD CROSS SECTION

APPR.	DATE: FEB. 2012
SCALE: N.T.S.	DWG. NO: VOP–R10

SCHEDULE C

SUBDIVISION AND DEVELOPMENT CONTROL BYLAW NO. 677, 2011

SUBDIVISION SERVICING AGREEMENT

THIS AGREEMENT made this _____ day of _____, 2011

BETWEEN: **VILLAGE OF PEMBERTON,** a village incorporated under the *Local Government Act* of British Columbia, and having its Municipal Offices at 7400 Prospect St, Pemberton, B.C. VON 2LO

(hereinafter called the Village)

OF THE FIRST PART

AND:

(hereinafter called the Developer)

OF THE SECOND PART

WHEREAS:

A. The Developer is the registered owner of lands within the Village of Pemberton in the Province of British Columbia, more particularly known and described as follows:

(hereinafter called the Lands)

B. The Developer desires to develop the Lands.

C. The Developer is required, pursuant to the *Local Government Act,* as a condition of the approval of the subdivision or development permit, to provide works and services (herein called the Works and Services) on the Lands and on that portion of a highway immediately adjacent to the Lands up to the centre line of the highway.

D. The Approving Officer of the Village has agreed to approve the building permit or development of the Lands subject to the terms and conditions contained in this Agreement and the posting with the Village of the Security Deposit described herein.

E. The Developer has requested approval of the development prior to the construction and installation of the Works in their entirety and is agreeable to entering into this Agreement pursuant to the *Local Government Act* and the Developer will deposit the Security Deposit specified by this Agreement;

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the promises, covenants and agreements hereinafter set forth, the parties hereto covenant, agree, represent and promise as follows:

APPENDICES:

1. The following Appendices will be read with and form part of this Agreement:

    a) Appendix "A" -A list of the Works & Services and an estimate of their respective construction costs.

    b) Appendix "B" -Construction drawings to be used for the construction of the Works & Services.

    c) Appendix "C" – A copy of the subdivision plan or the Lands or the Building Permit application.

DEVELOPER TO DO WORK

2. The Developer covenants and agrees to construct and provide all the Works and Services listed and shown on Appendices A and B hereto, as approved by the Village.

TRANSFER OF INTEREST IN WORKS

3. The Developer covenants and agrees with the Village to assign, transfer and convey to the Village all of its right, title and interest in the Works & Services on any and all of the Lands, upon or in which the Works & Services are situated, upon the completion of the Works & Services, (as witnessed by the issuance of a Certificate of Substantial Completion). The Developer will from time to time and at all times so long as it exercises any rights of ownership in the said Lands upon the request of the Village, make, do and execute or cause or procure to be made, done and executed, all such further acts, deeds, rights-of-ways, easements and easements assurances for the more effectual carrying out of this Agreement.

PERMISSION TO DO WORK

4. The Village covenants and agrees to permit the Developer to construct the Works & Services, on the terms and conditions herein, and in the manner required by and at the places specified in the Plans and Specifications; provided that nothing in this Agreement shall be construed as an undertaking, promise or covenant on the part of the Village to make available the use of or access to the Works for any purpose, and without limiting the foregoing, for the purpose of serving the Lands or any other real property whatsoever either owner or controlled by the Developer or its associates or otherwise, but rather the Village reserves the right in its sole and absolute discretion to make available, operate, alter, use, extend, diminish, discontinue, tear up, sell, rent or otherwise dispose of the Works as its Council from time to time deems fit.

CHANGES TO THE BYLAW

5. The Developer covenants and agrees to comply with any changes in subdivision requirements or standards enacted by Bylaw prior to the actual commencement upon the Lands of the Works contemplated by this Agreement.

START OF WORK

6. The Developer covenants and agrees not to commence work until the Approving Officer provides the Developer with written permission to proceed with construction in the form provided in Schedule D to this Bylaw.

COMPLETION TO DO WORK

7. The Developer shall complete the construction of the Works & Services, specified in Appendices "A" and "B" to the satisfaction of the Village, within one (1) year from the date of this Agreement.

DEVELOPER TO GRANT RIGHTS-OF-WAY

8. The Developer to grant to the Village all necessary road dedications, statutory rights-of-way and easements over the said Lands to accommodate the said Works & Services and, where the said Works & Services are located upon or under privately owned lands other than the said Lands, to obtain at the Developer's expense, all necessary road dedications, statutory rights-of-way and easements over such Lands, in favour of the Village where applicable, to accommodate the said Works & Services.

DESIGN BY P.ENG

9. The Developer covenants and agrees that all works required herein shall be designed by a Professional Engineer, who shall be registered with the Association of Professional Engineers and Geoscientists of British Columbia and retained by the Developer. Plans and specifications for the said works shall be prepared by or under the direct supervision of the said Professional Engineer and all plans shall bear his professional seal and signature.

INSPECTION BY P.ENG.

10. The Developer covenants and agrees to regain a Professional Engineer during the construction period for the purposes of inspection to ensure compliance with the approved design and to provide certification of the as-built records.

ENGINEERING DRAWINGS

11. The Developer covenants and agrees that the intent of this Agreement is that the Developer shall construct fully completed Works & Services, and grant all necessary easements as shown in the following plans and specifications prepared by :

    Under drawing numbers:

    And as received for the purposes of this agreement by the Village on the _____.

DESIGN CHANGES

12. The Approving Officer or Village's Agent may alter the plans because of conditions on site so that the works function and operate in a manner satisfactory to the Approving Officer or Village's Agent. Should the works, as provided herein, prove to be in any way defective or should they not operate to the satisfaction of the Approving Officer or Village's Agent, then the Developer shall, at his own expense modify and reconstruct the works so that the works shall be fully operative and function to the satisfaction of the Approving Officer or Village's Agent.

SUBSTAINTIAL COMPLETION

13. A Certificate of Substantial Completion shall be provided by the Village's Agent on the completion of the construction listing all the deficiencies. This letter of Substantial Completion shall not be construed as acceptance of the Works & Services. Substantial Completion is defined by MMCD.

"AS-BUILT" SUBMISSION

14. The Developer covenants and agrees to submit to the Village the final "as-built" drawings and records of construction, and test results, as accepted by the Village's Agent within 60 days of the date of the Certificate of Substantial Completion.

MAINTENANCE PERIOD AND RESPONSIBILITY

15. The Developer covenants and agrees to maintain every part of the Works & Services in good order and in complete repair for a period of one (1) year from the date shown on the Certificate of Substantial Completion.

    Should the Developer fail to maintain the Works, then the Village's Agent, at its option, after giving the Developer seven (7) days written notice (emergencies excepted), may do so, and the whole costs, charges and expenses so incurred by the Village will be payable by the Developer, as provided for herein. The decision of the Village's Agent will be final with respect to the necessity for repairs, or the adequacy of any work done.

    Once any Works covered by this Agreement are connected to the Village's infrastructure, only Village crews or Contractors under the direct supervision of the Village may undertake work on such Village infrastructure. As such, Village crews or contractors retained by the Village will correct any defects, imperfections, settlements and/or re-chlorination and flushing which is deemed by the Village's Agent to be necessary during the one (1) year period from the date shown on the Certificate of Substantial Completion and the whole of such costs, charges and expenses so incurred by the Village in undertaking such work including but not limited to contractor costs will be payable by the Developer as provided for herein.

CERTIFICATE OF ACCEPTANCE

16. The Village covenants and agrees that upon satisfactory completion by the Developer of all of the covenants and conditions in this Agreement, including the maintenance of the Works & Services in complete repair for a period of one (1) year, to provide the Developer with a Certificate

of Final Acceptance of the Works & Services, signed by the Village's Agent. Notice of acceptance of the Works & Services will be issued by the Village's Agent when all deficiencies have been corrected, as-built drawings and service record cards received, and the maintenance period outlined herein has expired. The maintenance and repair of all such Works & Services remain the responsibility of the Developer until the Certificate of Acceptance for the Works & Services has been issued.

DEVELOPER INDEMNIFIES VILLAGE

17. The Developer covenants and agrees to save harmless and effectually indemnify the Village against:

    a) all actions and proceedings, costs, damages, expenses, claims, and demands whatsoever and by whomsoever brought by reason of the construction, installation, maintenance or repair of the Works & Services provided by the Developer;

    b) all expenses and costs which may be incurred by reason of the construction, installation, maintenance or repair of the Works & Services resulting in damage to any property owned in whole or in part by the Village for which the Village by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, install, maintain or repair;

    c) all expenses and costs which may be incurred by reason of liens for non-payment of labour or materials, Workmen's Compensation, Unemployment Insurance, Federal or Provincial tax, check -off or encroachments owing to mistakes in survey;

    d) all expenses and costs which may be incurred by the Village as a result of faulty workmanship and defective material in any of the Works & Services installed by the Developer.

    The above clauses shall not be construed as to extinguish any rights which the Village would have were it not for the inclusion of Clause 17 in this Agreement.

INSURANCE BY DEVELOPER

18. The Developer will at his sole expense throughout the duration of the Work carry Comprehensive Liability Insurance acceptable to the Village in the amount of at least Three Million Dollars ($3,000,000) with insurance companies licensed to carry on business in the Province of British Columbia in partial discharge of its obligation under Clause 17 (a), (b), (c) and (d)

INSURANCE COVERAGE

19. The Developer covenants and agrees to provide the following insurance coverage, and to provide the Village with a copy of the insurance policy prior to the commencement of any construction of the Works:
    a. To protect the Developer and the Village against all claims arising out of:

i. Death or injury to persons; and
ii. Damage to or loss of, any property of third persons, including without limiting the foregoing; the following classes of property: Real property, chattels, land, works, buildings, structures, wires, conduits, pipes, mains, shafts, sewers, tunnels, and apparatus in connection therewith, even when the damage or loss of use is caused by vibration, moving, shoring, underpinning, raising, rebuilding or demolition of any building, structure or support, or by excavation, tunneling or other work below the surface of the ground or water; and
iii. Damage to or loss of all building, structures, stores, equipment and materials included in or required to the carrying out of the Works.

b. Every policy of insurance required will:
i. Name "The Village of Pemberton" and its Agents or Contracted Employees as additional insured; and
ii. State that the policy applies to each insured in the same manner and to the same extent as if a separate policy had been issued to each insured; and
iii. State that the policy cannot be cancelled, lapsed or materially changed without at least thirty (30) days written notice to the Village, delivered to the Village of Pemberton clerk.

SECURITY DEPOSIT

20. As security for the due performance of all of the covenants and promises contained in this Agreement the Developer has forthwith deposited with the Village a security deposit of 120% of estimated cost of the Works and Services, in the amount of $_____. as determined by the cost estimate of the Developers Professional Engineer and as attached as Appendix A , in the form of cash or a Letter of Credit acceptable to the Village (herein called the Security Deposit).

FORFEIT OF SECURITY DEPOSIT

21. In the event that the Developer fails to construct and install the Works & Services prescribed herein within the time specified in Clause 7, the said Security Deposit will be forfeited to the Village.

USE OF SECURITY DEPOSIT

22. If the Developer is in default of any of its obligations in respect to the construction and installation of the Works and Services or any portion thereof, the Village may cash the Security Deposit to secure completion of all or a portion of the Works and Services in compliance with the terms of this Agreement and any payment obligations of the Developer in respect of the Works and Services that remain unpaid including the discharge of any builders' liens, and such monies shall be applied to remedy the default and complete all or any portion of the Works and Services and to satisfy the Developers warranties in respect of same in place and stead of the Developer and ensure compliance with the terms of this Agreement. In addition the Village may cash, retain and use the

Security Deposit to remedy any emergency condition including any condition which may cause Public Health and Safety concerns which, in the sole opinion of the Approving Officer, is associated with, arises from or is a result of the Works and Services and requires expedient action. Notwithstanding the foregoing, the Village may cash, retain or use the Security Deposit to pay, settle or compromise any claim against the Village for which the Developer indemnified the Village pursuant to Clause 17. If the proceeds from the Security Deposit is not sufficient to pay all costs and expenses incurred by the Village in completing all or a portion of the Works and Services including the Village's normal overhead charges and satisfying the warranties thereof, curing other default by the Developer, or satisfying any amounts owing to the Village pursuant to Clause 17 the Developer shall forthwith pay to the Village the difference upon receipt from the Village of invoices for the same together with all interest thereon at the commercial prime rate of interest plus two percent from the date of receipt by the Developer of the invoices for the same and continuing until payment in full.

RELEASE OF SECURITY DEPOSIT, MAINTENANCE HOLDBACK

23. If the Village's Agent is of the opinion that the Works & Services or any portion thereof have been adequately completed and the Developer's covenants performed in compliance with this Agreement, and if there is no litigation pending by any third party against the Village as a result of, or arising from, the construction of the Works & Services, the Village's Agent shall be authorized to return all, or any portion of the Security Deposit to the Developer at such times and in such amounts as he may deem proper, provided that he will retain an amount equal to ten (10) percent of any released funds for a total or ten (10) percent of the total Security Deposit at the completion of the project to secure the performance of the maintenance required of the Developer (hereinafter called the Maintenance Holdback).

RELEASE OF MAINTENANCE HOLDBACK

24. Upon expiration of the Maintenance Period outlined in Clause 15 and provided that the Village's Agent is satisfied that the Developer has complied with the covenants contained in this agreement and if there is no litigation pending by any third party against the Village as a result of, or arising from, the construction of the Works & Services, the Village's Agent be authorized to return the Maintenance Security Deposit to the Developer and thereinafter the Developer's responsibility for the Works & Services shall cease.

INSPECTION & ADMINISTRATION FEE

25. The Developer covenants and agrees to pay to the Village an Inspection and Administration non-refundable fee in the amount of $_____ to cover Village administration, inspection and processing costs. This fee is payable prior to the execution of this Agreement by the Village and shall be calculated using a summation of the following and relative to the Security Deposit amount:

3% of the first $500,000

2% of the second $500,000

1% of the balance

NO OTHER REPRESENTATIONS

26. It is understood and agreed that the Village has made no representations, covenants, warranties, guarantees, promises or agreements (verbal or otherwise) with the Developer other than those in this agreement.

NO WAIVER

27. The Developer covenants and agrees that nothing contained or implied herein shall prejudice or affect the rights and powers of the Village in the exercise of its functions under any public and private statutes, bylaws, orders and regulations, all of which may be fully and effectively exercised in relation to the said Lands as if the Agreement had not been executed and delivered by the Developer.

WHENEVER the word "will" is used in this Agreement it will be construed as imperative (mandatory).

WHENEVER the singular or the masculine is used in the Agreement it will construed as meaning the plural or the feminine or body corporate or politic where the context or the parties hereto so require.

THIS CONTRACT shall enure to the benefit of and be binding upon the parties hereto, their respective successors and assigns.

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

SIGNED, SEALED AND DELIVERED

_____

SIGNED, SEALED AND DELIVERED

The Corporate Seal of the Village of Pemberton was hereunto affixed in the presence of:

_____

MAYOR

_____

ADMINISTRATOR

SCHEDULE D

SUBDIVISION AND DEVELOPMENT CONTROL BYLAW NO. 677, 2011

STANDARD FORMS

SCHEDULE D-1

PERMISSION TO CONSTRUCT **File No. _____**

Authorization to proceed with construction is hereby granted to:

Name of Developer _____

Address _____

For the works described generally as:

_____
_____
_____

Authorized Start Date _____ **Completion Date**_____

Authorized Hours of Work: From _____ hrs. to _____ hrs. Monday to Saturday inclusive.

Check the following: (all must be completed)

_____ Approved plans covering the works are attached.
_____ Certificates of insurance are attached.
_____ Administration fee has been paid.
_____ Security deposit has been paid.
_____ A Servicing Agreement has been completed – No._____

Consultant: _____

Contact: _____ Phone No. _____ bus.

Special Conditions:
_____
_____
_____

_____
Village Official's Approval

SCHEDULE D-2

CERTIFICATE OF INSPECTION **File No. _____**

I hereby certify that all engineering and construction services, required under the Subdivision and Development Control Bylaw of the Village of Pemberton for the subdivision of:

Legal Description: _____

Project No. _____

which services were designed by:

Name of Firm: _____

Address: _____

and approved for construction on drawing numbers:

drawing number	date	drawing number	date
_____		_____	
_____		_____	
_____		_____	
_____		_____	

Have been installed and inspected by or under the direction of:

_____
_____

I further certify that the "As-Built" drawings hereby submitted represent the works and services as installed for the aforementioned subdivision.

ENGINEER'S SEAL

_____
Consulting Engineer
(signature and name of the Professional Engineer responsible for design)

SCHEDULE D-3

CERTIFICATE OF SUBSTANTIAL COMPLETION **File No. _____**

Developer: _____

_____

Contractor: _____

_____

Project No: _____

Servicing Agreement No: _____

Date: _____

This certificate is issued pursuant to Clause 12 and Clause 14 to the Subdivision and Development Control Bylaw.

The Maintenance Period for the Works will begin on _____

The Maintenance Period for the Works will end on _____

The attached is a List of Deficiencies related to the Works.

The Construction Completion Certificate will be issued when all deficiencies have been cleared, the Maintenance Period expired, and the Village Official has been satisfied all conditions of the Servicing Agreement have been fulfilled.

This Certificate has been made to the best of the Village Official's knowledge, information and belief. It does not constitute acceptance of any Work not in accordance with the requirement of the Subdivision and Development Control Bylaw, and not listed as a deficiency herein, whether or not such defect(s) could have been observed or discovered during construction.

_____

Cc: Contractor Village Official's Approval

SCHEDULE D-4

CONSTRUCTION COMPLETION CERTIFICATE **File No. _____**

Date: _____

Owner: _____

Consulting Engineer: _____

_____

_____

Dear Sirs:

Re: _____

This is to certify that to the best of our knowledge all works and services in connection with the above noted project were completed as of _____in accordance with the approved engineering and asbuilt drawings including inspections, testing, and acceptance as per Subdivision and Development Control Bylaw.

This does not exempt the Owner from any further requirements or agreement responsibilities which may come to the knowledge of the Village during the one year Maintenance Period.

Based on the above construction completion date, the maintenance period shall extend to _____ and the Maintenance Holdback in the amount of $_____ will be confirmed for release on this date, in compliance with issuance of a Final Acceptance Certificate.

ENGINEER'S SEAL

_____
Consulting Engineer

_____
Village Official's Approval

SCHEDULE C-5

FINAL ACCEPTANCE CERTIFICATE

Date: _____

Owner: _____

Consulting Engineer: _____ Contractor: _____

_____ _____

_____ _____

Dear Sirs:

Re: _____

This is to certify that to the best of our knowledge all works and services in connection with the above noted project achieved Final Acceptance as of _____.

Based on the above date, it is recommended that the Village accept the works and services and release the Maintenance Holdback in the amount of $ _____.

_____ ENGINEER'S SEAL
Consulting Engineer

_____
Village Official's Approval