

WATERMAIN NOTES

1. WATERMAINS 150MM TO 300MM DIAMETER TO BE P.V.C. CL150 (DR-18) WITH GASKETED JOINTS.
2. ALL PVC WATER SERVICE PIPES SHALL BE CERTIFIED TO CAN/CSA B137.3.
3. ALL COOPER "K" SOFT WATER SERVICE PIPE SHALL BE CERTIFIED TO ASTM B88.
4. ALL WATER SERVICE PIPES SHALL BE PROVIDED WITH RESTRAINTS AS PER OBC DIV. B7.3.4.9.
5. WATER SERVICE CONNECTIONS TO BE AS PER O.P.S.D. 1104.01. PIPE FOR ALL SERVICE CONNECTIONS UP TO 50MM DIA. SHALL BE TYPE K SOFT COPPER TUBING.
6. A MIN. HORIZONTAL SEPARATION OF 2.5M MUST BE MAINTAINED BETWEEN WATERMAINS AND SANITARY OR STORM SEWERS, INCLUDING SERVICE LATERALS.
7. A MIN. VERTICAL SEPARATION OF 0.5M BETWEEN WATERMAINS AND SEWERS MUST BE MAINTAINED IF WATERMAIN IS INSTALLED ABOVE SEWER OR 0.50M IF SEWER IS ABOVE WATERMAIN.
8. WATERMAIN BEDDING TO BE SUITABLE GRANULAR BEDDING MATERIAL AS PER O.P.S.D. 1102.01, CLASS "B".
9. ALL HYDRANTS AS PER O.P.S.D. 1105.01 TO HAVE STEAMER CONNECTIONS. HYDRANTS TO BE SUPPLIED WITH:
TWO (2) 63.5MM (2 1/2") WITH CSA STANDARD THREAD, 63.5MM I.D., 79.4 O.D., 5 THREADS PER 25MM, 31.75MM SQUARE OPERATING NUT; AND
ONE (1) 100MM (4") STORZ PUMPER CONNECTION AS PER CAN/ULC #S-520, 31.75MM SQUARE OPERATING NUT, AND STORZ CAP PAINTED GLOSS BLACK.
10. HYDRANTS SHALL BE INSTALLED SUCH THAT THE ROD STEM LENGTH SHALL NOT EXCEED 1.7M MEASURED FROM THE BREAK-OFF FLANGE. IF HYDRANT BARREL LENGTH EXCEEDS 1.7M THEN A HYDRANT THAT CAN BE RAISED FROM THE BOTTOM WITHOUT INCREASING ROD LENGTH IS TO BE USED.
11. ALL METALLIC WATERMAINS, FITTINGS, HYDRANTS AND RESTRAINTERS TO HAVE CATHODIC PROTECTION IN ACCORDANCE WITH REGION OF HALTON STANDARD DRAWINGS RH 420.01 AND RH 420.02..
12. ALL SACRIFICIAL ANODES SHALL CONFORM TO A.S.T.M. B-418 TYPE II AND SHALL BE MADE OF HIGH GRADE ELECTROLYTIC ZINC, 99.99% PURE.
13. ANODE INSTALLATION IS NOT REQUIRED WITHIN VALVE-CHAMBERS, DRAIN CHAMBERS OR AIR RELEASE CHAMBERS.
14. ALL WELD CONNECTIONS TO BE COATED WITH "TC MASTIC" OR APPROVED EQUIVALENT.
15. FOR ALL ANODES CONNECTED TO NEW PIPE, FITTINGS OR TO EXISTING METALLIC WATERMAINS, A CADCWELDER AND CA-15 OR EQUIVALENT CARTRIDGE SHALL BE USED. ANODE INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
16. WHERE NEW PIPE IS TO BE CONNECTED TO EXISTING DUCTILE IRON OR CAST IRON PIPE A 14.5KG MAGNESIUM ANODE IS TO BE CONNECTED TO THE FIRST LENGTH OF EXISTING PIPE, AS PER REGION OF HALTON STANDARD DRAWING RH 420.01.
17. ALL VALVES TO OPEN LEFT (COUNTER-CLOCKWISE) AND SHALL HAVE 50MM SQUARE STANDARD AWWA OPERATING NUT.
18. ALL PLUGS, CAPS, TEES, AND BENDS SHALL BE MECHANICALLY RESTRAINED AS PER MANUFACTURERS SPECIFICATIONS. RESTRAINTS SHALL MEET UNI-B-13-92.
19. WHERE WATERMAIN IS PLACED IN FILL OR IN PREVIOUSLY DISTURBED GROUND ALL JOINTS TO BE MECHANICALLY RESTRAINED.
20. MINIMUM DEPTH OF COVER OVER WATERMAIN SHALL BE 1.70M MEASURED FROM THE ROAD CENTRELINE ELEVATION.
21. THE DEPTH OF WATER SERVICES AT PROPERTY LINE SHOULD BE A MINIMUM OF 1.7M AND A MAXIMUM OF 2.0M. THE DISTANCE BETWEEN THE GROUND ELEVATION AND THE TOP OF THE ROD SHOULD BE BETWEEN 0.5M AND 1.0M.
22. WATER SERVICES CROSSING THE STORM SEWER/SANITARY SEWER SHALL HAVE MIN. 0.5M OF CLEARANCE TO PASS OVER/BELOW SEWER. ALL PIPE JOINTS TO BE 2.4M FROM THE INTERSECTION. ADEQUATE STRUCTURAL SUPPORT IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING (OBC DIV. B7.3.5.7).
23. GATE VALVES CONFORMING TO A.W.W.A. C500 STANDARDS ARE REQUIRED ON WATERMAINS 300MM AND UNDER. LINE GATE VALVES SHALL HAVE AUGER OF SCREW TYPE VALVE BOXES.
24. ALL WATERMAIN FITTINGS SHALL HAVE MECHANICAL JOINTS.
25. VERTICAL AND HORIZONTAL ALIGNMENT OF WATERMAIN TO BE ACHIEVED BY DEFLECTION OF JOINTS AS PER MANUFACTURER'S SPECIFICATIONS. DEFLECTION IN THE BARREL IS NOT PERMITTED.
26. TRACER WIRE IS TO BE INSTALLED ON ALL NEW INSTALLATIONS OF PVC WATERMAIN PIPE FOR LOCATING PURPOSES. A SOLID 10 GAUGE T.W.U. COPPER WIRE IS TO BE INSTALLED ALONG THE PIPE, STRAPPED TO THE PIPE AT 6 METRE INTERVALS. JOINTS IN THE WIRE BETWEEN VALVES ARE NOT PERMITTED.
27. THE INSPECTOR MAY TEST THE TRACING WIRE FOR CONDUCTIVITY. IF THE TRACING WIRE IS NOT CONTINUOUS FROM VALVE TO VALVE, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, REPLACE OR REPAIR THE WIRE.
28. ALL WATER CUSTOMERS SUPPLIED BY A WATERMAIN TO BE SHUT DOWN SHALL BE NOTIFIED BY THE CONTRACTOR AT LEAST 72 HOURS IN ADVANCE OF THE SHUT DOWN AS PER REGION OF HALTON SPECIFICATIONS. NOTIFICATION SHALL TAKE PLACE UNDER THE ENGINEER'S DIRECTION.
29. OPERATION OF EXISTING WATERMAINS SHALL BE BY REGION OF HALTON STAFF ONLY.
30. THE BACKFILLING UNDER THE EXISTING ROAD AND PARKING AREAS WILL BE GRANULAR 'A' WITH 100% SPD COMPACTION.
31. AT THE END OF CONSTRUCTION TOP LAYER OF ASPHALT TO BE MILLED
MILLED DOWN AND RESURFACED WITH MIN. 40mm HL3.

GENERAL NOTES

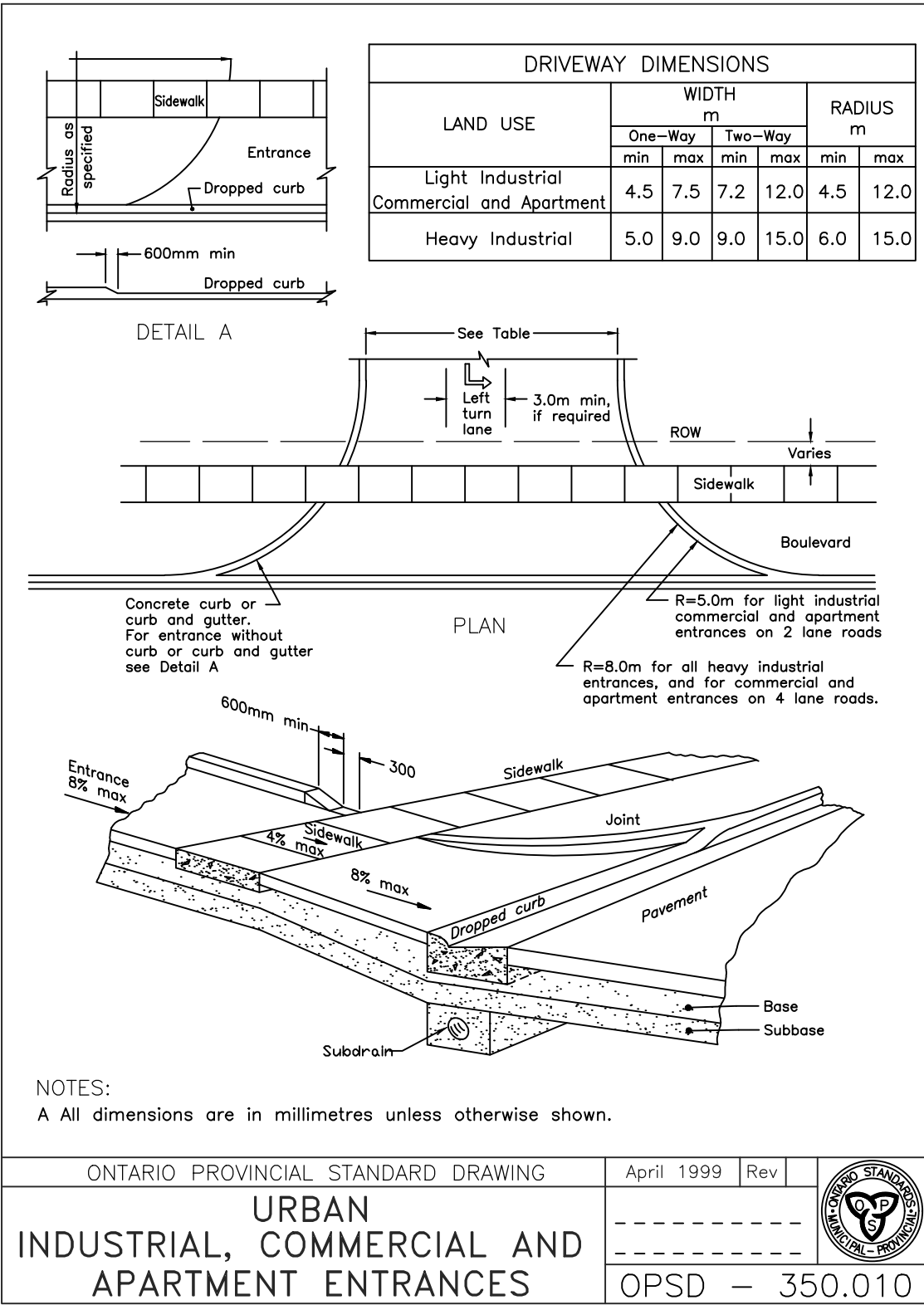
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
2. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THESE DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE LOCATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
3. ALL AREAS DISTURBED BY THE CONTRACTOR DURING THE CONSTRUCTION OF THE WORKS SHOWN HEREIN SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AS DETERMINED BY PLANNING AND PUBLIC WORKS DEPARTMENT. ALL GRASS AND VEGETATION COVERED AREAS SHALL BE RESTORED BY PLACING 150MM OF TOPSOIL AND NO. 1 NURSERY SOD TO ESTABLISH A GRASS COVER TO THE SATISFACTION OF THE TOWN UNLESS NOTED OTHERWISE.
4. TOWN OF HALTON HILLS AND REGION OF HALTON STANDARD DRAWINGS AND O.P.S.D. WITH REGIONAL AMENDMENTS FOR SANITARY SEWERS AND WATERMAINS SHALL CONSTITUTE PART OF THE ENGINEERING DESIGN AND CONSTRUCTION CONTRACT.
5. ALTERNATIVE MATERIALS MAY BE ACCEPTABLE, PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE TOWN ENGINEER AND/OR THE REGIONAL COMMISSIONER OF PLANNING AND PUBLIC WORKS.
6. NO BLASTING IS PERMITTED.
7. ANY AREAS WITHIN R.O.W. WHICH REQUIRE FILL IN EXCESS OF 0.30M ARE SUBJECT TO COMPACTION TESTS AND SUCH TESTS MUST SHOW A MIN. COMPACTION OF 98% S.P.D. AT ALL DEPTHS.
8. MANHOLE AND VALVE CHAMBER COVERS ARE TO BE SET FLUSH WITH BASE COURSE ASPHALT AND ADJUSTED TO FINAL GRADE PRIOR TO INSTALLING TOP LIFT OF ASPHALT.
9. ALL TRENCHES WITHIN EXISTING RIGHT-OF-WAY ARE TO BE BACKFILLED IN ACCORDANCE WITH OBC DIV.B7.3.5.1 AND TOWN OF HALTON HILLS REQUIREMENTS.
10. ALL WATERMAIN AND SANITARY SEWER INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND PECIFICATIONS (OPSS) AS AMENDED BY THE REGIONAL MUNICIPALITY OF HALTON.
11. THE LOCATION OF ALL EXISTING WATERMAIN, SANITARY SEWER, UTILITIES AND SERVICES ARE APPROXIMATE. THE CONTRACTOR MUST VERIFY THE LOCATION, VERIFY SIZE AND ELEVATION IN THE FIELD PRIOR TO CONSTRUCTION.
12. DRIVEWAY MATERIAL IS ASPHALT UNLESS OTHERWISE SPECIFIED.
13. UNLESS OTHERWISE NOTED, ALL NEW SANITARY SEWERS ARE TO BE PVC SDR 35 ASTM D3034 WITH GRANULAR 'A' BEDDING AND COVER AS PER OPSD 802.010 WITH GRANULAR 'B' BACKFILL.
14. UNLESS OTHERWISE NOTED, ALL EXISTING SANITARY LATERALS ARE TO BE REPLACED WITH PVC SDR28, 125MM DIA. CONNECTIONS FOR SINGLE FAMILY AND SEMI-DETACHED DWELLINGS AND 150MM DIA. CONNECTIONS FOR ALL OTHERS, AND ARE TO BE REPLACED FROM THE NEW SEWER MAIN TO EXISTING LATERALS AT THE PROPERTY LINE.
15. UNLESS OTHERWISE NOTED, ALL THE EXISTING SANITARY MANHOLES ARE TO BE EITHER REMOVED OR BROKEN DOWN 1.0M BELOW ROAD GRADE AND BACKFILLED WITH NON-SHRINK BACKFILL TO SUBGRADE. THE AFFECTED AREA SHALL BE COMPLETELY RESTORED. FRAMES AND COVERS ARE TO BE SALVAGED AND RETURNED TO THE REGIONAL STORES, 1179 BRONTE RD., OAKVILLE.
16. WATERMAIN MATERIAL IS TO BE EITHER DUCTILE IRON PRESSURE CLASS 350 AS PER AWWA C-150 OR PVC SDR-18 CL-150 AS PER AWWA C-900.
17. UNLESS OTHERWISE NOTED, ALL EXISTING WATER SERVICES ARE TO BE REPLACED WITH A MIN. 25MM DIA. COPPER FOR RESIDENTIAL DWELLINGS AND 25MM DIA. COPPER FOR INDUSTRIAL AND COMMERCIAL PREMISES AS PER OPSD 1104.01M. UNLESS OTHERWISE NOTED, SERVICES ARE TO BE REPLACED FROM THE MAIN TO THE PROPERTY LINE WITH A NEW CURB STOP AND SERVICE BOX AT THE PROPERTY LINE.
18. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS AND BLOW OFFS REQUIRED FOR TESTING THE NEW WATERMAIN.
19. MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION OF THE WATERMAIN SHALL BE 50% OF THE MANUFACTURER'S SPECIFICATIONS. PIPE BARREL DEFLECTION IS STRICTLY PROHIBITED.
20. ALL PVC STORM PIPES SHALL BE CERTIFIED TO CAN/CSA B182.2 OR CAN/CSA B182.4.
21. ALL CONCRETE STORM PIPES SHALL BE CERTIFIED TO CSA SERIES A257.
22. FROST PROTECTION SHALL BE PROVIDED AS PER OBC DIV. B7.3.5.4., AND THE MINIMUM COVER SHALL BE 1.2M.
23. CORROSION PROTECTION IS REQUIRED FOR ALL METALLIC PIPE, VALVES, FITTINGS SERVICES AND HYDRANTS. CATHODIC PROTECTION (ZINC ANODE) AS PER THE DETAILS IN THE REGIONAL DESIGN SPECIFICATIONS OR 8 MIL MEDIUM DENSITY POLYETHYLENE ENCASEMENT AS PER AWWA C-105 SHALL BE USED.
24. AFTER REMOVING VALVE BOXES AND HYDRANTS, BACKFILL WITH COMPACTED GRANULAR 'A', WHERE EXISTING VALVE CHAMBERS ARE TO BE ABANDONED, ALL VALVES WITHIN THE CHAMBER ARE TO BE LEFT IN PLACE AND THE CHAMBER IS TO BE BROKEN DOWN TO 1.0M BELOW FINAL GRADE AND BACKFILLED WITH NON-SHRINK WITH NON-SHRINK BACKFILL TO SUBGRADE. THE AFFECTED AREA SHALL BE COMPLETELY RESTORED. ALL HYDRANTS SHOWN FOR REMOVAL SHALL BE RETURNED TO REGIONAL STORES AT 1179 BRONTE RD., OAKVILLE. UNLESS OTHERWISE NOTED, ALL VALVES WHICH ARE SHOWN FOR REMOVAL SHALL BE DISPOSED OF BY CONTRACTOR.
25. EXISTING WATERMAIN IS TO BE EITHER REMOVED OR PLUGGED AND ABANDONED AS REQUIRED
26. HYDRANTS ARE TO BE INSTALLED SUCH THAT THE LOWER ROD/STEM LENGTH SHALL NOT EXCEED 1.7M MEASURED FROM THE BREAK-OFF FLANGE.
27. REGIONAL MUNICIPALITY OF HALTON APPROVED MECHANICAL RESTRAINTS ARE TO BE USED ON ALL STANDARD BENDS, VALVES, FITTINGS AND HYDRANTS. REFER TO TABLE.
28. THE CONSULTANTS RELY ON SURVEYS AND DIMENSIONS BY OTHERS.

STORM SEWER NOTES

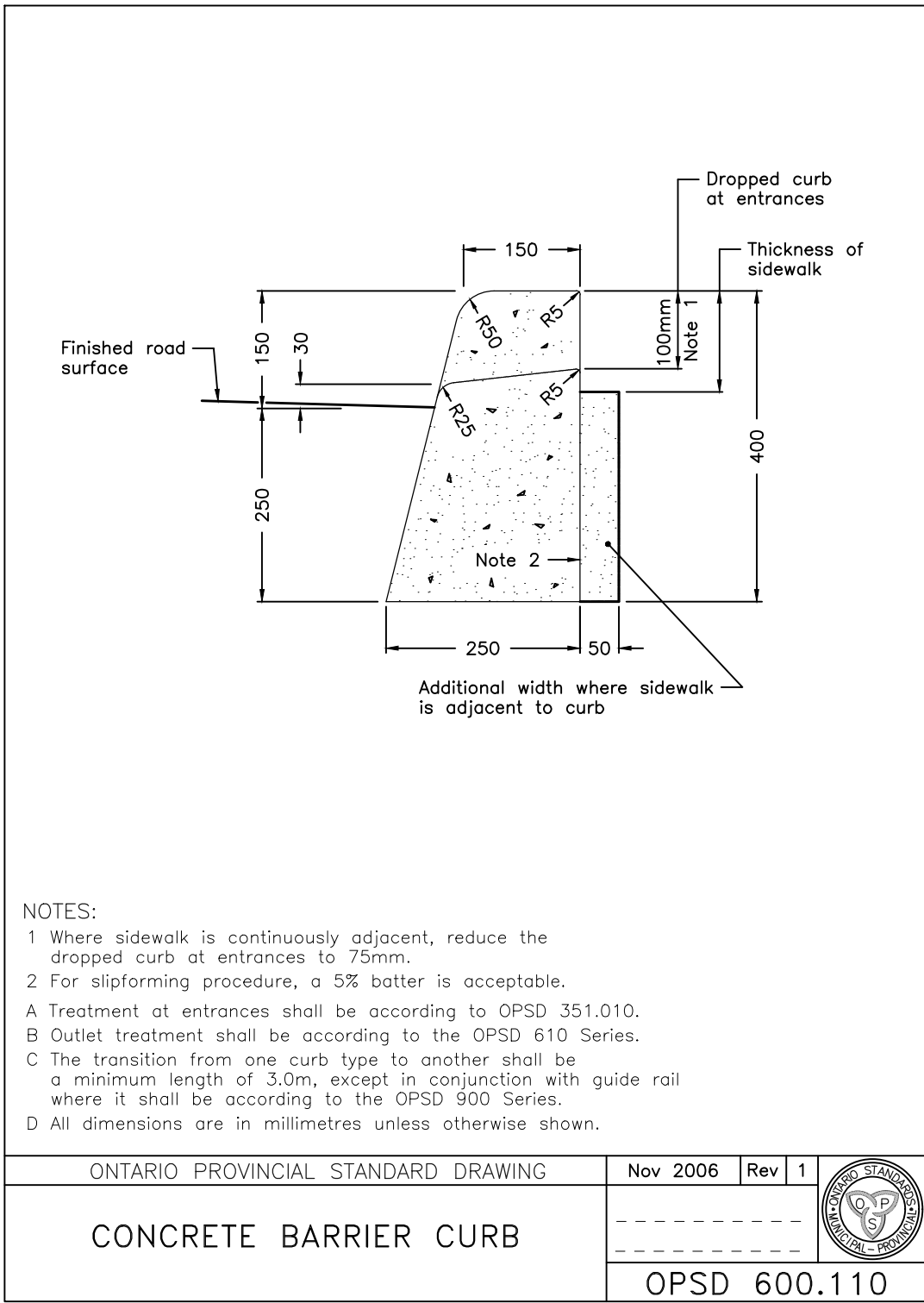
1. MAIN LINE PVC PIPE AS PER DR 35 CSA B182.2-06 CERTIFIED ASTM D3034-04a, F679-03. PVC PIPE TO BE AS PER DR28 CSA B182.2-06 CERTIFIED ASTM D3034-04a
2. BEDDING FOR FLEXIBLE PIPE SHALL BE AS PER OPSD 802.010, 802.013 OR 802.014
3. ULTRA-RIB PIPE IS NOT PERMITTED WITHIN THE MUNICIPAL RIGHT OF WAY.
4. MAINTENANCE HOLES AS PER OPSD, 701.010 (1200mm), 701.011 (1500mm), 701.012-1(1800mm) OR 701.013 (2400mm). FRAME AND COVER AS PER OPSD 401.010 TYPE B OPEN (STORM).
5. BENCHING SHALL BE AS PER OPSD 701.021.
6. DROP STRUCTURES TO BE AS PER OPSD 1003.01 (EXTERNAL AND 1003.01-2(INTERNAL)
7. SINGLE CATCHBASINS SHALL BE AS PER OPSD 705.02 COMPLETE WITH GOSS TRAP.
8. SERVICE CONNECTION AND UTILITY CUTS TO BE BACKFILLED WITH UNSHRINKABLE FILL.
9. CATCHBASINS LEAD TO BE 200mm PVC DR35 FOR SINGLE CATCHBASINS AND 250mm FOR DOUBLE CATCHBASINS UNLESS OTHERWISE SPECIFIED.
10. STORM SEWER LESS THAN 375mm TO BE PVC AND EQUAL OR GREATER THAN 375mm TO BE CONC.
11. THE BACKFILLING UNDER THE EXISTING ROAD AND PARKING AREAS WILL BE GRANULAR 'A' WITH 100% SPD COMPACTION.

SANITARY SEWER NOTES

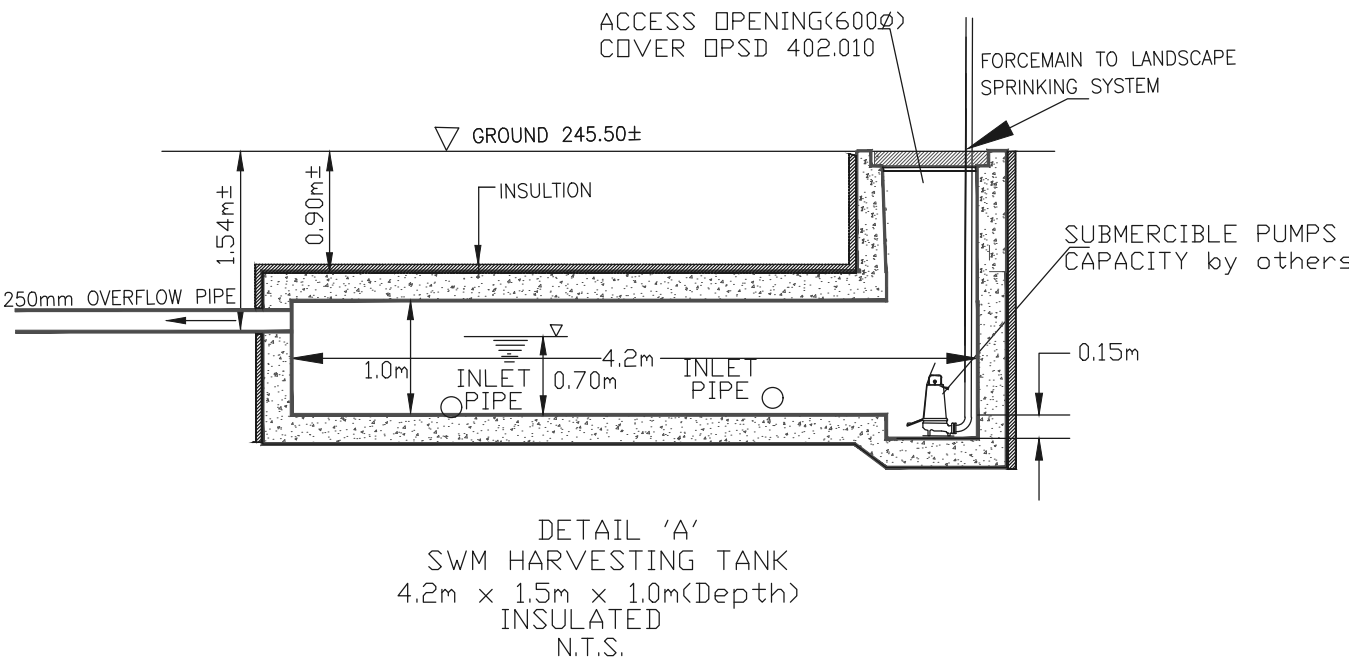
1. SANITARY MANHOLES AS PER O.P.S.D. 701.010 WITH FRAMES AND COVERS AS PER O.P.S.D. 401.01 TYPE "A" UNLESS OTHERWISE NOTED ON THE DRAWINGS.
2. BENCHING IN MANHOLES TO BE AS PER O.P.S.D. 701.021 AS AMENDED BY THE REGION OF HALTON. BENCHING IN SANITARY MANHOLES TO BE TO THE OBVERT OF THE PIPE.
3. SAFETY PLATFORMS AS PER O.P.S.D. 404.020 TO BE INSTALLED ONLY IN MANHOLES WHERE DEPTHS EXCEED 10.0M AS DIRECTED BY THE REGION AND AS INDICATED ON THE PROFILE DRAWINGS.
4. ALL PVC SANITARY PIPES SHALL BE CERTIFIED TO CAN/CSA B181.2,CAN/CSA B182.2 OR CAN/CSA B182.4.
5. SANITARY SERVICE CONNECTIONS TO BE 125MM DIA FOR SINGLE RESIDENTIAL CONNECTIONS AND 150MM DIA FOR DUAL RESIDENTIAL AND SINGLE NON-RESIDENTIAL CONNECTIONS. SANITARY SERVICE CONNECTIONS TO BE MINIMUM 2% GRADE AND SHALL BE NON-WHITE IN COLOUR.
6. SERVICES TO BE MIN. 2.15M AND MAX. 2.75M DEEP AT PROPERTY LINE. RISERS SHALL BE USED WHERE NOTED AS PER OPSD 1006.01.
7. CLASS "B" BEDDING ON ALL SEWERS AND CONNECTIONS TO BE AS PER O.P.S.D. 1005.02 UNLESS NOTED OTHERWISE
8. GRANULAR BACKFILL AROUND MANHOLES SHALL BE COMPACTED BY MECHANICAL MEANS TO A MINIMUM OF 95% S.P.D.
9. THE BACKFILLING UNDER THE EXISTING ROAD AND PARKING AREAS WILL BE GRANULAR 'A' WITH 100% SPD COMPACTION.




NOTES:
A All dimensions are in millimetres unless otherwise shown.



NOTES:
1 Where sidewalk is continuously adjacent, reduce the dropped curb at entrances to 75mm.
2 For slipforming procedure, a 5% batter is acceptable.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.



				BENCHMARK NOTE				LEGEND				TOWN OF HALTON HILLS				RESIDENTIAL DEVELOPMENT				FIELD NOTES					
				TOPOGRAPHIC INFORMATION MEASURED 2007. THIS IS NOT A PLAN OF SURVEY. BENCHMARK: HHBM 064 ELEVATION: 253.45 TEMPORARY BENCHMARK ELEVATION: 254.28 TOP OF RAILROAD SPIKE IN THE SOUTH SIDE OF THE FIRS HYDRO POLE EAST OF NORMANDY BOULEVARD ON GUELPH STREET. The location and extent of all existing utilities are not necessarily shown on this plan, and where shown, are to be considered approximate only. All Contractors shall inform themselves of the exact location and extent of all existing services prior to the start of construction, and shall assume all liabilities for damage to them or delays resulting from their actual extent and location.				O L.S. LIGHT STANDARD O T.L. TRAFFIC LIGHT O S SIGN O B BELL POLE O H HYDRO POLE O H HYDRO C GUY AND ANCHOR M MANHOLE EXISTING P MANHOLE PROPOSED C CATCHBASIN EXISTING C CATCHBASIN PROPOSED S S.I.B. STANDARD IRON BAR				RD DESIGN RD CHECKED BY MI PROJ. SUPVR.				 PREMIER ENGINEERING SOLUTIONS CIVIL ENGINEERS 3294 ALPACA AVENUE, MISSISSAUGA ONTARIO L5M 7V3 PHONE: (905) 817-1294 FAX: (905) 817-1299				16-18 MILL STREET HALTON HILLS, ON				DATE	
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