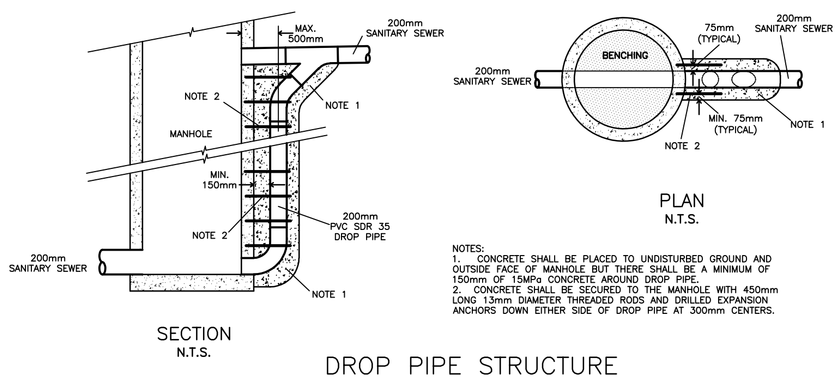
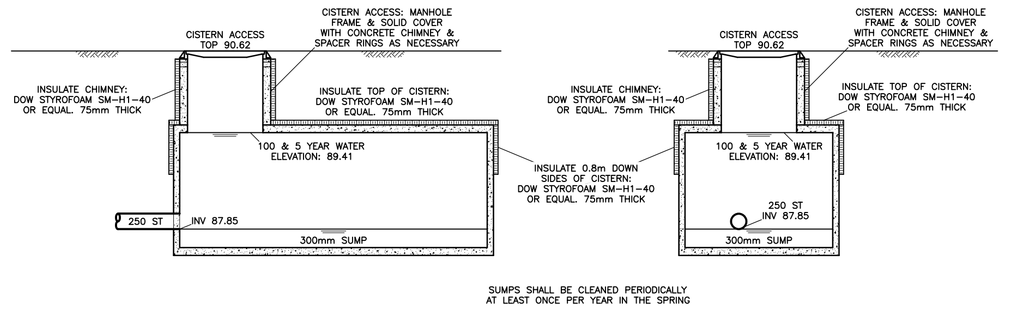
OWNER:
NIVO DEVELOPMENTS INC.
255 MICHAEL COWPLAND DRIVE
OTTAWA, ONTARIO, K2M 0M5
613–224–6200

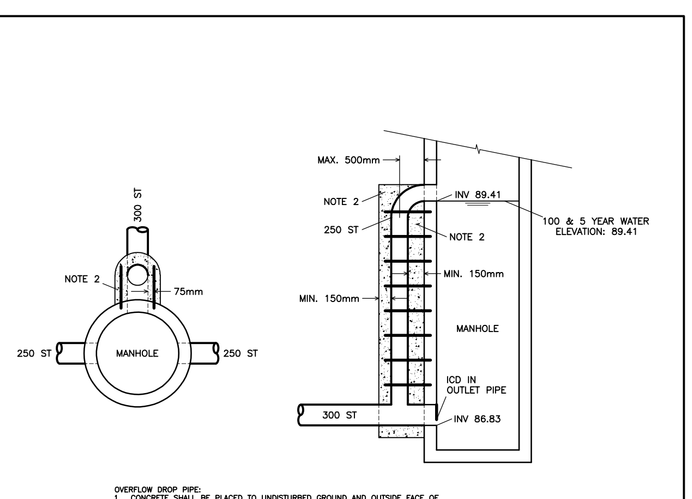


NOTES:
1. CONCRETE SHALL BE PLACED TO UNDISTURBED GROUND AND OUTSIDE FACE OF MANHOLE BUT THERE SHALL BE A MINIMUM OF 150mm OF 15MPa CONCRETE AROUND DROP PIPE.
2. CONCRETE SHALL BE SECURED TO THE MANHOLE WITH 450mm LONG 13mm DIAMETER THREADED RODS AND DRILLED EXPANSION ANCHORS DOWN EITHER SIDE OF DROP PIPE AT 300mm CENTERS.

DROP PIPE STRUCTURE
N.T.S.

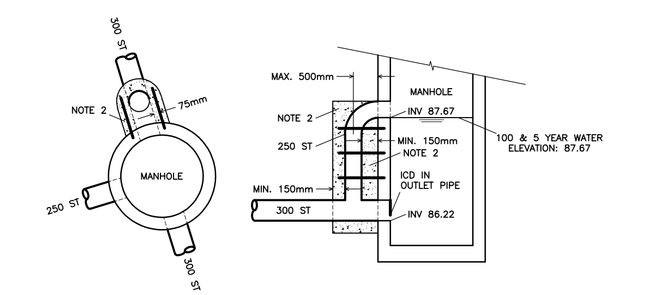


STORMWATER *CISTERN 1* SECTION
MACGREGOR 18,600 LITRE (4,100 GALLON)
CONCRETE TANK
5.175m (L) x 2.590m (W) x 2.110m (D)
N.T.S



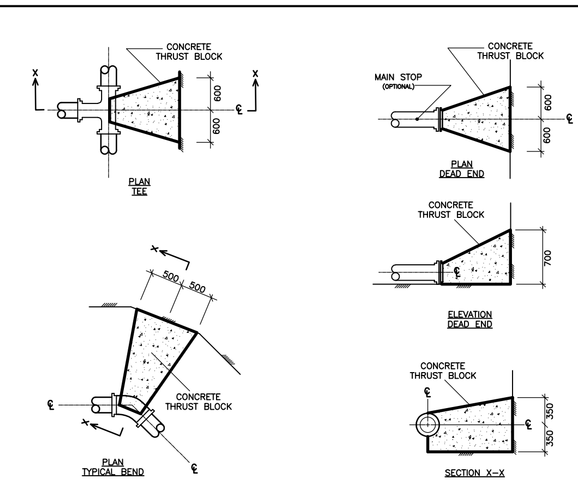
OVERFLOW DROP PIPE:
1. CONCRETE SHALL BE PLACED TO UNDISTURBED GROUND AND OUTSIDE FACE OF CISTERN.
2. THERE SHALL BE A MINIMUM OF 150mm 15 MPa CONCRETE AROUND DROP PIPE.
3. CONCRETE SHALL BE SECURED TO THE MANHOLE WITH 650mm LONG 13mm DIAMETER THREADED RODS AND DRILLED EXPANSION ANCHORS DOWN EITHER SIDE OF OVERFLOW PIPE AT 300mm CENTERS.

OVERFLOW DROP PIPE
AT MANHOLE CB/MH–4
N.T.S



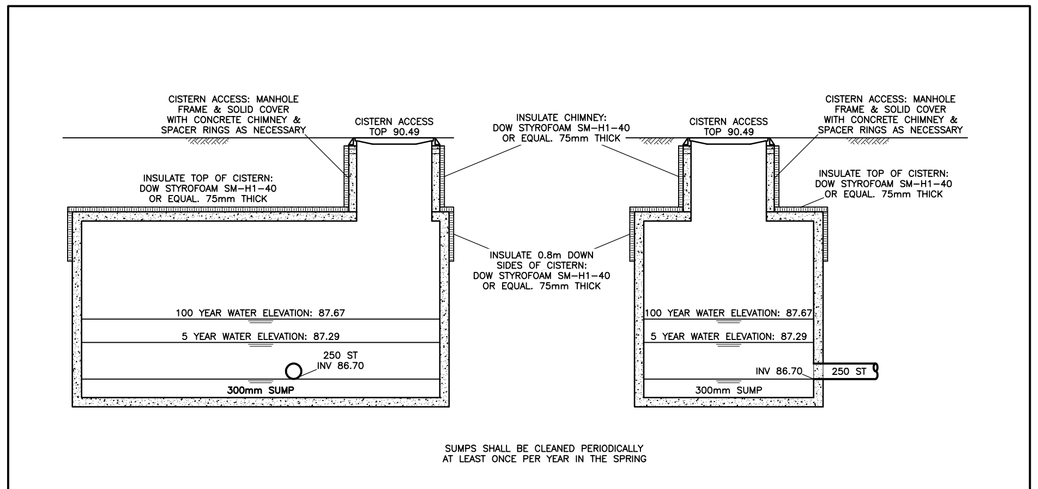
OVERFLOW DROP PIPE:
1. CONCRETE SHALL BE PLACED TO UNDISTURBED GROUND AND OUTSIDE FACE OF CISTERN.
2. THERE SHALL BE A MINIMUM OF 150mm 15 MPa CONCRETE AROUND DROP PIPE.
3. CONCRETE SHALL BE SECURED TO THE MANHOLE WITH 650mm LONG 13mm DIAMETER THREADED RODS AND DRILLED EXPANSION ANCHORS DOWN EITHER SIDE OF OVERFLOW PIPE AT 300mm CENTERS.

OVERFLOW DROP PIPE
AT MANHOLE CB/MH–10
N.T.S.

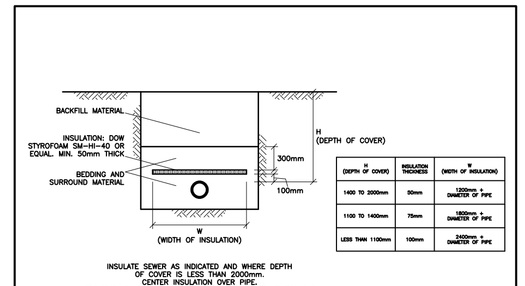


NOTES:
1. CONCRETE SHALL BE PLACED TO WITHIN 50mm OF FACE OF THE BELL.
2. BOND BREAKER TO BE USED BETWEEN CONCRETE AND FITTINGS.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. THRUST BLOCKS SHALL BE 20 MPa CONCRETE. THE BLOCK SHALL BE CENTERED ON THE THRUST FORCE AND SHALL ALSO PARTIALLY CRADLE THE FITTING TO DISTRIBUTE THE FORCE. THE SIDES OF THE BLOCK SHALL BE 80mm FROM THE JOINT ON EITHER SIDE OF THE BEND OR TEE.
5. THE CONCRETE WHERE POSSIBLE SHALL BE PLACED AGAINST UNDISTURBED SOIL AT THE BOTTOM AND SIDE OF THE TRENCH. WHERE IT IS NOT POSSIBLE THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED IN ACCORDANCE WITH CITY OF OTTAWA SPECIAL PROVISIONS NO. D–029.
6. EXCEPT FOR THE ADDITION OF WATER, CONCRETE FOR THRUST BLOCKS SHALL COME PREMIXED FROM CONCRETE SUPPLIER AS 'READY MIX' FROM A CONCRETE TRUCK ON–SITE MIXING OF CEMENT, SAND AND AGGREGATE ETC. BY THE CONTRACTOR, FOR THE PURPOSE OF MAKING CONCRETE THRUST BLOCKS/ANCHORS WILL NOT BE ACCEPTED.

CONCRETE THRUST BLOCKS
MODIFIED CITY OF OTTAWA DRAWING W25.3 FOR 200mm
WATERMAIN AND SOILS HAVING A BEARING CAPACITY OF 90kPa



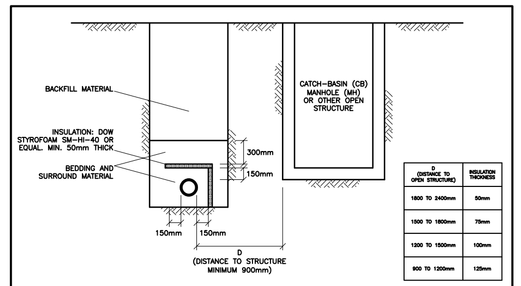
STORMWATER *CISTERN 2* SECTION
MACGREGOR 41,300 LITRE (9,000 GALLON)
CONCRETE TANK
6.095m (L) x 3.050m (W) x 3.155m (D)
N.T.S



DEPTH OF COVER	INSULATION THICKNESS	WIDTH OF INSULATION
1400 TO 2000mm	50mm	1000mm + 2xH
1100 TO 1400mm	75mm	1000mm + 2xH
1200 THRU 1100mm	100mm	1000mm + 2xH

INSULATE SEWER AS INDICATED AND WHERE DEPTH OF COVER IS LESS THAN 2000mm. CENTER INSULATION OVER PIPE.
JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

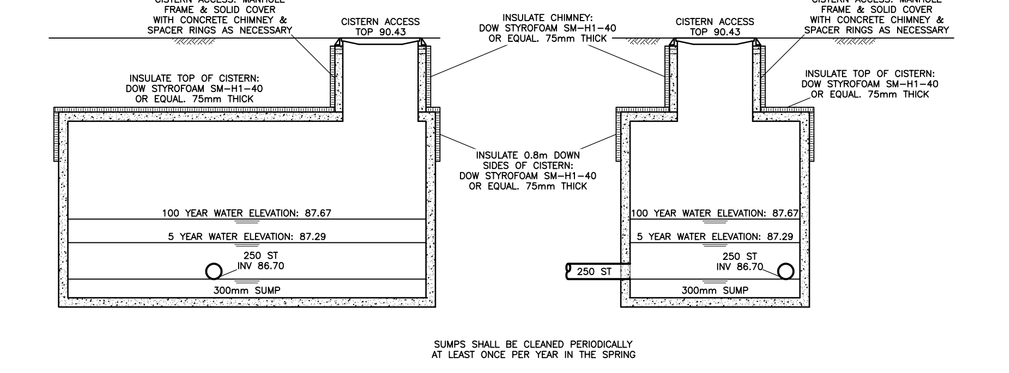
INSULATION OF SEWERS
IN SHALLOW TRENCHES
N.T.S



DISTANCE TO OPEN STRUCTURE	INSULATION THICKNESS
1800 TO 2400mm	50mm
1200 TO 1800mm	75mm
1200 TO 1200mm	100mm
900 TO 1200mm	125mm

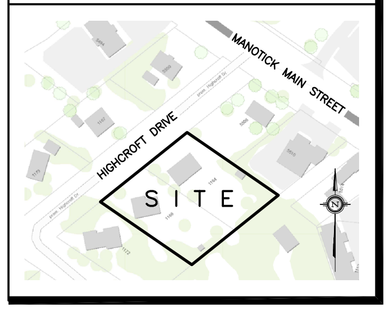
INSULATE SEWER AS INDICATED.
CENTER INSULATION OVER PIPE.
JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

INSULATION OF WATERMAINS &
WATER SERVICE CONNECTIONS
AT OPEN STRUCTURES
AS PER CITY OF OTTAWA DRAWING NO. W23
N.T.S



STORMWATER *CISTERN 3* SECTION
MACGREGOR 41,300 LITRE (9,000 GALLON)
CONCRETE TANK
6.095m (L) x 3.050m (W) x 3.155m (D)
N.T.S

KEY PLAN



No.	DATE	REVISION
5	JUN 18–20	RE–ISSUED FOR APPROVAL
4	MAY 5–20	ISSUED FOR COORDINATION
3	SEP 27–19	RE–ISSUED FOR APPROVAL
2	AUG 9–19	ISSUED FOR APPROVAL
1	JUN 14–19	PRELIMINARY

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle 613-425-8044
Ottawa, Ontario d.gray@dbgrayengineering.com

Project
PROPOSED
RESIDENTIAL DEVELOPMENT
1164–1166 HIGHCROFT DR.
MANOTICK, ONTARIO

Drawing Title
DETAILS

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
JUN 18–20
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G.
Hor. Scale	1:200
Vert. Scale	
Date	JUN 14–19
Job No.	18035

Drawing No.
C–7
of 11