Archive

THE SUMMER VILLAGE OF CHESTERMERE LAKE

POLICY HANDBOOK

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APPROVED BY: COUNCIL	SUBJECT: SEWER SERVICE CONNECTIONS INSPECTION SPECIFICATIONS AND PROCEDURES
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PURPOSE AND INTENT

The Village installed the sewer system in the early 1983. At the time of sewer installation, service connections were installed to the property lines of all the existing lots. Since that time several properties have been subdivided and additional lot owners have requested service connections. Unlike bigger municipalities, the Village does not have services of an on-staff Plumber or Pipe Layer who could install these new service connections. Currently the Village allows the property owners to install their own services, however this may change with future developments. The service connections to the house have two distinct parts, i.e. one on street Right of Way (R.O.W.) and the other on private lot. The owner is responsible for all maintenance of the on-site part, while the Village takes over the ownership of the parts inside the street R.O.W. Any faulty workmanship or defective materials used in the street right-of-way becomes a future liability of the Village. In addition any problem with the sewer connection, whether on-site or in street, will likely mean the Village staff spending time and effort on investigation/inspection. If the defect is on the private property, the owner becomes responsible for repairs but the Village will have already spent manpower in investigation. Therefore the following sections of this document, although written for work in street R.O.W.'s should also apply to the on-property connection.

POLICY

1. Permission is to be obtained from authorized Village representative prior to any excavation on Village right-of-way.

2. The property owner will be held responsible for any cost incurred on repair work (including any settlement) in the street right of way for a period of two years from the date of approval of service connection by the Village personnel.

A. GUIDELINES

Connection to Sewer System

A.1 The only connection size to be permitted using a saddle connection should be 100 mm (4 inch) diameter. No saddle connection shall be made within 3 metres (10 feet) of any other saddle connection or appurtenance of the sewer system. A 100 mm saddle connection may serve only one residential unit. Any 100 mm diameter line not within the road allowance should remain the total responsibility of the user of that line in perpetuity.

A.2 A 150 mm (6 inch) diameter connection may be made using a 200 x 200 x 150 mm diameter tee connection to the main sewer. The minimum distance between the tee and any other appurtenance to the sewer line shall be 3 metres. A clean-out should be provided every 30 metres or part thereof, of lengths of 150 mm diameter sewer. A manhole must be provided if the sewer length exceeds 90 metres. A 150 mm connection may serve a maximum of 4 properties. A formal legal agreement should be in place sharing the responsibility of the maintenance between the users for that part of the sewer not located on publicly owned lands.

A.3 For all connections where more than 4 properties will be serviced by a common line, a 200 mm diameter sewer should be provided. Connections to the existing sewer should be made in a manhole. Manholes should be provided with a maximum spacing of 120 m apart. Formal easements 10 metres wide with immediate right of access to Summer Village maintenance crews or contractors, should be in place throughout the length of the 200 mm diameter section of sewer.

B. INSPECTION SPECIFICATIONS & PROCEDURES

Basic Elements to be Checked

Inspection of installation of sewer connections involves both materials and workmanship. The following items will need checking (a form at the end of this specification may be used as a check list).

B.1 MATERIALS
- B.1.1 Existing Sewer Pipe
- B.1.2 Saddle for connection
- B.1.3 Straps for connection
- B.1.4 Service Pipe
- B.1.5 Bedding material for the pipe

B.2 TRENCHING AND INSTALLATION
- B.2.1 Safety of the Trench
- B.2.2 Slope of the Trench
- B.2.3 Bottom of the Trench

B.2.5 Installation of saddle (angle)
B.2.6 Installation of pipe
B.2.7 Bedding/support of pipe

B.3 BACKFILLING
B.3.1 Material of backfill
B.3.2 Safety of installed pipe joints
B.3.3 Rolling, moving or pumping of backfill material
B.3.4 Thickness of lifts of backfill for compaction
B.3.5 Compaction Equipment
.1 In pipe zone
.2 Above the pipe zone

B.4 RESTORATION
B.4.1 Road Area
.1 Width of Road
.2 Depth of Gravel
.3 Quality of Gravel
.4 Surface Finish
.5 Oiling or Surface Treatment
B.4.2 Ditch and Landscape
.1 Shape of Ditch
.2 Slope of Ditch
.3 Depth of Loam
.4 Quality of Loam
.5 Seeding/Sodding
.6 Erosion Protection, if required

C. SPECIFICATIONS

The existing sewer mains in the Village streets are P.V.C. pipe S.D.R.35. Most of the pipe is 200 mm (8") diameter. Almost all service connections should be 100 mm (4") size. Service connections must have a minimal spacing of 3 meters.

Saddle fitting for 100 mm connection to 200 and 250 mm is readily available.

The following specifications should be applied:

C.1 MATERIALS

C.1.1P.V.C. Tee Saddle of proper size with rubber gaskets
100 mm service x 200 mm main etc.
C.1.2 Stainless steel clamps for the saddle
C.1.3 P.V.C. service pipe S.D.R. 28.

It is appreciated that other materials are available for service connections and service pipes but the Village may not be able to stock the spare parts for

repairs to connections of various materials and in different sizes. Therefore it is recommended that the Village use only P.V.C. service connections material as noted in C.1.

C.2 TRENCHING AND INSTALLATION

The service connection trench is generally excavated with small backhoes having small buckets. Therefore width of the trench is generally 24" to 36". In the case of the Village some sewers are very deep (over 20 ft.). Therefore the Contractor/Plumber will use a bigger backhoe with a large bucket. The trench width for the bottom portion (lower 2 ft.) should not be over 1 m (42"). The Contractor should pay particular attention to safety of the trench walls. No more than 1.5 m (5 ft.) trench shall be excavated with vertical walls. Walls of any trench deeper than 1.5 m must be either cut back or be shored. The trench should have a minimum slope of 2% from the main to the property line. Excavation around the existing pipe must be using hand digging methods. The coring for service saddle should be carried out using proper machine. The hole for the saddle should be cut in the upper segment of the main pipe and the angle of the saddle to the horizontal should be minimum 11 1/4 o.

After the saddle and pipe have been fitted to the property line, slope of the pipe should be rechecked. Any over excavation and voids under the pipes shall be filled with pea gravel. It must be ensured that the bottom 60% of the entire pipe length is properly seated on the ground. This will require excavating holes in the areas of joint bells of the pipe.

If the main pipe has been cracked or damaged at or near the point of connection, it should be cut out and replaced by a new piece using proper repair clamps.

No connection should be made within 600 mm of a joint in the sewer main.

C.3 BACKFILLING

Native material excavated from the service trenches should in general be good quality material for backfill. However material from deep trenches may be too wet to get compacted. Visual inspection by the Village Inspector will be good enough to decide if the materials are responsible for use. Wet material will generally show pumping or moving effect under the compaction equipment. If so, the material should be replaced with suitably imported material (either a good clay, or if necessary, gravel) (particularly in the Village right-of-way). When making a connection during the winter, frozen material must not be used in backfilling.

During backfill operations the dirt shall be rolled along the walls of the trench and not dropped on the pipe. Safety and position of the installed pipe shall be kept in mind. The compaction of the backfill shall be 95% of the soils maximum density. Because the Village will not be in a position to test the compaction, it will be in order to specify the depth of lifts of uncompacted backfill material which can be placed at one time.

In the pipe zone (up to 300 mm above the top of pipe) material should be placed in 150 mm (6") lifts and compacted with hand tampers or jumping jacks taking care not to disturb or damage the pipes. Particular attention should be paid to compaction of material under the main where hand digging was carried out for installation of the service saddle. Pea gravel must be used for backfilling in the pipe zone. Thickness of the backfill lifts from 300 mm (12") above top of pipe to the surface will depend on the equipment used for compaction but should in no case be more than 300 mm (12").

Generally the following table can be used as a guideline when material has optimum moisture content.

Equipment	Lift Thickness of Uncompacted Material	Number of Passes for 95% Compaction
Jumping Jack	150 mm (6")	6 - 8
Small Smooth Drum Non-Vibratory roller	150 mm (6")	10 - 12
Small Smooth Drum Vibratory roller	150 mm (6")	6 - 8
Large Smooth Drum Vibratory roller	200 mm (8")	4 - 8
Large Sheep Foot Roller	300 mm (12")	6 - 10

The larger the roller, bigger gaps it will leave near the trench walls. Attention should be paid to compaction of the areas along the edges (walls) of the trench.

Generally walking over the compacted area and trying to print the heels of the shoes should give an indication of compaction achieved.

C.4 RESTORATION

The restoration of the roads should be to the same standard as the original construction of chip coat which was:

150 mm prepared subgrade
200 mm pit run gravel
75 mm of 20 mm crushed gravel
Road oiling with HF250 road oil

Because the work involved in rehabilitation of the service trench area will be of a minor nature, the road construction shall consist of 300 mm of 20 mm crushed gravel primed with two coats of diluted SS-1 emulsified asphalt (2 parts SS-1 to 1 part water), applied at a rate of 2.0 litres per square metre. The second coat should be applied only after the first coat has cured (minimum of 4 hours between 2 coats). The gravel shall be compacted.

The surface to be primed should not appear too stoney for driving. Width of the restored road should match with the road width on each side of the trench. Shape and scope of the ditch should be matched with that on each side of the service trench. The Village Inspector should check the subgrade before placement of the loam by the Contractor. All backfill in the ditch must be compacted as noted in the earlier section. Minimum depth of 150 mm of loam should be spread to bring the ditch to match with surroundings. The loam should be compacted before seeding/sodding.

Wherever the ditch has a slope of more than 2.0% and/or drains water from large catchment area from upstream of the repaired section, consideration should be given to reducing the velocity of water through the newly landscaped ditch to stop errosion.

D.1 INSPECTIONS

In the absence of any involvement by professional civil engineering inspectors and material testers, the Village personnel will have to accept most of the responsibility of inspection. The enclosed table can be used as a check list to ensure that work is carried out to produce the desired results.

SUMMER VILLAGE OF CHESTERMERE LAKE
SANITARY SEWER CONNECTIONS

CHECK LIST FOR INSPECTION

1. EXISTING MAIN
   - Size
   - Material
   - Distance of Service from in the main
   - Oversized hole cored?
   - Any damage with coring?
   - Repair to damage

2. SADDLE AND STRAPS
   - Material of saddle - PVC
   - Size of connection
   - Size of main
   - Rubber gasket
   - Stainless steel straps

3. SERVICE PIPE
   - Material PVC
   - SDR 28
   - Installation and Joints - Rubber gaskets

4. BEDDING OF SERVICE
   - Angle of Saddle - minimum 11 1/4 o to horizontal

- Position of Saddle -
  in top segment of pipe
- Scope of Service -
  minimum 2%
- Cover at the property line
  (minimum 2.4 m preferable 2.5 m)
- Holes for the joint bells
- Seating of bottom 60% of pipe
- Bedding under the sewer main -
  pea gravel
- Bedding under service connection

5. TRENCHING

Width of trench in bottom portion. Safety of trench walls (max. 1.5 m vertical) hand excavation around the existing main.

- Any over excavation of service trench backfill of over excavation compacted.

6. BACKFILLING/COMPACTION

Type of material
Wet or dry material
Any pumping when compacted
Compaction of pipe zone
Jumping Jack
Material rolled in or dropped
Thickness of lifts - 150 mm
Safety of installed pipe
Pipe zone (jumping jack) compaction
to 300 mm above top of pipe
Above pipe zone lift thickness
150 to 300 mm depending on equipment
- equipment used
- number of passes to achieve compaction
- marking of foot prints
- visual look of compaction

7. RESTORATION

a) Road inspection before installation of gravel
   - grading/size of crushed gravel
   - maximum 20 mm

- not too sandy
- not too stoney
- depth of gravel installed 300 mm
- lift thickness of gravel 2 x 150 mm
- width of road to match existing
- compaction of gravel
- oiling/priming - diluted SS-1
- rate of application - 21/m2
- two coats separated by minimum 4 hours

b) Ditch

- inspection before loaming
- shape of ditch
- slope of ditch
- quality of loam
- depth of loam
- compaction of loam
- seeding/sodding
- large catchment area upstream of repair
- excessive slope of ditch
- any errosion protection required
- any damage of other faciilities
- power poles
- A.G.T. underground lines
- power cables
- lift stations
- lift station panel
- repairs to the above