

**Construction Techniques to Reduce Inflow and Infiltration**

**Municipally Owned System (up to limit of ROW)**

**Standards Currently Employed by Town of EG for New Construction**

<b>Inflow/infiltration Contributor</b>	<b>Implemented Reduction Technique</b>
Infiltration around inlet pipes at precast manholes	<ul style="list-style-type: none"> <li>• monolithic base precast manholes</li> <li>• pre-benching in precast manholes</li> <li>• pre-manufactured gasket connections in all manholes</li> </ul>
Infiltration around precast manhole chamber in high water table zones	<ul style="list-style-type: none"> <li>• No joints below watertable</li> <li>• Consideration will be made for alternative gasketed joints and sealing at the discretion of the Town and Region</li> </ul>
Infiltration at pipe joints	<ul style="list-style-type: none"> <li>• PVC DR 28 pipe (or better) with locking ring gasket specified</li> <li>• C900 watermain pipe will be specified in areas of high water table or where sewer is greater than 8 metres depth</li> </ul>
Infiltration at service connection to mainline	<ul style="list-style-type: none"> <li>• Only pre-manufactured tees permitted</li> <li>• Controlled settlement joint riser/tee connections required</li> </ul>
Infiltration at service connection cleanout at property line	<ul style="list-style-type: none"> <li>• Only <u>sealed</u> manufactured cleanouts permitted</li> </ul>
Inflow to service connection cleanout at grade	<ul style="list-style-type: none"> <li>• Sealed cleanouts buried at property line with <u>no</u> extension pipe to surface</li> </ul>
Inflow at surface low-points during extreme rain events	<ul style="list-style-type: none"> <li>• Install sealed manhole covers at all low-points and areas subject to flooding up to 25 year rain event flow level</li> </ul>
Inflow from snow melt in cul-de-sacs and snow storage areas	<ul style="list-style-type: none"> <li>• Install sealed manhole covers in all cul-de-sacs and snow storage areas</li> </ul>
Inspection	<ul style="list-style-type: none"> <li>• Fulltime inspection for all works within ROW and all “as built” drawings to be stamped and certified by Engineer</li> <li>• Municipal or third party representative to witness and certify all testing through Acceptance Testing and Commissioning Guidelines</li> </ul>

**Building and Plumbing Techniques to Reduce Inflow and Infiltration**

**Private Property Side of New Building Lot**

**New Standards for Construction of Service Laterals**

<b>Inflow/infiltration Contributor</b>	<b>Implemented Reduction Technique *</b>
Infiltration into buried private plumbing drain	<ul style="list-style-type: none"> <li>• Plumbing inspector or third party inspector to witness and certify all tests as per building code on all laterals prior to backfill</li> <li>• Specify gasket joint PVC DR 28 pipe (or better) on private side into foundation</li> <li>• Colour code all service pipe on private side (storm and sanitary) to avoid cross connections</li> <li>• CCTV inspection of 25% of lateral connections immediately prior to occupancy. If all laterals meet requirements then no further CCTV inspection required</li> </ul>
Inflow during rain events into open sewer connections caused by building contractor removing plug in basement excavation	<ul style="list-style-type: none"> <li>• Avoid leaving connection in basement excavations at grade by installing temporary capped vertical risers (minimum 1.2 metres tall) and maintain until final plumbing connection is made</li> </ul>

**Flow Monitoring**

<b>Inflow/infiltration</b>	<b>Implemented Reduction Technique</b>
Flow Monitoring	<ul style="list-style-type: none"> <li>• Flow monitors and required equipment to be installed at point of connection to the existing system whereby all development areas are captured</li> <li>• Connection points to be bulkhead protected until all testing is complete and system is placed into operation</li> <li>• Flows to be analyzed from point of connection and all storm water (inflow) to be charged back at local sewer rate</li> <li>• Flows to be monitored until assumption of development</li> </ul>


If all above requirements are agreed to and completed the first 20% of allocation bonus will be granted. Trigger for first 18% additional allocation bonus will occur following one year of successful monitoring of development (85% completed to final occupancy). If performance is adequate the 18% allocation bonus will be granted. If performance does not meet acceptable levels adequate rehabilitation must be completed before assumption and release of securities. Similar approach will be applied to all future phases of each development.