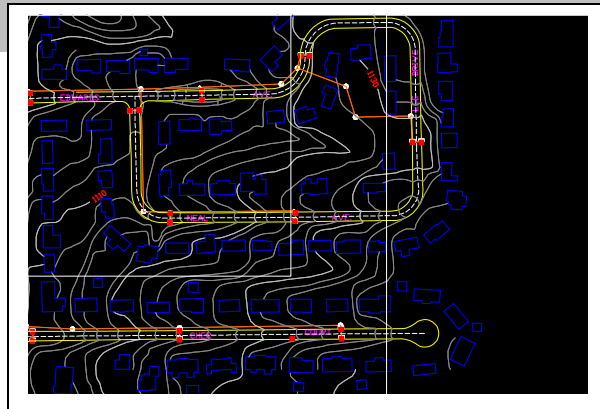


ENGINEERING CONSTRUCTION STANDARDS

- STANDARD DRAWINGS
- SPECIFICATIONS



A Guide for:

- **Engineers**
- **Developers**
- **Contractors**

City of Wooster
Division of Engineering

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538 North Market Street
Wooster, Ohio 44691

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City of Wooster : Division of Engineering

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Roger Kobilarcsik, P.E.
City Engineer**INDEX****ENGINEERING STANDARDS**

NO.	DATE	REVISION			
			16	01/06/15	ADDED TR-4.0, 4.1
11	10/31/08	REV. GN-1-3,5,7,8,PV-1-4,5,1,6,7,WT-1-4,SS-1,10	17	02/06/15	AM-2.0 REV's TO (OPEN)
		MS-1,3,3.1,ST-1,4,5,10,13,13.1,ADDED WT-3	18	01/04/18	ADDED GN-3.2, MS-5.0, MS-5.1
12	12/31/08	ADDED PV-14 & 14.1			REV. ST-11.0, ST-12.0, WS-6.0 TO OPEN
13	11/05/10	ADDED GN-3.1	19	08/01/18	REMOVED WC SERIES
14	7/01/12	ADDED WS SECTION			
15	01/06/14	REMOVED ST-2.0			

CAD FILE:

ENGINEERING STANDARDS\GN-1.DWG

SHEET:

DRWN BY:

TLH

APPRVD BY:

AJM

ISSUE DATE:

12/31/08

SCALE:

NONE

GN-1.0

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**INDEX
ENGINEERING STANDARDS**

CAD FILE:

\\ENGINEERING STANDARDS\GN-1.DWG

SHEET:

GN-1.1

DRWN BY:

AJM

APPRVD BY:

EPO

ISSUE DATE:

7/1/12

SCALE:

NONE

GENERAL CONDITIONS

1. ALL WORK AND MATERIALS FURNISHED SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS, THE MOST CURRENT EDITIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION "CONSTRUCTION AND MATERIAL SPECIFICATIONS" (CMS) AND THE CITY OF WOOSTER "ENGINEERING CONSTRUCTION STANDARDS", AND SHALL MEET AASHTO M306 STANDARDS AND BE MADE IN USA.
2. EXCESS EARTHEN FILL SHALL BE PLACED IN LOW AREAS WITHIN THE ALLOTMENT OR WORK SITE AND SHALL BE PROPERLY LEVELED AND GRADED PER THE APPROVED PLANS. PAVEMENT SUBGRADE SHALL BE FINE GRADED AND COMPACTED IN ACCORDANCE WITH ODOT CMS ITEM 203. BACKFILLING BEHIND CURBS SHALL BE PROPERLY LEVELED AND GRADED AND SHALL TAKE PLACE AS SOON AS THE 28-DAY CONCRETE STRENGTH HAS BEEN REACHED. PAYMENT FOR CURB BACKFILLING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE TYPE OF PAVEMENT USED.
3. WATER AND SANITARY SERVICE LOCATIONS SHALL BE MARKED AT THE RIGHT-OF-WAY WITH A 4x4 TREATED WOOD POST. PLACE POST AT THE END OF THE LINE AND EXTEND VERTICALLY TO 3' MINIMUM ABOVE THE PROPOSED FINISH GRADE. POSTS SHALL BE MARKED FOR EITHER WATER OR SEWER AND SHALL REMAIN IN PLACE UNTIL SUCH TIME AS THE BUILDING CONNECTIONS ARE MADE.
4. LININGS OF ALL UTILITY PIPING AND STRUCTURES SHALL BE KEPT CLEAN AND FREE OF DEBRIS PRIOR TO AND DURING CONSTRUCTION. THE CONTRACTOR SHALL PROTECT FLOW LINES AND STRUCTURES FROM DEBRIS THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL FINAL APPROVAL IS GRANTED BY THE CITY OF WOOSTER ENGINEERING DIVISION.
5. CLEAN WATER CONNECTIONS TO ANY SANITARY SEWER OR SANITARY APPURTENANCE ARE STRICTLY PROHIBITED.
6. WHERE GROUND COVER IS DISTURBED DURING THE CONSTRUCTION, THE CONTRACTOR SHALL INSTALL ALL NECESSARY EROSION CONTROL AND DRAINAGE CONTROL DEVICES IN ACCORDANCE WITH REGULATIONS OF THE CITY OF WOOSTER, OHIO EPA, AND THE SWPPP. THESE DEVICES SHALL BE ROUTINELY MONITORED AND MAINTAINED BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL SATISFACTORY GROUND COVER HAS BEEN RE-ESTABLISHED. NO WORK SHALL BEGIN UNTIL ALL SUCH DEVICES ARE IN PLACE.
7. ALL DEVELOPMENTS INVOLVING UTILITY IMPROVEMENTS SHALL HAVE DETAILED DESIGN DRAWINGS PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. DRAWINGS SHALL BE SIGNED AND DATED BY THE PREPARING ENGINEER.
8. CITY OF WOOSTER ENGINEERING CONSTRUCTION STANDARDS CONSTITUTE MINIMUM DESIGN STANDARDS. SPECIFIC PROJECTS MAY INVOLVE SPECIAL CIRCUMSTANCES WHICH REQUIRE MODIFICATION OF STANDARDS AND ADDITIONAL ENGINEERING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL DESIGN AND FOR OBTAINING APPROVAL OF ANY REQUESTED ENGINEERING CONSTRUCTION STANDARD MODIFICATIONS.
9. SURVEY MONUMENTS SHALL BE FURNISHED AND PLACED WHERE INDICATED ON THE PLANS AND AS A MINIMUM SHALL BE PLACED AS REQUIRED TO DEFINE PROPOSED ROADWAYS USING THE OHIO DEPARTMENT OF TRANSPORTATION STANDARD MONUMENT DETAILS PER ODOT STANDARD CONSTRUCTION DRAWING RM-1.1 AND CITY OF WOOSTER ENGINEERING CONSTRUCTION STANDARD PV-13.0.
10. PAVEMENT MARKINGS WHICH ARE DAMAGED OR DESTROYED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR IN ACCORDANCE WITH CITY OF WOOSTER, ODOT, AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES REQUIREMENTS. WHEN NOT INCLUDED IN A SPECIFIC PAY ITEM, THE COST FOR RESTORATION OR REPLACEMENT OF PAVEMENT MARKINGS SHALL BE INCLUDED IN THE COST FOR PAVEMENT REPLACEMENT.
11. DOWNSPOUT AND FOOTER DRAINS SHALL OUTLET INTO THE STORM SEWER, ONTO SPLASH BLOCKS, OR DAYLIGHT ONTO THE PROPERTY AND SHALL AT NO TIME BE CONNECTED TO THE ROADWAY UNDERDRAIN SYSTEM, PROTRUDE THROUGH THE CURB, OR CONNECT TO THE SANITARY SEWER.

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City Engineer

GENERAL CONDITIONS

NO.	DATE	REVISION
1	6/29/01	REVISED WORDING OF NOTE #9
2	11/25/02	ADDED NOTE #10 - PAVEMENT MARKING REPLACEMENT
3	10/31/08	ADDED NOTE #11 AND REVISED NOTE #1
4	01/06/14	REVISED WORDING OF NOTE #9
5	01/02/17	REVISED REFERENCES IN NOTES #1 AND #6
6	01/02/19	MISCELLANEOUS WORDING AND REFERENCE REVISIONS

CAD FILE:
ENGINEERING STANDARDS\GN-2.DWG

SHEET:

DRWN BY:	APPRVD BY:	ISSUE DATE:	SCALE:
AJM	EPO	07/24/00	NONE

GN-2.0

WATERLINE CONSTRUCTION

MAIN LINES: DUCTILE IRON PIPE, CLASS 52, AWWA C151.
CEMENT LINED, AWWA C104.
RUBBER GASKETED JOINTS, AWWA C111.
6" MINIMUM DIAMETER FOR DISTRIBUTION LINE.

TAPPING SLEEVE: TAPPING SLEEVE SHALL BE SMITH-BLAIR STYLE 665 (STAINLESS STEEL) OR MUELLER H-304L (STAINLESS STEEL WITH STAINLESS STEEL FLANGE AND MJ OUTLET FOR STANDARD GATE VALVE).
ALL TAPS SHALL BE MADE BY THE CONTRACTOR UNDER THE SUPERVISION OF AUTHORIZED CITY PERSONNEL, AND IN ACCORDANCE WITH CITY STANDARDS.

BEDDING: 6" MINIMUM OF ODOT #8 OR #67 GRAVEL. LIMESTONE IS NOT PERMITTED.

BACKFILL: 5'-0" MINIMUM COVER ON MAIN LINE.

MAIN LINE VALVES: MUELLER A-2361 OR EJ FLOWMASTER, WITH 304 STAINLESS STEEL FASTENERS, CLOSE LEFT, RESILIENT WEDGE, MECHANICAL JOINT.

VALVE BOX: EJ 8560 SERIES THREE PIECE SCREW TYPE BOX, 6800 VALVE BOX DROP LID.
(SEE WT-8.0)

FITTINGS: DUCTILE IRON, MECHANICAL JOINT, AWWA C153 WITH 304 STAINLESS STEEL NUTS AND BOLTS.

THRUST RESTRAINT: FIELD LOCK GASKETS, MJ FIELD LOK OR MECHANICAL JOINTS W/ EBAA IRON SERIES 1100 RESTRAINERS (STAINLESS STEEL NUTS AND BOLTS).

HYDRANTS: MUELLER SUPER CENTURION 250 A-423, EJ WATERMASTER 5CD250, OR KENNEDY GUARDIAN K81-D.
5'-6" BURY, OPEN LEFT, WITH 304 STAINLESS STEEL NUTS AND BOLTS.
NATIONAL STANDARD FIRE HOSE THREAD OUTLETS.
PUBLIC HYDRANTS SHALL BE PAINTED SAFETY YELLOW AND PRIVATE HYDRANTS SHALL BE PAINTED INTERNATIONAL RED.

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City Engineer

GENERAL NOTES WATERLINE

CAD FILE:
\\ENGINEERING STANDARDS\GN-3.DWG

SHEET:

GN-3.0

NO.	DATE	REVISION			
4	08/29/01	Rev service lid/rod part no, add brass plugs	10	9/16/10	Added PIV
5	10/02/01	Rev valve model no., resilient wedge	11	7/1/12	Services To WS-1.0
6	10/10/01	Added Thrust Restraint note.	12	1/2/17	Valve Specs; Added SS Nuts
7	09/30/06	Added valve box, MJ field lok	13	1/4/18	Move PIV to GN-3.2
8	10/31/08	Added Tapping Sleeve, Repair Coupling	14	1/2/19	Added Hose Thread Specs
9	04/30/10	Added Stainless Steel Bolts	15	1/2/20	Added Kennedy Hydrant

DRWN BY: TLH	APPRVD BY: AJM	ISSUE DATE: 11/08/00	SCALE: NONE
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WATERLINE INSTALLATION

- 1) WATERLINES SHALL BE INSTALLED TO MAINTAIN MINIMUM ISOLATION DISTANCES FROM EXISTING AND PROPOSED SEWERS:
VERTICAL ISOLATION = 18 INCHES
HORIZONTAL ISOLATION = 10 FEET
- 2) ALL HYDRANTS AND VALVES SHALL BE LOCATED OUTSIDE OF THE DITCH LINE AND DRAINAGE SWALES WHEREVER POSSIBLE.
- 3) NOT USED.
- 4) A MINIMUM OF 35 PSI SHALL BE MAINTAINED IN ALL WATER MAINS AND SERVICES DURING NORMAL OPERATING CONDITIONS.
- 5) BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
- 6) CONCRETE BLOCKING SHALL ONLY BE USED WHEN INDICATED ON THE DRAWINGS. COSTS FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE SIZE OF DUCTILE IRON PIPE AND FITTINGS.
- 7) WATERLINES SHALL BE INSTALLED WITH A MINIMUM COVER MEASURED BELOW EXISTING GRADE OR BELOW LEVEL OF EDGE OF ADJACENT PAVEMENT, WHICHEVER RESULTS IN THE LOWER ELEVATION. MINIMUM COVER SHALL BE 5 FEET UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

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City Engineer

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GENERAL NOTES

WATERLINE

CAD FILE:

\\ENGINEERING STANDARDS\GN-3.DWG

SHEET:

GN-3.1

DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:	04/30/10
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SCALE:
NONE

FIRE LINE CONSTRUCTION

GENERAL: ANY WATERLINE OR WATER SERVICE THAT IS LOCATED ON PRIVATE PROPERTY AND THAT SERVES EITHER A SPRINKLER SYSTEM OR ONE OR MORE FIRE HYDRANTS SHALL BE CONSIDERED A FIRE LINE.
UNDERGROUND FIRE SERVICE MAINS SHALL ENTER THE BUILDING NO MORE THAN 10 FEET FROM THE OUTSIDE EDGE OF THE BUILDING TO THE CENTER OF THE VERTICAL PIPE.
FIRE LINES SHALL ONLY BE REPAIRED OR INSTALLED BY INDIVIDUALS HAVING AN INDIVIDUAL STATE FIRE PROTECTION LICENSE FOR FIRE SERVICE MAINS AND THAT ARE EMPLOYED BY A STATE LICENSED FIRE PROTECTION COMPANY.
FIRE LINES SHALL BE PRESSURE TESTED TO 200 PSI IN THE PRESENCE OF THE CITY FIRE AND/OR ENGINEERING INSPECTOR.

POST INDICATOR VALVE: MUELLER A-2361 WITH 304 STAINLESS STEEL FASTENERS, RESILIENT WEDGE, MECHANICAL JOINT, (CLOSE RIGHT).
POST INDICATOR SHALL BE MUELLER A-20806 ADJUSTABLE VERTICAL INDICATOR POST.
VALVES SHALL BE ELECTRICALLY SUPERVISED BY A LISTED FIRE ALARM CONTROL UNIT.
TOP OF POST INDICATOR SHALL BE 32" TO 40" ABOVE FINAL GRADE.

FIRE DEPT CONNECTION: FIRE DEPARTMENT CONNECTION (FDC) SHALL BE FURNISHED WITH KNOX LOCKING CAPS.
TOP OF FDC SHALL BE 36" ABOVE FINAL GRADE.
"FDC" SIGN SHALL BE FURNISHED BY THE WOOSTER FIRE DEPARTMENT, IN ACCORDANCE WITH THE CURRENT FEE SCHEDULE.
INSTALLATION OF THE FDC BALL DRIP SHALL BE WITNESSED BY THE CITY FIRE AND/OR ENGINEERING INSPECTOR.
THE CHECK VALVE AND BALL DRIP FOR A REMOTE FDC SHALL BE LOCATED IN A CONCRETE MANHOLE OR VAULT WITH A NON-FREEZING DRAIN. THE MANHOLE OR VAULT SHALL BE PROVIDED WITH A DRAIN IN THE FLOOR THAT PROVIDES GRAVITY FLOW PIPED INTO A STORM SEWER OR OUTLETS TO DAYLIGHT. IN LOCATIONS WHERE THIS IS NOT POSSIBLE, THE MANHOLE OR VAULT SHALL BE PROVIDED WITH A SUMP AND SUMP PUMP THAT IS PIPED INTO AN UNOBSTRUCTED DISCHARGE LOCATION.

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GENERAL NOTES WATERLINE

CAD FILE:
\\ENGINEERING STANDARDS\GN-3.DWG

DRWN BY:
JAR

APPRVD BY:
RVK

ISSUE DATE:
01/04/18

SCALE:
NONE

SHEET:

GN-3.2

SANITARY SEWER CONSTRUCTION

GRAVITY SEWER

MAIN PIPE: 8" MINIMUM PVC, ASTM D3034; JOINTS ASTM D3212.
8" MINIMUM DUCTILE IRON PIPE, CLASS 52, AWWA C151, CERAMIC EPOXY LINED.
AIR TEST REQUIRED ON ALL MAINS AND LATERALS.
A 5% DEFLECTION TEST WITH AN APPROVED MANDREL SHALL BE MADE AFTER 30 DAYS. THE CITY OF WOOSTER ENGINEERING DIVISION RESERVES THE RIGHT TO REQUIRE RE-TESTING WITHIN 1 YEAR AFTER INSTALLATION.
MINIMUM REQUIRED SLOPE SHALL NOT BE LESS THAN 0.40% FOR 8" PIPE. THE CITY ENGINEER MAY REQUIRE A GREATER MINIMUM SLOPE FOR END OF LINE SEWERS.

LATERALS: 6" MINIMUM PVC (SAME SPECIFICATIONS AS FOR MAIN PIPE).
LATERAL CONNECTIONS TO MAIN SEWERS SHALL NOT BE MADE AT MANHOLES UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
WYE OR TEE TYPE FITTINGS SHALL BE USED AT MAIN PIPE.
ONLY FERNCO 5000 SERIES STRONG BACK COUPLINGS ARE PERMITTED FOR IN-LINE SPLICES, AND ONLY WHEN NECESSARY.
FERNCO 5000 SERIES STRONG BACK COUPLINGS SHALL BE USED FOR BUILDING SEWER CONNECTIONS. A NEOPRENE O-RING (DOUGHNUT) MAY BE USED AS AN ALTERNATIVE, WITH THE 4" PIPE INSIDE THE 6" PIPE A MINIMUM OF 18".
GLUED JOINTS UNDERGROUND ARE PROHIBITED.
90° BENDS ARE NOT PERMITTED. TWO 45° FITTINGS SHALL BE USED WITH A MINIMUM 24" STRAIGHT PIPE IN BETWEEN FITTINGS.
6" CLEAN-OUT, OF SAME MATERIAL, IS REQUIRED EVERY 100' MAXIMUM.
1.00% MINIMUM SLOPE.

MANHOLE PIPE CONNECTORS: PVC PLASTIC PIPE CONNECTORS TO MANHOLES SHALL BE RUBBER SLEEVES W/ STAINLESS STEEL BANDING, CAST-IN RUBBER COMPRESSION GASKETS, OR FIELD INSTALLED RUBBER COMPRESSION GASKETS W/ GROUT COLLAR THAT PROVIDES A FLEXIBLE, WATERTIGHT SEAL PER ASTM C923.

BEDDING: PVC: ASTM 2321D, CLASS 1, GRANULAR MATERIAL (ODOT #8 AGGREGATE).

BACKFILL: PVC: CLEAN BEDDING MATERIALS AS INITIAL BACKFILL TO SPRING LINE; CLEAN HAUNCHING MATERIAL TO 12" ABOVE THE PIPE CROWN.
UNDER ALL PAVED AREAS, INCLUDING AN AREA 2' BEYOND THE PAVEMENT EDGES, BACKFILL ENTIRELY WITH THE SPECIFIED GRANULAR MATERIAL.

METER: WHERE SEWER WILL BE METERED DIRECTLY FOR BILLING (RATHER THAN BASED ON THE WATER METER) AN EFFLUENT WASTEWATER METER WILL BE SPECIFIED BY THE CITY. THE CUSTOMER SHALL PURCHASE AND INSTALL THE METER, AND THE CITY WILL PROVIDE THE ELECTRONIC READER DEVICE.

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GENERAL NOTES SANITARY SEWER

NO.	DATE	REVISION			
			6	01/06/15	REV. LAT. FITTING NOTE
1	10/10/01	ADDED SANITARY FORCE MAIN SPEC.S	7	01/02/17	REV. MIN. SLOPE NOTE; METER
2	9/17/04	REV. MAIN PIPE: NOTE VSP TO DUCTILE IRON PIPE	8	01/04/18	REV. D.I. PIPE LINING
"	"	REV. BEDDING: NOTE REMOVED SPEC. FOR VSP			
3	9/24/04	REV. LATERALS & BACKFILL: NOTE REMOVED FOR VCP			
4	7/1/12	FERNCO 5000 STRONG BACK			
5	01/06/14	REV. LAT. CONNECTION TO MH NOTE			

CAD FILE:
ENGINEERING STANDARDS\GN-4.DWG

DRWN BY:	APPRVD BY:	ISSUE DATE:	SCALE:
AJM	EPO	11/08/00	NONE

SHEET:

GN-4.0

SANITARY SEWER CONSTRUCTION, CONT'D

FORCE MAIN

<u>PRESSURE PIPE:</u>	DUCTILE IRON PIPE, CLASS 52, AWWA C151. 4" DIAMETER MINIMUM. RUBBER GASKETED JOINTS, AWWA C111. HYDROSTATIC LEAKAGE TEST REQUIRED ON ALL FORCE MAINS.
<u>FITTINGS:</u>	DUCTILE IRON, MECHANICAL JOINT, AWWA C153 WITH 304 STAINLESS STEEL NUTS AND BOLTS.
<u>THRUST RESTRAINT:</u>	RESTRAINED JOINTS - FIELD LOCK GASKETS OR EBAA IRON SERIES 1100 RESTRAINTS.
<u>TRACER TAPE:</u>	REEF INDUSTRIES, INC. TERRA TAPE SENTRY LINE 1350, 3" WIDE, GREEN METALIZED FOIL TAPE IMPRINTED W/ BLACK LETTERING "CAUTION BURIED SEWER LINE".
<u>BEDDING:</u>	6" MINIMUM OF ODOT #8 OR #67 GRAVEL. <u>LIMESTONE IS NOT PERMITTED.</u>
<u>BACKFILL:</u>	5'-0" MINIMUM COVER OVER PIPE. SEE MS-1.0, RIGID PIPE TRENCH SECTION

SANITARY SEWER INSTALLATION

- 1) ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE PROPOSED SANITARY SEWER ARE PROHIBITED.

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City of Wooster : Division of Engineering

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GENERAL NOTES SANITARY SEWER

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NO.	DATE	REVISION			
1	10/10/01	ADDED SANITARY FORCE MAIN SPEC.S			
2	3/29/02	ADDED PVC, C900 FOR PRESSURE PIPE			
3	11/07/02	CHANGED MINIMUM FORCE MAIN DIA. FROM 3" TO 4"			
4	7/7/10	REMOVED NOTE #2 BEDDING MATERIAL			
5	01/06/14	REMOVED PVC C900 FOR PRESSURE PIPE			
6	01/04/18	ADDED S.S. NUTS AND BOLTS			

DRWN BY:

AJM

APPRVD BY:

EPO

ISSUE DATE:

10/10/01

SCALE:

NONE

STORM SEWER

STORM PIPE: THE MINIMUM SIZE STORM SEWER MAIN SHALL BE 12" DIAMETER. ALL STORM SEWER SHALL BE PLACED PER THE APPLICABLE TRENCH DETAIL IN ST-13. WHERE STORM AND SANITARY SEWERS CROSS, ALIGN JOINTS EQUIDISTANT FROM THE CROSS AND EXTEND PREMIUM, GASKETED JOINTS 10' IN EACH DIRECTION.

STORM PIPE UNDER PAVEMENT: 12" AND 15" PIPE SHALL CONFORM TO ODOT 611, MATERIAL SPECS AS FOLLOWS:
 REINFORCED CONCRETE PIPE (ODOT 706.02, W/ GASKETED JOINTS PER ASTM C443).
 PVC SOLID WALL PIPE (ODOT 707.45, SDR35, W/ GASKETED JOINTS PER ASTM D3212).
 CORRUGATED HDPE SMOOTH LINED PIPE (ODOT 707.33 WITH GASKETED JOINTS PER AASHTO M252, AASHTO M294, OR ASTM F2306 AND ASTM F477).
 18" AND LARGER PIPE SHALL CONFORM TO ODOT 611, MATERIAL SPECS AS FOLLOWS:
 REINFORCED CONCRETE SEWER PIPE - ODOT 706.02, ASTM C76, CLASS 3, 4 OR 5 BASED ON LOADING CONDITIONS, W/ GASKETED JOINTS PER ASTM C443.
 ALL 18" AND LARGER PIPE WITHIN THE CITY OF WOOSTER RIGHT OF WAY AND WITHIN 2' OF PAVEMENT SHALL BE REINFORCED CONCRETE SEWER PIPE. COVER OVER STORM PIPES SHALL BE PER ODOT L&D VOLUME 2 SECTION 1104.2.

MANHOLE PIPE CONNECTIONS: STORM SEWER PIPE CONNECTIONS TO MANHOLES SHALL BE MADE WITH CLASS QC MISC OR QC MS CONCRETE COLLAR SEALS, A MINIMUM OF 6" THICK AROUND THE PIPE.

HDPE MANHOLE ENTRY PIECES: MANHOLE ENTRY PIECES (MEP) FABRICATED FOR HDPE, CORRUGATED PLASTIC PIPE SHALL BE FABRICATED BY THE PIPE MANUFACTURER IN ACCORDANCE WITH AASHTO M252 AND M294, AND SHALL BE A MIN. OF 3'-3" LONG.

DRIVE PIPE: RCP, CMP, PVC, OR HDPE (DOUBLE WALL) UNDER DRIVES AT UNIMPROVED ROADS. MINIMUM 12" DIAMETER PIPE, OR AS APPROVED BY THE CITY ENGINEER. MINIMUM 12" COVER, OR AS APPROVED BY THE CITY ENGINEER.

HEADWALLS: POURED IN PLACE REINFORCED CONCRETE OR PRECAST CONCRETE, PER ODOT STANDARD CONSTRUCTION DRAWINGS.

ROCK CHANNEL PROTECTION: TYPE A, B, OR C ROCK OR STONE, W/ FABRIC FILTER, PER ODOT ITEM 601; OF THE SIZE, THICKNESS AND LENGTH AS SPECIFIED IN FIGURE 1107-1 "ROCK CHANNEL PROTECTION AT CULVERT AND STORM SEWER OUTLETS", ODOT LOCATION AND DESIGN MANUAL VOL. 2 - DRAINAGE DESIGN. ROCK CHANNEL PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER THE INSTALLATION OF THE PERTINENT STORM STRUCTURE OR HEADWALL.

NOTE:
 LIFT HOLES IN REINFORCED CONCRETE PIPE SHALL BE PLUGGED WITH CONCRETE PLUGS.

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GENERAL NOTES STORM SEWER

CAD FILE:
 \ENGINEERING STANDARDS\GN-5.DWG

SHEET:

DRWN BY:
 AJM

APPRVD BY:
 EPO

ISSUE DATE:
 07/27/00

SCALE:
 NONE

GN-5.0

NO.	DATE	REVISION	5	01/04/18	UPDATE PIPE SPECS
1	7/13/01	REVISED MISC. WORDING,			REV. HEADWALL NOTE
		ADDED FILTER FABRIC	6	01/02/19	REV. CONC. SPECS
2	3/29/02	REVISED PIPE CONNECTIONS			
3	10/31/08	REVISED STORM PIPE UNDER			
		PAVEMENT			
4	7/1/12	ADDED NOTE			

MANHOLES (SANITARY & STORM)

A. CONSTRUCTION:

- 1) SANITARY MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH ASTM C1244.
- 2) ALL NEW MANHOLES SHALL BE 48" MINIMUM INSIDE DIAMETER, PRECAST CONCRETE CONFORMING TO ASTM C478. PRECAST BASES SHALL BE 6" THICK MINIMUM.
- 3) NEW MANHOLES PLACED OVER EXISTING SEWER LINES, REFERRED TO AS "DOG-HOUSE" MANHOLES, SHALL HAVE CAST-IN-PLACE CONCRETE BASES WITH REINFORCEMENT (REBAR #4 @12" O/C EACH WAY). BASES SHALL BE CLASS QC MS OR QC MISC CONCRETE WITH A MINIMUM THICKNESS OF 10".
- 4) MANHOLES WITH PRECAST CONCRETE BASES SHALL BE PLACED ON A COMPACTED GRAVEL BED OF ODOT NO. 57 AGGREGATE HAVING A MINIMUM THICKNESS OF 3".
- 5) RUBBER O-RING GASKETS SHALL BE USED BETWEEN PRECAST MANHOLE SECTIONS, MEETING ASTM C443. APPLY MASTIC TAR STRIP BETWEEN SECTIONS.
- 6) MANHOLE PIPE CONNECTORS SHALL BE RUBBER SLEEVES W/ STAINLESS STEEL BANDING, CAST-IN RUBBER COMPRESSION GASKETS, OR FIELD INSTALLED RUBBER COMPRESSION GASKETS W/ GROUT COLLAR THAT PROVIDES A FLEXIBLE, WATERTIGHT SEAL PER ASTM C923.
- 7) THE CENTERLINE OF THE MANHOLE SHALL BE LOCATED OVER THE CENTERLINE OF THE MAIN SEWER, WHENEVER POSSIBLE.
- 8) MANHOLE STEPS SHALL BE REINFORCED POLYPROPYLENE PLASTIC, 16" O/C MAXIMUM AND IN PROPER ALIGNMENT.
- 9) MANHOLE FRAMES SHALL BE SET EVEN AND FLUSH WITH THE INTERIOR WALLS OF THE MANHOLE.
- 10) GRADE ADJUSTMENT RINGS SHALL BE PRECAST CONCRETE ONLY AND CONFORMING TO ASTM C478 GRADE RINGS. BRICK OR BLOCK MATERIALS ARE NOT PERMITTED. A MAXIMUM 12" OF ADJUSTMENT RINGS MAY BE USED. FINAL ADJUSTMENTS SHALL USE EJ INFRA-SPACER TO ACCOUNT FOR LONGITUDINAL AND CROSS SLOPES.
- 11) SANITARY MANHOLE CASTINGS IN OR NEAR WATERWAYS AND DITCHES SHALL BE FITTED WITH A MANHOLE INFILTRATION PROTECTION DEVICE, THE COST OF WHICH SHALL BE INCLUDED IN THE PRICE OF THE MANHOLE.
- 12) MANHOLES LOCATED WITHIN THE SLOPE OF A DITCH SHALL BE INSTALLED SO THE STEPS ARE ON THE OPPOSITE SIDE OF MANHOLE FROM THE DITCH OR FLOWLINE. CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR CORRECT ORIENTATION OF STEPS.

B. CASTINGS:

- 1) APPROVED MANHOLE FRAMES AND LIDS ARE SHOWN IN THE TABLE:

MANHOLE USE TYPE	HT	EJ		NEENAH	
		CASTING	LID	CASTING	LID
MANHOLE WITHIN PAVEMENT	9"	1050	TYPE A	R-1713 NON-ROCKING	TYPE B NON-ROCKING
MANHOLE NOT IN PAVEMENT BUT IN R/W	9" 7" 4"	1050 *1022 *1037	TYPE A	R-1713 R-1772 R-1647-A	TYPE B
MANHOLE IN YARD NOT IN PAVEMENT NOT IN R/W	9" 7"	1050 ZPT *1045 ZPT	BOLT DOWN	R-1916-C R-1916-F	TYPE B BOLT DOWN

* Must be preapproved by
the City Engineer

- 2) FRAMES SHALL BE SET LEVEL, EXCEPT SET TO GRADE WHEN WITHIN THE PAVEMENT. LIDS SHALL BE FITTED AND FINISHED TO PROVIDE A FIRM AND EVEN SEAT IN THE FRAME.
- 3) FRAMES AND LIDS SHALL BE FITTED, MATCHED, AND MARKED PRIOR TO DELIVERY TO THE PROJECT.
- 4) THE FRAME SHALL BE SET ON A MASTIC STRIP AROUND ITS PERIMETER AND PLACED ON THE SEAT OF THE CONCRETE STRUCTURE.
- 5) ANY SUBSTITUTIONS OF EQUAL QUALITY AND DIMENSIONS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO PROCUREMENT.
- 6) ALL LIDS SHALL BE CAST WITH THE WORDS "SANITARY" OR "STORM" AS APPROPRIATE.
- 7) ALL CASTINGS AND LIDS SHALL BE COATED WITH A WATERBASED BITUMINOUS COATING OR EQUAL.
- 8) ALL CASTINGS AND LIDS SHALL MEET OR EXCEED AASHTO H-20 LOADING AND AASHTO M306 REQUIREMENTS.

C. PAYMENT:

- 1) PAYMENT SHALL BE FOR THE MANHOLE COMPLETE IN PLACE, EXCAVATION AND BACKFILL INCLUDED.

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City Engineer

GENERAL NOTES MANHOLES

NO.	DATE	REVISION	7	7/7/10	REV. A.2,8-B.2 & ADD-A.11&12
2	3/29/02	ADDED "SANITARY" TO A. 6.)			REV. NEENAH CASTING
3	3/05/03	REVISED NEENAH LIDS AND	8	7/112	REV. A - 10
		MISC. WORDING	9	01/06/14	REV. A - 2
4	7/22/03	ASTM SPEC FOR A.6. & A.10.	10	01/31/18	REV. NEENAH CASTINGS
5	6/08/05	ADDED B. 7 & REV CASTINGS	11	01/02/19	REV. CONC. SPECS
6	9/30/06	REV. TABLE, ADD NOTE 8			REV. NOTE A-6

CAD FILE:
ENGINEERING STANDARDS\GN-6.DWG

SHEET:

DRWN BY: AJM APPRVD BY: EPO ISSUE DATE: 11/13/00 SCALE: NONE

GN-6.0

CATCH BASINS & INLETS

A. CONSTRUCTION:

- 1) INLETS AND CATCH BASINS MAY BE CAST-IN-PLACE OR PRECAST CONCRETE. CAST-IN-PLACE CONCRETE SHALL BE CLASS QC 1. REINFORCED PRECAST CONCRETE SHALL BE AS SPECIFIED.
- 2) MINIMUM WALL THICKNESS OF CAST-IN-PLACE INLETS AND BASINS SHALL BE 8". MINIMUM WALL THICKNESS OF PRECAST INLETS AND BASINS SHALL BE 6".
- 3) MINIMUM THICKNESS FOR BASES OF INLETS AND BASINS SHALL BE 6".
- 4) CATCH BASINS & INLETS WITH PRECAST CONCRETE BASES SHALL BE PLACED ON A COMPACTED GRAVEL BED OF ODOT NO. 57 AGGREGATE HAVING A MINIMUM THICKNESS OF 3".
- 5) BRICK AND CONCRETE BLOCK ARE NOT PERMITTED MATERIALS FOR THE CONSTRUCTION OR MODIFICATION OF INLETS AND CATCH BASINS. USE CONCRETE ADJUSTMENT RINGS OR EJ INFRA-RISERS.
- 6) FRAMES SHALL BE SET EVEN AND FLUSH WITH THE INTERIOR WALLS OF THE INLETS AND BASINS.
- 7) DOUBLE INLETS SHALL BE LOCATED AT ALL SAG VERTICAL CURVES. UNDERDRAINS SHALL DRAIN TO THE SIDES WITH SOLID PIPE PROVIDED FOR A MINIMUM OF 10' FROM THE WALLS.
- 8) INVERTS SHALL BE FORMED IN ALL INLET AND BASIN STRUCTURES TO PROVIDE POSITIVE FLOW. USE CLASS QC MS OR QC MISC WITH ODOT #8 AGGREGATE TO FORM INVERTS.
- 9) ALL PIPING THROUGH CATCH BASIN WALLS SHALL BE SEALED WITH A CLASS QC MS OR QC MISC CONCRETE COLLAR A MINIMUM OF 6" THICK.

B. CASTINGS:

- 1) APPROVED FRAMES/GRATES FOR BASINS AND INLETS ARE SHOWN BELOW:

STRUCTURE TYPE	EJ			NEENAH		
	FRAME	GRATE	BACK	FRAME	GRATE	CURB BOX
SINGLE CURB INLET (MOD. ODOT NO. 3A)	7035	M4	T1	R-3290	TYPE V	3" RADIUS
DOUBLE CURB INLET (MOD. ODOT NO. 3)	7036	M4	T1	R-3246-CL-2 RH R-3246-CL-2 LH	TYPE V	3" RADIUS
2-2A CATCH BASIN (w/ ANGLE FRAME)	5110	M3 (SINUSOIDAL)		4871.3001	R-4859, TYPE S	
2-2B CATCH BASIN IN PAVEMENT	5370	M3 (SINUSOIDAL)		R-3405	TYPE A	
2-2B CATCH BASIN NON-PAVED AREAS	5110	M3 (SINUSOIDAL)		4871.3001	R-4859, TYPE S	
FLAT SINGLE INLET, 2'x3', IN PAVEMENT	5245	M1		R-3413	TYPE C	

- 2) ALL GRATES WITHIN THE PAVEMENT SHALL BE BICYCLE-SAFE AND SET CORRECTLY WITH THE DIRECTION OF WATER FLOW.
- 3) THE FRAME AND GRATE SHALL BE FITTED AND FINISHED TO PROVIDE A FIRM AND EVEN SEAT IN THE FRAME.
- 4) BASINS AND INLETS SHALL BE PLACED TRUE TO LINE AND GRADE, PER PLAN.
- 5) THE FRAMES AND GRATES SHALL BE FITTED, MATCHED, AND MARKED PRIOR TO DELIVERY TO THE PROJECT.
- 6) ANY SUBSTITUTIONS OF EQUAL QUALITY AND DIMENSIONS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO PROCUREMENT.
- 7) ALL FRAMES AND GRATES SHALL BE COATED WITH A WATERBASED BITUMINOUS COATING (OR EQUAL) AND SHALL MEET OR EXCEED AASHTO M306.
- 8) ALL CASTINGS SHALL HAVE THE WORDS "DUMP NO WASTE" AND "DRAINS TO WATERWAY" ALONG WITH A FISH LOGO CAST INTO THE GRATE AND/OR BACK OR CURB BOX.

C. PAYMENT:

- 1) THE CONCRETE PAVEMENT BLOCK-OUT SHALL BE PLACED AFTER THE CASTING HAS BEEN SET, BUT WILL BE PAID FOR AS THOUGH PART OF THE PAVEMENT.
- 2) NO DEDUCTION SHALL BE MADE IN QUANTITIES OF PAVEMENT BECAUSE OF THE CASTING.

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GENERAL NOTES CATCH BASINS & INLETS

CAD FILE:

\\ENGINEERING STANDARDS\GN-7.DWG

SHEET:

GN-7.0

DRWN BY:
RM

APPRVD BY:
EPO

ISSUE DATE:
11/08/00

SCALE:
NONE

NO.	DATE	REVISION	7	6/08/05	ADDED B. 7 & 8
1	12/29/00	NOTE A. 9) ADDED	8	9/30/06	REVISED TABLE
2	7/16/01	FRAME/GRATE TABLE REV.	9	10/31/08	ADDED AASHTO M306
3	10/02/01	REV. EJIW CURB BACK NO.	10	7/8/10	REV. NOTE B.3
4	3/1/02	REV. FRAME/GRATE TABLE	11	7/1/12	REV. NOTE A.5, A.7
5	3/29/02	REV. NOTE 9.)	12	01/06/14	REV. NOTE A.4
6	3/06/03	REV. GRATE TABLE	13	01/02/19	REV. CONC. SPECS

WATERMAIN TESTING & DISINFECTION

A. PRESSURE TESTING:

- 1) PRESSURE TESTING OF ALL NEW WATER MAINS SHALL BE IN ACCORDANCE WITH CURRENT AWWA C-600 STANDARDS AND REGULATIONS.
- 2) AFTER EXPELLING ALL TRAPPED AIR IN THE LINE, THE TEST PRESSURE SHALL BE 150 PSI OR 50% ABOVE THE NORMAL OPERATING PRESSURE, WHICHEVER IS GREATER.
- 3) DURATION OF THE LEAKAGE TEST SHALL NOT BE LESS THAN 2 HOURS UNDER PRESSURE. ALLOWABLE LEAKAGE SHALL NOT EXCEED 10.49 GALLONS PER INCH OF PIPE DIAMETER PER MILE OF PIPE PER 24 HOUR PERIOD.
- 4) PRIVATE WATERLINES CONNECTED TO SPRINKLER SYSTEMS, STANDPIPE SYSTEMS, OR FIRE HYDRANTS SHALL BE TESTED AT 200 PSI MINIMUM FOR 2 HOURS IN THE PRESENCE OF THE CITY FIRE CHIEF OR REPRESENTATIVE.
- 5) TESTING OF THE WATERLINE SHALL BE MADE AFTER ALL CORPORATION VALVES AND CURB STOP VALVES HAVE BEEN INSTALLED. THE CORPORATION (TAPPING) VALVES SHALL BE LEFT OPEN AND THE CURB STOP VALVES SHALL REMAIN CLOSED DURING THE TESTING.
- 6) THE CONTRACTOR SHALL PERFORM ALL TESTING IN THE PRESENCE OF THE CITY ENGINEER OR REPRESENTATIVE, EXCEPT FIRELINE TESTING AS NOTED ABOVE.
- 7) FAILURES SHALL BE FOUND AND CORRECTED AND THE TEST REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.

B. DISINFECTION PROCEDURES:

- 1) ALL NEW MAINS OR SECTIONS OF MAINS ARE REQUIRED TO HAVE 1" TAPS WITHIN 50' OF THE INFLUENT END, EVERY 500' TO 700', AND AT THE END OF THE MAIN. EACH TAP IS REQUIRED TO HAVE A BRONZE STANDARD HOSE BIBB (OR SIMILAR) FOR THE PURPOSE OF STERILIZATION AND COLLECTION OF SAMPLES. A TEST HOSE BIBB CAN BE INCORPORATED INTO A FLUSHING ASSEMBLY IF APPROVED. CHLORINE OR BACTERIA TESTING WILL NOT BE PERMITTED FROM A FIRE HYDRANT. WATER PLANT PERSONNEL WILL HAVE FINAL APPROVAL OF THE LOCATION OF ALL CHLORINE AND BACTERIA TESTING TAPS.
- 2) ANY NEW LINE LESS THAN 100' IN LENGTH MAY REQUIRE ONLY ONE TAP TO BE PLACED AT THE EFFLUENT END OF THE LINE, WITH APPROVAL OF WATER PLANT PERSONNEL.
- 3) A RESIDUAL OF 50 MG/L OR GREATER OF CHLORINE MUST BE PRESENT AT THE INFLUENT, AT THE DESIGNATED TAPS, AND AT THE END OF THE MAIN OR BRANCH. THE CONTRACTOR SHALL NOTIFY THE WATER PLANT PERSONNEL AT 330-263-5286 OR THE CITY INSPECTOR AT 330-263-5251 TO HAVE THE HIGH CHLORINE RESIDUAL LEVEL CHECKED.
- 4) AFTER 24 HOURS, WATER PLANT PERSONNEL OR THE CITY INSPECTOR WILL AGAIN CHECK THE DESIGNATED TAPS TO SEE IF THE REQUIRED 50 MG/L CHLORINE RESIDUAL IS STILL PRESENT. IF IT IS NOT PRESENT, RECHLORINATION WILL BE NECESSARY. (THE CITY INSPECTOR WILL REQUIRE THE PRESSURE TEST TO BE COMPLETED PRIOR TO THE FLUSHING OF THE CHLORINE FROM THE NEW MAIN.)
- 5) THE NEW MAIN CAN THEN BE FLUSHED TO BRING THE CHLORINE LEVEL BACK TO NORMAL CITY WATER. THE LEVEL WILL BE CHECKED BY WATER PLANT PERSONNEL TO SEE IF ADDITIONAL FLUSHING IS NECESSARY.
- 6) BACTERIA SAMPLES WILL BE TAKEN AT THE EARLIEST CONVENIENT TIME BY WATER PLANT PERSONNEL. AFTER 24 HOURS, ANOTHER BACTERIA SAMPLE WILL BE TAKEN FROM THE SAME LOCATION(S). THE NEW MAIN INFLUENT VALVES ARE TO REMAIN CLOSED UNTIL ALL BACTERIA TESTING RESULTS ARE ACQUIRED. IT IS REQUIRED THAT ALL BACTERIA SAMPLES BE NEGATIVE.
- 7) WHEN ALL OF THE ABOVE REQUIREMENTS ARE MET, THE CORPORATION STOPS INSTALLED ONLY FOR TESTING AND/OR SAMPLING MUST BE REMOVED AND BRASS PLUGS INSERTED. THE CITY INSPECTOR MUST WITNESS THIS. THE NEW MAIN WILL THEN BE ACCEPTED FOR USE.
- 8) ALL WATERMAIN DISINFECTION SHALL BE IN ACCORDANCE WITH AWWA C-651.

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NO.	DATE	REVISION			
1	3/6/03	Revised Note B, 1)			
2	10/31/08	Revised Note A, 3)			
3	01/06/14	Rev. Note A, 4)			

GENERAL NOTES WATERLINE TESTING

CAD FILE:

ENGINEERING STANDARDS\GN-8.DWG

SHEET:

DRWN BY:

AJM

APPRVD BY:

EPO

ISSUE DATE:

07/28/00

SCALE:

NONE

GN-8.0

SANITARY SEWER TESTING

A. LEAKAGE TESTING:

- 1) LEAKAGE TESTING OF ALL NEW SANITARY SEWERS SHALL BE PERFORMED USING THE LOW PRESSURE AIR TEST METHOD PER ASTM F1417.
- 2) TESTING SHALL NOT BE PERFORMED UNTIL ALL LATERALS REQUIRED ON THE LINE TO BE TESTED HAVE BEEN INSTALLED.
- 3) THE ENDS OF THE SEWER SECTION TO BE TESTED SHALL BE CLOSED AT THE UPSTREAM AND DOWNSTREAM MANHOLES WITH AIRTIGHT BULKHEADS OR PLUGS.
- 4) AIR SHALL BE ADDED TO THE SEWER BY MEANS OF AN AIR PUMP UNTIL A PRESSURE OF APPROXIMATELY 4 PSI GREATER THAN THE EXTERNAL WATER PRESSURE EXISTS WITHIN THE SEWER.
- 5) THE AIR LINE SHALL BE CLOSED AND THE PRESSURE ALLOWED TO STABILIZE FOR A PERIOD OF AT LEAST 2 MINUTES.
- 6) AFTER THE STABILIZATION PERIOD, THE PRESSURE IN THE LINE SHALL BE REDUCED TO 3.5 PSI GREATER THAN THE EXTERNAL WATER PRESSURE AND THE TIME SHALL BE MEASURED FOR THE PRESSURE IN THE SEWER TO DROP FROM 3.5 TO 2.5 PSI GREATER THAN THE EXTERNAL WATER PRESSURE.
- 7) THE PERMISSIBLE TIME FOR THE SPECIFIED PRESSURE DROP SHALL BE GREATER THAN THE SUM OF THE TIMES FOR THE VARIOUS PIPE SIZES AND LENGTHS IN THE SECTION BEING TESTED AS DETERMINED IN THE FOLLOWING TABLE:

MINIMUM TEST TIME FOR VARIOUS PIPE SIZES			
NOMINAL PIPE SIZE (IN)	TIME (SEC/100 FT)	NOMINAL PIPE SIZE (IN)	TIME (SEC/100 FT)
6	40	24	214
8	71	27	250
10	89	30	286
12	107	33	323
15	125	36	361
18	144	42	436
21	178	48	513

- 8) FAILURES SHALL BE FOUND AND CORRECTED AND THE TEST REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED.
- 9) THE CONTRACTOR SHALL PERFORM ALL TESTING IN THE PRESENCE OF THE CITY ENGINEER OR REPRESENTATIVE AND SHALL SUPPLY ALL NECESSARY EQUIPMENT FOR PERFORMING THE REQUIRED LOW PRESSURE AIR TESTING.

B. DEFLECTION TESTING:

- 1) DEFLECTION TESTING OF ALL NEW SANITARY SEWERS SHALL BE PERFORMED USING ELECTRONIC EQUIPMENT SPECIFICALLY DESIGNED FOR SEWER DEFLECTION TESTING AND WHICH WILL MEASURE AND CONTINUOUSLY RECORD BOTH THE LOCATION AND PIPE DEFLECTION; OR THE STANDARD MANDREL TESTING METHOD SHALL BE USED. ELECTRONIC EQUIPMENT SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO USE.
- 2) DEFLECTION TESTING SHALL NOT BE PERFORMED DURING THE FIRST 30 DAYS AFTER FINAL BACKFILL HAS BEEN PLACED.
- 3) THE DEFLECTION SENSING DEVICE SHALL BE PULLED THROUGH THE SEWER SEGMENT UNDER TEST AT A RATE OF SPEED NOT EXCEEDING 30 FEET PER MINUTE.
- 4) THE PERMISSIBLE DEFLECTION SHALL NOT EXCEED 5 PERCENT OF THE ORIGINAL INSIDE DIAMETER OF THE SEWER. IF ANY PIPING TEST DISCLOSES DEFLECTION GREATER THAN THIS AMOUNT, THE CONTRACTOR SHALL LOCATE AND REPAIR THE CAUSE OF FAILURE AND RETEST THE PIPING UNTIL DEFLECTION AFTER A 30 DAY PERIOD FALLS WITHIN PERMISSIBLE LIMITS. IN LIEU OF MANDREL TESTING THE CONTRACTOR MAY VIDEO THE SEWER.
- 5) THE CONTRACTOR SHALL PERFORM ALL TESTING IN THE PRESENCE OF THE CITY ENGINEER OR REPRESENTATIVE AND SHALL SUPPLY ALL NECESSARY EQUIPMENT FOR PERFORMING THE REQUIRED DEFLECTION TESTING.

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NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

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GENERAL NOTES SEWER TESTING

CAD FILE:
ENGINEERING STANDARDS\GN-9.DWG

SHEET:

DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 11/09/00	SCALE: NONE
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GN-9.0

NO.	DATE	REVISION			
1	7/16/01	SHEET NO. REVISED			
		FROM GN-9.0A TO GN-9.0			
2	7/9/10	REV. NOTE B.4			

SANITARY SEWER TESTING, CONT'D

C. MANHOLE TESTING:

- 1) VACUUM TESTING OF ALL NEW SANITARY MANHOLES PER ASTM C1244 SHALL BE PERFORMED AFTER INSTALLATION OF THE TOP PRECAST MANHOLE SECTION, PRECAST ADJUSTING RINGS, AND THE MANHOLE FRAME.
- 2) ALL PIPES ENTERING THE MANHOLE SHALL BE CLOSED WITH AIRTIGHT BULKHEADS OR PLUGS AND THE TOP OPENING OF THE MANHOLE SHALL BE CLOSED WITH A SUITABLE AIR TEST HEAD.
- 3) AIR SHALL BE WITHDRAWN FROM THE MANHOLE BY MEANS OF A VACUUM PUMP UNTIL A VACUUM OF 10 INCHES OF MERCURY EXISTS WITHIN THE MANHOLE.
- 4) THE VACUUM LINE SHALL BE CLOSED AND THE TIME SHALL BE MEASURED FOR THE VACUUM IN THE MANHOLE TO DROP FROM 10 TO 9 INCHES OF MERCURY.
- 5) THE PERMISSIBLE TIME FOR THE SPECIFIED VACUUM DROP SHALL BE GREATER THAN 1.77 SECONDS PER FOOT OF MANHOLE DEPTH FOR 48 INCH DIAMETER MANHOLES, 2.30 SECONDS PER FOOT OF MANHOLE DEPTH FOR 60 INCH DIAMETER MANHOLES, AND 2.84 SECONDS PER FOOT OF MANHOLE DEPTH FOR 72 INCH DIAMETER MANHOLES.
- 6) IF ANY MANHOLE TEST DISCLOSES A TIME LESS THAN REQUIRED, THE CONTRACTOR SHALL LOCATE AND REPAIR THE CAUSE OF FAILURE AND RETEST THE MANHOLE UNTIL THE TEST TIME FALLS WITHIN PERMISSIBLE LIMITS.
- 7) THE CONTRACTOR SHALL PERFORM ALL TESTING IN THE PRESENCE OF THE CITY ENGINEER OR REPRESENTATIVE AND SHALL SUPPLY ALL NECESSARY EQUIPMENT FOR PERFORMING THE REQUIRED VACUUM TESTING.

D. FORCEMAIN TESTING:

- 1) PRESSURE TESTING OF ALL NEW SANITARY SEWER FORCEMAINS SHALL BE PERFORMED USING THE HYDROSTATIC PRESSURE METHOD AS SPECIFIED FOR WATERMAINS, EXCEPT AS MODIFIED BELOW.
- 2) HYDROSTATIC TESTING OF FORCEMAINS SHALL BE TESTED AT A PRESSURE OF 65 PSI OR 50% ABOVE THE NORMAL OPERATING PRESSURE AT THE LOWEST POINT IN THE PIPING UNDER TEST, WHICHEVER IS GREATER.
- 3) THE CONTRACTOR SHALL PERFORM ALL TESTING IN THE PRESENCE OF THE CITY ENGINEER OR REPRESENTATIVE AND SHALL SUPPLY ALL NECESSARY EQUIPMENT FOR PERFORMING THE REQUIRED HYDROSTATIC TESTING.

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GENERAL NOTES SEWER TESTING

CAD FILE:

\\ENGINEERING STANDARDS\GN-9.DWG

SHEET:

GN-9.1

DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:
11/09/00

SCALE:
NONE

GENERAL SUMMARY

SHEET NUMBER										ITEM	QUANTITY	UNIT	DESCRIPTION
1	2	3	4	5									
													TEMPORARY EROSION CONTROL
										207		SY	Temporary Seeding and Mulching
										207		CY	Temporary Benches, Dams and Sediment Basins
										207		EA	Straw or Hay Bales
										207		LF	Filter Fabric Fence
										207		LF	Temporary Slope Drains
										207		LF	Temporary Dikes
										207		SY	Temporary Ditch Protection
													ROADWAY
										201	—	LS	Clearing and Grubbing
										203	—	LS	Excavation including Embankment Construction
										203		SY	Subgrade Compaction
										207		EA	Straw or Hay Bales
										659	—	LS	Seeding and Mulching
													PAVEMENT
										301		CY	Bituminous Aggregate Base
										411		CY	Subbase
										402		CY	Asphalt Concrete
										404		CY	Asphalt Concrete
										452		SY	6" Plain Portland Cement Concrete
										608		SF	4" Concrete Sidewalk
										608		EA	Curb Ramp (Type 2)
										609		LF	Integral Concrete Curb, Type 2-A
										608		SF	4" Concrete Sidewalk
										608		EA	Curb Ramp, Type 2
													STORM SEWER
										601		CY	Rock Channel Protection, Type C without filter
										601		CY	Rock Channel Protection, Type B without filter
										602		EA	HW-4B Headwall
										603		LF	12" Conduit, Type B
										603		LF	12" Conduit, Type D
										603		LF	15" Conduit, Type B
										603		LF	15" Conduit, Type D
										603		LF	18" Conduit, Type D
										603		LF	36" Conduit, Type B
										603		LF	36" Conduit, Type D
										604		EA	2-2-A Catch Basin
										604		EA	No. 3A Catch Basin
										604		EA	No. 3 Catch Basin
										604		EA	Std. No. 3 Manhole
										604		EA	2-2-B Catch Basin
										605		LF	6" Perforated Underdrain
													SANITARY SEWER
										LF			8" Sanitary Sewer
										LF			6" Sanitary Sewer (connections) including wyes, bends, plugs and markers
										EA			Std. No. 3 Sanitary Manhole
										EA			Sanitary Manhole adjusted to grade
										EA			8" plug
													WATER LINE
										LF			6" Class 52 Cement Lined Ductile Iron Water Main
										EA			6" Tee
										EA			6" Bend
										EA			6" Gate Valve (Mueller, close left) with box
										EA			Fire Hydrant (Mueller Centurian A-423)
										EA			1" Type K Copper House Connection, ASTM B-88-62 Complete With Tap; Curb Stop; Curb Cock; Box and Marker

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GENERAL SUMMARY TABLE

CAD FILE:

ENGINEERING STANDARDS\GN-10.DWG

SHEET:

GN-10.0

DRWN BY:

JES

APPRVD BY:

EPO

ISSUE DATE:

07/01/98

SCALE:

NONE

NO.	DATE	REVISION
1	7/16/01	A-421 HYDRANTS REV. TO A-423

DRIVEWAY SPACING

DRIVEWAY SPACING FOR NON-RESIDENTIAL DRIVES ON ADJACENT PARCELS, MEASURED FROM CENTERLINE TO CENTERLINE.

DRIVEWAY SPACING TABLE

POSTED SPEED LIMIT (MPH)			MINIMUM SPACING (FEET)		
	25			150	
	30			200	
	35			225	
	40			275	
	45			325	
	50			400	
	55			450	

REF. SECTION 201.2, ODOT L & D MANUAL VOL. I

- NOTES: 1. THE ABOVE TABLE APPLIES TO ALL THRU STREETS, PRINCIPAL ROADWAYS AND MINOR ARTERIALS, AS DEFINED BY CITY ORDINANCE, THE TRAFFIC CONTROL MAP, AND THE DEPARTMENT OF TRANSPORTATION FEDERAL URBAN SYSTEM.
2. STATE ROUTES WITHIN THE CITY CORPORATION LIMITS SHALL HAVE DRIVEWAY SPACING MEETING ACCESS CATEGORY IV REQUIREMENTS AS DEFINED IN THE LATEST EDITION OF THE OHIO DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ACCESS MANUAL.

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**DRIVEWAY
SPACING**

CAD FILE:
ENGINEERING STANDARDS\AM-1.0.DWG

SHEET:

DRWN BY: RVK
APPRVD BY: AJM
ISSUE DATE: 09/30/06
SCALE: NONE

AM-1.0

EROSION AND SEDIMENT CONTROL

GENERAL: ALL TEMPORARY AND PERMANENT CONTROL MEASURES SHALL BE PERFORMED IN ACCORDANCE WITH THE OHIO DEPARTMENT OF TRANSPORTATION STANDARD CONSTRUCTION DRAWINGS AND MATERIAL SPECIFICATIONS, THE OHIO RAINWATER AND LAND DEVELOPMENT MANUAL, THE OHIO ENVIRONMENTAL PROTECTION AGENCY STORMWATER REGULATIONS, AND THE CITY OF WOOSTER SITE DEVELOPMENT AND IMPROVEMENT MANUAL. SEDIMENT CONTROL SHALL INCLUDE KEEPING STREETS CLEAN & FREE OF SEDIMENT FROM CONSTRUCTION SITE RUNOFF & MUD FROM CONSTRUCTION VEHICLES.

OPERATIONS SCHEDULE:

1. CONSTRUCT DIVERSION DITCHES, DIKES, SEDIMENT BASINS, AND OTHER MEASURES FOR TRAPPING SEDIMENT AND VERIFY FUNCTIONALITY BEFORE UPSLOPE LAND DISTURBANCE OR OTHER GRADING ACTIVITIES.
2. CONSTRUCT TEMPORARY SEDIMENT BARRIERS, DITCH CHECKS, AND SILT FENCES AS CONSTRUCTION PROGRESSES IN ORDER TO INTERCEPT AND DETAIN SEDIMENT, REDUCE FLOW VELOCITIES, AND LIMIT RUNOFF FLOW FROM LARGE DISTURBED AREAS.
3. CONSTRUCT CATCH BASIN, INLET, AND WATERWAY PROTECTION USING CHECK DAMS AND SILT FENCE FILTERS TO PREVENT SILTATION, DETAIN SEDIMENT, REDUCE FLOW VELOCITIES, AND LIMIT RUNOFF FLOW FROM DISTURBED AREAS.
4. CONSTRUCT SLOPE AND CHANNEL PROTECTION, PERFORM FINAL SEEDING AND MULCHING AND OTHER PERMANENT EROSION CONTROL MEASURES AS GRADING AND CONSTRUCTION OPERATIONS ARE COMPLETED.

TEMPORARY EROSION CONTROL MEASURES:

SEDIMENT TRAPS, SEDIMENT BASINS, SILT FENCES, EARTH DIVERSION DIKES, CHECK DAMS, STORM INLET PROTECTION, AND TEMPORARY SEEDING AND MULCHING (SEE ODOT SUPPLEMENTAL SPECIFICATION 832 AND OHIO RAINWATER AND LAND DEVELOPMENT MANUAL).

PERMANENT EROSION CONTROL MEASURES:

SEDIMENT BASINS, EARTH DIVERSION DIKES, SODDING, SEEDING AND MULCHING, DETENTION BASINS, PERMANENT SLOPE AND CHANNEL PROTECTION, MATTING, AND EROSION CONTROL NETTING:
SLOPE AND CHANNEL PROTECTION - ODOT CMS ITEM 601
SEEDING AND MULCHING - ODOT CMS ITEM 659
SODDING - ODOT CMS ITEM 660
EROSION PROTECTION - ODOT CMS ITEM 670
EROSION CONTROL MATS - ODOT CMS ITEM 671

EROSION CONTROL PROCEDURES:

1. **CONSTRUCTION DRIVE ENTRANCE** - A CONSTRUCTION DRIVE ENTRANCE SHALL BE INSTALLED CONSISTING OF 6" OF GRAVEL OR LIMESTONE (NO.1 & NO.2) ALONG WITH A PROPERLY SIZED CULVERT APPROVED BY THE CITY ENGINEER.
2. **TIMING OF SEDIMENT TRAPPING PRACTICES** - SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL THROUGHOUT EARTH DISTURBING ACTIVITIES. SETTLING FACILITIES, PERIMETER CONTROLS AND OTHER PRACTICES INTENDED TO ENTRAP SEDIMENT SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING AND WITHIN SEVEN (7) DAYS FROM THE START OF GRUBBING. THEY SHALL CONTINUE TO FUNCTION UNTIL THE UPSLOPE AREA HAS BEEN RESTABILIZED.
3. **STABILIZATION OF DISTURBED AREAS** - DISTURBED AREAS SHALL HAVE SOIL STABILIZATION APPLIED WITHIN SEVEN (7) DAYS IF THEY ARE TO REMAIN DORMANT (UNDISTURBED) FOR MORE THAN 14 DAYS (OR WITHIN TWO (2) DAYS FOR AREAS THAT ARE WITHIN 50 FEET OF A SURFACE WATER OF THE STATE). SOIL STABILIZATION PRACTICES SHALL BE INITIATED WITHIN TWO (2) DAYS ON ALL ACTIVE, DISTURBED AREAS. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO ANY DISTURBED AREAS WITHIN SEVEN (7) DAYS (TWO (2) DAYS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE) AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. WHEN SEASONAL CONDITIONS PROHIBIT THE APPLICATION OF TEMPORARY OR PERMANENT SEEDING, NON-VEGETATIVE SOIL STABILIZATION PRACTICES SUCH AS MULCHING AND MATTING SHALL BE USED.
4. **SEDIMENT BARRIERS** - SHEET FLOW RUNOFF FROM DISTURBED AREAS SHALL BE INTERCEPTED BY SEDIMENT BARRIERS (SUCH AS SILT FENCES OR SILT SOCKS) OR DIVERSIONS DIRECTING RUNOFF TO SETTLING FACILITIES TO PROTECT ADJACENT PROPERTIES AND WATER RESOURCES FROM SEDIMENTATION.
5. **INSPECTION AND MAINTENANCE** - ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDER DAYS AND WITHIN TWENTY-FOUR (24) HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER TWENTY-FOUR (24) HOUR PERIOD. REPAIRS NECESSARY TO MAINTAIN FUNCTIONALITY SHALL BE MADE IMMEDIATELY.

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NO.	DATE	REVISION			
1	7/18/01	ADDED STREET CLEANING,			
		MISC. NOTE REVISION			
2	10/02/01	REV. REF. MANUALS			
3	01/06/15	REV. REF. MANUALS			
		REV. PER NPDES PERMIT			
4	01/02/17	REV. ER. CTL. PRC. NOTE 3			

GENERAL NOTES EROSION CONTROL					SHEET: ER-1.0
CAD FILE: \\ENGINEERING STANDARDS\\ER-1.DWG					
DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 07/20/00	SCALE: NONE		

STORMWATER POLLUTION PREVENTION PLAN

GENERAL NOTES

1. NOTICE OF INTENT (NOI) MUST BE SUBMITTED TO THE OHIO EPA FOR NPDES PERMIT COVERAGE PRIOR TO THE START OF CLEARING AND OR GRADING WHERE 1 ACRE OR MORE IS DISTURBED.
2. CONSTRUCTION MUST COMPLY WITH ALL LOCAL EROSION AND SEDIMENT CONTROL REGULATIONS.
3. NO SOLID OR LIQUID WASTES MAY BE DISCHARGED INTO STORM WATER RUNOFF.
4. OFF-SITE TRACKING OF SEDIMENTS SHALL BE MINIMIZED.
5. SWPPP MUST SHOW COMPLIANCE WITH LOCAL WASTE DISPOSAL, SANITARY, AND HEALTH REGULATIONS.
6. MAINTENANCE AND INSPECTION: RECORDS OF MAINTENANCE AND INSPECTION MUST BE MADE A MINIMUM OF EVERY 7 DAYS AND AFTER STORM EVENTS GREATER THAN 0.5 INCH IN A 24 HOUR PERIOD. NAME OF INSPECTOR, MAJOR OBSERVATIONS, DATE OF INSPECTION, CERTIFICATE OF COMPLIANCE, AND CORRECTIVE MEASURES TAKEN. RECORDS MUST BE MAINTAINED FOR 3 YEARS AFTER NOTICE OF TERMINATION PER OHIO EPA NPDES PERMIT.
7. ANY EROSION CONTROL MEASURES, STRUCTURES, DEVICES OR RELATED ITEMS IN NEED OF REPAIR WILL BE MADE WITHIN 10 DAYS.
8. SEDIMENT PONDS AND PERIMETER SEDIMENT CONTROLS SHALL BE IMPLEMENTED AS THE FIRST STEP OF ANY GRADING WITHIN 7 DAYS FROM THE START OF GRUBBING, AND SHALL CONTINUE TO FUNCTION UNTIL UPLAND AREAS ARE RESTABILIZED.
9. DISTURBED AREAS WHICH WILL REMAIN UNWORKED FOR A PERIOD OF 14 DAYS OR MORE SHALL BE STABILIZED WITH SEEDING AND MULCHING OR OTHER APPROPRIATE MEANS WITHIN 7 DAYS (2 DAYS FOR AREAS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE).

SCHEDULE OF MAJOR CONSTRUCTION ACTIVITIES

ACTIVITY DESCRIPTION	MONTH	YEAR _____												YEAR _____											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
CLEARING AND GRUBBING																									
SILT FENCE																									
SEDIMENT BASINS																									
DRAINAGE-WAY ROUTING																									
INLET PROTECTION																									
DITCH PROTECTION																									
MULCHING																									
TEMPORARY SEEDING & MULCHING																									
PERMANENT SEEDING & MULCHING																									
TEMPORARY ROADWAY																									
CONSTRUCT BUILDINGS																									
ROADS, DRIVEWAYS & PARKING																									

SITE DESCRIPTION AND CALCULATIONS

SUBDIVISION <input type="checkbox"/>	_____	TOTAL AREA	_____
COMMERCIAL <input type="checkbox"/>	_____	PRE-DEV. RUNOFF COEFF.	_____
RESIDENTIAL <input type="checkbox"/>	_____	AREA TO BE CLEARED	_____
P.U.D. <input type="checkbox"/>	_____	AREA TO BE EXCAVATED	_____
OTHER <input type="checkbox"/>	_____	POST-DEV. RUNOFF COEFF.	_____
		SEDIMENT BASIN VOLUME REQUIRED (67 C.F./Ac.)	_____
		SEDIMENT BASIN VOLUME PROVIDED	_____
SOIL TYPES	_____	_____ % OF SITE	_____ % EXCAVATED
	_____	_____ % OF SITE	_____ % EXCAVATED

SWPPP NOTES: THE STORMWATER POLLUTION PREVENTION PLAN SHALL ALSO INCLUDE THE FOLLOWING INFORMATION:

1. **EROSION CONTROL PLAN** - A GENERAL SITE PLAN SHOWING ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES USED.
2. **EROSION CONTROL DETAILS** - CONSTRUCTION DETAILS, SPECIFICATIONS AND NOTES FOR ALL EROSION CONTROL MEASURES USED.

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City Engineer



STORMWATER POLLUTION PREVENTION PLAN

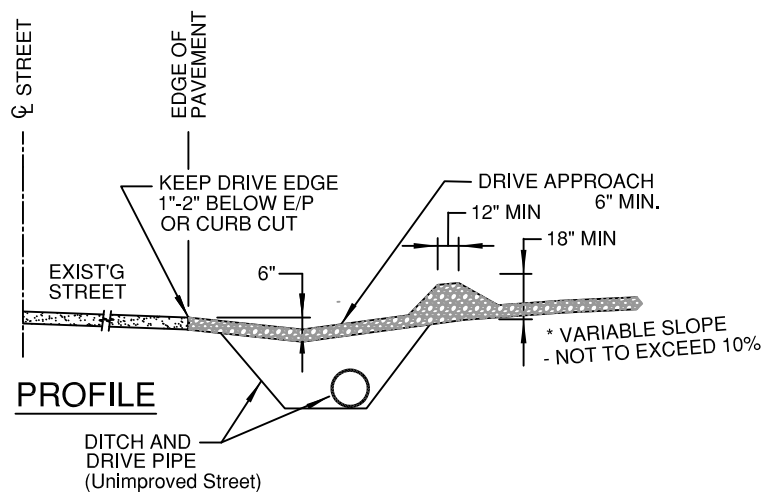
CAD FILE:
\\ENGINEERING STANDARDS\ER-2.DWG

SHEET:

DRWN BY: AJM
APPRVD BY: EPO
ISSUE DATE: 07/26/00
SCALE: NONE

ER-2.0

NO.	DATE	REVISION			
1	01/06/15	REV. PER NPDES PERMIT			
2	01/04/18	REV. NOTES 1,6			
3	01/02/19	REV. NOTE 9			



1. Curb cuts and drive pipes shall be constructed prior to any construction activities taking place (C.O. 331.37 (c)).
2. Temporary drives shall be coordinated with permanent drive construction. See drawing PV-6.0.
3. Stone for construction drives shall meet the gradation for ODOT Size No. 1 & 2 coarse aggregate between the R/W line and the end of the drive.
4. A geotextile fabric shall be placed under the entire drive area prior to placing stone.
5. The construction drive shall be maintained by periodically adding stone as conditions demand.
6. Construction traffic shall be limited to the construction drive as much as possible. Mud and stones which are spilled, dropped, washed or tracked onto public roads or other surfaces where sediment controls were not adequate, shall be removed immediately by scraping or sweeping.

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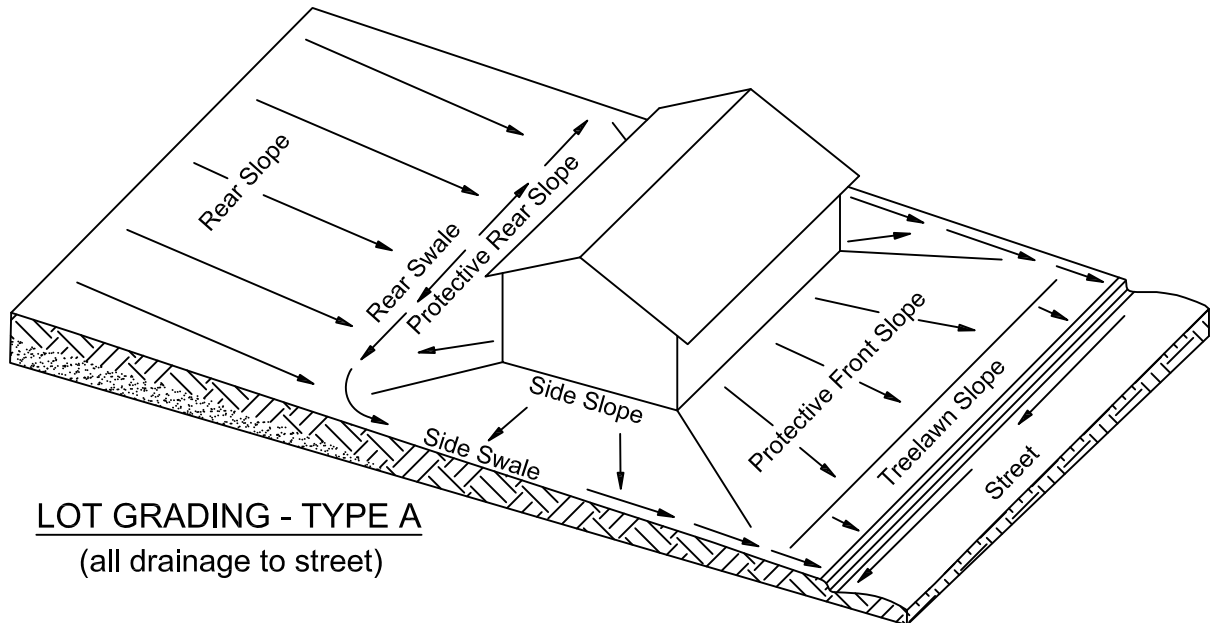
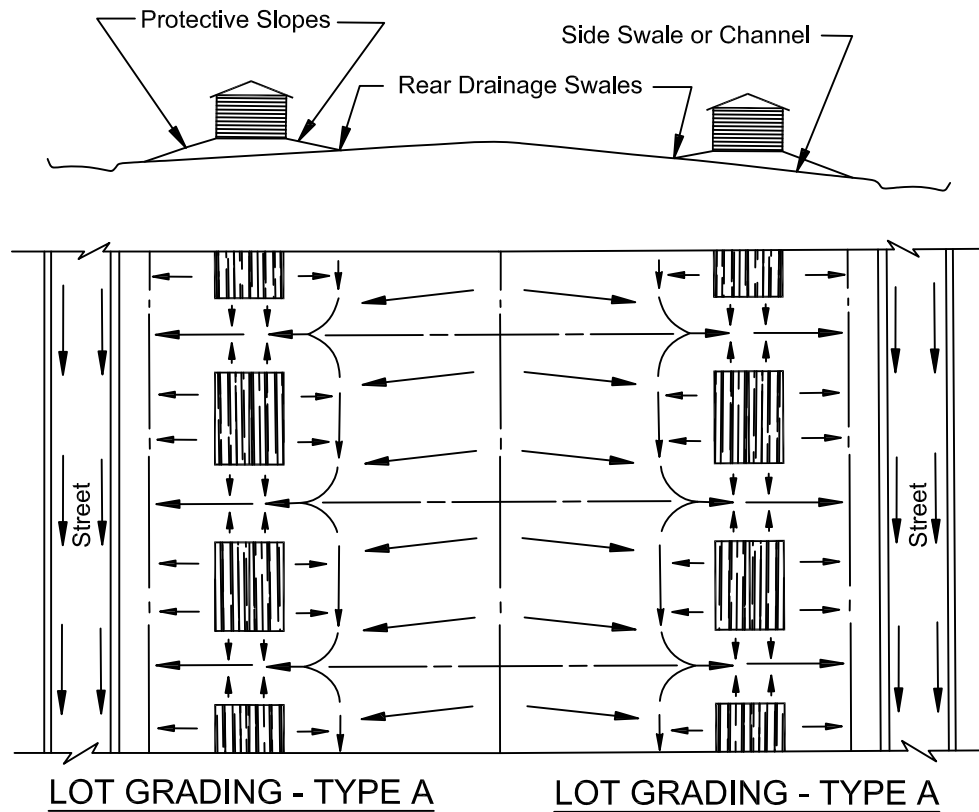
Fax: (330) 263-5283

CONSTRUCTION DRIVE DETAIL

ER-3.0

NONE

NO.	DATE	REVISION			
1	10/02/01	CREATED			
2	7/1/12	REV. DIMENSIONS			
3	01/06/14	REV. NOTE 3.			



EXAMPLE : BLOCK GRADING TYPE 1 Ridge Along Rear Lot Lines

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NO.	DATE	REVISION
2	7/28/04	REVISED DWG

LAND GRADING URBAN AREAS

CAD FILE:

\\ENGINEERING STANDARDS\\ER-4.0.DWG

SHEET:

DRWN BY:

TLH

APPRVD BY:

AJM

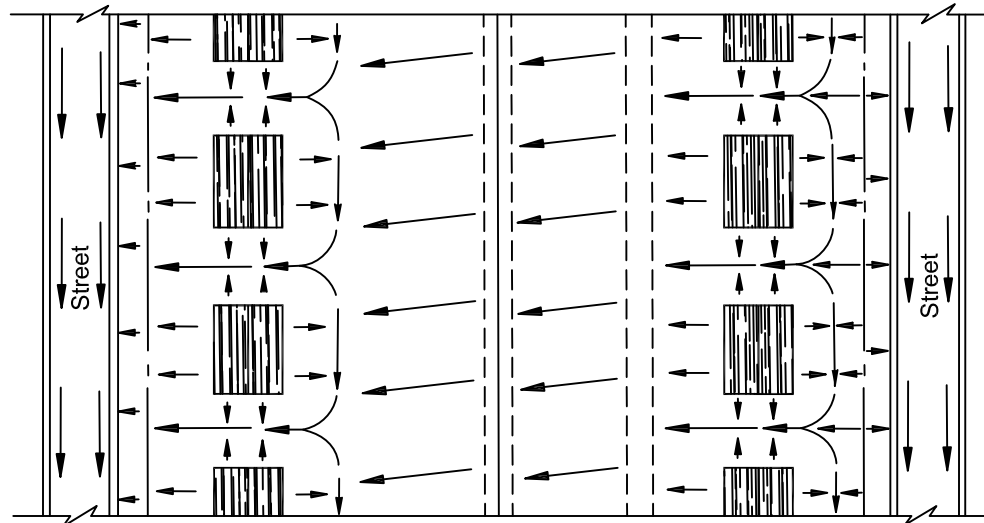
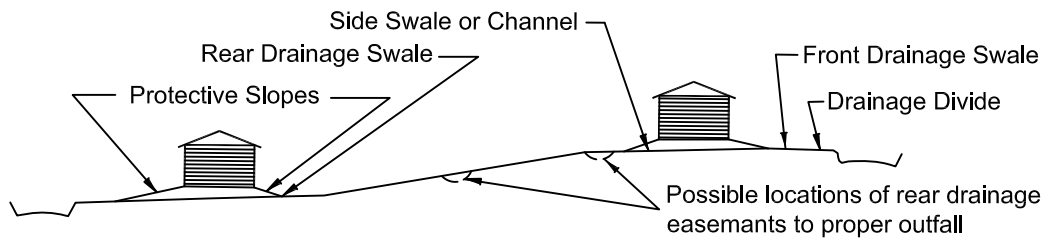
ISSUE DATE:

06/02/04

SCALE:

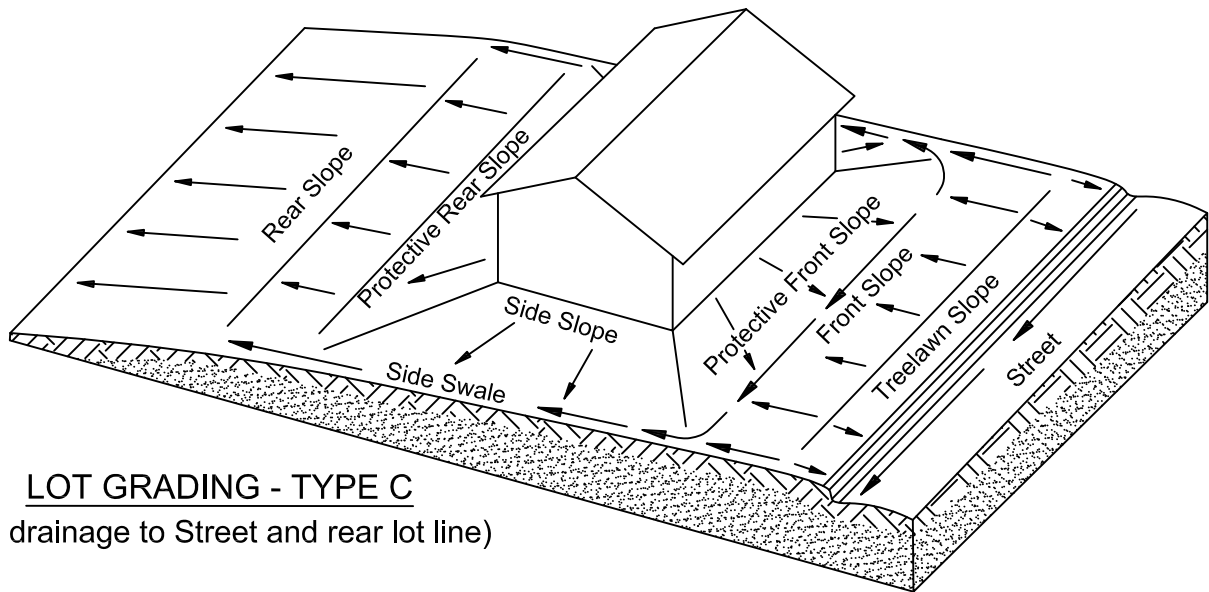
NONE

ER-4.0



LOT GRADING - TYPE A

LOT GRADING - TYPE C



LOT GRADING - TYPE C

(all drainage to Street and rear lot line)

EXAMPLE : BLOCK GRADING TYPE 2&3

Steep Cross-Slope

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NO.	DATE	REVISION
1	7/28/04	REVISED REFERENCE NOTES AND CHANGED TO 4.1

LAND GRADING URBAN AREAS

CAD FILE:

\\ENGINEERING STANDARDS\ER-4.1.DWG

SHEET:

DRWN BY:

TLH

APPRVD BY:

AJM

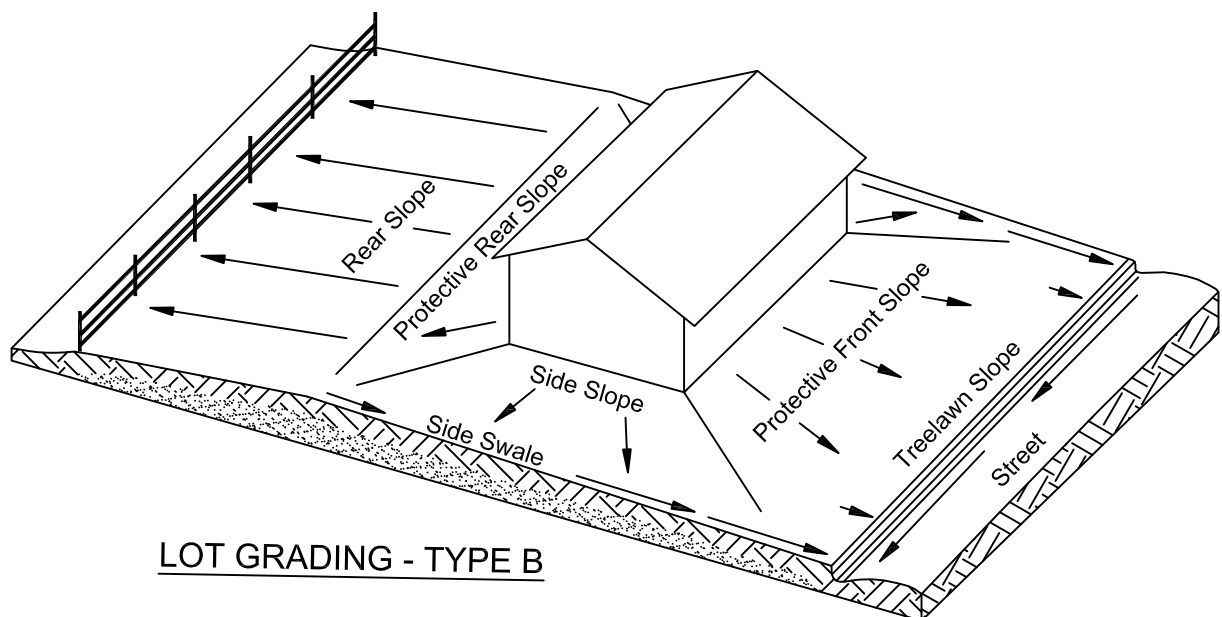
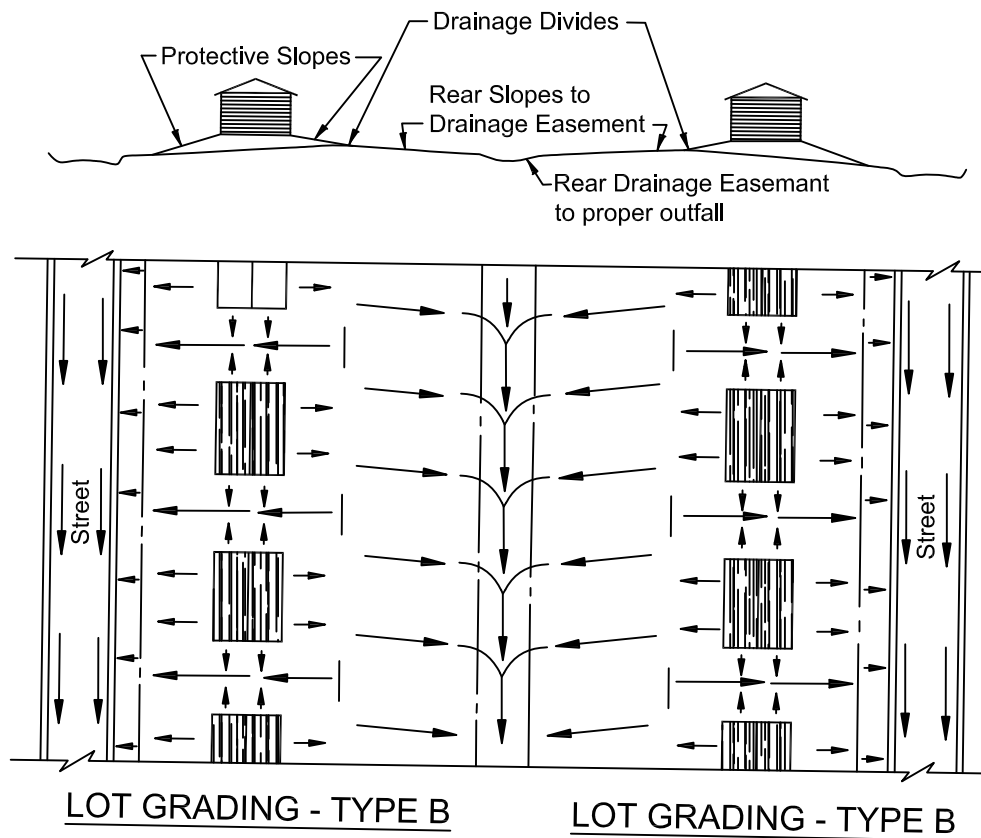
ISSUE DATE:

06/02/04

SCALE:

NONE

ER-4.1



EXAMPLE : BLOCK GRADING TYPE 4 Valley Along Rear Lot Lines

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

538 N. Market Street Wooster, Ohio 44691

Phone: (330) 263-5236

Fax: (330) 263-5283

Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION
1	7/28/04	REVISED REFERENCE NOTES AND CHANGED TO 4.2

LAND GRADING URBAN AREAS

CAD FILE:

\\ENGINEERING STANDARDS\\ER-4.2.DWG

SHEET:

DRWN BY:

TLH

APPRVD BY:

AJM

ISSUE DATE:

06/02/04

SCALE:

NONE

ER-4.2

**FLEXIBLE PIPE
TYPICAL TRENCH SECTION
BEDDING AND BACKFILL**

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAYS OR SIDEWALKS -
COMPACTED ODOT 411 GRANULAR MATERIAL

NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED
MATERIAL CONTAINING NO REFUSE OR ORGANIC MATERIAL,
ASTM D2321, CLASS 1 THRU 3 BACKFILL

INITIAL BACKFILL:

COMPACTED NO. 8, OR NO. 67 AGGREGATE, ODOT 703.01
(ASTM D2321, CLASS I MATERIAL)

HAUNCHING:

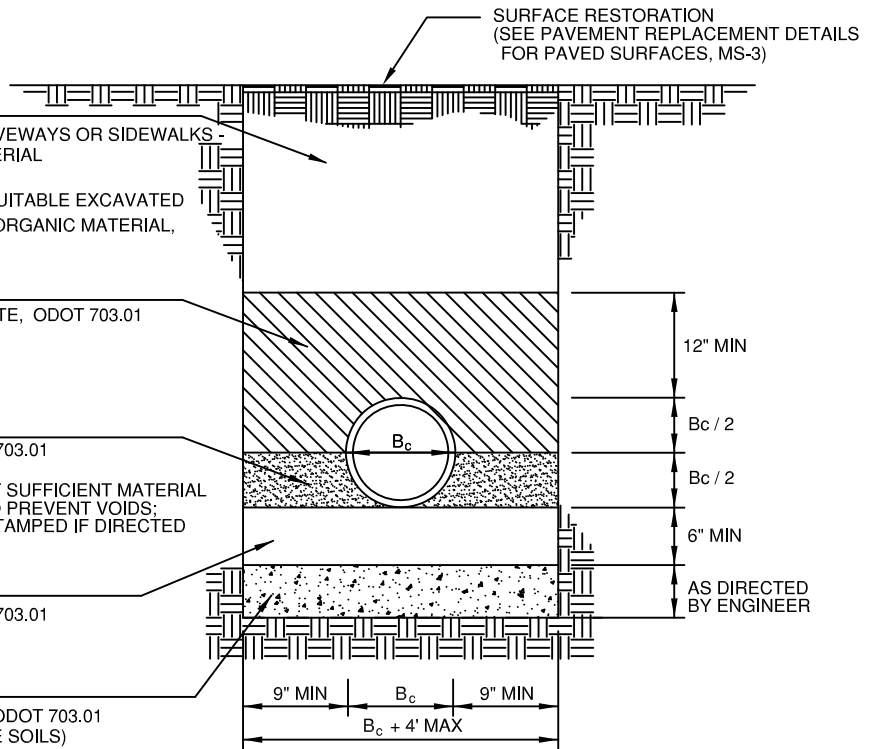
COMPACTED NO. 8 AGGREGATE, ODOT 703.01
(ASTM D2321, CLASS I MATERIAL)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT MATERIAL
HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS;
HAUNCHING SHALL BE HAND PLACED & TAMPED IF DIRECTED

GRANULAR BEDDING:

COMPACTED NO. 8 AGGREGATE, ODOT 703.01
(ASTM D2321, CLASS I MATERIAL)

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 LIMESTONE, ODOT 703.01
(AS REQUIRED TO REPLACE UNSUITABLE SOILS)



**RIGID PIPE
TYPICAL TRENCH SECTION
BEDDING AND BACKFILLING**

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAYS OR
SIDEWALKS - COMPACTED ODOT 411 GRANULAR MATERIAL
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED
MATERIAL CONTAINING NO ROCKS, REFUSE OR
ORGANIC MATERIAL.

INITIAL BACKFILL:

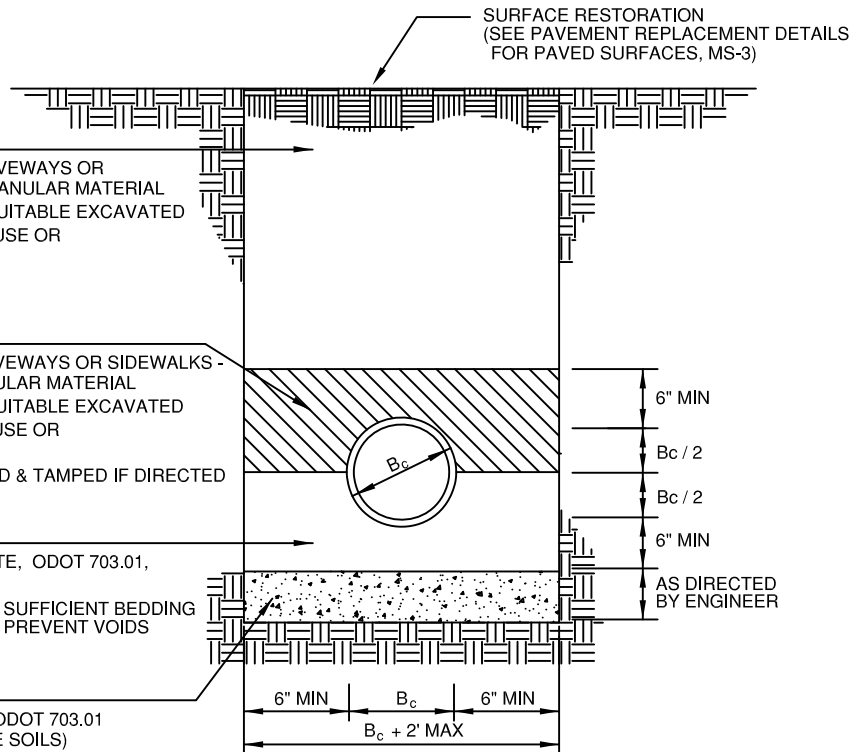
UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAYS OR SIDEWALKS -
COMPACTED ODOT 411 OR NO. 67 GRANULAR MATERIAL
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED
MATERIAL CONTAINING NO ROCKS, REFUSE OR
ORGANIC MATERIAL.
INITIAL BACKFILL SHALL BE HAND PLACED & TAMPED IF DIRECTED

GRANULAR BEDDING:

COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01,
(ASTM C12, BEDDING CLASS B)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT BEDDING
HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 LIMESTONE, ODOT 703.01
(AS REQUIRED TO REPLACE UNSUITABLE SOILS)



NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT
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City Engineer

NO.	DATE	REVISION			
1	7/18/01	BEDDING & BACKFILL REV.S,			
		SURFACE RESTORATION			
2	5/02/02	CRUSHED STONE SPEC'D			
3	10/31/08	REV. AGGREGATE NOTE			

**MISC. UTILITY
TRENCH DETAILS**

CAD FILE:

ENGINEERING STANDARDS\MS-1.0.DWG

SHEET:

DRWN BY:

AJM

APPRVD BY:

EPO

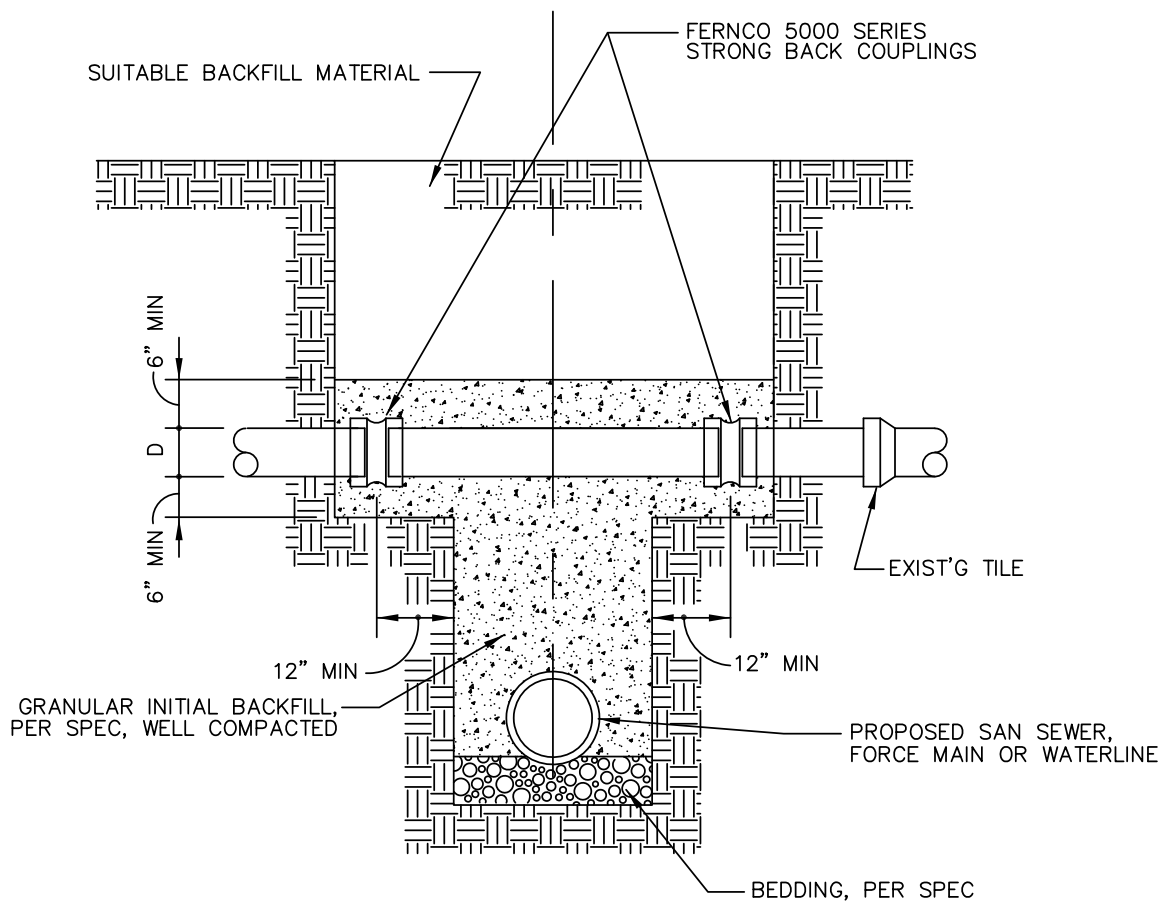
ISSUE DATE:

11/13/00

SCALE:

NONE

MS-1.0



TYPICAL TILE REPLACEMENT DETAIL

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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Roger Koblarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	01/06/14	COUPLINGS			

TILE REPAIR

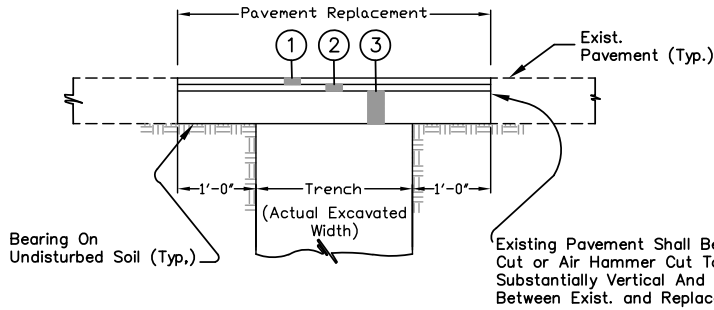
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DRWN BY: JES APPRVD BY: EPO ISSUE DATE: 07/01/98 SCALE: NONE

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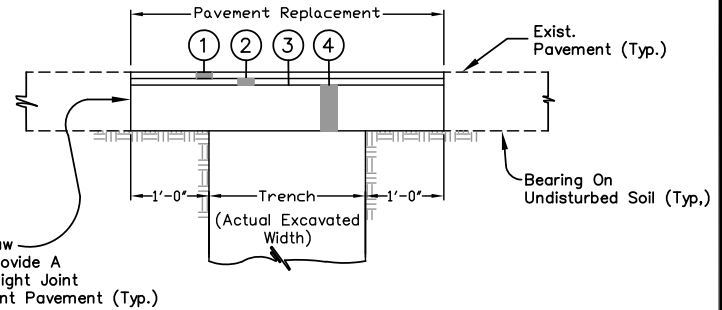
MS-2.0

PAVEMENT REPLACEMENT OVER UTILITY TRENCH



- ① 1 1/4" - Item 441 Asphalt Concrete Surface Course, Type 1, Medium Duty
- ② 1 3/4" - Item 441 Asphalt Concrete Intermediate Course, Type 2, Medium Duty
- ③ 7" - Item 301 Bituminous Aggregate Base (Placed in 2 Equal Layers)

FULL DEPTH ASPHALT SURFACE
N.T.S.

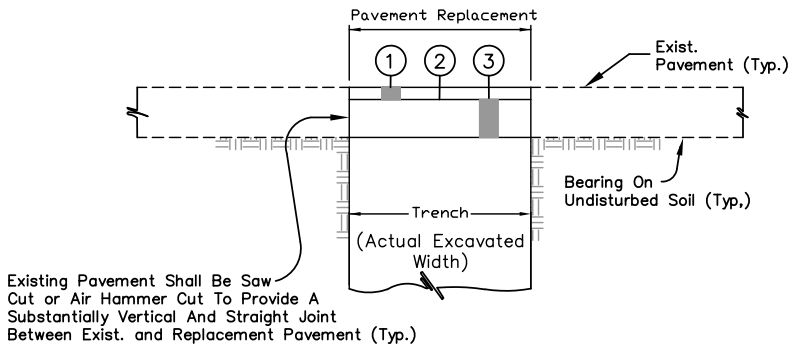


- ① 1 1/4" - Item 441 Asphalt Concrete Surface Course, Type 1, Medium Duty
- ② 1 3/4" - Item 441 Asphalt Concrete Intermediate Course, Type 2, Medium Duty
- ③ Item 407 Tack Coat (0.1 Gal. Bituminous Material Per Sq. Yd.)
- ④ 6" - Item 305 Portland Cement Concrete Base (MS Concrete)

ASPHALT SURFACE ON CONCRETE OR BRICK BASE
N.T.S.

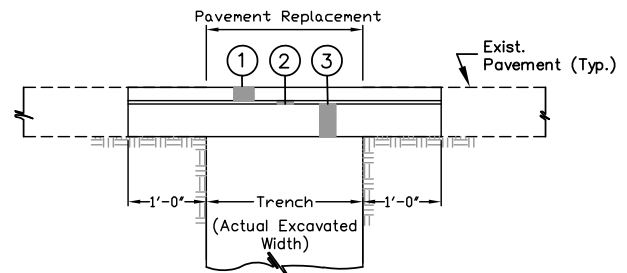
ASPHALT SURFACE MULTI-USE PATH

Shall Be The Same Asphalt Surface And Intermediate Courses As The Full Depth Asphalt Surface. Replace Item 301 With 6" Of Item 411 (8" Of Item 411 At Drives).



- ① 1 1/4" - Item 441 Asphalt Concrete Surface Course, Type 1, Medium Duty
- ② Item 408 Prime Coat (0.5 Gal. Bituminous Material Per Sq. Yd.)
- ③ 6" - Item 411 Aggregate Base

ASPHALT OR CHIP & SEAL SURFACE ON AGGREGATE BASE
N.T.S.



- ① Relaid or Replacement Bricks
- ② 1" - Item 703.06 Sand Cushion
- ③ 6" - Item 305 Portland Cement Concrete Base (MS Concrete)

BRICK PAVEMENT
N.T.S.

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NO.	DATE	REVISION		
1	7/18/01	ISSUED	6	01/04/18 REV. BRICK PAVEMENT SPEC
2	9/23/03	REV. ASPHALT ITEM #'S		
3	9/30/06	REV. 301 BITUMINOUS BASE THICK- NESS FOR FULL DEPTH ASPHALT		
4	10/31/08	MS CONCRETE, 411 AGGREGATE BASE		
5	01/02/17	REV. ASPHALT ITEM; ADDED PATH		

PAVEMENT REPLACEMENT DETAILS

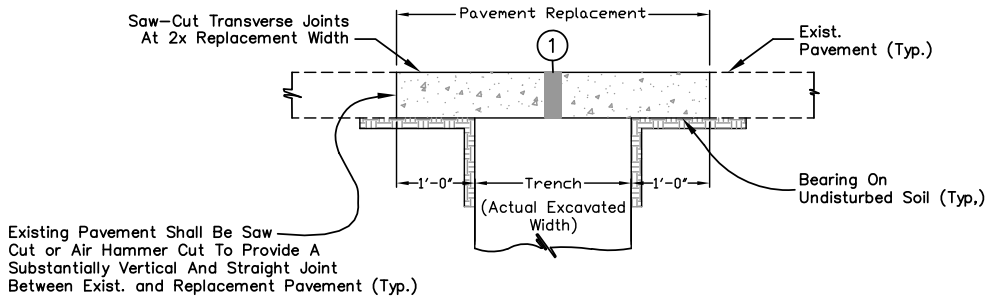
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DRWN BY: AJM APPRVD BY: EPO ISSUE DATE: 07/18/01 SCALE: NONE

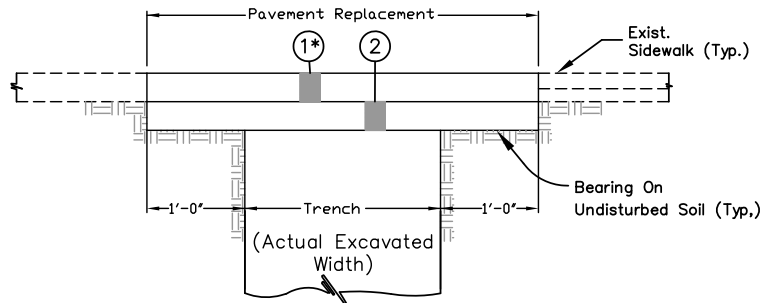
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PAVEMENT REPLACEMENT OVER UTILITY TRENCH, CONT'D



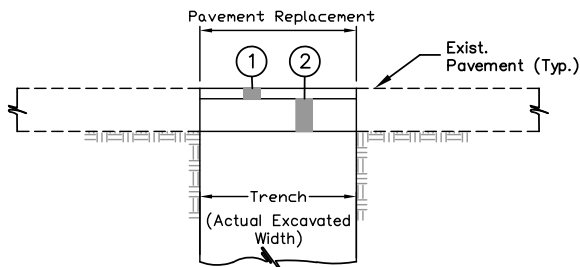
- ① 8" - Item 452 Plain Portland Cement Concrete Pavement (Limestone Aggregate)

CONCRETE SURFACE
N.T.S.



- ① 4" - Item 608 Concrete Walks (Limestone Aggregate)
 * 6" - Item 608 Concrete Walks in Drive Approaches (Limestone Aggregate) (MS Concrete)
 ② 3" - Item 411 Aggregate Base

SIDEWALKS
N.T.S.



- ① 2" - Item 411 Stabilized Crushed Aggregate (Limestone, Slag, Gravel Or Cinders To Match Existing.)
 ② 4" - Item 411 Aggregate Base

CRUSHED AGGREGATE SURFACE
N.T.S.

PAVEMENT REPLACEMENT OVER UTILITY TRENCH - NOTES:

1. All Pavement And Sidewalk Replacement Details Shown Represent The Minimum Acceptable Repair. If Existing Surfaces Exceed These Details, Then Repaired Surfaces Shall Match The Existing.
2. All Joints Between Existing Curb Or Pavement And The Pavement Replacement Surface Shall Be Sealed With Crafcro Roadsaver 515.
3. Pavement Replacement Quantities Approved For Payment Shall Be Calculated Based On The Trench Width Shown On The Utility Trench Detail.
4. Pavement Replacement Shall Include Restoration or Replacement of All Damaged Pavement Markings.
5. Limestone Aggregate Shall Be Used In Surface Course Of Asphalt And All Concrete Used For Pavement Replacement.
6. Tack Coat Shall Be Placed On All Surfaces To Receive Asphalt Concrete.

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City Engineer

NO.	DATE	REVISION		IN ALL PAVEMENT REPLACEMENT
1	7/18/01	ISSUED	5	10/31/08 MS CONC., 411 AGGREG. BASE
2	11/25/02	Add Note #4-Pavemt. Marking Repl.	6	4/23/09 O.D.O.T.409/705.04, ADD NOTE 6
3	10/02/03	REV. THICKNESS FOR CONCRETE	7	7/1/12 SEAL PAVEMENT
		SURFACE ONLY	8	01/06/15 ADDED CONCRETE JOINT REQ'MENT
4	9/30/06	REV. THICKNESS FOR SIDEWALK		
		BASE, LIMESTONE AGGREGATE		

PAVEMENT REPLACEMENT DETAILS

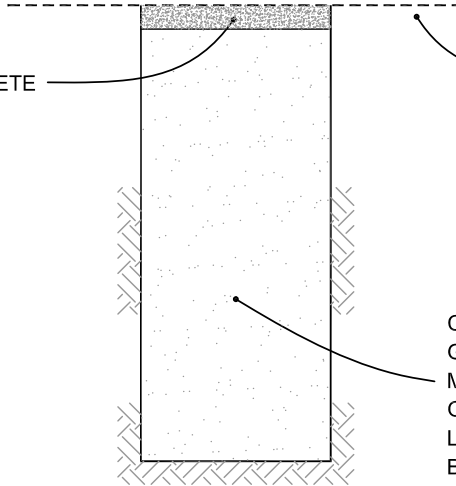
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SHEET:

DRWN BY: AJM
APPRVD BY: EPO
ISSUE DATE: 07/18/01
SCALE: NONE

MS-3.1

2" - 441 ASPHALT CONCRETE
SURFACE COURSE, HPM,
OR CLASS FS 3000 PSI
CONCRETE WITH AN
ANTI-BONDING LAYER
(VISQUEEN)



EXISTING PAVEMENT

COMPACTED
GRANULAR
MATERIAL (ODOT 411)
OR
LOW STRENGTH MORTAR
BACKFILL (ODOT 613)

NOTE 1: TEMPORARY PAVEMENT PATCHES SHALL BE
MAINTAINED IN A DRIVABLE CONDITION.

NOTE 2: TEMPORARY PAVEMENT PATCHES SHALL BE
REPLACED WITH PERMANENT PAVEMENT
RESTORATION AS SOON AS POSSIBLE.

NOTE 3: GRAVEL PAVEMENT PATCHES SHALL BE
USED FOR A MAXIMUM OF 1 WEEK, AFTER
WHICH, TEMPORARY PAVEMENT OR PERMANENT
RESTORATION SHALL BE PERFORMED.

NOTE 4: TEMPORARY CONCRETE SHALL USE
NO. 8 STONE.

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City Engineer

TEMPORARY PAVEMENT REPLACEMENT DETAIL

CAD FILE:
\\ENGINEERING STANDARDS\\MS-3.0.DWG

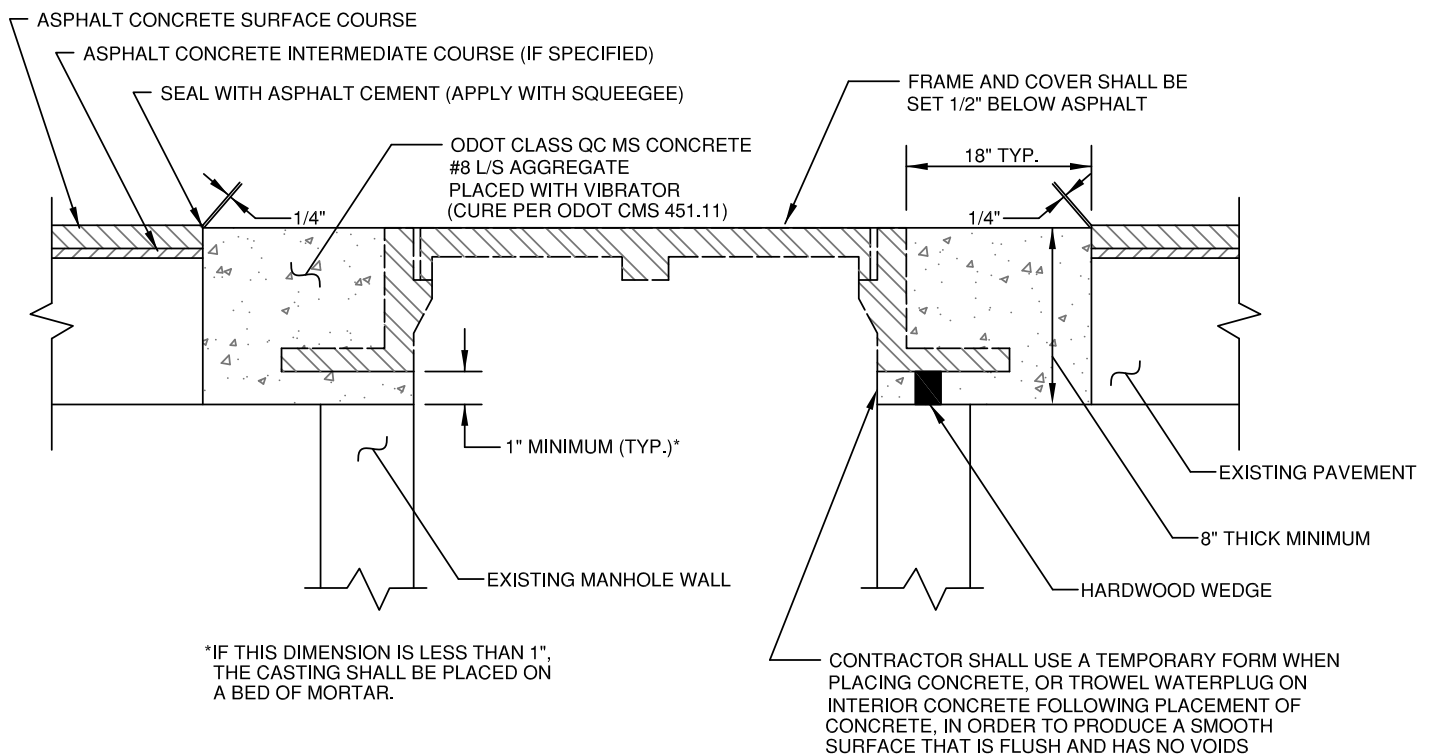
SHEET:

MS-3.2

NO.	DATE	REVISION			
1	09/30/06	ELIMINATED OTHER THAN THROUGH STREET DETAIL, REVISED TOPPING			
2	01/02/17	REV. ASPHALT ITEM			

DRWN BY: TLH	APPRVD BY: AJM	ISSUE DATE: 02/11/04	SCALE: NONE	
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<h1 style="text-align: center;">TYPICAL STREET UTILITY LOCATIONS</h1>				
CAD FILE: \ENGINEERING STANDARDS\MS-4.0.DWG				SHEET: <div style="font-size: 2em; font-weight: bold;">MS-4.0</div>
DRWN BY: AJM	APPRVD BY: JES	ISSUE DATE: 10/15/01	SCALE: NONE	



ITEM 611 - MANHOLE ADJUSTED TO GRADE

PRIOR TO PERFORMING THE PAVEMENT PLANING OPERATION, THE CONTRACTOR SHALL REMOVE FOR STORAGE THE CASTING FRAME AND COVER AND DISPOSE OF ANY ASSOCIATED MATERIAL. THE FRAME AND COVER SHALL BE MARKED TO IDENTIFY ITS LOCATION. THE OPEN STRUCTURES SHALL BE PLATED AND THE OPEN AREA FILLED WITH ITEM 301 ASPHALT BASE, MATCHING THE ADJACENT GRADE. FOLLOWING THE PAVING OPERATION, THE CONTRACTOR SHALL LOCATE AND EXPOSE THE STRUCTURE. THE CONTRACTOR SHALL REINSTALL THE FRAME AND COVER AT ITS ORIGINAL LOCATION. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL VERIFY THAT THE FRAME RING AND COVER ARE FLUSH. THE MANHOLE FRAME AND COVER SHALL BE ADJUSTED TO THE NEW GRADE IN ACCORDANCE WITH THE STANDARD DETAIL AS SHOWN HEREIN. ADJUSTING THE MANHOLE BY USING PERMANENT ADJUSTING DEVICES IS PROHIBITED.

IF THE ORIGINAL FRAME AND/OR COVER IS UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER, THE CONTRACTOR SHALL OBTAIN A SUITABLE FRAME AND/OR COVER FROM THE CITY. THE SUITABLE FRAME AND/OR COVER WILL BE EXCHANGED BY THE CITY AT NO COST TO THE CONTRACTOR.

THE CONCRETE AROUND THE CASTING SHALL BE FLUSH WITH THE ADJACENT ASPHALT PAVEMENT, AND THE CASTING SHALL BE SET 1/2" BELOW THE ASPHALT. THE ENGINEER WILL INSPECT EACH CASTING USING A 10 FOOT HAND LEVEL PROVIDED BY THE CONTRACTOR.

EXTRA CARE SHALL BE EXERCISED TO PREVENT DEBRIS AND CONCRETE FROM ENTERING THE FLOW OF SEWERS. AFTER THE JOB IS COMPLETE, THE CONTRACTOR SHALL OPEN ALL MANHOLES FOR FINAL INSPECTION.

PAYMENT FOR ITEM 611 MANHOLE ADJUSTED TO GRADE SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO PERFORM THE WORK AS DESCRIBED HEREIN. BASIS OF PAYMENT WILL BE AT THE CONTRACT BID PRICE FOR EACH.

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NO.	DATE	REVISION			
1	01/02/19	REV. FILL MATERIAL			
		ADDED ASTERISKED NOTE			

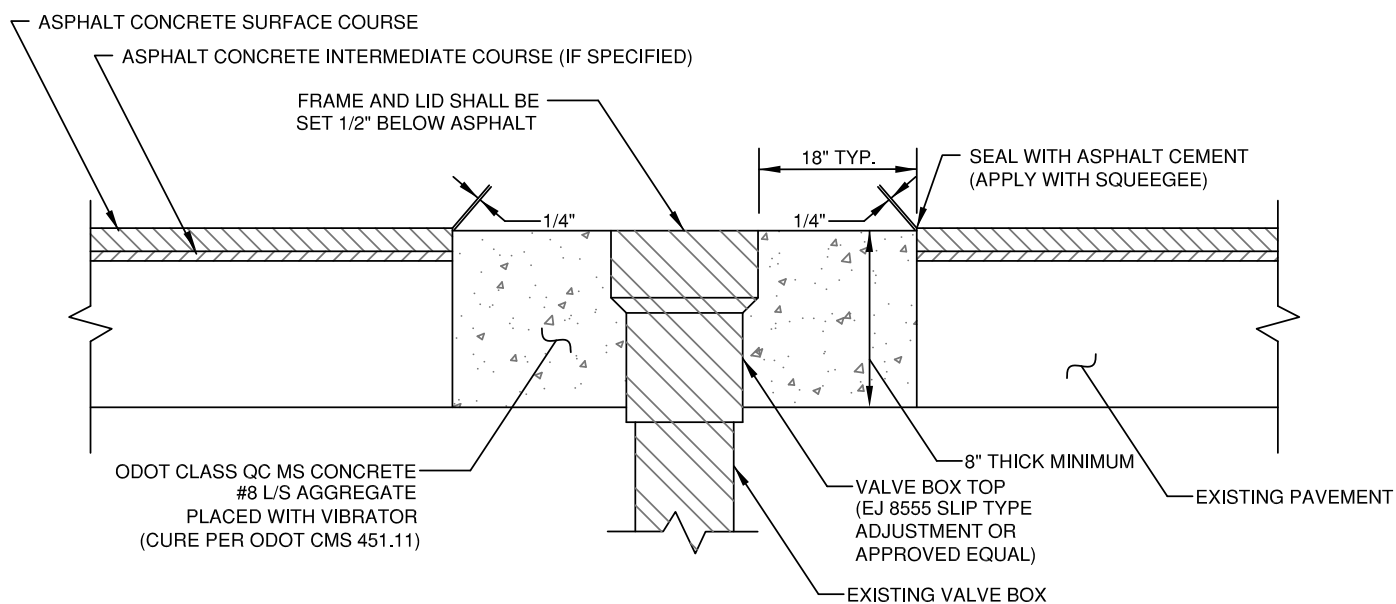
UTILITY CASTING ADJUSTMENT TO GRADE

CAD FILE:
ENGINEERING STANDARDS\MS-5.0.DWG

SHEET:

DRWN BY: JAR
APPRVD BY: RVK
ISSUE DATE: 01/31/18
SCALE: NONE

MS-5.0



ITEM 638 - VALVE BOX ADJUSTED TO GRADE

PRIOR TO PERFORMING THE PAVEMENT PLANING OPERATION, THE CONTRACTOR SHALL LOWER THE VALVE BOX (BY REMOVING THE TOP OR CUTTING THE VALVE BOX, AS APPROPRIATE) AND REMOVING AND DISPOSING OF ANY ASSOCIATED MATERIAL. THE OPEN AREA SHALL BE PLATED AND FILLED WITH ITEM 301 ASPHALT BASE, MATCHING THE ADJACENT GRADE. FOLLOWING THE PAVING OPERATION, THE CONTRACTOR SHALL LOCATE AND EXPOSE THE VALVE BOX. THE VALVE BOX SHALL BE ADJUSTED TO THE NEW GRADE WITH A VALVE BOX TOP IN ACCORDANCE WITH THE STANDARD DETAIL AS SHOWN HEREIN.

THE CONCRETE AROUND THE BOX SHALL BE FLUSH WITH THE ADJACENT ASPHALT PAVEMENT, AND THE BOX SHALL BE SET 1/2" BELOW THE ASPHALT. THE ENGINEER WILL INSPECT EACH BOX USING A 10 FOOT HAND LEVEL PROVIDED BY THE CONTRACTOR.

PAYMENT FOR ITEM 638 VALVE BOX ADJUSTED TO GRADE SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO PERFORM THE WORK AS DESCRIBED HEREIN. BASIS OF PAYMENT WILL BE AT THE CONTRACT BID PRICE FOR EACH.

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City Engineer

NO.	DATE	REVISION			
1	01/02/19	REV. FILL MATERIAL			

UTILITY CASTING ADJUSTMENT TO GRADE

CAD FILE:
ENGINEERING STANDARDS\MS-5.0.DWG

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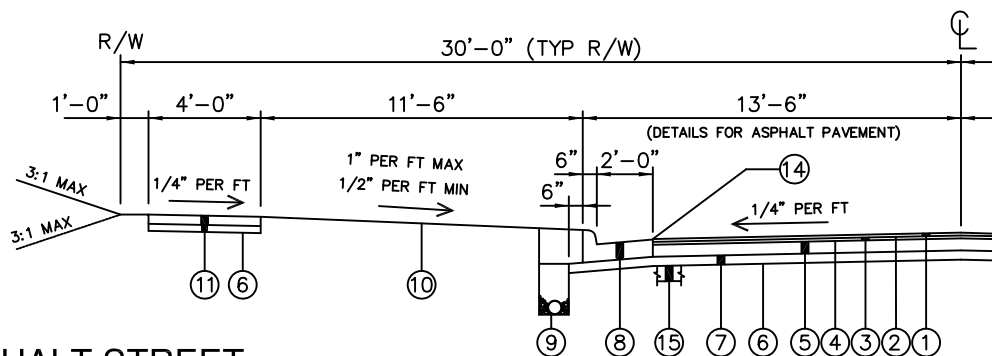
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APPRVD BY:
RVK

ISSUE DATE:
01/31/18

SCALE:
NONE

MS-5.1



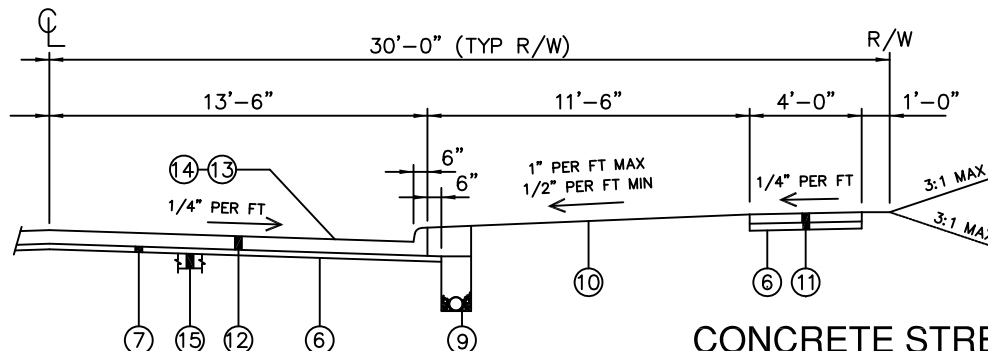
ASPHALT STREET

LEGEND

- | | |
|--|---|
| ① ITEM 441 1-1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, MEDIUM DUTY, PG64-22 (LIMESTONE AGGREGATE ONLY, NO RAP ALLOWED) | ⑨ ITEM 605 6" UNDERDRAINS (SEE DETAIL PV-4.0) |
| ② ITEM 407 0.04 GAL/SY TACK COAT | ⑩ ITEM 659 SEEDING AND MULCHING |
| ③ ITEM 441 1-3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, MEDIUM DUTY (RAP 20% OR LESS) | ⑪ ITEM 608 4" CONCRETE SIDEWALK WITH 3" COMPACTED 411 GRANULAR BASE; 6" DRIVE APPROACH AND 6" SIDEWALK BEHIND APPROACH. |
| ④ ITEM 407 0.08 GAL/SY TACK COAT | ⑫ ITEM 452 8" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT WITH TYPE 2A INTEGRAL CURB |
| ⑤ ITEM 301 7" ASPHALT CONCRETE BASE (RAP 30% OR LESS) | ⑬ ITEM 451.09 LONGITUDINAL & TRANSVERSE JOINTS; SAW CUT TRANSVERSE JOINTS ON 15' CENTERS AND AT RE-ENTRY CORNERS; SKEW JOINTS 3' FROM PERPENDICULAR WITH BACK OF CURB |
| ⑥ ITEM 204 * SUBGRADE COMPACTION AND PROOF ROLLING | ⑭ ITEM 451.16/705.04 JOINT SEALING; LONGITUDINAL, TRANSVERSE AND CURB & GUTTER JOINTS |
| ⑦ SUBBASE:
ASPHALT 4" NO. 1's & 2's
3" 304
CONCRETE 4" NO. 57 | ALTERNATE SUBGRADE PREP. (SEE NOTE 5 BELOW) |
| ⑧ ITEM 609 30" COMBINATION CURB & GUTTER; TYPE 2 MODIFIED (SEE DETAIL PV-5.0) | ⑮ ITEM 206 8" MIN SOIL-CEMENT STABILIZATION FOR ASPHALT PAVEMENT
6" MIN SOIL-CEMENT STABILIZATION FOR CONCRETE PAVEMENT |

* WHERE GRANULAR FILL IS USED TO REPLACE SOFT SUBBASE AREAS, EXTEND CUT AND GRANULAR TO UNDERDRAIN.

- NOTES:**
1. COMPACTION OF TRENCHES IN THE RIGHT-OF-WAY IS REQUIRED FOR ALL UTILITIES.
 2. LIMESTONE SHALL BE USED FOR ALL AGGREGATE SUBBASE, FOR COARSE AGGREGATE IN ALL ASPHALT PAVEMENT SURFACE, AND FOR COARSE AGGREGATE IN CONCRETE.
 3. PORTLAND CEMENT FOR CONCRETE PAVEMENT SHALL BE CLASS QC 1 PER TABLE 499.03-1 OF ODOT CMS.
 4. RECLAIMED ASPHALT PAVEMENT (RAP) MAY BE USED IN INTERMEDIATE AND BASE COURSES AT THE PERCENTAGES ALLOWED AS LISTED ABOVE. RECLAIMED ASPHALT SHINGLES (RAS) ARE NOT ALLOWED.
 5. IF SOIL-CEMENT STABILIZATION IS USED FOR SUBGRADE STABILIZATION, THE FOLLOWING MODIFIED SECTION THICKNESSES MAY BE USED: ITEM 301 6" SUBBASE 3" FOR CONCRETE
ITEM 452 7"
 6. CITY WILL NOT BE RESPONSIBLE FOR ANY COSTS ASSOCIATED WITH CONCRETE THAT IS "LOST" IN THE NO. 57 SUBBASE.



CONCRETE STREET

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

538 N. Market Street Wooster, Ohio 44691

Phone: (330) 263-5236

Fax: (330) 263-5283

Roger Kobilarcsik, P.E.
City Engineer

TYPICAL STREET RESIDENTIAL

CAD FILE:
ENGINEERING STANDARDS\PV-1.0.DWG

SHEET:

DRWN BY:
AJM

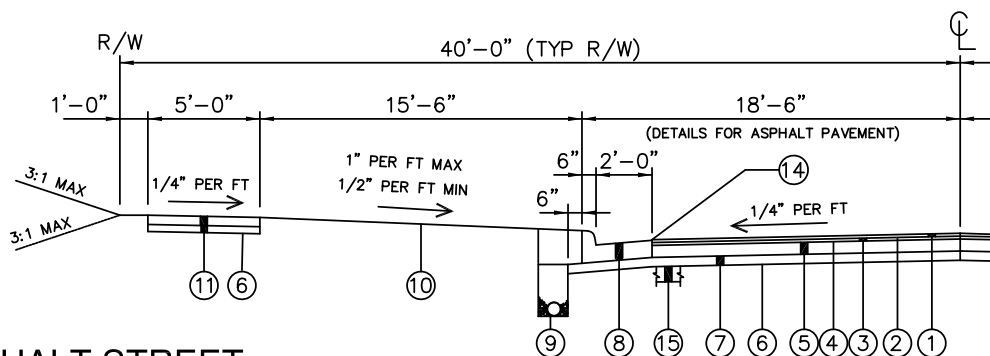
APPRVD BY:
EPO

ISSUE DATE:
11/09/00

SCALE:
NONE

PV-1.0

NO.	DATE	REVISION		
14	01/06/15	ADDED TACK	15	01/02/17
		CHANGED ITEM 448 TO ITEM 441		REV. ITEM 407
		CHANGED ITEM 451.08 TO 451.09		ADD BASE TO WALK DETAIL
		CHANGED ITEM 804 TO 206		ELIMINATED NO. 8 SUBBASE
		REV. NOTE 3 PER CMS REVISIONS		ELIMINATED GGBFS RESTRICTION
				ADDED NOTE 6



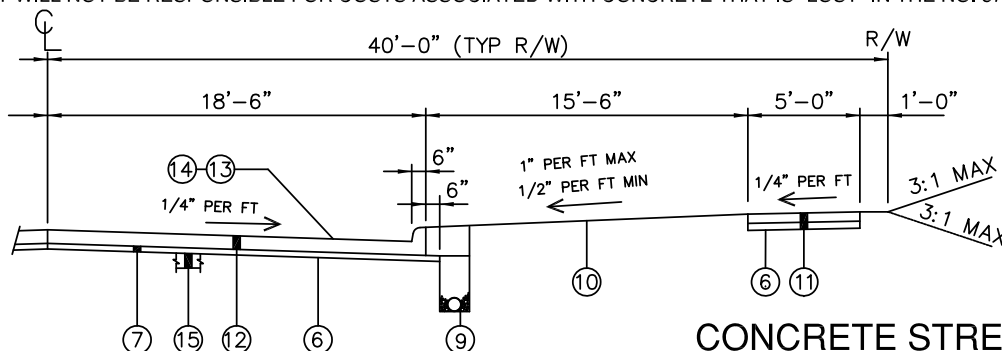
ASPHALT STREET

LEGEND

- | | |
|---|---|
| ① ITEM 441 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, MEDIUM DUTY PG64-22 (LIMESTONE AGGREGATE ONLY, NO RAP ALLOWED) | ⑩ ITEM 659 SEEDING AND MULCHING |
| ② ITEM 407 0.04 GAL/SY TACK COAT | ⑪ ITEM 608 4" CONCRETE SIDEWALK WITH 3" COMPACTED 411 GRANULAR BASE; 8" DRIVE APPROACH AND 8" SIDEWALK BEHIND APPROACH. |
| ③ ITEM 441 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, MEDIUM DUTY (RAP 20% OR LESS) | ⑫ ITEM 451 9" REINFORCED CONCRETE PAVEMENT WITH TYPE 2A INTEGRAL CURB. MIN. REINFORCEMENT WWF6 x 6 - W4 x W4 WELDED WIRE MESH (PLACED ON CHAIRS). |
| ④ ITEM 407 0.08 GAL/SY TACK COAT | ⑬ ITEM 451.09 LONGITUDINAL & TRANSVERSE JOINTS; SAW CUT TRANSVERSE JOINTS ON 15' CENTERS AND AT RE-ENTRY CORNERS; SKEW JOINTS 3' FROM PERPENDICULAR WITH BACK OF CURB |
| ⑤ ITEM 301 8" ASPHALT CONCRETE BASE (RAP 30% OR LESS) | ⑭ ITEM 451.16/705.04 JOINT SEALING; LONGITUDINAL, TRANSVERSE AND CURB & GUTTER JOINTS |
| ⑥ ITEM 204 * SUBGRADE COMPACTION AND PROOF ROLLING | ALTERNATE SUBGRADE PREP. (SEE NOTE 5 BELOW) |
| ⑦ SUBBASE:
ASPHALT 4" NO. 1's & 2's
3" 304
CONCRETE 4" NO. 57 | ⑮ ITEM 206 12" MIN SOIL-CEMENT STABILIZATION FOR ASPHALT PAVEMENT
8" MIN SOIL-CEMENT STABILIZATION FOR CONCRETE PAVEMENT |
| ⑧ ITEM 609 30" COMBINATION CURB & GUTTER; TYPE 2 MODIFIED (SEE DETAIL PV-5.0) | |
| ⑨ ITEM 605 6" UNDERDRAINS (SEE DETAIL PV-4) | |

* WHERE GRANULAR FILL IS USED TO REPLACE SOFT SUBBASE AREAS, EXTEND CUT AND GRANULAR TO UNDERDRAIN.

- NOTES:**
1. COMPACTION OF TRENCHES IN THE RIGHT-OF-WAY IS REQUIRED FOR ALL UTILITIES.
 2. LIMESTONE SHALL BE USED FOR ALL SUBBASE, FOR COARSE AGGREGATE IN ALL ASPHALT PAVEMENT SURFACE, AND FOR COARSE AGGREGATE IN CONCRETE.
 3. PORTLAND CEMENT FOR CONCRETE PAVEMENT SHALL BE CLASS QC 1 PER TABLE 499.03-1 OF ODOT CMS.
 4. RECLAIMED ASPHALT PAVEMENT (RAP) MAY BE USED IN INTERMEDIATE AND BASE COURSES AT THE PERCENTAGES ALLOWED AS LISTED ABOVE. RECLAIMED ASPHALT SHINGLES (RAS) ARE NOT ALLOWED.
 5. IF SOIL-CEMENT STABILIZATION USED FOR SUBGRADE STABILIZATION, THE FOLLOWING MODIFIED SECTION THICKNESSES MAY BE USED: ITEM 301 7" SUBBASE 3" FOR CONCRETE ITEM 451 8"
 6. CITY WILL NOT BE RESPONSIBLE FOR COSTS ASSOCIATED WITH CONCRETE THAT IS "LOST" IN THE NO. 57 STONE SUBBASE.



CONCRETE STREET

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City Engineer

NO.	DATE	REVISION		
13	01/06/15	ADDED TACK	14	01/02/17
		CHANGED ITEM 448 TO 441		
		CHANGED ITEM 451.08 TO 451.09		
		CHANGED ITEM 804 TO 206		
		REV. NOTE 3 PER CMS REVISIONS		

TYPICAL STREET INDUSTRIAL

CAD FILE:
ENGINEERING STANDARDS/PV-2.0.DWG

SHEET:

DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:
11/09/00

SCALE:
NONE

PV-2.0

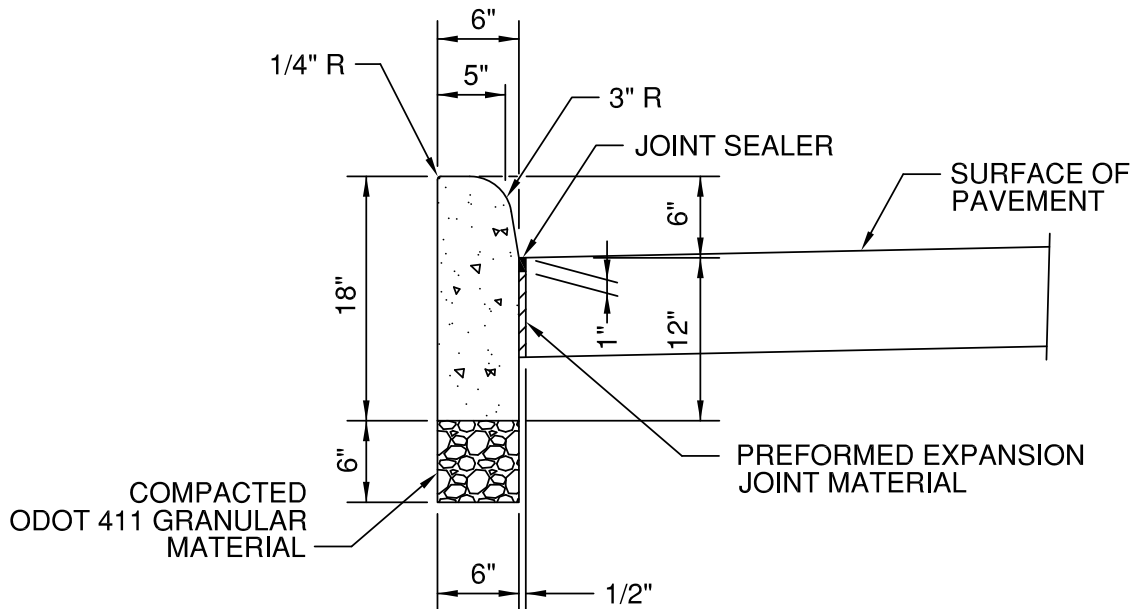
SHEET:
PV-3.0



1. CONTRACTOR SHALL INCLUDE THE COST OF ALL REQUIRED DETECTABLE WARNING PLATES WITH THEIR BID PRICE FOR EACH CURB RAMP.

PV-3.1

PV-5.0



TYPE 6 CURB

NOTES:

1. COST PER LINEAR FOOT OF TYPE 6 CONCRETE CURB SHALL INCLUDE EXCAVATION AND GRANULAR MATERIAL.
2. PREFORMED EXPANSION JOINT MATERIAL IS NOT REQUIRED WHERE CURB IS ADJACENT TO ASPHALT PAVEMENT.

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CURB DETAIL

NO.	DATE	REVISION			
1	4/27/12	ADDED 6" OF 411 GRANULAR			
2	01/06/14	ADDED NOTE 2			

CAD FILE:

\\ENGINEERING STANDARDS\PV-5.0.DWG

DRWN BY:
SLG

APPRVD BY:
AJM

ISSUE DATE:
10/31/08

SCALE:
NONE

SHEET:

PV-5.1

DRIVE APPROACH ON UNIMPROVED STREET

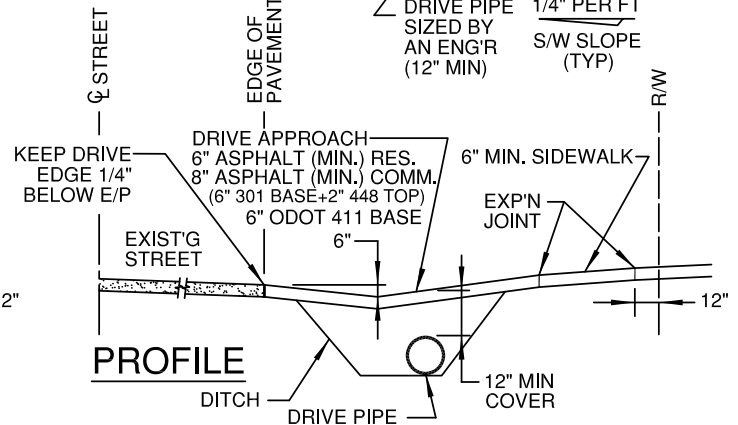
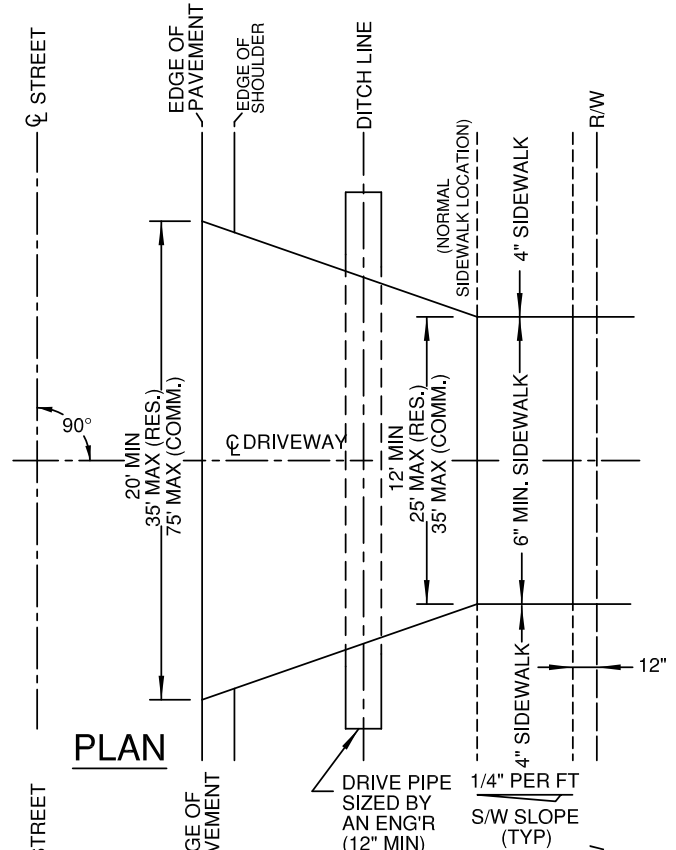
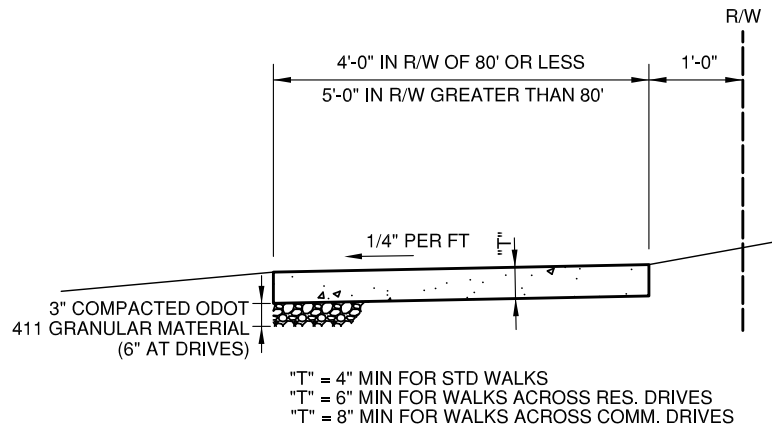


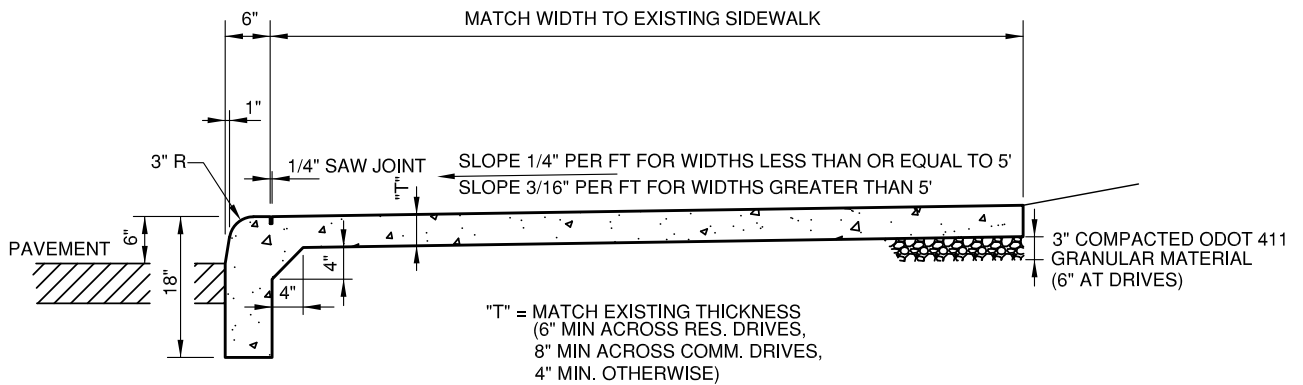
Diagram illustrating a pavement joint detail. The joint is labeled "1 1/2" EXP JOINT". The approach on the right is labeled "6" MIN DRIVE APPROACH". The gap between the joint and the approach is labeled "1" MIN". The pavement surface is labeled "PAVEMENT".

PV-6.0

NO.	DATE	REVISION	7	01/06/15	SHOW 411 BASE IN BUILDUP
1	7/16/01	ADDED COMM. DRIVE SPEC.S	8	01/02/17	DRIVE PIPE SIZE BY "AN" ENGR
2	7/28/04	ADDED CONCRETE TO SPEC.S			
3	10/31/08	ADDED TYPE 6 CURB			
4	9/30/10	ADDED DRIVE MAT'L FOR UNIMP. ST			
5	4/27/12	ADDED NOTE 3			
6	01/06/14	SIDEWALK MIN. THICKNESS			



STANDARD SIDEWALK RESIDENTIAL/COMMERCIAL



REPLACEMENT MONOLITHIC SIDEWALK/CURB

NOTES:

- ALL CONCRETE SHALL BE 4000 PSI CLASS QC MISC OR QC1 WITH AIR-ENTRAINING ADMIXTURE.

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NO.	DATE	REVISION			
1	7/16/01	ELIMIN. NEW MONOLITHIC	5	01/04/18	UPDATE CONCRETE SPEC
		WLAK/CURB DETAIL, ADDED			
		COMM. DRIVE "T".			
2	6/08/05	ADDED 3" ODOT 411			
3	10/31/08	ADDED CONCRETE SPEC.			
4	01/06/15	CLARIFY 6" 411 AT DRIVES			

SIDEWALK DETAILS

CAD FILE:

ENGINEERING STANDARDS\PV-7.0.DWG

SHEET:

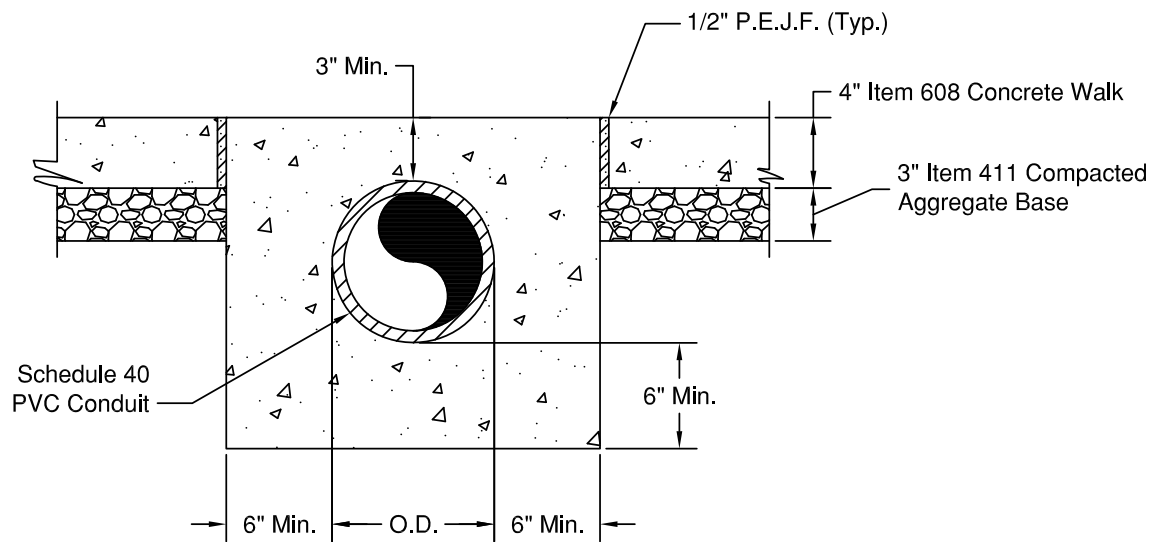
DRWN BY:
JES

APPRVD BY:
EPO

ISSUE DATE:
07/01/98

SCALE:
NONE

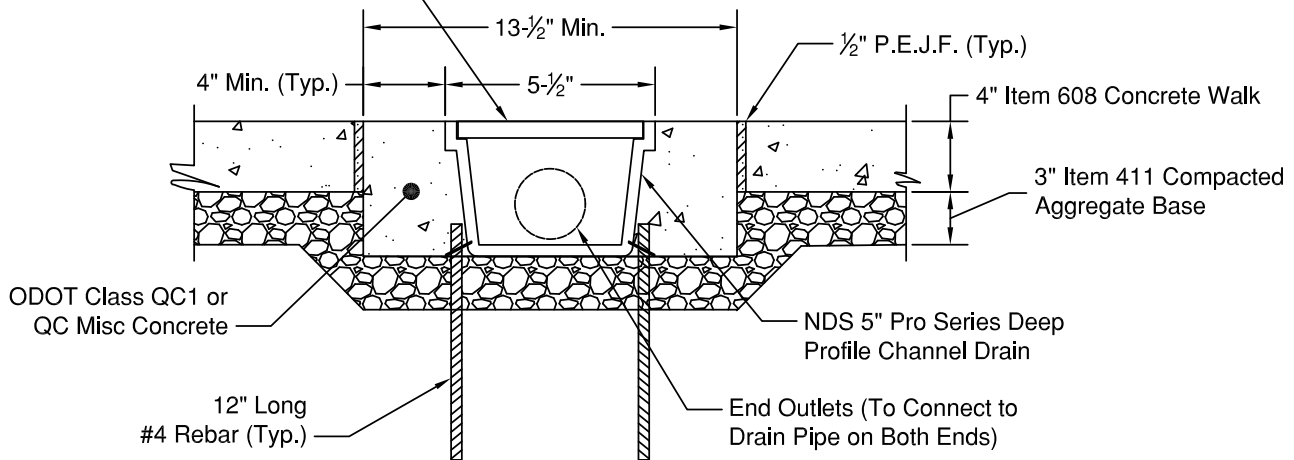
PV-7.0



CONCRETE ENCASED CONDUIT

NO SCALE

NDS Part #826 5" Pedestrian
Traffic Channel Grate
(ADA Compliant and heelproof)



SIDEWALK TRENCH DRAIN

NO SCALE

NOTES:

1. THESE DETAILS ONLY APPLY TO CONSTRUCTION OF NEW SIDEWALKS ACROSS EXISTING DRAIN PIPES, UNLESS OTHERWISE APPROVED BY THE ENGINEERING DIVISION. THE CONCRETE ENCASED CONDUIT DETAIL SHALL BE USED WHERE A MINIMUM OF 3" OF CONCRETE CAN BE PLACED OVER THE CONDUIT. IN CASES WHERE 3" OF CONCRETE CANNOT BE PLACED, THE SIDEWALK TRENCH DRAIN DETAIL SHALL BE USED.
2. ALL CONCRETE SHALL BE 4000 PSI CLASS QC MISC OR QC1 WITH AIR-ENTRAINING ADMIXTURE.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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NO.	DATE	REVISION			

SIDEWALK ACROSS STORM LATERAL DETAIL

CAD FILE:

ENGINEERING STANDARDS/PV-7.0.DWG

SHEET:

DRWN BY:

JAR

APPRVD BY:

RVK

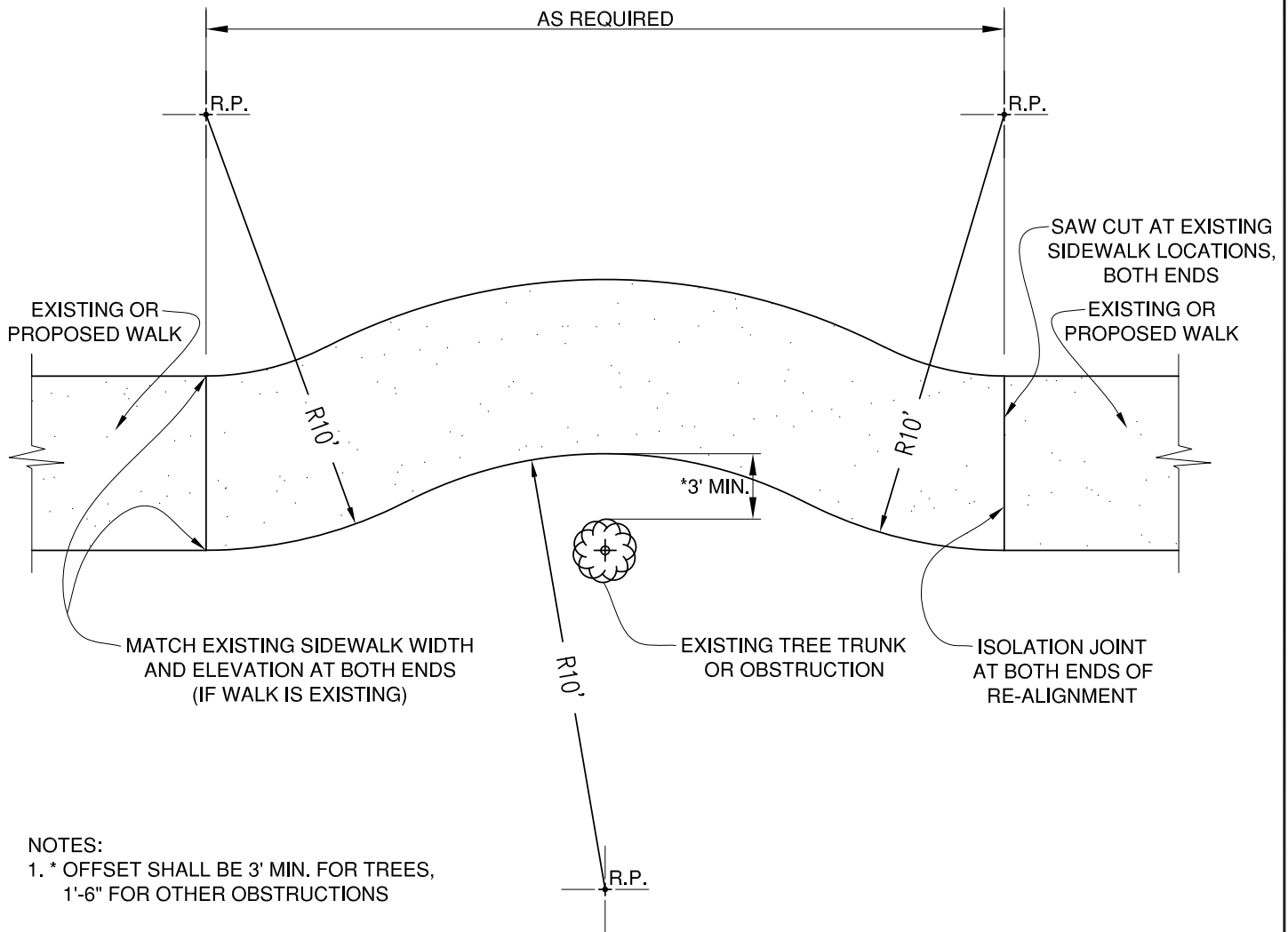
ISSUE DATE:

01/02/19

SCALE:

NONE

PV-7.1



NOTES:

1. * OFFSET SHALL BE 3' MIN. FOR TREES,
1'-6" FOR OTHER OBSTRUCTIONS
2. PROVIDE 1/4" SAW JOINTS AT 5' MAX. SPACING.
3. PROVIDE 1/4" EXPANSION JOINT W/ FILLER
AT ALL ISOLATION JOINTS.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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**SIDEWALK RE-ALIGNMENT
DETAIL**

CAD FILE:

ENGINEERING STANDARDS\PV-8.0.DWG

SHEET:

PV-8.0

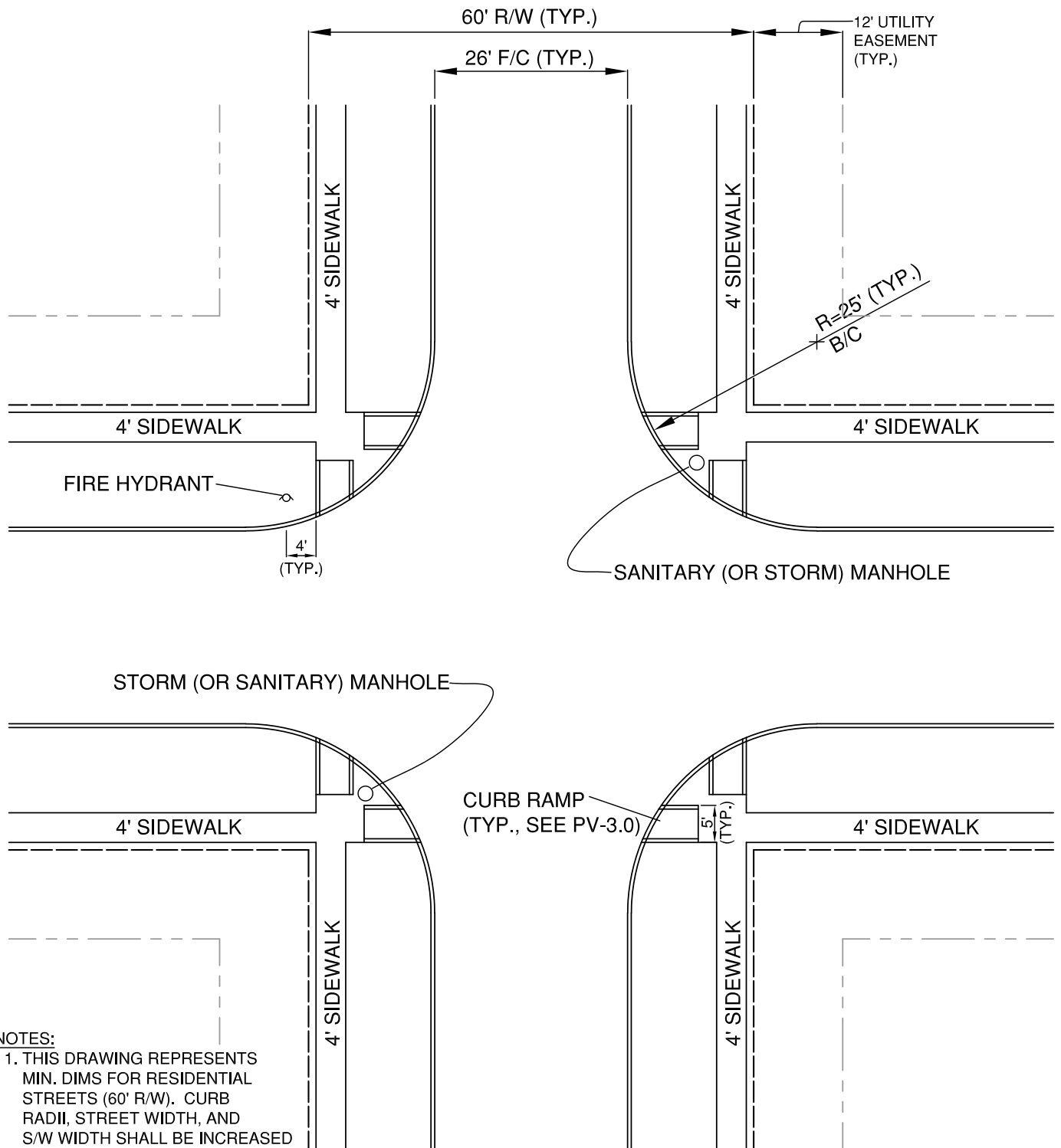
DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:
07/18/98

SCALE:
NONE

NO.	DATE	REVISION			
1	7/16/01	ADDED SAW & EXP. JOINTS			
2	2/20/03	REV. JOINT SPACING			



NOTES:

1. THIS DRAWING REPRESENTS MIN. DIMS FOR RESIDENTIAL STREETS (60' R/W). CURB RADII, STREET WIDTH, AND S/W WIDTH SHALL BE INCREASED FOR COMMERCIAL STREETS (80' R/W).
2. SEE STANDARD DRAWINGS PV-1.0 & PV-2.0, TYPICAL STREET SECTIONS, FOR ADDITIONAL DIMENSIONS.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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City Engineer

NO.	DATE	REVISION			
1	7/17/01	ADDED CURB RAMP DWG REF. & CURB RADIUS NOTE			
2	10/15/01	ADDED COMM. DIM. NOTE			

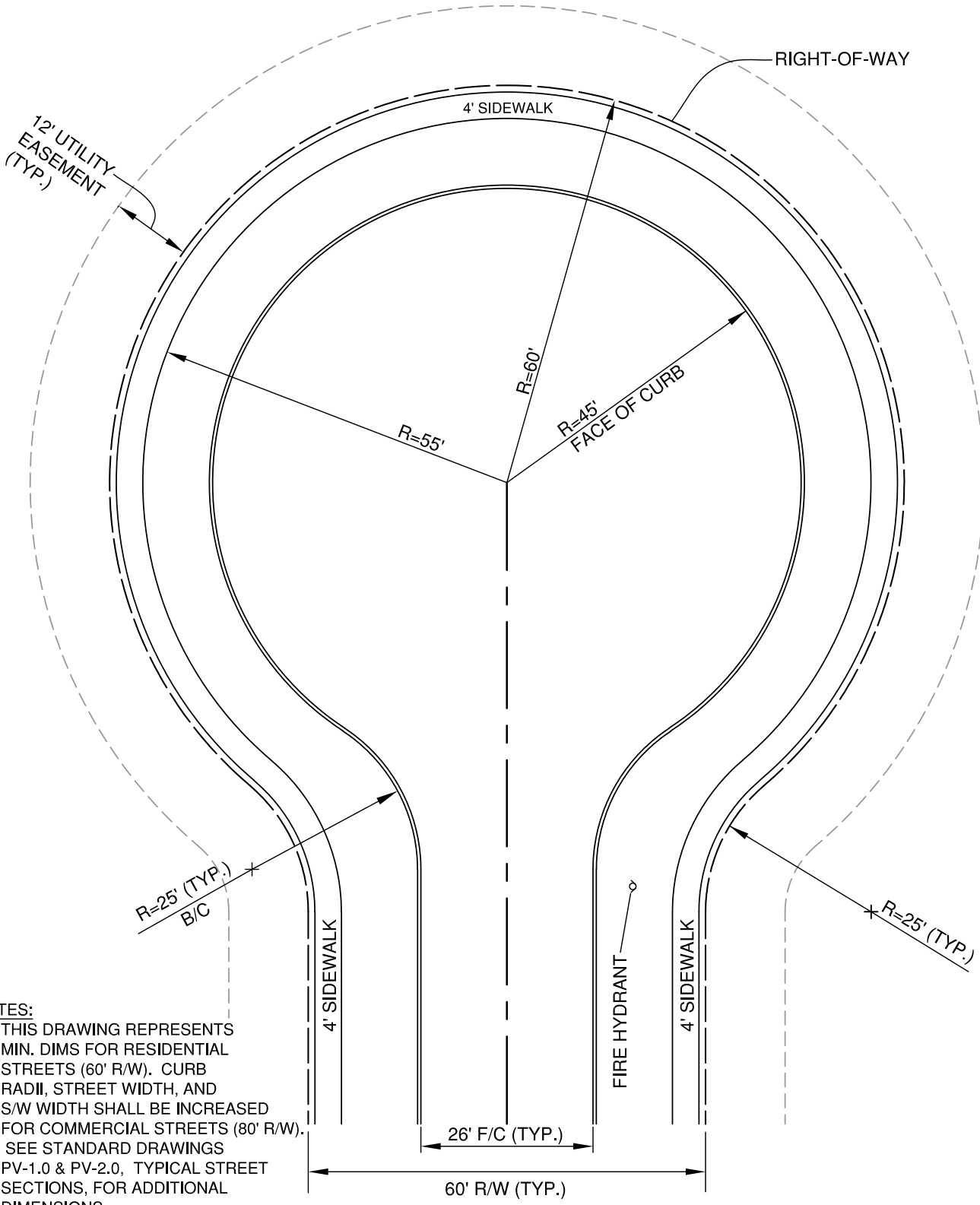
**INTERSECTION
DETAIL**

CAD FILE:
ENGINEERING STANDARDS\PV-9.0.DWG

SHEET:

DRWN BY: **AJM** APPRVD BY: **EPO** ISSUE DATE: **07/18/98** SCALE: **NONE**

PV-9.0



NOTES:

1. THIS DRAWING REPRESENTS MIN. DIMS FOR RESIDENTIAL STREETS (60' R/W). CURB RADII, STREET WIDTH, AND S/W WIDTH SHALL BE INCREASED FOR COMMERCIAL STREETS (80' R/W).
2. SEE STANDARD DRAWINGS PV-1.0 & PV-2.0, TYPICAL STREET SECTIONS, FOR ADDITIONAL DIMENSIONS.

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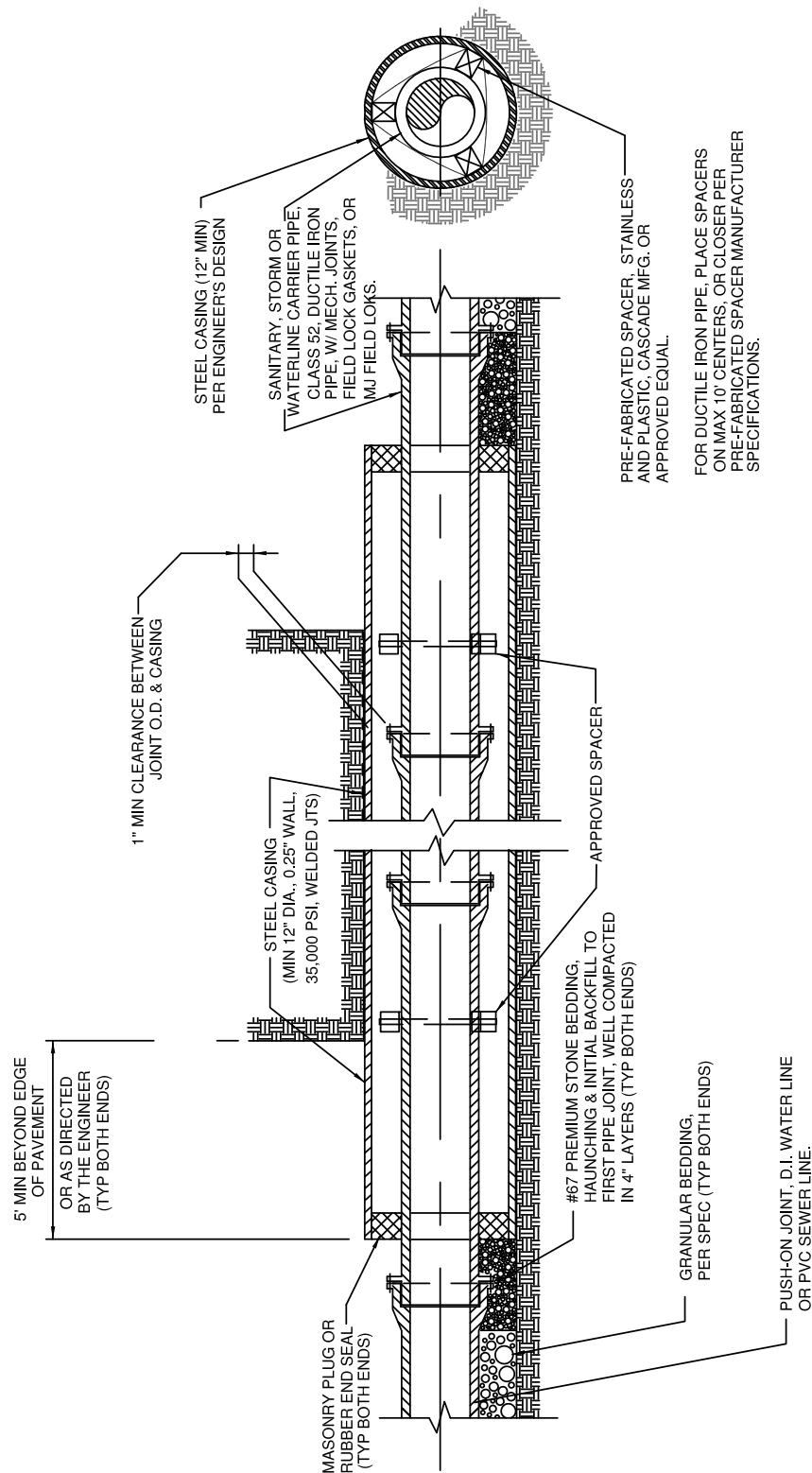
NO.	DATE	REVISION			
1	7/16/01	ADDED CURB RADIUS NOTE			
2	10/05/01	REVISED CURB RADIUS			
3	10/15/01	ADDED COMM. DIM. NOTE			

**CUL-DE-SAC
DETAIL**

CAD FILE:
\\ENGINEERING STANDARDS\PV-10.0.DWG

DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 07/18/00	SCALE: NONE
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SHEET:
PV-10.0



FOR SDR35 PVC SEWER PIPE, USE AN M.J. x SDR35 TRANSITION GASKET FOR CONNECTION AT M.J. END OF CARRIER PIPE; AND AN M.J. SLEEVE W/ M.J.x SDR35 TRANSITION GASKET TO CONNECT TO PLAIN END OF M.J. CARRIER PIPE.

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City Engineer

ROAD BORE DETAIL

CAD FILE:
\\ENGINEERING STANDARDS\\PV-11.0.DWG

DRWN BY: AJM APPRVD BY: EPO ISSUE DATE: 11/13/98 SCALE: NONE

SHEET:

PV-11.0

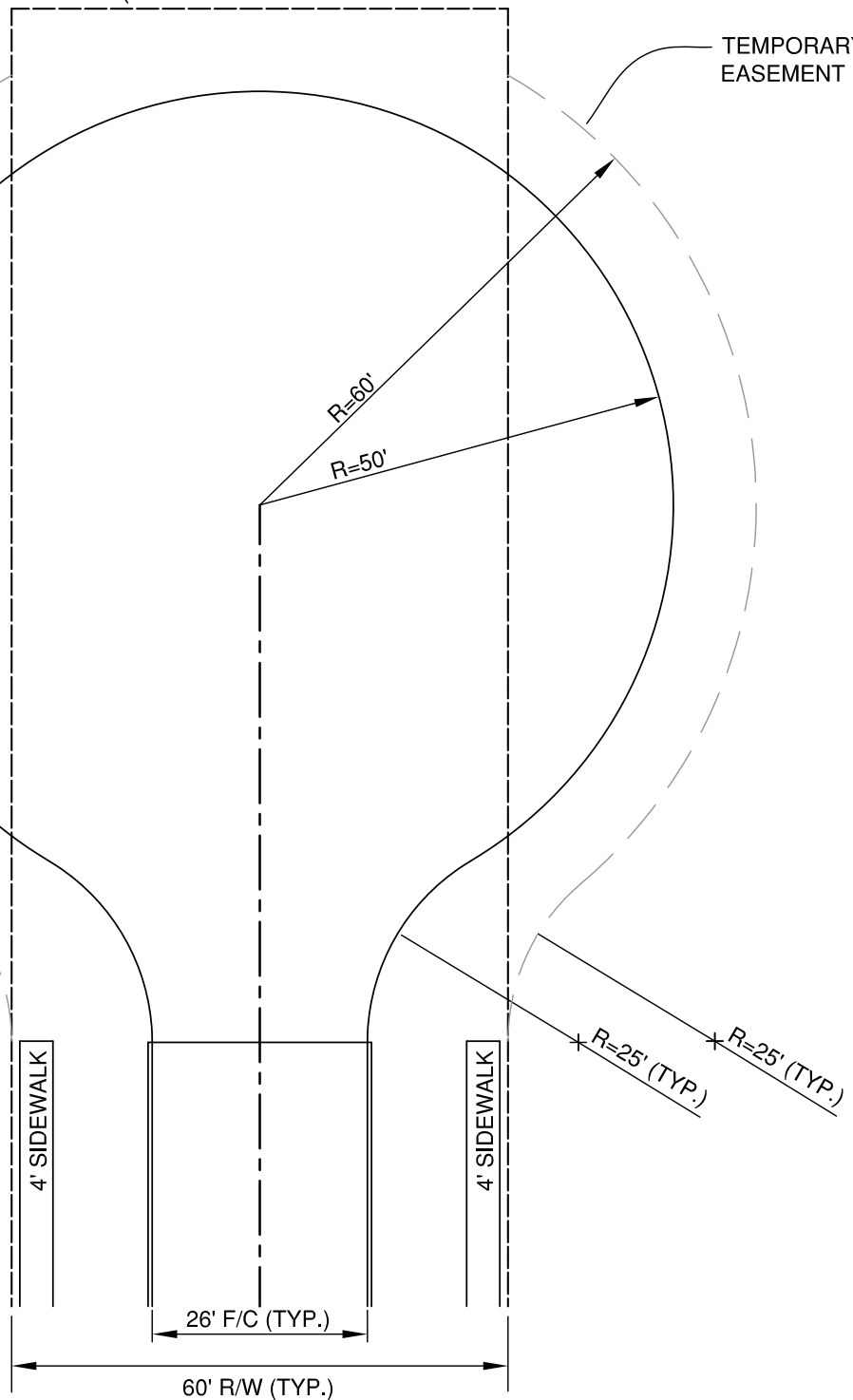
NO.	DATE	REVISION			
1	7/17/01	ELIMINATED VENT PIPES & FILL SAND; ADDED NOTE FOR TRANS. GASKET.			
2	3/1/02	ELIMINATED WOOD SPACERS ADDED RUBBER END SEALS			
3	9/30/06	ADDED MJ FIELD LOKS			

RIGHT-OF-WAY

TEMPORARY
EASEMENT

NOTES:

1. SEE STANDARD DRAWINGS
PV-1.0 & PV-2.0 (TYPICAL STREET
SECTIONS) FOR ADDITIONAL
DIMENSIONS.
2. TEMPORARY CUL-DE-SAC PAVEMENT
SHALL MEET THE REQUIREMENTS OF
THE TYPICAL RESIDENTIAL STREET
SECTION.



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NO.	DATE	REVISION			
1	7/12/02	REMOVE "FACE OF CURB"			

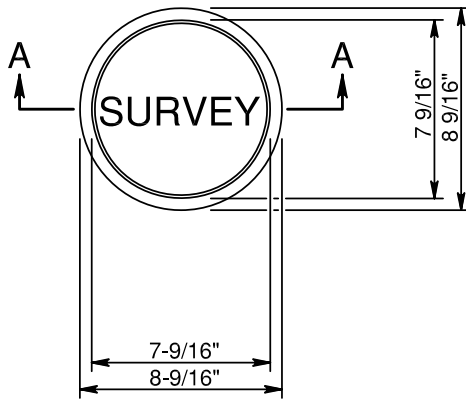
TEMPORARY TURN-AROUND
(CUL-DE-SAC TYPE)

CAD FILE:
ENGINEERING STANDARDS\PV-12.0.DWG

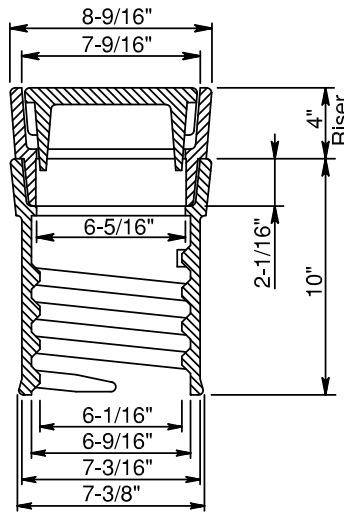
SHEET:

DRWN BY: AJM APPRVD BY: EPO ISSUE DATE: 07/19/00 SCALE: NONE

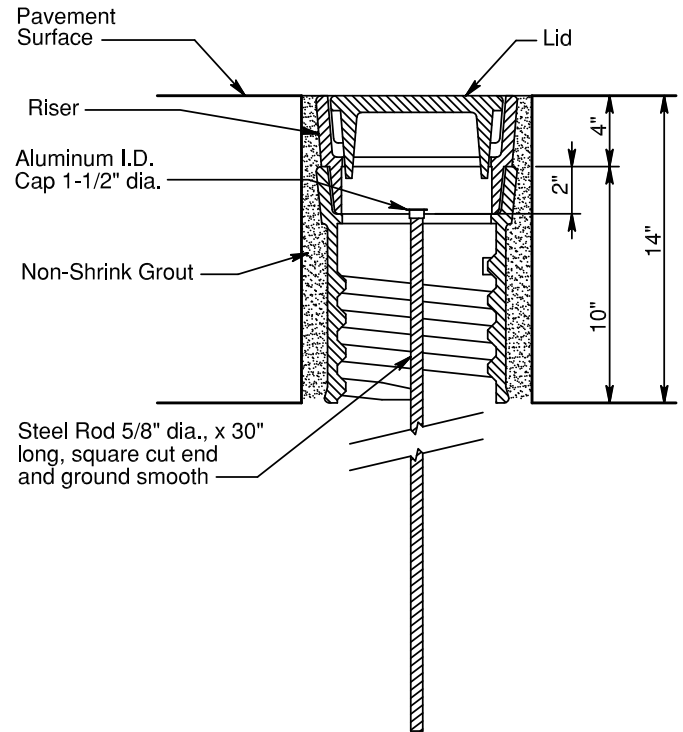
PV-12.0



TOP VIEW



SECTION A-A



SIDE VIEW

NOTE:

ACCEPTABLE MANUFACTURERS AND PRODUCTS ARE:

1. EJ CO.
P.O. BOX 439-301
EAST JORDAN, MI. 49727
8550 10T TOP WITH ADJUSTABLE RISERS AND LID WITH
THE WORD "SURVEY" ON TOP.
2. ALTERNATE PRODUCTS MAY BE SUBMITTED FOR
REVIEW.

INSTALLATION:

1. CORE OPENING IN PAVEMENT
2. REMOVE DEBRIS AND PREPARE PAVEMENT FOR GROUT
PER MANUFACTURERS INSTRUCTIONS.
3. COAT PAVEMENT OPENING AND EXTERIOR OF CASTING
WITH GROUT.
4. INSTALL CASTING AND FINISH FLUSH WITH EXISTING
PAVEMENT.
5. ANNULAR SPACE BETWEEN CASTING AND PAVEMENT
TO BE FILLED WITH NON-SHRINK GROUT PER ODOT CMS
705.20.
6. RISER SHALL NOT BE USED WITH CONCRETE PAVEMENT.

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**MONUMENT BOX
ASSEMBLY**

CAD FILE:
\\ENGINEERING STANDARDS\VPV-13.0.DWG

SHEET:

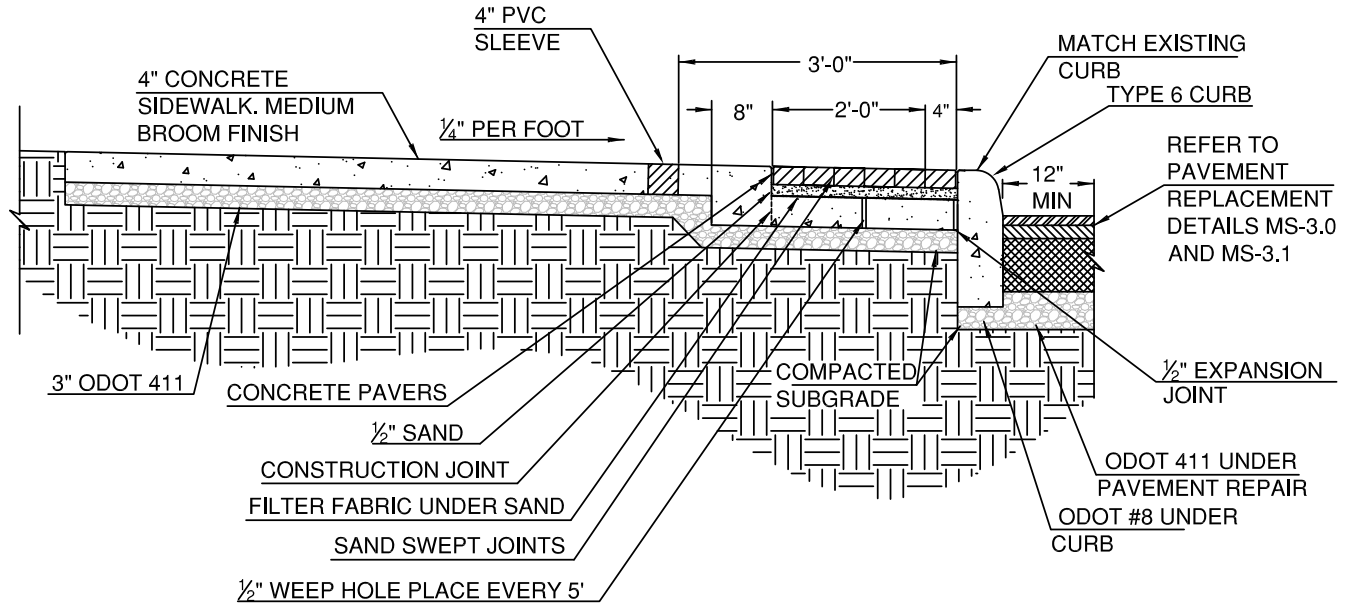
DRWN BY: SLG
APPRVD BY: AJM
ISSUE DATE: 9/30/06
SCALE: NONE

PV-13.0

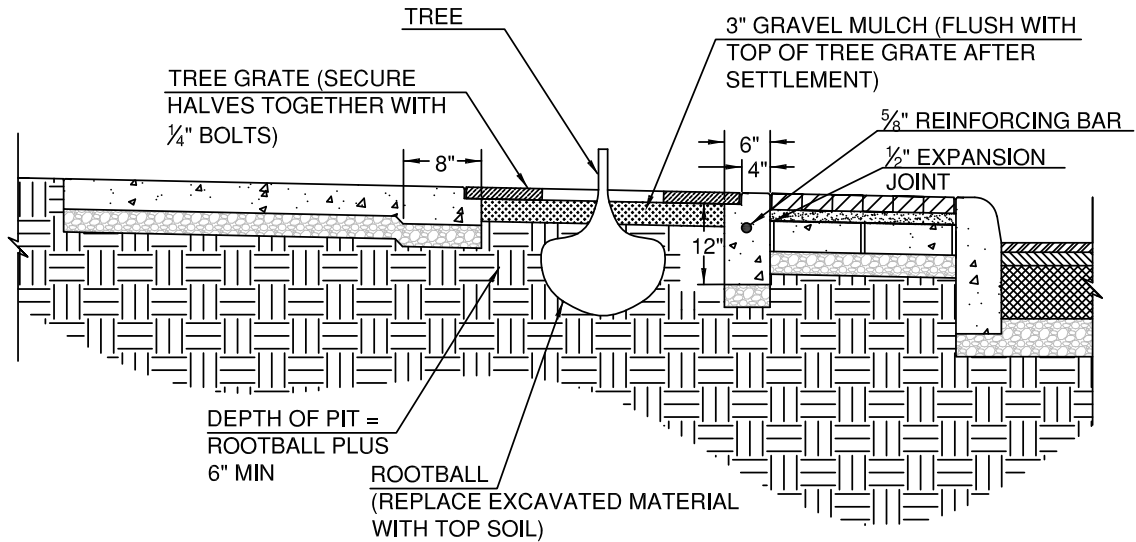
NO.	DATE	REVISION			
1	9/30/06	ISSUED			
2	10/26/10	4" RISER			
3	7/1/12	REV. LABEL			
4	1/2/19	REV. LID WORDING			

PV-14.0

PROPOSED DECORATED BRICK BAND AND SIDEWALK



TREE GRATE



NOTE:

1. CONCRETE PAVERS SHALL BE HOLLANDSTONE UNILOCK, WIL-LOK OR APPROVED EQUAL
2. PAVER COLOR SHALL BE RUSTIC RED BLEND FOR UNILOK AND VIRGINIA BLEND FOR WIL-LOK WITH DIMENSIONS OF 2- $\frac{3}{8}$ " THICK, 4" IN WIDTH AND 8" LONG

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NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

538 N. Market Street Wooster, Ohio 44691

Phone: (330) 263-5236

Fax: (330) 263-5283

Roger Kobilarcsik, P.E.
City Engineer

STREETSCAPE DETAIL

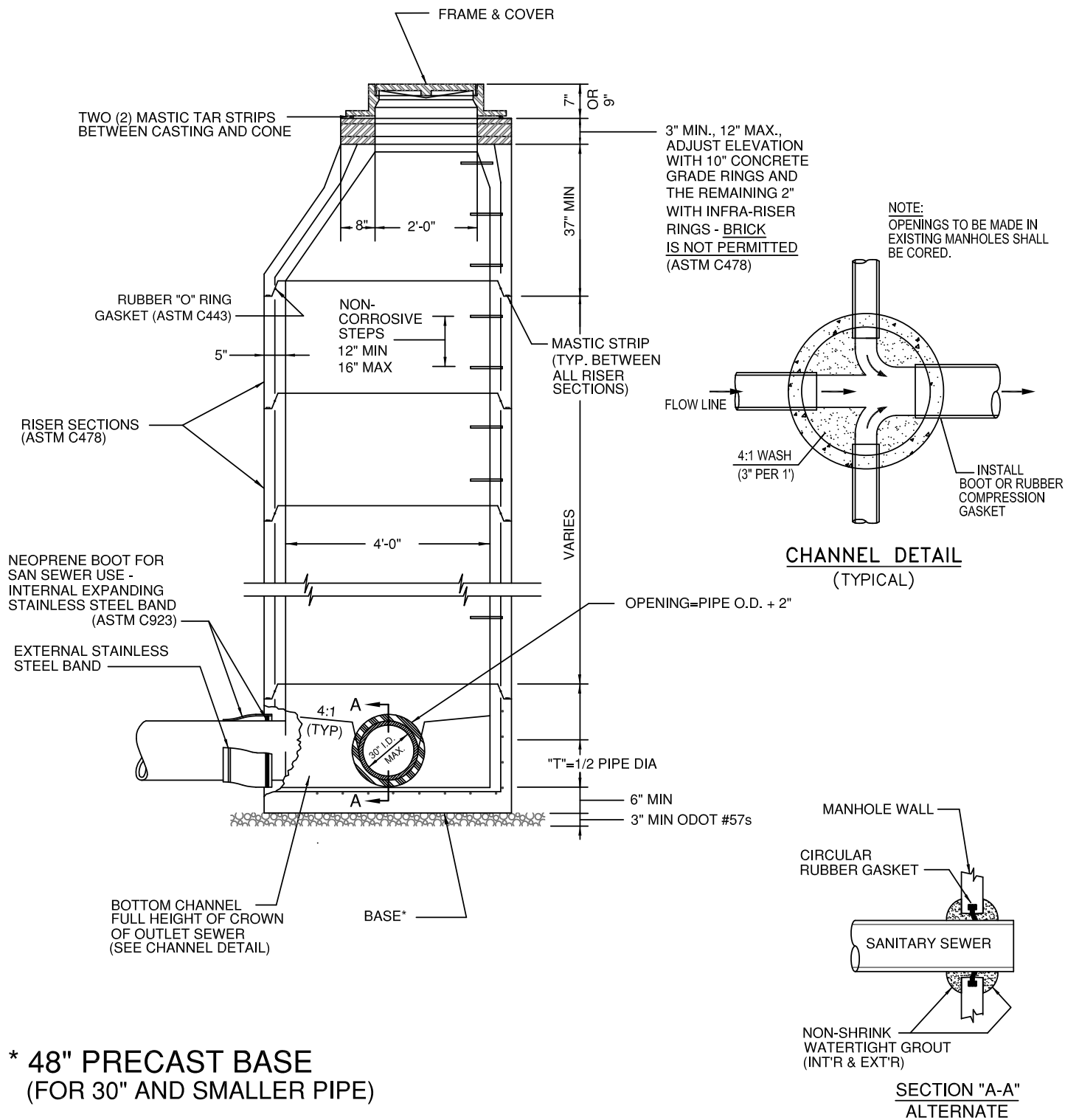
CAD FILE:
\\ENGINEERING STANDARDS\\PV-14.1.DWG

SHEET:

PV-14.1

DRWN BY: SLG	APPRVD BY: AJM	ISSUE DATE: 12/31/08	SCALE: NONE
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NO.	DATE	REVISION			
1	12/31/08	ISSUED			
2	7/14/10	REV.NOTES 1&2, ADD. CONS.			
		/JNT., FIL./FAB. & RE.BAR			



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City Engineer

SANITARY STANDARD MANHOLE

CAD FILE:
ENGINEERING STANDARDS/SS-1.0.DWG

SHEET:

DRWN BY:
AJM

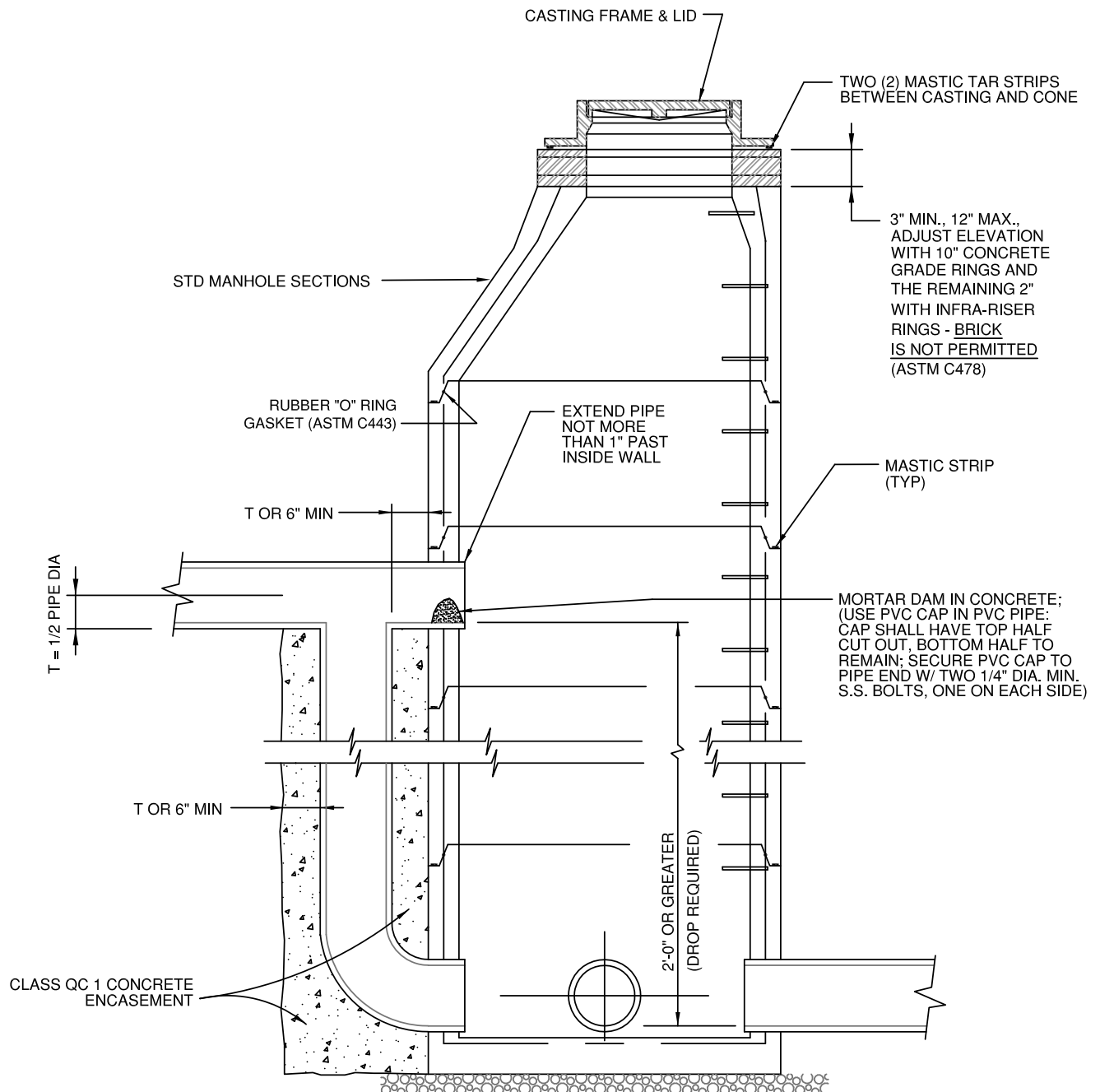
APPRVD BY:
EPO

ISSUE DATE:
07/27/00

SCALE:
NONE

SS-1.0

NO.	DATE	REVISION		AND ASTM C-32
2	7/17/01	REMOVED ALT. BASE DETAIL	7	6/08/05 ADDED #57'S
		ADDED LAT. NOTE	8	10/31/08 REV. ASTM C32 TO C478
3	10/11/01	ADDED REF. TO ASTM C-478	9	7/1/12 REV. ADJUST. NOTE
4	8/27/02	REV. BOTTOM CHANNEL	10	01/06/14 REV. ADJUST. NOTE
5	11/14/02	REMOVED LATERAL NOTE	11	01/06/15 ADD SECOND MASTIC STRIP
6	7/22/03	ADDED REF. TO ASTM C-923	12	01/02/19 REM. CASTING MORTAR



NOTE:

1. ONLY OUTSIDE DROP PERMITTED ON STD MANHOLE (4' DIA).
2. INSIDE DROP PERMITTED ON MANHOLES 5' DIA OR LARGER.
3. LATERAL CONNECTIONS TO MANHOLE ARE PROHIBITED, UNLESS APPROVED BY THE CITY ENGINEER.
4. SEE STANDARD MANHOLE DRAWING FOR OTHER DETAILS.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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City Engineer

NO.	DATE	REVISION	REM. CASTING MORTAR
1	9/17/04	REV. MORTAR DAM IN VSP TO CONC.	
2	01/06/14	REV. ADJUST. NOTE	
3	01/06/15	ADD SECOND MASTIC STRIP	
		ADD PVC CAP NOTE	
4	01/02/19	REV. CONC. SPECS	

**SANITARY
DROP MANHOLE**

CAD FILE:
ENGINEERING STANDARDS\SS-2.0.DWG

SHEET:

DRWN BY:
JES

APPRVD BY:
EPO

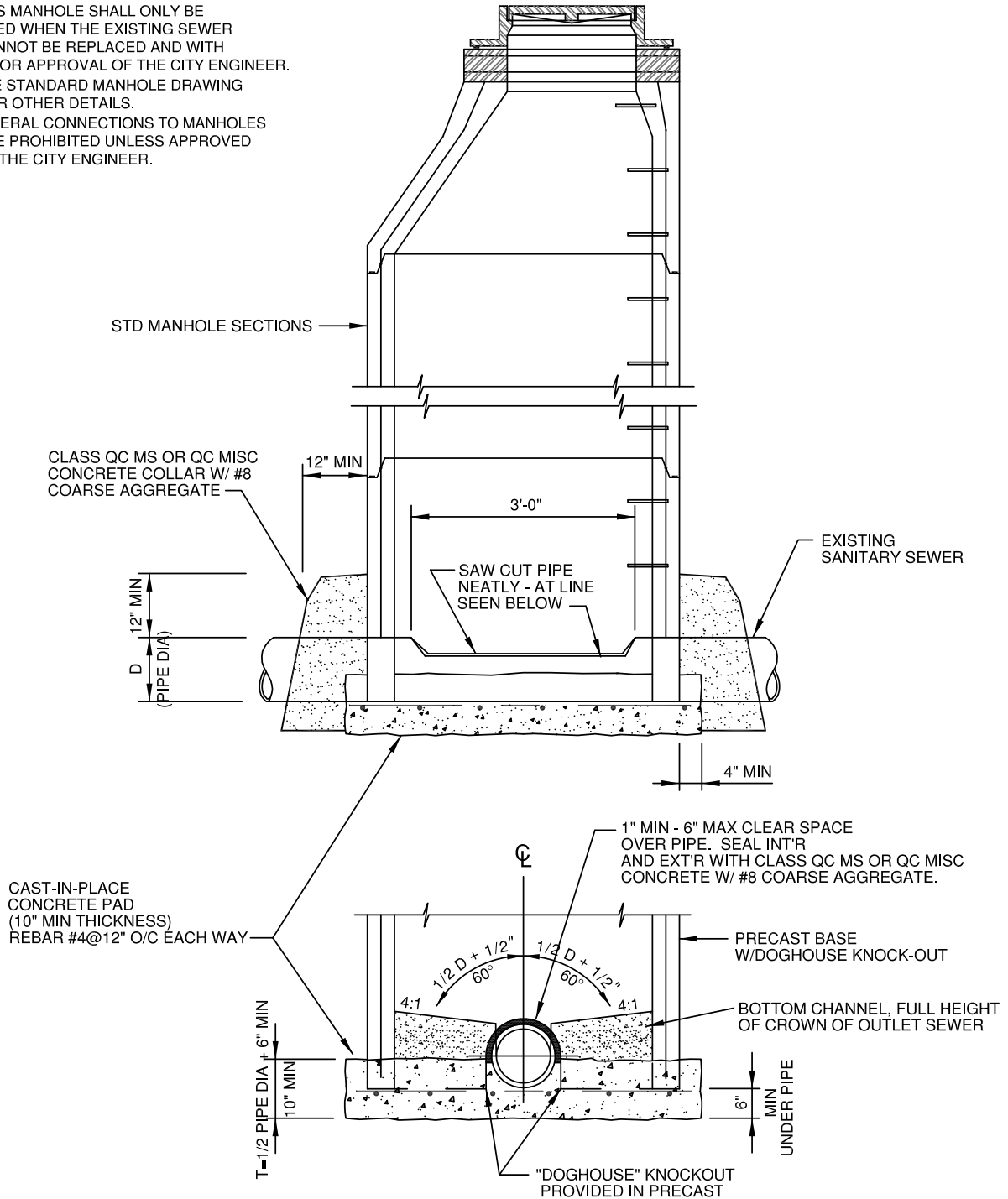
ISSUE DATE:
07/01/98

SCALE:
NONE

SS-2.0

NOTES:

1. THIS MANHOLE SHALL ONLY BE USED WHEN THE EXISTING SEWER CANNOT BE REPLACED AND WITH PRIOR APPROVAL OF THE CITY ENGINEER.
2. SEE STANDARD MANHOLE DRAWING FOR OTHER DETAILS.
3. LATERAL CONNECTIONS TO MANHOLES ARE PROHIBITED UNLESS APPROVED BY THE CITY ENGINEER.



ROTATED SECTION

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	7/17/01	ADDED NOTES 2 & 3.			
2	8/27/02	REV. BOTTOM CHANNEL			
3	01/02/19	REV. CONC. SPECS			
		REM. CASTING MORTAR			

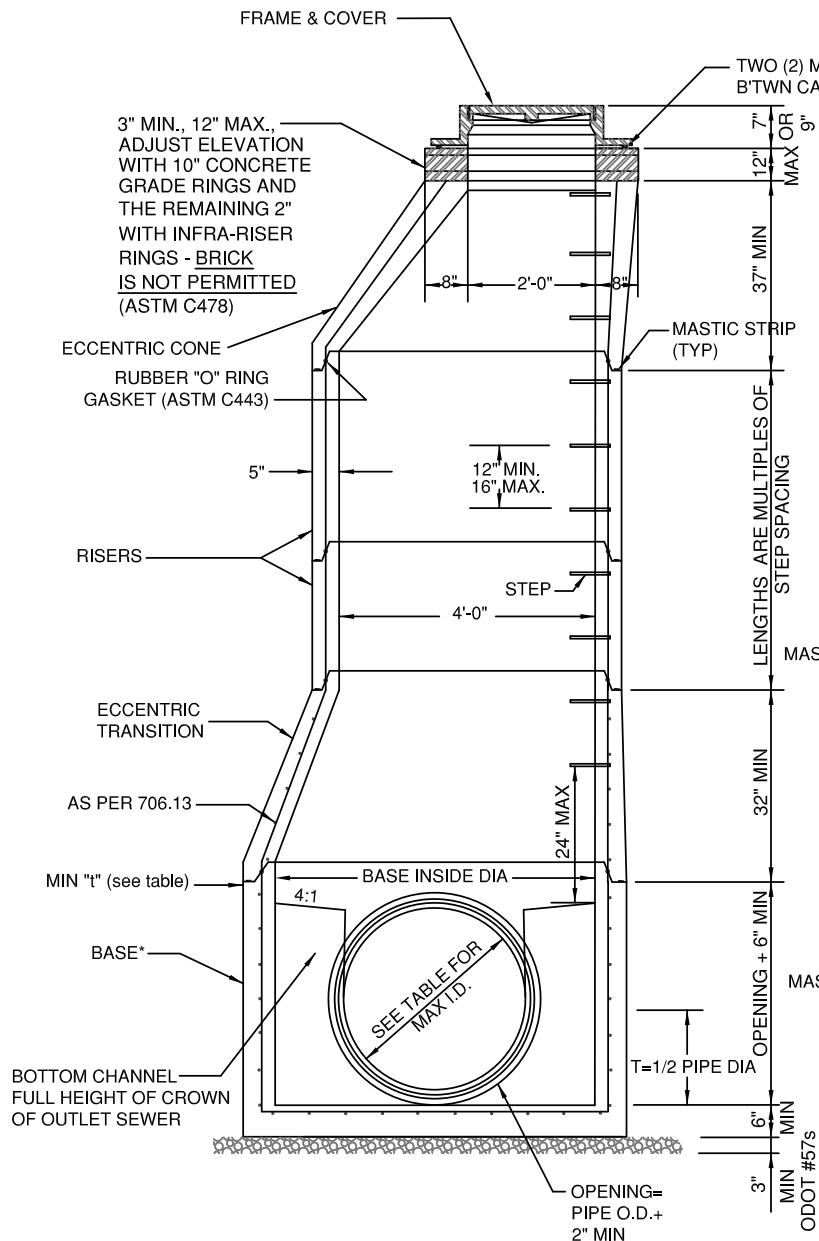
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DRWN BY: JES
APPRVD BY: EPO
ISSUE DATE: 07/27/00
SCALE: NONE

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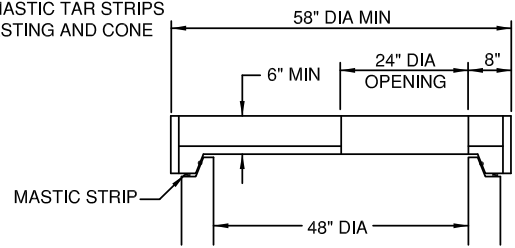
SS-3.0

SANITARY
DOGHOUSE MANHOLE

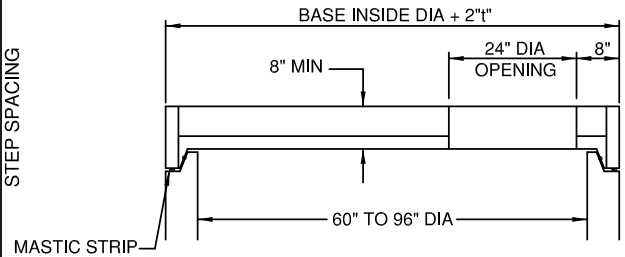


NOTES:

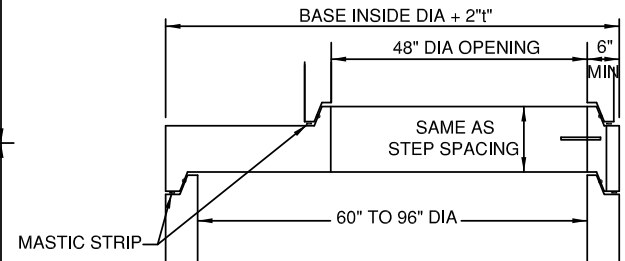
1. SEE "SANITARY STANDARD MANHOLE" DRAWING FOR ADDITIONAL DETAILS NOT SHOWN.
2. LATERAL CONNECTIONS TO MANHOLES ARE PROHIBITED UNLESS APPROVED BY THE CITY ENGINEER.



FLAT SLAB TOP



FLAT SLAB TOP



FLAT SLAB TRANSITION

**TABLE FOR
PRECAST MANHOLE BASE SECTIONS**

BASE I.D.	MIN. "t"	MAX. PIPE SIZE
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7 1/2"	60"
96"	8"	60"

*** 60" TO 96" PRECAST BASE
(SEE TABLE FOR MAXIMUM PIPE SIZES)**

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City Engineer

NO.	DATE	REVISION			
			6	01/06/14	REV. ADJUST. NOTE
1	12/29/00	ADDITIONAL DETAILS NOTE	7	01/06/15	ADD SECOND MASTIC STRIP
2	7/17/01	ADDED LAT. NOTE AND	8	01/04/18	CORRECT GASKET SPEC
		ELIM. 48" MH FROM TABLE	9	01/02/19	REM. CASTING MORTAR
3	8/27/02	REV. BOTTOM CHANNEL			
4	6/08/05	ADDED #57's			
5	7/1/12	REV. ADJUST. NOTE			

LARGE DIAMETER SANITARY MANHOLE

CAD FILE:
\\ENGINEERING STANDARDS\SS-4.0.DWG

SHEET:

DRWN BY:
JES

APPRVD BY:
EPO

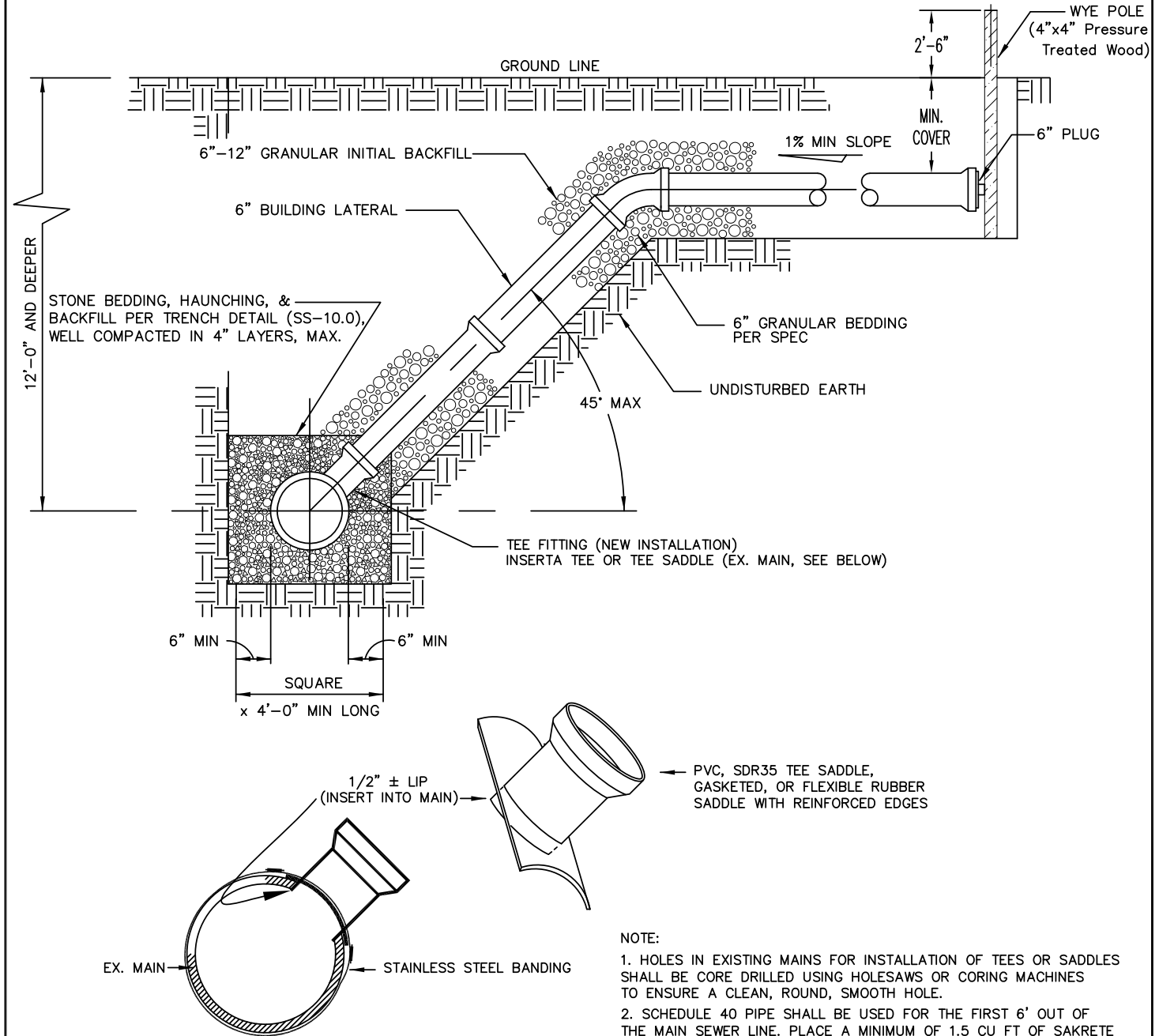
ISSUE DATE:
07/01/98

SCALE:
NONE

SS-4.0

LATERAL TERMINATION:

LATERAL SHALL TERMINATE 6" FROM THE RIGHT-OF-WAY LINE UNLESS SHOWN OTHERWISE ON THE DRAWINGS. TERMINATION DEPTH SHALL PROVIDE 4'-0" MIN. COVER, BUT NOT LOWER THAN THE ADJACENT SANITARY SEWER MAIN. RISER PIPE SHALL BE INSTALLED AS NECESSARY TO TERMINATE LATERAL AT THE APPROPRIATE GRADE TO SERVICE LOWEST BUILDING LEVEL.



NOTE:

1. HOLES IN EXISTING MAINS FOR INSTALLATION OF TEES OR SADDLES SHALL BE CORE DRILLED USING HOLESAWS OR CORING MACHINES TO ENSURE A CLEAN, ROUND, SMOOTH HOLE.
2. SCHEDULE 40 PIPE SHALL BE USED FOR THE FIRST 6' OUT OF THE MAIN SEWER LINE. PLACE A MINIMUM OF 1.5 CU FT OF SAKRETE (HIGH STRENGTH MIX) AROUND MAIN LINE CONNECTION.

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NO.	DATE	REVISION			
1	7/17/01	LAT. TERMINATION DEPTH			
2	10/11/01	BEDDING & BACKFILL NOTE			
3	12/10/03	REVISED SADDLE			
4	9/30/06	REMOVED WYE FITTINGS			
5	7/1/12	REVISED NOTES			

DEEP LATERAL CONNECTION

CAD FILE:
ENGINEERING STANDARDS\SS-5.0.DWG

SHEET:

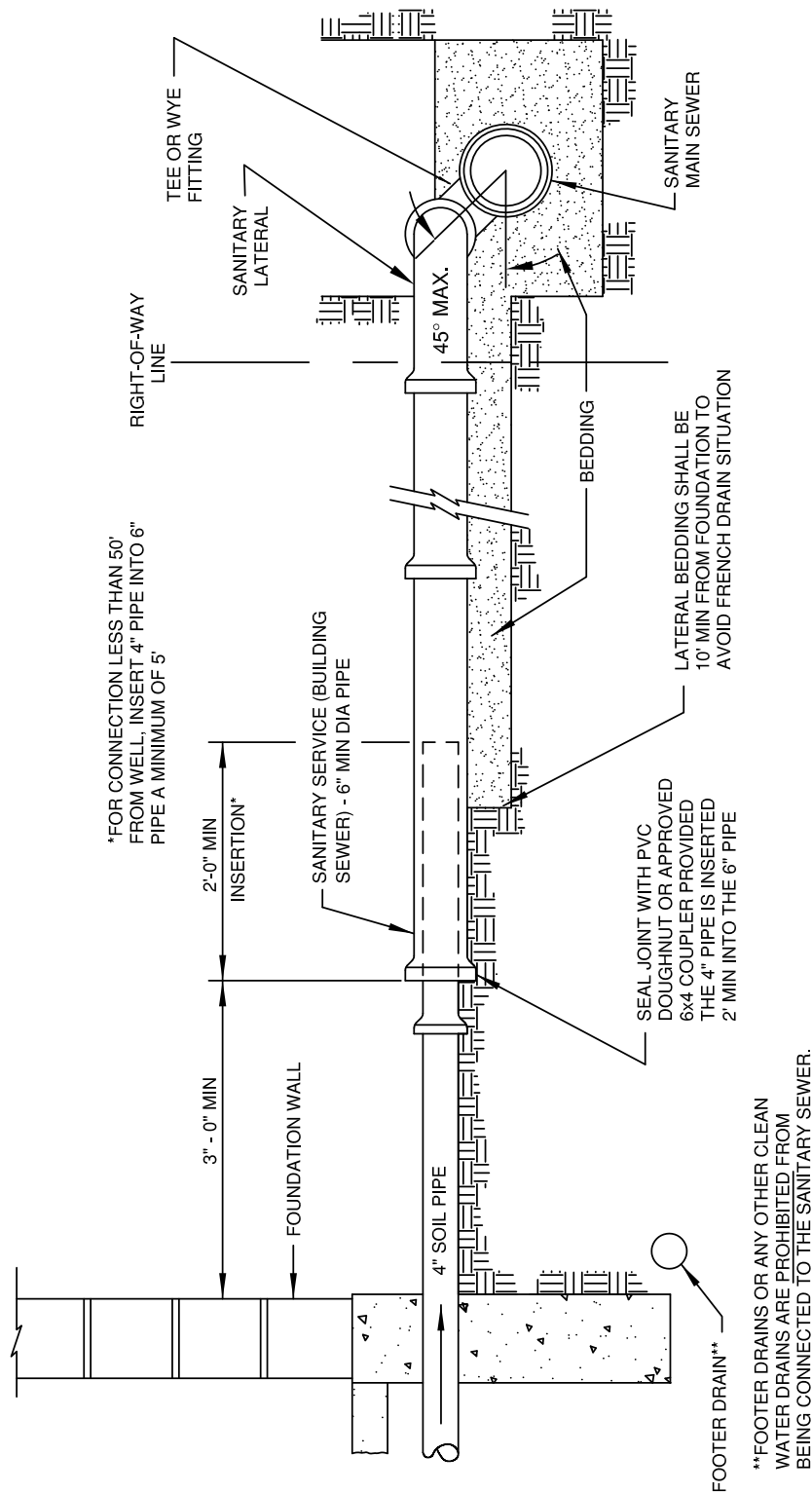
DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:
11/09/00

SCALE:
NONE

SS-5.0



NOTES:

1. MINIMUM GRADE FOR SANITARY SERVICE SHALL BE 1% (1/8" FALL PER FOOT).
2. MAXIMUM GRADE FOR SANITARY SERVICE SHALL BE NOT MORE THAN 10% (1-1/4" FALL PER FOOT).
3. MINIMUM DIAMETER FOR SANITARY SERVICE SHALL BE 6".
4. SANITARY SERVICE PIPE SHALL BE PVC ASTM 3034 (SDR 35), OR AS APPROVED BY THE CITY ENGINEER.
5. APPROVED ELASTOMERIC COUPLERS ARE FERNCO 5000 SERIES STRONG BACK.
6. CLEAN-OUTS ARE REQUIRED AT ALL BENDS GREATER THAN 45° AND ALONG STRAIGHT RUNS FOR EVERY 100'.
7. SANITARY SERVICE MUST BE INSPECTED BY THE CITY BUILDING STANDARDS DEPARTMENT BEFORE BACKFILLING.
8. REFERENCE OTHER STANDARD DRAWINGS REGARDING BEDDING, BACKFILL, CLEAN-OUT, TRENCHING, ETC.
9. INSERTA TEES OR GASKETED PVC TEE/WYE SADDLES WITH 1/2" INSERTION LIP SHALL BE USED FOR CONNECTION TO EX. MAINS.

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City Engineer

NO.	DATE	REVISION			
1	7/17/01	LAT. ANGLE AT WYE, SADDLE			
		MANUFACTURER NOTE.			
2	10/24/01	REV. NOTE 9 - SADDLES			
3	7/1/12	REV. NOTE 5			

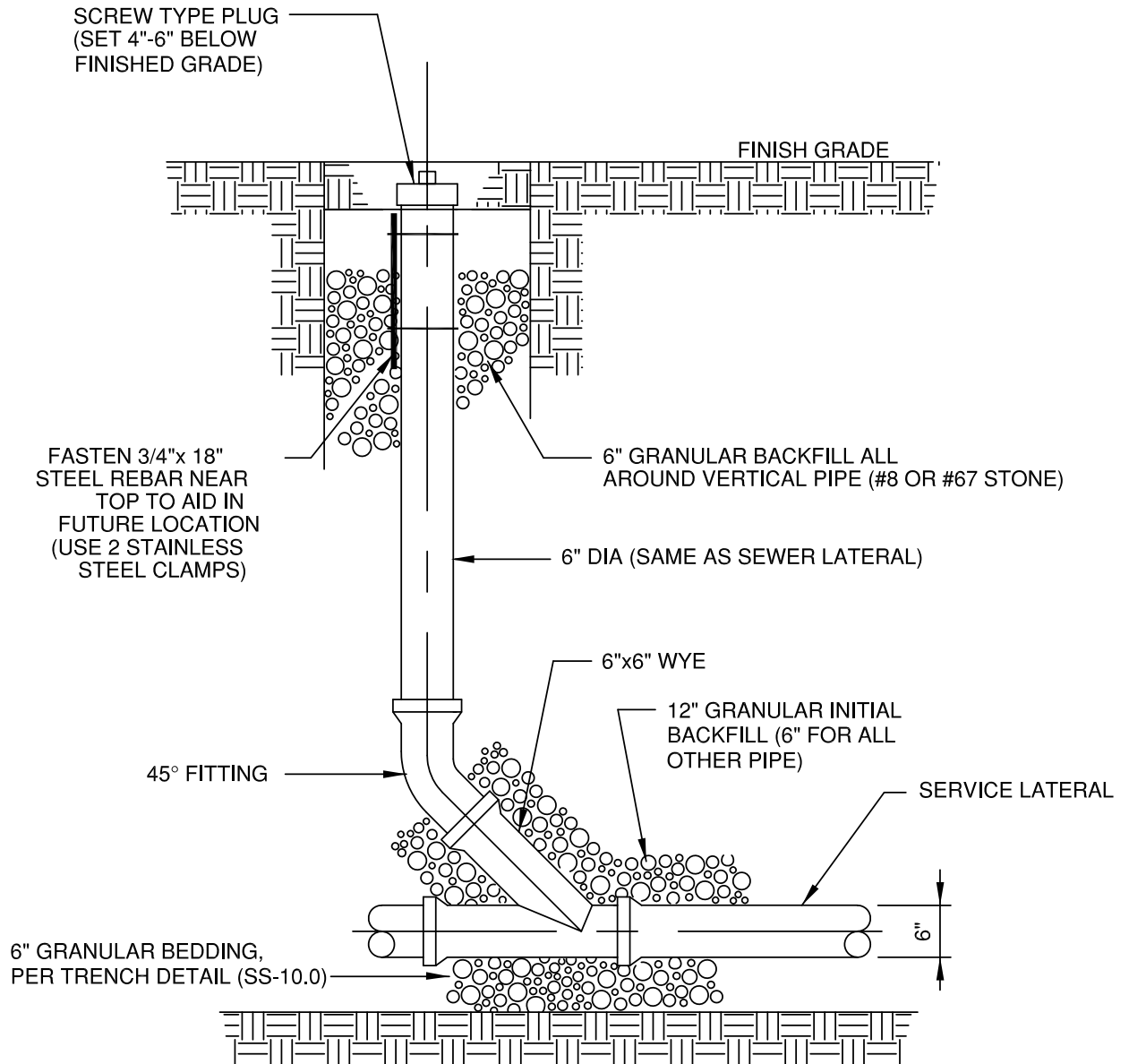
TYPICAL SANITARY SERVICE CONNECTION

CAD FILE:
\ENGINEERING STANDARDS\SS-6.0.DWG

DRWN BY: AJM
APPRVD BY: EPO
ISSUE DATE: 07/28/00
SCALE: NONE

SHEET:

SS-6.0



OUTSIDE RIGHT-OF-WAY

(PRIVATE PROPERTY)

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	10/11/01	REV. BEDDING NOTE			
2	5/2/02	REV. CAP			

CLEAN-OUT DETAIL PRIVATE PROPERTY

CAD FILE:
\\ENGINEERING STANDARDS\SS-7.0.DWG

SHEET:

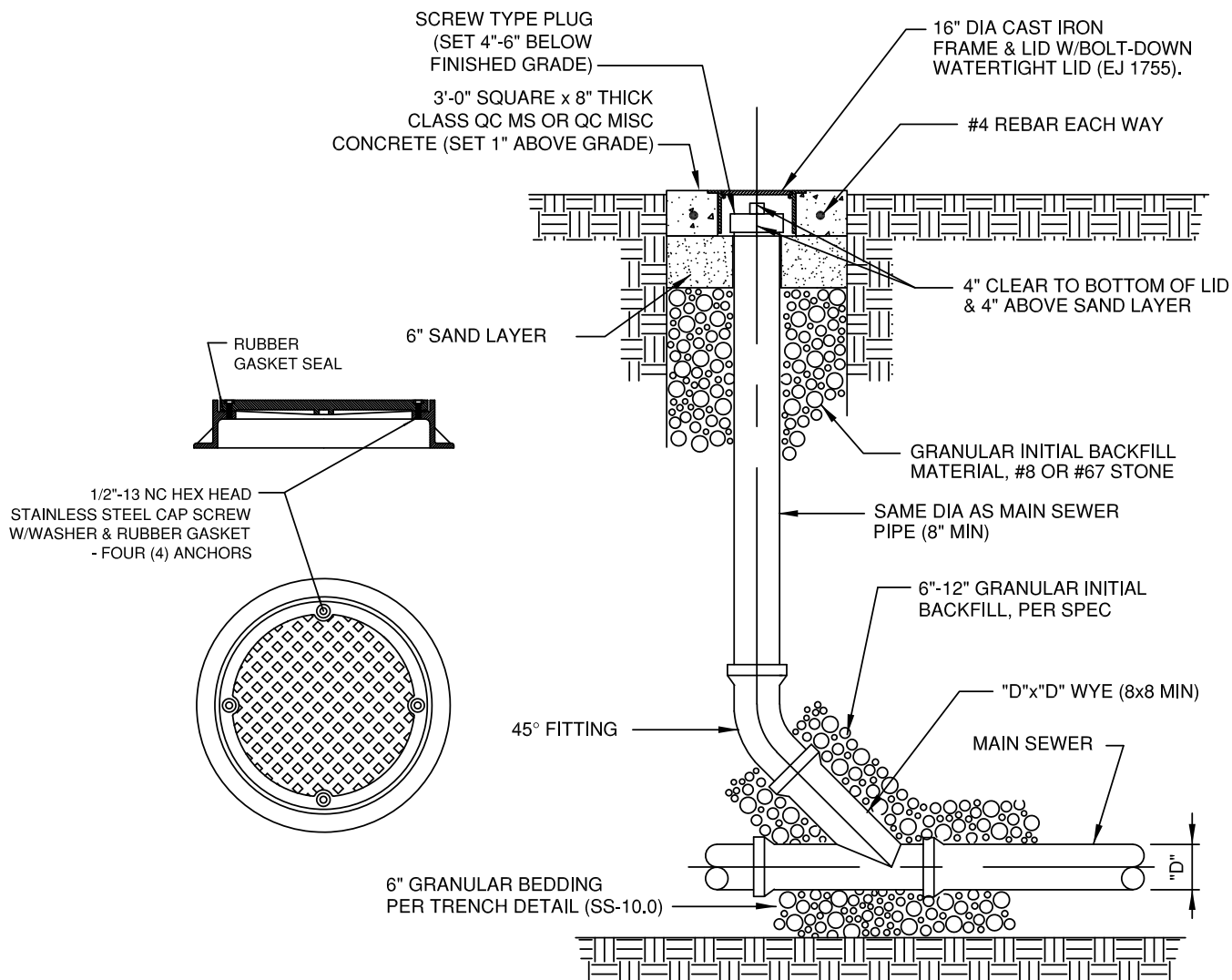
DRWN BY:
JES

APPRVD BY:
EPO

ISSUE DATE:
07/01/98

SCALE:
NONE

SS-7.0



WITHIN RIGHT-OF-WAY (OR PUBLIC EASEMENT)

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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NO.	DATE	REVISION			
1	10/11/01	REV. BEDDING NOTE			
2	5/2/02	REV. CAP			
3	01/04/18	CORRECT LID SPEC			
4	01/02/19	REV. CONC. SPEC			

CLEAN-OUT DETAIL PUBLIC

CAD FILE:
\\ENGINEERING STANDARDS\SS-8.0.DWG

SHEET:

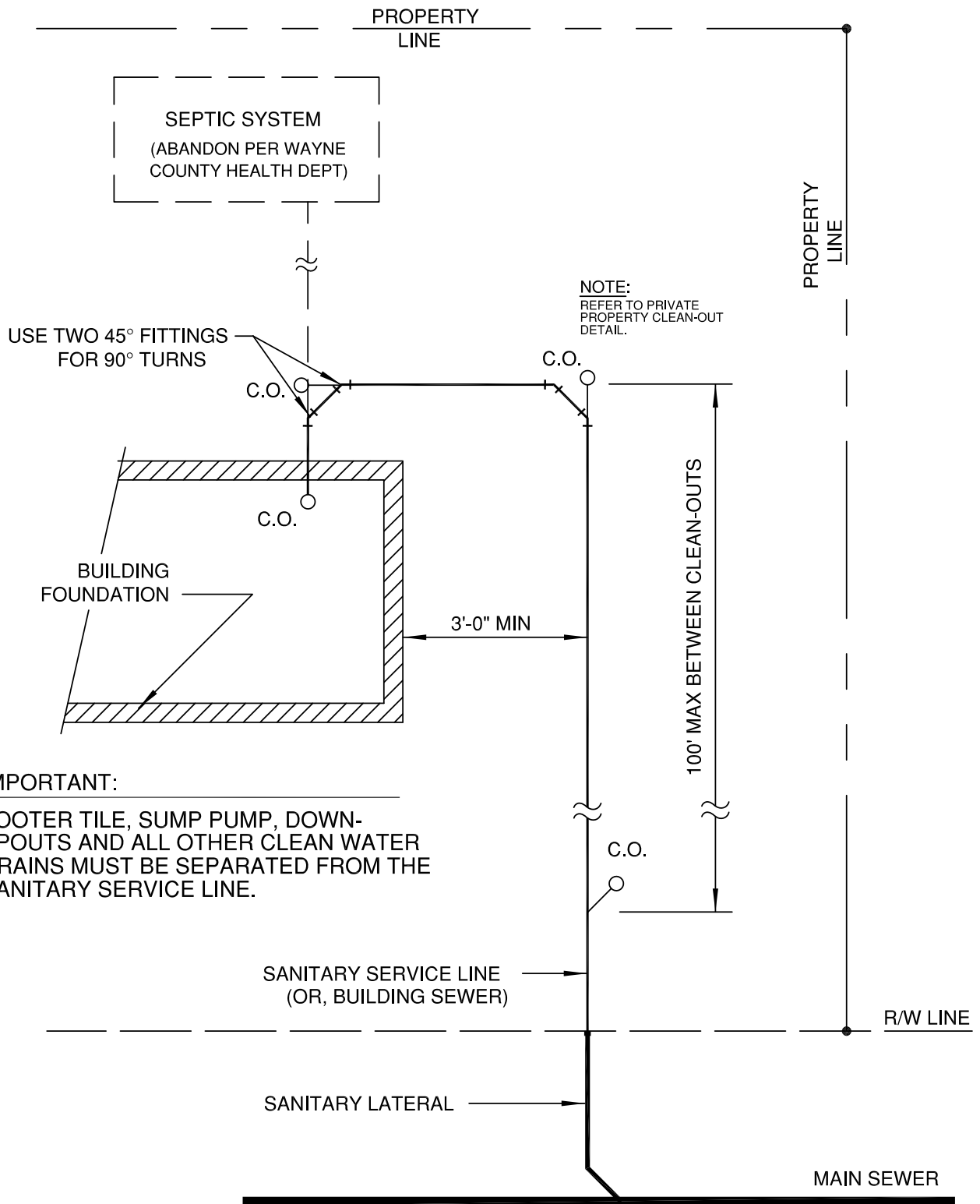
DRWN BY:
JES

APPRVD BY:
EPO

ISSUE DATE:
07/01/98

SCALE:
NONE

SS-8.0



IMPORTANT:

FOOTER TILE, SUMP PUMP, DOWN-SPOUTS AND ALL OTHER CLEAN WATER DRAINS MUST BE SEPARATED FROM THE SANITARY SERVICE LINE.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	7/17/01	TYPO. CORRECTION			
2	5/02/02	REV. C.O. LOCATIONS			

SEPTIC CONVERSION TO SEWER

CAD FILE:
ENGINEERING STANDARDS\SS-9.0.DWG

SHEET:

DRWN BY: JES
APPRVD BY: EPO
ISSUE DATE: 07/01/98
SCALE: NONE

SS-9.0

**PVC GRAVITY PIPE
TYPICAL TRENCH SECTION
BEDDING AND BACKFILL**

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAYS OR SIDEWALKS - COMPACTED ODOT 411 GRANULAR MATERIAL
NOT UNDER PAVEMENT -
COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO REFUSE OR ORGANIC MATERIAL, (ASTM D2321, CLASS 1 THRU 3 BACKFILL)

INITIAL BACKFILL:

COMPACTED NO. 8 AGGREGATE, ODOT 703.01 (ASTM D2321, CLASS I MATERIAL)

HAUNCHING:

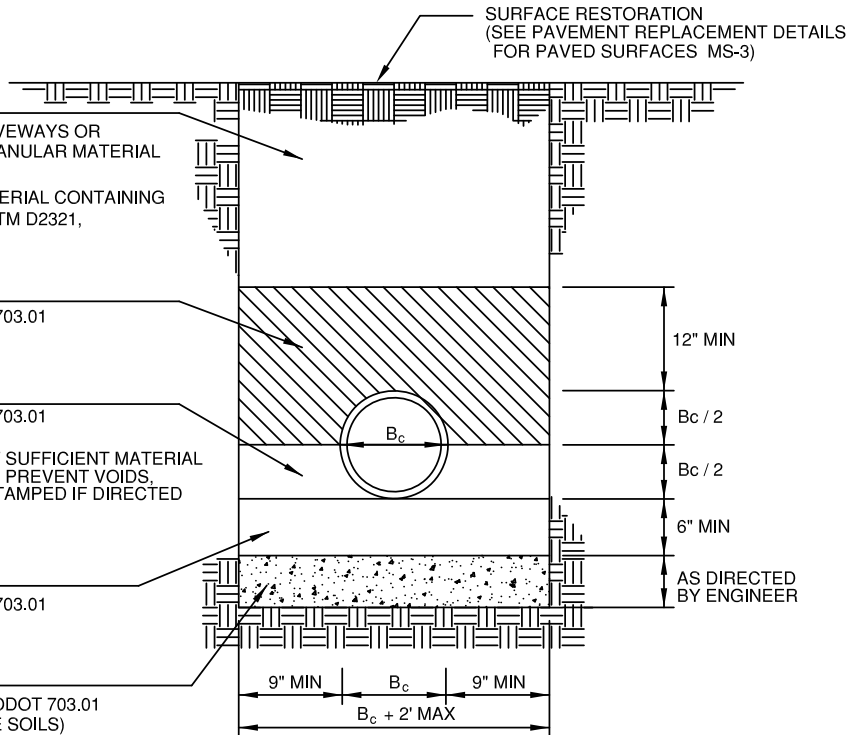
COMPACTED NO. 8 AGGREGATE, ODOT 703.01 (ASTM D2321, CLASS I MATERIAL)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT MATERIAL HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS. HAUNCHING SHALL BE HAND PLACED & TAMPED IF DIRECTED

GRANULAR BEDDING:

COMPACTED NO. 8 AGGREGATE, ODOT 703.01 (ASTM D2321, CLASS I MATERIAL)

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 LIMESTONE, ODOT 703.01 (AS REQUIRED TO REPLACE UNSUITABLE SOILS)



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NO.	DATE	REVISION			
1	10/31/08	REV. AGGREGATE NOTES			
2	10/22/10	GRAV. DIM 4'MAX TO 2'MAX			
3	7/1/12	ADDED DRIVES / SW			
4	01/06/14	REMOVE PVC F.M.			

SANITARY SEWER TRENCH DETAILS

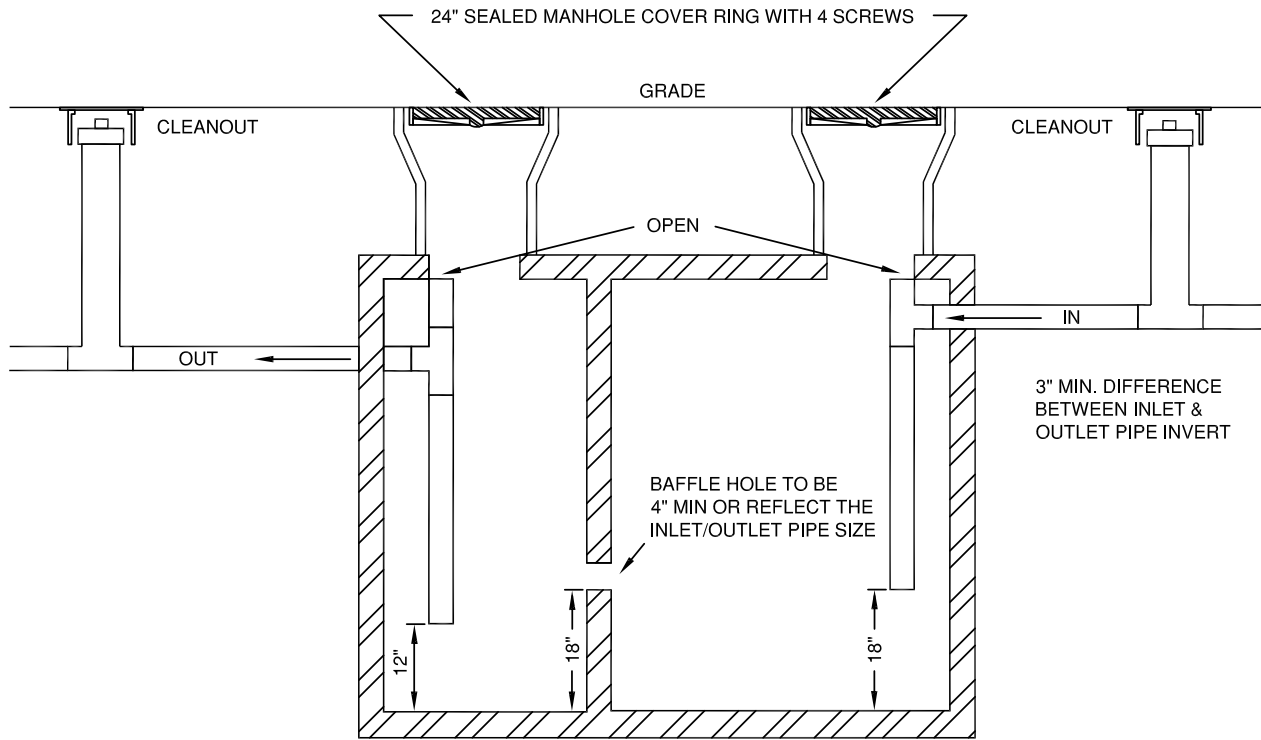
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SHEET:

DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 5/02/02	SCALE: NONE
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SS-10.0

CITY OF WOOSTER GREASE INTERCEPTOR 1,000 GALLON MIN.



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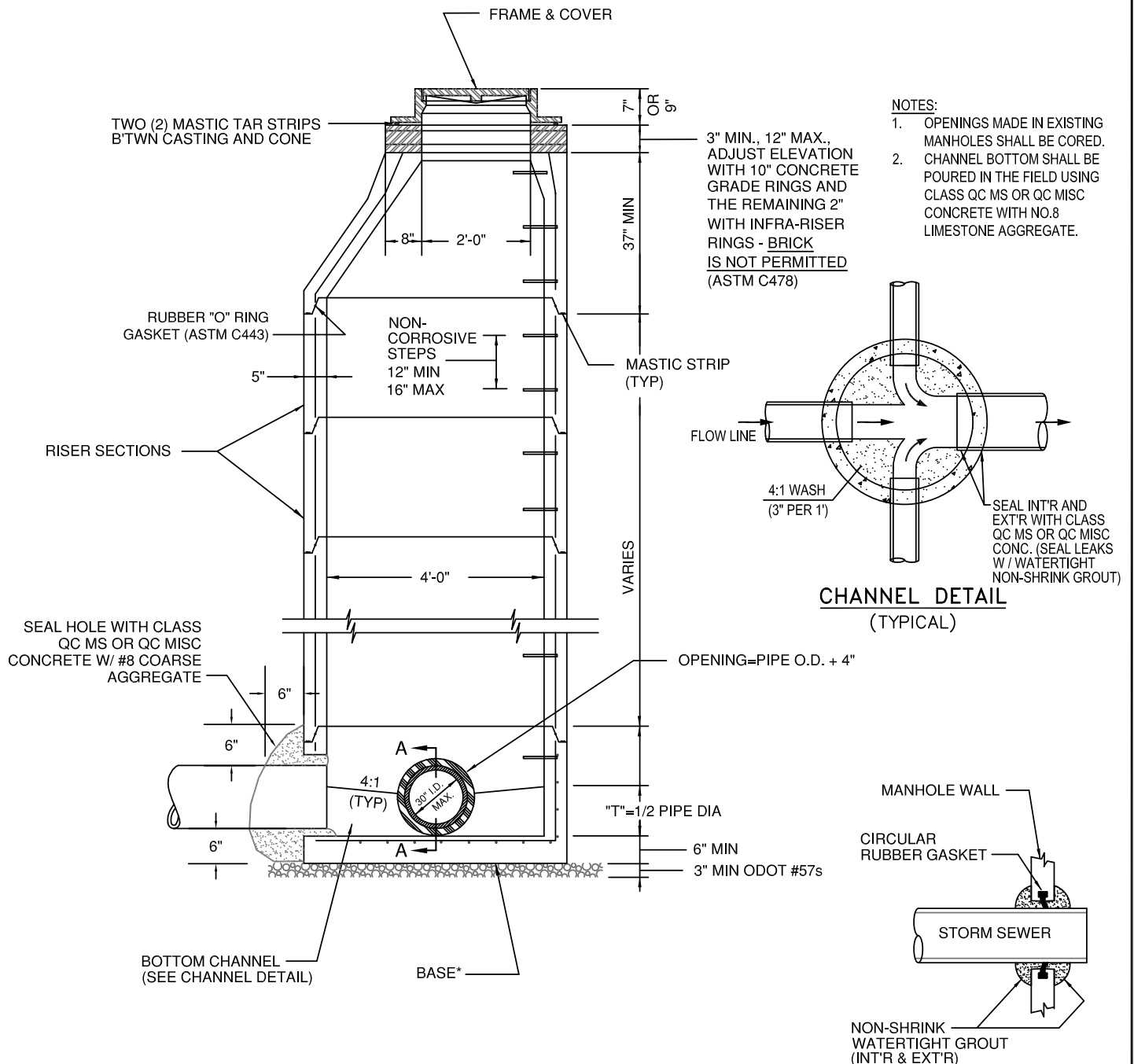
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 Roger Koblarcsik, P.E.
 City Engineer

NO.	DATE	REVISION			

GREASE
INTERCEPTOR

CAD FILE: ENGINEERING STANDARDS\SS-11.0.DWG				SHEET: SS-11.0	
DRWN BY: TLH	APPRVD BY: AJM	ISSUE DATE: 07/1/12	SCALE: NONE		



*** 48" PRECAST BASE
(FOR 30" AND SMALLER PIPE)**

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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NO.	DATE	REVISION	7	10/28/09	ADD CHANNEL DETAIL NOTE 2
1	12/27/00	CHANNEL DETAIL PIPE SEAL	8	7/1/12	REV. ADJUST. NOTE
2	7/18/01	ELIM. BASE ALTERNATE	9	01/06/14	REV. ADJUST. NOTE
3	10/15/01	REV. SECTION A-A ALT.	10	01/06/15	ADD SECOND MASTIC STRIP
4	3/28/02	REV. PIPE SEALS	11	01/02/19	REV. CONC. SPECS
5	6/08/05	ADDED #57's			REM. CASTING MORTAR
6	10/31/08	REV. OPENING SIZE			

CAD FILE:
ENGINEERING STANDARDS/ST-1.0.DWG

DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:
07/27/00

SCALE:
NONE

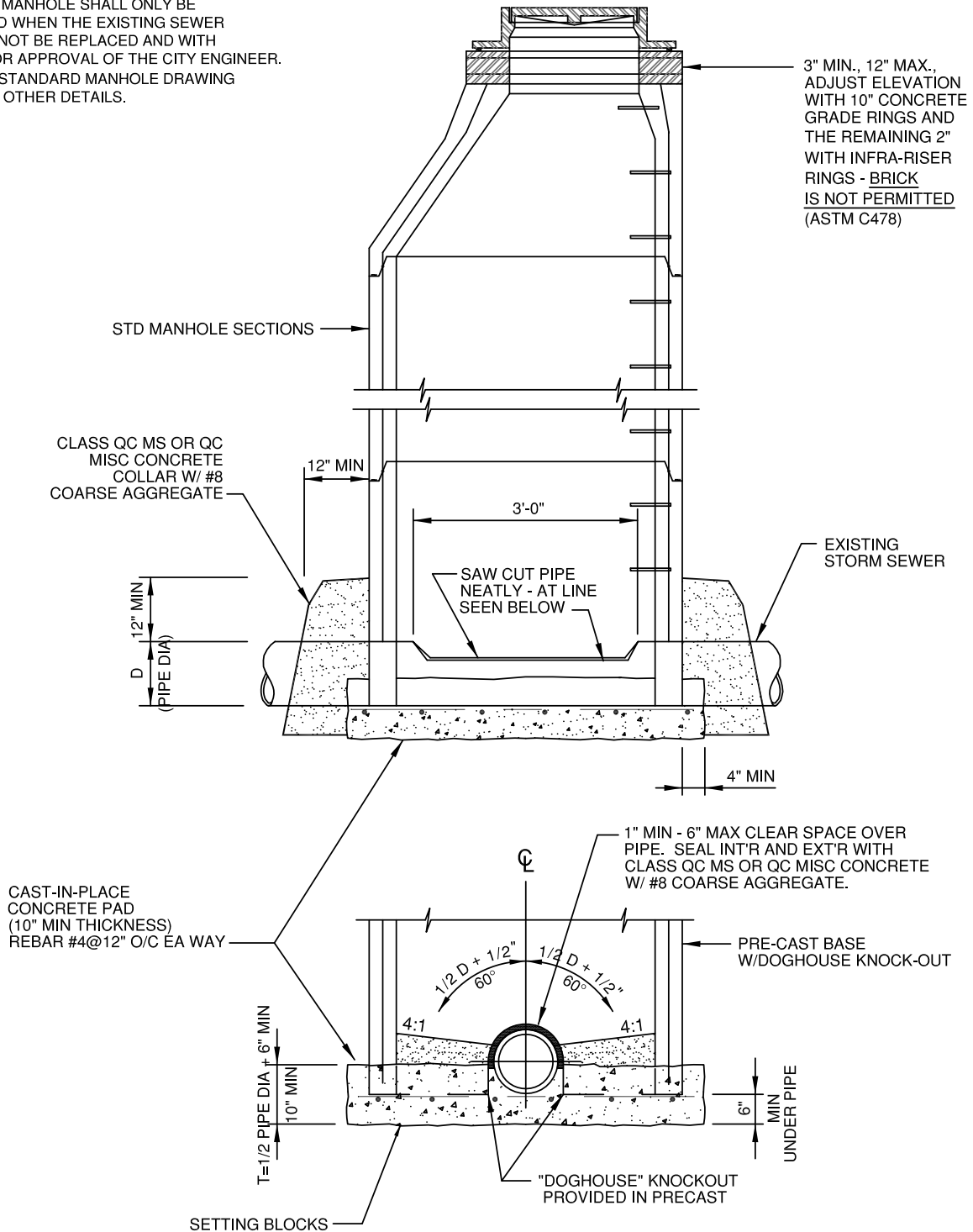
SHEET:

ST-1.0

**STORM
STANDARD MANHOLE**

NOTES:

1. THIS MANHOLE SHALL ONLY BE USED WHEN THE EXISTING SEWER CANNOT BE REPLACED AND WITH PRIOR APPROVAL OF THE CITY ENGINEER.
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NO.	DATE	REVISION			
1	7/18/01	ADDED NOTE 2			
2	7/1/12	REV. ADJUSTMENT NOTE			
3	01/06/14	REV. ADJUSTMENT NOTE			
4	01/02/19	REV. CONC. SPECS			
		REM. CASTING MORTAR			

CAD FILE:
ENGINEERING STANDARDS\ST-3.0.DWG

DRWN BY:
AJM

APPRVD BY:
EPO

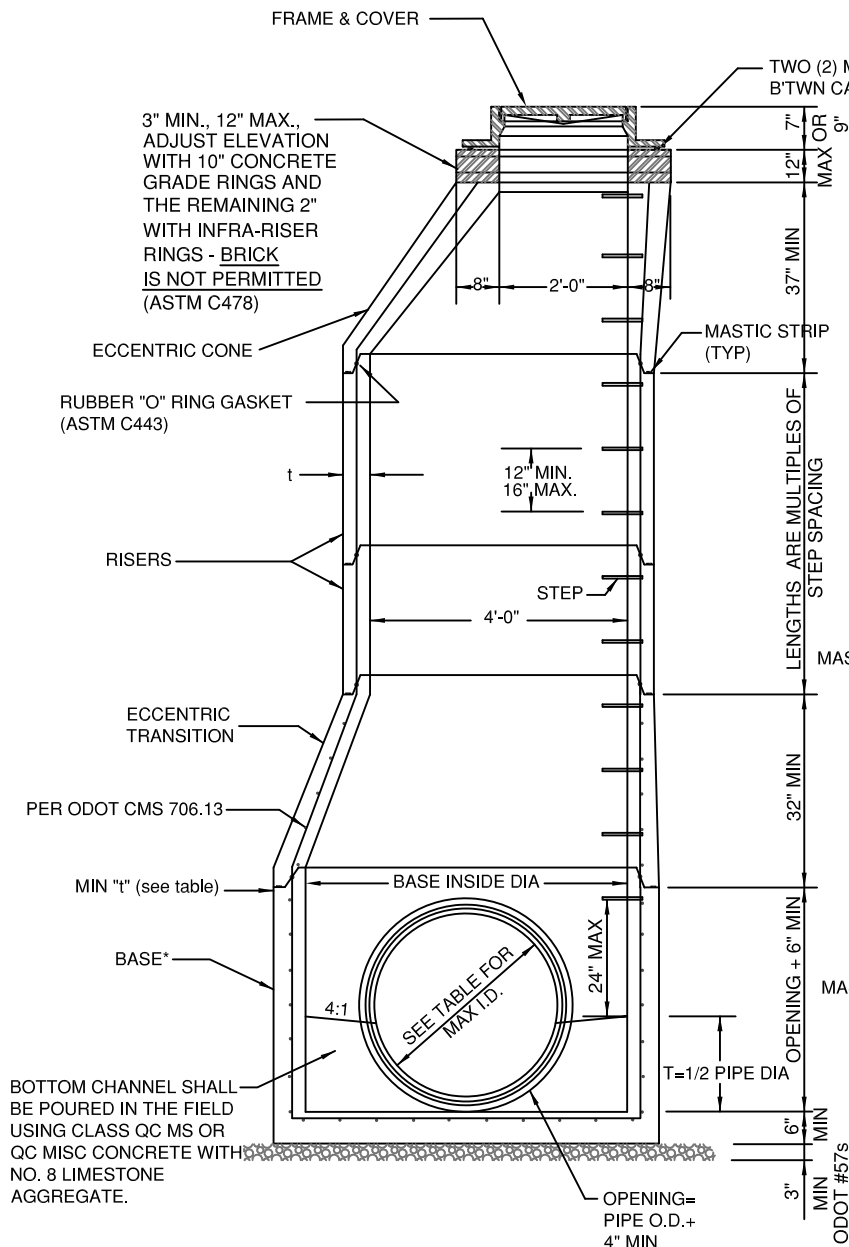
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07/27/00

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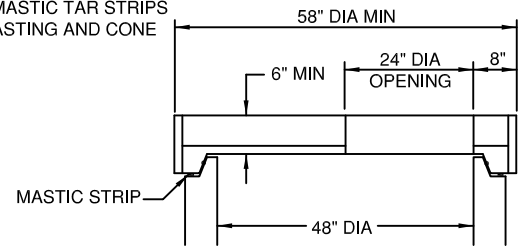
SHEET:

ST-3.0

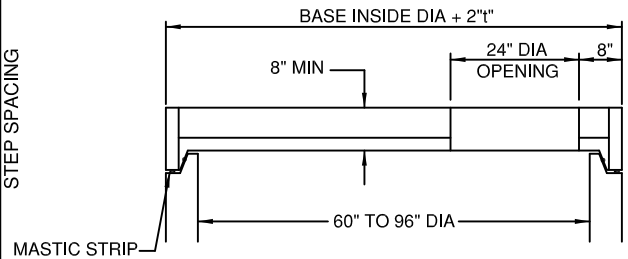
STORM
DOGHOUSE MANHOLE



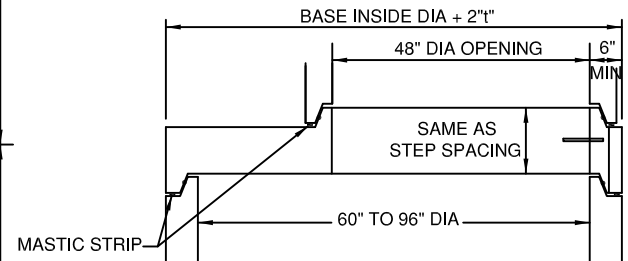
NOTES:
SEE "STORM STANDARD MANHOLE"
DRAWING FOR ADDITIONAL DETAILS NOT SHOWN.



FLAT SLAB TOP



FLAT SLAB TOP



FLAT SLAB TRANSITION

TABLE FOR
PRECAST MANHOLE BASE SECTIONS

BASE I.D.	MIN. "t"	MAX. PIPE SIZE
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7 1/2"	60"
96"	8"	60"

*** 60" TO 96" PRECAST BASE**
(SEE TABLE FOR MAXIMUM PIPE SIZES)

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

538 N. Market Street Wooster, Ohio 44691

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION	7	01/06/14	REV. ADJUSTMENT NOTE
1	12/29/00	NOTE ON MASTIC STRIP REV.	8	01/06/15	ADD SECOND MASTIC STRIP
2	7/18/01	48" MH REM. FROM TABLE	9	01/04/18	UPDATE SPEC REF'S
3	6/08/05	ADDED #57's	10	01/02/19	REV. CONC. SPECS
4	10/31/08	REV. OPENING SIZE			REM. CASTING MORTAR
5	10/28/09	POUR CHANNEL IN FIELD			
6	7/1/12	REV. ADJUSTMENT NOTE			

LARGE DIAMETER STORM MANHOLE

CAD FILE:

ENGINEERING STANDARDS/ST-4.0.DWG

SHEET:

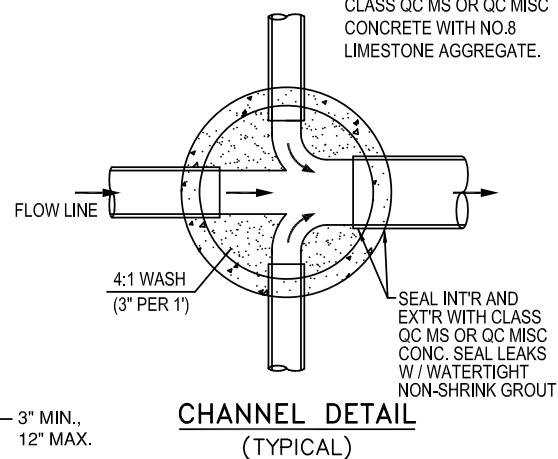
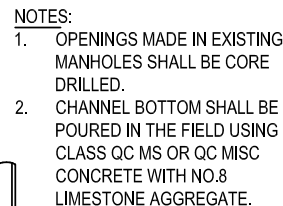
DRWN BY:
JES

APPRVD BY:
EPO

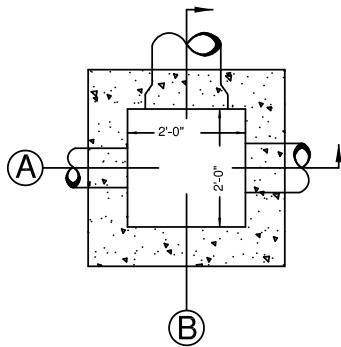
ISSUE DATE:
07/01/98

SCALE:
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ST-4.0

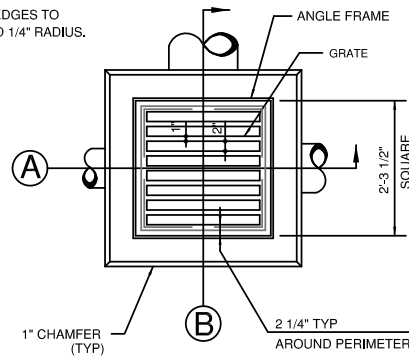


ST-5.0

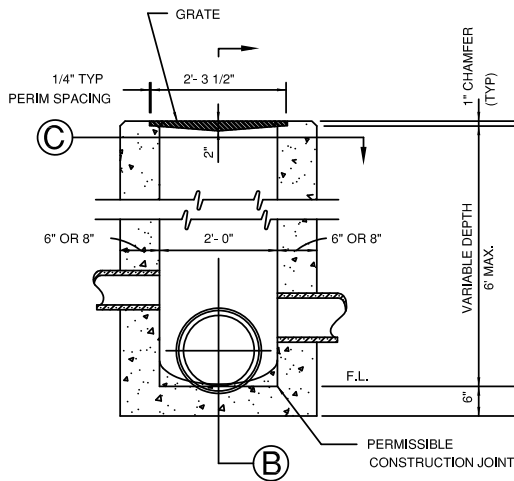


SECTION C

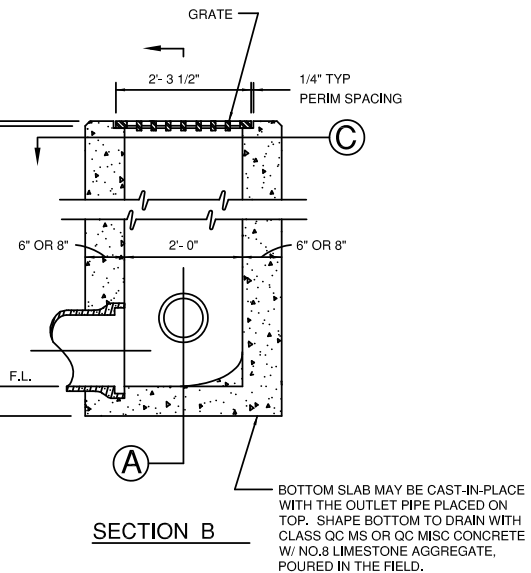
ALL GRATE EDGES TO BE ROUNDED 1/4" RADIUS.



PLAN



SECTION A



SECTION B

NOTES:

LOCATION AND ELEVATION, when given on the plans, shall be the top center of the grate for catch basins.

BRICK OR CONCRETE BLOCK will not be permitted to build, alter, modify, adjust or repair any catch basin, inlet, manhole, junction box or any other such structure.

CAST-IN-PLACE CONCRETE WALLS shall have a nominal thickness of 8". Bottom slab shall have a nominal thickness of 6".

PRECAST CONCRETE WALLS and bottom slab shall have a nominal thickness of 6" and be reinforced sufficiently to permit shipping and handling without damage to the structure.

CONCRETE, cast-in-place, shall be Class QC 1. All pre-cast concrete shall meet current ODOT requirements; 6% (±2%) air void content in the hardened concrete and be marked with the catch basin number.

OPENINGS for any pipe shall be OD+4" when fabricated or field cut. All field cut openings shall be mechanically cored. The use of saw-cutting, hammering or other impact devices is prohibited.

ADJUSTMENT RINGS OR COLLARS used to modify the main structure, when necessary, shall be precast concrete, 2" minimum thickness and shall be doweled and grouted to its base. Dowels shall be 1/2" diameter bars (#4 rebar) on 12" centers around the perimeter; 6" in from any corner and 3" in from the outside edges. Core drill and embed 6" into the main structure and into 1/2 the thickness of the added piece.

PIPE CONNECTIONS to catch basins shall be sealed using Class QC MS or QC Misc concrete with #8 coarse aggregate. Concrete collars shall be 6" thick minimum around the pipe.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

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Roger Kobilarcsik, P.E.
City Engineer

CATCH BASIN 2-2B

NO.	DATE	REVISION
1	12/29/00	BOOT NOTE ADDED
2	7/18/01	REVISED LOC. AND ELEV. NOTE
3	3/29/02	REVISED PIPE CONNECTIONS NOTE.
4	10/28/09	PIPE OPENING O.D. + 4", POUR CHANNEL IN THE FIELD
5	01/02/19	REV. CONC. SPECS

CAD FILE:
ENGINEERING STANDARDS/ST-6.0.DWG

DRWN BY:
AJM

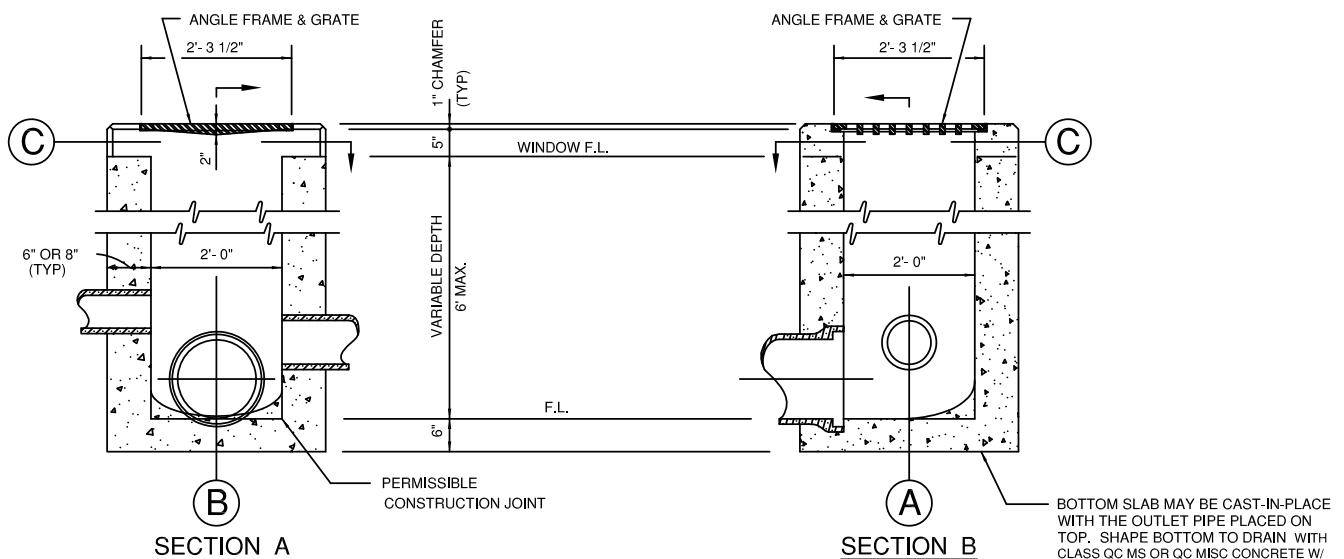
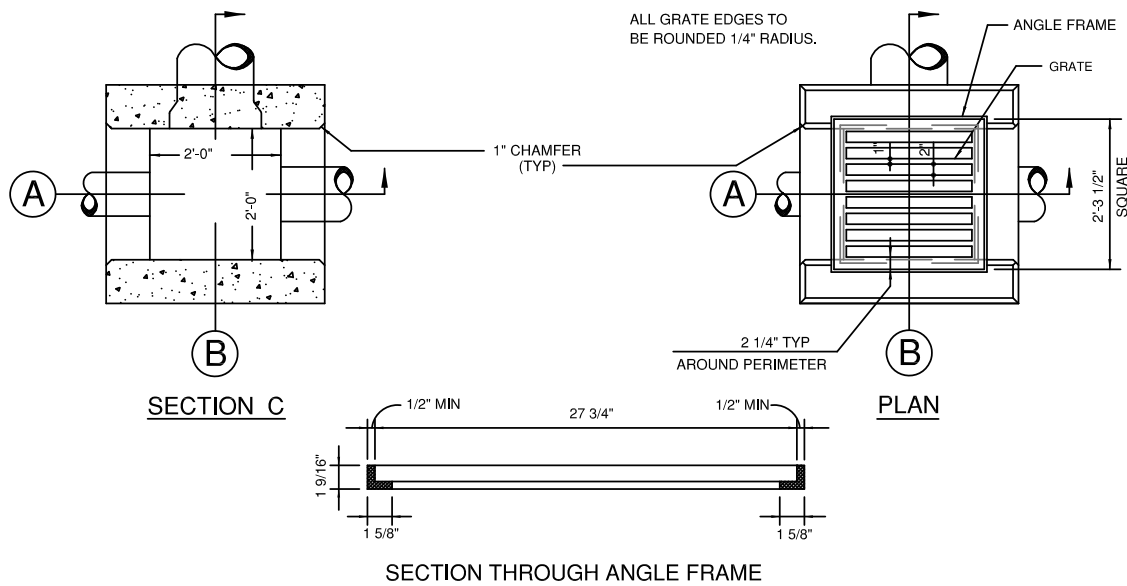
APPRVD BY:
EPO

ISSUE DATE:
11/09/00

SCALE:
NONE

SHEET:

ST-6.0



NOTES:

LOCATION AND ELEVATION, when given on the plans, shall be the top center of the grate for catch basins. When side openings are provided, elevation shall be the flow line of the side inlet.

BRICK OR CONCRETE BLOCK will not be permitted for use to build, alter, modify, adjust or repair any catch basin, inlet, manhole, junction box or any other such structure.

CAST-IN-PLACE CONCRETE WALLS shall have a nominal thickness of 8". Bottom slab shall have a nominal thickness of 6".

PRECAST CONCRETE WALLS and bottom slab shall have a nominal thickness of 6" and be reinforced sufficiently to permit shipping and handling without damage to the structure.

2-2A SIDE INLETS shall be placed 4"-6" below normal elevations of the median or ditch flow line. This elevation shall return to the normal flow line at a distance of 10' out from each side of the basin.

SIDE INLETS shall be provided on both sides of the No. 2-2A catch basin in sags and on upstream side only where the ditch has a continuous down grade past the catch basin.

CONCRETE, cast-in-place, shall be Class QC 1. All pre-cast concrete shall meet current ODOT requirements; 6% (±2%) air void content in the hardened concrete and be marked with the catch basin number.

OPENINGS for any pipe shall be OD+4" when fabricated or field cut. All field cut openings shall be mechanically cored. The use of saw-cutting, hammering or other impact devices is prohibited.

ADJUSTMENT RINGS OR COLLARS used to modify the main structure, when necessary, shall be precast concrete, 2" minimum thickness and shall be doweled and grouted to its base. Dowels shall be 1/2" diameter bars (#4 rebar) on 12" centers around the perimeter; 6" in from any corner and 3" in from the outside edges. Core drill and embed 6" into the main structure and into 1/2 the thickness of the added piece.

PIPE CONNECTIONS to catch basins shall be sealed using Class QC MS or QC Misc concrete with #8 coarse aggregate. Concrete collars shall be 6" thick minimum around the pipe.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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Roger Kobilarcsik, P.E.
City Engineer

CATCH BASIN 2-2A

NO.	DATE	REVISION			
1	12/29/00	BOOT NOTE ADDED			
2	7/18/01	REVISED LOC. AND ELEV. NOTE			
3	3/29/02	REV. PIPE CONNECTIONS NOTE			
4	10/28/09	PIPE OPENING O.D. + 4", POUR CHANNEL IN THE FIELD			
5	01/02/19	REV. CONC. SPECS			

CAD FILE:
ENGINEERING STANDARDS\ST-7.0.DWG

DRWN BY:
JES

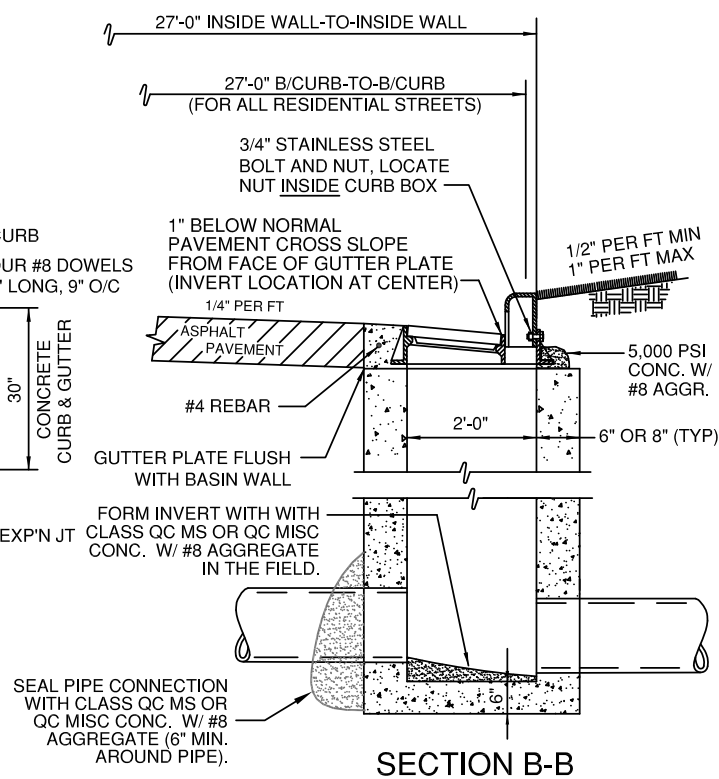
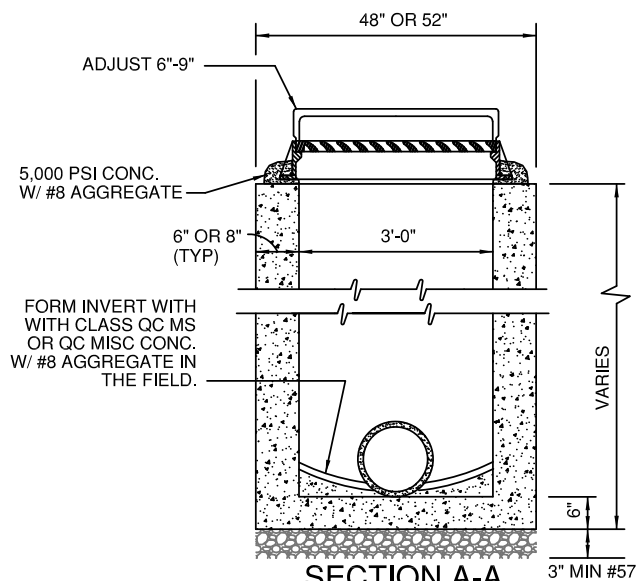
APPRVD BY:
EPO

ISSUE DATE:
07/01/98

SCALE:
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SHEET:

ST-7.0

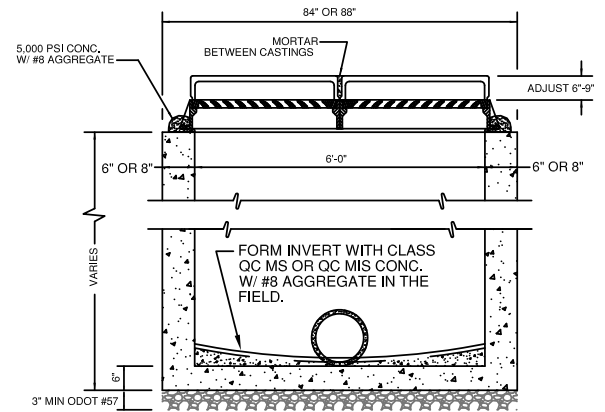
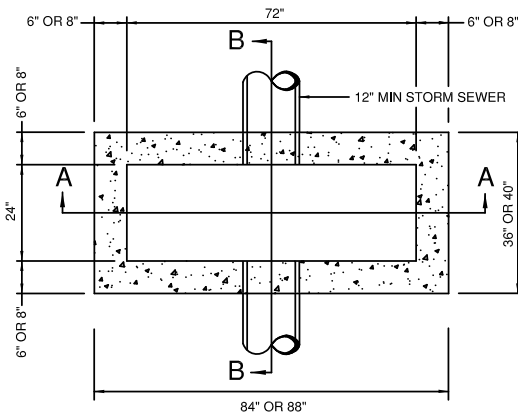


SECTION B-B

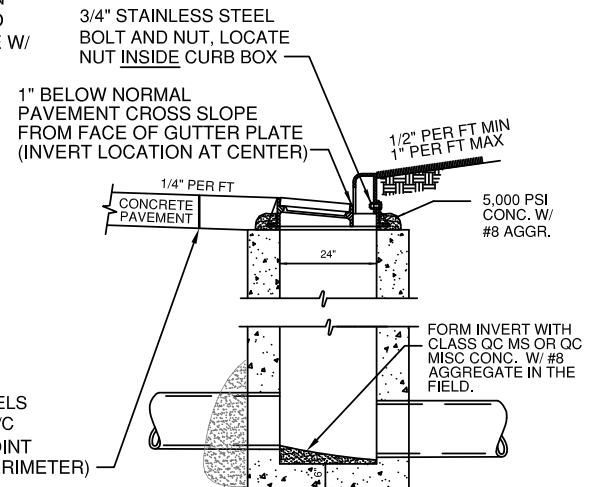
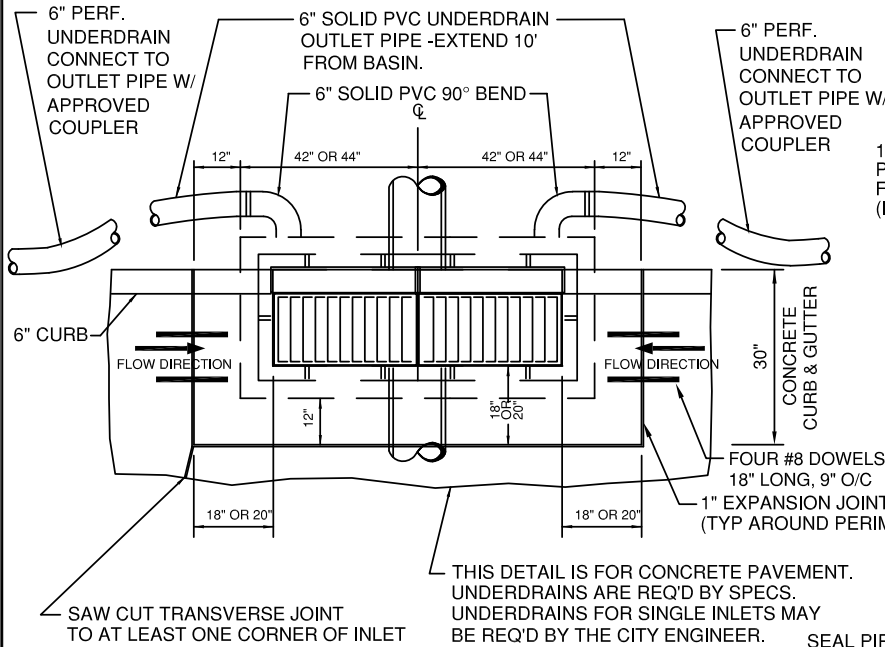
1. THIS DETAIL SHOWS ASPHALT PAVEMENT W/ CURB AND GUTTER.
SEE "DOUBLE INLET" FOR CONCRETE PAVEMENT DETAILS.
2. EXCAVATION DIMENSIONS SHALL BE A MINIMUM OF 2' BEYOND THE OUTER WALL
OF THE OUTER WALL OF THE BASIN TO ALLOW FOR ADEQUATE COMPACTION AROUND
THE BASIN. BACKFILL AROUND BASINS SHALL BE COMPACTED ODOT 304 OR ODOT 411
AGGREGATE; OR ODOT 613 - LOW STRENGTH MORTAR BACKFILL.
3. SEE ODOT SCD CB-2.2 FOR ADDITIONAL DETAILS NOT SHOWN.
4. PIPE OPENING SHALL BE O.D. +4".
5. CATCH BASIN SHALL HAVE STEPS IF DEPTH IS GREATER THAN 5'-0".
6. CONTRACTOR SHALL PROVIDE TWO #8 DOWELS FOR DOWELING INTO TYPE 6
CONCRETE CURB (ONE DOWEL ON EACH SIDE).
7. CONTRACTOR SHALL PROVIDE 3/4" STAINLESS STEEL BOLTS AND NUTS TO HOLD THE BACK.

8. WHERE INLETS ARE INSTALLED WITHIN EXISTING CURB THAT HAS LESS THAN 6" REVEAL, THE NEW INLETS SHALL HAVE THE HOODS SET AT 6", THE ADJACENT REPLACEMENT CURB EXTENDED FOR A LENGTH OF 12" ON BOTH SIDES OF THE INLET WITH REVEAL OF 6", AND THEN THE HEIGHT OF THE CURB TRANSITIONED OVER A LENGTH OF 36" TO MATCH THE HEIGHT OF THE EXISTING CURB.

ST-8.0



SECTION A-A



SECTION B-B

PLAN

NOTES:

1. THIS DETAIL SHOWS CONCRETE PAVEMENT W/ INTEGRAL CURB. SEE "SINGLE INLET" FOR ASPHALT PAVEMENT W/ CURB AND GUTTER DETAILS.
2. EXCAVATION DIMENSIONS SHALL BE A MINIMUM OF 2' BEYOND THE OUTER WALL OF THE BASIN. BACKFILL AROUND BASINS SHALL BE COMPACTED ODOT 304 OR ODOT 411 AGGREGATE; OR ODOT 613 - LOW STRENGTH MORTAR BACKFILL.
3. SEE ODOT SCD CB-2.1 FOR ADDITIONAL DETAILS NOT SHOWN.
4. PIPE OPENING SHALL BE O.D. +4".
5. CATCH BASIN SHALL HAVE STEPS IF DEPTH IS GREATER THAN 5'-0".
6. CONTRACTOR SHALL PROVIDE TWO #8 DOWELS FOR DOWELING INTO TYPE 6 CONCRETE CURB (ONE DOWEL ON EACH SIDE).
7. CONTRACTOR SHALL PROVIDE 3/4" STAINLESS STEEL BOLTS AND NUTS TO HOLD THE BACK.

8. WHERE INLETS ARE INSTALLED WITHIN EXISTING CURB THAT HAS LESS THAN 6" REVEAL, THE NEW INLETS SHALL HAVE THE HOODS SET AT 6", THE ADJACENT REPLACEMENT CURB EXTENDED FOR A LENGTH OF 12" ON BOTH SIDES OF THE INLET WITH REVEAL OF 6", AND THEN THE HEIGHT OF THE CURB TRANSITIONED OVER A LENGTH OF 36" TO MATCH THE HEIGHT OF THE EXISTING CURB.

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City Engineer

CURB INLET
DOUBLE

CAD FILE:
ENGINEERING STANDARDS/ST-9.0.DWG

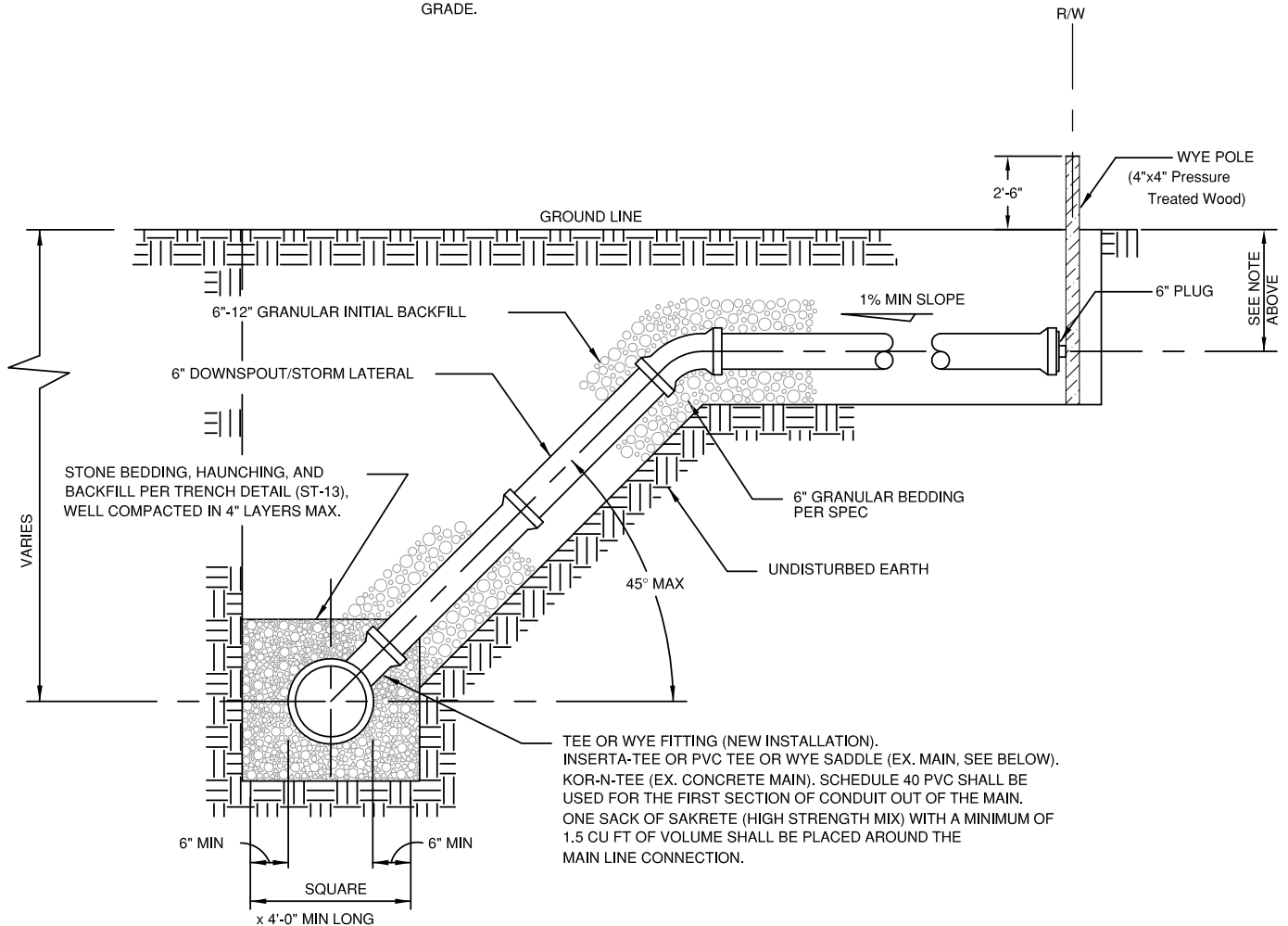
SHEET:

ST-9.0

DRWN BY: AJM
APPRVD BY: EPO
ISSUE DATE: 11/09/00
SCALE: NONE

NO.	DATE	REVISION	6	9/22/03	BACK SLOPE 1/4" TO 1/2"
1	12/29/00	BOOT ADDED AND UNDER-DRAIN REVISED	7	6/08/05	ADDED 3" MIN #57
			8	10/28/09	NOTES 4,5&6. FORM CHANNEL IN FIELD, 3/4" STAINLESS
2	7/18/01	MISC. SPELL. & PIPE REV.S			
3	3/29/02	REV. PIPE SEAL	9	01/04/18	CHANGE MORTAR TO CONC.
4	11/07/02	ADDED BACKFILL SPEC.S	10	01/02/19	REV. CONC. SPECS
5	8/12/03	SIZE OF TIE IN DOWELS	11	01/02/20	ADDED NOTE 8

LATERAL TERMINATION:
 LATERAL SHALL TERMINATE 6" FROM THE RIGHT-OF-WAY LINE
 UNLESS SHOWN OTHERWISE ON THE DRAWINGS. TERMINATION
 DEPTH SHALL BE 2'-9" MINIMUM BUT NOT LOWER THAN THE
 ADJACENT STORM SEWER MAIN. RISER PIPE SHALL BE INSTALLED
 AS NECESSARY TO TERMINATE THE LATERAL AT THE APPROPRIATE
 GRADE.



NOTE:
 HOLES IN EXISTING MAINS FOR INSTALLATION OF TEES OR SADDLES
 SHALL BE CORE DRILLED USING HOLESAWS OR CORING MACHINES
 TO ENSURE A CLEAN, ROUND, SMOOTH HOLE.

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Roger Koblarcsik, P.E.
 City Engineer

STORM LATERAL DETAIL

CAD FILE:

ENGINEERING STANDARDS\ST-10.0.DWG

SHEET:

ST-10.0

DRWN BY:

AJM

APPRVD BY:

EPO

ISSUE DATE:

11/13/00

SCALE:

NONE

NO.	DATE	REVISION			
1	7/18/01	LAT. TERMINATION DEPTH			
2	10/11/01	REV. BEDDING NOTE			
3	10/31/08	REV. LATERAL NOTE			
4	7/1/12	REV. CONN. NOTE			

**PVC PLASTIC PIPE
TYPICAL TRENCH SECTION
BEDDING AND BACKFILL**

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAYS OR SIDEWALKS - COMPACTED ODOT 411 GRANULAR MATERIAL
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO REFUSE OR ORGANIC MATERIAL, (ASTM D2321, CLASS 1 THRU 3 BACKFILL)

INITIAL BACKFILL:

COMPACTED NO. 8, OR NO. 67 AGGREGATE, ODOT 703.01, (ASTM D2321, CLASS I MATERIAL)

HAUNCHING:

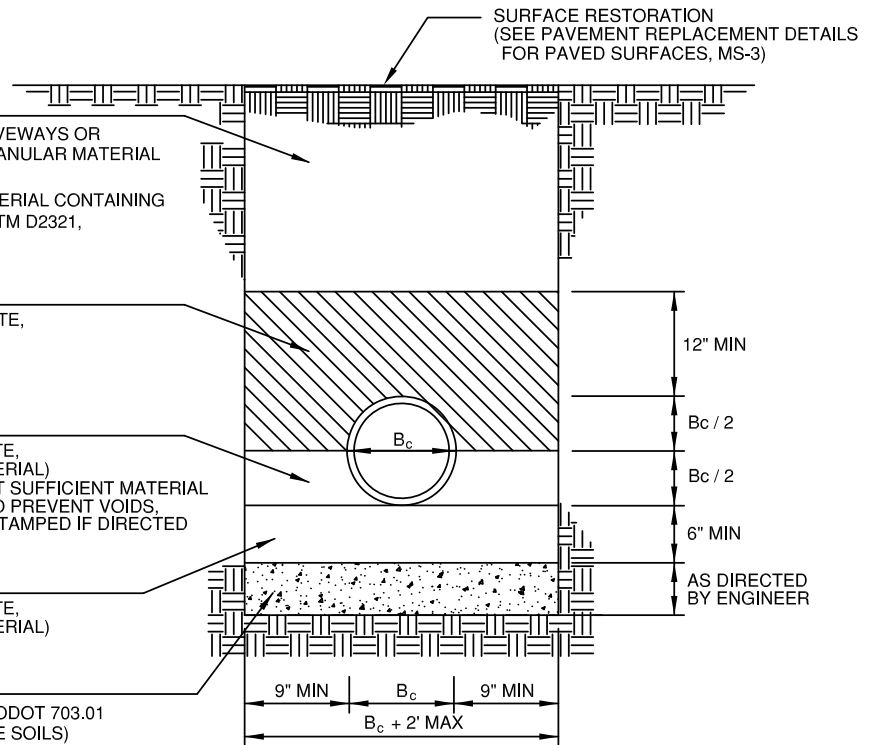
COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01, (ASTM D2321, CLASS I MATERIAL)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT MATERIAL HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS, HAUNCHING SHALL BE HAND PLACED & TAMPED IF DIRECTED

GRANULAR BEDDING:

COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01, (ASTM D2321, CLASS I MATERIAL)

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 LIMESTONE, ODOT 703.01 (AS REQUIRED TO REPLACE UNSUITABLE SOILS)



**CONCRETE PIPE
TYPICAL TRENCH SECTION
BEDDING AND BACKFILLING**

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAY OR SIDEWALK - COMPACTED ODOT 411 GRANULAR MATERIAL
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO ROCKS, REFUSE OR ORGANIC MATERIAL.

INITIAL BACKFILL:

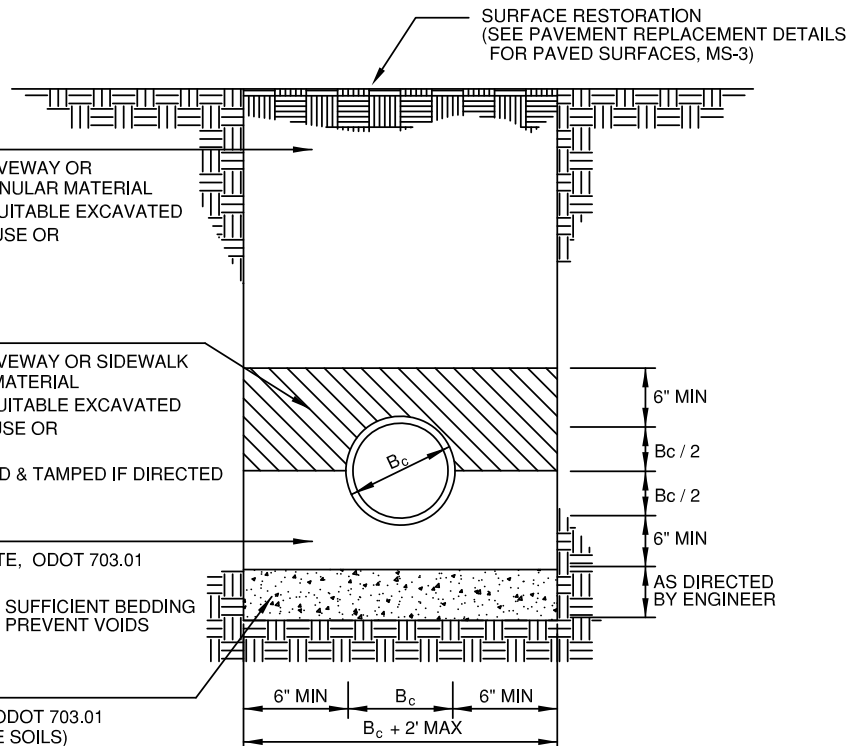
UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAY OR SIDEWALK COMPACTED 411 OR NO. 67 GRANULAR MATERIAL
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO ROCKS, REFUSE OR ORGANIC MATERIAL.
INITIAL BACKFILL SHALL BE HAND PLACED & TAMPED IF DIRECTED

GRANULAR BEDDING:

COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01 (ASTM C12, BEDDING CLASS B)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT BEDDING HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 LIMESTONE, ODOT 703.01 (AS REQUIRED TO REPLACE UNSUITABLE SOILS)



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Roger Kobilarcsik, P.E.
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**STORM SEWER
TRENCH DETAILS**

CAD FILE:
\\ENGINEERING STANDARDS\ST-13.0.DWG

SHEET:

ST-13.0

DRWN BY: AJM
APPRVD BY: EPO
ISSUE DATE: 5/02/02
SCALE: NONE

NO.	DATE	REVISION			
1	10/31/08	REV. AGGREGATE NOTES			
2	10/25/10	PVC, TRENCH WIDTH 4' TO 2'			
3	7/1/12	ADDED DRIVE OR SIDEWALK			

**HDPE PIPE
TYPICAL TRENCH SECTION
BEDDING AND BACKFILL**

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT, DRIVEWAYS OR SIDEWALKS - COMPACTED ODOT 411 GRANULAR MATERIAL
NOT UNDER PAVEMENT -
COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO REFUSE OR ORGANIC MATERIAL, (ASTM D2321, CLASS 1 THRU 3 BACKFILL)

INITIAL BACKFILL:

COMPACTED NO. 8, OR NO. 67 AGGREGATE, ODOT 703.01,
(ASTM D2321, CLASS I MATERIAL)
INITIAL BACKFILL SHALL BE HAND PLACED & TAMPED.

HAUNCHING:

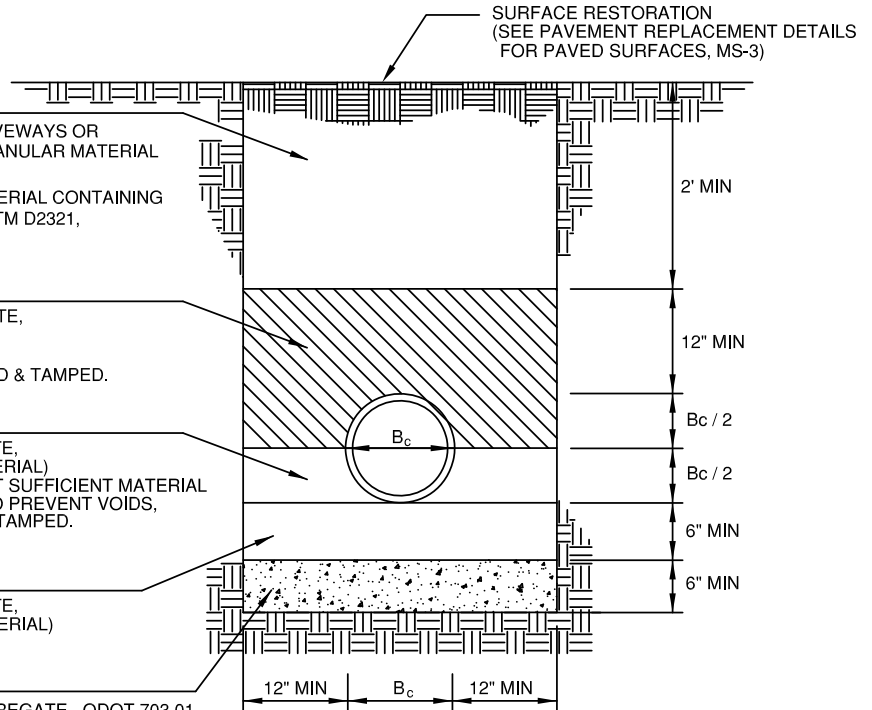
COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01, (ASTM D2321, CLASS I MATERIAL)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT MATERIAL HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS, HAUNCHING SHALL BE HAND PLACED & TAMPED.

GRANULAR BEDDING:

COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01, (ASTM D2321, CLASS I MATERIAL)

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 COARSE AGGREGATE, ODOT 703.01



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City Engineer

**STORM SEWER
TRENCH DETAILS**

NO.	DATE	REVISION			
1	7/1/12	ADDED DRIVE / S/W			

CAD FILE:
ENGINEERING STANDARDS\ST-13.1.DWG

SHEET:

DRWN BY: SLG	APPRVD BY: AJM	ISSUE DATE: 10/31/08	SCALE: NONE
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ST-13.1

TRAFFIC NOTES

A. GENERAL:

- 1) THESE CONDITIONS SHALL GENERALLY APPLY TO ALL TRAFFIC CONTROL DEVICES, SIGNS, PAVEMENT MARKINGS, AND MATERIALS.

B. TRAFFIC CONTROL SIGNS:

- 1) ALL SIGNS (OTHER THAN STREET NAME SIGNS) SHALL CONFORM TO THE CURRENT EDITIONS OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS), ODOT STANDARD CONSTRUCTION DRAWINGS, AND OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

C. STREET SIGNS:

- 1) ALL STREET SIGNS SHALL CONFORM TO CITY OF WOOSTER SPECIFICATIONS AND TO THE APPLICABLE PORTIONS OF ITEM 630, OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIALS SPECIFICATIONS, AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (CURRENT EDITIONS).
- 2) ALL SIGNS SHALL BE FABRICATED ON 0.080" 5052 ALLOY ALUMINUM BLANK (NON-EXTRUDED).
- 3) ALL SIGNS SHALL HAVE A FEDERAL RADIUS (ACCORDING TO THE SIZE OF BLANK).
- 4) NO SPECIALTY SIGNAGE (CONSISTING OF MATERIAL SUCH AS FIBERGLASS, WOOD, PLASTIC, OR OTHER) SHALL BE INSTALLED IN THE CITY OF WOOSTER RIGHT-OF-WAY WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.

D. TRAFFIC SIGNALS:

- 1) ALL TRAFFIC SIGNALS SHALL CONFORM TO CURRENT CITY OF WOOSTER REQUIREMENTS AND ITEMS 632 AND 633, OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIALS SPECIFICATIONS (CURRENT EDITION) FOR TRAFFIC SIGNAL EQUIPMENT AND CONTROLLERS. CONTACT CITY OF WOOSTER ENGINEERING DIVISION FOR CURRENT REQUIREMENTS.

E. PAVEMENT MARKING:

- 1) ALL PAVEMENT MARKINGS SHALL CONFORM TO CITY OF WOOSTER SPECIFICATIONS AND THE CURRENT EDITION OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIALS SPECIFICATIONS FOR THE VARIOUS TYPES OF TRAFFIC PAINT. IN GENERAL, ALL LONG LINES SHALL BE ITEM 642 TYPE 1 TRAFFIC PAINT AND OTHER MARKINGS SHALL BE ITEM 644 THERMOPLASTIC, EXCEPT WHERE PAVEMENT SURFACE DOES NOT ALLOW FOR ITEM 644. IN THIS SITUATION, THE ALTERNATIVE TYPE(S) OF TRAFFIC PAINT SHALL BE APPROVED BY THE CITY ENGINEER.

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NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

538 N. Market Street Wooster, Ohio 44691
Phone: (330) 263-5236 Fax: (330) 263-5283
Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	7/18/01	NOTE C. TYPO.			
2	3/29/02	REV. TRAFFIC SIGNAL NOTE			
3	1/2/17	REV. NOTES B, C, D, E			

GENERAL NOTES TRAFFIC

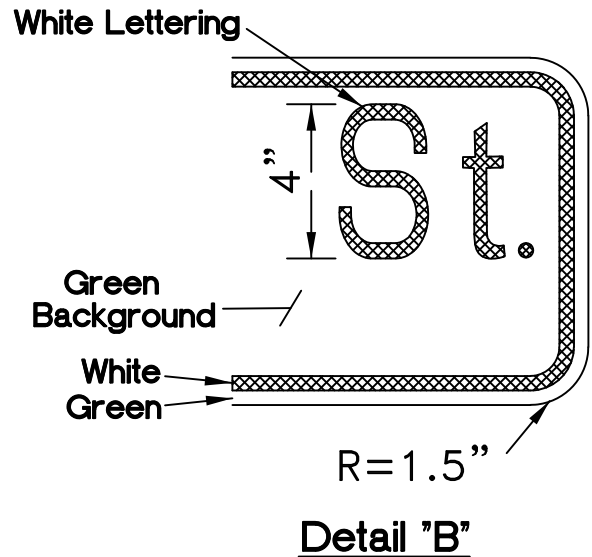
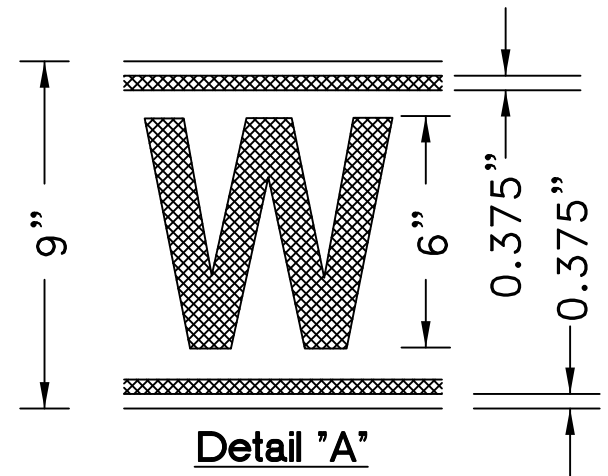
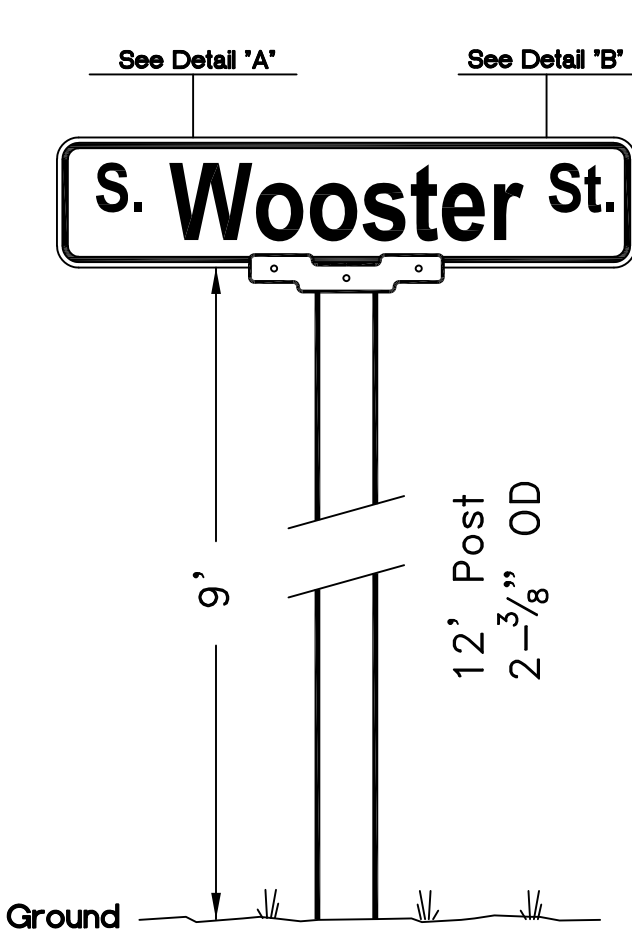
CAD FILE:
ENGINEERING STANDARDS\TR-1.0.DWG

SHEET:

DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 11/13/00	SCALE: NONE
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TR-1.0

GROUND MOUNTED STREET NAME SIGN



Sign Specifications:

- 1) 0.080" 5052 alloy aluminum blank (non-extruded).
- 2) 9" Height x Length (as needed).
- 3) 1.5" Federal radius.
- 4) 0.375" outer border stripe (green stripe).
- 5) 0.375" inner border stripe (white stripe).
- 6) "Wooster" lettering is 6" T2000HWYB font, with the first letter upper case and remaining letters 6" lower case with medium or default kerning, centered top to bottom. See Detail "A" above.
- 7) "St." lettering is 4" T2000HWYB font with the letter "S" in upper case and the letter "t" in lower case, with medium or default kerning. Directional notations shall be the same font. Directional and type of roadway (eg. St, Ave, Blvd, Dr) shall be aligned with top of street name upper case letter. See Detail "B" above.
- 8) The words "S. Wooster St." shall be centered between the inner border left to right.
- 9) The white is Avery Dennison T-6500 Prismatic or 3M 3930 HIP (High Intensity Prismatic) Reflective Sheeting.
- 10) The green overlay is Avery Dennison 84837 Electro Cut Film or 3M 1177C Electro Cut Film.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	7/01/02	Street Signage			
2	2/12/04	Updated Specifications			
3	8/9/04	Updated Specifications			
4	9/30/06	Updated Specifications			
5	1/2/17	Updated Specifications			

SIGN SPECIFICATIONS STREET NAME

CAD FILE:
\\ENGINEERING STANDARDS\TR-2.0.DWG

SHEET:

DRWN BY:
TLH

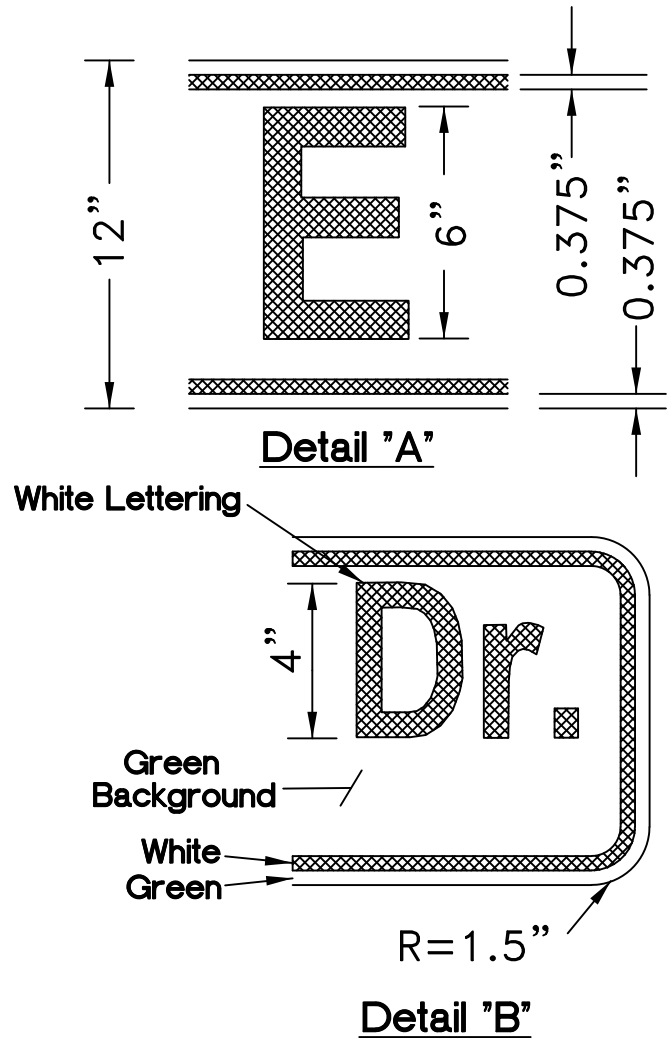
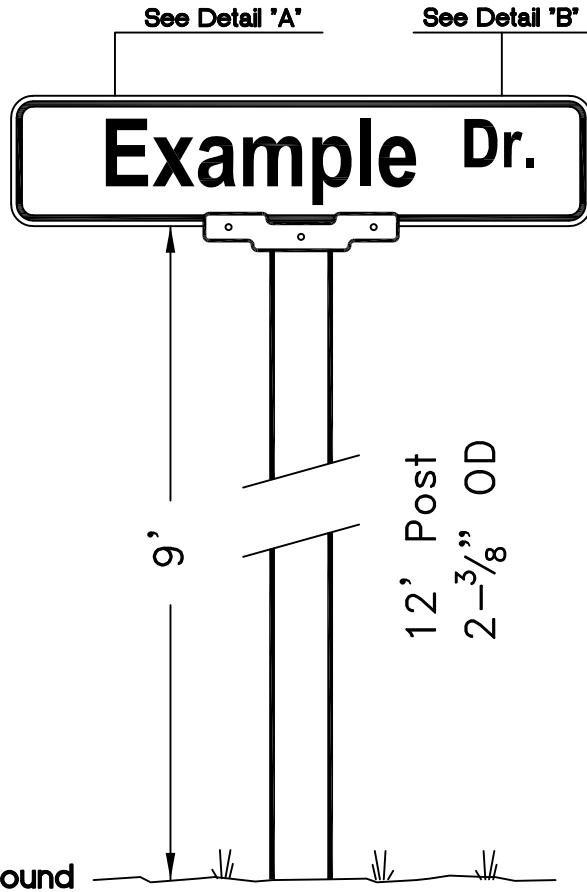
APPRVD BY:

ISSUE DATE:
02/12/04

SCALE:
NONE

TR-2.0

GROUND MOUNTED (TAILED) STREET NAME SIGN



Sign Specifications:

- 1) 0.080" 5052 alloy aluminum blank (non-extruded).
- 2) 12" Height x Length (as needed).
- 3) 1.5" Federal radius.
- 4) 0.375" outer border stripe (green stripe).
- 5) 0.375" inner border stripe (white stripe).
- 6) "Example" lettering is 6" T2000HWYB font, with the first letter upper case and remaining letters 6" lower case with medium or default kerning. Because of tailed letters (g, j, p, q, y), bottom of tail shall be equal distance to lower border as top of upper case letter to upper border. See Detail "A" above.
- 7) "Dr." lettering is 4" T2000HWYB font with the letter "D" in upper case and the Letter "r" in lower case. "Dr." is medium or default kerning. "Dr." is located in the upper right side and aligned with top of upper case letter. See Detail "B" above.
- 8) The white is Avery Dennison T-6500 Prismatic or 3M 3930 HIP (High Intensity Prismatic) Reflective Sheeting.
- 9) The green overlay is Avery Dennison 84837 Electro Cut Film or 3M 1177C Electro Cut Film.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	1/2/17	Reissued			

SIGN SPECIFICATIONS TAILED STREET NAME

CAD FILE:

\\ENGINEERING STANDARDS\TR-2.0.DWG

SHEET:

DRWN BY:
TLH

APPRVD BY:

ISSUE DATE:
02/12/04

SCALE:
NONE

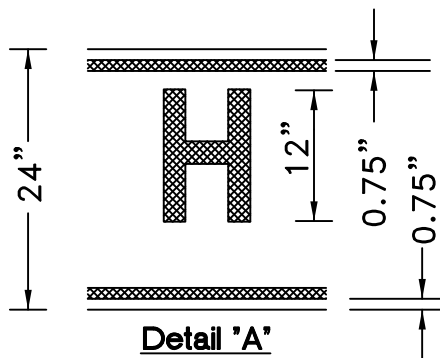
TR-2.1

STANDARD OVERHEAD (TAILED) STREET NAME SIGN

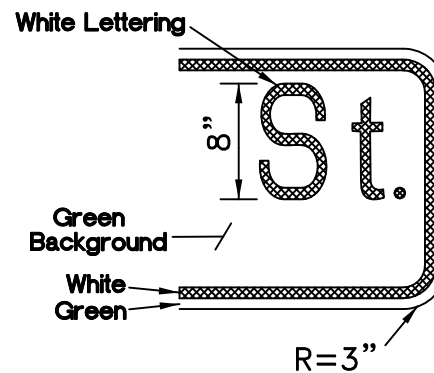


See Detail 'A'

See Detail 'B'



Detail 'A'



Detail 'B'

Sign Specifications:

- 1) 0.080" 5052 alloy aluminum blank (non-extruded).
- 2) 24" Height x Length (as needed).
- 3) 3" Federal radius.
- 4) Both borders are 0.750".
- 5) "Henry" lettering is 12" T2000HWYD font, with the first letter 12" upper case and remaining letters 12" lower case with medium or default kerning, centered accordingly with the space available. See Detail "A" above.
- 6) Directional letter "E." and roadway designator "S" are 8" T2000HWYD with the "t" an 8" lower case T2000HWYD with medium or default kerning, centered accordingly with the space available. See Detail "B" above.
- 7) The reflective sheeting is 3M 4090 Diamond Grade or Avery Dennison T11500 OmniCube reflective material.
- 8) The green overlay is Avery Dennison 84837 Electro Cut Film or 3M 1177C Electro Cut Film.
- 9) Because of the tailed letters (g,j,p,q,y), the bottom of the tailed letter(s) shall have the same distance to the lower border as the top of the "H" to the upper border.

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NO.	DATE	REVISION			
1	1/02/17	Issued			

SIGN SPECIFICATIONS TAILED OVERHEAD STREET NAME

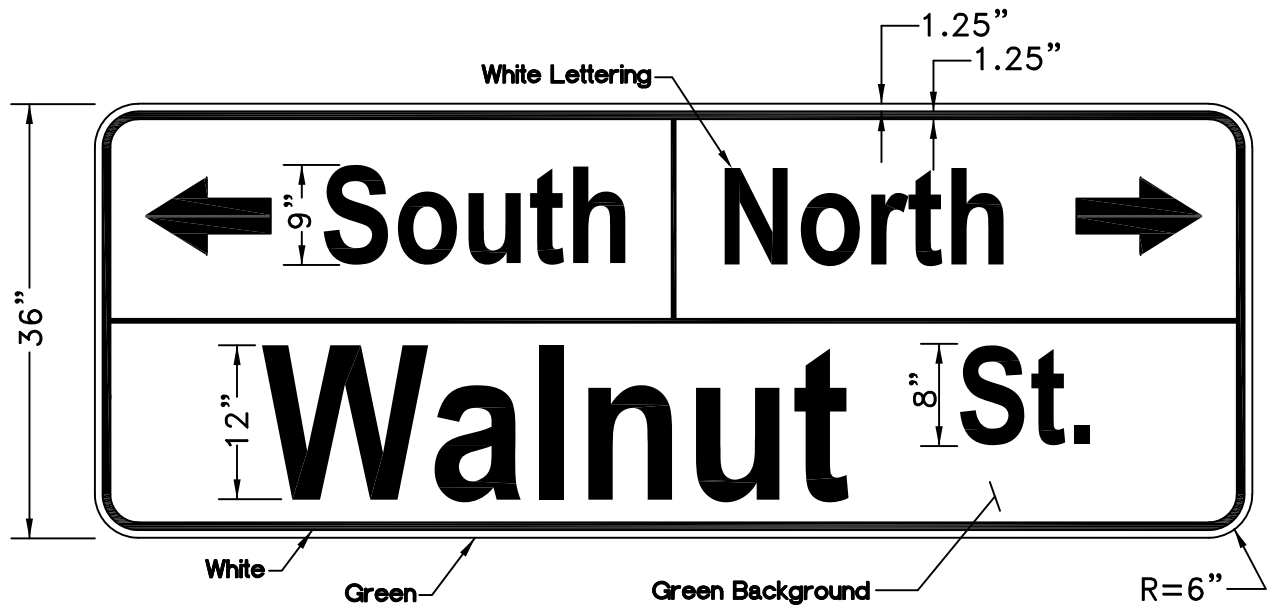
CAD FILE:
 \ENGINEERING STANDARDS\TR-2.0.DWG

DRWN BY: JAR
 APPRVD BY: RVK
 ISSUE DATE: 01/02/17
 SCALE: NONE

SHEET:

TR-2.3

COMBINATION STREET NAME AND DIRECTIONAL SIGN



Sign Specifications:

- 1) 0.080" 5052 alloy aluminum blank (non-extruded).
- 2) 36" Height x Length (East/West Min. 108"; North/South Min. 120").
- 3) 6" Federal radius.
- 4) Both borders are 1.25".
- 5) The horizontal and vertical divider bars are 0.75" wide and positioned accordingly with space available.
- 6) "Walnut" lettering is 12" T2000HWYD font, with the first letter 12" upper case and remaining letters 12" lower case with medium or default kerning, centered accordingly with the space available.
- 7) North/South shall have first letter 9" upper case T2000HWYD, with the remaining letters 9" lower case T2000HWYD with medium or default kerning, centered accordingly with the space available.
- 8) Roadway designator "St." shall have the first letter 8" upper case T2000HWYD and the remaining letters 8" lower case T2000HWYD with medium or default kerning, centered accordingly with space available.
- 9) The reflective sheeting is 3M 4090 Diamond Grade or Avery Dennison T11500 OmniCube reflective material.
- 10) The green overlay is Avery Dennison 84837 Electro Cut Film or 3M 1177C Electro Cut Film.
- 11) Arrows are 8.55" in length and 7.00" in height, space permitting.

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 City Engineer

NO.	DATE	REVISION			
1	1/02/17	Issued			

SIGN SPECIFICATIONS

COMBINATION OVERHEAD STREET NAME

CAD FILE:
 \ENGINEERING STANDARDS\TR-2.0.DWG

SHEET:

DRWN BY: JAR APPRVD BY: RVK ISSUE DATE: 01/02/17 SCALE: NONE

TR-2.4

EMERGENCY SNOW BAN SIGN



Sign specifications:

- a) 0.080" 5052 alloy aluminum blank.
- b) 1.5" Federal radius.
- c) Avery Dennison Retroreflective White Sheeting T-6500 or 3M 3930 prismatic reflective material.
- d) Red Electro Cut Film (Avery Dennison or 3M).
- e) Overall size 18" wide x 24" height.
- f) The outer white borders are 0.375" width.
- g) The wording EMERGENCY SNOW BAN is T2000HWYC font at 2.5" size, default kerning and upper case. The wording is white with the background red.
- h) The wording NO PARKING is T2000HWYB font 2.5" size, default kerning and upper case. The wording is red with the background white.
- i) The wording WHEN SNOW EXCEEDS 3 IN. is T2000HWYB font at 1.625" size, default kerning and upper case. The wording is red with the background white.
- j) The lower block, which is white, is 8.5" high x 16" wide which gives a three sided red border on the lower part of the sign of 5/8".

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City Engineer



NO.	DATE	REVISION			
1	1/02/17	Issued			

SIGN SPECIFICATIONS SNOW PARKING BAN

CAD FILE:
ENGINEERING STANDARDS\TR-2.0.DWG

SHEET:

DRWN BY: JAR	APPRVD BY: RVK	ISSUE DATE: 01/02/17	SCALE: NONE
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TR-2.5

REVERSED COLOR PARKING SIGN



Sign Specifications:

- a) Prohibitive or timed parking signage shall have reversed colors in upper left hand corner.
- b) All parking restriction signage shall include directional arrows.
- c) Arrow direction and/or times vary and depend on the application and sign location.
- d) 0.080" 5052 alloy aluminum blank.
- e 1.5" Federal radius.
- f) Avery Dennison Retroreflective White Sheeting T-6500 or 3M 3930 prismatic reflective material.
- g) 3M or Avery Dennison Electro Cut Film.
- h) A combination sign made side by side with prohibitive and timed restricted parking shall be installed on an 18" high x 24" wide blank instead of two separate 12" x 18" blanks.

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 Roger Kobilarcsik, P.E.
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NO.	DATE	REVISION			
1	1/02/17	Issued			

SIGN SPECIFICATIONS NO PARKING

CAD FILE:
ENGINEERING STANDARDS\TR-2.0.DWG

DRWN BY: JAR	APPRVD BY: RVK	ISSUE DATE: 01/02/17	SCALE: NONE
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SHEET:

TR-2.6

Ground Mounted Street Name Post and Attaching Hardware

- 1) All Street Name signs shall be installed on a single 12" long, 0.130" wide slot, round post mount with set screws (SMC #103 or equivalent) for flat (non-extruded) street name signs only.
- 2) Clustering of street name signs on a single street name post is permitted in residential areas with a 12" long, 0.130" wide slot cross bracket. Where a 12" sign and a 9" high sign are to be mounted on the same post, the 12" high sign shall be mounted on the bottom with the 9" high sign on the top.
- 3) All street name posts shall be 2-3/8" O.D., 12' long with 9' above grade. Posts shall be galvanized, except in Streetscape areas where they shall be black power coated.
- 4) No street name signage will be allowed on top of Stop signs or their posts without prior approval.
- 5) Street Name signs in business, commercial, and primary arterials should be mounted on separate round posts located diagonally opposite from each other, unless otherwise approved by the City Engineer.
- 6) No ground mounted street name post shall be located on the same corner as a stop sign post. The use of two dead men (minimum of 5/16" x 18" rods) opposing each other shall be welded within 12" to the lower end of the post. This will help support and minimize the post from rotating in the ground.

Overhead Street Name Sign Attaching Hardware

- 1) The mounting of ALL overhead street name signage shall be done with Pelco Astro-Sign Brac cable mount (standard). No articulated or other style of sign hanger assemblies will be accepted.

Stop, Yield, and Do Not Enter Sign Posts and Attaching Hardware

- 1) All posts shall be galvanized square posts, 12 gauge breakaway style, and perforated continually.
- 2) 3' x 2" I.D. Anchor.
- 3) 10' x 2" O.D. Post.
- 4) Stiffener sleeve for above anchor and post.
- 5) Corner bolts as per manufacturer's specifications.
- 6) Signs shall be installed with a minimum of two 5/16"-18 by 2-1/2" HHCS aluminum bolts and 5/16"-18 aluminum nuts with 5/16" nylon washers between the sign face and the bolt head.
- 7) A 2" red post prismatic reflector shall be installed on the square post to within 12" of grade.
- 8) All Stop, Yield, and Do Not Enter signs shall be installed according to the current edition of the Ohio Manual of Uniform Traffic Control Devices.
- 9) Any square post reinstallation shall be upgraded to the current standards.

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City Engineer

NO.	DATE	REVISION			
1	2/12/04	Updated Specifications			
2	8/9/04	Updated Specifications			
3	2/28/05	Added note 4 mount signs			
	"	over sidewalk			
4	9/30/06	Updated Specifications			
5	1/2/17	Updated Specifications			

SIGN POST SPECIFICATIONS

CAD FILE:
ENGINEERING STANDARDS\TR-3.0.DWG

DRWN BY: TLH	APPRVD BY:	ISSUE DATE: 02/12/04	SCALE: NONE
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SHEET:

TR-3.0

U Channel Posts

- 1) All U Channel posts shall be galvanized and punched full length.
- 2) Posts shall be Lap Splice Breakaway System for 3# and 4# U Channel posts, consisting of one 1/2"x3/4"x5" gold bar spacer, two cut washers, two Grade 9 bolts, and two self-locking flange nuts. The system shall be NCHRP-350, FHWA, and AASHTO approved.
- 3) Not used.
- 4) Not used.
- 5) The anchor posts shall be 3#, 3.5' in length and installed per manufacturer's recommendations.
- 6) The upper posts shall be 2#, with the length determined by the sign or signs.
- 7) All signs other than Street Names signs and Stop, Yield, and Do Not Enter signs shall be installed on U Channel posts with a minimum of two 5/16"-18 x 2" HHCS aluminum bolts and 5/16"-18 aluminum nuts with 5/16" nylon washers between the sign face and the bolt head.
- 8) All other street signs shall be installed according to the current edition of the "Ohio Manual of Uniform Traffic Control Devices."
- 9) Any U channel post reinstallation shall be upgraded to the current standards.

Sign Posts in Streetscape Areas

- 1) All sign posts in the designated Streetscape areas shall be round with 2-3/8" O.D., 12' long minimum, black powder coated with 9' minimum above grade.

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City Engineer

NO.	DATE	REVISION	7	1/2/20	Revised Notes 2,3,4
1	2/12/04	Updated Specifications			
2	8/9/04	Updated Specifications			
3	2/28/05	Added note 4 Safety Cable			
4	9/30/06	Updated Specifications			
5	10/26/10	Added 6" Reveal & 1/2" Spacer			
6	1/2/17	Updated Specifications			

SIGN POST SPECIFICATIONS

CAD FILE:
\\ENGINEERING STANDARDS\TR-3.0.DWG

DRWN BY: TLH	APPRVD BY:	ISSUE DATE: 02/12/04	SCALE: NONE
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SHEET:

TR-3.1

Solar Powered School Zone Flashing Beacon System

Description The purpose of this specification is to describe the minimum acceptable design for a solar powered, dual beacon school zone flashing beacon system. The system shall be designed to operate for a period of 4 hours per day, 5 days per week. The system shall be designed to operate with a probability of no loss of load during all months of the year. Dimming of the LEDs during daylight hours is not permitted in accordance with FHWA letter of interpretation dated September 27, 2012. A 12 month solar sizing report is required as part of the submittal.

Cabinet The cabinet shall be manufactured of 0.125" sheet aluminum. Nominal cabinet dimensions shall be 1' -10" H x 8" W x 12" D. The cabinet shall be a one (1) compartment type and shall have wire screened insect proof louvers on each side of both compartments for ventilation. The louvers shall be designed to not allow any rain to enter the cabinet. On the bottom of the cabinet there shall be two screened insect proof drain holes. The door shall be a single unit with a continuous piano hinge riveted to the door and the cabinet. The door shall incorporate a neoprene gasket which, when closed, forms a snug weather tight seal. The door lock shall be a standard police lock, reinforced with steel plate. Two police lock keys shall be included. Each cabinet shall be equipped with the necessary rigid top and bottom mount for a 4 inch ID pole with 4.5 inch OD pole clamps. All necessary hardware for proper mounting shall be included.

Control Panel The control panel containing the electronics (solar charge controller and flasher) and programmable time clock shall be mounted in the top for quick and easy removal. The solar panel, beacons, and battery shall be connected through a main wiring harness via a circular pin connector (CPC). The solar panels, load, and battery shall be fused for short circuit protection and ease of system maintenance.

Solar Charge Controller The solar charge controller shall control battery charging through pulse width, modulated, temperature compensating, constant charging algorithm. The solar charge controller shall have both a low voltage disconnect (LVD) of 11.4 VDC and a high voltage disconnect (HVD) of 15.5 VDC. A liquid crystal display (LCD) of battery voltage, solar array current, and load current shall be available with the solar charge controller. In addition, colored LEDs shall display battery state. A green LED shall indicate full charge, amber LED shall indicate half charge, and a flashing red LED shall indicate low charge. A solid glowing red LED shall indicate the load has been disconnected. A separate green LED shall indicate the battery is being charged. The solar charge controller shall have a load disconnect pushbutton. When the load is disconnected the button shall glow red. The solar charge controller shall be capable of operating in a temperature range of -40 degrees C and +85 degrees C.

Flasher The flasher shall be solid state, 2 circuit device which controls the flashing sequence of the beacon. The flasher shall have a selectable flash rate of 60 flashes per minute and will flash a duty cycle of 50% on and 50% off. The flasher shall be built into the time clock. The flasher shall be capable of operating in a temperature range of -40 degrees C and +85 degrees C.

Programmable Time Clock The programmable time clock shall be an ELTEC TC-18 and shall store an annual program, a holiday (no school) program, and an exception program. The programmable time clock shall select the appropriate program and/or exception for today and shall run that program. The programmable time clock shall have the capability of being programmed via a key pad on the time clock or from software on a PC via a transfer cable.

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NO.	DATE	REVISION			

SOLAR SCHOOL SPEED SIGN SPECIFICATIONS

CAD FILE:

ENGINEERING STANDARDS\TR-4.0.DWG

SHEET:

DRWN BY:

JAR

APPRVD BY:

RVK

ISSUE DATE:

01/06/15

SCALE:

NONE

TR-4.0

Solar Powered School Zone Flashing Beacon System (Con't)

The programmable time clock shall contain watch dog circuits to ensure that the clock resets itself should it fault for a period greater than specified. The clock shall contain 2 output circuits, each circuit rated at 16 amps. The clock shall be capable of being powered by either AC or DC power. The clock shall contain non-volatile memory so that a power failure will not erase the program. The clock shall have capacitive backup power rated at 168 hours in the event of power failure. The clock shall be capable of leap year compensation and shall automatically compensate for daylight savings time.

The programmable time clock shall have display which provides a key word for each entry for quick and easy programming. The display shall be a 2 line X 16 character alpha numeric lighted liquid crystal display. The light shall go out after 2 minutes of inaction. The timing accuracy shall be +/- .002% at 26 Degrees C. The programmable time clock shall contain a built in flasher as described above. The time clock shall be capable of operating in a temperature range of -34° degrees C and +74° degrees C.

Solar Panel The solar panel shall be high efficiency, single crystal silicon solar cells that are laminated to glass with layers of ethylene vinyl acetate (EVA). The panel shall be self-cleaning, impact resistant, highly transmissive, tempered glass superstrate. The panel module frame shall be made of extruded, polymer coated aluminum alloy or similar approved construction. The panel module junction box shall be a UV resistant, weatherproof wire termination system which handles #14 AWG - #8 AWG wiring. The minimum acceptable wattage of the solar panel shall be 40 watts.

Battery The battery shall be a type 55 ampere hour sealed, maintenance-free, deep cycle, AGM lead acid type 12 volt DC battery. The battery shall contain valve regulation with a self discharge rate of 1% per month or less (at 68 degrees F). The battery shall utilize T881 terminals. The positive terminal shall be covered with a rubber boot to protect the battery from accidental shorting.

Signal Beacon The signal beacon shall consist of the head, amber lens, visor, signal closure cap, and mounting hardware for a 4.5" OD aluminum pole. The lens shall be a 12VDC 12" amber LED beacon using AlInGaP technology. The head shall be a one piece polycarbonate shell with the polycarbonate door using stainless steel hinge pins. Thumbscrews shall hold the door against the body. The visor shall be a one piece polycarbonate tunnel unit which shall be duralocked at four points to the head door. The signal beacon shall be assembled and wired as a unit. Two (2) beacons shall be required per pole.

Sign The sign shall be an S5-1 with dimensions of 24"x48" with a speed limit of "20."

Pole and Base The pole shall be a spun aluminum 4" ID (4.5" OD) x 15' H. The base shall be a square base assembly and shall be a Pelco PB-5335. The base shall be attached to a concrete foundation, which shall consist of a Pelco AP-1095-36 anchor bolt cage assembly placed in minimum 2' square by 5' deep ODOT Class QC Misc or QC 1 concrete.

Warranty A 25 month warranty from the date of system shipment is required for all system components. The battery shall be pro-rated warranted for 5 years. The solar panel shall be warranted for 20 years. All shipping costs for warranty repairs shall be paid by the vendor.

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NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

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Roger Kobilarcsik, P.E.
City Engineer

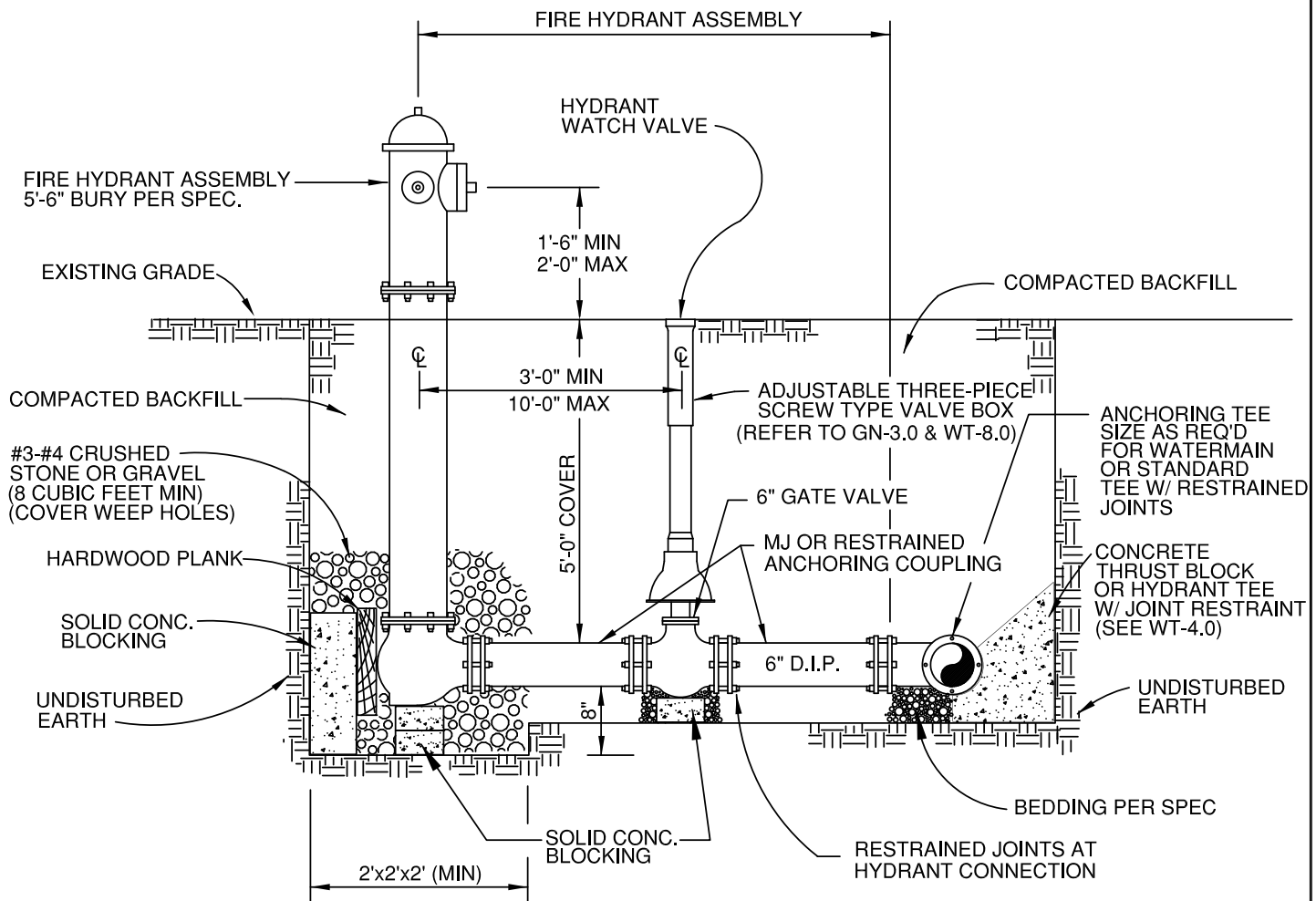
SOLAR SCHOOL SPEED SIGN SPECIFICATIONS

CAD FILE:
\\ENGINEERING STANDARDS\TR-4.0.DWG

SHEET:

DRWN BY: JAR	APPRVD BY: RVK	ISSUE DATE: 01/06/15	SCALE: NONE
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TR-4.1



FIRE HYDRANT ASSEMBLY DETAIL

NOTES:

1. CENTER OF THE FIRE HYDRANT SHALL BE LOCATED BETWEEN 2'-0" AND 10'-0" FROM THE BACK OF THE CURB.
2. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE FIRE HYDRANT.

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City Engineer

NO.	DATE	REVISION			
1	1/01/01	NEW HYDRANT, A-423			
2	7/17/01	ADDED REF. NOTES			
3	9/30/06	ADDED REF. TO GN-3.0			
4	12/03/12	REV. S NOTE BURY PER SPEC			
5	01/02/19	REV. NOTE 1; ADD NOTE 2			

FIRE HYDRANT ASSEMBLY

CAD FILE:
\\ENGINEERING STANDARDS\WT-1.0.DWG

SHEET:

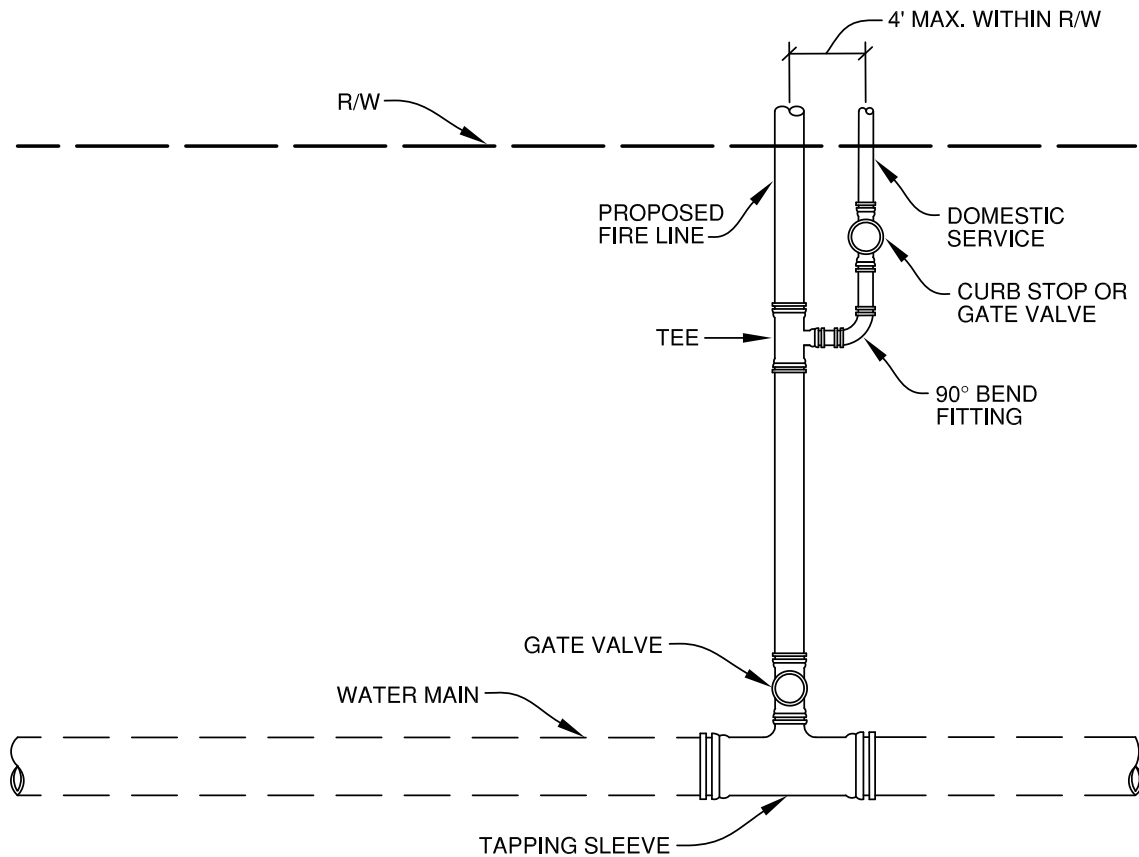
DRWN BY:
AJM

APPRVD BY:
EPO

ISSUE DATE:
11/08/00

SCALE:
NONE

WT-1.0



NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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 City Engineer

NO.	DATE	REVISION			
1	01/06/14	ADDED MAX OFFSET			
2	01/04/18	REM. STREET AND CURB			

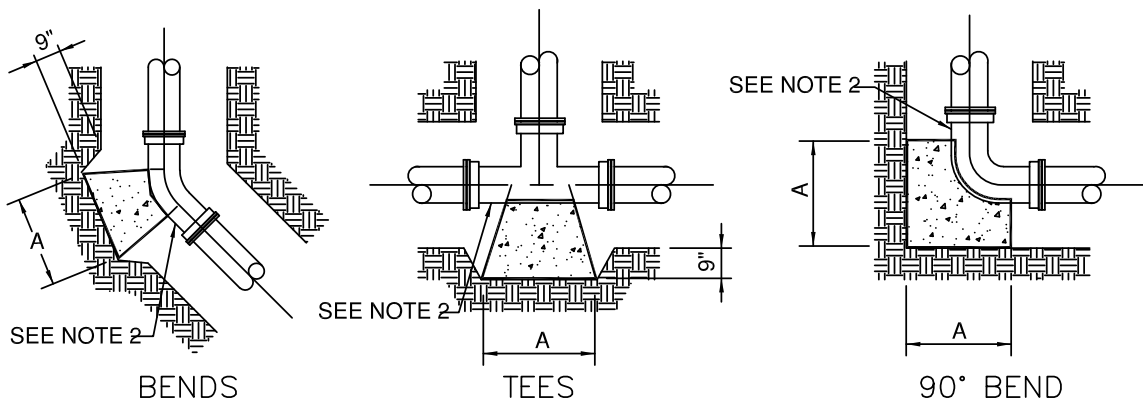
FIRE LINE WITH DOMESTIC SERVICE

CAD FILE:
 \ENGINEERING STANDARDS\WT-3.0.DWG

SHEET:

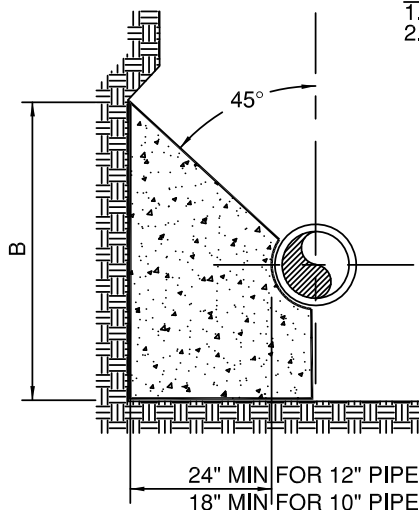
DRWN BY: SLG APPRVD BY: AJM ISSUE DATE: 11/18/08 SCALE: NONE

WT-3.0



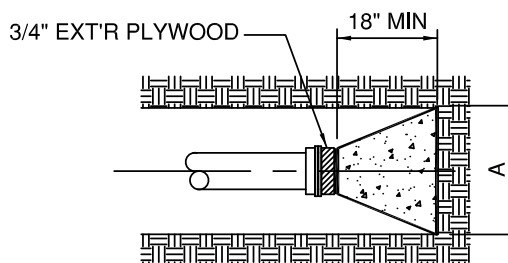
NOTES:

1. DIMENSION "A" SHALL BE CENTERED OVER THE BEND OR TEE.
2. ALL THRUST BLOCKS SHALL HAVE A 3" MIN CLEARANCE OF JOINTS.



NOTE:

TYPICAL PLUGGED END CONSISTS OF A GATE VALVE PLUS ONE FULL LENGTH OF PIPE, A PUSH-ON SOLID PLUG, EXT'R PLYWOOD PIECE AND A CONCRETE THRUST BLOCK, AS SHOWN.



THRUST BLOCK AREA SCHEDULE

SQUARE FEET (SF) OF CLASS C CONC REQ'D AGAINST UNDISTURBED EARTH
MINIMUM A & B DIMENSIONS FOR THRUST BLOCK DETAILS

PIPE SIZE			6"	8"	10"	12"	16"
BENDS	A	SF	10" 1.5	14" 2.5	20" 4.0	24" 6.0	36" 10.0
	B		24"	28"	30"	36"	40"
TEES	A	SF	12" 2.0	18" 3.5	27" 5.5	32" 8.0	47" 13.0
	B		24"	28"	30"	36"	40"
PLUGS	A	SF	12" 2.0	18" 3.5	27" 5.5	32" 8.0	47" 13.0
	B		24"	28"	30"	36"	40"
90° BEND	A	SF	18" 3.0	24" 4.5	20" 8.0	22" 11.0	31" 17.0
	B		24"	28"	30"	36"	40"

NOTE: PLACE 6 MIL VISQUEEN BETWEEN PIPE AND CONC.

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City Engineer

NO.	DATE	REVISION
1	04/04/00	ADD NOTES & 6" CLEAR DIM AT JOINTS; EDIT A&B DIMS IN SCHEDULE TABLE
2	07/17/01	CLASS C CONC. SUBSTITUTED FOR CLASS B PER ODOT 638.06

THRUST BLOCK DETAILS

CAD FILE:

ENGINEERING STANDARDS\WT-4.0.DWG

DRWN BY:
JES

APPRVD BY:
EPO

ISSUE DATE:
07/01/98

SCALE:
NONE

SHEET:

WT-4.0

TABLE FOR RESTRAINED PIPES

LENGTH OF PIPE RESTRAINED IN EACH DIRECTION FROM $\frac{1}{2}$ OF FITTING					
FITTING TYPE	DUCTILE IRON PIPE DIAMETER				
	6"	8"	10"	12"	16"
90° BEND	13'	17'	20'	24'	30'
45° BEND	5'	7'	8'	10'	13'
22-1/2° BEND	3'	3'	4'	5'	6'
11-1/4° BEND	1'	2'	2'	2'	3'
VALVE OR PLUG	20'	26'	32'	38'	49'
REDUCER	10'	11'	19'	27'	41'
TEE	18'	24'	29'	35'	47'

NOTES

1. RESTRAINED LENGTHS IN TABLE ARE MINIMUM VALUES.
2. AT HIGH POINTS ALONG WATERMAIN WHERE INDICATED ON DRAWINGS, ANCHORING TEE SHALL BE SET AT 45° ANGLE UPWARDS AND CONNECTED TO 6" 45° BEND. WATERMAIN SHALL BE LOWERED TO PROVIDE COVER AS SPECIFIED.
3. ALL JOINTS WITHIN THE SPECIFIED LENGTH SHALL BE RESTRAINED. LENGTH OF RESTRAINT FOR TEES APPLIES TO BRANCH, ASSUMING JOINTS ON RUN ARE RESTRAINED AND CONNECTED TO A MINIMUM OF 1' OF PIPE IN EACH DIRECTION WITHOUT JOINTS.

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NO.	DATE	REVISION			
1	7/17/01	NOTE CLARIFICATION			

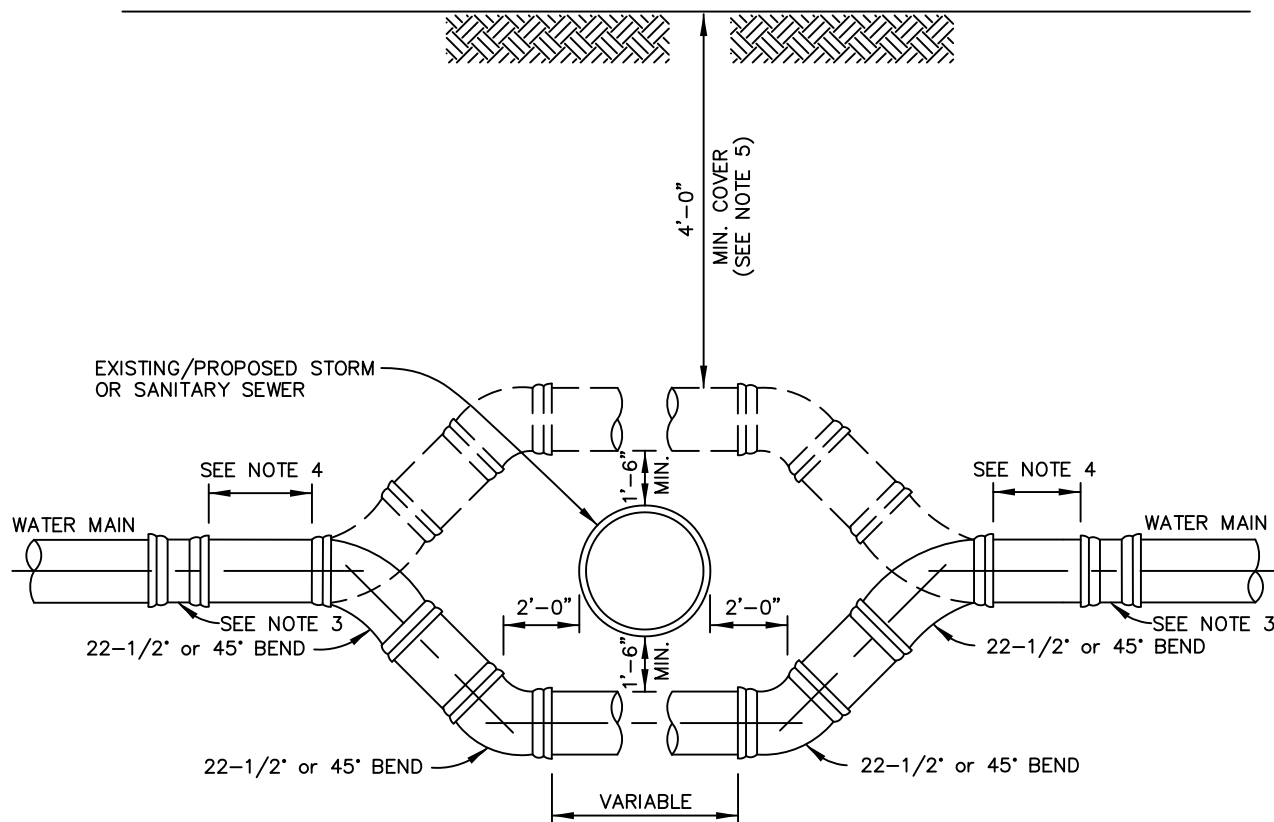
RESTRAINED PIPE JOINT TABLE

CAD FILE:
 \ENGINEERING STANDARDS\WT-5.0.DWG

DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 07/19/00	SCALE: NONE
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SHEET:

WT-5.0



WATER MAIN OFFSET

N.T.S.

NOTES:

1. ALL JOINTS SHALL BE RESTRAINED.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.
3. SOLID SLEEVES SHALL BE USED IF THE EXISTING WATER MAIN IS DUCTILE IRON; OTHERWISE, HYMAX GRIP (OR EQUAL) RESTRAINED COUPLINGS SHALL BE USED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING IN THE FIELD THAT THE LENGTH OF RESTRAINED PIPE ON BOTH SIDES OF THE BENDS IS MET AND IF IT ISN'T REPLACING THIS PORTION OF THE WATER MAIN AT NO ADDITIONAL COST TO THE OWNER.
5. IF ANY PORTION OF THE WATER MAIN BEING OFFSET IS LESS THAN 4' COVER, CONTACT THE ENGINEER TO DETERMINE IF ADDITIONAL LENGTH OF RESTRAINED PIPE IS NEEDED.

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NO.	DATE	REVISION			
1	7/18/01	REVISED BENDS			
2	10/25/10	ADDED NOTE 2			
3	01/06/14	REV. NOTE 1			
4	01/02/20	ADDED NOTES 3,4,5			

WATER MAIN OFFSET DETAIL

CAD FILE:

ENGINEERING STANDARDS\WT-6.0.DWG

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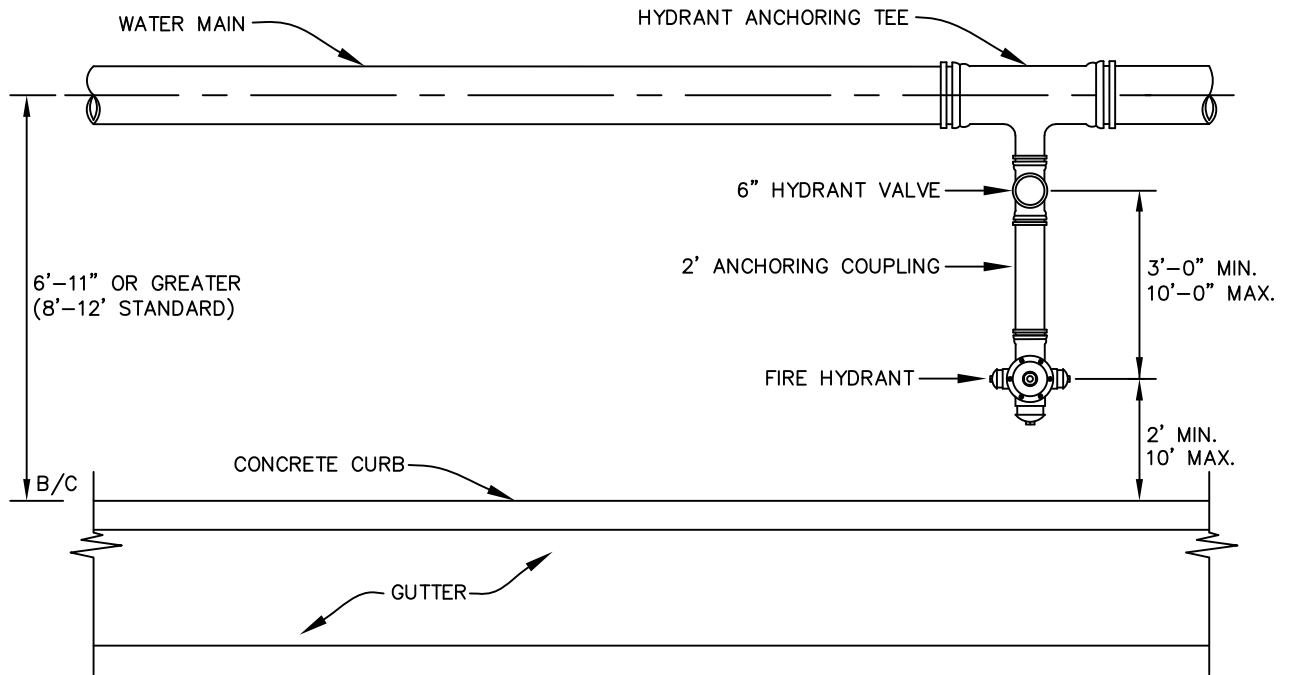
DRWN BY:
AJM

APPRVD BY:
EPO

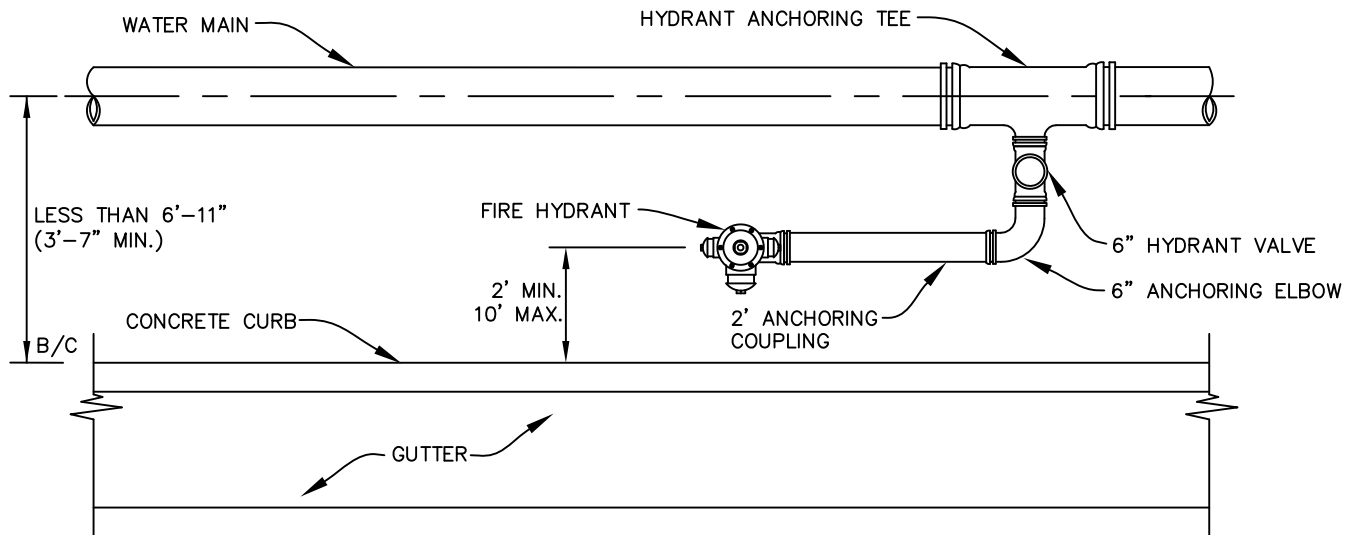
ISSUE DATE:
07/12/00

SCALE:
NONE

WT-6.0



NORMAL HYDRANT SETTING
PLAN VIEW



ALTERNATE HYDRANT SETTING
PLAN VIEW

NOTE:

1. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE FIRE HYDRANT.

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**ALTERNATE FIRE HYDRANT
SETTINGS**

CAD FILE:
ENGINEERING STANDARDS\WT-7.0.DWG

SHEET:

DRWN BY:
AJM

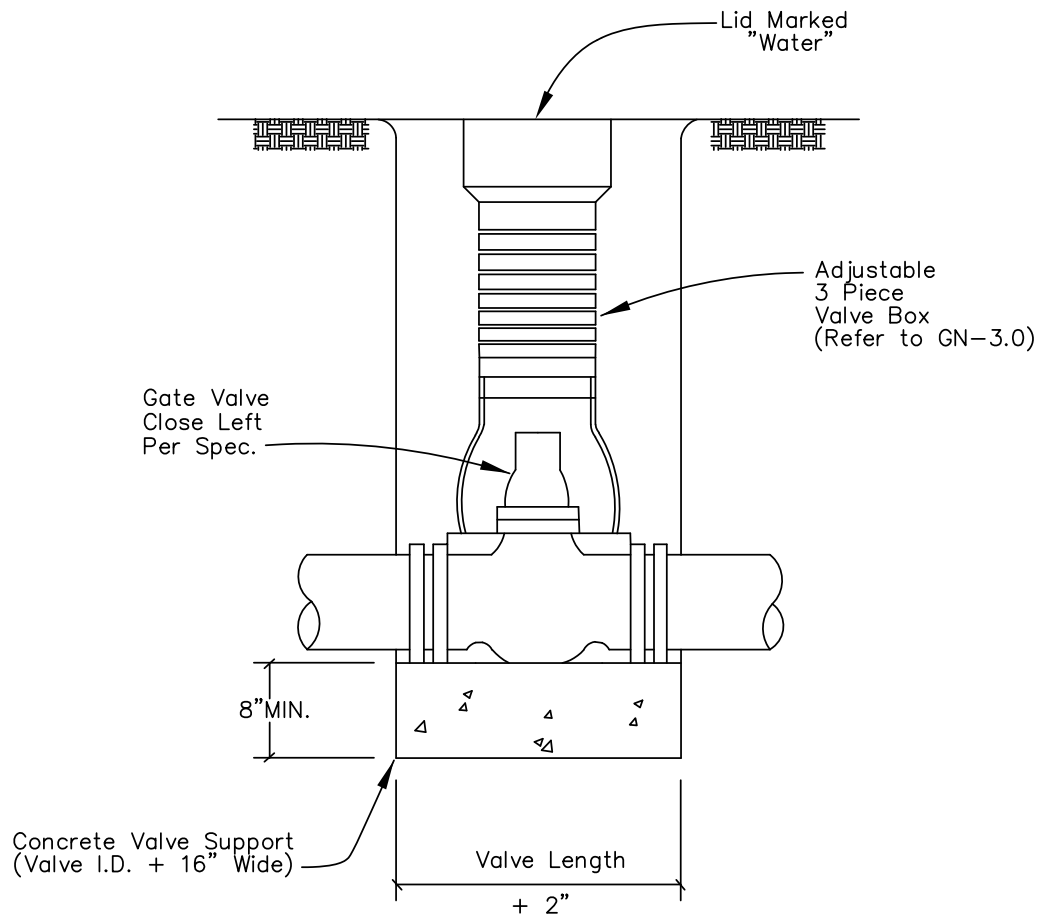
APPRVD BY:
EPO

ISSUE DATE:
07/19/00

SCALE:
NONE

WT-7.0

NO.	DATE	REVISION			
1	7/18/01	REVISED DIMENSIONS			
2	10/16/01	REVISED DIMENSIONS			
3	10/31/01	REVISED LOCATION OF VALVE AND ELBOW			
4	01/02/19	ADDED MAX FROM B/CURB			
		ADDED NOTE			



NOTES:

1. Valves shall be set so that operating shaft is plumb.

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NO.	DATE	REVISION	7	7/1/12	ADDED EJIW VALVE
1	7/18/01	ADDED VALVE MODEL NO.	8	12/03/12	REV'S NOTE VALVE PER SPEC
2	10/03/01	REV. VALVE MODEL NO.	9	01/06/14	REV. NOTE 2
3	9/30/06	ADDED REFERENCE NOTE	10	01/02/17	ELIMINATE RISER AND NOTE 2
4	10/22/10	EDIT REF.NOTE E.J.-8500			
5	10/22/10	REV. MUEL. A2362 & A2361			
6	10/22/10	ADD 4" RISER			

VALVE SETTING DETAIL

CAD FILE:

ENGINEERING STANDARDS\WT-8.0.DWG

SHEET:

WT-8.0

DRWN BY:

AJM

APPRVD BY:

EPO

ISSUE DATE:

11/08/00

SCALE:

NONE

DUCTILE IRON PIPE TYPICAL TRENCH SECTION BEDDING AND BACKFILLING

FINAL BACKFILL:

UNDER OR WITHIN 2' OF PAVEMENT - COMPACTED ODOT 411 GRANULAR MATERIAL
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO ROCKS, REFUSE OR ORGANIC MATERIAL,

INITIAL BACKFILL:

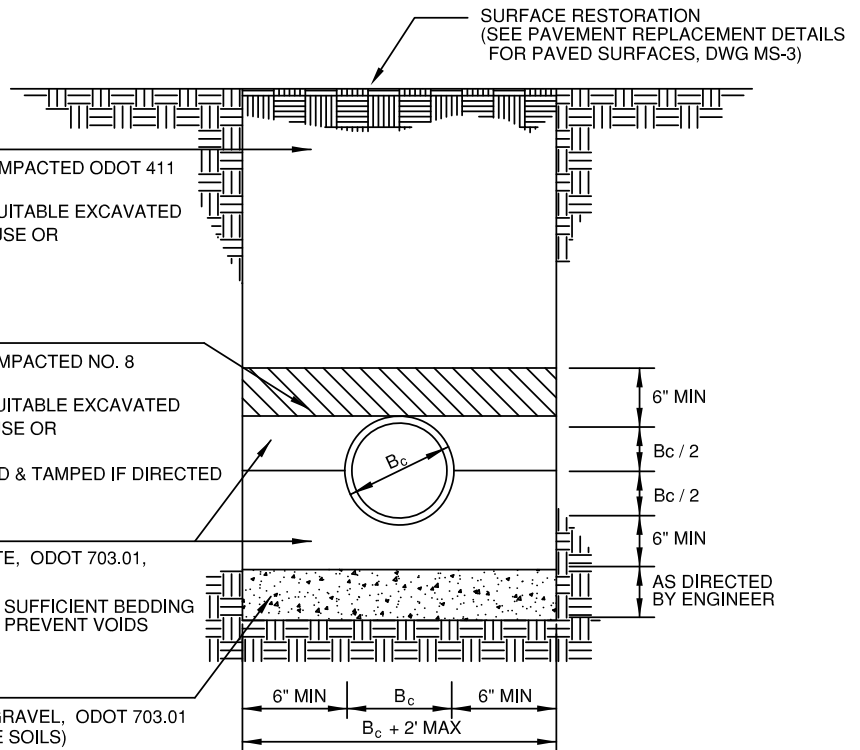
UNDER OR WITHIN 2' OF PAVEMENT - COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01
NOT UNDER PAVEMENT - COMPACTED SUITABLE EXCAVATED MATERIAL CONTAINING NO ROCKS, REFUSE OR ORGANIC MATERIAL.
INITIAL BACKFILL SHALL BE HAND PLACED & TAMPED IF DIRECTED

GRANULAR BEDDING:

COMPACTED NO. 8 OR NO. 67 AGGREGATE, ODOT 703.01, (ASTM C12, BEDDING CLASS B)
CARE MUST BE TAKEN TO ENSURE THAT SUFFICIENT BEDDING HAS BEEN WORKED UNDER THE PIPE TO PREVENT VOIDS

FOUNDATION AGGREGATE:

COMPACTED NO.1 & NO.2 FRACTURED GRAVEL, ODOT 703.01 (AS REQUIRED TO REPLACE UNSUITABLE SOILS)



NOTES:

1. NO LIMESTONE AGGREGATE.
2. PAVEMENT INCLUDES DRIVEWAYS AND SIDEWALKS.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	10/31/08	REV. AGGREGATE NOTES			
2	7/1/12	ADDED NOTE 2			
3	01/02/17	REV. INITIAL BACKFILL			
4	01/02/19	REV. INITIAL BACKFILL			

WATERLINE TRENCH DETAIL

CAD FILE:
ENGINEERING STANDARDS\WT-9.0.DWG

SHEET:

DRWN BY: **AJM** APPRVD BY: **EPO** ISSUE DATE: **5/02/02** SCALE: **NONE**

WT-9.0

WATER SERVICE CONSTRUCTION

BACKFILL:

5'-0" MINIMUM COVER.

COPPER SERVICE:

TYPE K COPPER, 1" MINIMUM.

HIGH DENSITY POLYETHYLENE SERVICE:

POLYFLEX TUBING (CTS) WITH 200 PSI RATING AND CONFORMING TO ASTM D2737, AWWA C901, AND NSF STANDARDS 14 AND 61. STAINLESS STEEL SLEEVES SHALL BE USED AT EACH CONNECTION POINT. AWG #12 SOLID COPPER TRACER WIRE SHALL BE INSTALLED ALONG WITH POLYFLEX, CHECK CONDUCTIVITY.

SINGLE FAMILY RESIDENTIAL METER VAULT (PE SERVICE):

MUELLER THERMAL COIL METER BOX #200CS1548FSBSN WITH LID #311954
OR A.Y. McDONALD COIL PIT SETTER #790-148QFPP 440x15, #90L15X800 LID.
METER VAULTS FOR OTHER APPLICATIONS SHALL BE REVIEWED ON A CASE-BY-CASE BASIS.

CURB STOP:

MUELLER H-15209N OR B-25209N, A.Y. McDONALD 76100Q 1" MINIMUM; OR APPROVED EQUAL BY FORD FOR 2" AND UNDER.

CURB BOX:

MUELLER H-10334 CURB BOX, 60"; 88055 SS ROD, 23", 89376 LID OR A.Y. McDONALD 5607 CURB BOX, 60", 5660 SS ROD, 23", 5607 LID, BRASS MACHINES THREAD.
MUELLER H-10386 CURB BOX W/SS ROD FOR 1-1/2" AND 2" SERVICES.

CORPORATION STOP:

MUELLER B-25008N OR A.Y. McDONALD 74701BQ, 1" MINIMUM OR APPROVED EQUAL FOR 2" AND UNDER.

UNION:

MUELLER H-15400N UNION, STRAIGHT THREE PART, WHEN NECESSARY. MUELLER H-15403N OR A.Y. McDONALD 74758Q UNION, RECONSTRUCTION PROJECTS OR AS APPROVED.

COUPLING:

MUELLER H-15071N OR A.Y. McDONALD 74755Q COUPLING, RECONSTRUCTION PROJECTS OR AS APPROVED. MUELLER H-15062N COUPLING, RECONSTRUCTION PROJECTS OR AS APPROVED.

TWO BOLT COUPLING:

SMITH-BLAIR, INC. 400 SERIES BETWEEN NEW COPPER AND EXISTING GALVANIZED WATER SERVICE.

BRASS PLUGS:

MUELLER H-10033N OR H-10034N OR A.Y. McDONALD 73206, 1" BRASS PLUGS, WHEN NECESSARY.

SERVICE SADDLE:

MUELLER BR2B SERIES OR A.Y. McDONALD 3825 AWWA WHEN NECESSARY FOR SERVICES LARGER THAN 1".

NOTES:

1. FOR MAINLINE WATERLINE CONSTRUCTION STANDARDS SEE SHEET GN-3.0.

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NO.	DATE	REVISION			
1	12/04/12	REV'S McDONALD PARTS # 7			
2	01/06/14	REV'S CURB STOP & BOX			
3	01/02/17	REV PART NO'S			
		MODIFIED METER VAULT			
4	01/04/18	REV PART NO'S			

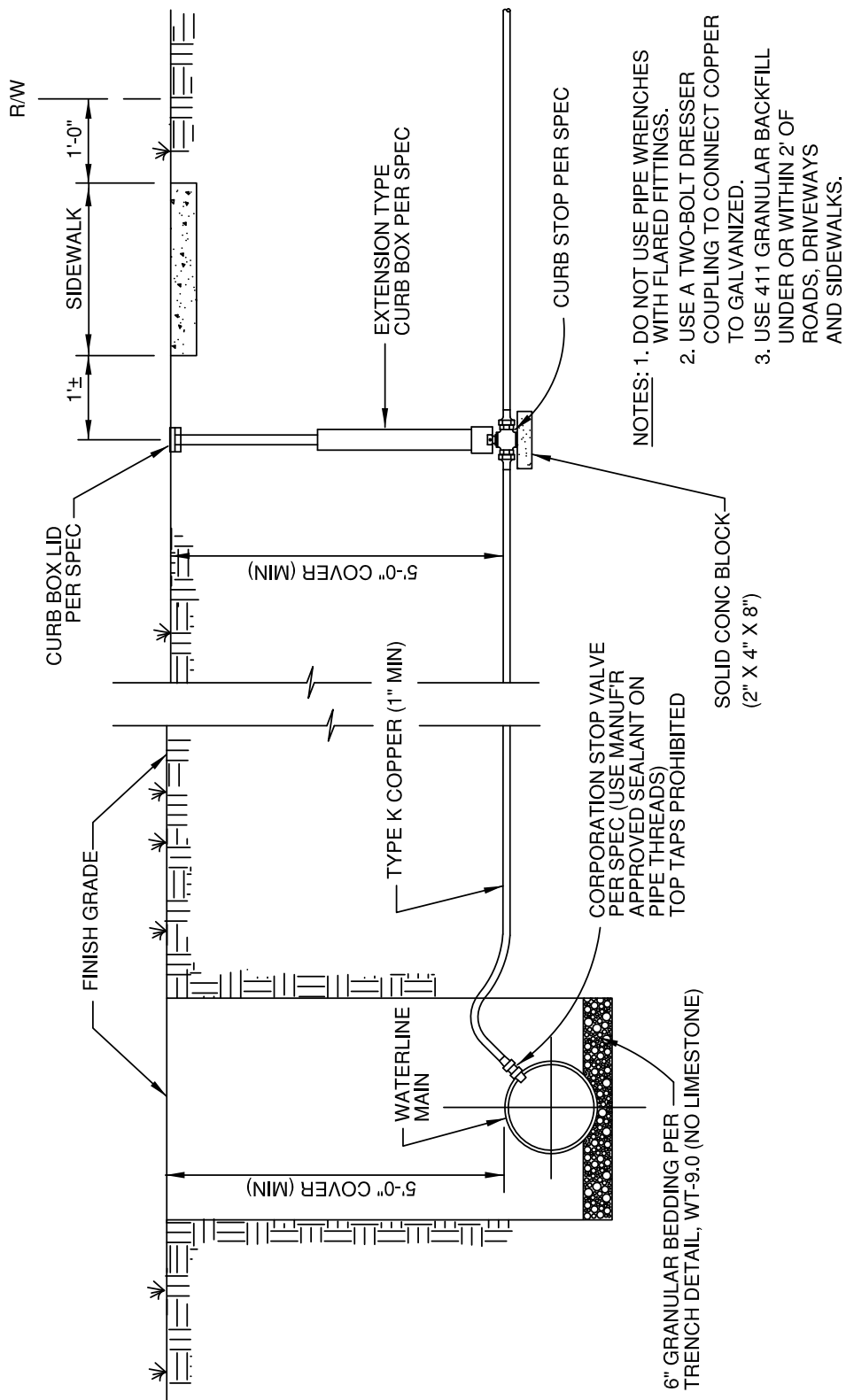
WATER SERVICE MATERIALS

CAD FILE:
ENGINEERING STANDARDS\WS-1.0.DWG

SHEET:

DRWN BY: TLH
APPRVD BY: AJM
ISSUE DATE: 07/1/12
SCALE: NONE

WS-1.0



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Roger Kobilarcsik, P.E.
City Engineer

WATER SERVICE CONNECTION

CAD FILE:

ENGINEERING STANDARDS\WT-2.0.DWG

SHEET:

WS-2.0

DRWN BY:
JES

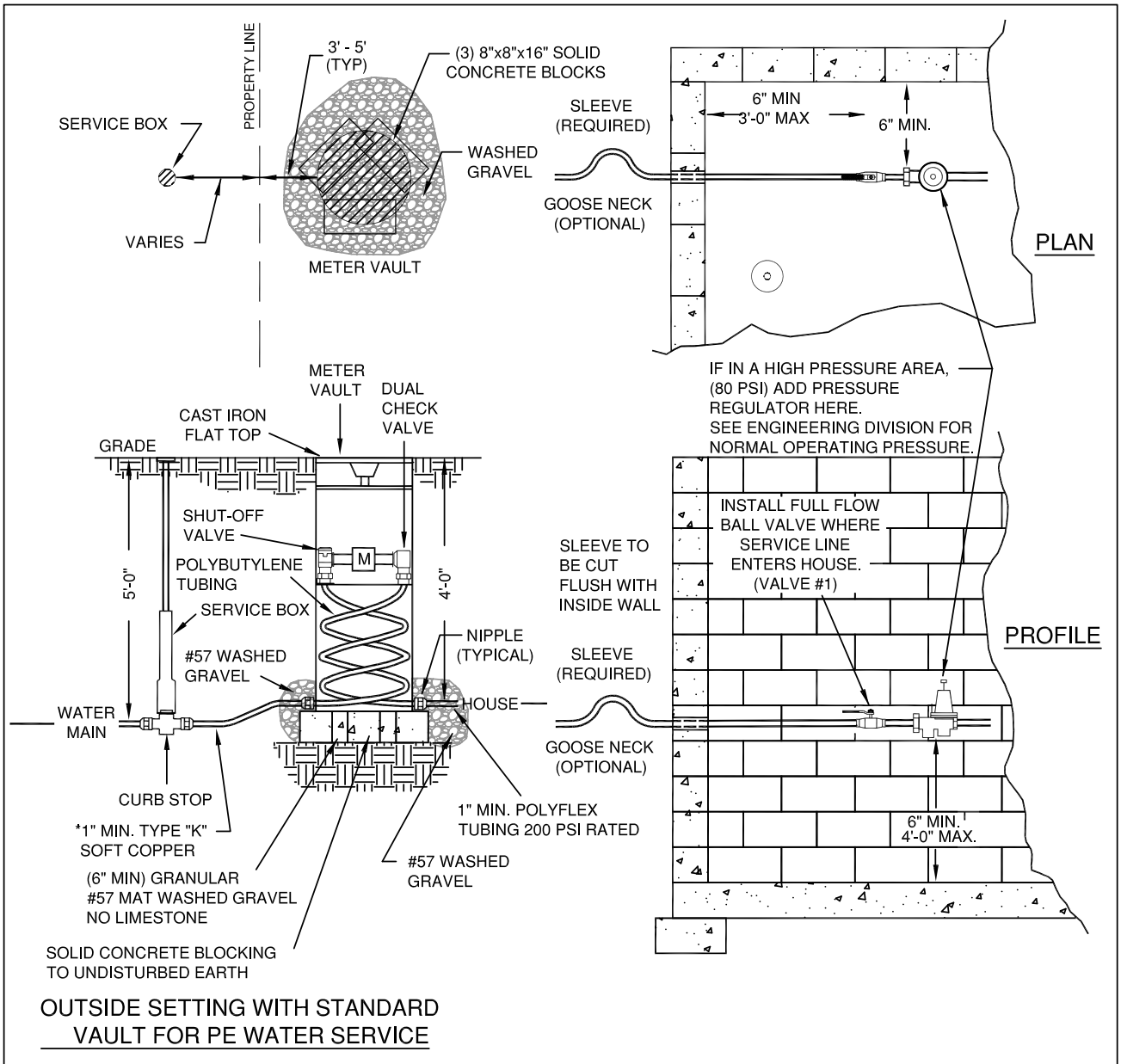
APPRVD BY:
EPO

ISSUE DATE:
07/01/98

SCALE:
NONE

NO.	DATE	REVISION			
1	7/17/01	INCREASED BEDDING DEPTH			
2	10/11/01	REV. BEDDING NOTE			
3	9/30/06	ADDED COMPRESSION FIT.			
4	10/31/08	REV. REPAIR FITTING, CONCRETE BLOCK.			
5	7/1/12	REV. NOTES.			

SINGLE FAMILY RESIDENTIAL METER VAULT INSTALLATION (BASEMENT)



NOTES:

1. WATER SERVICE SHALL ENTER THROUGH THE BASEMENT WALL AND SHALL BE SLEEVED THROUGH THE WALL.
2. NO FITTINGS ARE PERMITTED WITHIN THE WALL.
3. A GOOSE NECK IS RECOMMENDED TO ALLOW FOR TRENCH SETTLEMENT.
4. NO SOLDER CONNECTIONS ARE PERMITTED UNDERGROUND OR BEFORE THE METER (USE MUELLER 110 OR A.Y. McDONALD Q COMPRESSION FITTING).
5. USE STAINLESS STEEL LINERS WITH POLYFLEX TUBING AND MUELLER 110 OR A.Y. McDONALD Q COMPRESSION FITTINGS.

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NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

City of Wooster : Division of Engineering

538 N. Market Street Wooster, Ohio 44691
Phone: (330) 263-5236 Fax: (330) 263-5283

Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION
1	01/02/17	REV. TOP SHEET TITLE

STANDARD PE SERVICE CONNECTION

CAD FILE:
ENGINEERING STANDARDS\WS-2.0.DWG

SHEET:

DRWN BY:
TLH

APPRVD BY:
AJM

ISSUE DATE:
07/1/12

SCALE:
NONE

WS-2.1

PLAN

(3) 8"x8"x16" SOLID CONCRETE BLOCKS

WASHED GRAVEL

METER VAULT

3' - 5' (TYP)

PROPERTY LINE

SERVICE BOX

WATER MAIN

DISTANCE TO BE DETERMINED

1' (TYP)

EASEMENT LINE

6" MIN

3'-0" MAX

6" MIN.

PROFILE

IF IN A HIGH PRESSURE AREA, (80 PSI) ADD PRESSURE REGULATOR HERE. SEE ENGINEERING DIVISION FOR NORMAL OPERATING PRESSURE.

INSTALL FULL FLOW BALL VALVE WHERE SERVICE LINE ENTERS HOUSE. (VALVE #1)

SMOOTH WALL PLASTIC SLEEVE (REQUIRED)

2'

6" MIN. 4'-0" MAX.

HOUSE

1" MIN. POLYFLEX TUBING 200 PSI RATED

NIPPLE (TYPICAL)

4'-0"

DUAL CHECK VALVE

METER VAULT

CAST IRON FLAT TOP

GRADE

SHUT-OFF VALVE

POLYBUTYLENE TUBING

SERVICE BOX

#57 WASHED GRAVEL

5'-0"

WATER MAIN

CURB STOP

*1" MIN. TYPE "K" SOFT COPPER

SOLID CONCRETE BLOCKING TO UNDISTURBED EARTH

#57 WASHED GRAVEL

OUTSIDE SETTING WITH STANDARD VAULT FOR PE WATER SERVICE

1. WATER SERVICE SHALL ENTER THROUGH THE SLAB AND SHALL BE SLEEVED THROUGH THE SLAB.
2. NO FITTINGS ARE PERMITTED WITHIN THE SLEEVE.
3. A GOOSE NECK IS RECOMMENDED TO ALLOW FOR TRENCH SETTLEMENT.
4. NO SOLDER CONNECTIONS ARE PERMITTED UNDERGROUND OR BEFORE THE METER (USE MUELLER 110 OR A.Y. McDONALD Q COMPRESSION FITTING).
5. USE STAINLESS STEEL LINERS WITH POLYFLEX TUBING AND MUELLER 110 OR A.Y. McDONALD Q COMPRESSION FITTINGS.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

Roger Kobilarcsik, P.E.
City Engineer

[illegible]

STANDARD PE SERVICE CONNECTION

CAD FILE:
\\ENGINEERING STANDARDS\WS-2.0.DWG

DRWN BY:
TLH

APPRVD BY:
AJM

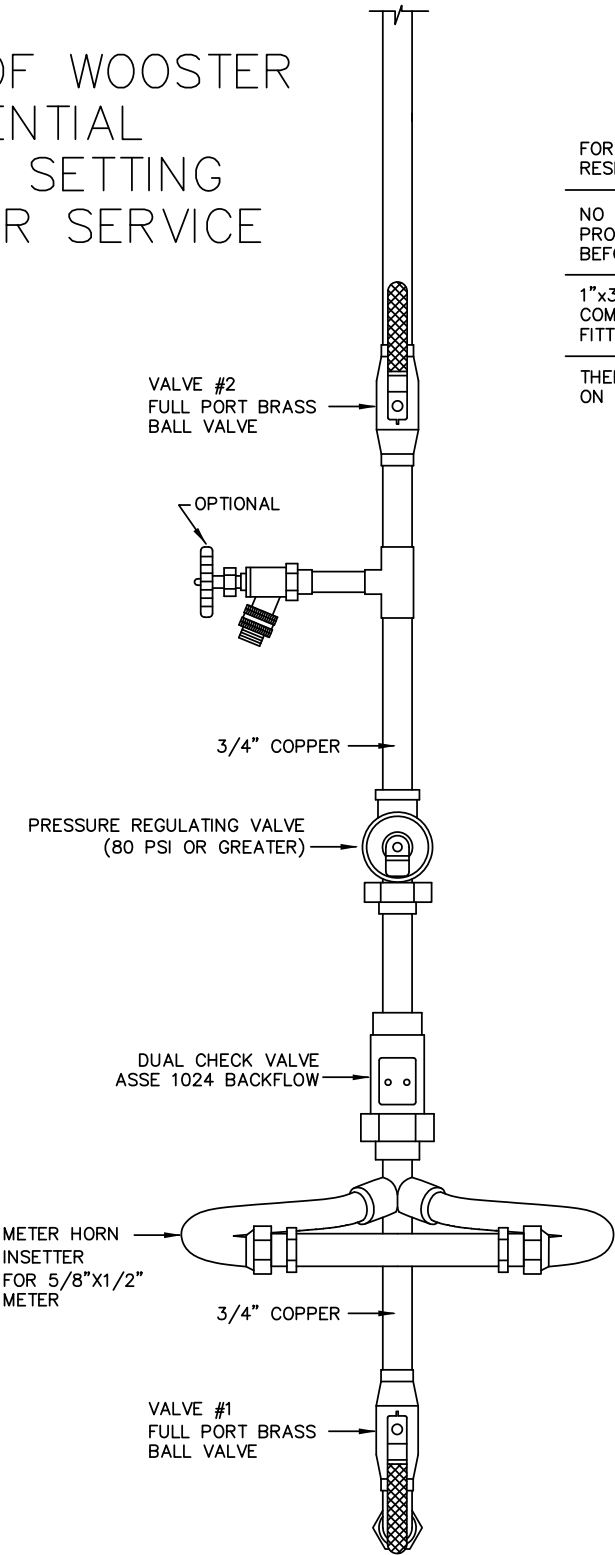
ISSUE DATE	07/1/12
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SCALE:
NONE

SHEET:

WS-2.2

CITY OF WOOSTER RESIDENTIAL METER SETTING COPPER SERVICE



FOR CITY OF WOOSTER
RESIDENTIAL METERS (5/8"x1/2") METER.

NO SHARK BITE FITTINGS OR
PRO PRESS FITTINGS
BEFORE VALVE #2.

1"x3/4" SOLDER 90° FLARE OR
COMPRESSION TO THREADED BRASS
FITTINGS ONLY BEFORE VALVE #1.

THERMAL EXPANSION TANK
ON COLD SUPPLY LINE (SEE WS-4.0).

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	1/12/18	REMOVED NOTE 1			

RESIDENTIAL METER SETTING

CAD FILE:

ENGINEERING STANDARDS\WS-3.0.DWG

SHEET:

WS-3.0

DRWN BY:

TLH

APPRVD BY:

AJM

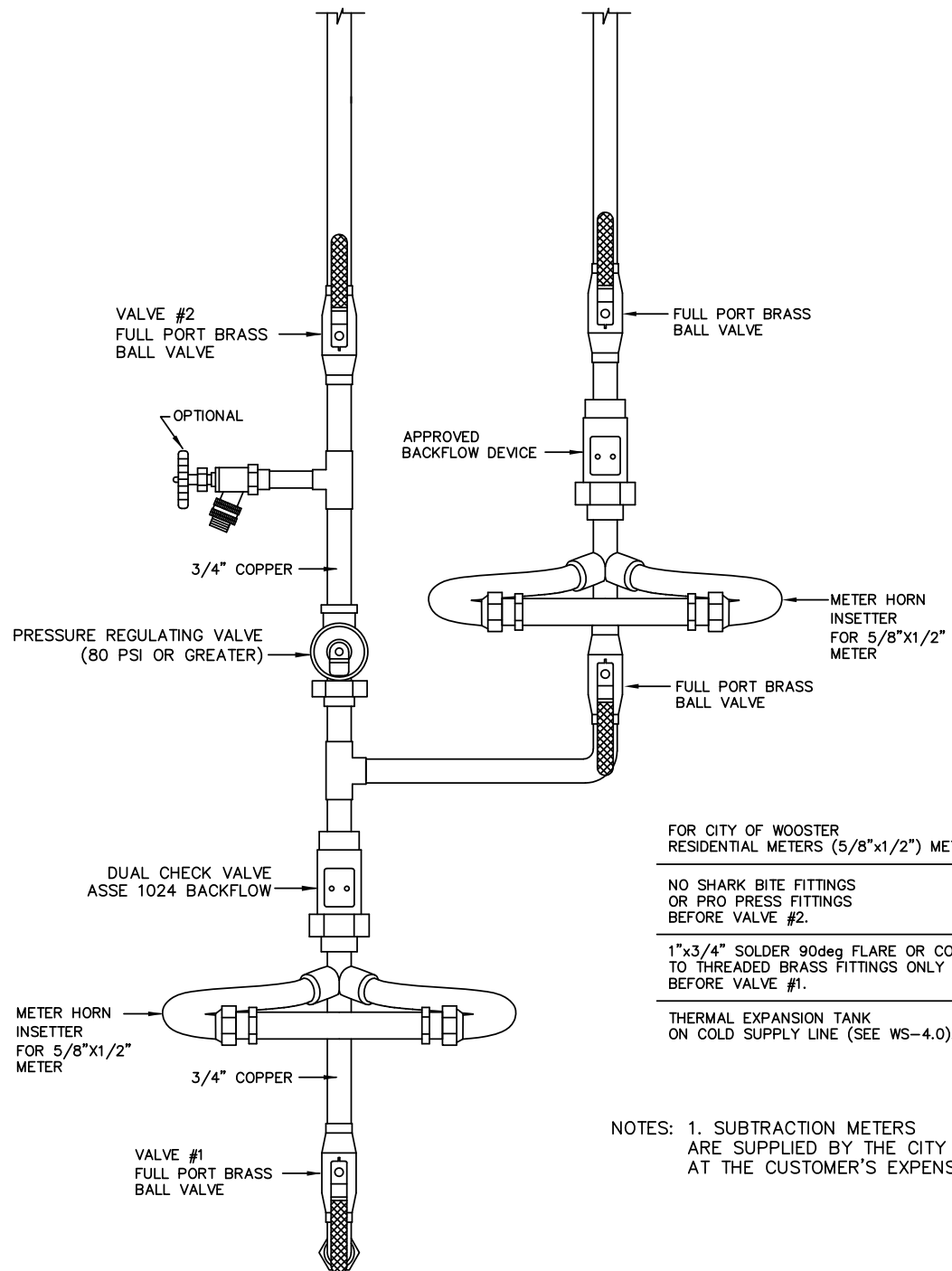
ISSUE DATE:

07/1/12

SCALE:

NONE

CITY OF WOOSTER RESIDENTIAL SUBTRACTION
METER SETTING COPPER SERVICE



NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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City Engineer

RESIDENTIAL SUBTRACTION METER SETTING

CAD FILE:

\\ENGINEERING STANDARDS\WS-3.0.DWG

SHEET:

WS-3.1

DRWN BY:

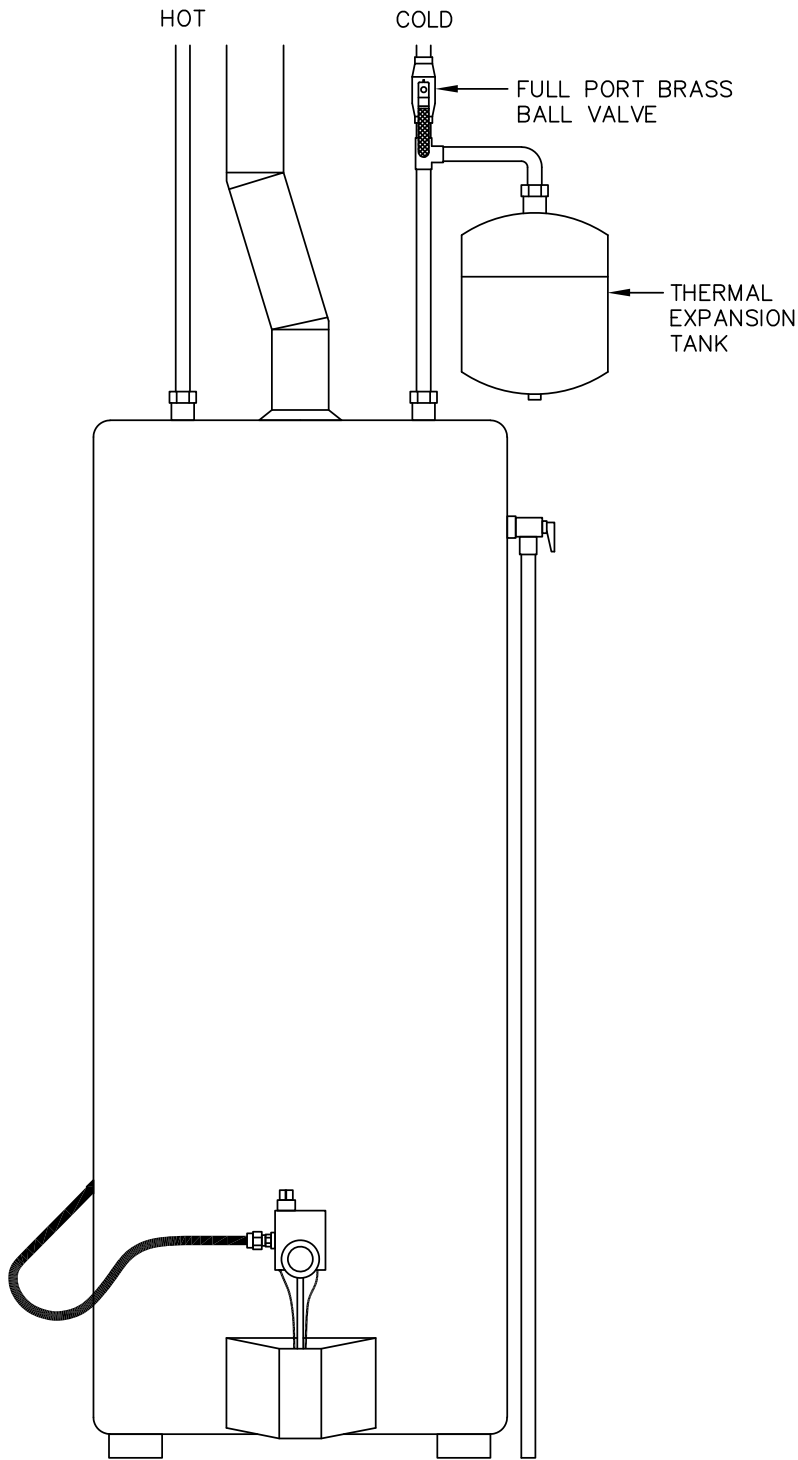
APPRVD BY:

ISSUE DATE:

SCALE:

NONE

CITY OF WOOSTER RESIDENTIAL
WATER TANK



NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

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NO.	DATE	REVISION			

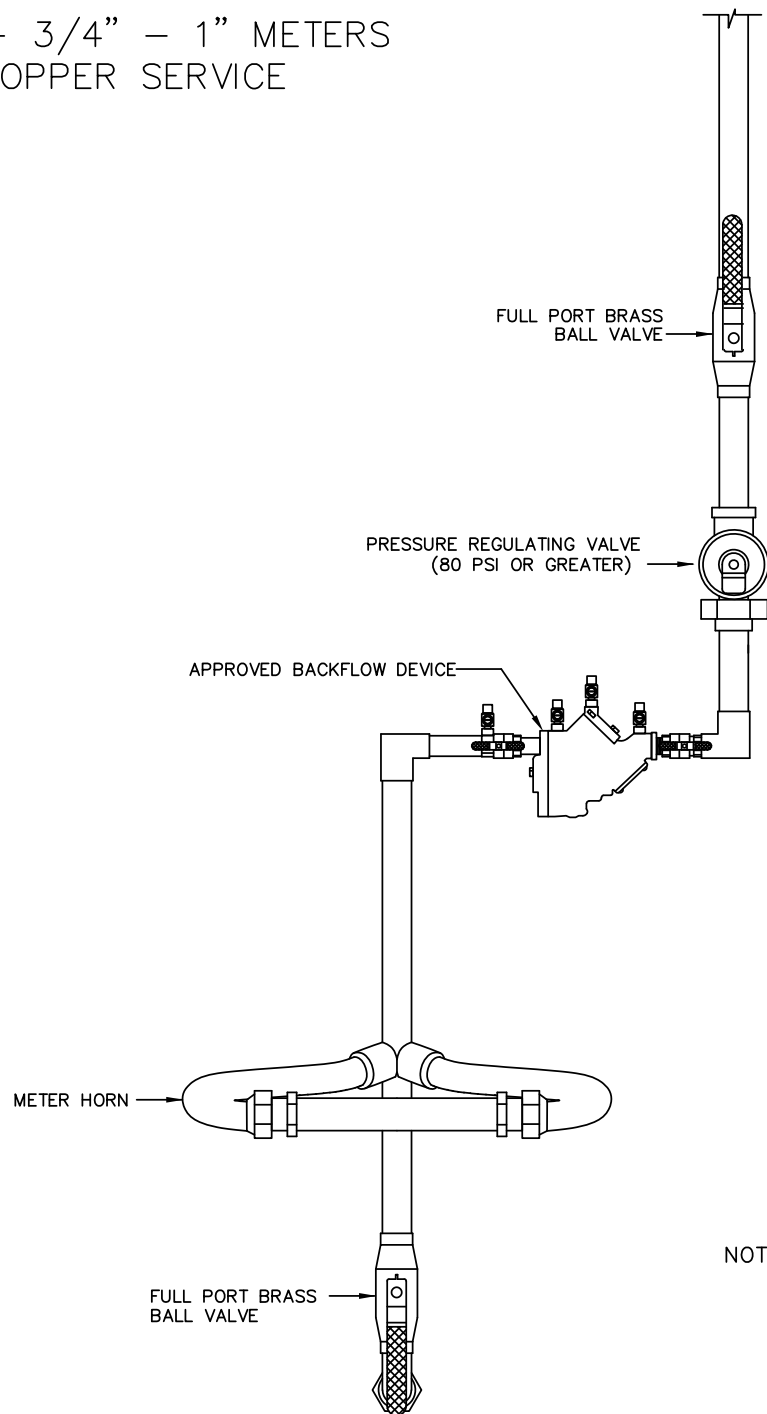
RESIDENTIAL
WATER TANK

CAD FILE:
ENGINEERING STANDARDS\WS-4.0.DWG

SHEET:
WS-4.0

DRWN BY: TLH	APPRVD BY: AJM	ISSUE DATE: 07/1/12	SCALE: NONE
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CITY OF WOOSTER COMMERCIAL METER SETTING 5/8" – 3/4" – 1" METERS COPPER SERVICE



NOTES:
1. METERS PROVIDED BY THE CITY.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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City Engineer

NO.	DATE	REVISION			
1	01/02/17	SWITCH PRV AND BACKFLOW			
		REMOVE DUCTILE			
2	1/12/18	REMOVED NOTE 2			

COMMERCIAL METER SETTING

CAD FILE:

\\ENGINEERING STANDARDS\WS-5.0.DWG

SHEET:

DRWN BY:

APPRVD BY:

ISSUE DATE:

SCALE:

TLH

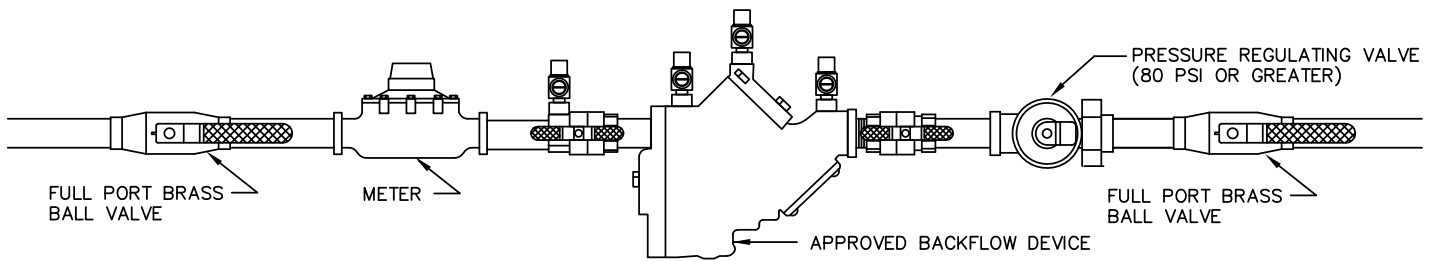
RVK

07/1/12

NONE

WS-5.0

CITY OF WOOSTER COMMERCIAL METER SETTING 1-1/2" AND 2" METERS COPPER SERVICE



NOTES:

- 1) METERS PROVIDED BY THE CITY.
- 2) 2-BOLT BRASS OVAL FLANGES SUPPLIED BY THE CITY AT THE CUSTOMER'S EXPENSE.
- 3) NOT USED.
- 4) 1-1/4" METERS NOT ALLOWED.
- 5) NOT USED.
- 6) METER SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S PIPE FORMULA.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

NOTE 2: CONTACT OHIO811 AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) BEFORE ANY EXCAVATION.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			
1	01/02/17	SWITCH PRV AND BACKFLOW			
		REMOVE DUCTILE			
		ADD NOTE 6			
2	1/12/18	REMOVED NOTES 3,5			

COMMERCIAL METER SETTING

CAD FILE:
ENGINEERING STANDARDS\WS-5.0.DWG

DRWN BY: AJM	APPRVD BY: EPO	ISSUE DATE: 07/1/12	SCALE: NONE
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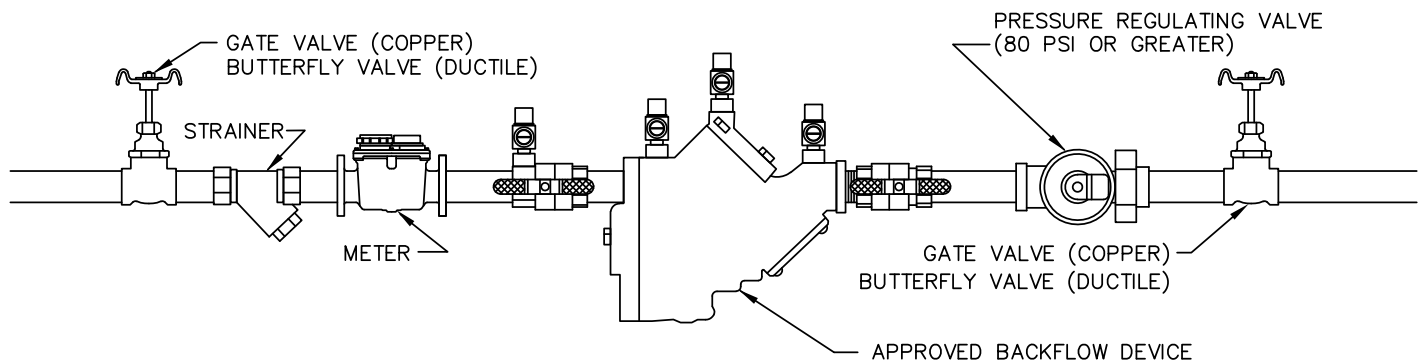
WS-5.1

CITY OF WOOSTER

COMMERCIAL METER SETTING

3", 4", AND 6" METERS

COPPER OR DUCTILE IRON SERVICE



NOTES:

- 1) METER TO BE SPECIFIED BY THE CITY, CUSTOMER PURCHASED (6 WHEEL ENCODER REGISTER).
- 2) METER MUST BE COMPATIBLE WITH STAR/HEXAGRAM SYSTEM (AMR).
- 3) METER MUST REGISTER IN U.S. GALLONS.
- 4) THE ELECTRONIC READER DEVICE FOR THE METER TO BE PROVIDED BY THE CITY (AMR).
- 5) VALVES TO BE FULL PORT BALL VALVES (COPPER PIPE) OR BUTTERFLY VALVES (DUCTILE PIPE).
- 6) NOT USED.
- 7) NOT USED.
- 8) METER SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S PIPE FORMULA.
- 9) A 2" TEST PORT SHALL BE INSTALLED AFTER THE WATER METER AND BEFORE THE BACKFLOW DEVICE.

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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COMMERCIAL METER SETTING

NO.	DATE	REVISION			
1	01/02/17	SWITCH PRV AND BACKFLOW			
		VALVE SPEC FOR DUCTILE			
		REV. NOTE 1; ADD NOTE 8			
2	03/20/17	ADD NOTE 9			
3	01/04/18	REV. NOTE 1			
		REM. NOTES 6, 7			

CAD FILE:
ENGINEERING STANDARDS\WS-5.0.DWG

SHEET:

DRWN BY:
TLH

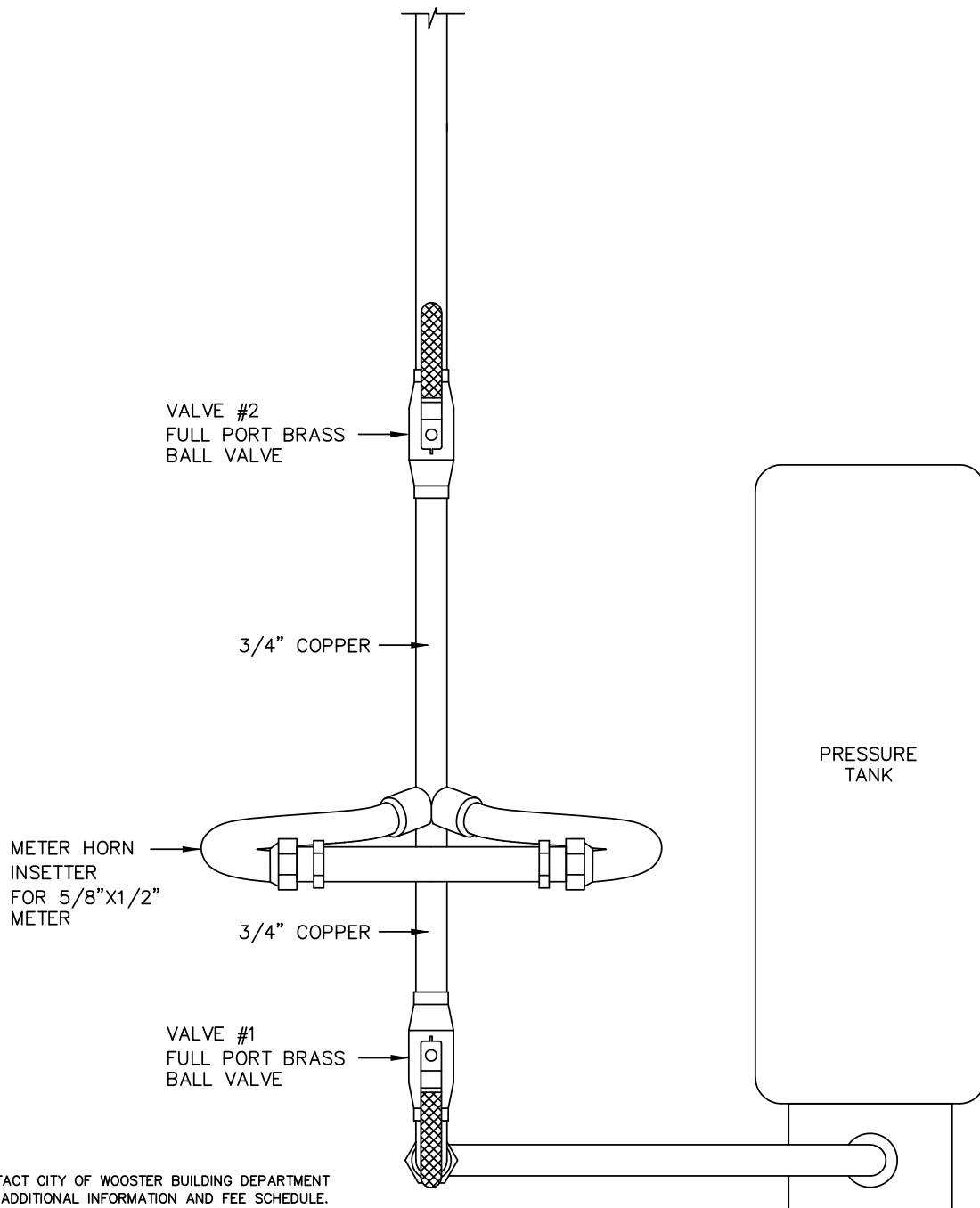
APPRVD BY:
RVK

ISSUE DATE:
07/1/12

SCALE:
NONE

WS-5.2

CITY OF WOOSTER KILLBUCK SOUTH WELL METER SETTING



NOTE:

1) CONTACT CITY OF WOOSTER BUILDING DEPARTMENT FOR ADDITIONAL INFORMATION AND FEE SCHEDULE.

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Roger Kobilarcsik, P.E.
City Engineer

NO.	DATE	REVISION			

KILLBUCK SOUTH WELL METER SETTING

CAD FILE:

\\ENGINEERING STANDARDS\WS-5.0.DWG

SHEET:

DRWN BY:

TLH

APPRVD BY:

AJM

ISSUE DATE:

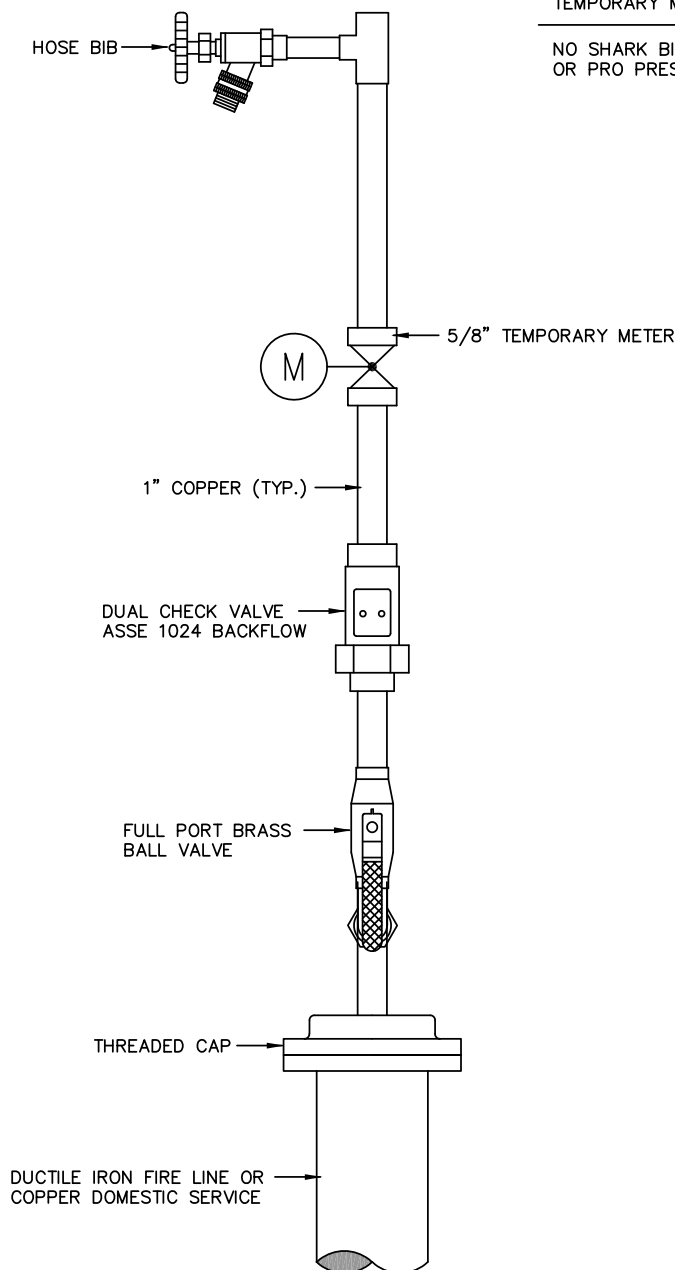
07/1/12

SCALE:

NONE

WS-5.3

NO SHARK BITE FITTINGS
OR PRO PRESS FITTINGS.



NOTE:

1. CONTRACTOR SHALL INSTALL PIPING.
2. THE CITY WILL PROVIDE THE METER (DEPOSIT REQUIRED).

NOTE 1: THIS DETAIL IS VALID ONLY WHEN USED AS PRESENTED HERE, WITHOUT CHANGES AND IN CONJUNCTION WITH ANY GENERAL NOTES AND/OR OTHER DETAILS WHICH MAY APPLY. ANY CHANGES TO THIS DETAIL SHALL FIRST BE SUBMITTED TO AND APPROVED BY THE CITY ENGINEER.

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Roger Kobilarcsik, P.E.
City Engineer

CONSTRUCTION METER SETTING

CAD FILE:
\\ENGINEERING STANDARDS\WS-6.0.DWG

DRWN BY: AMG	APPRVD BY: RVK	ISSUE DATE: 01/02/19	SCALE: NONE
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SHEET:

WS-6.0

[illegible]