

***SCHEDULE A***  
**SERVICE LEVELS**

This is Schedule A of the Corporation of the Village of  
Lytton Subdivision and Development Servicing Bylaw  
No. 483, 1998.

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Clerk

*Madigan*

# SCHEDULE A

## SERVICE LEVELS

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### SERVICE LEVELS

Servicing levels will be the same for all new subdivisions and developments throughout the Village and the minimum standard is as follows:

1. Site grading in accordance with Schedule B.
2. Highway Standards as indicated on Table A-1 including:
  - .1 Asphalt concrete paving on all roadways, walkways and lanes in accordance with Schedule "C".
  - .2 Concrete curb, gutter and sidewalk in accordance with Schedule "D".
  - .3 Street lighting in accordance with Schedule "H".
  - .4 Underground hydro, telephone, cablevision, and gas in accordance with Schedule "I".
3. Water distribution system and connection to community water system for domestic purposes as required in Schedule "E".
4. Sanitary sewer collection system and connection to community sanitary sewer system for domestic purposes as required in Schedule "F"; for sewage generated by industrial use, the owner may be required to provide alternate treatment and disposal facilities.
5. Storm water drainage in accordance with a drainage plan as required in Schedule "G".

### INFILLING

1. Throughout the Village, where an applicant wishes to subdivide a maximum of 2 existing residential parcels, and there is no potential or opportunity for future subdivision of adjacent parcels the owner may apply to Village Council for a Development Variance permit to provide a level of service equivalent to that in adjacent parcels.

**TABLE A-1  
SUBDIVISION AND DEVELOPMENT STANDARDS**

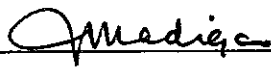
Road Classification	Right-of-Way Width	Pavement Width	Lane Width	Curb & Gutter		Sidewalks
				Non-Mountable	Mountable	
Downtown Commercial	20.0 m	15.0 m	3.75 m	both sides		1.5 m both sides with 0.6 m paving stone
Local (2-Lane) • major • minor	20.0 m	11.0 m	3.00 m		both sides	1.4 m one side
	18.0 m	8.5 m	3.00 m		both sides	1.4 m one side
Cul-de-Sac: ▪ Entrance ▪ Terminus	18.0 m	8.5 m	3.00 m		both sides around bulb	1.4 m one side
	15.0 m radius	12 m radius			around bulb	halfway around bulb
Industrial (2-Lane)	20.0 m	11.0 m	5.5 m		both sides	not required
Lanes	6.0 m	6.0 m	3.0 m	not required	not required	
Developments	N/A	7.3 m	3.65 m	not required	not required	

**NOTE: Pavement width is defined as the distance between the gutter lines on each side of the road.**

***SCHEDULE B***

**REGULATIONS, STANDARDS AND SPECIFICATIONS FOR  
THE DESIGN AND CONSTRUCTION OF SITE GRADING**

This is Schedule B of the Corporation of the  
Village of Lytton Subdivision and  
Development Servicing Bylaw No. 483, 1998.

  
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Clerk

## **SCHEDULE B**

### **REGULATIONS, STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF SITE GRADING**

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#### **B - 1.0 GENERAL**

Through areas of steep topography, site grading, when requested by the Approving Officer is required to develop subdivisions or developments with respect to providing building sites, or accommodating or enhancing drainage; the Owner shall execute the work in accordance with the regulations, standards and specifications set out in this Schedule.

#### **B - 1.01 Approval of Engineering Drawings Required Prior to Construction**

Prior to commencement of construction, engineering drawings for site grading work shall be submitted to the Approving Officer for approval. These drawings shall explicitly show:

- clearing and grubbing boundaries
- fill and excavation areas (by shading)
- structural fill areas
- lot grading elevations and sections
- drainage
- siltation abatement and erosion control
- profiles along excavation and embankment control lines

No construction of the work shall commence until the Owner has received written approval from the Village.

#### **B - 1.02 Geotechnical Evaluation**

In addition to the Geotechnical overview undertaken during the initial phases of the project, the Owner shall, when requested by the Approving Officer, engage the services of a qualified Geotechnical Engineer to investigate surface and sub-surface conditions with respect to site grading within the proposed subdivisions. The Geotechnical Engineer shall prepare a report outlining his findings and shall provide clear, definitive recommendations on the geometry and placement of fill sections, compaction requirements for structural and non-structural fills, pavement structures for roads, and any other geotechnical issues affecting site grading construction within the propose

subdivision. A copy of the Geotechnical evaluation shall be submitted to the Approving Officer prior to the time engineering drawings are submitted for approval.

### **B - 1.03 Drainage**

Supplemental to the requirements for drainage systems outlined in Schedule G of this Bylaw the owner shall design site grading and drainage works to:

- accommodate drainage through the site;
- accommodate drainage generated on-site;
- mitigate drainage from one property to another;
- mitigate sub-surface drainage/groundwater problems;
- mitigate soil erosion potential; and
- negate siltation of adjacent or receiving streams and water courses.

The Engineer shall prepare the appropriate drawings to explicitly show the works required to accommodate site drainage.

### **B - 1.04 Detail Site Survey**

Detail site surveys are required throughout the site to ensure grading in accordance with the requirements of this bylaw with respect to assuring the competence of non-structural and structural fills; and to accommodate site drainage during and after construction of the subdivision or development.

## **B - 2.0 DESIGN CRITERIA**

### **B - 2.01 General**

The intent of site grading plans is to ensure that the following parameters are accommodated:

- Overall site drainage with respect to:
  - conveyance of off-site runoff onto and through the site;
  - conveyance of on-site runoff into existing water courses or new drainage infrastructure;
  - abatement of drainage from one lot to another; and
  - abatement of sub-surface groundwater problems.

- Buildable lots with respect to:
  - reasonable access from fronting roadways;
  - drainage from each lot and into drainage infrastructure;
  - structural competence of undisturbed and embanked soils to support building loads.
- Provide drawings that are easy to interpret by approving authorities and contractors to construct the work.

### **B - 2.02 Site Preparation**

All areas of the site where excavations or embankments are to be constructed shall be cleared of trees, structures and debris, grubbed and stripped of organic topsoil.

Merchantable timber shall be salvaged; waste wood, roots, structures and debris shall be loaded, hauled and disposed of at an approved location off-site.

### **B - 2.03 Excavation and Embankment Slopes**

Unless specified otherwise by a Geotechnical Engineer, maximum (steepest) excavation and embankment slopes shall be 2 m horizontal by 1 m vertical (2:1).

### **B - 2.04 Compaction**

Unless specified otherwise by a Geotechnical Engineer all embankment shall be compacted as follows:

- Non-Structural Embankments – Minimum 95% Standard Proctor Density
- Structural Embankments – Minimum 100% Standard Proctor Density

### **B - 2.05 Lot Grading**

All lots shall be graded towards roadways; through areas where site topography prohibits drainage to roadways, lots may be graded to drain to lot lines with drainage swales graded to draining onto roadways. Drainage swales shall be protected by registration on the lot title.

Maximum lot grades shall be 15% graded to 20 m back from the front property line and minimum lot grades 2%.

## **B - 2.06 Lot Access**

Lot access shall be provided in accordance with the provisions outlined in Schedule C, Clauses 2.07.1 and 2.07.2.

## **B - 2.07 Landscaping and Hydroseeding**

Upon completion of earthworks, all excavation and embankment slopes shall be covered with a minimum 200 mm thickness of organic topsoil, stripped during the site preparation phase of the project and hydroseeded as follows:

1. Schedule all operations to ensure optimum environmental protection and seeding operations. Schedule hydraulic seeding to follow as soon as practical after growing medium placement and finish grading to provide vegetative cover as soon as possible.
2. Schedule seeding after frost has left ground and before June 15, or between August 31 and September 30.
3. Do not perform work under adverse field conditions such as winds greater than 10 km per hour, frozen soil, hot and arid conditions, excessively wet or dry soil or soil covered with snow, ice or standing water.
4. No seeding to be carried out in areas or over surfaces that are not properly prepared. The Contractor is to examine site before starting work to verify all surfaces are properly prepared.
5. All seed, mulch, fertilizers and related materials, where required, to be stored in dry, weatherproof storage place and to be protected from damage by heat, moisture, rodents or other causes until time of seeding. Labels or other identification to not be removed or defaced.
6. A slow release fertilizer formulation based on analysis of soil to be seeded shall be applied in conjunction with the hydroseed application.
7. Mulch shall be specially prepared wood cellulose and/or textile fabric of a type commonly used and approved for hydraulic seeding.
8. Blend hydroseed application into adjacent grass and forest to form uniform surfaces.
9. Maintain hydroseed areas as necessary to establish a complete coverage of grass in a healthy and growing condition until final acceptance.
10. Hydroseed areas will be accepted when seeded areas are uniformly established and areas are free of rutted, eroded, bare or dead spots and is free of weeds.

### **Products**

#### **Seed**

Grass seed to meet requirements of Canada Seed Act for Canada No. 1 seed.

Seed mixes shall be supplied by a recognized supplier of certified seed.

Seed to be packed and delivered in original containers clearly showing:

1. Name of supplier
2. Analysis of seed mixture
3. Percentage of pure seed
4. Year of production
5. Net weight
6. Date and location of bagging

Installed seed mixes and application rates are to take into account site specific variables such as altitude, micro-climate, soil type, and soil organic content, as well as water availability, seed availability, seed germination rates, and time of seeding.

All seed species, installed on sites where no additional water supplementation is to be applied other than natural rainfall, shall be drought tolerant varieties.

A seed mix shall be specified from the following seed species for a typical installation in populated areas i.e., subdivisions, roadside cover slopes, and empty lots:

1. Hard fescue
2. Creeping red fescue
3. Sheep fescue
4. Annual ryegrass
5. Perennial ryegrass
6. Crested wheatgrass
7. Mountain bromegrass

No less than three species of seed of which no portion is less than 20% shall be used in each custom blend.

Percentages and application rate for custom mixes shall be specified by the supplier and shall be not less than 30 kg/ha.

Nitrogen fixing legumes such as alfalfa or clover may be used in limited quantity in seed mixes where a quick short term (less than 3 years) cover crop is required to control erosion or to establish native dryland grasses. Inclusion of legumes in seed mixes is to be approved prior to application.

## Mulch

### Slurry application

1. Mulch material application at 2,000 kg/ha
2. Tackifier application at 60 kg/ha
3. Fertilizer application as required to bring top soil to required levels of fertility.
4. Sufficient water to suspend the components in a slurry and provide a uniform coverage of the soil surface of the components at the specified rates.

### B- 2.08 Siltation Abatement and Erosion Control

Siltation abatement and erosion control works shall be designed and implemented during construction, in consultation with and in accordance with the requirements specified by the Village, the Provincial Ministry of Environment Lands and Parks, and the Federal Department of Fisheries and Oceans. Specialist drainage, environmental and biological consultants shall be engaged by the owner as required to mitigate siltation and erosion control concerns to the satisfaction of the Village and Provincial and Federal Agencies.

### B-3.0 MATERIALS

#### B – 3.01 Embankments

Embankment material shall be free of rock detrimental to proper compaction and free of organic or other deleterious matter.

Imported roadway embankment material shall conform to the gradation limits shown in the following table:

USBC Sieve Size	Percent by Weight Passing
150 mm	100%
75 mm	74 – 100%
38 mm	56 – 100%
25 mm	46 – 94%
4.75 mm	20 – 70%
1.18 mm	10 – 52%
0.300 mm	2 – 26%
0.075 mm	0 – 8%

### **B – 3.02 Rock Fill**

Rock, by definition, shall mean any material excepting hardpan or glacial till over 0.75 cu.m. in volume requiring continuous drilling and blasting including natural boulders.

Rock fill shall be any material containing more than 15% by volume of rock larger than 150 mm diameter, to a maximum of 300 mm diameter.

It shall only be used in approved areas and by approved methods to provide maximum stability of the fill.

### **B – 3.03 Siltation Abatement and Erosion Control**

Materials shall be in accordance with the requirements specified by Specialist Consultants engaged to design siltation abatement and erosion control works.

### **B – 4.0 WORKMANSHIP**

#### **B – 4.01 Notification of Approving Officer Prior to Undertaking Earthworks**

Adequate notice shall be given to the Approving Officer by the Owner after site preparation and stripping and prior to the commencement of earthworks. The Owner shall not proceed to the excavation of site grading work without the approval of site stripping and preparation work by the Approving Officer.

#### **B – 4.02 Site Preparation and Clearing**

Excavation and embankment areas shall be cleared of all trees, stumps, logs, roots, and any other objectionable material. In addition, buildings, fences, superfluous culverts, or any other structures shall also be removed. Trees shall be left only where they do not conflict with roadwork or utility services and where they are not deemed a hazard at the discretion of the Approving Officer.

#### **B – 4.03 Site Excavation and Embankment**

Embankments shall be constructed by placing, shaping and compacting approved materials as classified in this Bylaw. All material placed in embankments shall be bladed smooth in level layers not exceeding 300 mm uncompacted depth over the entire embankment area and placed in successive uniform layers.

When embankments are to be made on hillsides or where a new fill is to be applied upon an existing embankment, the slopes of the original ground or embankment (except rock embankments) shall be terraced or stepped before filling is commenced.

Each layer shall be compacted with approved equipment to minimum 95% Standard Proctor Density for non-structural fills and to 100% Standard Proctor Density for structural fills.

Sufficient amounts of watering and compaction equipment required to efficiently and properly compact the material for the rate at which the material is being hauled into the embankment area shall be provided.

The embankment shall be constructed to provide adequate drainage. Should the embankment material become damaged or saturated by rain, flooding, or other effects, repair, scarification, or whatever other measures required to restore the embankment to the moisture and compaction requirements this Bylaw shall be undertaken.

Unsuitable materials encountered in the excavation areas shall be excavated and wasted.

Over excavation shall be rebuilt to grade with an approved compacted material and compacted to the satisfaction of the Approving Officer.

#### **B – 4.04 Materials Testing**

The Owner shall retain an independent materials testing firm to carry out comprehensive testing to frequencies defined below, for each stage of construction of roads and streets. The materials testing firm must employ a full time, qualified professional engineer within the office from which the testing services are provided and he shall review all test data. The Owner shall provide a copy of all test data in summary form to the Village Approving Officer prior to applying for final Construction Completion. Testing will be performed at the following minimum frequencies:

##### For Site Embankment

- a) Moisture – density relationship (Standard Proctor) – ASTM D698; - one test for each soil type.
- b) Moisture and density tests:
  - Non-structural embankment - one test per lift per 500 square metres
  - Structural embankment – one test per lift per 250 square metres

##### For Trench Backfill

- a) One test per lift per 120 lineal metres of trench.

#### **B-4.05 Construction Record Drawings**

Prior to Construction Completion, the owner's engineer shall submit the following:

- a site plan at minimum 1:1000 scale showing the location of excavation areas, non-structural, and structural embankments, drainage courses, and drainage works.
- Detailed site data for each structural fill lot showing:
  - ♦ Cadastral lot layout
  - ♦ site topography after stripping
  - ♦ site topography after completion of structural fills
  - ♦ a profile through each lot showing the original ground line profile (after stripping) and the finished gradeline profile
  - ♦ a geotechnical report under seal of a Professional Engineer, documenting site inspections, compaction testing and certification of the fill, together with recommendations for building construction.

***SCHEDULE C***

**REGULATIONS, STANDARDS AND SPECIFICATIONS FOR  
THE DESIGN AND CONSTRUCTION OF HIGHWAYS**

This is Schedule C of the Corporation of the  
Village of Lytton Subdivision and  
Development Servicing Bylaw No.483, 1998.

  
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Clerk

## **SCHEDULE C**

### **REGULATIONS, STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF HIGHWAYS**

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#### **C - 1.0 GENERAL**

Where the provisions of Schedule A of this Bylaw require the construction of roads, the Owner shall construct such roads consistent with the regulations, standards and specifications set out in this Schedule.

#### **C - 1.01 Approval of Engineering Drawings Required Prior to Construction**

Engineering drawings for Subdivisions and Developments showing detailed design of roads shall be submitted to the Approving Officer for approval prior to commencement of construction. These drawings shall be prepared in accordance with the City's specification found in Schedule J and shall show existing groundline and proposed alignment and grade of the highways, horizontal and vertical curve information and all other details as may be required. Grades shall be given at all changes in vertical and horizontal alignments for centreline and gutter lines. Elevations shall be shown on the drawings at all changes in vertical alignments. Construction work shall not commence until the Owner has been advised of approval by the Approving Officer in writing.

#### **C - 1.02 Classification of Highways**

Prior to design of the road system, the Approving Officer shall classify and name each road proposed within the subdivision and stipulate the required standards in accordance with the provisions of this Bylaw.

#### **C - 1.03 Geotechnical Evaluation**

In addition to the geotechnical overview undertaken during the initial phases of the project the Owner shall, when requested by the Approving Officer, engage the services of a qualified Geotechnical Engineer to investigate surface and sub-surface conditions with respect to roadworks within the proposed subdivision. The Geotechnical Engineer shall prepare a report outlining his findings and shall provide clear, definitive recommendations on the geometry and placement of fill sections, compaction requirements over and above those stipulated in this Bylaw, cut slope geometry, pavement structures for roads, and any other geotechnical issues affecting road construction within the proposed subdivision. A copy of the Geotechnical evaluation shall be submitted to the Approving Officer at the time the engineering drawings are submitted for approval.

## **C - 2.0 DESIGN CRITERIA**

### **C - 2.01 General Design Requirements**

In the preparation of engineering plans for highways, the Owner shall take into account the following general design considerations:

#### **.1 Continuation of Existing Streets**

The design and arrangement of highways within a subdivision shall provide for the continuation or projection of existing streets in the surrounding area. In no case shall the arrangement of highways within a proposed subdivision make impractical the subdivision of adjoining parcels.

#### **.2 Topography to be Taken into Account**

The design and arrangement of highways shall be suited to the topography of the land proposed to be subdivided.

### **C - 2.02 Conformity with Official Community Plan**

The location, classification and standard of all highways proposed within a subdivision shall take into account the proposed use of the land and shall conform to the provisions of the Corporation of the Village of Lytton Official Community Plan.

### **C - 2.03 Local Highways**

Local highways within a proposed subdivision shall be arranged so that their use by through traffic will be discouraged.

### **C - 2.04 Cul-de-Sacs**

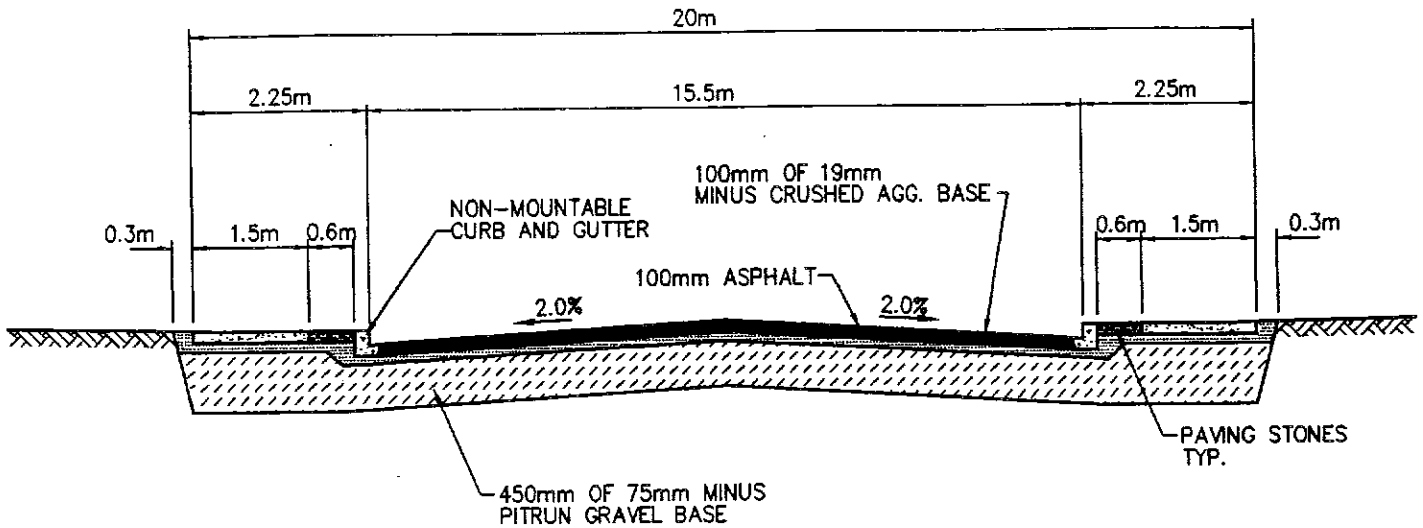
Cul-de-sac streets shall not exceed 150 metres in length measured from the intersection to the center of cul-de-sac and shall be provided with an area designed to permit safe and adequate space for the turning of motor vehicles.

### **C - 2.05 Lanes**

Lanes, meeting the standards set out in this bylaw, shall be provided where the Approving Officer deems them to be necessary.

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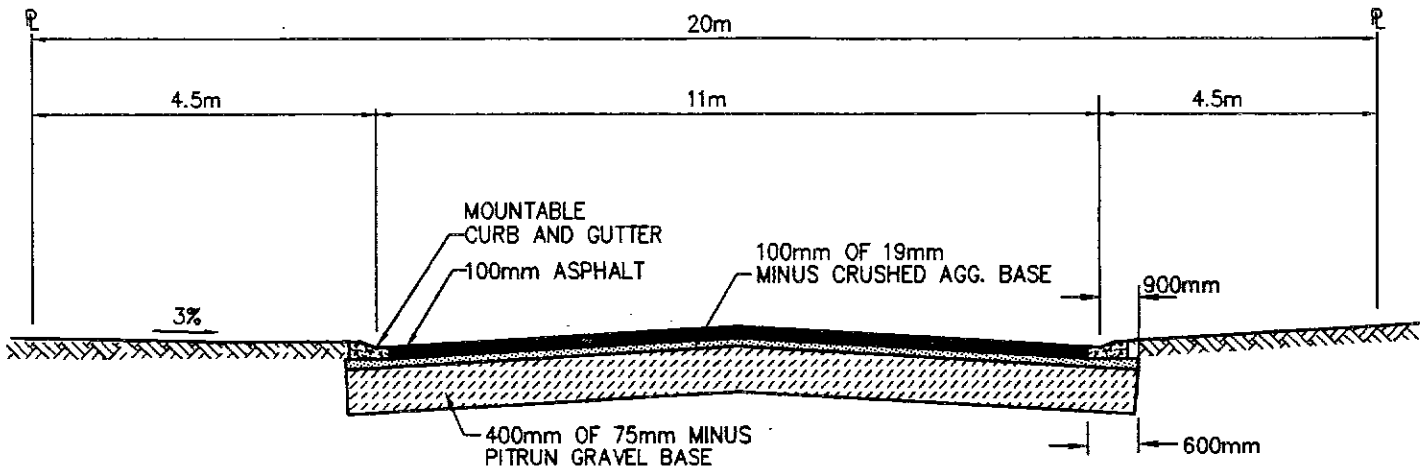
NOTE:

1. THE THICKNESS OF SUBBASE & BASE GRAVELS MAY CHANGE DEPENDING ON THE INTEGRITY OF SUBGRADE SOILS DETERMINED BY A GEOTECHNICAL ENGINEER.
2. THE ROAD WIDTH IS MEASURED AS THE DISTANCE BETWEEN THE GUTTERLINES ON EACH SIDE OF THE ROAD.
3. ALTERNATE 3m SIDEWALK SECTIONS TO BE EXPOSED AGGREGATE.
4. PAVING STONES TO BE INSTALLED AS DIRECTED BY VILLAGE.

<p>VILLAGE OF LYTTON</p>	SCALE: NOT TO SCALE		<p>TITLE:  DOWNTOWN COMMERCIAL</p>		
	DATE DRAWN: MAR. 1998	LATEST REVISION DATE: MAR. 1998			
	APPROVED BY: <i>Medica</i>		SECTION: SCHEDULE C HIGHWAYS	REVISION No. 0	DWG.No. C-1

PLOT DATE: 98/04/30 9:00am RH

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### 20m R/W

**NOTE:**

1. THE THICKNESS OF SUBBASE & BASE GRAVELS MAY CHANGE DEPENDING ON THE INTEGRITY OF SUBGRADE SOILS DETERMINED BY A GEOTECHNICAL ENGINEER.
2. THE ROAD WIDTH IS MEASURED AS THE DISTANCE BETWEEN THE GUTTERLINES ON EACH SIDE OF THE ROAD.

<b>VILLAGE OF LYTTON</b>	SCALE: <b>NOT TO SCALE</b>		TITLE:  <b>INDUSTRIAL</b>	
	DATE DRAWN: <b>MAR. 1998</b>	LATEST REVISION DATE: <b>MAR. 1998</b>		
	APPROVED BY: <i>Madia</i>		SECTION: <b>SCHEDULE C HIGHWAYS</b>	REVISION No. <b>0</b>

## C - 2.06 Walkways and Fences

- .1 Walkways shall be provided where the Approving Officer deems them to be necessary to provide access through a subdivision to schools, parks, playgrounds, commercial areas or other community facilities, or for the safe and efficient circulation of pedestrian traffic.
- .2 Walkways shall be chain link fenced for their full length on both sides. The minimum height shall be 1.5 meters but may vary at the discretion of the Approving Officer according to individual situations and the height requirements of the Village's Zoning Bylaw.

## C - 2.07 Driveways

- .1 Single Family Residential Driveway:
  - .1 Minimum driveway width shall be 3.0 metres.
  - .2 Driveway widths (surfaced) in excess of 7.3 metres must be approved in writing by the Approving Officer.
  - .3 Maximum driveway grade shall not exceed 12%.
  - .4 Minimum driveway surface shall be compacted all weather gravel surfaces.
  - .5 Surface water from driveway on private property must be contained on-site, unless otherwise approved in writing by the Approving Officer.
  - .6 Driveway access roads must have a minimum of 9.0m centre line radius on all curves and corners along the road.
  - .7 Turn around facilities are to be provided for any dead-end access driveway fronting an arterial roadway.
  - .8 The finished elevation of the driveway at the road property line shall not vary more than 150mm from the elevation of the centreline of the existing road, unless otherwise approved in writing by the Approving Officer.
  - .9 Unless otherwise approved in writing by the Approving Officer only one driveway will be permitted into each lot.
- .2 Reciprocal Access Driveway for a Maximum of Three (3) Multi-Family and Commercial Developments or more Single Family Residences;
  - .1 Minimum driveway width shall be 6.0 metres.
  - .2 Driveway widths (surfaced) in excess of 7.3 metres must be approved in writing by the Approving Officer.
  - .3 Maximum driveway grade shall not exceed 12%.
  - .4 Minimum driveway surface shall be hot mix asphaltic concrete.
  - .5 Surface water from driveway on private property must be contained on-site, unless otherwise approved in writing by the Approving Officer
  - .6 Driveway access roads must have a minimum of 10.25 m centreline radius on all curves and corners along the road.

- .7 Turn around facilities are to be provided for any dead-end access driveway.
- .8 The finished elevation of the driveway at the road property line shall not vary more than 150mm from the elevation of the centreline of the existing road, unless otherwise approved in writing by the Approving Officer.
- .9 Unless otherwise approved in writing by the Approving Officer only one reciprocal access driveway will be permitted into clusters of single family residences.

#### **C - 2.08 Highway Right-Of-Way Requirements**

- .1 Highway rights-of-way widths shall be in accordance with Table A.1 of Schedule A.
- .2 The tops of road cuts and the toes of road fills that are outside the highway right-of-way shall be identified and legally protected.

#### **C - 2.09 Intersections**

Intersections for streets and major driveways into multi-family developments shall be designed as follows:

- intersecting highways shall meet substantially at right angles (between 70 degrees and 110 degrees);
- jogs in highway alignment at intersections shall be avoided except where the distance between centrelines is sufficient to ensure traffic safety. The minimum spacing between the intersections along a street shall be 40 m;
- intersections having more than four intersecting legs shall not be permitted.
- intersections shall provide adequate crossing sight distances and stopping sight distances, whichever is greater;
- a property line cutoff of 3.0 metres for local roads and 4.0 metres for collector and arterial roads shall be at all intersections.

#### **C - 2.10 Reverse Curves**

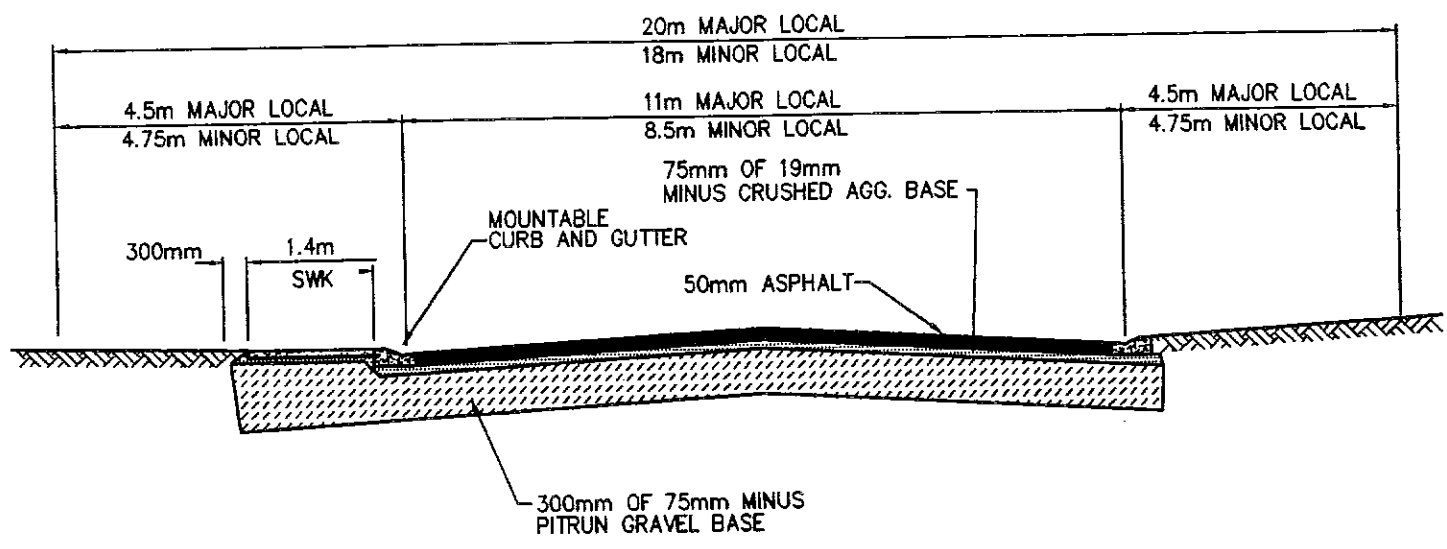
If reverse curves are required in a highway alignment, the City Engineer may require that they be separated by means of tangents of sufficient length to allow superelevation rotation.

#### **C - 2.11 Mail Boxes**

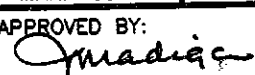
Where required by Canada Post, the Owner shall construct a base for super mail boxes in the location specified by Canada Post and approved by the Approving Officer. The owner is referenced to Canada Post for location and design guidelines.

PLOT DATE: 98/04/30 9:18am RH

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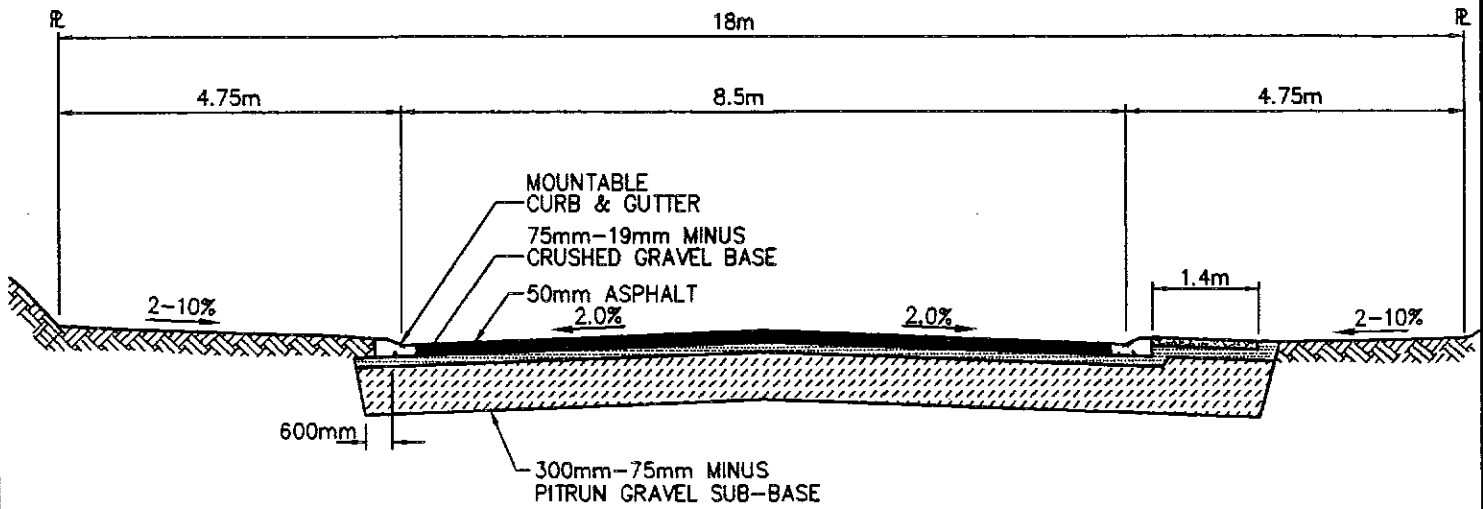
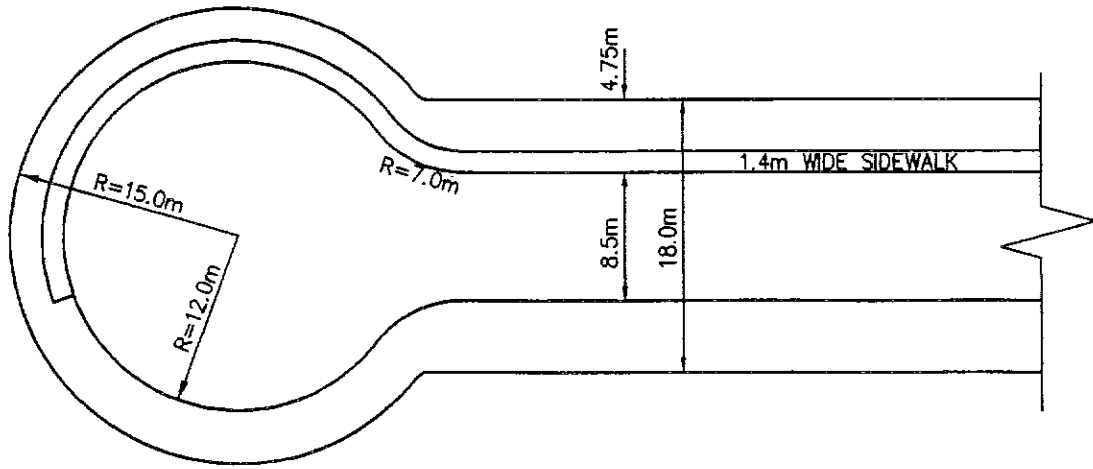


- NOTE:
1. THE THICKNESS OF SUBBASE & BASE GRAVELS MAY CHANGE DEPENDING ON THE INTEGRITY OF SUBGRADE SOILS DETERMINED BY A GEOTECHNICAL ENGINEER.
  2. THE ROAD WIDTH IS MEASURED AS THE DISTANCE BETWEEN THE GUTTERLINES ON EACH SIDE OF THE ROAD.
  3. SIDEWALK IS MEASURED FROM THE BACK OF CURB.

<b>VILLAGE OF LYTTON</b>	SCALE: <b>NOT TO SCALE</b>		TITLE: <b>LOCAL STREETS</b>	
	DATE DRAWN: MAR. 1998	LATEST REVISION DATE: MAR. 1998		
	APPROVED BY: 		SECTION: <b>SCHEDULE G HIGHWAYS</b>	REVISION No. <b>0</b>

PLOT DATE: 95/04/30 9:20am RH

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NOTE:

1. THE THICKNESS OF SUBBASE & BASE GRAVELS MAY CHANGE DEPENDING ON THE INTEGRITY OF SUBGRADE SOILS DETERMINED BY A GEOTECHNICAL ENGINEER.
2. THE ROAD WIDTH IS MEASURED AS THE DISTANCE BETWEEN THE GUTTERLINES ON EACH SIDE OF THE ROAD.

<p>VILLAGE OF LYTTON</p>	<p>SCALE: NOT TO SCALE</p>		<p>TITLE: CUL-DE-SAC</p>	
	<p>DATE DRAWN: MAR. 1998</p>	<p>LATEST REVISION DATE: MAR. 1998</p>		
	<p>APPROVED BY: <i>Amadia</i></p>		<p>SECTION: SCHEDULE C HIGHWAYS</p>	<p>REVISION No. 0</p>

### **C - 2.12 Street Names and Traffic Signs**

Street name signs and traffic signs required as a result of constructing or improving streets shall be provided by the Village at the expense of the Owner. Street names shall be assigned by the Corporation of the Village of Lytton.

### **C - 2.13 Appurtenances**

The Design Engineer shall detail on the design drawings the location of all proposed traffic islands, retaining walls, guardrails, and permanent barricades. These structures shall be designed in keeping with good engineering practices.

The design should show the location of all traffic signs, street signs, and other traffic control devices required to be placed in the road allowance.

Where applicable, the drawings shall show all utility poles and indicate the poles to be relocated to accommodate the proposed subdivision or development design. Design drawings for underground hydro, telephone, and cablevision system shall show the location of underground conduits, and appurtenances including the connections to properties.

### **C - 2.14 Vertical Alignment**

The vertical alignment of a road shall be set so the grades of the driveway to adjacent properties shall be in accordance with clause 2.07 of Schedule C. The maximum grade of the driveway as it crosses the road boulevard will be 3%.

The minimum longitudinal gradient at the gutter line shall be 0.50% for all classifications of streets.

### **C - 2.15 Design Speeds**

The design speeds used for design of Highways shall be as in Table C.1.

**TABLE C.1  
DESIGN SPEED**

Local	50 km/h
Industrial	50 km/h

**C - 2.16 Road Crown**

Minimum road crown shall be 2%.

**C - 2.17 Road Grades**

Minimum and maximum road centreline grades shall conform to Table C.2 based on the classification of the road:

**TABLE C.2  
ROAD GRADES**

Road Classification	Minimum Grade	Maximum Grade
Local	0.5%	10%
Industrial	0.5%	8%
Cul-de-Sac (entry downhill)	0.5%	8%
Cul-de-Sac (entry uphill)	0.5%	10%
Cul-de-Sac (bulbs)	0.5%	6%
Lane	0.5%	8%
Walkway	0.5%	15%

Maximum grades are to be reduced by 1% for each (or part of each) 30 metres that the centreline radius is less than 150 m.

**C - 2.18 Vertical Curves**

Vertical curves shall be designed to provide safe stopping sight distances. Minimum stopping sight distance is the least distance required to bring the vehicle to a stop under prevailing vehicle and climatic conditions. Vertical curves shall be provided at all grade

changes greater than 1.0%. Vertical curve length is calculated by the equation  $L = KA$  where:

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

L shall not be less than the design speed in kilometres per hour

Minimum K values (in metres) for vertical curve design shall be as described in Table C.3.

**TABLE C.3  
MINIMUM K VALUES FOR VERTICAL CURVE DESIGN**

<b>Road Classification</b>	<b>Crest Curve</b>	<b>Sag Curve</b>
	<b>Minimum</b>	<b>Lighting</b>
Local & Cul-de-Sac	7	6

**C - 2.19 Horizontal Alignment**

Centre Line Radii

The minimum required centreline radius for various super elevation rates for each classification of roadways are as follows:

**TABLE C.4**  
**MINIMUM CENTRELINE RADIUS**

Road Classification	Horizontal Curve Radii (m)			
	Superelevation (m/m)			
	None	0.02	0.04	0.06
Arterial (70 kph design speed)	N/A	230	200	190
Collector (60 kph design speed)	160	140	130	N/A
Local* (50 kph design speed)	95	N/A	N/A	N/A

\* Radius may be reduced at the discretion of the Approving Officer

Spiral transitions shall be designed on all Arterial Roads. Collector, industrial and local streets shall be designed with simple curves.

**C - 2.20 Curb Return Radii**

Curb return radii shall conform to the following and be based on the lesser classified Highway.

Local & Cul-de-Sac	8.0 m
Cul-de-Sac	12.0 m
Industrial	11.0 m

**C - 2.21 Intersection Design**

Unless indicated elsewhere herein, all intersection design standards shall conform to those outlined in the latest edition of "Geometric Design Standards for Canadian Roads and Streets" as published by the Transportation Association of Canada (TAC).

**C - 2.22 Intersection Grades**

Approach grades for a crest curve of minor streets at intersections to major streets shall not exceed 75% of the maximum grade allowed for that street classification. The minor street shall be designed to intersect the major street with a vertical curve of minimum length required for that street classification. The vertical curve shall terminate at the projected curb line of the major street using k values as described in Table C.5.

**TABLE C.5  
INTERSECTION CURVES**

Intersecting Street	Minimum K Value (in metres)	
	Crest Curve	Sag Curve
Arterial	17	(1)
Collector	7	(1)
Local	4	(1)

(1) *Approach grades for a sag curve of minor streets of intersections to major streets shall be designed to provide maximum gradient of 3% at a point 15 metres from the projected curb line of the major street.*

**C - 2.23 Pavement Structure**

The pavement structure shall be designed in accordance with Manual Series MS-1 of the Asphalt Institute (1981 or most recent edition). The pavement structure shall be designed for a fifteen (15) year design life. Staged construction may be considered in the structural design by the Approving Officer when a road is to be constructed and to be widened at a later date.

Roads shall be classified as follows for purposes of structural design of the total pavement structure; design traffic values and minimum depths of hot mix asphalt are defined as well:

**TABLE C.6  
PAVEMENT STRUCTURE**

Road Classification	Design Traffic (EAL'S)	Min. Depth of Hot Mix Asphalt (mm)
<b>URBAN</b>		
Industrial	$5.6 \times 10^5$	75
Residential	$2.8 \times 10^4$	50
Lanes	Not Applicable	50
Walkways	Not Applicable	50

Soils used to construct the roadway subgrade shall be evaluated in accordance with MS-1 (see Chapter V) to determine the load bearing capacity of the subgrade. For this purpose, the California Bearing Ratio (CBR) test value shall be obtained using soil moulded to the minimum specified compaction level. The design CBR values shall be determined in the soaked condition in accordance with ASTM Des D1883. This value shall be used for structural design purposes. The minimum compacted depth of crushed granular base course, in the total pavement structure, shall be 100 mm.

If the soaked CBR value of the subgrade soil is less than 3, subgrade enhancement shall be provided to create a soaked CBR of 3, and the pavement structure shall be designed using a soaked CBR of 3. Subgrade enhancement shall be provided by placement of an initial layer of granular sub-base of a thickness which has been calculated to provide the necessary structural improvement to the subgrade.

A minimum pavement structure for roads shall be provided, notwithstanding the structural character of the subgrade. Following minimum pavement structures are specified, and will be considered structurally adequate when the subgrade soil exhibits a minimum soaked CBR of 6:

**TABLE C.7**  
**MINIMUM PAVEMENT STRUCTURES**

Road Classification	Sub-base (Pitrun) mm	Crushed Granular Base (mm)	Hot Mix Asphalt (mm)
<b>URBAN</b>			
Industrial	400	150	75 in 2 lifts
Local & Cul-de-Sac	300	75	50
Lanes	300	75	50
Walkways	200	75	50

The design of structural overlays of existing pavements shall be based on the analysis of the results of Benkelman beam tests and test hole information acquired from the existing road which is to be upgraded.

The Transportation Association of Canada procedure for designing structural design of overlays of existing pavements, as published in "The Pavement Management Guide", shall be used. The maximum permissible Benkelman beam deflections to be used for overlay design are:

**TABLE C.8**  
**MAXIMUM ROAD DEFLECTIONS**

Road Classification	Maximum Permissible Deflection After Overlay
Industrial	1.25 mm
Residential	1.50 mm

The structural design of pavements for roads shall be performed by a qualified pavements engineer. Structural designs of pavements shall be submitted to the Approving Officer in an acceptable report format.

Other pavement evaluation systems may be considered upon consultation with the Approving Officer.

**C - 2.24 Highway Cross-Sections**

The standard street cross-section for various classifications of roadways shall be as per Table C.9 and the Standard Drawings.

**TABLE C.9**  
**HIGHWAY CROSS-SECTIONS**

Road Classification	Typical Cross-Section (Dwg. Number)
Downtown Commercial	C-1
Industrial	C-2
Local	C-3
Residential Cul-de-Sac	C-4

**C - 3.0 MATERIALS**

**C - 3.01 Roadway Embankment**

Roadway embankment material shall be free of rock detrimental to proper compaction and free of organic or other deleterious matter.

Imported roadway embankment material shall conform to the gradation limits shown in the following table:

**TABLE C.10**  
**IMPORTED EMBANKMENT GRADATION LIMITS**

USBC Sieve Size	Percent by Weight Passing
150 mm	100%
75 mm	74 - 100%
38 mm	56 - 100%
25 mm	46 - 94%
4.75 mm	20 - 70%
1.18 mm	10 - 52%
0.300 mm	2 - 26%
0.075mm	0 - 8%

**C - 3.02 Rock Fill**

Rock, by definition, shall mean any material excepting hardpan or glacial till over 0.75 cu.m. in volume requiring continuous drilling and blasting. It shall mean masonry or concrete as well as natural boulders fitting this definition.

Rock fill shall be any material containing more than 15% by volume of rock larger than 150 mm diameter, to a maximum of 300mm diameter.

It shall only be used in approved areas and by approved methods to provide maximum stability of the fill.

### C - 3.03 Granular Sub-base Course

Granular sub-base shall be well graded material within the following gradation limits when tested in accordance with ASTM C136:

**TABLE C.11**  
**GRANULAR SUB-BASE GRADATION LIMITS**

USBC Sieve Size	Percent by Weight Passing
75 mm	100%
25 mm	50 - 85%
0.150mm	0 - 16%
0.075 mm	0 - 8%

### C - 3.04 Crushed Granular Base Course

Crushed base course shall be composed of inert, durable aggregate, reasonably uniform in quality, and free from soft or disintegrated pieces, wood wastes, roots, organic material or other deleterious materials. The gradation shall be within the following limits when tested to ASTM C-136 and C-117, using the designated sieve sizes, and to have a smooth curve without sharp breaks when plotted on a semi-log grading chart.

**TABLE C.12**  
**CRUSHED BASE GRADATION LIMITS**

USBC Sieve Size	Percent by Weight Passing
25.00 mm	100%
19.00 mm	80 - 95%
9.50 mm	50 - 80%
4.75 mm	35 - 65%
2.36 mm	25 - 50%
1.18 mm	15 - 35%
0.300 mm	5 - 20%
0.075 mm	3 - 8%

A minimum of 60% of the material retained on a 4.75 mm sieve shall have at least two fractured faces as determined by particle count.

**C - 3.05 Crushed Granular Aggregate for Asphaltic Concrete**

Crushed granular aggregate for asphaltic concrete shall be composed of hard, durable, crushed gravel free from shale, clay, silt balls loose coatings and other deleterious materials.

The gradation of aggregates, when blended to meet the job mix formula shall be within the following limits when tested to ASTM C-136 and C-117, using the designated sieve sizes, and to have a smooth curve without sharp breaks when plotted on a semi-log grading chart.

**TABLE C.13  
ASPHALTIC CONCRETE AGGREGATE GRADATION LIMITS**

Sieve Size (mm)	Arterial, Industrial and Collector Streets Percent Passing by Weight		Residential, Lanes, Walkways, Percent Passing By Weight
	Lower Course	Surface Course	
37.5	100		
25	80 - 100		
19	60 - 92	100	
16			100
12.5	50 - 85	84 - 95	80 - 95
9.5	40 - 80	73 - 90	70 - 85
4.75	30 - 65	50 - 75	55 - 67
2.36	20 - 50	35 - 37	45 - 53
1.18	15 - 35	26 - 45	31 - 43
0.600	8 - 30	18 - 34	22 - 35
0.300	6 - 22	10 - 26	12 - 25
0.150	3 - 15	6 - 17	5 - 15
0.075	1 - 7	3 - 7	3 - 7

A minimum of 60% of the material retained on a 4.75 mm sieve shall have at least two freshly fractured faces as determined by particle count.

**TABLE C.14**  
**ASPAHLTIC CONCRETE AGGREGATE GRADATION**  
**TOLERANCE LIMITS**

Tolerance Limits (% Passing By Weight)*		
Max. Size To	4.75	5.0
	2.36	4.0
	1.18	4.0
	0.600	3.0
	0.300	3.0
	0.150	2.0
	0.075	1.5

\* The tolerance limits are in relation to the design aggregate gradation submitted with the Marshall mix design.

Aggregate short of material passing the 0.075 mm sieve shall have approved mineral filler added. Mineral filler shall be material passing the 0.075 mm sieve and shall be non-plastic when tested in accordance with ASTM D424. The moisture content of the aggregate after leaving the drier and before mixing shall be not more than 0.5% by weight.

**C - 3.06 Tack Coat**

Bituminous tack coat shall be undiluted SS-1H or SS-1 asphalt emulsion, and shall be applied at a rate not greater than 0.5 litres per square metre to a clean pavement surface, and provide for adequate curing time prior to placing asphalt paving mixtures. The temperature of the material shall be maintained between 30°C and 40°C at the time of application.

**C - 3.07 Asphalt Cement**

**TABLE C.15  
TYPE OF ASPHALT**

Requirements	Minimum 80/100	Maximum 150/200
Viscosity @ 60°Pa/s	150	70
Penetration @ 25°C	80 – 100	150 – 200
% Ret. Pen. after T.F.O.T. @ 25°C - 100 g/5 s	55	50
Solubility in Trichloroethylene %	99.0	99.0
Flash Point, C.O.C. minimum °C	230	220
Ductility at 25°C, 5 cm/min. - cm	100	100
Water %	0.5	0.5

The asphalt cement shall be Type A, homogenous, free from water, and shall not foam when heated to 175°C.

**C - 3.08 Asphaltic Concrete**

Asphaltic Concrete shall conform to the following:

**TABLE C.16  
ASPHALTIC CONCRETE DESIGN**

Property	Arterial & Collector Streets		Residential
	Lower Course	Surface Course	Surface Course
Marshall blows per face	75	75	50
Marshall Stability @ 60°C, kN	9000 min.	9000 min.	9000 min.
Marshall Flow, 0.25 mm units	8 - 14	8 - 14	8 - 16
Voids in Mineral Aggregate %	13	14	14
Air Voids in Mixture, %	3 – 8	3 – 5	3 - 5
Index of Retained Stability after water immersion for 24 hours @ 60°C	85%	85 %	85%
Tensile Strength Ration	75%	75%	75%

The Owner shall supply the Approving Officer with a current 5 point Marshall mix design, performed in accordance with ASTM D-1559, under the signature of a Professional Engineer. The design asphalt content shall be specified to comply with the requirements of this article.

The asphalt content of hot mix asphalt which is produced in accordance with the approved Marshall design shall be maintained within plus or minus 0.3% of the approved design asphalt content.

### **C - 3.09 Chain Link Fence**

All frames to be welded and covered with two coats of zinc rich paint. Each knuckle to be independently tied and set flush with the top rail. Dome tops to be riveted or welded to end posts. All galvanizing shall be minimum of 488 gm/M. All poles to be set in a minimum 250 mm diameter concrete anchors drilled into native or compacted fill soils.

- .1 Fabric - 9 gauge (3.55 mm) galvanized 50 mm mesh.
- .2 Top Rail - 42 mm O.D., 3.55 mm wall thickness, galvanized steel pipe.
- .3 End & corner posts - 73 mm O.D., 5.15 mm wall thickness, galvanized steel pipe.
- .4 Line Posts - 48 mm O.D., 3.68 mm wall thickness galvanized steel pipe.
- .5 Gates - Sizes as required. Frames 42 mm O.D., 3.55 mm wall thickness galvanized steel pipe.
- .6 Barbed Arms - Galvanized malleable steel.
- .7 Tension Wire - 6 gauge (4.50 mm) galvanized steel.
- .8 Tie Wire - 9 gauge (3.55 mm) aluminium.
- .9 Tension Bar - 4.76 mm x 19 mm galvanized steel.
- .10 Dome Tops - size as required. Galvanized malleable steel.

### **C - 4.0 WORKMANSHIP**

#### **C - 4.01 Notification of Approving Officer Prior to Undertaking Roadworks**

Adequate notice shall be given to the Approving Officer by the Owner prior to the commencement of roadworks in accordance with Table C.13. The Owner shall not proceed from one stage as described in Table C.13 to another stage without the approval of the Approving Officer.

**TABLE C.17**  
**ROADWORKS**

Stage	Minimum Notice Required
Prior to construction of fills and subgrade preparation	24 hours
During proof rolling, prior to placement of sub-base gravel	24 hours
Prior to placement of concrete for curbs and sidewalks	48 hours
Prior to placement of base course	24 hours
Prior to paving	48 hours
Prior to top soiling boulevards	24 hours

**C - 4.02 Clearing**

The road right-of-way shall be cleared of all trees, stumps, logs, roots, and any other objectionable material likely to cause settlement for the full width of the highway, and for such additional width as may be required to contain cut and fill slopes. In addition, buildings, fences, superfluous culverts, or any other structures within the highway shall also be removed. Trees may be left within the highway only where they do not conflict with utility services and where they are not deemed a hazard at the discretion of the Approving Officer.

**C - 4.03 Roadway Excavation and Embankment**

Prior to placing of any granular aggregate on the highway, all existing topsoil or other deleterious matter shall be removed from the full width of the road right-of-way and the road surface graded to the desired cross-section.

Embankments shall be constructed by placing, shaping and compacting approved materials as classified in this Bylaw. All material placed in embankments shall be bladed smooth in level layers not exceeding 300 mm uncompacted depth over the entire embankment area and placed in successive uniform layers.

When embankments are to be made on hillsides or where a new fill is to be applied upon an existing embankment, the slopes of the original ground or embankment (except rock embankments) shall be terraced or stepped before filling is commenced.

Each layer shall be compacted with approved equipment to 95% Standard Proctor Density.

Sufficient amounts of watering and compaction equipment required to efficiently and properly compact the material for the rate at which the material is being hauled into the embankment area shall be provided.

The embankment shall be constructed to provide adequate drainage. Should the embankment material become damaged or saturated by rain, flooding, or other effects, repair, scarification, or whatever other measures required to restore the embankment to the moisture and compaction requirements this Bylaw shall be undertaken.

Unsuitable materials encountered in the excavation areas, or at the subgrade elevation, shall be excavated, and wasted.

Overexcavations shall be rebuilt to grade with an approved compacted material and compacted to the satisfaction of the Approving Officer.

At transition sections where the profile grade changes from embankment to cut, the natural slope (excepting solid rock) shall be excavated to a depth of 1 meter and replaced with suitable material for a distance of 15 meters in order to prevent abrupt future differential grade changes.

#### **C - 4.04 Subgrade Preparation**

Prior to placement of the granular sub-base, the upper 300 mm of the subgrade shall be compacted to 100% of Standard Proctor density. Subgrade preparation shall extend a minimum of 600 mm out from back of curb or sidewalk on either side of the road.

#### **C - 4.05 Proof Rolling**

Upon completion of the subgrade preparation, the subgrade shall be proof rolled in the presence of the Approving Officer with a loaded single axle truck with a rear axle load of 8165 Kg.

Any areas found to be soft or wet shall be excavated and backfilled with select granular sub-base, or imported granular roadway embankment, and compacted to 100% Standard Proctor density.

#### **C - 4.06 Spreading and Compaction of Granular Sub-Base and Base Gravels**

Granular sub-base and base gravels shall be placed in maximum 150 mm lifts and shall be spread in an approved manner such that the aggregate is neither segregated nor

contaminated with foreign material. Segregated materials shall be remixed until uniform. Immediately following spreading, granular aggregate shall be compacted to 100% Standard Proctor density. The finished surfaces shall be within +/- 15 mm of the design grade and cross-section.

**C - 4.07 General Paving Requirements**

Paving shall not be undertaken during snow, heavy rain, temperatures below 5 degrees C or other unsuitable conditions. Asphaltic concrete shall not be placed on a frozen, muddy or rutted base. Asphaltic concrete shall be placed in maximum 50 mm lifts of compacted thickness. Asphalt lifts thicker than 50 mm shall be compacted in two lifts.

**TABLE C.18  
MAXIMUM ASPHALTIC CONCRETE LIFT THICKNESS**

Mix Type	Permissible Compacted Lift Thickness (mm)	
	Minimum	Maximum
Lower Course	20	50
Surface Course	25	50

**C - 4.08 Placing and Compacting Asphaltic Concrete**

Surfaces onto which bituminous concrete pavement is placed shall be dry, above 4 degrees C and cleaned of all loose and foreign materials. Mixtures shall not normally be laid when the atmospheric temperature is less than 4 degrees C and falling. An approved self-propelled mechanical paver shall be used to spread the mixture to the specified thickness. Compaction shall commence immediately after the bearing capacity of the course is adequate to support the compaction equipment without undesirable displacement or cracking. Compaction methods shall be carried out as specified in the Asphalt Paving Manual published by the Asphalt Institute.

**C - 4.09 Density of Completed Asphaltic Concrete Pavement**

The minimum allowable density of the completed pavement shall be not less than 97% of the laboratory compacted Marshall density.

Flaws in the pavement surface shall be corrected by removal of the complete area and the full lift involved. Pavement which is unsatisfactory in the opinion of the Approving Officer by reason of faulty materials or methods of placement shall be repaired, removed, replaced or otherwise corrected.

#### **C - 4.10 Tie-Ins to Existing Pavement**

Tie-ins to existing pavement shall be made by saw-cutting the existing pavement to sound material as necessary to produce a neat, vertical face with a straight edge. Prior to placing asphaltic concrete, exposed faces and other abutting structures shall be painted with liquid asphalt and heated to 66 degrees C.

#### **C - 4.11 Restoration of Improvements**

Driveways, retaining walls, vegetation and other private or municipal improvements on private or municipal property or highways affected by the road construction shall be restored at minimum to the condition existing prior to construction and to the satisfaction of the Approving Officer.

#### **C - 4.12 Materials Testing**

The Owner shall retain an independent materials testing firm to carry out comprehensive testing to frequencies defined below, for each stage of construction of roads and streets. The materials testing firm must employ a full time, qualified professional engineer within the office from which the testing services are provided and he shall review all test data. The owner shall provide a copy of all test data in summary form to the Approving Officer prior to applying for final approval. Testing will be performed at the following minimum frequencies:

##### For Roadwork embankment and subgrade construction

- .1 Moisture - density relationship (Standard Proctor) - ASTM D698; - one test for each soil type incorporated.
- .2 Moisture and density tests:
  - i) roadwork embankment - one test per lift per 500 square metres of road.
  - ii) road subgrade preparations - one test per 500 square metres of road.

##### For Trench Backfill

- .1 One test per lift per 120 lineal metres of trench.

##### For Sub-Base and Base Course Construction:

- .1 Gradation analysis - one test per 1000 m<sup>3</sup> or 2200 tonnes of material delivered to the site with a minimum of 1 test per day of placement.

- .2 Moisture - density relationship (Standard Proctor) - ASTM D698; - one test per class of material for each 1000 m<sup>3</sup>, or 2200 tonnes delivered to site.
- .3 Compaction testing - one test per 500 square metres of road per lift, to include dry density and moisture content.

For Hot Mix Asphalt Pavement Production and Placement:

- .1 Asphalt content and gradation of extracted aggregate - one test per production period, where a production period is defined as that part of the working day either before or after 12:00 Noon local time. In a full working day, the times of test shall be not less than two hours apart.
- .2 Marshall analysis of hot mix asphalt - one per work week per mix type; additional tests shall be performed when any of the specified Marshall properties are not met in the initial analysis.
- .3 Asphalt cement tests - one complete analysis per project or one every two work weeks, whichever is the lesser in timing; plus one penetration (ASTM D5) test per work week from product obtained from the Contractor's asphalt cement storage tanks.
- .4 Density, air voids and pavement thickness tests - 1 core (100 mm dia.) per 500 m<sup>2</sup> of paved area per lift. Air void tests shall be performed in accordance with ASTM D3203.
- .5 Tests on tack coat products - one test per product per project.

The Village shall be provided with copies of all sieve and compaction test results pertaining to subgrade, granular base, granular sub-base and pavement structure.

**C - 4.13 Construction Record Drawings**

Prior to Construction Completion, the Owner shall deposit with the Village one computer diskette (3½" floppy) in AutoCAD (latest release) format showing all the information requested by this schedule conforming to the criteria set out in Schedule J.