

Engineering File Number:		
Date:		
Version #:		

PROJECT TITLE & PHASE: _____

PROJECT MANAGER/PROPONENT: _____

ATTENTION:

1. MECP Design Criteria items (indicated as DC in the Reference column) are the minimum requirements to be met. Not meeting these minimum requirements imply MECP Approval cannot be processed using Form SS1.
2. A design deviation memo shall be provided for all identified design deviations (i.e., N checkbox checked off). Deviation memo is subject to PW Commissioner's approval.

REQUIREMENT DESCRIPTION <small>(PLEASE REFER TO THE LINEAR DESIGN MANUAL VERSION 5.0 and MECP DESIGN CRITERIA FOR THE EXACT AND FULL WORDINGS OF THE PROVISIONS IN ORDER TO HAVE BETTER UNDERSTANDING OF THE REQUIREMENTS. THE DESCRIPTIONS BELOW ARE INDICATIVE, MEANT TO BE GUIDES AND MAY NOT BE COMPLETE)</small>	REFERENCE (E.G. PW LINEAR DESIGN MANUAL (LDM))	REQUIREMENT MET? Y=YES; N=NO; N/A = NOT APPLICABLE	COMMENTS/REFERENCE
Design flow			
• Latest hydraulic model used for existing developed areas	LDM 3.1.1&3.2.1b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Halton Std Calculation Sheet RH 2001.010 is used or equivalent for drainage areas not including existing developed areas	LDM 3.1.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Higher than typical std densities are used where info is available	LDM 3.1.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Design Flow = ADWF * APWFF + I/I	LDM 3.2.1a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Halton Standard Population Densities (person/ha) are used	LDM Table 3-1 & 3-2;	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Halton Standard Unit Sewage Flows (L/capita/day) is used;	LDM Table3-1&3-2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Flowrates for commercial and institutional uses as per DC Table 1; minimum commercial flows=28 m ³ /ha/day	DC 2.1.3; DC 2.1.2.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Industrial flows based on actual flow data over at least 2 years; if not available, ave flow from 0.2-0.5 L/s/ha is used	DC 2.1.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Table 3-1 & 3-2 (dry weather flow) as guide for local service wwm	LDM 3.2.2 a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Population densities & flows for development charge wwm from masterplan or DC report	LDM 3.2.2 b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Peaking Factor by Harmon formula used; min. = 2.0	LDM 3.2.3; M 5.5.2.1; DC 2.1.1.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Rain Derived Inflow/Infiltration Factor (I&I allowances) are used			
• Halton Standard (0.286 L/ha/s for all types of land uses for areas not including existing developed areas)	LDM 3.2.4a; DC 2.1.5	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Halton Modified (< 3.0 L/ha/s) (existing urban areas)	Masterplan T.12	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Pipe size, flow velocity & grades			
• Halton Std Table RH2000 or Manning's formula is used	LDM 3.3.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Minimum 200mm diameter for residential areas	LDM 3.3.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Sewers have uniform slopes between MHs	DC 2.4.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Minimum flow velocity based on actual flows=0.6 m/s is met;	LDM 3.4.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Actual peak flow velocities (m/s) are calculated for each section	LDM 3.4.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Max full flow velocity <= 3.0 m/s is met to minimize erosion	LDM 3.4.3; DC 2.4.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Flow velocities when flowing less than full under peak flow conditions (i.e. PDWF at current development) >0.6 m/s	M 5.7.6	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Q/Qf (design Q/Full Q)<=70% full & upsize at 80% full for sewers>450mm;else design for 60% full & upsize@70% full	LDM 3.4.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Min & max grades as per Table RH2000 else deviation memo	LDM 3.5.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• First leg grade selected to achieve actual flow velocity of 0.6 m/s	LDM 3.5.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• First 40 units (40 dwelling units or less in upstream branches) where actual flow velocity is impractical @ 0.6 m/s has a slope of 1% or higher; reasons why impractical are provided in the deviation memo	LDM 3.5.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Coefficient of Roughness n=>0.013 is used for all new smooth-wall pipe materials	M 5.7.1;LDM 3.3.1; DC 2.2.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• For sewer replacement: Options of improving slope or flow velocities considered; if so, document provided showing how and what actions were taken & reasons why, etc.	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
ENGINEERING PLANS / DRAWINGS/SPECIFICATIONS			
• New wastewater mains indicated per Town or City Std Drawings	LDM 3.6.1.a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Replacement sewers considered existing utilities location, etc.	LDM 3.6.1b		
• *New ww mains plugged at connection point until approved	LDM 3.6.1c	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Manhole depths greater than 5m are indicated in the drawings	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Basement elevations indicated; control elevations clearly marked	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Project specifications included re: mandatory inspection & testing (i.e. leakage testing, deflection testing, hydrostatic testing) & comply with MECP Design Criteria Section 8	DC 1.2.7.1; DC 8	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Rqmt for inspection and testing for water tightness or damage prior to placing into service is written in the specifications	M	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
- Leakage test results < 0.075L/mm dia/100m/hr for sewers	M 5.7.11.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
- Leakage test results < 3.0 L/hr/m of head above MH invert	M 5.7.11.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Where flow depth under peak flow (d/D) <=0.3, slope is increased to get actual flow velocity =>0.6 m/s	M 5.7.6	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	

Permanent easements			
• Permanent easement avoided, else wwm & other utility mains <3m from easement limits	LDM 3.6.3a&g&l	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• There's no lateral connections to main line within easements	LDM 3.6.3b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Min width for depths 1.7- 3.7m & dia <600mm is 8m, else 9m	LDM 3.6.3c&d	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• For depths greater than 3.7m, easement width shall permit installation by conventional method & operation totally contained within easement; width is increased by 3m/m of depth	LDM 3.6.3e&f	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Pipe is outside of zone encumbered by 1:1 slope from face & depth of deepest foundation of existing or future structures	LDM 3.6.3h	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• No substitution by encasement due to width & 1:1 slope reqmts	LDM 3.6.3i	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Min 1.2m horizontal separation of wwm from other utilities is met	LDM 3.6.3j	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Min 2.5m horizontal distance (outer edges) from wm; if not, installed >=0.5m below wm or w/ joints equivalent to wm std	LDM 3.6.3k; LDM 2.6.6.a.i	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Casings, Encasements and Liners			
• Steel casing for river/creek,rails,culvert crossings per RH412.010	LDM 3.6.4a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Approved spacers,runners of ultra-high polymer; no wood blocks	LDM 3.6.4b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• WWM is centered in casing; min 200mm clearance around outside pipe bell or harness joint	LDM 3.6.4c	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Wwm installed per mfr specs; restrained entire casing length	LDM 3.6.4d	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Grouting at 3:1 sand/cement unless stated otherwise	LDM 3.6.4e	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Ends of casing & pipe are sealed are wrapped with hi quality rubber & secured with Type 316 stainless steel bands	LDM 3.6.4f	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• No concrete encasement for PVC wwm; encasement for other pipes has been evaluated & approved by Halton Region	LDM 3.6.4g	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Separation general (sewer main and service connections)			
• Wm crossed above wwm & laterals at least 0.15m; 0.5m if under	LDM 2.6.6b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• >2.5m horizontal separation from parallel watermains (wm)	LDM 2.6.6.a.i	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Vertical separation at crossing: >0.5m if wm is below sewer; 0.15m if above	LDM 2.6.6.b.ii	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• >50m distance from drinking water reservoirs or wells	M 5.14.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Trench plugs, Bedding, Pipe Cover & Backfill Materials			
• Minimum 2.75m below centerline of the urban right of way	LDM 3.6.5.a&b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Minimum 3.35m below open ditch or unimproved roads	LDM 3.6.5.a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Minimum 1.4m below ground surface at any other location	LDM 3.6.5.a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Located below and deeper than frost line; insulation is provided if not achievable & accepted by Owner	DC 2.8.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• If subject to traffic loads, loading factor as per appropriate authorities is used to know depth of cover; incl structural support	DC 2.8.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Live load and freezing protection if minimum cover not achieved	LDM 3.6.5.a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Max pipe cover as per mfr recommendations (proof is shown)	DC 2.8.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Granular A as bedding & cover; Gran B Type I as trench backfill conforming to OPSD 802.031,802.031,802.033 & amendments	LDM 3.6.8a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *'High performance' bedding, cover or backfill is not to be used	LDM 3.6.8c	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Granular A bedding as per OPSD 802.010 to 802.014 w 98% Std Proctor Density for flexible pipe	LDM 3.7.3c	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Rock squeeze mitigation measures as per geotech report	LDM 3.6.9	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Anchors/Restraints			
• *Sewers on 20% slope or greater are anchored securely	DC 2.5.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Anchors & spacings designed based on material, anchor type, & site conditions. Recommended spacing: 11m on grades 20%-35%,7.3m on grades 35%-50%, 4.9m on grades >50%	DC 2.5.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Sewers => 3 m/s flow velocity & drop MH not possible is protected against scouring & erosion & acceptable to the Owner	DC 2.5.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Layout & Maintenance Holes (MH)			
• MH for all alignment changes (no pipe deflection is allowed)	LDM 3.6.2.a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• MH at end of each line; at all changes in grade, size, or alignment; at all pipe intersections	DC 2.10.1; LDM 3.6.6c; M 5.9.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• If MH cannot be provided where required, upstream MH is provided w/in 30m max	DC 2.10.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Max alignment change: 90° for dia < 450mm; 45° for =>450mm	LDM 3.6.2.b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• For alignment change 0-15°,invert drop is 0.015-0.030m provided	-- LDM 3.6.6.a.ii --	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• For alignment change 15-45°, invert drop = 0.25 v ² /2g (min.= 0.030m) is provided	LDM 3.6.6.b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• For alignment change 45-90°, invert drop = 0.50 v ² /2g (min. = 0.060 m) is provided	LDM 3.6.6.b	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Minimum drop across MH=25mm for straight, 50mm for 90 bends	DC 2.10.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Drop structure provided for sewers entering MH 0.61m or more above MH outlet pipe invert if accepted by Owner, etc.; or alternative energy dissipation method is specified if not feasible	DC 2.10.6	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• External drop structure if elevation change >1.2m	LDM 3.6.6.e	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Drop pipe is one size smaller than ww main	LDM 3.6.6.e	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Prefabricated internal drops only on MH>1.5m as per RH303.01	LDM 3.6.6e	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *MH conform to OPSS & OPSD & CAN/CSA A-257	LDM 3.6.6f	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	



<ul style="list-style-type: none"> MH is away from overland route or ponding area; Grading around & away otherwise analysis for 25-yr storm is completed for watertight design including covers & ventilation if submerged MH 	DC 2.10.7 & 8	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Frost straps are provided; external straps extend top to bottom & at least 1m below frost depth for deep MH 	DC 2.10.9	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Watertight & locking MH covers on easements & areas prone to flooding; extended vents for significant watertight w/m sections 	LDM 3.6.6g	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Downstream pipe are not smaller; if larger, obverts are matched 	LDM 3.6.6.c; DC 2.10.5	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> No safety grating in maintenance holes 	-- LDM 3.6.6.d --	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Safety platforms or safety measures employed for deep MH as per OSHA reqmts and inspection and O&M needs, at least one 	DC 2.10.12	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Max spacing=120m for dia<=400mm; 150m for 450-750mm dia 	DC 2.10.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Maximum spacing=150m for dia. <=750mm 	-- LDM 3.6.6.a.i --	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Spacing >150m for dia >750mm has Director-approval 	LDM 3.6.6.a.i	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Add'l straight-thru MH for flow monitoring new subdivisions 	DC 2.10.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Minimum 1500mm dia. MH for pipes >450mm dia. 	LDM 3.6.6.h	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Minimum dia=1200mm; minimum access dia=610mm 	DC 2.10.11	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Tee manholes for wwm 1200mm dia and larger 	LDM 3.6.6i	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> If sanitary lateral into MH is permitted, it comes above spring line 	LDM 3.6.6j	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> MH for Commercial/Industrial/Institutional or Multi-Residential units connection is provided 1m behind property line; or MH on wwm is installed if there's no space at property line 	By-Law 184-95 s. II.M.22(1); LDM 3.8.13	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Flow channel inside MH is provided (benching) 	M 5.9.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Joints between sections of MH, & inlet and outlet pipe joining MH have gasketed flexible watertight connection; for cast-in-place, sealing provided at point of connection 	DC 2.10.10 M 5.9.6	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Benching to obvert is provided 	LDM 3.6.6.k	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Watertight MH; waterproofing all exterior joints w 300mm strip 	LDM 3.6.6l	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Sewers & MH Below Seasonally-High Groundwater Table (SHGWT) (if 0.6m lower or unknown)			
<ul style="list-style-type: none"> Pipes, joints, & connections designed for pressure=>45 psi w/o leakage 	DC 2.9.1.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *MH externally wrapped with waterproof membrane, etc. 	DC 2.9.1.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Buoyancy considered, adequate flotation prevention provided 	DC 2.9.1.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Where SHGWT is unknown, sewers are 0.6m below SHGWT 	DC 2.9.2		
<ul style="list-style-type: none"> Trench plugs provided for sewers below water table as per geotech report 	LDM 3.6.7	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Pipe Requirements			
<ul style="list-style-type: none"> *Pipes, etc met OPS or municipal stds, whichever is more strict 	DC 2.6.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Soil assessment considered prior to specifying pipes & gaskets 	DC 2.6.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Reasons & locations provided for site-specific pipe materials 	DC 2.6.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Pipes are colour coded green incl wrapping, tape, & stenciling 	DC 2.12.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Polyvinyl Chloride (PVC) if pipe diameter <= 675mm; green 	LDM 3.7.1.b(i & ii)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Radius pipe not specified nor used 	LDM 3.7.1b(iii)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *PVC pipes & gaskets as per CSA, OPSS, OPSD stds 	LDM 3.7.1b(iv)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Ribbed PVC pipes & gaskets 200-600mm as per CSA stds, etc 	LDM 3.7.1b(v)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Tees are manufactured 	LDM 3.7.1b(vi)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Concrete pipe if dia. >= 300mm; pipe fittings & joints as per stds 	LDM 3.7.1c(i)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Std length & extra strong non-RC per CSA A-257& ASTM C-14 	LDM 3.7.1c(iii)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Short conc radius pipe used with PW approval; w tracer wire as per Sect. 2.7.4 from MH to MH & meets CSA A-257;675-3050mm 	LDM 3.7.1c(iv)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *AWWAC301 pipe & joints if top of pipe>4m below finished grade 	LDM 3.7.1c(v)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Conc. joints diapered & grouted in high water table areas 	LDM 3.7.1(vi)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Concrete pipe at industrial areas if dia. => 600mm 	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *HDPE pipe if dia. <= 600mm as per stds; *mfd tees only 	LDM 3.7.1.d(i)&(iii)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *HDPE joints butt-fused for forcemains; bell & spigot for sewers 	LDM 3.7.1d(ii)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Glass Reinforced Polymer (GRP) if dia=>500mm; ASTM D3262 	LDM 3.7.1e(i)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Minimum pipe stiffness provided by dia determined by Designer 	LDM 3.7.1e(vi)		
<ul style="list-style-type: none"> *GRP joints as per ASTM D4161; fittings fabricated from materials meeting ASTM D3262 & ASTM D4161; only mfd tees 	LDM 3.7.1e(ii) (iii)&(vi)	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Designed for live load, dead load, soil type & trench conditions 	LDM 3.7.3a	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> Pipe material selected for all loading combinations + safety factor (provide proof or calculations) 	DC 2.7.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Flexible pipe min DR 35 for mainline wwm; DR 28 for service connections; K=0.110, E=1.38x10⁶ 	LDM 3.7.3c	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Pipe joints are water tight 	LDM 3.7.3d	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
Service Connections-Service Laterals			
<ul style="list-style-type: none"> *All service connections shall be <u>constructed</u> watertight 	DC 2.12.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Individual service lateral is provided to all parcels (Dual connections are not permitted); per dwelling, not shared 	By-Law 184-95 s. II.F.13.(2);LDM 3.8.1	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Min size of residential lateral =125mm dia; up to property line 	LDM 3.8.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<ul style="list-style-type: none"> *Minimum size of commercial, industrial, institutional =150mm 	LDM 3.8.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	



• Minimum size=100mm dia, green incl wrapping, demarcation tape or stenciling	DC 2.12.2	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Where lateral connection size => half of wastewater main, connection with 'tee' or 'tee-wye' (pipe dia. > 300mm) is used	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• No horizontal bends from main to the property line; connected to MH at the ww main if dia=>200mm	LDM 3.8.5	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Lateral connections from property line to wwm sloped =>2%; DC: minimum=1%, 2% is recommended	LDM 3.8.6 DC 2.12.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Covers at property line are 2.15 m-2.75m (depth)	LDM 3.8.7	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Laterals for multi-family blocks as per Tables 3-5 & 3-6	LDM 3.8.8	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Max 45° from the horizontal to mainline; if PVC s/b green, DR28;*installed as per OPSD 1006.010 & RH 302.010 & 302.020	LDM 3.8.9	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Joints & beddings same as that specified for main sewer line	LDM 3.8.10	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• 2 laterals in same trench provided bsmt elev difference<=0.6m	LDM 3.8.11	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• Not tied to wwm 450mm dia & larger nor to MH for trunk sewer	LDM 3.8.12	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Where required, risers are at max 1:1 slope where feasible before transitioning to horizontal installation by long radius bend	DC 2.12.4	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Cleanouts if installed, is at or near to the property line	DC 2.12.5	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• MH provided for commerc'l connections or for >5 resid'l bldgs	DC 2.12.6	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• *Tracer wire is recommended where feasible	DC 2.12.7	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
MISCELLANEOUS			
• Sewer connect to manhole at less than 90° horizontally	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
BASEMENT FLOODING RISK MITIGATION			
• Basement floor clearances above sewer invert at point of connection are tabulated	OP	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
• If drained by gravity, basement floor level shall be at least 0.9m to 1.5m above invert elevation of sewer (at the service lateral connection)	M 5.7.3	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	

Note: M = Ministry of Environment, Conservation & Parks Design Guidelines for Sewage Works (update Oct. 12, 2016)
 LDM = Water and Wastewater Linear Design Manual, Public Works (Version 5.0, October 2019); Bolded references indicate Design Criteria requirements are more stringent
 OP = Public Works Operational Preference
 DC = MECP Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains, etc.;
 * Shall be written in the specifications

Reviewer:	Name Print, Position, Name of Firm (if any)	Signature & Date
Designer Completing the Checklist:		
Comments:		
Reviewed by Project Manager (DPM or E&C PM)		

No.	REVISION	DATE	INITIALS
1			
2			
3			

Reviewed by:

 Technical Reviewer's Name & Signature & Date (Region)
 Infrastructure & Systems Improvement

