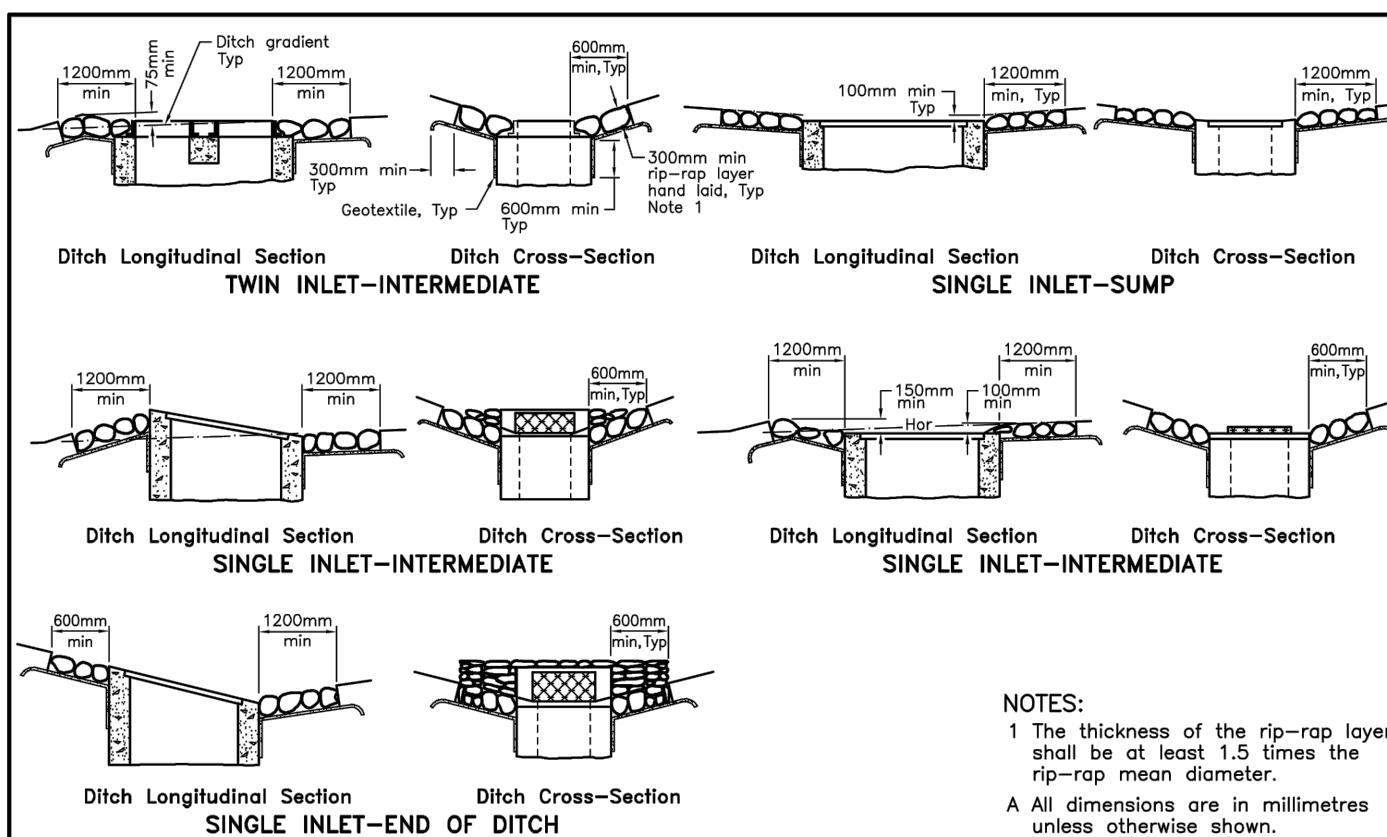


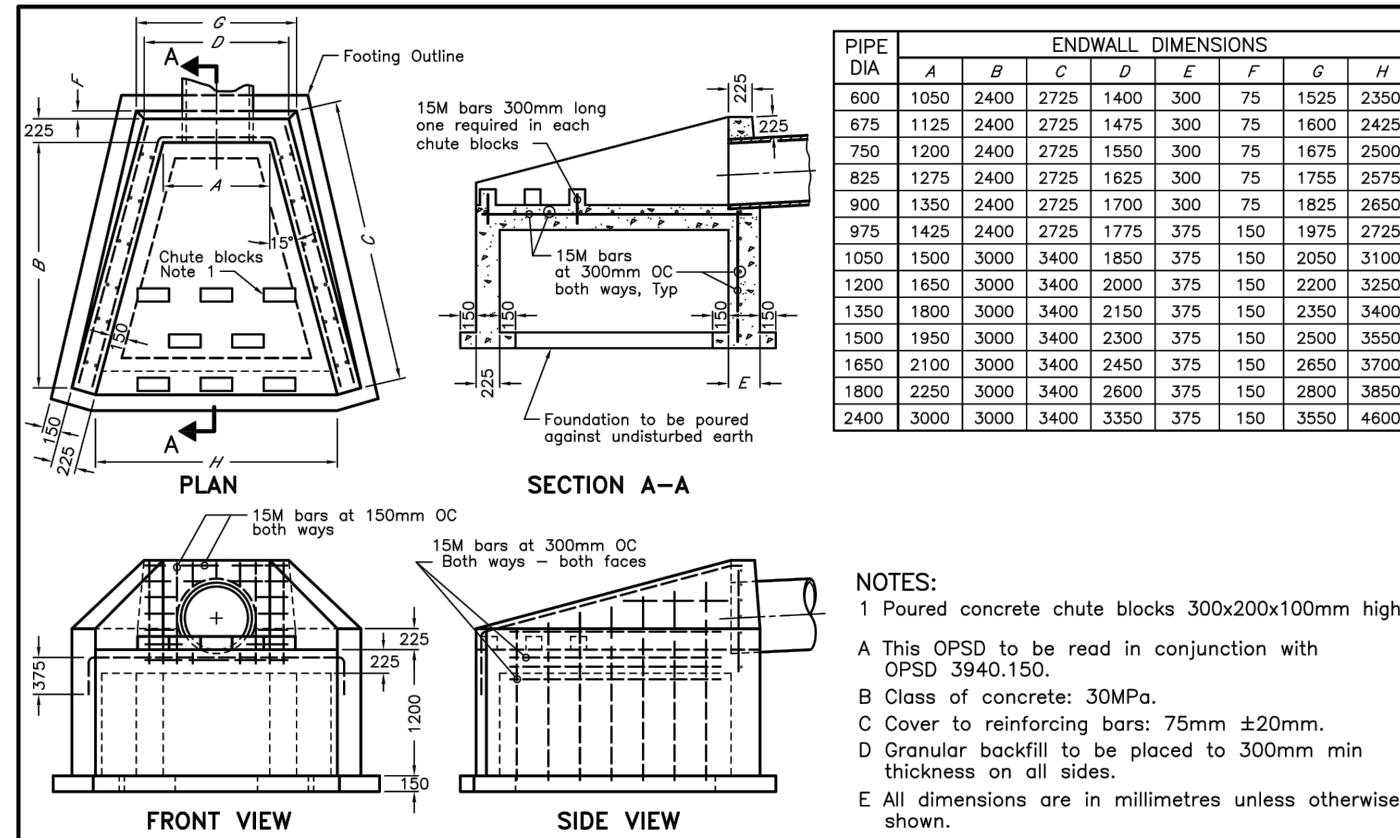
- NOTES:**
- Height of fill is measured from the finished surface to top of pipe.
 - The minimum bedding depth below the pipe shall be 0.15D in no case shall this dimension be less than 150mm or greater than 300mm.
 - The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
 - Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
 - Condition of excavation is symmetrical about centreline of pipe.
 - Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
 - All dimensions are in metres unless otherwise shown.
- LEGEND:**
- D - Inside diameter
OD - Outside diameter

PIPE DIA	CLEARANCE mm
900 or less	300
Over 900	500

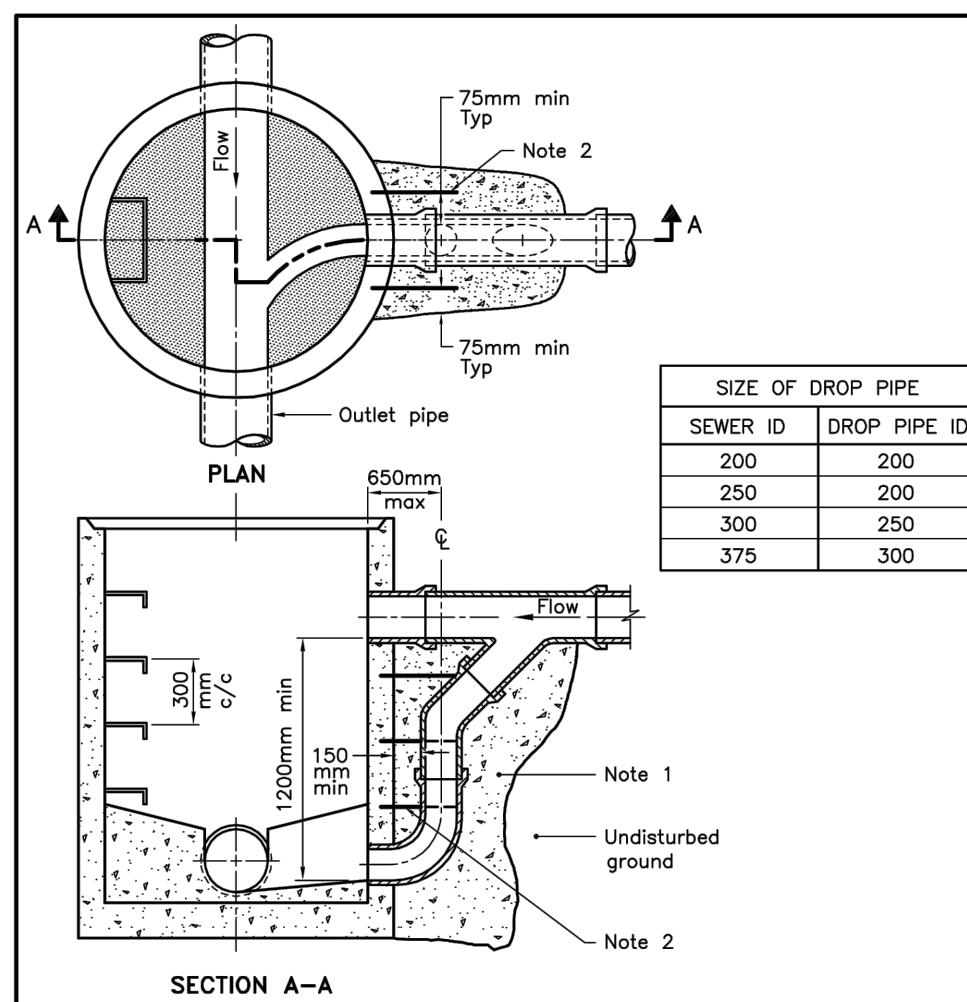
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 3
RIGID PIPE BEDDING, COVER, AND BACKFILL		
TYPE 3 SOIL - EARTH EXCAVATION		
		OPSD 802.031



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev 2
GENERAL RIP-RAP LAYOUT FOR DITCH INLETS		
		OPSD 810.020



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 0
CONCRETE HEADWALL FOR SEWER OR CULVERT PIPE OUTLET		
		OPSD 804.040



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2011	Rev 2
CAST-IN-PLACE MAINTENANCE HOLE DROP STRUCTURE WYE		
		OPSD 1003.020

TABLE 1 - MAINTENANCE HOLE / CATCH BASIN TABLE - EAST OUTLET

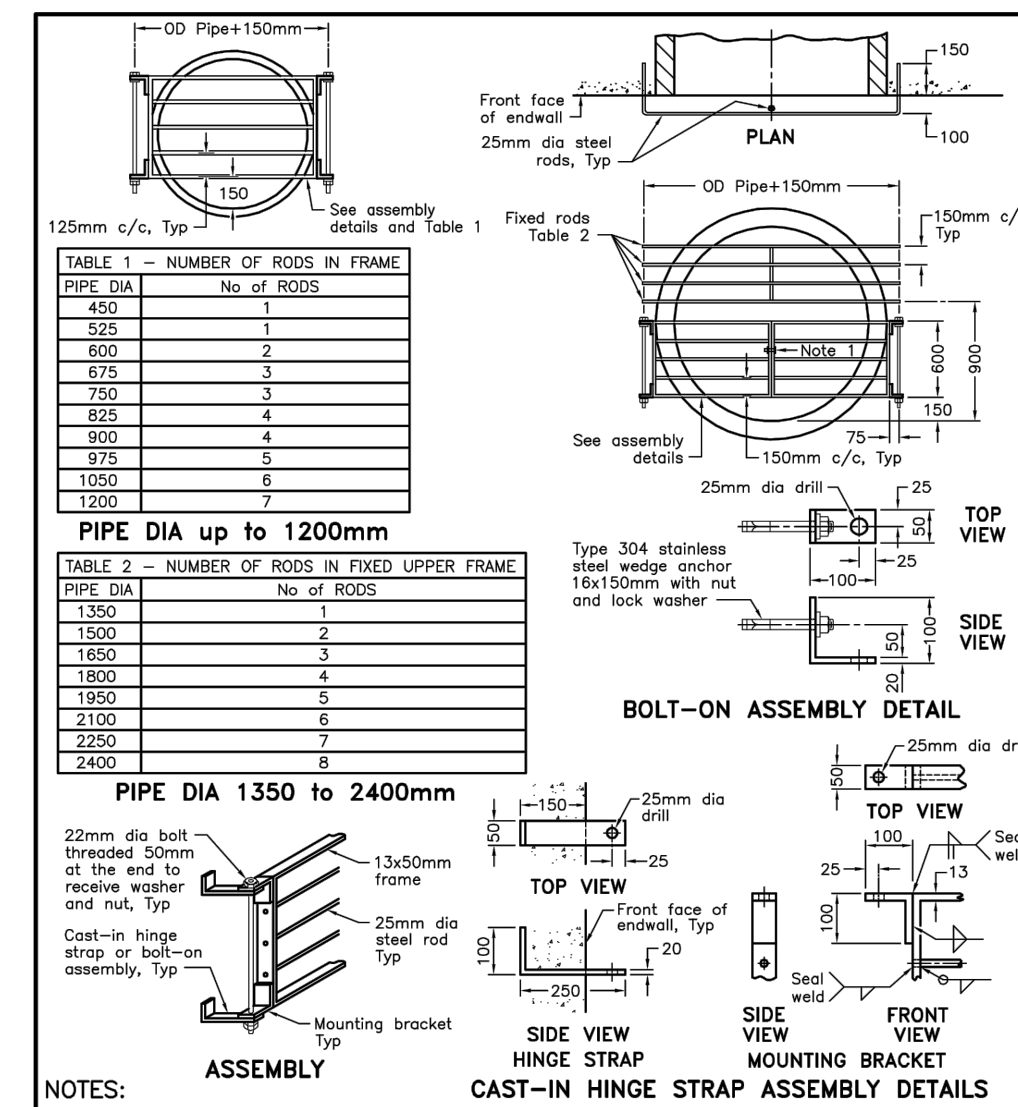
STRUCTURE NUMBER	TOP OF GRATE (PHASE 1)	TOP OF GRATE (PHASE 2)	ADJUSTMENT REQUIRED (mm)	STRUCTURE SIZE (mm)	STRUCTURE OPSD	FRAME AND GRATE OPSD
MH1E*	182.485	182.485	0	1500	701.011	401.010 TYPE A
MH2E	182.210	182.210	0	1500	701.011	401.010 TYPE A
MH3E	181.065	181.065	0	1500	701.011	401.010 TYPE A
MH4E	180.030	180.030	0	1800	701.012	401.010 TYPE A
MH5E	179.605	179.605	0	1800	701.012	401.010 TYPE A
MH6E	178.970	178.970	0	1800	701.012	401.010 TYPE A
MHCB1E	181.605	181.255	-350	1200	701.010	401.010 TYPE B
MHCB2E	181.090	180.725	-365	1200	701.010	401.010 TYPE B
MHCB3E	180.850	180.435	-415	1200	701.010	401.010 TYPE B
CB1E	182.150	182.150	0	600	705.010	400.020
CB2E	182.200	182.200	0	600	705.010	400.020
CB3E	181.665	181.230	-435	600	705.010	400.020
CB4E	181.115	180.855	-260	600	705.010	400.020
CB5E	181.115	180.580	-535	600	705.010	400.020
CB6E	179.920	179.920	0	600	705.010	400.020
CB7E	179.920	179.920	0	600	705.010	400.020

MH — MAINTENANCE HOLE
MHCB — MAINTENANCE HOLE / CATCH BASIN
CB — CATCH BASIN
* — INDICATES DROP STRUCTURE REQUIRED PER OPSD 1003.020

TABLE 2 - MAINTENANCE HOLE / CATCH BASIN TABLE - WEST OUTLET

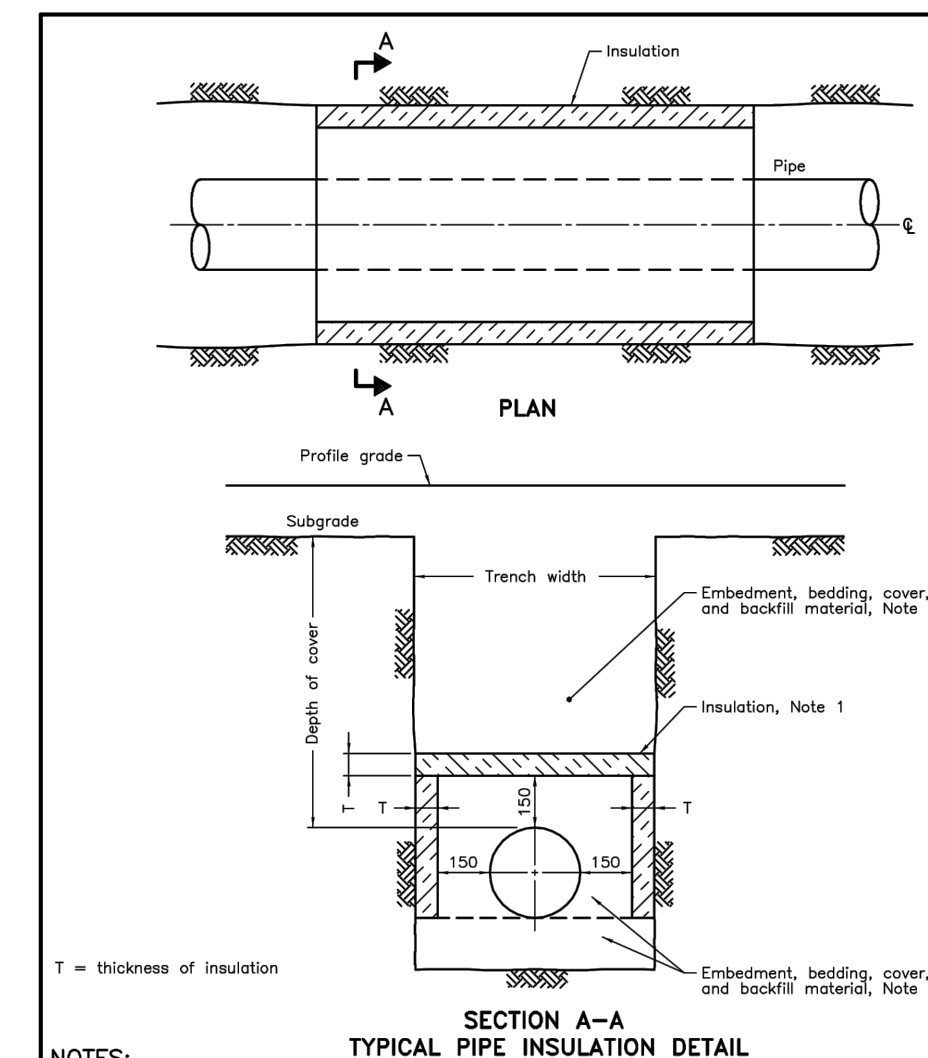
STRUCTURE NUMBER	TOP OF GRATE (PHASE 1)	TOP OF GRATE (PHASE 2)	ADJUSTMENT REQUIRED (mm)	STRUCTURE SIZE (mm)	STRUCTURE OPSD	FRAME AND GRATE OPSD
MH7W	178.940	178.940	0	1500	701.011	401.010 TYPE A
MH8W	178.460	178.550	90	1200	701.010	401.010 TYPE A
MH9W	177.805	178.310	505	1800	701.012	401.010 TYPE A
MH10W	177.995	178.300	305	1200	701.010	401.010 TYPE A
MH11W	178.170	178.330	160	1200	701.010	401.010 TYPE A
MH12W	178.110	178.330	220	1800	701.012	401.010 TYPE A
MH13W	179.000	179.000	0	1800	701.012	401.010 TYPE A
MHCB4W	178.360	178.360	0	1200	701.010	401.010 TYPE B
MHCB5W	178.090	178.200	110	1200	701.010	401.010 TYPE B
CB8W	180.860	180.775	-85	600	705.010	400.020
CB9W	180.220	180.220	0	600	705.010	400.020
CB10W	178.440	178.250	-190	600	705.010	400.020
CB11W	178.120	178.200	80	600	705.010	400.020
CB12W	177.915	178.200	285	600	705.010	400.082/401.010 TYPE A
CB13W	178.150	178.150	0	600	705.030 6H-1V	403.010
CB14W	178.300	178.200	-100	600	705.010	400.020
CB15W	178.245	178.200	-45	600	705.010	400.020
CB16W	178.145	178.200	55	600	705.010	400.020
CB17W	178.260	178.200	-60	600	705.010	400.020
CB18W	178.080	178.200	120	600	705.010	400.082/401.010 TYPE A
CB19W	178.000	178.200	200	600	705.010	400.082/401.010 TYPE A
CB20W	178.295	178.200	-95	600	705.010	400.020
CB21W	178.015	178.200	185	600	705.010	400.082/401.010 TYPE A
CB22W	177.885	178.200	315	600	705.010	400.082/401.010 TYPE A
CB23W	177.340	177.340	0	600	705.030 3H-1V	403.010
CB24W	177.790	177.790	0	600	705.030 3H-1V	403.010

MH — MAINTENANCE HOLE
MHCB — MAINTENANCE HOLE / CATCH BASIN
CB — CATCH BASIN
* — INDICATES DROP STRUCTURE REQUIRED PER OPSD 1003.020



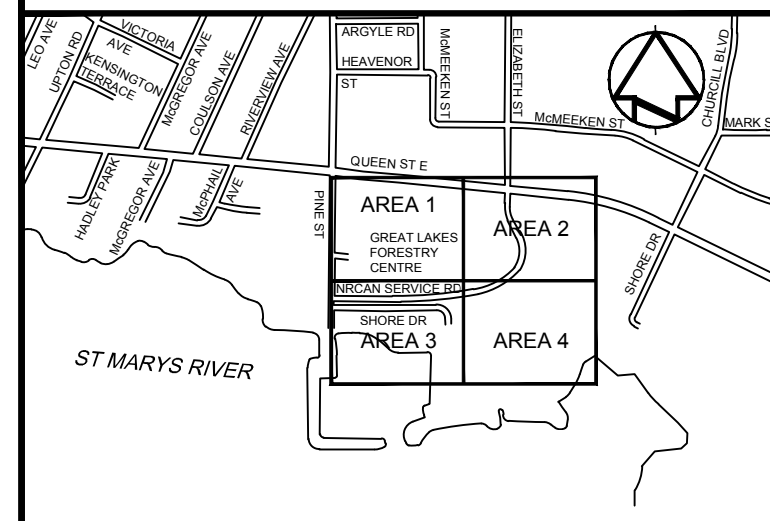
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2013	Rev 1
GRATING FOR CONCRETE ENDWALL		
		OPSD 804.050

- NOTE:**
- GRATING TO BE HINGED TO OPEN UPWARDS AS OPPOSED TO THE SIDE. CONTRACTOR TO PROVIDE SHOP DRAWING TO DEPARTMENTAL REPRESENTATIVE FOR APPROVAL.



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 0
INSULATION FOR SEWERS AND WATERMAINS IN SHALLOW TRENCHES		
		OPSD 1109.030

- NOTE:**
- INSULATE PROPOSED SEWERS WHERE DEPTH OF COVER IS LESS THAN 1.5m.
 - WHERE DEPTH OF COVER IS GREATER THAN OR EQUAL TO 1.0m USE HI-40 (275 KPA) INSULATION.
 - WHERE DEPTH OF COVER IS LESS THAN 1.0m USE HI-60 (400 KPA) INSULATION.



KEY PLAN



04	ISSUED FOR TENDER	2016/07/22
03	ISSUED FOR MUNICIPAL APPROVAL	2016/06/30
02	ISSUED FOR 100% REVIEW	2016/06/30
01	ISSUED FOR 50% REVIEW	2016/04/13
revision		date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	Detail No.
B	drawing no. - where detail required
C	drawing no. - where detailed

project title
titre du projet
**SAULT STE. MARIE ONTARIO
NATURAL RESOURCES CANADA
THE GREAT LAKES FORESTRY CENTRE
1219 QUEEN ST. EAST
NRCN-GLFC STORM SEWER
SYSTEM REPLACEMENT**

drawing title
titre du dessin
DETAILS PLAN

drawn by
dessiné par
Y. LAROCHELLE

designed by
conc par
T. KENNEDY

approved by
approuvé par
C. LYON

bid
offre
ELISABETH OHI project manager
administrateur de projets

project date
date du projet
2016/07/22

project no.
no. du projet
R.076919.001

drawing no.
dessiné no.
C303