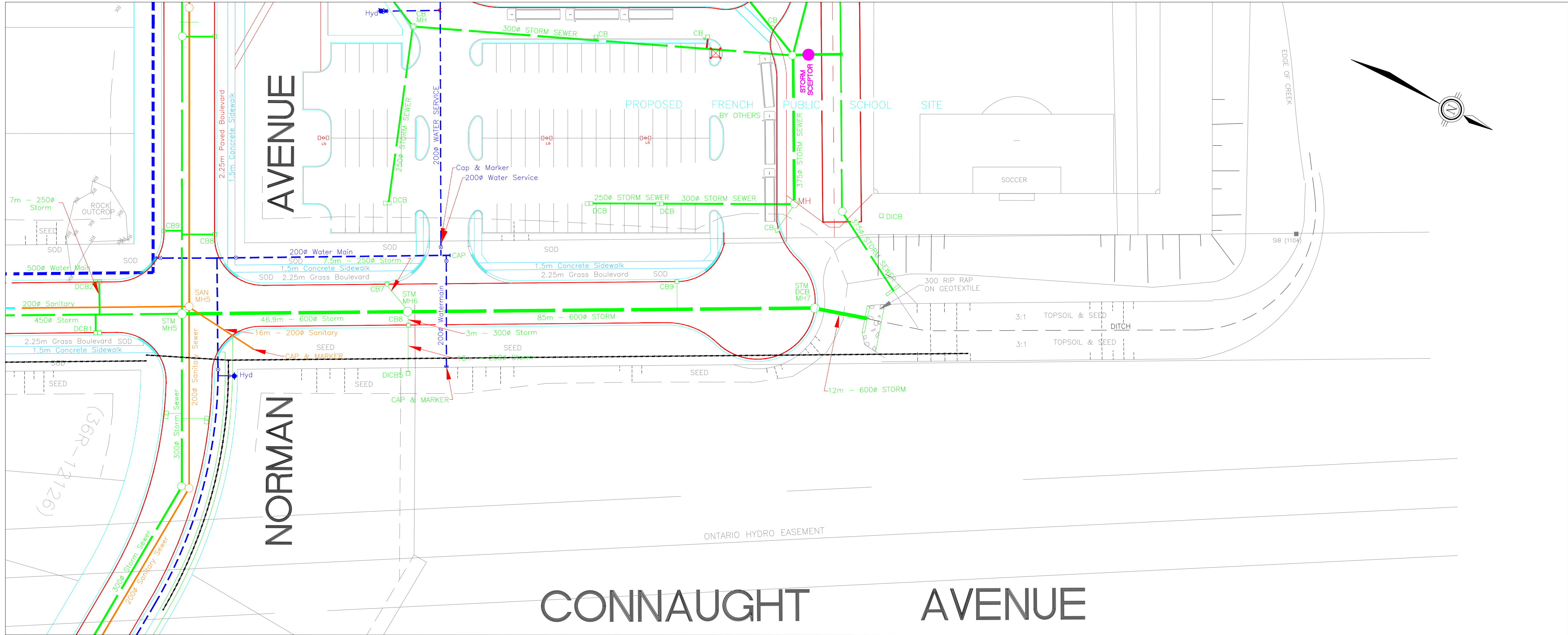
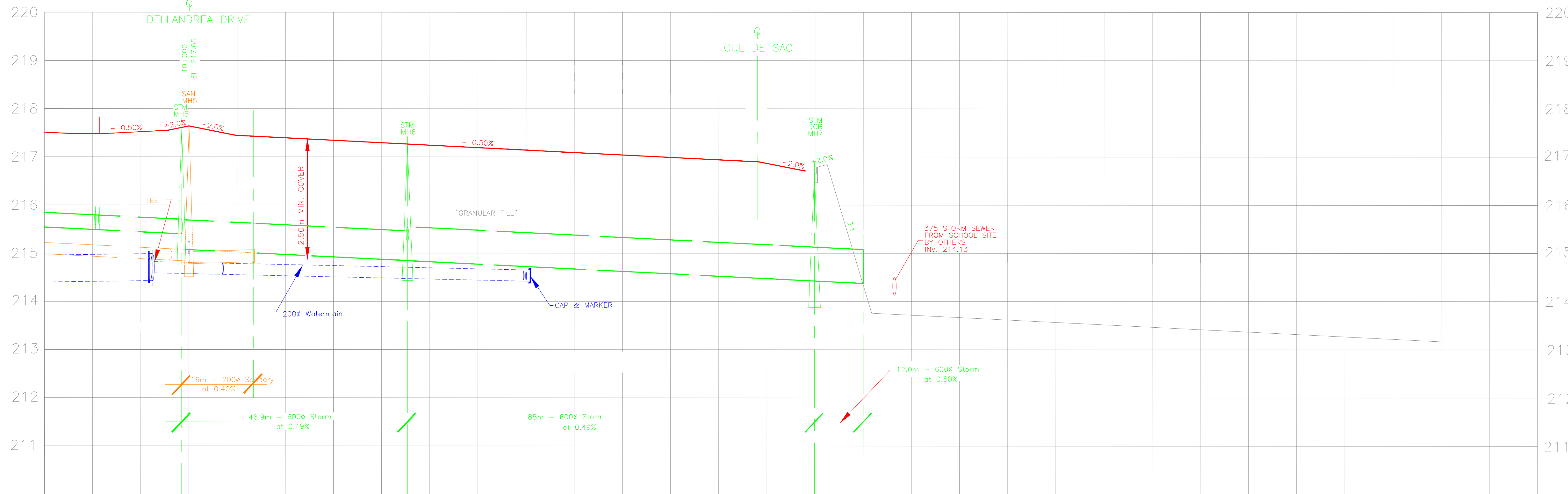




- NOTES:
SEWERS
- a) MAINS
SANITARY MAINS - POLYVINYL CHLORIDE (PVC), CLASS DR 35, TYTON JOINT.
STORM MAINS (INCLUDING CATCH BASIN LEADS) - POLYVINYL CHLORIDE, CLASS DR 35, OR HIGH DENSITY POLYETHYLENE (HDPE), OR REINFORCED CONCRETE CLASS IV WITH SMOOTH INSIDE WALLS AND CASKETS BEL AND SPOOT JOINTS.
CATCH BASIN LEAD CONNECTION TO MAINS WITH "TEE" OR AN APPROVED SADDLE.
HOUSE SERVICE PIPE - POLYVINYL CHLORIDE (PVC) CLASS DR 28, TYTON JOINT.
CLASS "B" BEDDING (OPSD 802.030) WITH BEDDING MATERIAL GRANULAR "A", COVER MATERIAL GRANULAR "B" TYPE "1" AND NATIVE BACKFILL.
ALL IN ACCORDANCE WITH OPSS 410.
- b) STRUCTURES
MANHOLES - PRECAST CONCRETE - 1200mm DIAMETER (OPSD 701.010), WITH MONOLITHIC BASE AND TAPERED TOP WHEN DEPTH PERMITS.
CATCH BASINS - PRECAST CONCRETE - SINGLE INLET - 600 X 600 (OPSD 705.0100), TWIN INLET - 600 X 1450 (OPSD 705.020), TWIN DITCH INLET 100 X 1200 (OPSD 705.040).
FRAMES AND COVERS - MANHOLES OPSD 401.01 - TYPE A, CATCH BASIN OPSD 400.01 AND DITCH INLET OPSD 403.01.
ADJUSTMENT UNITS (2 LAYERS MIN. 6 LAYERS MAX.) - OPSD 704.010 - GROUT OUTSIDE ONLY.
STEPS - OPSD 405.010 - CIRCULAR ALUMINUM - IN MANHOLES ONLY.
FROST STRAPS - OPSD 701.100 (MODIFIED TO 3 STRAPS AT 120 DEGREES ON MANHOLES)
2 STRAPS ON JOINTED CATCH BASINS.
BENCHING - OPSD 701.021 (SANITARY MANHOLES ONLY).
WRAPPING (MANHOLES AND CATCH BASINS) - DOUBLE 4 MIL POLYETHYLENE.
BEDDING 150mm GRANULAR "A".
BACKFILL WITH GRANULAR "B" TYPE "1".
ALL IN ACCORDANCE WITH OPSS 407.
- c) WATERMANS
i) MAINS (INCLUDES HYDRANT LEADS)
POLYVINYL CHLORIDE (PVC), CLASS 150 OR DUCTILE IRON CLASS 52 MORTAR LINED (M.L.) OR DUCTILE IRON PRESSURE CLASS 350, M.L. WITH MECHANICAL JOINT.
CORROSION PROTECTION IS REQUIRED ON ALL DUCTILE IRON PIPE AND FITTINGS AND SERVICES.
PROVIDE TRACER CABLE (BRIDGED #4 COPPER, COATED) ALONG ALL PVC WATER MAINS.
TERMINATE TRACER CABLES AT VALVE BOX TOPS AND AT ABOVE GROUND HYDRANT FLANGE.
THRUST BLOCK (OPSD 1103.010) ALL BENDS, TEES AND ENDS - PROVIDE POLY SEPARATION BETWEEN CONCRETE AND FITTING.
WATER SERVICES - 200mm COPPER (TYPE K) COMPLETE WITH MAIN AND CURB STOP AND MARKER AND IN ACCORDANCE WITH OPSD 1104.010, CURB STOP WITH STAINLESS STEEL OPERATOR ROD, CLASS "B" BEDDING (OPSD 802.030) WITH BEDDING MATERIAL GRANULAR "A", COVER MATERIAL GRANULAR "B" TYPE "1" AND NATIVE BACKFILL.
DOUBLE 2MM ALL WATERMANS.
PRESSURE TEST ALL WATERMANS AT 1050 KPa.
DISINFECT ALL WATERMANS AND FITTINGS AND PROVIDE BACTERIAL TEST PROOF.
ALL IN ACCORDANCE WITH OPSS 701.
ii) HYDRANTS SHALL BE EITHER CENTURY B-50-B BY CANADA VALVE OR M SERIES BY CLOW CANADA OR AN APPROVED EQUAL WITH TWO PIECE BARREL, BE NON-RISING AND HAVE A BARREL LENGTH TO SUIT 2.5 METRES COVER ON LEAD, IT SHALL OPEN COUNTER CLOCKWISE AND HAVE TWO HOSE NOZZLES AND ONE PUMPER NOZZLE COMPLETE WITH CAPS.
DOUBLE WRAP BURIED HYDRANT BARREL WITH 2 MIL POLYETHYLENE.
HYDRANT FLANGE TO BE 100mm ABOVE FINISHED GRADE.
BACKFILL WITH GRANULAR "B" TYPE "1".
HYDRANT ASSEMBLY AS PER OPSD 1105.010.
iii) WATER VALVES SHALL BE GATE VALVES BY CANADA VALVE OR CLOW CANADA AWWA C509-80 AND BE STANDARD BODY, BRONZE MOUNTED WITH INSIDE SCREW AND BE RESILIENT SEATED, HAVE NON-RISING STEM WITH MECHANICAL JOINTS AND OPEN COUNTER CLOCKWISE.
SEAT VALVE ON POURED OR PRECAST SLAB (REINFORCED PATO STONE).
iv) VALVE BOXES SHALL BE CAST IRON, BITUMINOUS COATED AND TWO PIECE SLIDING TYPE (ADJUSTABLE FOR 500mm MIN.), THE BOTTOM SHALL HAVE A VALVE BONNET WITH ALIGNER, CAP WITH "WATER" INSCRIBED ON IT.
DOUBLE WRAP VALVE BOX WITH 2 MIL POLYETHYLENE.
WRAP BONNET AND VALVE WITH GEOTEXTILE (NON-WOVEN, F.O.S.150 TO 210um, CLASS II), BACKFILL VALVE BOX WITH GRANULAR "B" TYPE "1".
STREET GRADING.
- d) SUBGRADE GRADING IN ACCORDANCE WITH OPSS 206 AND OPSD 200.010 COMPACTED TO 98% SPMD.
DISPOSE OF EXCESS MATERIALS IN ACCORDANCE WITH OPSS 180 AND OR MINISTRY OF THE ENVIRONMENT GUIDELINES.
e) SUBBASE IN ACCORDANCE WITH OPSS 314 AND OPSD 206.01.
SUB BASE MATERIAL SHALL BE GRANULAR "B" TYPE "1" COMPACTED TO 100 %SPMD.
f) BASE IN ACCORDANCE WITH OPSS 314 AND OPSD 206.01.
BASE MATERIAL SHALL BE GRANULAR "A" COMPACTED TO 100 % SPMD.
g) ASPHALT PAVEMENTS IN ACCORDANCE WITH OPSS 310.
ASPHALT MATERIALS SHALL CONSIST OF HOT MIX HL4 SURFACE COURSE AND HOT MIX HL4 BINDER COURSE.
SUPPLIER TO BE A M.T.O. CERTIFIED PLANT.
MINIMUM MARSHALL FLOW SHALL BE 8 UNITS OF 0.25mm AT 3.5 % AIR VOIDS.
ASPHALT SHALL BE PERFORMANCE GRADED (PGAC) GRADE 58-34.
h) SUBDRAINS IN ACCORDANCE WITH OPSS 405 AND OPSD 216.021 (WRAPPED TRENCH).
GEOTEXTILE NON-WOVEN, F.O.S. 70 TO 140 um, CLASS 1.
PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE).
i) CONCRETE CURBS IN ACCORDANCE WITH OPSS 353 AND OPSD 600.110
CONCRETE TO BE 35 MPa STRENGTH AT 28 DAYS
AIR ENTRAINMENT SHALL BE 8 % PLUS OR MINUS 1/2 %.
CONCRETE TO BE SUPPLIED FROM A CERTIFIED READY MIX PLANT.
j) CONCRETE SIDEWALKS IN ACCORDANCE WITH OPSS 351 AND OPSD 310.01 TO .04 APPROVED
MONOLITHIC CURB AND SIDEWALK SYSTEM CAN BE USED.
CONCRETE TO BE 35 MPa STRENGTH AT 28 DAYS.
AIR ENTRAINMENT SHALL BE 8 % PLUS OR MINUS 1/2 %.
CONCRETE TO BE SUPPLIED FROM A CERTIFIED READY MIX PLANT.
CONCRETE SIDEWALKS TO BE 125mm IN DEPTH.
GRADING, SWALE AND DITCH SLOPES TO NO STEEPER THAN 2:1.
PLACE 100mm OF TOPSOIL ON ALL GRADED AREAS. PLACE SOD OR SEED AS INDICATED.



- SEDIMENT AND EROSION CONTROLS
- THE EROSION AND SEDIMENT CONTROLS IDENTIFIED ARE THE MINIMUM REQUIRED.
THE CONTRACTOR SHALL PROVIDE A SEDIMENT AND EROSION CONTROL PLAN FOR REVIEW BY THE ENGINEER BEFORE COMMENCING ANY EXCAVATIONS.
THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATION AND LIABILITY FOR THE INSTALLATION, MAINTENANCE AND REMOVAL OF ALL NECESSARY CONTROLS TO PREVENT SEDIMENT MIGRATION INTO THE DOWNSTREAM DRAINAGE COURSES.
- NOTES:
1. UNLESS INDICATED OTHERWISE MAINTAIN 2.5 METRES COVER OVER WATERMANS TO WITHIN 3 METRES OF CONNECTIONS TO EXISTING MAINS.
2. SANITARY SEWER PIPE IN A COMBINED TRENCH WITH A WATERMAIN AND WITHOUT THE REQUIRED VERTICAL CLEARANCE SHALL BE OF A PRESSURE CLASS (SERIES 100 OR DR 28) OF PIPE AND WITHSTAND PRESSURE TESTING OF 350 KPa.
3. WHERE A WATERMAIN CROSSES ABOVE A SEWER AND WITHIN 150mm, THE WATERMAIN SHALL BE BEDDED WITH LEAN CONCRETE THE FULL WIDTH OF THE WATERMAIN TRENCH AND TO A MINIMUM DISTANCE OF 1m FROM THE CENTRELINE OF THE SEWER.
4. WHERE A WATERMAIN CROSSES BELOW A SEWER 0.50m MINIMUM CLEAR SEPARATION MUST BE MAINTAINED. ALSO THE WATERMAIN COVER MATERIAL IS TO EXTEND UP TO THE BOTTOM OF THE SEWER BEDDING FOR THE FULL WIDTH OF THE WATERMAIN TRENCH. AS WELL KEEP PIPE JOINTS IN BOTH SEWER AND WATERMAIN AS FAR APART AS IS PRACTICAL FROM THE CROSSING.
5. THE LOCATIONS OR COMPLETENESS OF EXISTING UTILITIES (ABOVE AND BELOW GROUND) AS SHOWN IS APPROXIMATE. EXCAVATIONS TO VERIFY LOCATIONS OF SUCH UTILITIES MAY BE NECESSARY TO DETERMINE THEIR EXACT LOCATIONS.

APP'D BY	DETAILS	DATE	No
	REVISIONS		

Disclaimer

The information contained on this drawing may be based upon data provided by others and may not have been verified by either or constructed drawings or on Ontario Land Surveyor. The City of North Bay cannot accept responsibility for any errors or omissions on any information shown herein. Field verification, land surveys or excavation (with City approvals) may be required to determine actual location of any and all utilities or property lines.

NORTH BAY
Just South Enough to be Perfect

MILLFORD DEVELOPMENT LIMITED

HILLVIEW PARK SUBDIVISION
STAGE III - PHASE II + IV

CONNAUGHT AVENUE
NORMAN AVENUE NORTH
9+970 TO 10+280

northland engineering limited Consulting Engineers and Planners		NORTH BAY SUDBURY	
DRAWN BY:	R.E.A.	DATE:	MARCH 2004
CHECKED BY:	R.E.A.	SCALE:	1 : 500 1 : 50
CAD FILE:	LAKEVIEW DRIVE SOUTH	OFFICE	PROJECT No 1527-04
DRAWING No C-1156	REV. 0		