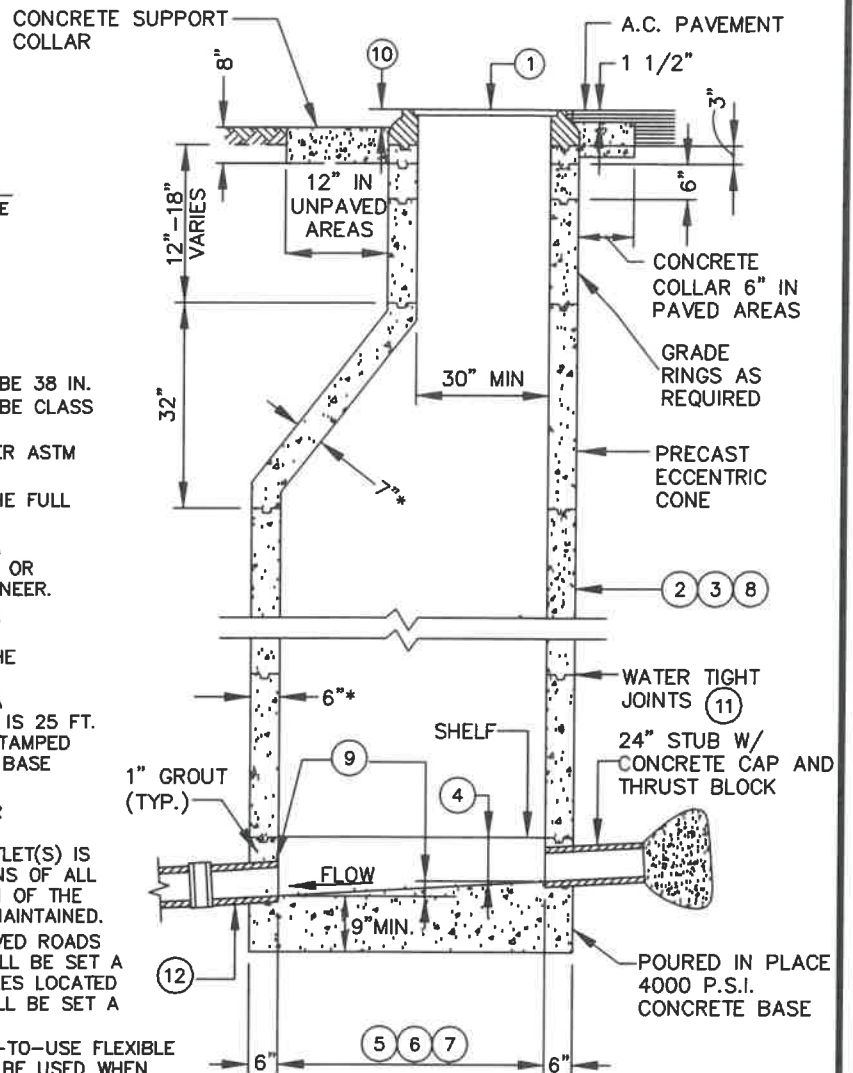
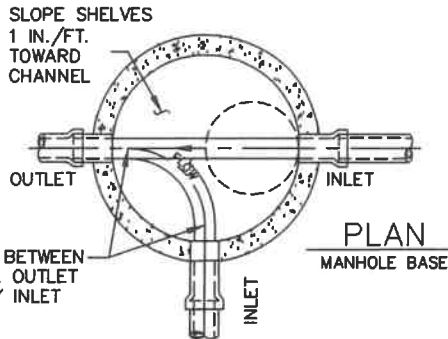




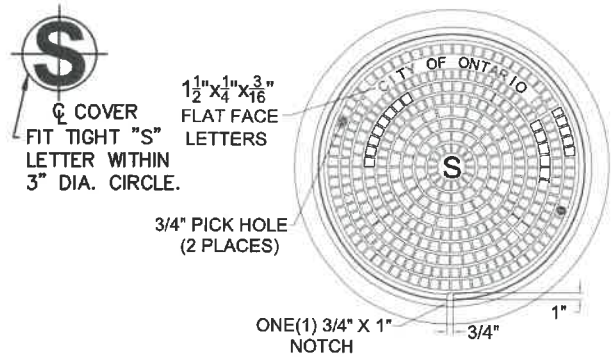
Sewer Standard Drawings List

Standard Drawing No.	Details	Approval Date	Page No.
2001	Sewer Manhole	30-Aug-2023	2
2002	Drop Manhole for 12 VCP or Less	15-Aug-2006	3
2003	Sewer Lateral	24-May-2023	4
2004	Sewer Chimney	15-Aug-2006	5
2005	Sewer Saddle and Cute in Wye Connection	15-Aug-2006	6
2101	Remodeling of Main Line and House Connection Sewer	15-Aug-2006	7
2102	Protection for Main Line and House Connection Sewer	15-Aug-2006	8
2103	Sewer and Water Casing Detail	15-Aug-2006	9
2104	Bedding Details (A)	22-Nov-2010	10
2105	Bedding Details (B)	15-Aug-2006	11
2201	General Requirements for Monitoring Manhole	22-Nov-2010	12
2202	Three Chamber Sand and Oil Interceptor	22-Nov-2010	13
2203	Monitoring Manhole (Traffic Area)	22-Nov-2010	14
2204	Modified Surveillance Monitoring Manhole (Traffic Area-Shallow Depth)	22-Nov-2010	15



SECTION VIEW

*NON-REINFORCED MANHOLE



PLAN

TOP OF MANHOLE COVER
(TRAFFIC SIDE)

CONSTRUCTION NOTES:

- ① FRAME AND COVER:
FOR 48 IN. I.D. MANHOLE, COVER SHALL BE 32 IN.
FOR 60 IN. OR LARGER I.D. MANHOLE, COVER SHALL BE 38 IN.
- ② NON-REINFORCED PRE-CAST MANHOLE RINGS SHALL BE CLASS 560-C-3250 PER SECTION 201-1 OF THE SSPWC.
- ③ REINFORCED PRE-CAST MANHOLE RINGS SHALL BE PER ASTM C-478 SPECIFICATIONS.
- ④ THE DEPTH OF THE CHANNEL SHALL BE EQUAL TO THE FULL DIAMETER OF THE PIPE.
- ⑤ 48 IN. I.D. MANHOLE TO BE USED ON SEWERS WITH A DIAMETER OF 18 IN. OR LESS OR A DEPTH OF 12 FT. OR LESS UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
- ⑥ 60 IN. I.D. MANHOLE TO BE USED ON SEWERS WITH A DIAMETER OF 20 IN. OR GREATER OR WITH A DEPTH EXCEEDING 12 FT UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
- ⑦ 72 IN. I.D. MANHOLE TO BE USED ON SEWERS WITH A DIAMETER OF 30 IN. AND GREATER OR IF THE DEPTH IS 25 FT. OR GREATER. WHEN DEPTH IS 25 FT. OR GREATER, STAMPED STRUCTURAL CALCULATIONS REQUIRED FOR MANHOLE BASE AND PIPE BEDDING.
- ⑧ SAFETY LEDGES AT MIDWAY POINT ARE REQUIRED FOR MANHOLES 30 FT. OR GREATER TO INV.
- ⑨ A MIN. 0.2 FT. DROP BETWEEN ALL INLET(S) AND OUTLET(S) IS REQUIRED. IF PIPE SIZES VARY, THE SOFFIT ELEVATIONS OF ALL PIPES SHALL BE THE SAME AS THE SOFFIT ELEVATION OF THE LARGEST PIPE, PROVIDED THE 0.2 FT. MIN. DROP IS MAINTAINED.
- ⑩ FOR MANHOLES LOCATED IN SHOULDER AREAS, UNPAVED ROADS OR LANDSCAPED AREAS, THE FRAME AND COVER SHALL BE SET A MIN. OF 0.1 FT. ABOVE FINISHED GRADE. FOR MANHOLES LOCATED IN UNDEVELOPED AREAS THE FRAME AND COVER SHALL BE SET A MIN. OF 18 IN. ABOVE UNFINISHED GRADE.
- ⑪ **PLASTIC JOINTS** - PREFORMED COLD-APPLIED READY-TO-USE FLEXIBLE PLASTIC JOINT SEALING GASKET OR COMPOUND MUST BE USED WHEN GROUND WATER IS ENCOUNTERED.
MORTAR JOINTS - SUFFICIENT MORTAR SHALL BE APPLIED ACROSS ENTIRE FACE OF JOINT SO THAT WHEN PRECAST UNITS ARE PLACED ON TOP OF ONE ANOTHER, THE MORTAR WILL SQUEEZE OUT BOTH THE INSIDE AND OUTSIDE WALL FACES AROUND FULL CIRCUMFERENCE. JOINTS SHALL BE "POINTED UP" AFTER SETTING PRECAST UNITS EXCLUDING GRADE RINGS.
- ⑫ A 24" LONG PLAIN END STUB WITH SHIELDED TRANSITION COUPLING SHALL BE INSTALLED FROM THE MANHOLE INSIDE WALL AT ALL MANHOLE PENETRATIONS.

NOTES:

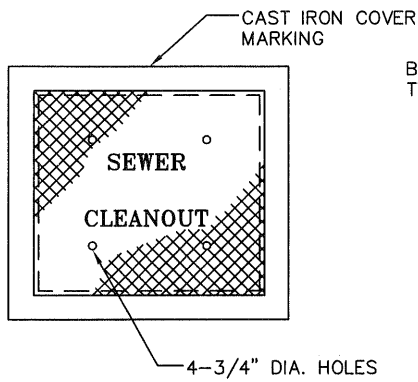
1. ALL MANHOLE COVER MARKINGS SHALL BE RAISED, FLAT FACE LETTERS MARKED BY MEANS OF CAST-IN MOLD LETTERING 1-1/2" X 1/4" X 3/16" (HEIGHT X LINE WIDTH X DEPTH).
2. MANHOLE COVER SHALL BE MANUFACTURED WITH THE LETTER "S" IN THE CENTER AND "CITY OF ONTARIO" ON THE COVERS FOR PUBLIC SEWERS ONLY. NO "CITY OF ONTARIO" INSCRIPTION ON PRIVATE SEWERS.
3. ANY INLET LOCATION MUST BE BETWEEN 90° AND 180° FROM THE OUTLET LOCATION.
4. MANHOLES ARE REQUIRED AT ALL JUNCTIONS OF 8 IN. PIPE OR GREATER; CHANGE IN HORIZONTAL DIRECTION; CHANGE IN SLOPE; CHANGE IN MATERIAL, AND MAIN STUBS GREATER THAN 2 FT.

5. MANHOLES SHALL BE SPACED AT A MAX. DISTANCE OF 350 FT. IF INVERT DEPTH IS 30 FT. OR GREATER. MANHOLES SHALL BE SPACED AT 300 FT MAX.
6. ALL FRAMES AND COVERS SHALL BE H-20 TRAFFIC RATED.



APPROVED BY:				
		8-30-23 62809		
KHOI DO, CITY ENGINEER		RCE DATE		
RECOMMENDED:				
		8/24/23 62268		
DENNIS MEJA, UTILITIES ENG DIVISION MGR		RCE DATE		
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO		STANDARD DRAWING NUMBER 2001
SEWER MANHOLE		



PLAN

SEE FRAME AND COVER DETAILS ON THIS SHEET

BACKFILL SHALL BE TYPE II SLURRY

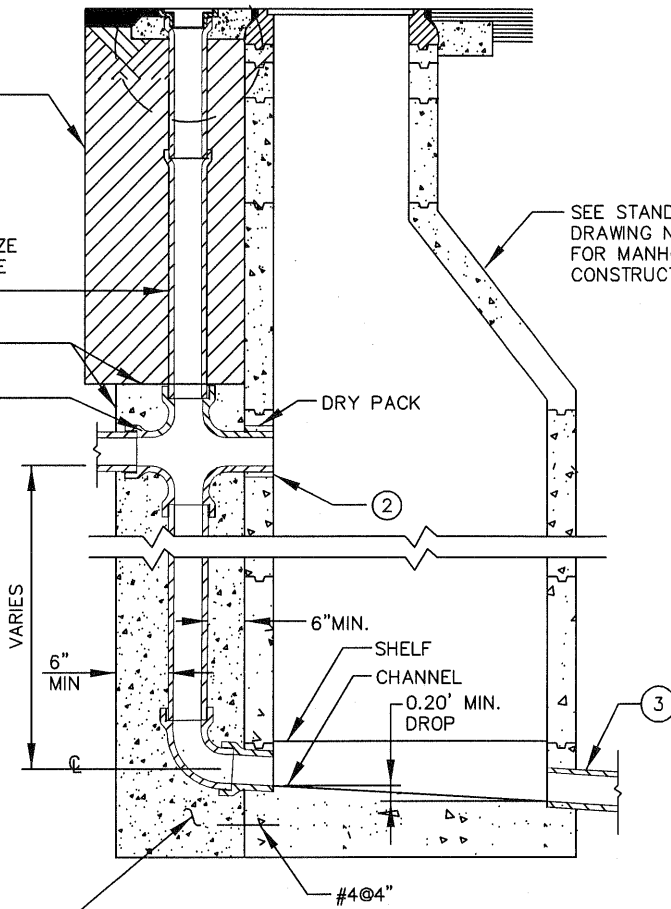
V.C.P. (SAME SIZE AS THAT OF THE SEWER TRUNK)

6" MINIMUM ENCASEMENT

12" DIAMETER OR LESS

DRY PACK

SEE STANDARD DRAWING NO. 2001 FOR MANHOLE CONSTRUCTION ①



SECTION VIEW

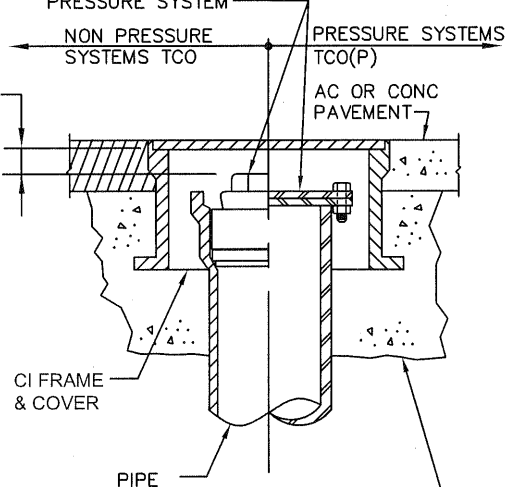
CAP W/ BAND SEAL CLAMP FOR NON-PRESSURE SYSTEM. BLIND FLANGE W/BOLTS & NUTS FOR PRESSURE SYSTEM

NON PRESSURE SYSTEMS TCO

PRESSURE SYSTEMS TCO(P)

AC OR CONC PAVEMENT

1" MIN



CI FRAME & COVER

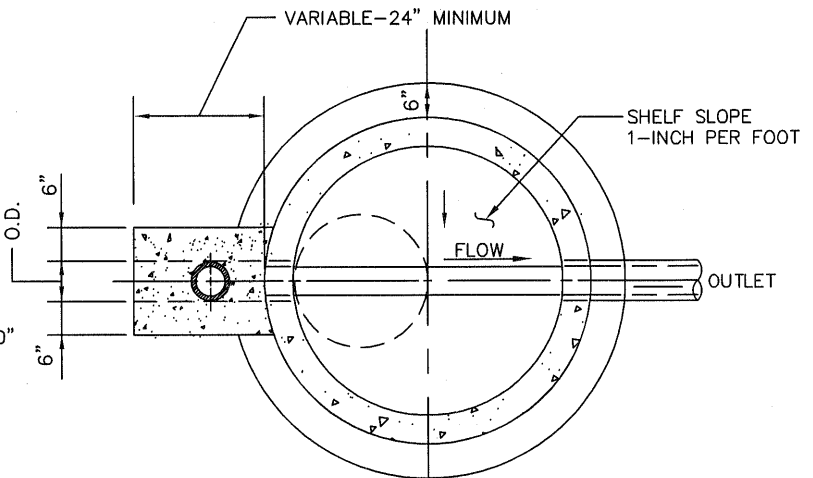
PIPE

3000 PSI CONC ENCASEMENT
2'-0" x 2'-0" x 1'-6" (LXWXD)
OR 2'-0" Ø x 1'-6"

CONCRETE SUPPORT CLASS 560-C-3250 PER SECTION 201-1.1.2 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

NOTES

- ① DROP MANHOLES SHALL BE CONSTRUCTED WITH A 60" INSIDE DIAMETER.
- ② ALL NEW OPENINGS CONSTRUCTED INTO MANHOLE SHALL BE CORE DRILLED.
- ③ A 24" LONG STUB SHALL BE INSTALLED FROM THE MANHOLE INSIDE WALL TO THE PIPE BELL.
- ④ DROP MANHOLES ONLY ALLOWED WITH SPECIAL CONSIDERATION BY CITY.



PLAN



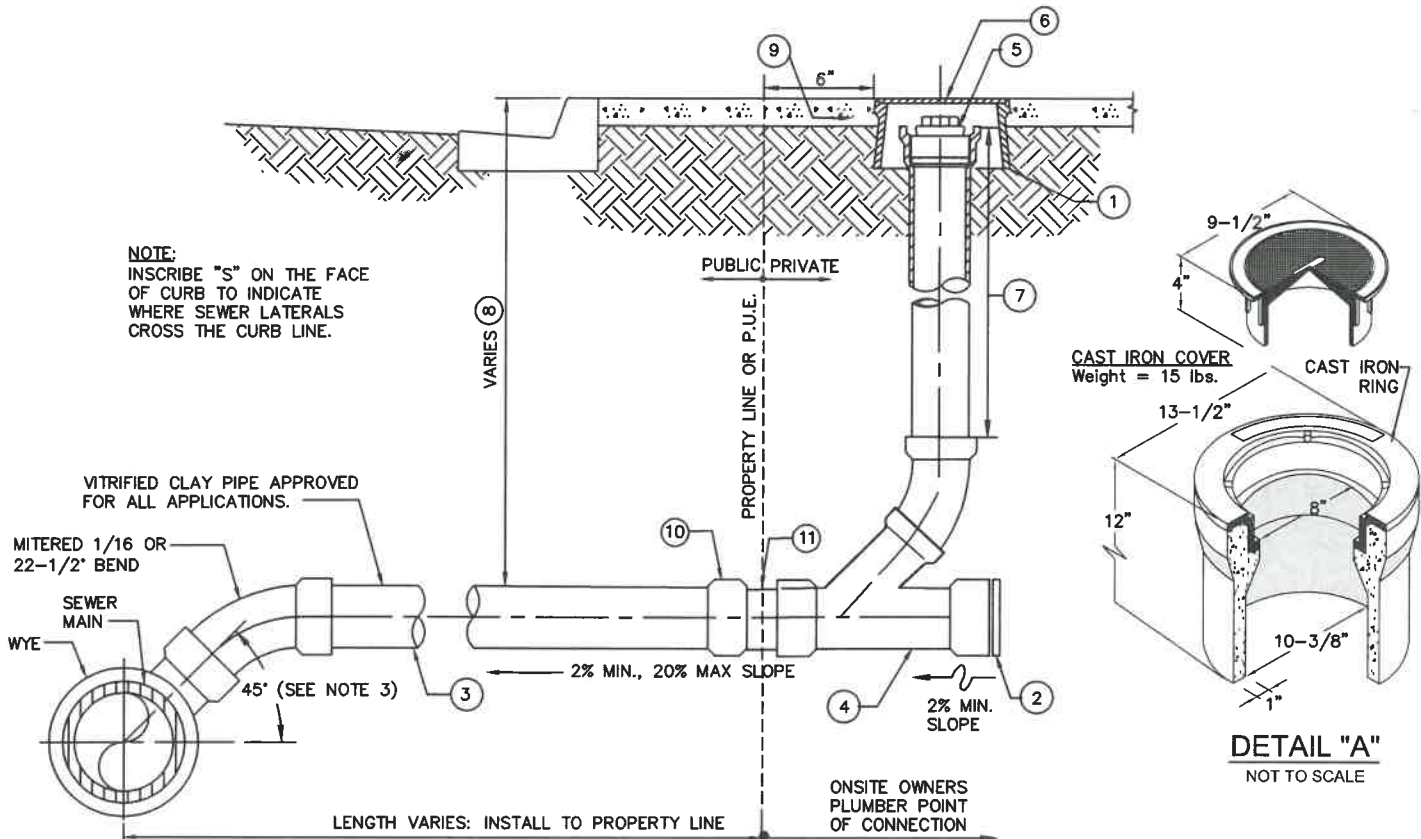
APPROVED BY:		24079 08/15/06	
<i>John P. Sullivan</i>		RCE DATE	
JOHN P. SULLIVAN CITY ENGINEER			
RECOMMENDED:		57875 08/14/06	
<i>Scott Bantz</i>		RCE DATE	
ASST. UTIL. DIRECTOR/ENG.			
REV	DESCRIPTION	BY	APP'D DATE

CITY OF ONTARIO

DROP MANHOLE FOR 12" VCP OR LESS

STANDARD DRAWING NUMBER

2002



CONSTRUCTION NOTES:

- ① CONCRETE HOUSING MARKED SEWER PER EQUIVALENT MATERIALS LIST AND DETAIL "A" ON THIS SHEET.
- ② APPROVED PLUG.
- ③ LATERAL SIZE RECOMMENDED BY DESIGN ENGINEER. MINIMUM 4" DIAMETER SEWER PIPE FOR SINGLE FAMILY RESIDENTIAL AND MIN. 6" DIAMETER FOR MULTI FAMILY RESIDENTIAL, COMMERCIAL AND INDUSTRIAL.
- ④ 4" OR 6" ONE-WAY CLEANOUT WYE ABS PER EQUIVALENT MATERIALS LIST.
- ⑤ CLEANOUT ACCESS RISER WITH ABS THREADED COUPLING AND PLUG.
- ⑥ BOLT DOWN H-20 TRAFFIC RATED LID REQUIRED IN VEHICLE TRAFFIC OR PAVED AREAS.
- ⑦ ONE CONTINUOUS 4" OR 6" ABS RISER ONLY.
- ⑧ MINIMUM DEPTH OF LATERAL AT CURB LINE AND PROPERTY LINE TO BE DETERMINED IN THE FIELD.
- ⑨ LOCATE CONCRETE HOUSING 6" BEHIND BACK OF PROPERTY LINE.
- ⑩ VCP TO ABS COUPLING.
- ⑪ 4" OR 6" ABS PUP.

NOTES:

- SEE STD. NO. 4001 FOR REQUIREMENTS WHEN SEWER CONNECTION IS CONSTRUCTED IN THE VICINITY OF A WATER MAIN.
- 1. PLACE CLEANOUT WITHIN PRIVATE PROPERTY.
 - 2. LID MUST BE CAST IRON FOR LOCATING PURPOSES AND MARKED SEWER. BOLT DOWN H-20 TRAFFIC RATED LID REQUIRED IN VEHICLE TRAFFIC OR PAVED AREAS.
 - 3. WYES LESS THAN 6' DEEP SHALL BE INSTALLED AT A 22-1/2" ANGLE.
 - 4. BACKFILL AND BEDDING SHALL BE PER STD. NO. 2104 AND 2105.
 - 5. FACTORY INSTALLATION WYE REQUIRED ON NEW MAINS.
 - 6. FOR CONNECTIONS TO EXISTING MAINS, CUT IN A WYE OR CORE HOLE WITH A SADDLE WYE PER STD. NO. 2005. FOLLOWING SADDLE WYE INSTALLATIONS CCTV MUST BE PERFORMED BETWEEN MAIN MANHOLES. IF MAIN IS DAMAGED, MAIN MUST BE REPLACED AND A FACTORY WYE SHALL BE INSTALLED INSTEAD.
 - 7. GRADE PARKWAY AT 2% TOWARDS CURB OR BACK OF SIDEWALK OR AS DIRECTED BY THE CITY ENGINEER.
 - 8. WHERE LATERAL IS CONSTRUCTED UNDER AN EXISTING CURB, THE CONTRACTOR SHALL CHISEL THE LETTER "S" INTO THE CURB FACE DIRECTLY ABOVE THE LATERAL. "S" TO BE 1-1/2" HIGH & 3/16" DEEP.
 - 9. IN LIEU OF WYE, MANHOLE REQUIRED AT SEWER MAINLINE FOR LATERALS 8" AND GREATER OR INVERT 20' DEEP OR GREATER, REGARDLESS OF LATERAL SIZE. MANHOLES TO BE INSTALLED PER STD. NO. 2001.
 - 10. IN LIEU OF CLEANOUT, MANHOLE REQUIRED AT PROPERTY LINE FOR SEWER LATERALS 8" AND GREATER OR MAIN INVERTS 20' DEEP AND GREATER, REGARDLESS OF LATERAL SIZE. MANHOLES TO BE INSTALLED PER STD. NO. 2001.
 - 11. LATERALS MAY BE CONSTRUCTED IN PRIVATE DRIVEWAYS WHEN ADEQUATE SEPARATION FROM OTHER UTILITIES OR PUBLIC IMPROVEMENTS IS NOT FEASIBLE, AS DIRECTED BY CITY ENGINEER. BOLT DOWN H-20 TRAFFIC RATED LID REQUIRED.
 - 12. LATERALS SHALL BE PLACED PERPENDICULAR TO MAIN LINE.
 - 13. LATERAL PROFILES MAY BE REQUIRED AT THE DISCRETION OF ONTARIO MUNICIPAL UTILITIES COMPANY.



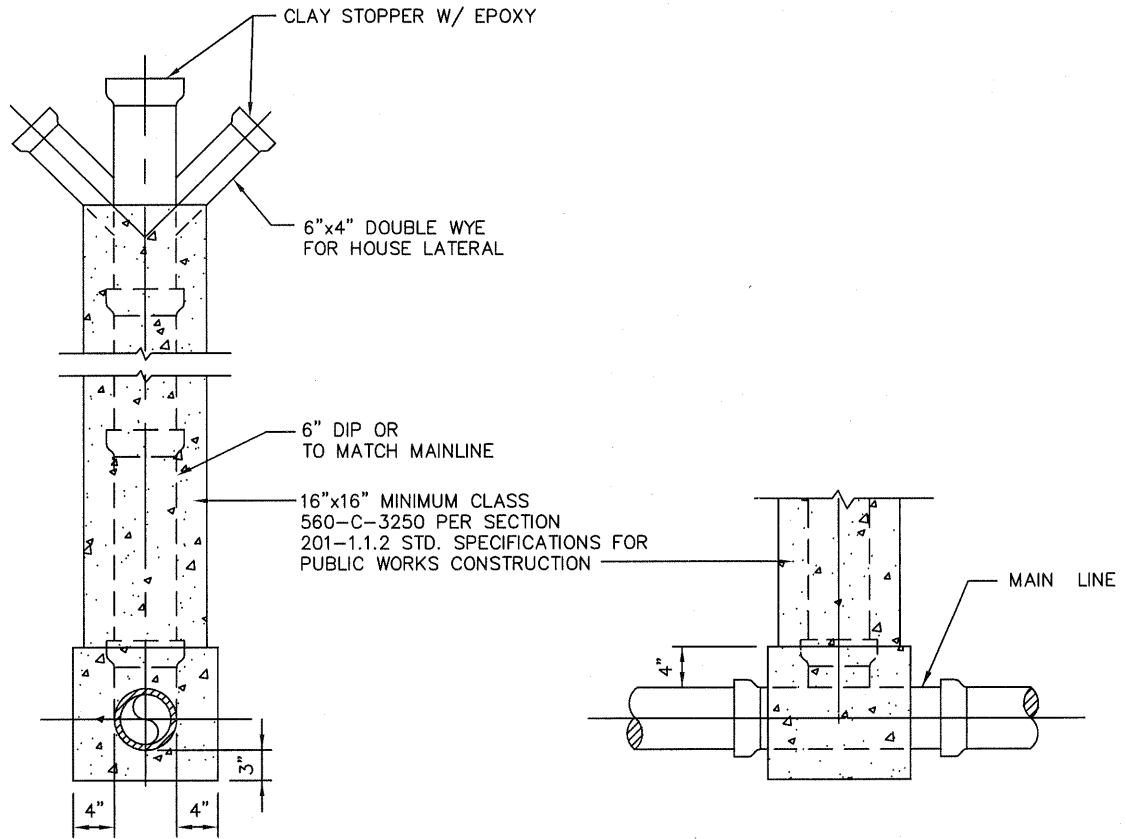
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<i>[Signature]</i>		62809	
KHOI DO, CITY ENGINEER		RCE	DATE
RECOMMENDED:		5/24/23	
<i>[Signature]</i>		62268	
DENNIS MEJIA, UTILITIES ENG DIVISION MGR		RCE	DATE
REV	DESCRIPTION	BY	APP'D DATE

CITY OF ONTARIO

SEWER LATERAL

STANDARD DRAWING NUMBER

2003



SECTION

ELEVATION

NOTES

- ① SEE DRAWING NO. 4001 FOR REQUIREMENTS WHEN SEWER CONNECTION IS CONSTRUCTED IN THE VICINITY OF A WATER MAIN.
- ② WHERE LATERAL IS CONSTRUCTED UNDER AN EXISTING CURB, THE CONTRACTOR SHALL CHISEL THE LETTER "L" INTO THE CURB FACE DIRECTLY ABOVE THE LATERAL. "L" TO BE 1-1/2" HIGH & 3/16" DEEP.



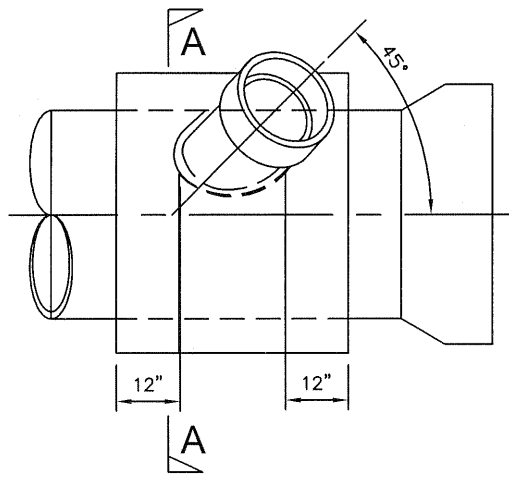
APPROVED BY:				
<i>John P. Sullivan</i>		24079 08/15/06		
JOHN P. SULLIVAN CITY ENGINEER		RCE	DATE	
RECOMMENDED:				
<i>Scott Burton</i>		57875 08/14/06		
ASST. UTIL. DIRECTOR/ENG.		RCE	DATE	
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO

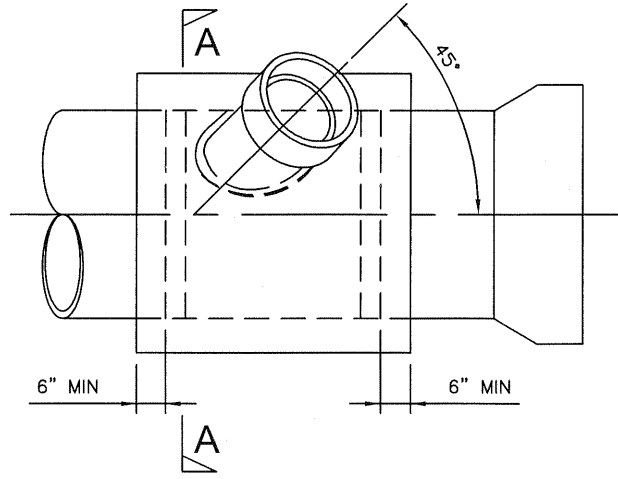
SEWER CHIMNEY

STANDARD
DRAWING
NUMBER

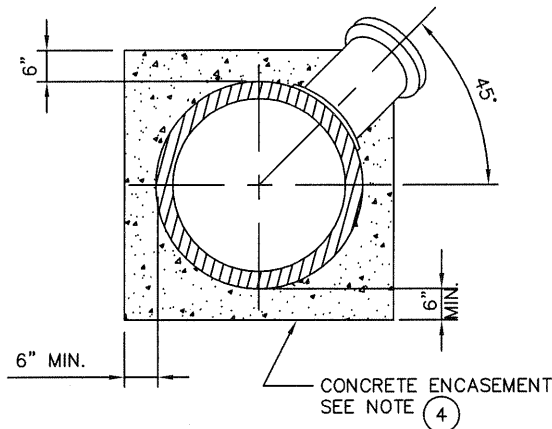
2004



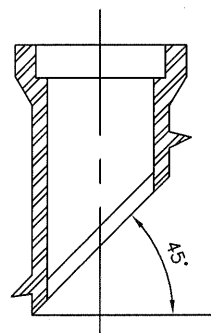
COLLAR WYE SADDLE



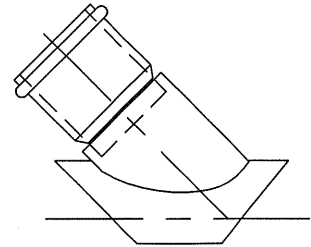
CUT IN WYE



SECTION A-A



CLAY



PVC

NOTES

- ① TAP TO BE MADE AT APPROXIMATELY CENTER OF JOINT LENGTH.
- ② THE HOLE FOR THE COLLAR WYE FITTING FOR A SEWER SADDLE SHALL BE MADE WITH A TAPPING MACHINE. THE HOLE SHALL BE CLEANLY MACHINED AND IF NECESSARY WORKED BY HAND WITH A RASP, OR SANDED TO ACCOMPLISH A TRUE AND NEAT OPENING FOR THE COLLAR WYE.
- ③ THE COLLAR WYE SADDLE SHALL BE SECURED TO THE SEWER WITH AN APPROVED EPOXY RESIN.
- ④ THE SADDLE CONNECTION SHALL BE ENCASED WITH CLASS 560-C-3250 CONCRETE AFTER THE CONNECTION IS APPROVED BY THE INSPECTOR TO THE LIMITS INDICATED ABOVE. CONCRETE SHALL BE CLASS 560-C-3250 PER SECTION 201-1.1.2 STD. SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION.
- ⑤ THE BELL ON THE LATERAL SHALL NOT BE ENCASED.
- ⑥ ALL CHIPS, DIRT, EPOXY, MORTAR, AND CONCRETE SHALL BE KEPT OUT OF THE SADDLED SEWER, AND CLEANING AND BALLING OF THE SADDLED REACH SHALL BE PERFORMED IF SO ORDERED BY THE INSPECTOR.
- ⑦ ANY DAMAGED PIPE SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE INSPECTOR.
- ⑧ COLLAR WYE SADDLE OR CUT IN WYE TO BE USED WHEN LATERAL IS 4" OR 6" IN DIAMETER. FOR 8" AND OVER, A STANDARD MANHOLE CONNECTION IS REQUIRED.
- ⑨ SEE DRAWING NO. 4001 FOR REQUIREMENTS WHEN SEWER CONNECTION IS CONSTRUCTED IN THE VICINITY OF A WATER MAIN.
- ⑩ MAIN LINE SHALL BE BROKEN OUT FOR SADDLE ONLY IN THE PRESENCE OF A CITY ENGINEERING DEPARTMENT INSPECTOR.



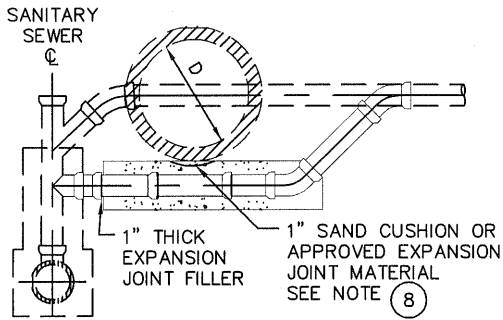
APPROVED BY:				
<i>John P. Sullivan</i>		24079 08/15/06		
JOHN P. SULLIVAN CITY ENGINEER		RCE	DATE	
RECOMMENDED:				
<i>Scott Burton</i>		57875 08/14/06		
ASST. UTIL. DIRECTOR/ENG.		RCE	DATE	
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO

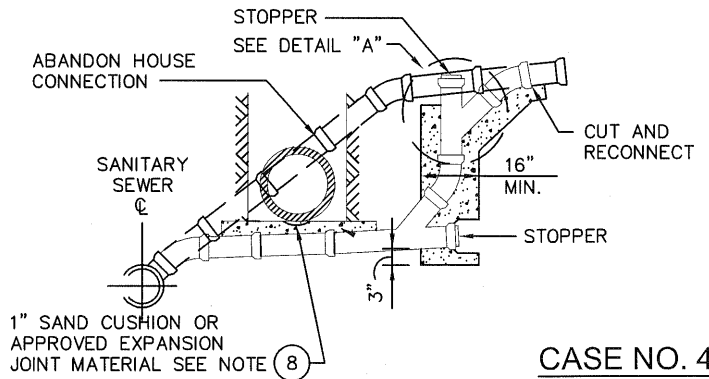
SEWER SADDLE
AND CUT IN
WYE CONNECTION

STANDARD
DRAWING
NUMBER

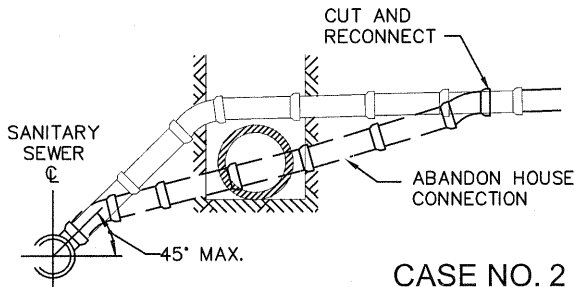
2005



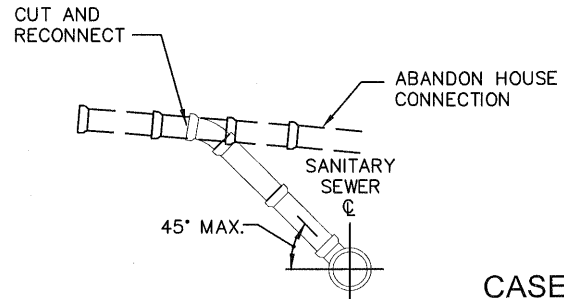
CASE NO. 1



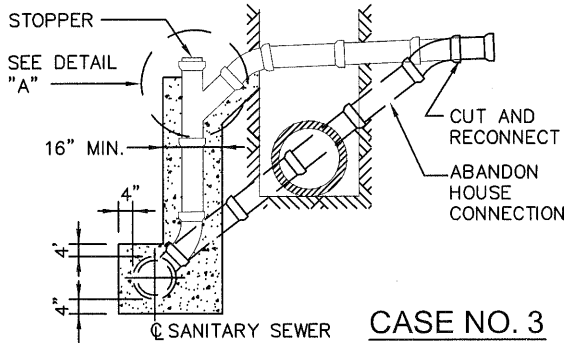
CASE NO. 4



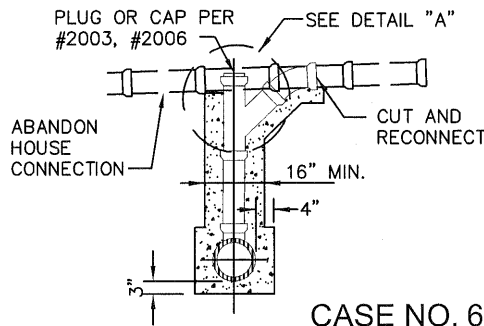
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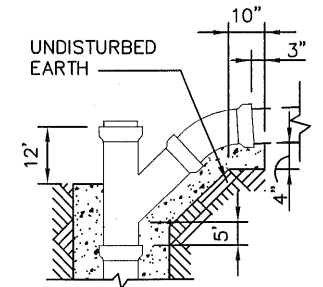
CASE NO. 5



CASE NO. 3



CASE NO. 6



DETAIL "A"

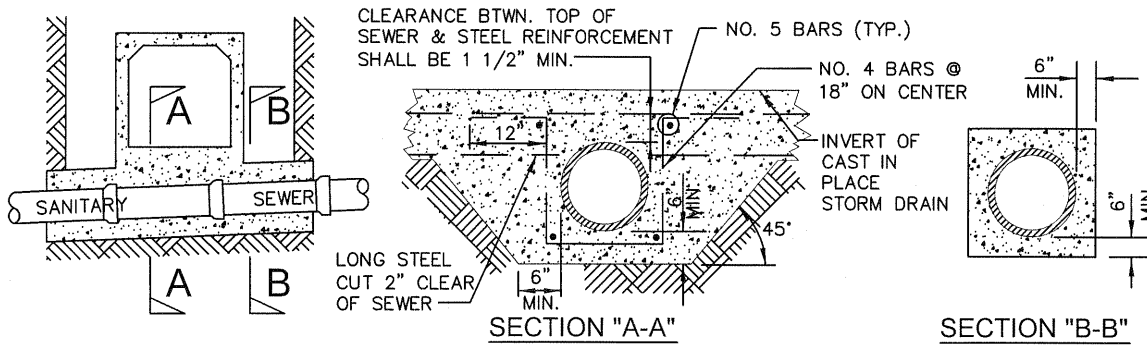
NOTES

- ① ALL HOUSE CONNECTIONS SHALL BE VITRIFIED CLAY PIPE, 4" IN DIAMETER OR AS OTHERWISE NOTED ON THE PLANS.
- ② THE MINIMUM SLOPE FOR 4" HOUSE CONNECTIONS SHALL BE 1/4" PER FOOT.
- ③ A 4" SADDLE SHALL BE USED WHERE NECESSARY AND SHALL BE CONNECTED TO THE PIPE CONSTITUTING THE EXISTING "Y" OR "T", OR THE NEXT LOWER PIPE.
- ④ "Y"s MAY BE LAID "FLAT" UPON APPROVAL BY THE CITY ENGINEER.
- ⑤ CONCRETE FOR CHIMNEYS SHALL BE CLASS 560-C-3250 PER SECTION 201 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- ⑥ WHEN SANITARY SEWER HOUSE CONNECTIONS ARE SUPPORTED ON CONCRETE SUPPORTS, THEN SUCH HOUSE CONNECTIONS SHALL BE ENCASED PER DETAIL SHOWN ON STD. DWG. NO. 2102 AND THE CONCRETE SUPPORTS FOR THE HOUSE CONNECTIONS SHALL BE LENGTHENED AND WIDENED TO SUPPORT SUCH ENCASEMENT.
- ⑦ CHIMNEYS SHOWN ARE PICTORIAL ONLY AND THE ACTUAL CHIMNEY CONSTRUCTED AT ANY LOCATION SHALL MEET THE APPROVAL OF THE CITY ENGINEER.
- ⑧ CONDUITS TO BE INSTALLED OVER OR WITHIN ONE INCH OF ANY CONCRETE ENCASEMENT OR STRUCTURE, WHETHER EXISTING OR TO BE PLACED IN CONFORMITY WITH THE REQUIREMENTS HEREIN, SHALL BE INSTALLED ON A ONE-INCH SAND CUSHION OR APPROVED EXPANSION JOINT MATERIAL. CONCRETE ENCASEMENT INSTALLED PURSUANT TO THESE STANDARD PLANS SHALL BE SEPARATED FROM EXISTING CONDUIT WITH ONE-INCH THICK EXPANSION JOINT MATERIAL.
- ⑨ THOSE PORTIONS OF AN ABANDONED PIPE LOCATED BENEATH OR WITHIN 6 INCHES OF A RELOCATED HOUSE CONNECTION SEWER SHALL BE REMOVED. THE EXCAVATION SHALL BE REFILLED TO THE GRADE OF THE NEW PIPE INVERT WITH CONCRETE. WHERE CAPS ARE USED, THEY SHALL BE SEALED BY FILLING THE SPACE ABOVE THE CAP WITH SAND AND A 1/2-INCH-THICK COATING OF TYPE "F" MORTAR.



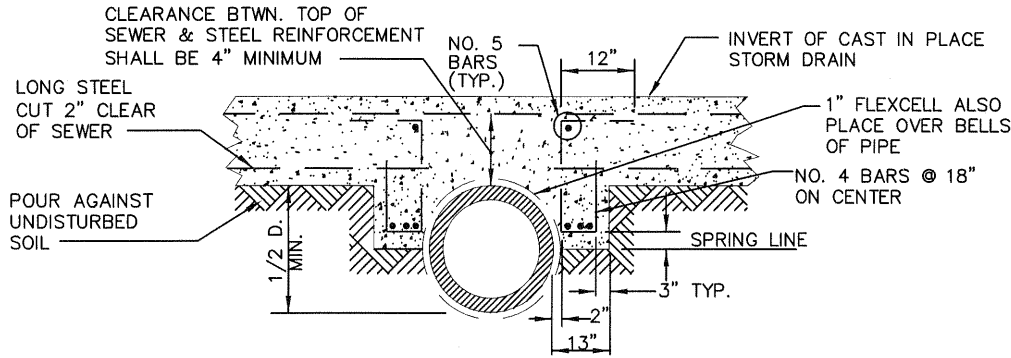
APPROVED BY:				
<i>John P. Sullivan</i>				
JOHN P. SULLIVAN CITY ENGINEER		24079	08/15/06	
		RCE	DATE	
RECOMMENDED:				
<i>Scott Burton</i>				
ASST. UTIL. DIRECTOR/ENG.		57875	08/14/06	
		RCE	DATE	
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO		STANDARD DRAWING NUMBER 2101
REMODELING OF MAIN LINE AND HOUSE CONNECTION SEWER		



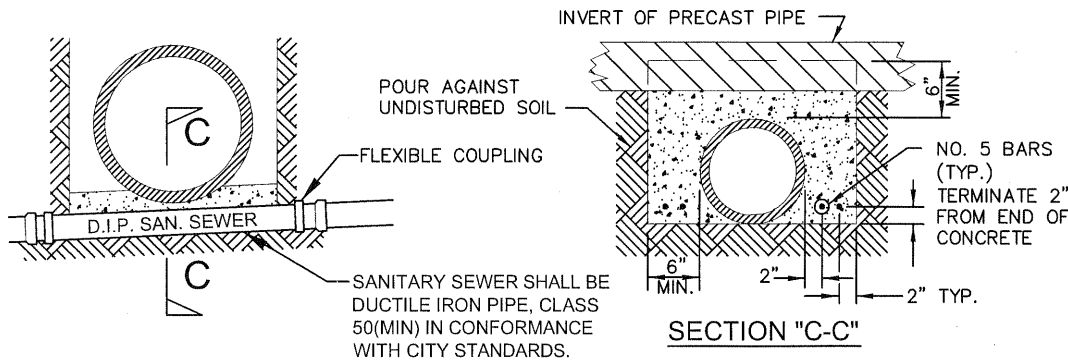
CASE 1

FOR EXISTING AND NEW SEWERS LESS THAN 15" IN DIAMETER WHERE CLEARANCE BETWEEN BOTTOM OF CAST IN PLACE STORM DRAIN & TOP OF SANITARY SEWER IS LESS THAN 6" AND WHERE THE SEWER IS APPROXIMATELY AT RIGHT ANGLES TO THE STORM DRAIN.



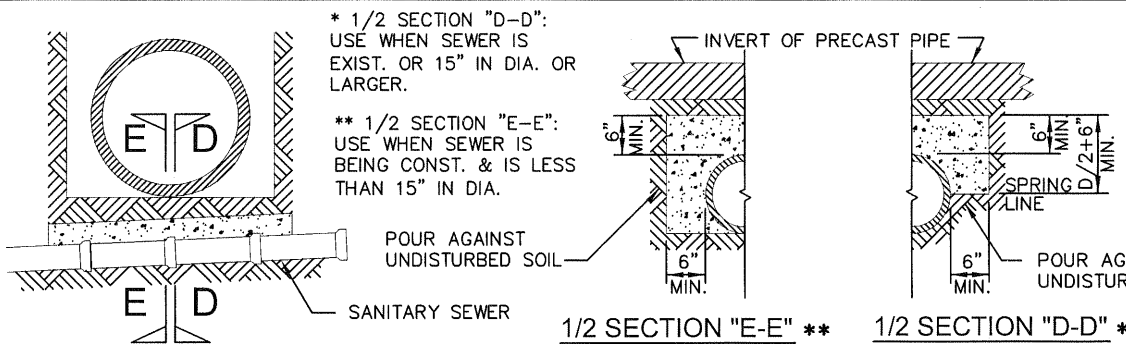
CASE 2

FOR EXISTING SANITARY SEWERS LESS THAN 15" IN DIAMETER WHERE EXISTING SEWER IS TO BE MAINTAINED IN PLACE AND WHERE CLEARANCE BETWEEN BOTTOM OF CAST IN PLACE STORM DRAIN AND TOP OF SANITARY SEWER IS LESS THAN 6".



CASE 3

WHERE CLEARANCE BETWEEN BOTTOM OF PRECAST PIPE OR CAST IN PLACE STORM DRAIN AND TOP OF SANITARY SEWER IS LESS THAN 6".



CASE 4

WHERE CLEARANCE BETWEEN BOTTOM OF PRECAST PIPE OR CAST IN PLACE STORM DRAIN AND TOP OF SANITARY SEWER IS FROM 6" TO 18".

NOTES

- ① WHERE D.I.P. IS CALLED FOR, THE SANITARY SEWER SHALL BE CONSTRUCTED OR REPLACED WITH STANDARD DUCTILE IRON PIPE, IN THE CASE OF HOUSE CONNECTIONS, OR WITH CLASS "B" OR PRESSURE CLASS "350" DUCTILE IRON PRESSURE PIPE, IN THE CASE OF MAIN LINE SEWERS.
- ② CONCRETE FOR ENCASEMENTS SHALL BE 3000 P.S.I. PORTLAND CEMENT CONCRETE OR BETTER, EXCEPT CASE 4, WHICH SHALL BE CLASS 450-C-2000 PER SECTION 201-1.1.2 STD. SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION.
- ③ THE CONCRETE ENCASEMENT SHALL EXTEND ACROSS THE FULL WIDTH OF THE STORM DRAIN TRENCH PLUS AN ADDITIONAL 12" INTO UNDISTURBED EARTH ON EACH SIDE OF THE STORM DRAIN TRENCH.
- ④ SEE STD. DWG. NO. 4001 FOR WATER/SEWER SEPARATION CRITERIA.

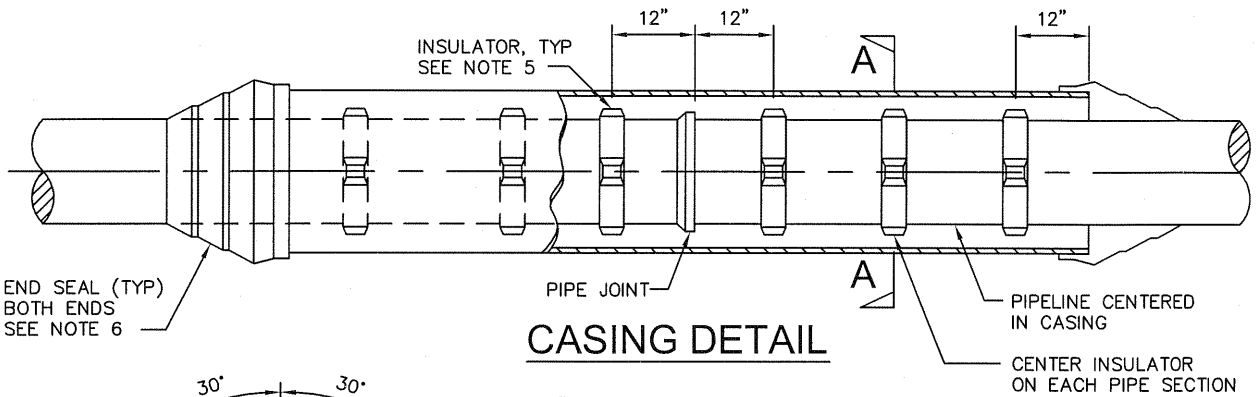


APPROVED BY:		<i>John P. Sullivan</i>		24079	08/15/06
JOHN P. SULLIVAN		CITY ENGINEER		RCE	DATE
RECOMMENDED:		<i>Scott Bentz</i>		57875	08/14/06
ASST. UTIL. DIRECTOR/ENG.		RCE		DATE	
REV	DESCRIPTION	BY	APP'D	DATE	

CITY OF ONTARIO

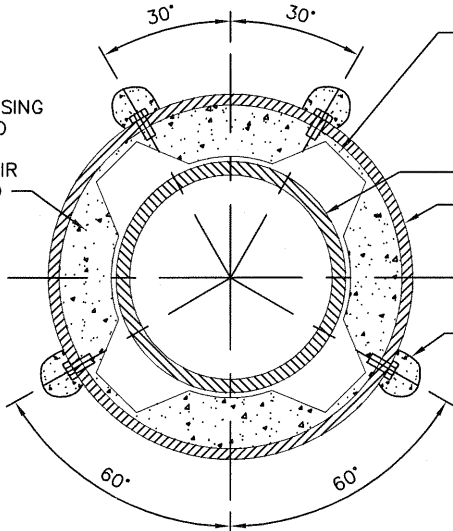
PROTECTION FOR MAINLINE AND HOUSE CONNECTION SEWER

STANDARD DRAWING NUMBER
2102



CASING DETAIL

PLANS WILL DESIGNATE WHETHER CASING TO BE FILLED WITH LEAN GROUT OR AIR BLOWN SAND



SECTION A - A

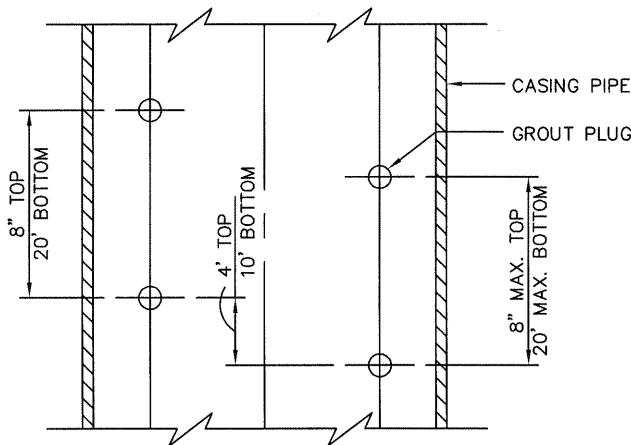
USE POLYETHYLENE CASING INSULATORS WITH POLYETHYLENE SKIDS. ALL BOLTS AND BANDS SHALL BE TYPE 304 STAINLESS STEEL.

PIPE CENTERED IN CASING

STEEL CASING PIPE WITH MIN. PLATE THICKNESS AND MINIMUM INSIDE DIAMETER PER SCHEDULE HEREON

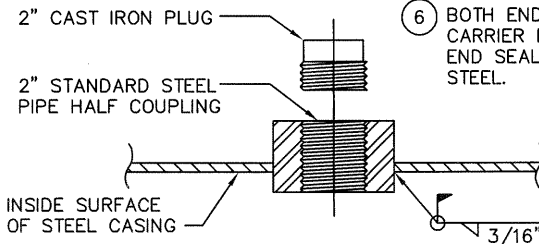
GROUT CONNECTION HOLES SEE BELOW FOR SPACING

PIPE SIZE (I.D.)	STEEL CASING PIPE		
	MIN. SIZE (I.D.)		MIN. WALL THK.
	DIP & PVC	CML&C	
6"	16"	14"	1/4"
8"	18"	14"	1/4"
10"	21"	18"	5/16"
12"	24"	18"	5/16"



NOTES

- ALL STEEL CASING PIPE JOINTS SHALL BE WELDED FULL CIRCUMFERENCE.
- PERIPHERY OF CASING TO BE PRESSURE GROUTED.
- CARRIER PIPE SHALL BE AIR TESTED PRIOR TO FILLING CASING WITH GROUT OR BLOWN SAND.
- UPSTREAM AND DOWNSTREAM ELEVATIONS TO BE VERIFIED PRIOR TO FILLING CASING.
- SPACING BETWEEN THE CASING INSULATORS SHALL BE PER THE MANUFACTURERS RECOMMENDATIONS EXCEPT THAT THERE SHALL BE AT LEAST 3 CASING INSULATORS PER PIPE SECTION, ONE 12" FROM EACH JOINT AND ONE CENTERED. ADDITIONALLY, ONE INSULATOR SHALL BE INSTALLED 12" FROM EACH END OF THE CASING.
- BOTH ENDS OF THE CASING BETWEEN THE CASING AND CARRIER PIPE SHALL BE SEALED WATERTIGHT USING AN END SEAL. BANDS SHALL BE TYPE 304 STAINLESS STEEL.



GROUT COUPLING



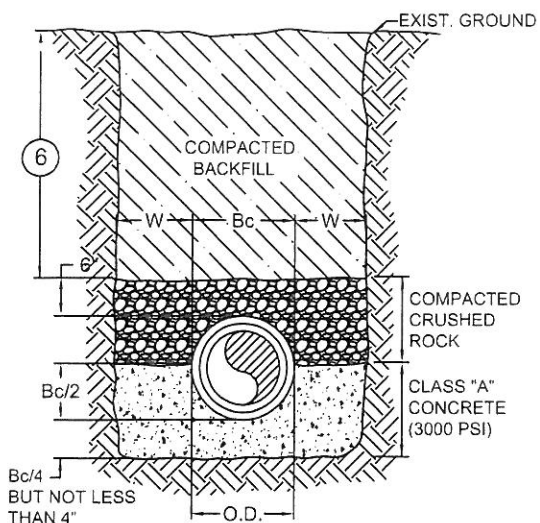
APPROVED BY: <i>John P. Sullivan</i> 24079 08/15/06				
JOHN P. SULLIVAN CITY ENGINEER RCE DATE				
RECOMMENDED: <i>Scott Burke</i> 57875 08/14/06				
ASST. UTIL. DIRECTOR/ENG. RCE DATE				
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO

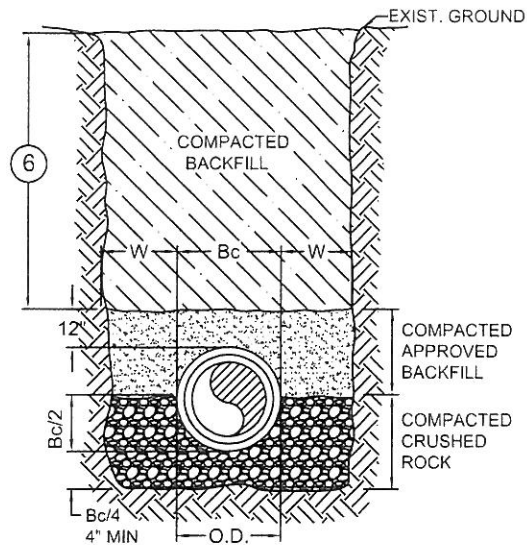
SEWER AND WATER CASING DETAIL

STANDARD DRAWING NUMBER

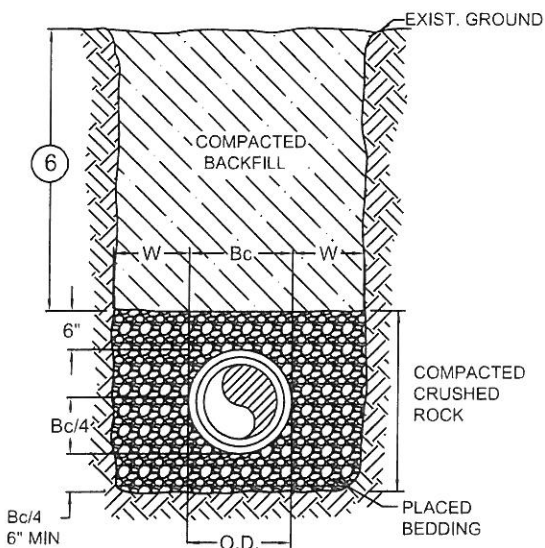
2103



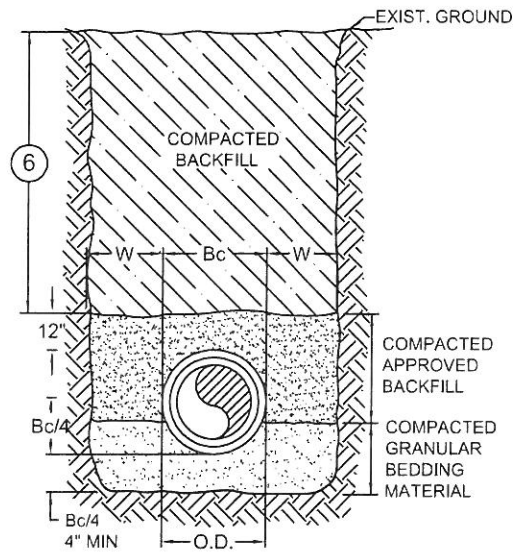
CLASS "A-1"



CLASS "B-1"



**CLASS "B-2"
ROCK ENCASEMENT**



CLASS "C"

NOTES:

1. ALL BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION)
2. O.D. = OUTSIDE DIA. OF BELL
3. Bc = OUTSIDE DIA. OF PIPEBARREL
4. CONCRETE SHALL BE ALLOWED TO DEVELOP SUFFICIENT STRENGTH BEFORE BACKFILLING.

5. W = 10"
6. FOLLOW CITY STD. DWG No. 1306

CRUSHED ROCK	
SIEVE ANALYSIS-PERCENT PASSING	
SIEVE SIZES	CLAY PIPE INSTITUTE ASTM D448-67
1"	100%
3/4"	90%-100%
3/8"	20%-55%
NO.4	0%-10%
NO.8	0%-5%



APPROVED BY: <i>Louis Abi-Younes</i> 11-22-10				
LOUIS ABI-YOUNES, CIVIL ENGINEER		RCE	DATE	44485
RECOMMENDED: <i>Scott Burton</i> 10-25-10				
SCOTT BURTON, UTILITIES ENG./OPERATIONS DIRECTOR		RCE	DATE	57875
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO

BEDDING DETAILS (A)

STANDARD
DRAWING
NUMBER
2104

BEDDING

1. V.C.P. (EXTRA-STRENGTH)

A. THE FOLLOWING MAY BE USED AS A GUIDE ONLY IN DETERMINING THE REQUIRED CLASS OF BEDDING BASED UPON MAXIMUM DEPTH TO SEWER PIPE INVERT. FOR OTHER CONDITIONS OF TRENCH WIDTH, OR FOR A WIDE TRENCH CONDITION, INDEPENDENT ANALYSIS MUST BE MADE.

PIPE DIAMETER (in.)	TRENCH MAXIMUM WIDTH (in.)	MAXIMUM DEPTH, (FEET)			
		A-1(1)	B-2	B-1	C
8	32	30+	30+	20.0	12.0
10	34	30+	30+	19.0	12.0
12	38	30+	21.5	16.0	11.0
15	42	30+	23.0	17.0	12.0
18	46	30+	24.0	18.0	12.5
21	50	30+	25.0	19.0	13.5
24	54	30+	26.0	20.0	14.5
27	56	30+	27.5	21.5	15.0

(1) REFER TO STD. DWG. NO. 2104

(2) ASSUMPTIONS

A. ORDINARY CLAY BACKFILL @ 120 lbs/cf

B. F.S. = 1.5

C. LOAD FACTORS

CLASS A-1 = 2.8
 B-2 = 2.2
 B-1 = 1.9
 C = 1.5

ENGINEER SHALL BE REQUIRED TO PROVIDE STRUCTURAL LOADING CALCULATIONS FOR PIPELINE INSTALLATIONS DEEPER THAN 30 FEET.



APPROVED BY: <i>John P. Sullivan</i>				
JOHN P. SULLIVAN CITY ENGINEER RCE DATE 24079 08/15/06				
RECOMMENDED: <i>Scott Burtis</i>				
ASST. UTIL. DIRECTOR/ENG. RCE DATE 57875 08/14/06				
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO

BEDDING DETAILS (B)

STANDARD DRAWING NUMBER

2105

SEWER MONITORING MANHOLE

LOCATION

1. CONTACT THE PUBLIC WORKS AGENCY/UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION FOR APPROVAL OF MONITORING MANHOLE LOCATION. CONFIRM THAT STANDARD DRAWING CONTAINS LATEST REVISION.
2. MONITORING MANHOLES ARE TO BE LOCATED AWAY FROM TRAFFIC, IF POSSIBLE. HOWEVER, IF INSTALLED IN TRAFFIC, THE MONITORING MANHOLE MUST BE CAPABLE OF CARRYING H-20 LOADINGS.
3. MONITORING MANHOLES MUST BE LOCATED ON LINES WHICH REFLECT TOTAL NONDOMESTIC FLOWS.

GENERAL PROVISIONS

1. A UNIFORM PIPE SLOPE, NOT EXCEEDING 2.0% OR LESS THAN 0.40%, MUST BE MAINTAINED AT LEAST TWENTY (20) PIPE DIAMETERS UPSTREAM AND DOWNSTREAM OF THE MONITORING MANHOLE AS WELL AS THROUGH THE MANHOLE. DEVIATIONS FROM THE PIPE SLOPE LIMITS WILL REQUIRE SPECIAL PERMISSION FROM THE CITY ENGINEER.
2. THERE SHALL BE NO BENDS, DROP MANHOLES, FLOW JUNCTIONS, ETC. WITHIN 20 PIPE DIAMETERS (D) UPSTREAM OF THE MONITORING MANHOLE.
3. THE BASE OF THE MANHOLE MUST BE POURED AROUND THE EXISTING SEWER LINE WITHOUT ANY CHANGES IN THE SLOPE OF THE LINE.
4. WELD THE PERCENTAGE OF SLOPE AND PIPE DIAMETER OF THE SEWER LINE BEING MONITORED (%S,D") ON THE LID/COVER.
5. THE MAXIMUM UPSTREAM DEPTH SHALL NOT EXCEED 0.90D (D = PIPE DIAMETER IN INCHES).
6. WEIRS OR FLUMES ARE OPTIONAL AND MAY BE INSTALLED IF DESIRED. ALL INSTALLATION MUST BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND APPROVED BY THE CITY ENGINEERING DEPARTMENT.
7. ALL SURFACE WATER SHALL DRAIN AWAY FROM THE MONITORING MANHOLE.
8. ELECTRICAL CONDUIT IS OPTIONAL AT THIS TIME BUT MAY BE DESIRED IF PERMANENT MONITORING DEVICES ARE DESIRED OR REQUIRED IN THE FUTURE.
9. ANY MONITORING INSTRUMENTATION DEVICES MUST BE APPROVED BY THE PUBLIC WORKS AGENCY/UTILITIES DEPARTMENT PRIOR TO AND AFTER INSTALLATION. MANUFACTURER OF THESE DEVICES WILL HAVE TO BE RECALIBRATED EVERY SIX (6) MONTHS BY EITHER THE MANUFACTURER OR AN APPROVED TESTING LABORATORY. A COPY OF THE CALIBRATION CERTIFICATE SHALL BE FURNISHED TO THE CITY ENGINEER.
10. ALL MONITORING MANHOLE LOCATIONS MUST BE APPROVED BY THE PUBLIC WORKS AGENCY/UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION AND INSTALLATION MUST BE APPROVED BY THE CITY ENGINEERING DEPARTMENT INSPECTOR.



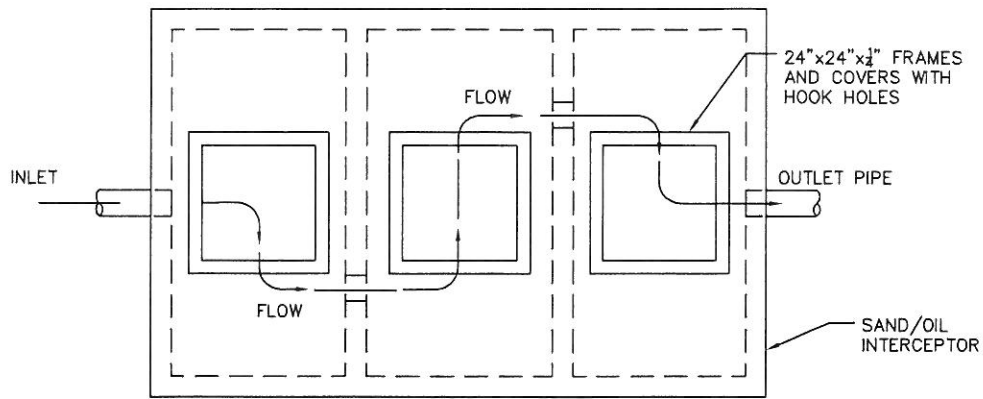
APPROVED BY:				
<i>Louis Abi-Younes</i>		11-22-10		
LOUIS ABI-YOUNES, CITY ENGINEER		44485	RCE	DATE
RECOMMENDED:				
<i>Scott Burton</i>		10/25/10		
SCOTT BURTON, UTILITIES ENG/OPERATIONS DIRECTOR		57875	RCE	DATE
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO

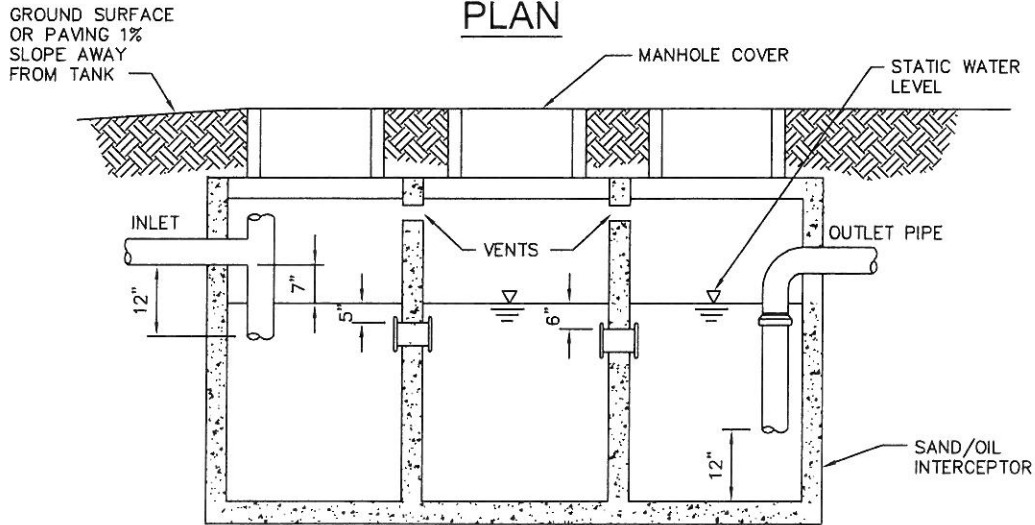
GENERAL
REQUIREMENTS FOR
MONITORING MANHOLE

STANDARD
DRAWING
NUMBER

2201



PLAN



SECTION

NOTES

- ① SIZING PER UNIFORM PLUMBING CODE, CHAPTER 7, "TRAPS AND INTERCEPTORS".
- ② THE UNIT SHOWN SHALL BE MADE OF CONCRETE OR OTHER MATERIAL APPROVED BY THE CITY ENGINEER (SEE NOTE 3).
- ③ THE UNIT IS TO BE LOCATED AWAY FROM TRAFFIC, IF POSSIBLE. IF INSTALLED IN TRAFFIC, THE UNIT MUST BE CAPABLE OF CARRYING H-20 LOADINGS.
- ④ NO WASTE FROM RESTROOMS SHALL FLOW THROUGH INTERCEPTOR.
- ⑤ ALL WASTE SHALL ENTER THE INTERCEPTOR THROUGH THE INLET PIPE ONLY.
- ⑥ STRUCTURE SHALL BE INSTALLED TO ALLOW ACCESS FOR MAINTENANCE OR INSPECTION AT ALL TIMES.
- ⑦ ALL SURFACE WATER MUST DRAIN AWAY FROM THE SAMPLING BOX AND INTERCEPTOR TO EXCLUDE ANY SURFACE DRAINAGE.
- ⑧ INSPECTION COVERS SHALL BE BROUGHT TO GRADE TO PERMIT VISUAL INSPECTION OF INTERNAL FITTINGS, WITH RISERS AS REQUIRED.



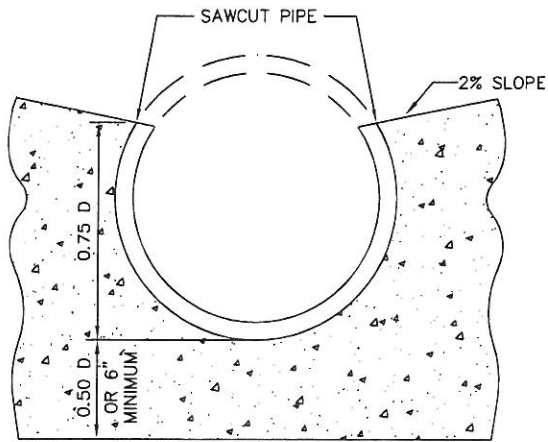
APPROVED BY:		11-22-10	
<i>Louis Abi-Younes</i>		44485	
LOUIS ABI-YOUNES, CITY ENGINEER		RCE	DATE
RECOMMENDED:		10/25/10	
<i>Scott Burton</i>		57875	
SCOTT BURTON, UTILITIES ENG/OPERATIONS DIRECTOR		RCE	DATE
REV	DESCRIPTION	BY	APP'D DATE

CITY OF ONTARIO

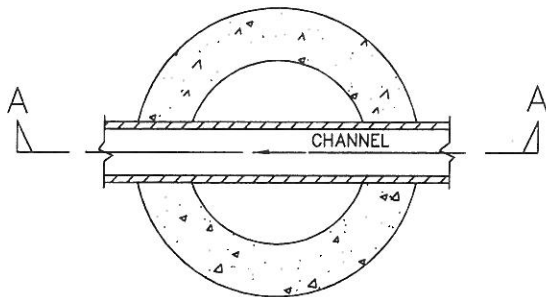
THREE CHAMBER
SAND AND OIL
INTERCEPTOR

STANDARD
DRAWING
NUMBER

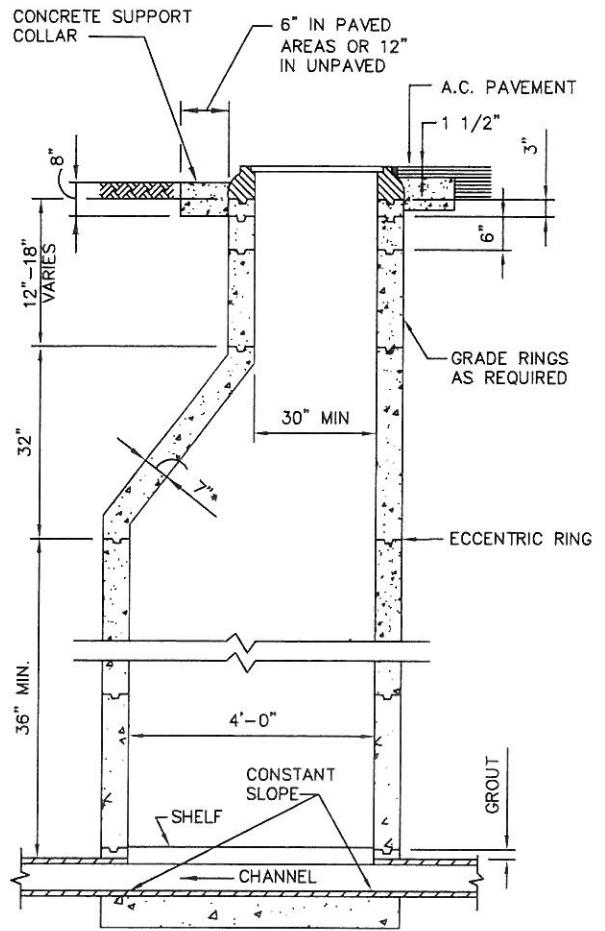
2202



CROSS-SECTION OF BASE



PLAN OF BASE



* (NON REINFORCED MANHOLE)

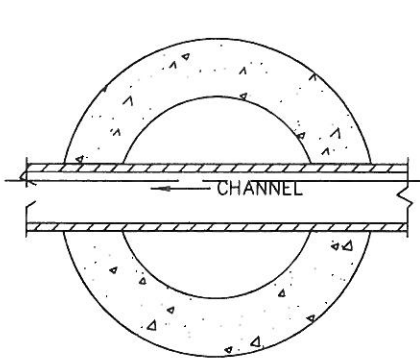
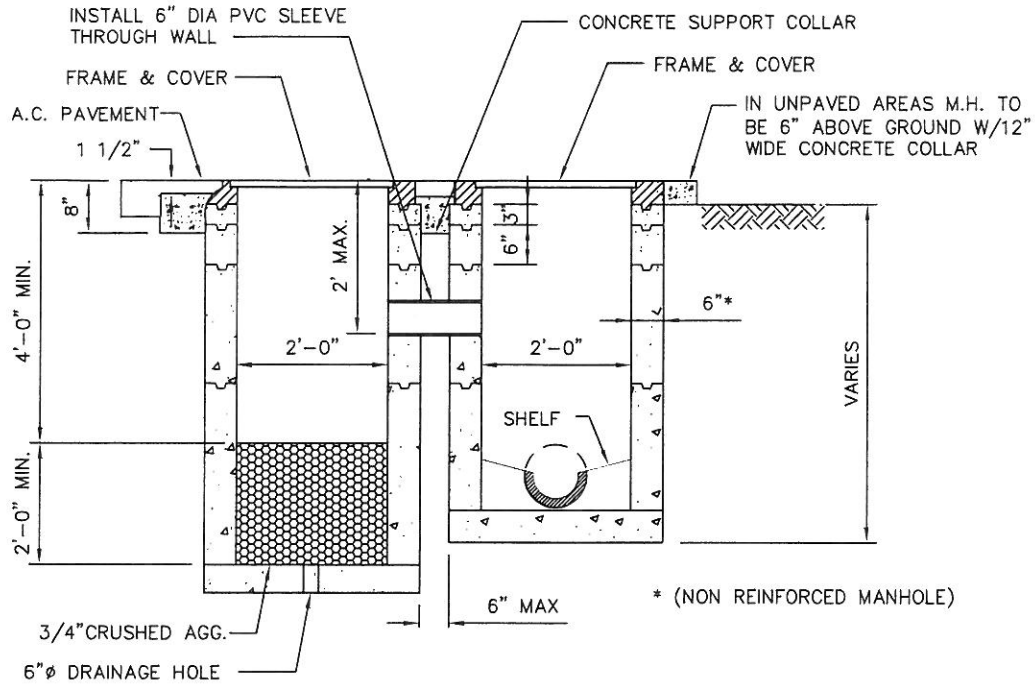
SECTION A-A

THE REQUIREMENTS SPECIFIED PER CITY STANDARD DRAWINGS 2001 AND 2201 SHALL APPLY TO THIS MANHOLE.

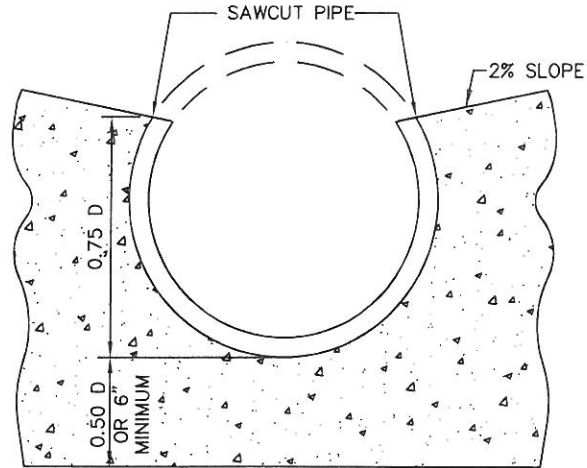


APPROVED BY:				
<i>Louis Abi-Younes</i>		11-22-10		
LOUIS ABI-YOUNES, CITY ENGINEER		44485	RCE	DATE
RECOMMENDED:				
<i>Scott Burton</i>		10/25/10		
SCOTT BURTON, UTILITIES ENG./OPERATIONS DIRECTOR		57875	RCE	DATE
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO	
MONITORING MANHOLE - TRAFFIC AREA	STANDARD DRAWING NUMBER
	2203



PLAN OF BASE



CROSS-SECTION OF BASE

THE REQUIREMENTS SPECIFIED PER CITY STANDARD
DRAWING 2201 SHALL APPLY TO THIS MANHOLE



APPROVED BY:		11-22-10	
<i>Louis Abi-Younes</i>		44485	
LOUIS ABI-YOUNES, CITY ENGINEER		RCE	DATE
RECOMMENDED:		10/25/10	
<i>Scott Burton</i>		57875	
SCOTT BURTON, UTILITIES ENG/OPERATIONS DIRECTOR		RCE	DATE
REV	DESCRIPTION	BY	APP'D DATE

CITY OF ONTARIO		STANDARD DRAWING NUMBER 2204
MODIFIED SURVEILLANCE / MONITORING MANHOLE - TRAFFIC AREA (SHALLOW DEPTH)		