3.4 Sanitary Sewers

3.4.1 Materials

3.4.1.1 The class and type of pipe and fittings, together with required class of bedding and trench widths, shall be selected such that the pipe will support the anticipated loads with a reasonable margin of safety. The Consulting Engineer shall submit design calculations to the Municipality for review if requested.

3.4.1.2 Pipe product specifications and standards shall be as per the MMCD and the Supplementary Specifications.

3.4.1.3 Sewers may be smooth profile polyvinyl chloride (PVC) or concrete.

3.4.1.4 Concrete pipe design shall include detailed consideration of resistance to hydrogen sulphide.

3.4.2 Quantities

3.4.2.1 The quantity of sewage to be carried in a proposed sanitary sewer shall be determined by the Consulting Engineer, having regard for the type and extent of existing and ultimate development within the total area to be served. The Municipality will provide data upon request from its sewer modeling program for upstream flows.

3.4.2.2 The design flow for pipe size selection shall be the average flow due to population, times a peaking factor, plus an allowance for groundwater infiltration.

3.4.2.3 Flows Due to Population

3.4.2.3.1 Average daily sewage flows for residential land uses shall be based upon 360 litres per capita per day. Population per dwelling unit shall be as follows:

Type of Residential Use	**Pop'n per unit**
Single family and two family	2.75
All other residential uses	2.25

3.4.2.3.2 Average daily sewage flows for other land uses shall be as per the *Sewage Disposal Regulation* of the *Health Act* or some other criteria acceptable to the Director of Engineering Services..

3.4.2.3.3 Flows from all sources shall be converted to population equivalents at the residential rate when determining the peaking factor below.

3.4.2.4 Peaking

3.4.2.4.1 The peaking factor shall be calculated according to the Harmon formula:

$$PF = 1 + 14/(4 + \sqrt{P})$$

where: PF = peaking factor
P = population equivalent, in thousands.

3.4.2.5 Infiltration

3.4.2.5.1 The minimum allowance for ground water infiltration shall be 0.13 litres/ second/ hectare (approx 1,000 Igal/day/acre).

3.4.3 Minimum Sizes

3.4.3.1 Sewer mains shall not be less than 200mm in diameter except that sewers in the upper 360m (total amount of upstream pipe) of a non-extendable system shall be 150mm in diameter.

3.4.3.2 Service connections shall not be less than 100mm in diameter.

3.4.4 Friction Factors

3.4.4.1 Pipe capacity shall be determined by the Manning Formula using the following roughness coefficients (n):

Concrete pipe	0.013
PVC pipe	0.011

3.4.5 Minimum Velocities and Grades

3.4.5.1 The minimum grade of sewers shall be that which produces a minimum velocity of 0.61 metres per second except for the upstream portion of a residential sewer serving a design population of 25 or less, in which case the minimum grade shall be 0.6%.

3.4.5.2 The minimum grade of sewers above the last manhole of a non-extendable system shall be that which produces a minimum velocity of 0.90 metres per second in the pipe or 0.6%, whichever is greater.

3.4.5.3 The minimum grade of service connections shall be 2.0%.

3.4.6 Vertical/horizontal Curves

3.4.6.1 Pipes shall be designed for straight alignment and constant grade between manholes. The Director of Engineering Services may approve a curved alignment if the Consulting Engineer can satisfactorily demonstrate why it is necessary.

3.4.6.2 If a curved alignment is approved by the Director of Engineering Services:

3.4.6.2.1 The radius of a horizontal curve shall be not less than 60m, or that radius recommended by the pipe manufacturer, whichever is the greater.

3.4.6.2.2 A vertical curve must be designed so that the pipe deflection does not exceed the manufacturer's specifications.

3.4.6.2.3 Only one curve, either horizontal or vertical, will be permitted between manholes without special permission of the Director of Engineering Services.

3.4.7 Minimum Cover

3.4.7.1 Minimum cover for PVC pipe shall be 750mm.

3.4.7.2 Minimum cover for Concrete pipe shall be 500mm.

3.4.7.3 For installation under areas used for vehicular traffic, minimum cover shall be 1.0m.

3.4.8 Separation to Other Services

3.4.8.1 The minimum horizontal clearance between a sewer and other utilities or open ditches shall be no less than 1 m, except as noted below.

3.4.8.2 Storm drains and sanitary sewers may be installed in the same trench, in which case they shall have a minimum horizontal clearance between the outsides of the pipes of 150 mm.

3.4.8.3 For separation to watermains, refer to Section 3.6.10.1 *Separation to Other Services.*

3.4.8.4 Sewers shall not be located within 1 m of any utility pole.

3.4.8.5 Where it is necessary for a sewer to cross other underground services, the crossing shall be made at an angle greater than 20^{o} and the vertical clearance between the sewer and the service at the crossing point shall be not less than 75 mm.

3.4.9 Manholes

3.4.9.1 Location Criteria

3.4.9.1.1 Manholes shall be provided at the following locations:

3.4.9.1.1.1 at all changes of grade and/or alignment, except on approved curves,

3.4.9.1.1.2 at all changes of pipe size,

3.4.9.1.1.3 at all pipe junctions other than normal service connections,

3.4.9.1.1.4 where a service connection is the same size as the main, and

3.4.9.1.1.5 at the end of all sewers.

3.4.9.2 Spacing

3.4.9.2.1 The maximum distance between sewer manholes shall be as shown in the table below:

Pipe Diameter	**Maximum spacing**
200mm up to and including 375mm	120 metres
400mm up to and including 1200mm	180 metres
Over 1200mm	300 metres

3.4.9.3 Design

3.4.9.3.1 Manholes for sewers up to 400mm in diameter shall be as per Municipal Standard Drawings S1SS and S1aSS.

3.4.9.3.2 Manholes for sewers of 400mm diameter or larger shall be individually designed by the Consulting Engineer. The design shall include details of the reinforcing and benching.

3.4.9.3.3 Manholes on lines that can be extended in the future, or providing connections to a main for future extensions, shall include securely capped stubs outside the manhole. For manholes less than 2 metres deep, the stub shall be at least 1 metre long. For manholes 2 metres deep or more, the stub shall be at least 3 metres long. If the stub is in rock, the trench shall be over blasted for one metre beyond the stub end.

3.4.9.4 Hydraulic Considerations

3.4.9.5 Manholes shall include the following minimum drop in elevation from the inlet(s) to the outlet:

Horizontal Deflection Angle	**Drop (mm)**
0° - 45°	25
Greater than 45°	50

3.4.9.5.1 An outlet pipe larger than the inlet pipe(s) shall be designed such that the obvert of the outlet pipe is at the same elevation as the obvert of the lowest inlet pipe.

3.4.9.5.2 When a pipe leaving a manhole is designed at a flatter grade than a pipe entering the manhole, the Consulting Engineer shall provide design details demonstrating how turbulence will be minimized.

3.4.9.5.3 Manholes shall be designed such that the maximum drop in invert elevation(s) is 600mm. The Director of Engineering Services may approve a drop manhole for elevation changes greater than 600mm if the Consulting Engineer can satisfactorily demonstrate why it is necessary. If a drop manhole is approved, allowance shall be made in the design for the effect of the resulting turbulence on the hydraulic capacity of the system and for the prevention of the generation of hydrogen sulphide.

3.4.10 Service Connections

3.4.10.1 Service connections shall be installed to each proposed lot or to each duplex unit in a development, shall be connected to the main, and where feasible shall be installed in a common trench with a storm drain service connection.

3.4.10.2 Service connections shall be installed at right angles to the main, within the boundaries of the lot being served, except in the turning area of a cul-de-sac.

3.4.10.3 Inspection chambers shall be installed on all sewer services up to and including 200mm in size as per MMCD S7, with the plug and post painted red. A larger service shall have a manhole installed at the property line.

3.4.10.4 Service connections to a main installed in a right-of-way shall be extended to the edge of the right-of-way.

3.4.10.5 On a panhandle lot, where a service connection is to be located in the access strip, the service connection shall be extended from the front property line, along the access strip, to the main body of the lot, at the time of subdivision development

3.4.11 Future Developments

3.4.11.1 Where sewers can be extended to accommodate future development upstream, the mains shall be extended to the limits of the subdivision and manholes, complete with stubs for the future extension, shall be installed at the ends of the mains.

3.5 Storm Drains

3.5.1 General Principles

3.5.1.1 The Municipality requires that all developments provide drainage structures that will:

- reduce the rate of post development site runoff to predevelopment levels,
- improve the quality of site drainage water; and
- minimize erosion and retain sediments.

The Municipality is open to consideration of site specific drainage solutions brought forward by the Applicant, designed by the Consulting Engineer.

3.5.2 Materials

3.5.2.1 General

3.5.2.1.1 The class and type of pipe and fittings, together with required class of bedding and trench widths, shall be selected such that the pipe will support the anticipated loads with a reasonable margin of safety. The Consulting Engineer shall submit design calculations to the Director of Engineering Services for review if requested.

3.5.2.1.2 Pipe product specifications and standards shall be as per the MMCD and the Supplementary Specifications.

3.5.2.2 Mains

3.5.2.2.1 Storm drain mains may be polyvinyl chloride (PVC-either smooth profile or ribbed profile), ductile iron, or concrete.

3.5.2.3 Services

3.5.2.3.1 Storm drain services may be smooth profile polyvinyl chloride (PVC) or ductile iron.

3.5.2.4 Catch Basin Leads

3.5.2.4.1 Catch basin leads may be smooth profile polyvinyl chloride (PVC) or ductile iron.

3.5.2.5 Culverts

3.5.2.5.1 Culverts may be concrete or galvanized corrugated metal pipe.

3.5.3 Flow Calculations

3.5.3.1 Design Recurrence Intervals and Calculation Method

3.5.3.1.1 The recurrence interval used in designing storm drains up to and including 900mm shall be ten (10) years. Drains greater than 900mm shall be designed to 25 years.

3.5.3.1.2 Flow rates shall be calculated using the Rational Method.

3.5.3.1.3 Calculations shall be submitted as per Standard Municipal Drawing DES 11 and shall be accompanied by a topographic plan of the drainage basin(s) at 1:2500 maximum. The proposed pipe network shall be included on the plan.

3.5.3.1.4 Future land use, as detailed in the Community Plan, shall be incorporated in the flow calculations.

3.5.3.2 Intensity/duration Factors

3.5.3.2.1 The intensity-duration curve shall be as per Standard Municipal Drawing DES 10.

3.5.3.3 Runoff Coefficients

3.5.3.3.1 The following minimum values shall be used for the inlet time to the upstream end of non-extendable storm drain lines and for the coefficient of runoff (C);

Land Use	**Inlet Time (min)**	**Min. Coeff (c)**
Unimproved areas, parks, playgrounds, cemeteries, etc	Calc'd individually	0.35
Residential areas - low density, single family dwelling neighborhoods	10	0.6
High density and largely impervious areas	5	0.9

Composite values based on percentages of different types of contributory areas may be established from the figures above.

3.5.3.4 Stormwater Management

3.5.3.4.1 Comprehensive calculations shall be submitted for any stormwater management facilities, including such things as design flows, storage volumes, release rates, orifice sizing, etc.

3.5.4 Pipe capacity

3.5.4.1 Minimum sizes

3.5.4.1.1 Storm drains shall be a minimum 200 mm diameter.

3.5.4.1.2 Catch basin leads shall be a minimum 150mm diameter.

3.5.4.1.3 Drain service connections for single family dwellings shall be 100mm diameter. Connections for other than single family dwellings shall be sized in accordance with the *BC Building Code*.

3.5.4.1.4 Driveway culverts shall be a minimum 300mm diameter and a minimum 6.0 metres in length.

3.5.4.2 Friction Factors

3.5.4.2.1 Pipe capacity shall be determined by the Manning Formula using the following roughness coefficients (n):

PVC pipe	0.011
Concrete pipe	0.013
Ductile iron	0.013
CMP pipe	0.025

3.5.5 Min/max Velocities

3.5.5.1 The minimum grade of storm drains shall be that which produces a minimum velocity of 0.61 metres per second in the pipe.

3.5.5.2 The minimum grade of service connections shall be 2.0%.

3.5.6 Vertical/horizontal Curves

3.5.6.1 Pipes shall be designed for straight alignment and constant grade between manholes. The Director of Engineering Services may approve a curved alignment if the Consulting Engineer can satisfactorily demonstrate why it is necessary.

3.5.6.2 If a curved alignment is approved by the Director of Engineering Services:

3.5.6.2.1 The radius of a horizontal curve shall be not less than 60m, or that radius recommended by the pipe manufacturer, whichever is the greater.

3.5.6.2.2 A vertical curve shall not be less than 30m in length. The curve must be designed so that the pipe deflection does not exceed the manufacturer's specifications.

3.5.6.2.3 Only one curve, either horizontal or vertical, will be permitted between manholes.

3.5.7 Minimum Cover

3.5.7.1 Minimum cover for PVC pipe shall be 750mm.

3.5.7.2 Minimum cover for concrete or ductile iron pipe shall be 500mm.

3.5.7.3 For installation under areas used for vehicular traffic, minimum cover shall be 1.0m, except for catch basin leads.

3.5.8 Separation to Other Services

3.5.8.1 The minimum horizontal clearance between a storm drain and other utilities or open ditches shall be no less than 1 m, except as noted below.

3.5.8.2 Storm drains and sanitary sewers may be installed in the same trench, in which case they shall have a minimum horizontal clearance between the outsides of the pipes of 150 mm.

3.5.8.3 For separation to watermains, refer to Section 3.6.10 *Separation to Other Services*

3.5.8.4 Storm drains shall not be located within 1 m of any utility pole.

3.5.8.5 Where it is necessary for a storm drain to cross other underground services, the crossing shall be made at an angle greater than 20° and the vertical clearance between services at the crossing point shall be not less than 75 mm.

3.5.9 Manholes

3.5.9.1 Location Criteria

3.5.9.1.1 Manholes shall be provided at the following locations:

3.5.9.1.1.1 at all changes of grade and/or alignment, except on approved curves,

3.5.9.1.1.2 at all changes of pipe size,

3.5.9.1.1.3 at all pipe junctions other than normal service connections.

3.5.9.1.1.4 where a service connection is the same size as the main, and

3.5.9.1.1.5 at the upstream end of all storm drains.

3.5.9.2 Spacing

3.5.9.2.1 The maximum distance between manholes shall be as shown in the table below:

Pipe Diameter	**Maximum spacing**
200mm up to and including 375mm	120 metres
400mm up to and including 1200mm	180 metres
Over 1200mm	300 metres

3.5.9.3 Design

3.5.9.3.1 Manholes for storm drains up to 400mm in diameter shall be as per Municipal Standard Drawings S1SS and S1aSS.

3.5.9.3.2 Sump manholes are not approved by the Municipality.

3.5.9.3.3 Manholes for storm drains of 400mm diameter or larger shall be individually designed by the Consulting Engineer. The design shall include details of the reinforcing and benching if the manhole base is to be cast-in-place. For a precast base, the Consulting Engineer shall supply a signed and sealed shop drawing from the manufacturer for review.

3.5.9.3.4 Manholes on lines that can be extended in the future, or providing connections to a main for future extensions, shall include securely capped stubs outside the manhole. For manholes less than 2 metres deep, the stub shall be at least 1 metre long. For manholes 2 metres deep or more, the stub shall be at least 3 metres long. If the stub is in rock, the trench shall be over blasted for one metre beyond the stub end.

3.5.9.4 Hydraulic Considerations

3.5.9.4.1 Manholes shall include the following minimum drop in elevation from the inlet(s) to the outlet:

Horizontal Deflection Angle	**Drop (mm)**
0° - 45°	25
Greater than 45°	50

3.5.9.4.2 An outlet pipe larger than the inlet pipe(s) shall be designed such that the obvert of the outlet pipe is at the same elevation as the obvert of the lowest inlet pipe, or with the minimum drop noted previously, whichever provides the greater drop.

3.5.9.4.3 When a pipe leaving a manhole is designed at a flatter grade than a pipe entering the manhole, the Consulting Engineer shall provide design details demonstrating how turbulence will be minimized.

3.5.9.4.4 Manholes shall be designed such that the maximum drop in invert elevation(s) is 600mm. The Director of Engineering Services may approve a drop manhole for elevation changes greater than 600mm if the Consulting Engineer can satisfactorily demonstrate why it is necessary. If a drop manhole is approved, allowance shall be made in the design for the effect of the resulting turbulence on the hydraulic capacity of the system.

3.5.10 Silt Traps

3.5.10.1 Silt traps shall be as per Municipal Standard Drawing S18SS.

3.5.10.2 Silt traps shall be located at the entrance to an enclosed storm drain system from an open ditch, a landscaped area, or a French drain.

3.5.11 Service Connections

3.5.11.1 Service connections shall be installed to each proposed lot or to each duplex unit in a development, shall be connected to the main, and where feasible shall be installed in a common trench with a sanitary sewer service connection. The Applicant may apply to the Director of Engineering Services for approval of alternative methods of dealing with stormwater.

3.5.11.2 Service connections shall be installed at right angles to the main, within the boundaries of the lot being served, except in the turning area of a cul-de-sac.

3.5.11.3 Inspection chambers shall be installed on all sewer services up to and including 200mm in size as per MMCD S7, with the plug and post painted green. A larger service shall have a manhole installed at the property line.

3.5.11.4 Service connections to a main installed in a right-of-way shall be extended to the edge of the right-of-way.

3.5.11.5 On a panhandle lot, where a service connection is to be located in the access strip, the service connection shall be extended from the front property line, along

the access strip, to the main body of the lot, at the time of subdivision development

3.5.12 Catch Basins

3.5.12.1 Each catch basin shall be connected to a storm drain by an individual lead.

3.5.12.2 Details of construction and spacing of catch basins are provided in Section 3.7.10 *Catch Basins*.

3.5.13 Driveway Culverts

3.5.13.1 Driveway culverts shall have endwalls as necessary, of concrete, mortared concrete block or mortared rock. No endwalls shall be constructed of sandbags filled with a sand/cement mix or with concrete.

3.5.14 Interception of Overland Flows and/or Seepage

3.5.14.1 In areas subject to overland flows or groundwater seepage, the Consulting Engineer shall incorporate works as necessary to intercept the flows or seepage, such as French drains, diversion ditches, silt traps, etc., all connected to the storm drain system in a manner acceptable to the Director of Engineering Services.

3.5.15 Discharges from Service Stations

3.5.15.1 In addition to any other storm water management device required by this specification, discharges from service stations shall be intercepted by combination silt trap/grease interceptors as per Municipal Standard Drawing S25SS prior to entering a storm drain.

3.5.16 Storm Water Management and Erosion Control

3.5.16.1 Types of Watersheds

3.5.16.1.1 All watersheds and all their tributaries are deemed to be TYPE II Watershed receiving environments for the purpose of storm water management and erosion control, except:

- Colquitz River/ Elk and Beaver Lakes,
- Tod Creek and Prospect Lake,
- Hobbs Creek/Mystic Vale and
- Gorge Waterway.

These are deemed to be TYPE I Watershed receiving environments and developments within these four catchment areas are required to provide a higher level of drainage control and treatment.

Municipal Standard Drawing DES17 indicates the extent of the Type I watersheds.

3.5.16.1.2 The components of storm water management that shall be incorporated in the development depend on the type of the receiving watershed. Direct ocean discharges will be individually addressed.

	Required Storm Water Management Components	
Purpose	**TYPE I Watersheds**	**TYPE II Watersheds**
Reduce runoff rate	Normal storm water storage	Reduced storm water storage
Improve drainage quality	Constructed wetland or treatment train	Oil/Grit separator or grass swale
Erosion & sediment control (During Construction only)	Sediment basin and inlet protection	Silt fencing and inlet protection Over 10 lots - sediment basin required

3.5.16.2 Design Concepts

3.5.16.2.1 Conceptual design information for storm water management methods is illustrated in Municipal Standard Drawings DES12 to DES16. Detail design shall conform to good engineering practice. Proponents may use other techniques provided they can be shown to have similar efficiencies. Any alternative systems must receive written approval from the Director of Engineering Services prior to design submission.

3.5.16.3 Detention Facilities

3.5.16.3.1 Any storm water management facility proposed to be located on public park land shall conform to the *Development Guidelines for Surface Storm Water Management,* attached as Appendix "A".

3.5.16.3.2 Storm water storage may be combined with a constructed wetland or provided in a separate detention facility such as a pond or underground chamber. The live storage volume for the "minor" event (approximately 2 years) shall be 200m³/ha of impervious surface area of the completed development, regardless of existing condition. Impervious area includes roofs, driveways, roadways and other hard surfaced areas. The corresponding maximum site release rate shall be 5 L/s per ha of total contributory catchment. For reduced storm water storage requirements, the live storage volume shall be 100m³/ha of impervious surface area with a corresponding maximum release rate of 10 L/s per ha of total contributory catchment.

3.5.16.3.3 The detention facility shall have normal overflow capability for the peak 10-year design flow and an emergency overflow capability for the 200-year peak design flow that is routed in a way that does not threaten downstream property with erosion or flooding.

3.5.16.3.4 Storm water storage volumes may be reduced if used in combination with an infiltration system designed in accordance with good engineering practice. The reduction in the storage requirement shall be proportional to the percentage of peak minor event post development discharge that is

infiltrated to ground. Storm water storage may be eliminated if peak minor event post development discharge downstream from an infiltration system does not exceed 5 L/s per ha of contributory catchment. Infiltration systems shall incorporate appropriate pretreatment systems to prevent clogging of the soils with fine materials.

3.5.16.3.5 If downstream drainage facilities do not have capacity to accommodate the calculated postdevelopment 10-year peak flow rate, then the on site detention facility shall also be designed to control the 10 year flow to its predevelopment level for the site.

3.5.16.4 Water Quality Improvements

3.5.16.4.1 Stormwater quality improvements for developments in TYPE I watersheds shall preferably be achieved with a constructed wetland. For developments of 10 lots or units or less, a "treatment train" approach using oil/grit separators followed by a grassed swale is acceptable. Proprietary treatment train or multi-chamber methodologies may also be used if similar efficiencies in pollutant removal can be certified.

3.5.16.4.2 Treatment facilities shall be designed on the basis of the post development peak "6-month" storm, which is deemed to be 60% of the 2-year peak flow. Constructed wetlands and grassed swales shall provide water surface areas equivalent to 1% of the contributory catchment area. This surface area shall be calculated as the extent of ponding caused in the wetland or swale by a 6-month storm event.

3.5.16.4.3 Hydraulic overflow capacities for constructed wetlands shall be the same as for detention facilities, as outlined in a previous section of this specification.

3.5.16.4.4 Constructed wetlands shall be designed with input from a professional who specializes in wetland designs. Proof of input by the professional shall be provided in writing to the Director of Engineering Services.

3.5.16.5 Oil/ Grit Chambers

3.5.16.5.1 Oil/grit separator chambers may be proprietary or non-proprietary. Chambers are to be designed to remove approximately 90% of the sediment particles larger than 100 microns. The Consulting Engineer shall supply sufficient information to satisfy the Director of Engineering Services that the removal efficiency can be achieved.

3.5.16.6 Temporary Sediment Basins

3.5.16.6.1 Temporary sediment basins shall have surface areas equivalent to 1% of the contributory development area. All runoff shall be directed to a sediment basin except where it is impractical to construct a sediment basin due to the very small catchments involved. In this case silt fencing shall be installed to intercept all overland runoff before it leaves the development site.

3.5.16.6.2 Temporary storm drain inlet protection shall consist of geotextile fabrics and gravel filters placed over catch basins and other inlets to prevent inflow of sediments.

3.5.16.6.3 The Applicant shall arrange for the removal of sediment from the basin when the available storage volume has been reduced to two-thirds of the original volume.

3.5.16.6.4 Temporary sediment control shall remain in place until the development area is 90% built out and landscaping is established and stabilized. Sediment basins may be converted to constructed wetlands at this time.

3.5.16.7 Location of Facilities

3.5.16.7.1 Storm water management systems will normally be constructed on private property or on non-roadway lands dedicated to the Municipality. Facilities will only be permitted on park lands where significant enhancement is achieved and where approval is received from the Director of Engineering Services at project initiation.

3.5.16.7.2 Where underground systems are used and proposed to be located on municipal or private lands, rights-of-way for the purpose of maintenance and access for heavy equipment must be provided, including constructed gravel roadways. Minimum access right-of-way widths are 3.7m and maximum road grades shall be 15%.

3.5.16.8 Maintenance of Facilities

3.5.16.8.1 Maintenance schedules and proof of maintenance shall be provided for all private systems annually. For new systems, a maintenance bond or surety equivalent to three years of service must be provided to the Municipality. The owner of the storm water management system must advise the Municipality annually that all required maintenance has been performed. After three years of adequate maintenance, the maintenance bond shall be returned to the Owner. If adequate maintenance is not undertaken by the owner, the Municipality may undertake the works and reduce the maintenance bond accordingly, or after the maintenance period has expired, undertake the works and charge the owner the costs of the work.

3.5.16.8.2 Where the storm water management facilities are constructed under municipal roadways, said facilities must be cleaned, inspected and certified acceptable by the Applicant prior to the Municipality accepting the entire project. This is normally at the expiration of the one year maintenance period.