

**VILLAGE OF SOUTH LEBANON, OHIO
ORDINANCE NO. 2018-17**

**AN ORDINANCE ADOPTING WARREN COUNTY WATER STANDARD
DETAILS WITH VILLAGE MODIFICATIONS, AND TO DECLARE AN
EMERGENCY.**

WHEREAS, the Warren County Board of County Commissioners adopted the latest amendments to the Warren County Water Standard Details on April 3, 2018, per Resolution# 18-0585; and

WHEREAS, the Village Public Works Department has reviewed these details and has recommended modifications to promote standardization and modernization of water apparatuses in all new construction; and

WHEREAS, immediate implementation is necessary to ensure uniformity in water and sewer standards throughout the Village; and

NOW, THEREFORE BE IT RESOLVED by the Council of the Village of South Lebanon, Ohio, at least two-thirds of all members elected thereto concurring:

Section 1. . That this Council hereby adopts the Warren County Water Standard Details, dated April 3, 2018, included by reference, with the following revisions, as attached hereto and made a part hereof:

WATER DETAIL W-8	Hydrant Setting (with attached revision)
WATER DETAIL W-10A	Meter Box Detail for 3/4" and 1" meters (with attached revisions)
WATER DETAIL W-10B	Meter Box Detail for 1 1/2" and 2" meters (with attached revisions)
WATER DETAIL W-14	Large Domestic Water Meter Pit (with attached revisions)
WATER DETAIL W-15A	Large Water Meter Pit w/ Fire w/ FDC & Domestic Line (with attached revisions)
WATER DETAIL W-15B	Large Water Meter Pit w/ Fire Line, Domestic Line & Irrigation Line (with attached revisions)

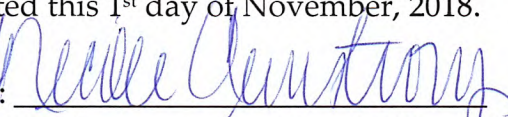
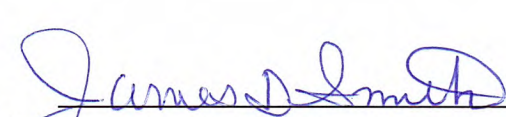
Section 2. That the recitals contained within the Whereas Clauses set forth above are incorporated by reference herein.

Section 3. That this Ordinance is hereby declared to be an emergency measure in accordance with Ohio Rev. Code § 731.30 for the immediate preservation of the public peace, health, safety and general welfare; and, this Ordinance shall be in full force and effective immediately upon its passage.

Section 4. That it is found and determined that all formal actions of the Council concerning and relating to the adoption of this Ordinance were adopted in an open meeting of Council in compliance with all legal requirements, including Section 121.22 of the Ohio Revised Code.

Adopted this 1st day of November, 2018.

Attest:

 
Nicole Armstrong, Fiscal Officer/Clerk James D. Smith, Mayor

Rules Suspended: 11 / 1 / 2018 (if applicable)

Effective Date – / / 2018

Vote - 16 Yeas

_____ Nays

First Reading – / / 2018

Effective Date – / / 2018

Second Reading – n/a

Third Reading – n/a

Vote - _____ Yeas

_____ Nays

Prepared by and approved as to form:

PAUL R. REVELSON
VILLAGE SOLICITOR
SOUTH LEBANON, OHIO

By: 

Date: 11/1/18

Village of South Lebanon, Ohio Fire Hydrant Specification

1. Fire Hydrant shall be manufactured in accordance with AWWA Standard C502, be listed by Underwriters Laboratories, Inc. and be FM Approved.
2. Fire Hydrant shall be designed for 250PSI working pressure and tested to 500 PSI hydrostatic pressure.
3. Fire hydrant shall be backed by manufacturer's 10 year limited warranty.
4. Fire hydrant shall be dry top, center stem, 4 bolt bonnet construction having an O-ring sealed lubrication reservoir.
5. Fire hydrant shall be manufactured with operating nut and thrust nut made of copper alloy, with bearings located both above and below the thrust collar and with operating nut protected by a cast iron weather shield.
6. All valves and hydrants shall open left and be fitted with National Standards threads.
7. Fire hydrant shall be manufactured with nozzles mechanically locked into the nozzle section and having O-ring seals.
8. Fire hydrant shall be a Traffic Model complete with safety flanges and stainless steel stem coupling. Nozzle section must rotate 360 degrees.
9. Fire hydrant shall be manufactured with a main valve seat ring of copper alloy drain ring. A 360 degree drain channel shall have a minimum of two tapped drain outlets.
10. Fire hydrant shall have a solid copper alloy upper valve plate with two rubber facings that activate the drain ports.
11. Fire hydrant shall be manufactured with a bronze lower valve plate that bottoms out in the shoe for maximum opening.
11. Fire hydrant shall have the 5" storz connection.
12. Nozzle section shall be coated inside and out with TGIC coating, *OSHA Safety Red*
13. Fire hydrant shall be the Clow Medallion as manufactured by the Clow Valve Company.

November 1, 2018

Resolution

Number 18-0585

Adopted Date April 03, 2018

AMEND STANDARD DETAILS FOR THE WARREN COUNTY WATER AND SEWER DEPARTMENT

WHEREAS, by Resolution #87-1103, the Board established Standard Details for water and sanitary sewer improvements to be constructed within Warren County; and

WHEREAS, by Resolution #12-0787, the Board amended said Standard Details; and

WHEREAS, it is necessary, at this time, to amend said Standard Details; and

NOW THEREFORE BE IT RESOLVED:

1. That the Standard Details for the Warren County Water and Sewer Department are hereby amended by the revisions to the following:

STANDARD DRAWING INDEX

WATER DETAIL W-1	(WATERMAIN LAYOUT AT CUL-DE-SAC)
WATER DETAIL W-5	(WATERMAIN ENCASEMENT AT CREEK CROSSING)
WATER DETAIL W-6	(WATERMAIN ENCASEMENT AT SEWER CROSSING)
WATER DETAIL W-8	(HYDRANT SETTING)
WATER DETAIL W-10A	(METER BOX DETAIL FOR ¾" AND 1" METERS)
WATER DETAIL W-10B	(METER BOX DETAIL FOR 1 ½" AND 2" METERS)
WATER DETAIL W-11	(MULTIPLE WATER SERVICE CONNECTIONS)
WATER DETAIL W-12	(TYPICAL WATER SYSTEM DETAIL)
WATER DETAIL W-13	(DITCH AND METER LOCATION)
WATER DETAIL W-14	(LARGE DOMESTIC WATER METER PIT)
WATER DETAIL W-15A	(LARGE WATER METER PIT W/ FIRE LINE W/ FDC & DOMESTIC LINE)
WATER DETAIL W-15B	(LARGE WATER METER PIT W/ FIRE LINE, DOMESTIC LINE, & IRRIGATION LINE)
WATER DETAIL W-15C	(LARGE WATER METER PIT EQUIPMENT SCHEDULE)
WATER DETAIL W-16	(VALVE PIT)
WATER DETAIL W-17	(ANCHORS & BUTTRESSES FOR VERTICAL BENDS)
WATER DETAIL W-18	(REQUIRED RESTRAINED JOINTS FOR BENDS)

WATER DETAIL W-19	(REQUIRED RESTRAINED JOINTS – DEAD
WATER DETAIL W-20	END VALVES, PLUGS, CAPS, & TEES)
WATER DETAIL W-21	(ROAD PAVEMENT CUT AND RESTORATION
WATER DETAIL WG-1A	AT ROADWAY CROSSING)
WATER DETAIL WG-1B	(METER TEST AT CREEK CROSSING)
WATER DETAIL WG-2	(PROCEDURE FOR CONNECTION TO
WATER DETAIL WG-3	EXISTING WATER SYSTEM)
SANITARY DETAIL S-1	(PROCEDURE FOR RELOCATING AND
SANITARY DETAIL S-2	LOWER SERVICE LATERAL AND
SANITARY DETAIL S-3	RELOCATING OR BRINGING TO GRADE
SANITARY DETAIL S-4	METER PITS)
SANITARY DETAIL S-5	(PRECAST MANHOLE)
SANITARY DETAIL S-6	(PRECAST MANHOLE INSIDE DROP
SANITARY DETAIL S-7	CONNECTION)
SANITARY DETAIL S-8	(VENTED MANHOLE)
SANITARY DETAIL S-9	(MANHOLE CHANNELS)
SANITARY DETAIL S-10	(SANITARY MANHOLE INVERT TRANSITION
SANITARY DETAIL S-11	BASE SECTIONS)
SANITARY DETAIL S-12	(SANITARY GRAVITY SEWER TRENCH
SANITARY DETAIL S-13	DETAIL)
SANITARY DETAIL S-14A	(ROAD PAVEMENT CUT AND RESTORATION
SANITARY DETAIL S-14B	AT ROADWAY CROSSING)
SANITARY DETAIL S-15	(SEWER IN CASING)
SANITARY DETAIL S-16	(CONCRETE ANCHOR)
SANITARY DETAIL S-17	(FULL CONCRETE ENCASEMENT)
SANITARY DETAIL S-18	(SANITARY SEWER CREEK CROSSING)
SANITARY DETAIL S-19	(AERIAL SANITARY SEWER CROSSING)
SANITARY DETAIL S-20	(DEEP HOUSE CONNECTIONS)
SANITARY DETAIL S-21	(HOUSE CONNECTIONS)
SANITARY DETAIL SG-1	(HOUSE CONNECTIONS)
SANITARY DETAIL SG-2A	(FORCE MAIN CLEANOUT)
SANITARY DETAIL SG-2B	(AIR RELEASE VALVE ASSEMBLY)
SANITARY DETAIL SG-4	(SANITARY CLEANOUT)
	(REQUIRED RESTRAINED JOINTS FOR
	BENDS)
	(REQUIRED RESTRAINED JOINTS – DEAD
	END VALVES, PLUGS, CAPS, & TEES)
	(FORCE MAIN TRENCH DETAIL)
	(IMPERVIOUS DAM DETAIL)
	(DETAILED PROCEDURES FOR SANITARY
	SEWER)
	(SEWER TESTING)

2. That the Standard Details for the Warren County Water and Sewer Department are hereby amended by adding the following:

SANITARY DETAIL S-22 (LATERAL SADDLE INSTALLATION DETAIL
FOR PVC PIPE)

SANITARY DETAIL S-23 (LATERAL SADDLE INSTALLATION DETAIL
FOR VCP AND DUCTILE IRON PIPE)

3. That the Standard Details for the Warren County Water and Sewer Department are hereby amended by deleting the following:

WATER DETAIL W-16 (BLOWOFF DETAIL)

WATER DETAIL W-21 (BLOWOFF HYDRANT)

SANITARY DETAIL S-2 (DROP MANHOLE DETAIL)

4. That these modifications shall be effective immediately and a copy of the amended details are attached her to be made a part hereof.

5. That all other provisions and requirements of the Standard Details shall remain unchanged.

Mr. Young moved for adoption of the foregoing resolution being seconded by Mr. Grossmann. Upon call of the roll, the following vote resulted:

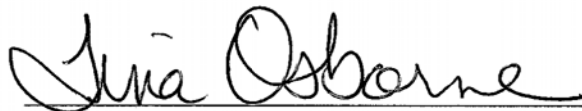
Mrs. Jones – absent

Mr. Grossmann – yea

Mr. Young – yea

Resolution adopted this 3rd day of April 2018.

BOARD OF COUNTY COMMISSIONERS



Tina Osborne, Clerk

cc: Water/Sewer (file)

**WARREN COUNTY WATER AND SEWER DEPARTMENT
STANDARD DRAWINGS INDEX**

MARCH, 2018

WATER

Watermain Layout at Cul-De-Sac	W-1
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Meter Test Pit at Creek Crossing	W-21

WATER – GENERAL NOTES

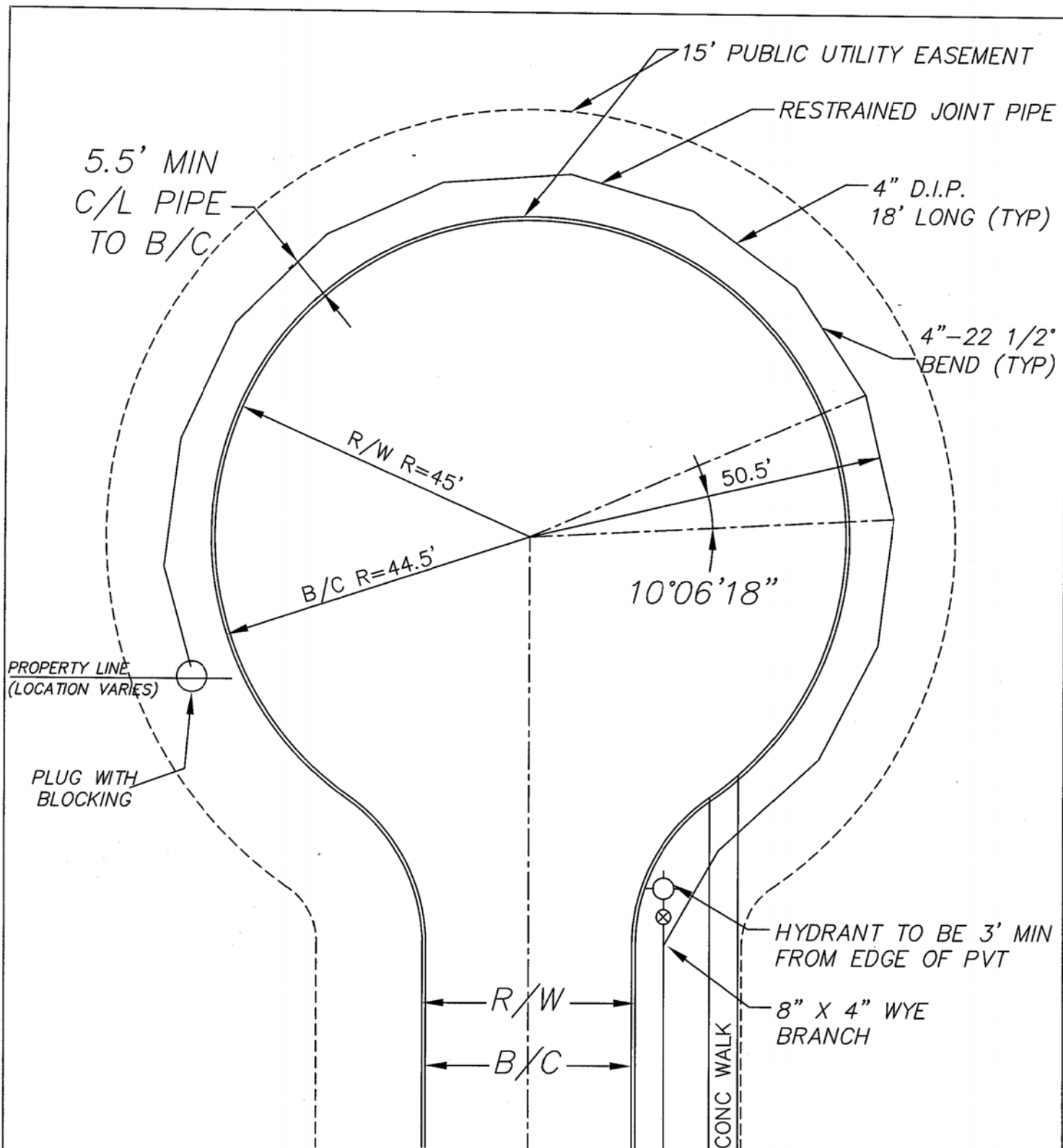
Water	WG-1A
Water (Continued)	WG-1B
Procedure for Connection to Existing Water System	WG-2
Procedure for Relocating or Lowering Service Laterals and Relocating or Bringing to Grade Meter Pits	WG-3

SEWER

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Vented Manhole	S-3
Manhole Channels	S-4
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Required Restrained Joints – Dead End Valves, Plugs, Caps, & Tees	S-19
Force Main Trench Detail	S-20
Impervious Dam Detail	S-21
Saddled Wye Gasket Hub x Gasket Skirt w/ Stainless Steel Bands	S-22

SEWER – GENERAL NOTES

Detailed Procedures for Sanitary Sewer	SG-1
Sewer	SG-2A
Sewer (Continued)	SG-2B
Pipe Connection into Manholes	SG-3
Sewer Testing	SG-4



WATERMAIN LAYOUT AT CUL-DE-SAC

APPROVED/REVISED

MARCH, 2018

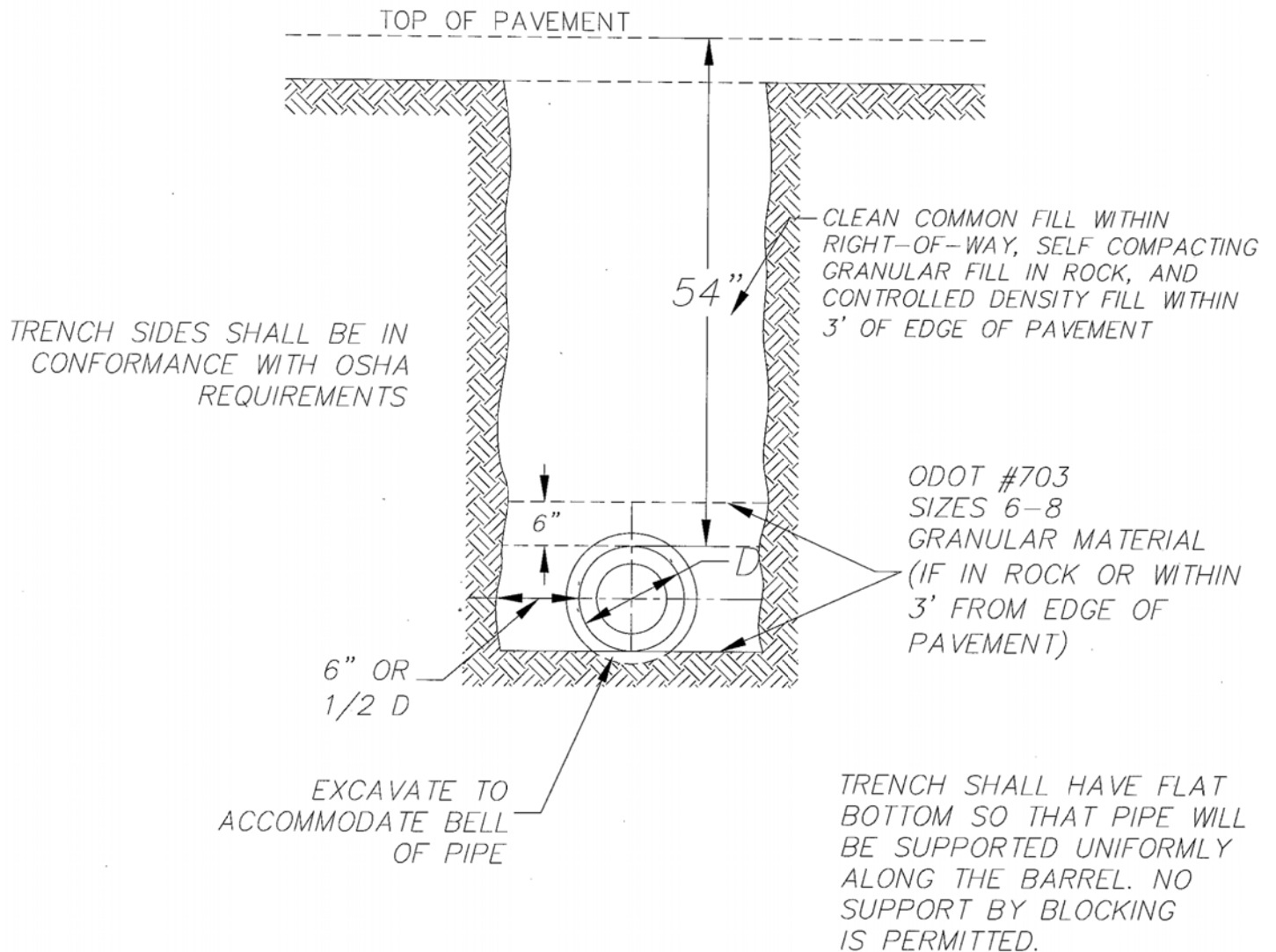
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-1

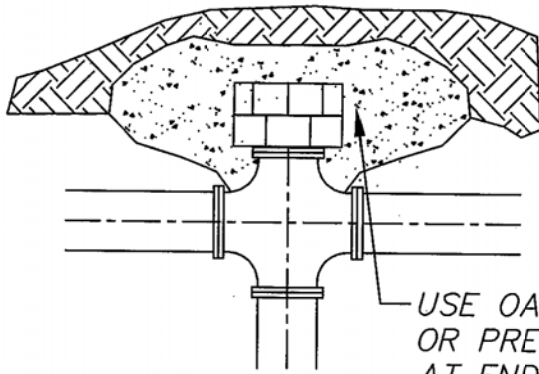
WATERMAIN SHALL BE INSTALLED
IN A SEPARATE TRENCH FROM THE
SANITARY SEWER AND SHALL BE A
MINIMUM DISTANCE OF 10' MEASURED
HORIZONTALLY FROM THE SANITARY
SEWER.

BACKFILL AND RESTORATION
OF PAVEMENT MUST
CONFORM TO THE
APPLICABLE WARREN COUNTY
ENGINEER OR ODOT
SPECIFICATION(S).



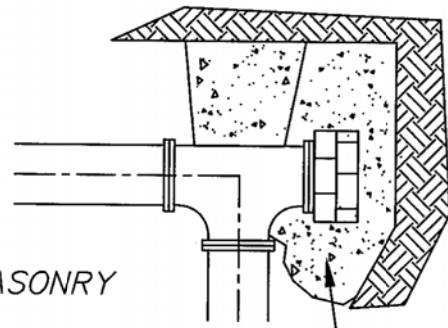
WATERMAIN TRENCH DETAIL

APPROVED/REVISED	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER
JUNE, 2012		W-2



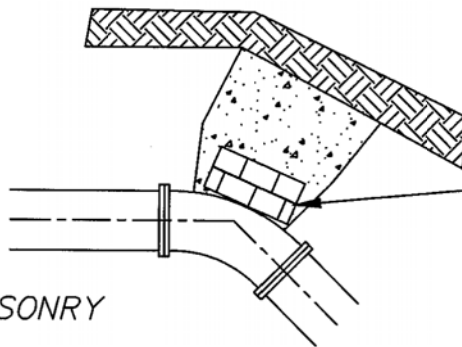
CROSS

USE OAK, CEMENT MASONRY
OR PRECAST BLOCKS
AT END TO BE PLUGGED
(TYP)



TEE

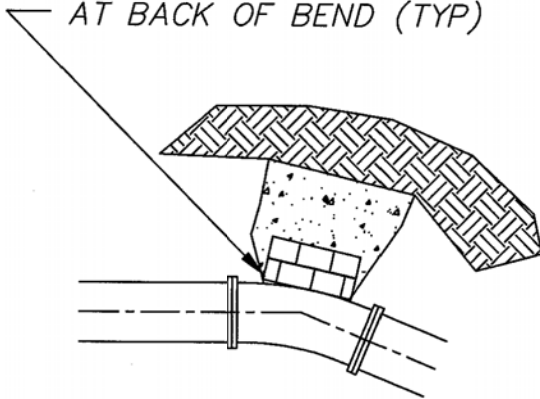
USE OAK,
CEMENT MASONRY
OR PRECAST BLOCKS
AT END TO BE PLUGGED
(TYP)



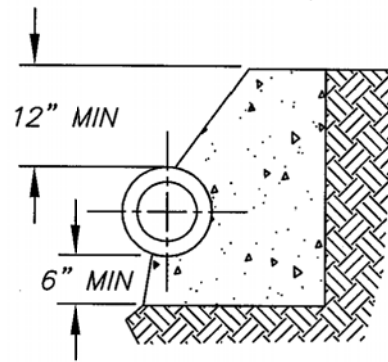
USE OAK, CEMENT MASONRY
OR PRECAST BLOCKS
AT BACK OF BEND (TYP)

USE OAK, CEMENT MASONRY
OR PRECAST BLOCKS
AT BACK OF BEND (TYP)

45° BEND



22.5° BEND



SECTIONAL VIEW

NOTE:

BEARING AREA TO BE DETERMINED BASED ON SOIL TYPE & WORKING PRESSURE.
THRUST BLOCKS TO BE USED AT ALL BENDS 22.5° OR GREATER.
THRUST BLOCKS TO BE POURED AGAINST FIRM UNDISTURBED SOIL.
USE CLASS "C" CONCRETE.
90° BENDS SHALL NOT BE PERMITTED.

THRUST BLOCK DETAILS

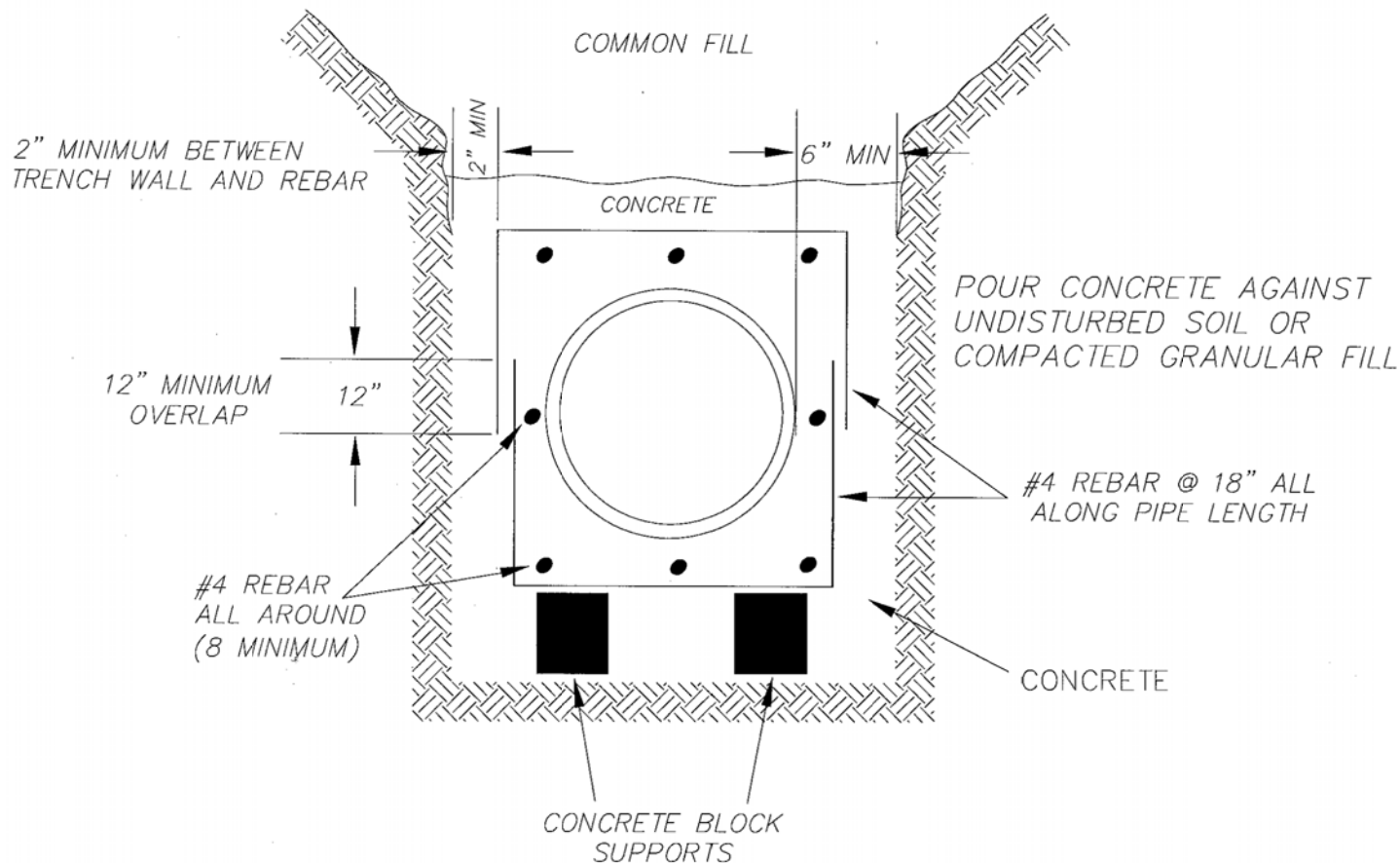
APPROVED/REVISED

JUNE, 2012

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-3



NOTES:

- 1) CONCRETE SHALL BE 3000 P.S.I. MINIMUM 28 DAYS STRENGTH (4" SLUMP).
- 2) SUPPORT PIPE AND REBAR CAGE ON CONCRETE BRICKS DURING CONCRETE PLACEMENT.
- 3) CONCRETE ENCASEMENT SHALL BE TERMINATED AT PIPE JOINTS ONLY.

FULL CONCRETE ENCASEMENT

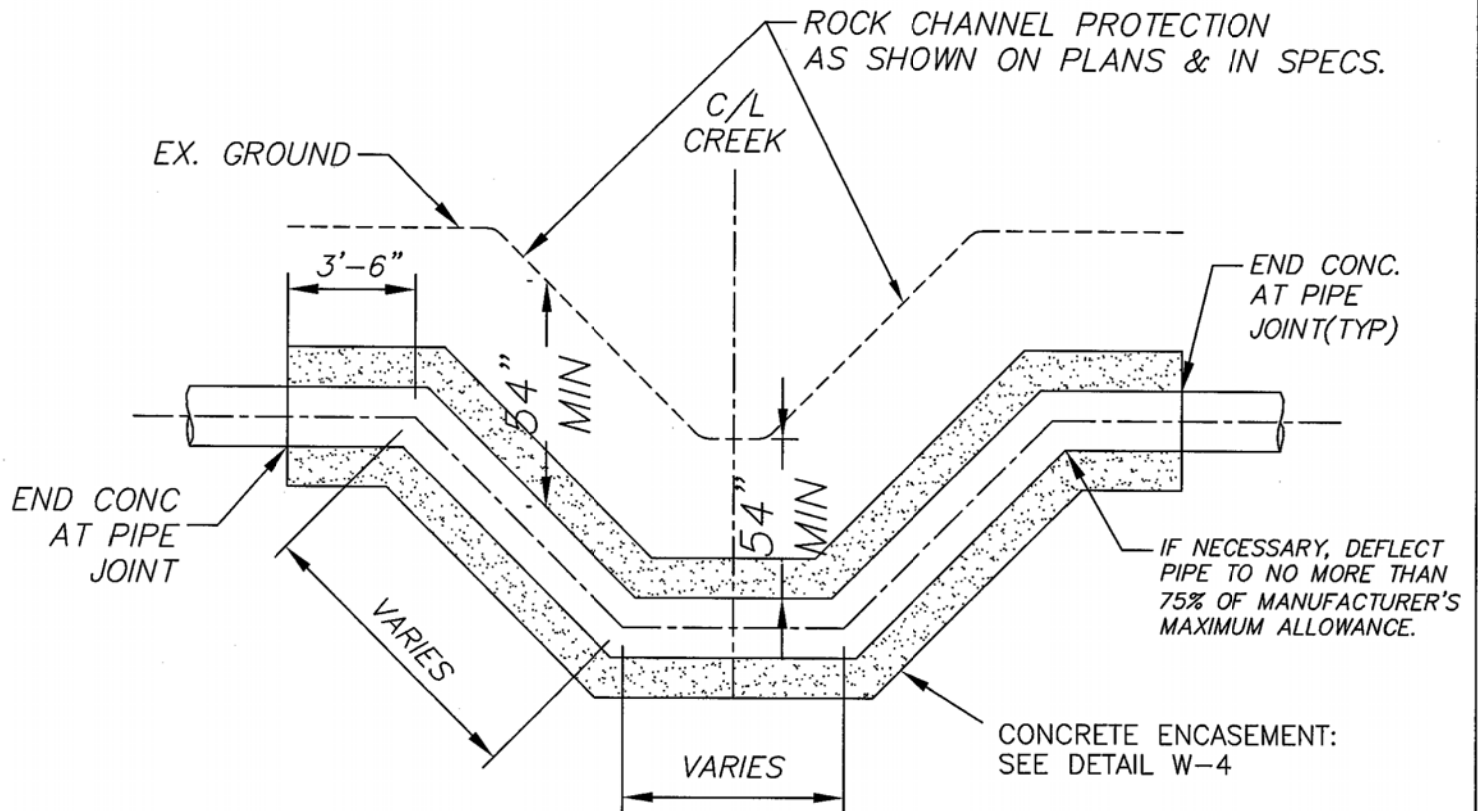
APPROVED/REVISED

MARCH, 2008

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-4



NOTE:
ALL PIPE IN CREEK CROSSINGS TO BE RESTRAINED
JOINT, PER STANDARD NUMBER W-18

WATERMAIN ENCASEMENT AT CREEK CROSSING

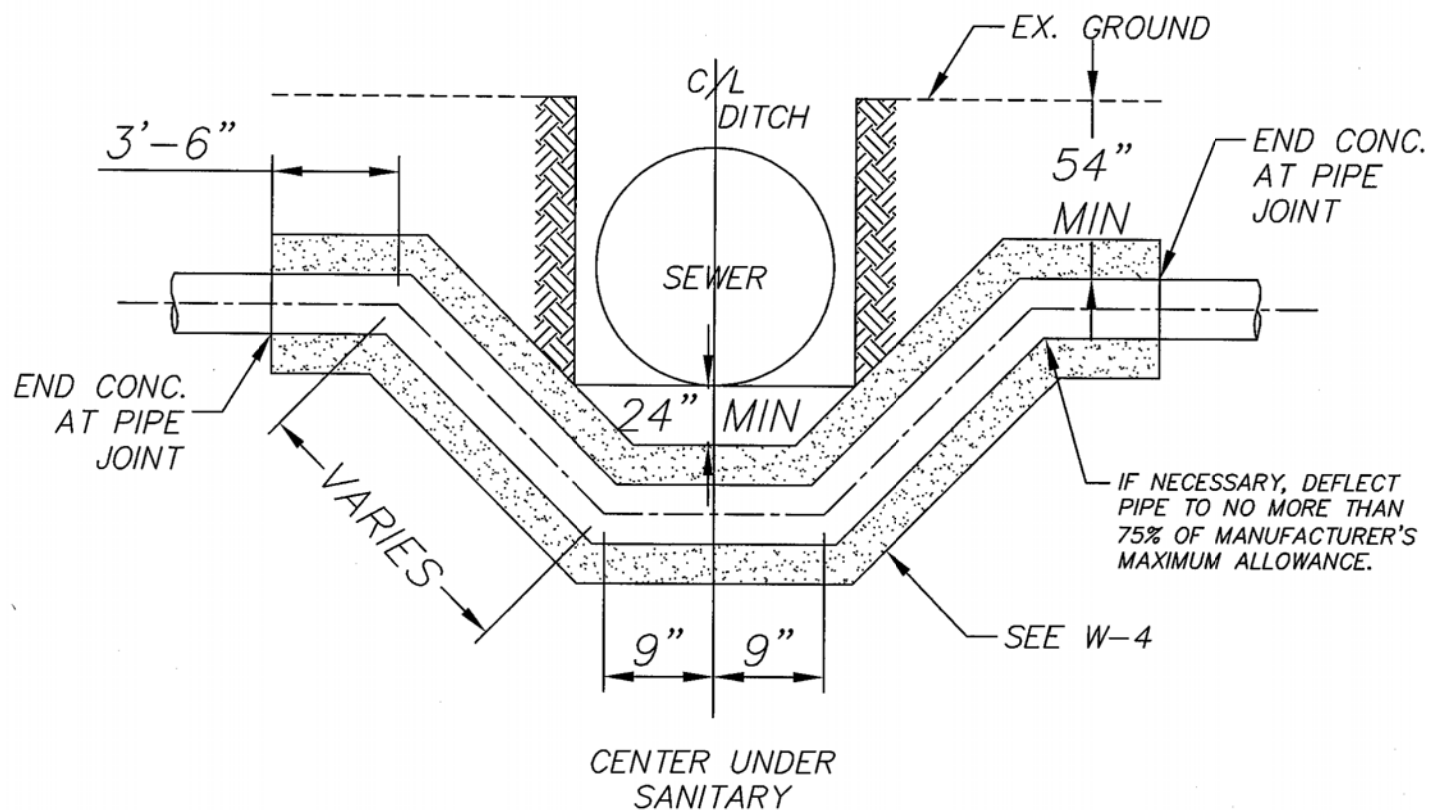
APPROVED/REVISED

MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-5



ALL PIPE IN SEWER CROSSINGS TO BE RESTRAINED JOINT, PER STANDARD NUMBER W-18

WATERMAIN ENCASEMENT AT SEWER CROSSING

APPROVED/REVISED

MARCH, 2018

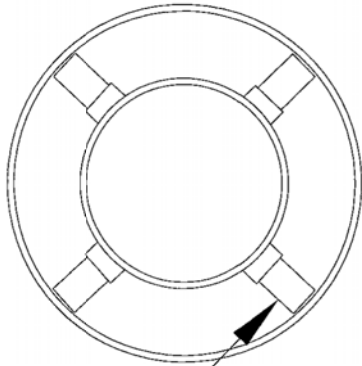
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-6

WATER PIPE SIZE - CARRIER PIPE SIZE (O.D.)-THICKNESS

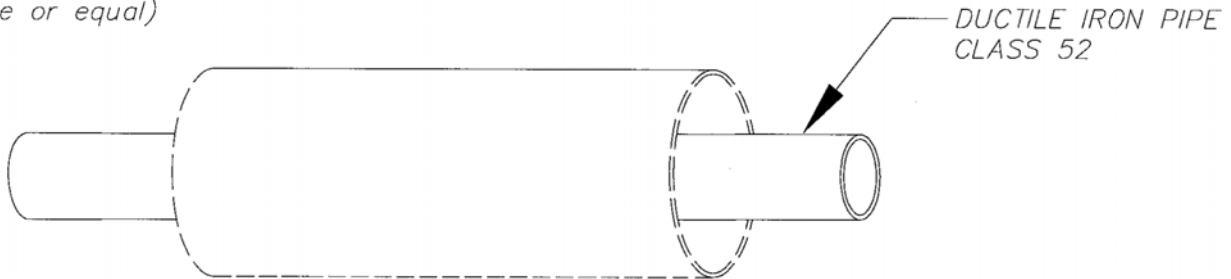
4"	10"	1/4"
6"	12"	3/8"
8"	18"	3/8"
10"	20"	3/8"
12"	24"	1/2"
16"	24"	1/2"
20"	30"	1/2"
24"	36"	1/2"



SO THAT PIPE WILL BE CENTERED IN CARRIER PIPE, THE FOLLOWING INFORMATION IS NEEDED:

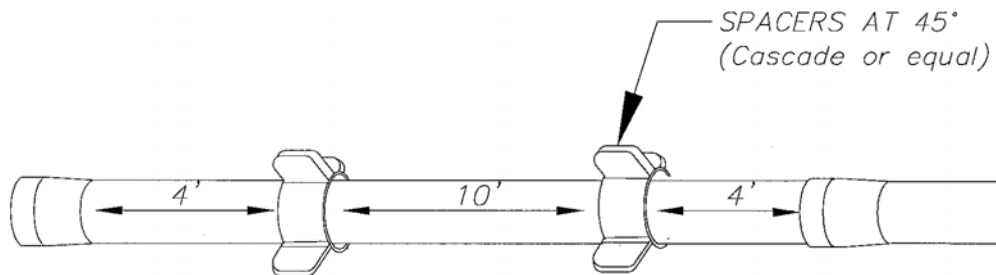
1. TYPE & O.D. OF PIPE
2. TYPE OF JOINT/RESTRAINT
3. TYPE & I.D. OF CASING
4. 2 SPACERS PER LENGTH OF PIPE (18")
(SEE STANDARD PLACEMENT BELOW)

SPACERS AT 45°
(Cascade or equal)



NOTE:

1. RESTRAINED JOINT TO BE USED WITHIN LIMITS OF CASING
2. PACK END OF CASING W/ CONCRETE OR GRAVEL
3. CASING SPACERS TO BE USED THRU CARRIER PIPE.



RECOMMENDED STANDARD PLACEMENT

WATERMAIN IN CASING

APPROVED/REVISED

JUNE, 2012

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

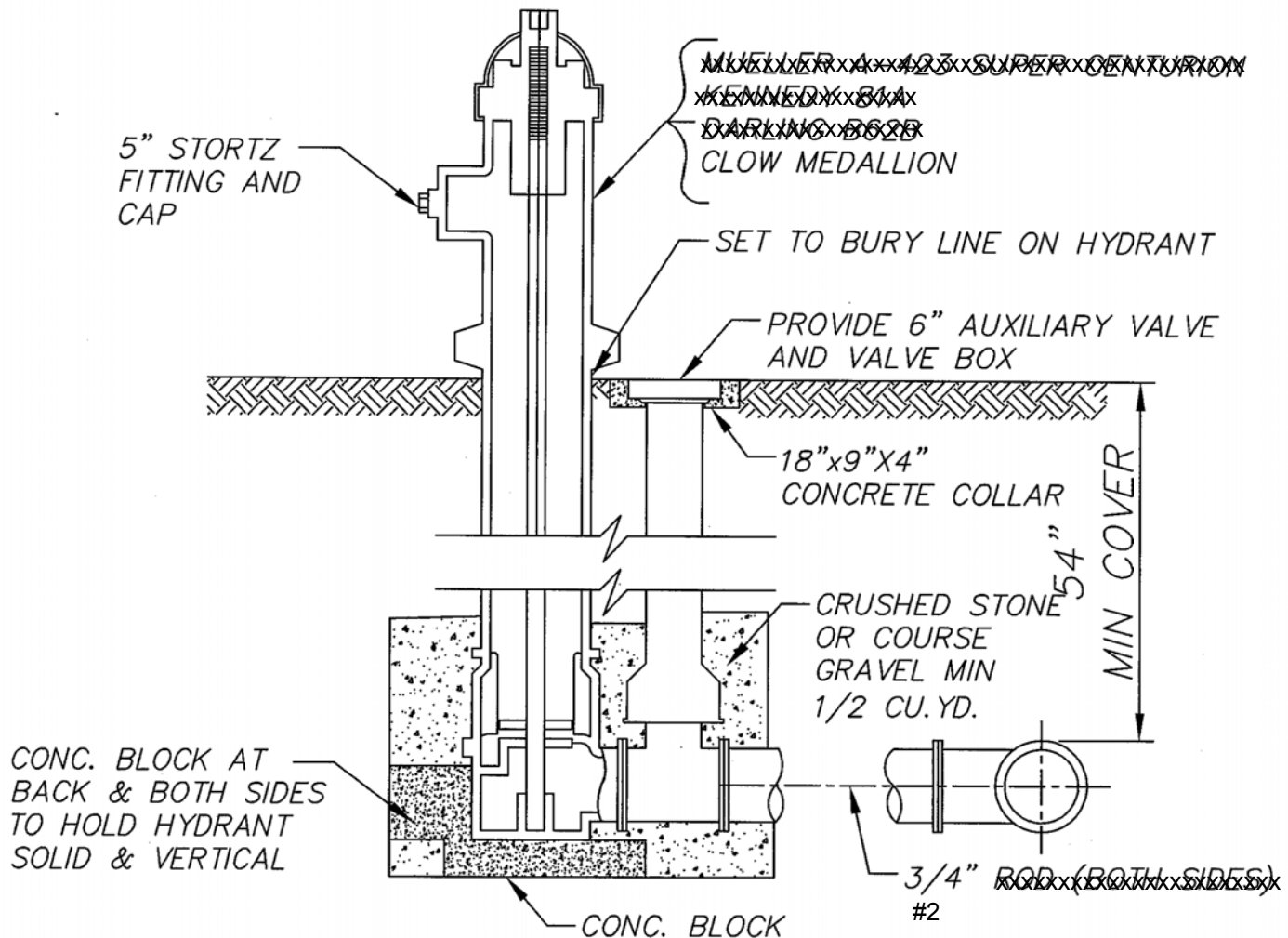
STANDARD NUMBER

W-7

W.M.	F.H. BURIAL DEPTH
6"	5'-0"
8"	5'-0"
10"	5'-0"
12"	5'-0"
16"	5'-6"
18"	5'-6"
20"	5'-6"

ALL FIRE HYDRANTS AND HYDRANT VALVES MUST OPEN LEFT.

ALL HYDRANTS TO BE 5 1/4" BRONZE TO BRONZE SEAT



1. ALL VALVES MUST BE RESILIENT SEATED.
2. APPROVED VALVE TYPES: CLOW, ~~DRESSER~~, ~~AMERICAN~~, ~~DARLING~~ MUST CONFORM TO AWWA C509.
3. RODDING SHALL NOT BE REQ'D IF ANCHOR FLANGES (SPOOLS) ARE USED.
4. HYDRANTS TO BE EQUIPPED WITH PRE-ATTACHED 4.5" NST PUMPER CONNECTION WITH A 5" STORTZ FITTING AND CAP.

HYDRANT SETTING

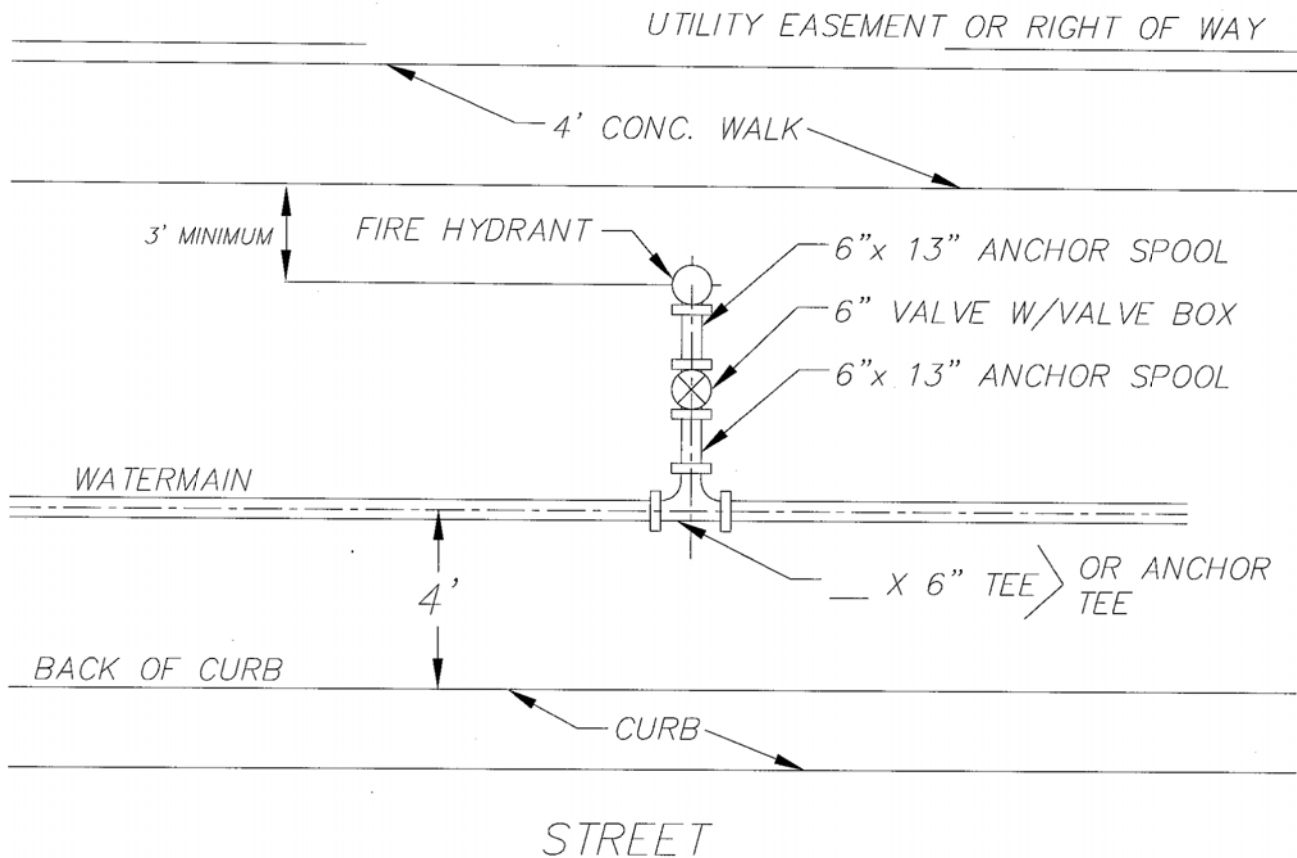
APPROVED/REVISED

MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-8



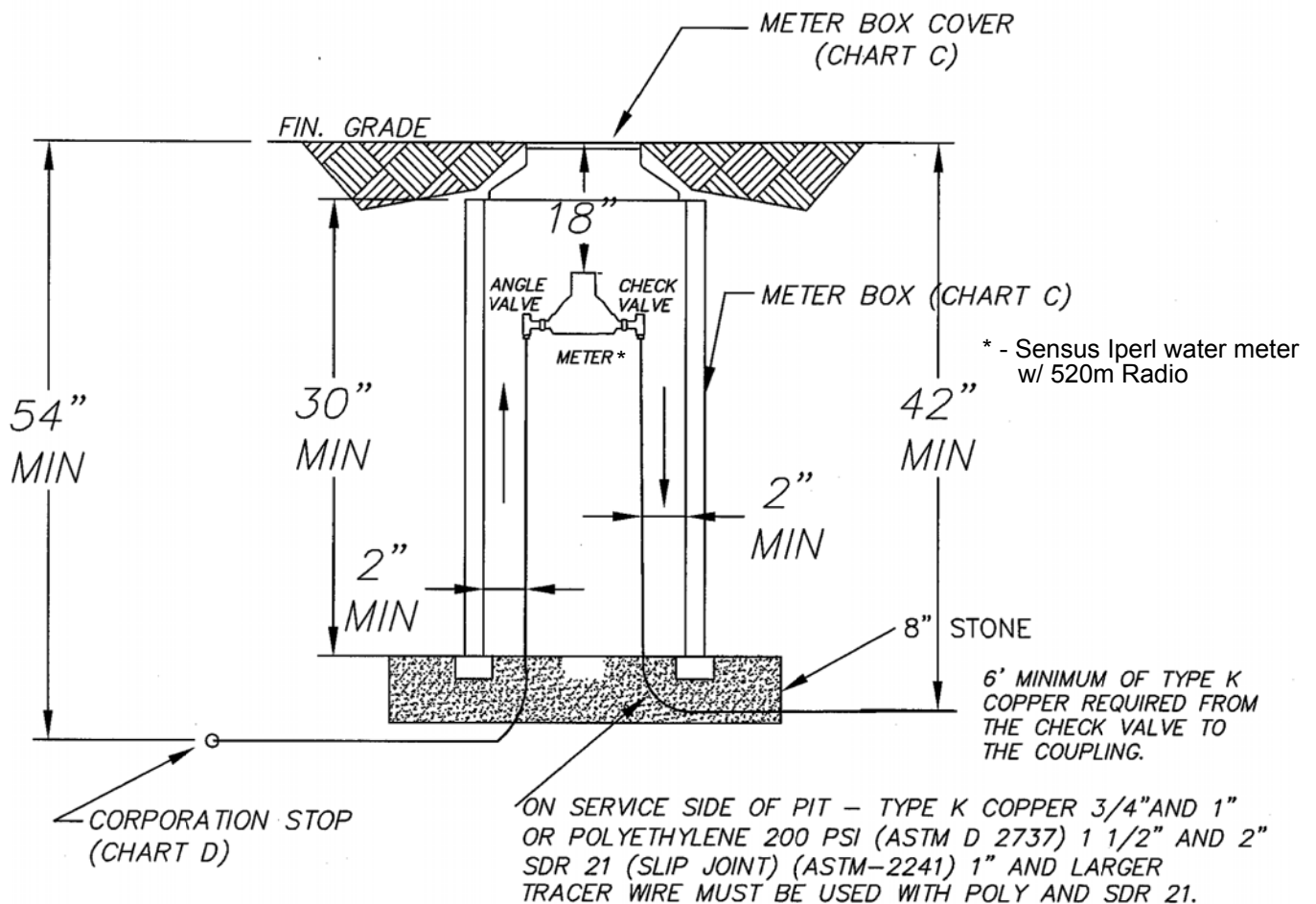
NOTES:

1. HYDRANT, VALVE, BEND & TEE TO BE CLOSE COUPLED (USE RESTRAINED JOINTS).
2. HYDRANT AND VALVE MUST BE A MINIMUM OF 3' FROM ANY PAVED SURFACE.
3. ALL VALVES MUST BE RESILIENT SEATED.
4. APPROVED VALVE TYPES: CLOW, ~~PIZZER & AMERICAN~~ MUST CONFORM TO AWWA C509.
5. RODDING SHALL NOT BE REQ'D IF ANCHOR FLANGES (SPOOLS) ARE USED.
6. HYDRANTS TO BE EQUIPPED WITH PRE-ATTACHED 4.5" NST PUMPER CONNECTION WITH A 5" STORTZ FITTING AND CAP.

FIRE HYDRANT ARRANGEMENT

APPROVED/REVISED JUNE, 2012	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER W-9
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METER SIZE	CHART A ANGLE VALVE	CHART B CHECK VALVE	CHART C METER PIT & COVER	CHART D CORP STOP	CHART E COUPLINGS
3/4" - 5/8"	MUELLER P 1500 FORD BA43-332W McDONALD 4758-22	MUELLER P 1500 FORD HA34 323 McDONALD 4758-22	METER PIT 20"X30" CARSON #0020213 STRAIGHT WALL METER PIT -OR- 20"X30" OLDCASTLE #0020-S COVER FORD C-3T OR EQUAL	MUELLER P 1500 FORD F-1000 McDONALD 4758-22	FORD C44-33 MUELLER P 15403 McDONALD 4758-22
1"	FORD BA43-444W	FORD HA34-444	METER PIT 20"X30" CARSON #0020213 STRAIGHT WALL METER PIT -OR- 20"X30" OLDCASTLE #0020-S COVER FORD C-3T OR EQUAL	FORD F-1000	FORD C44-44 MUELLER P 15403 McDONALD 4758-22
DOUBLE 3/4"	FORD UVB43-42W	FORD HA34-323	METER PIT 20"X30" CARSON #0020213 STRAIGHT WALL METER PIT -OR- 20"X30" OLDCASTLE #0020-S COVER FORD C-3T OR EQUAL	FORD F-1000	FORD C44-33 MUELLER P 15403 McDONALD 4758-22



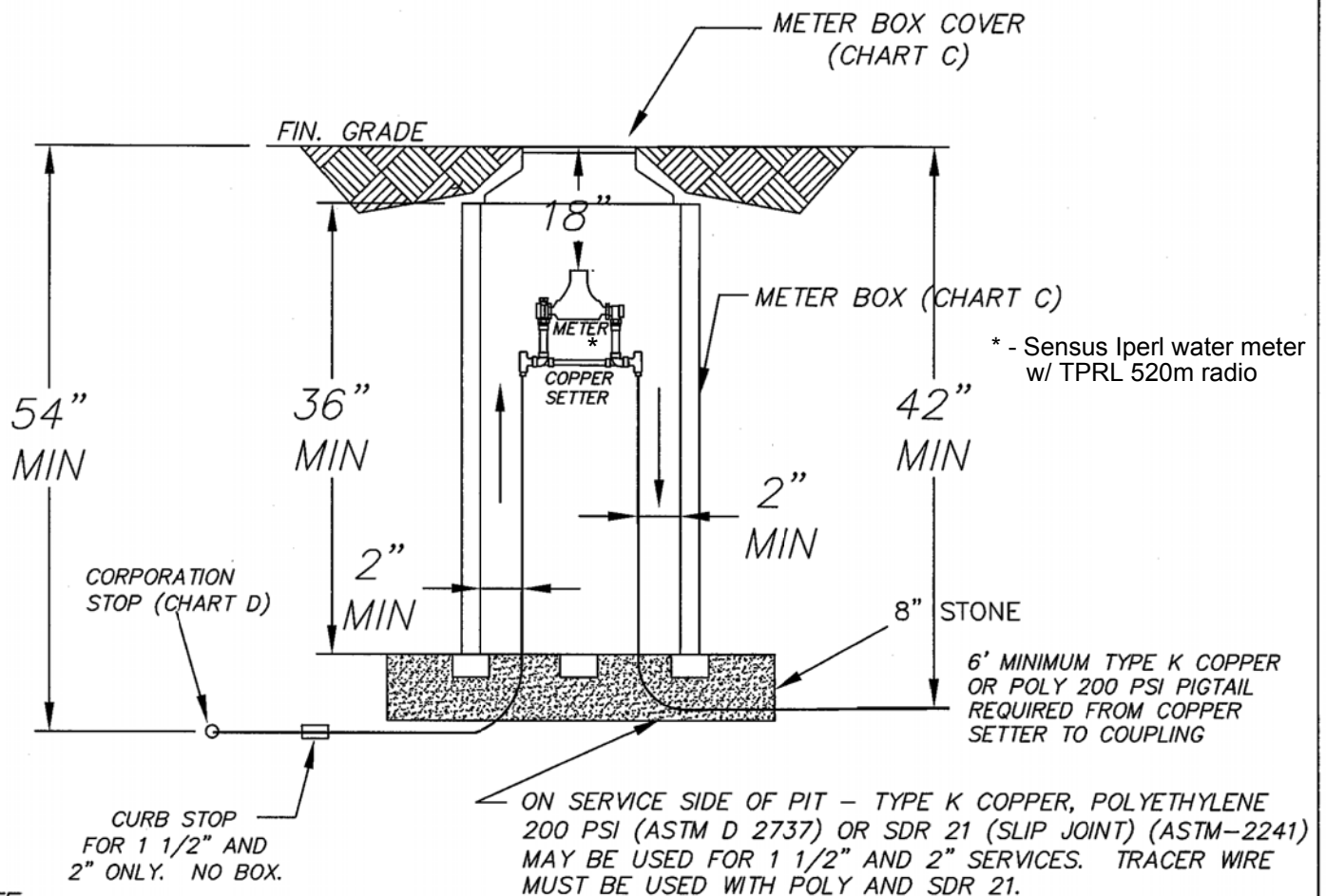
NOTE:

1. BACK FLOW PREVENTER TO BE INSTALLED AHEAD OF ANY SPRINKLER BUT NOT IN METER PIT.

METER BOX DETAIL FOR 3/4" AND 1" METERS

APPROVED/REVISED MARCH, 2018	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER W-10A
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METER SIZE	COPPER SETTER	CURB STOP	CHART C METER PIT & COVER	CHART D CORP STOP	CHART E COUPLINGS
1 1/2"	FORD VBH76-15-44-66 OR EQUAL	FORD B44-666 OR EQUAL	METER PIT 36" X 36" CARSON, STRAIGHT WALL METER PIT COVER FORD C-3T OR EQUAL	FORD F-1000 FORD F8-1000	FORD C44-66 MUELLER P15403 McDONALD 4758-22
2"	FORD VBH77-15B-44-77 OR EQUAL	FORD B44-777 OR EQUAL	METER PIT 36" X 36" CARSON, STRAIGHT WALL METER PIT COVER FORD C-3T OR EQUAL	FORD F-1000 FORD F8-1000	FORD C44-77 MUELLER P15403 McDONALD 4758-22



NOTE:

1. BACK FLOW PREVENTER TO BE INSTALLED AHEAD OF ANY SPRINKLER BUT NOT IN METER PIT.

METER BOX DETAIL FOR 1 1/2" AND 2" METERS

APPROVED/REVISED

MARCH, 2018

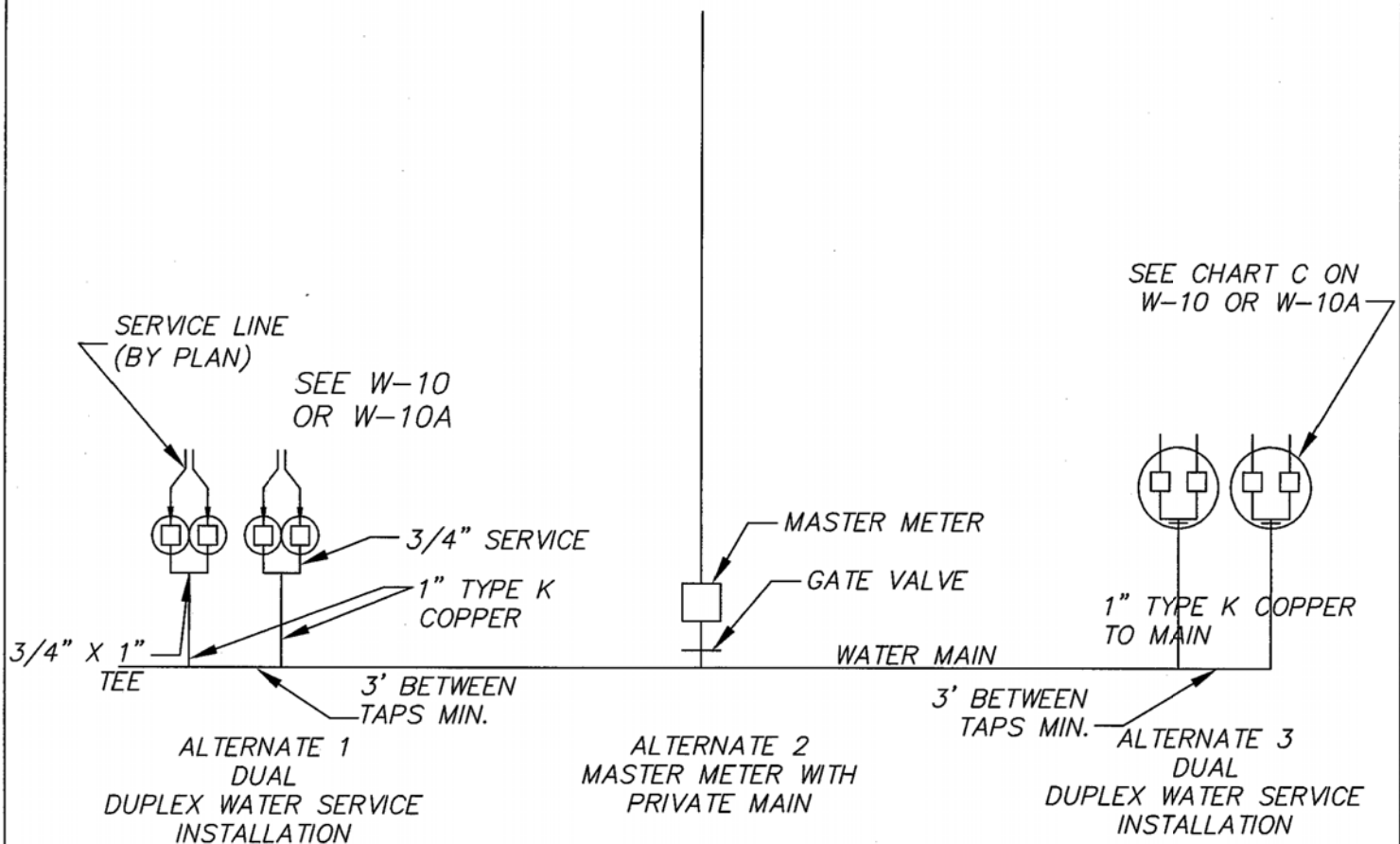
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-10B

NOTES:

1. PRIVATE MAIN APPLICATION MUST BE ACCOMPANIED BY MAINTENANCE AGREEMENT IN PROPER FORM.
2. MULTIPLE SERVICE LINES ON SINGLE TAPS SHALL BE APPROVED BY THE COUNTY ON A CASE-BY-CASE BASIS.



(TYPICAL LAYOUT)
WATER METER SEE W-10A, W-10B, W-14,
W-15A AND W-15B

MULTIPLE WATER SERVICE CONNECTIONS

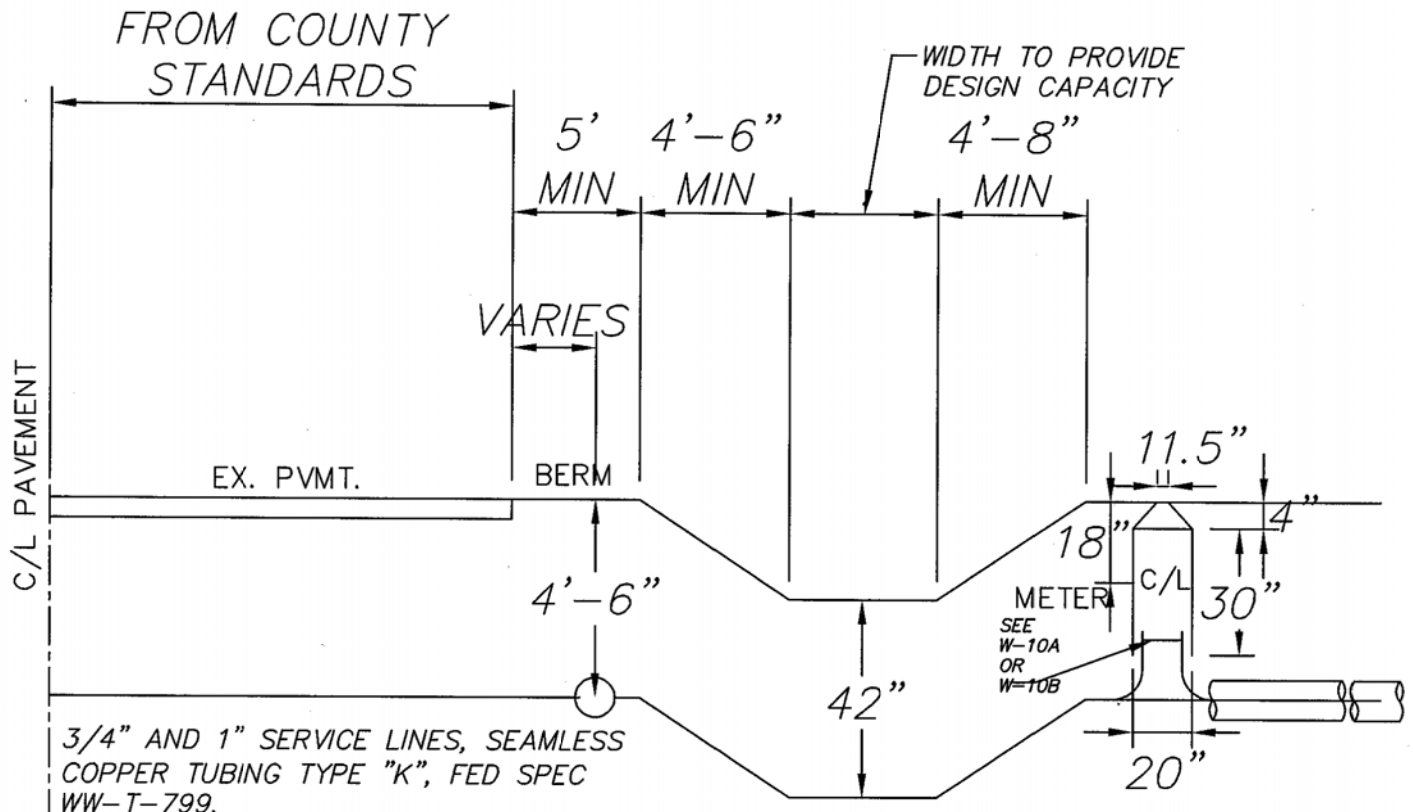
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-11



OR

1 1/2" AND 2" SERVICE LINES, SEAMLESS COPPER TUBING TYPE "K", FED. SPEC. W-T-799 OR SEAMLESS POLYETHYLENE 200 PSI WITH TRACER WIRE WITH 6' LEAD INTO THE PIT.

NOTE:

- 1) CORPORATION STOP TO BE CAST BRASS OR BRONZE. SEE W-10A OR W-10B.
- 2) PLASTIC CONDUIT (2" ID) SHALL BE 20'+/- LONG AND EXTEND A MINIMUM OF 2' INTO THE LOTS TO CLEAR UTILITY EASEMENTS.
- 3) CONTRACTOR SHALL PLACE 2"X 4" OR LARGER POSTS, PAINTED BLUE AT BOTH ENDS OF PLASTIC CONDUIT.
- 4) CONTRACTOR SHALL INSTALL A REBAR 5' LONG VERTICALLY AT ANGLE VALVES.
- 5) WATER MAIN WITHIN 3' OF BACK OF CURB MUST HAVE CDF BACKFILL.

DITCH AND METER LOCATION

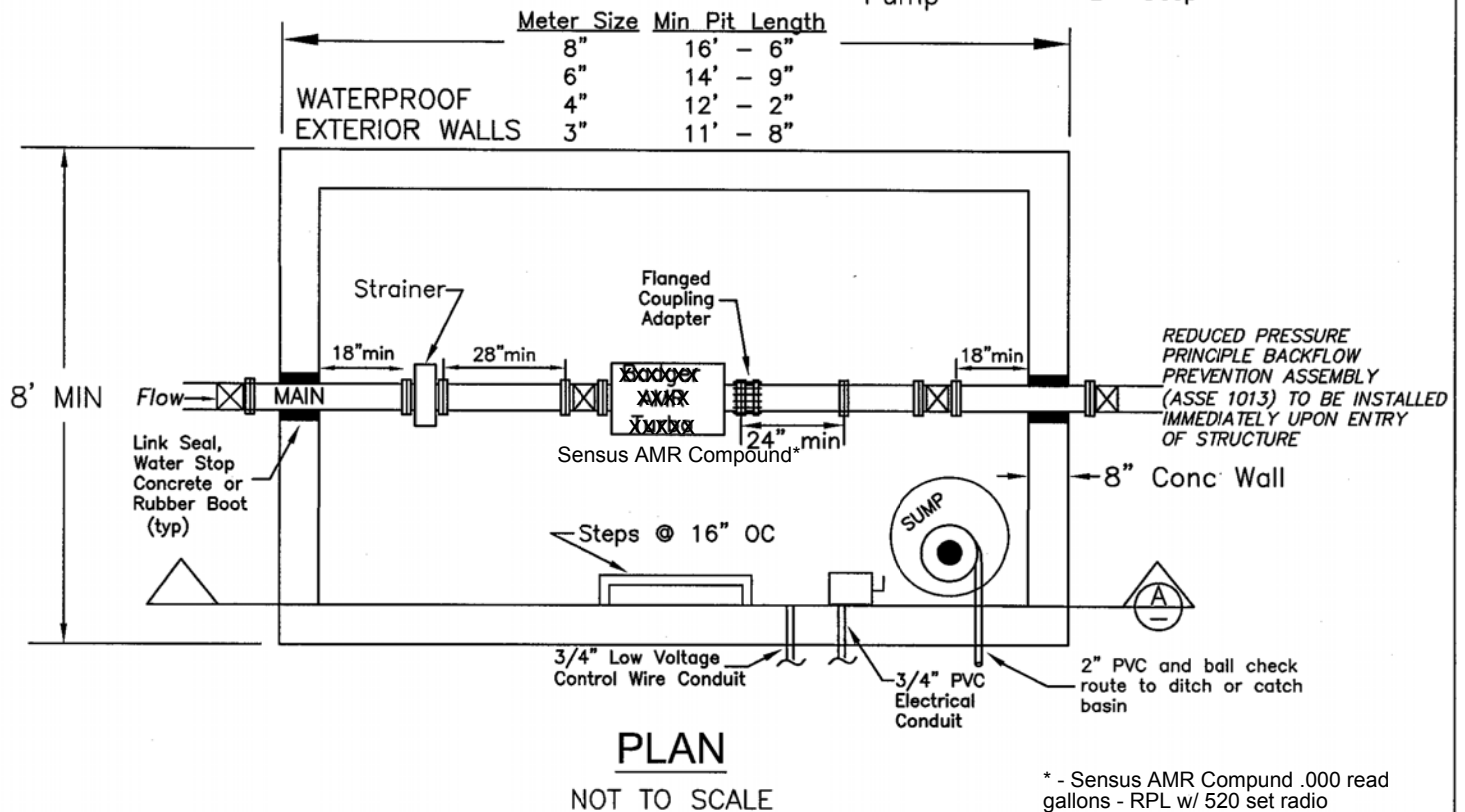
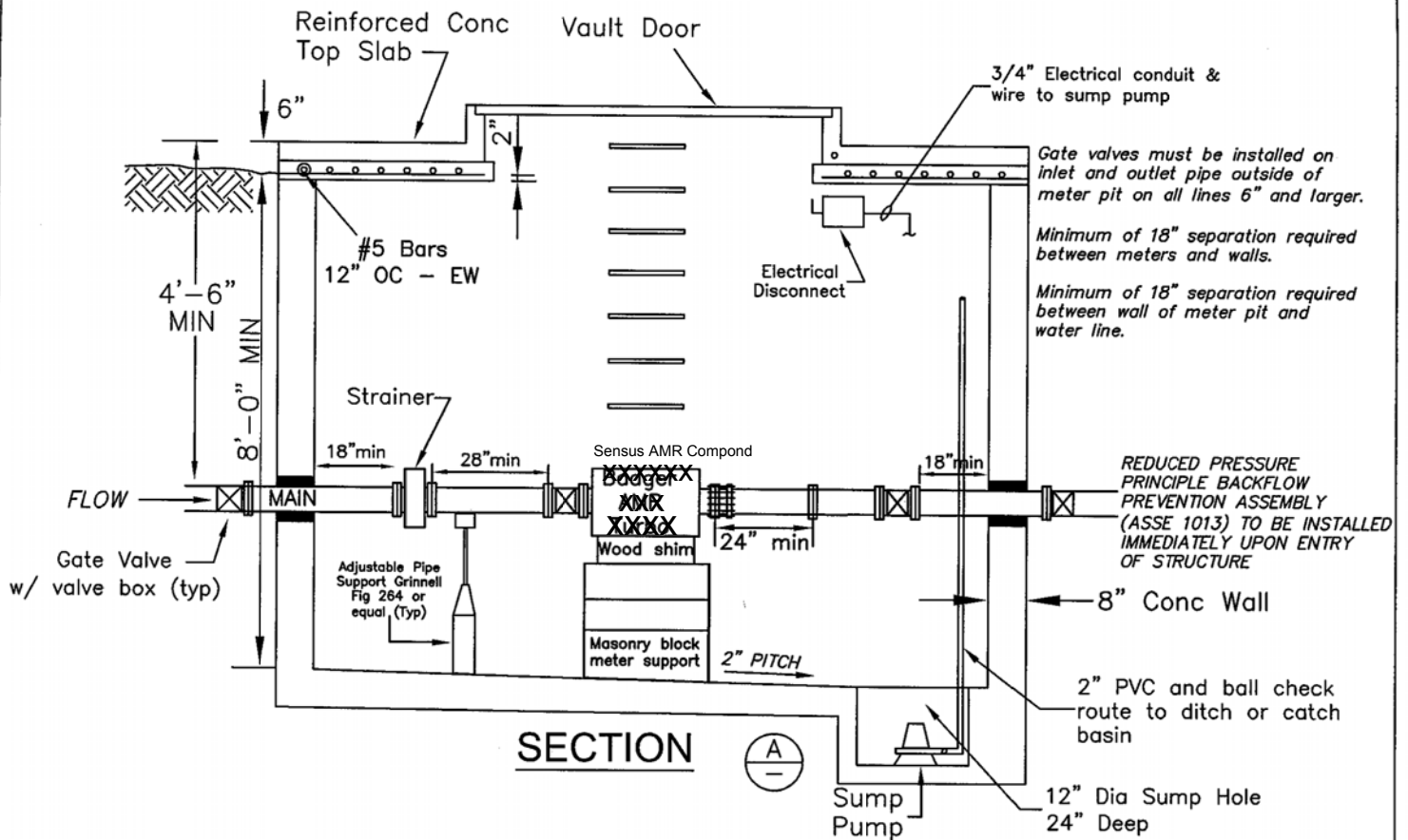
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DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-13



* - Sensus AMR Compound .000 read gallons - RPL w/ 520 set radio

LARGE DOMESTIC WATER METER PIT

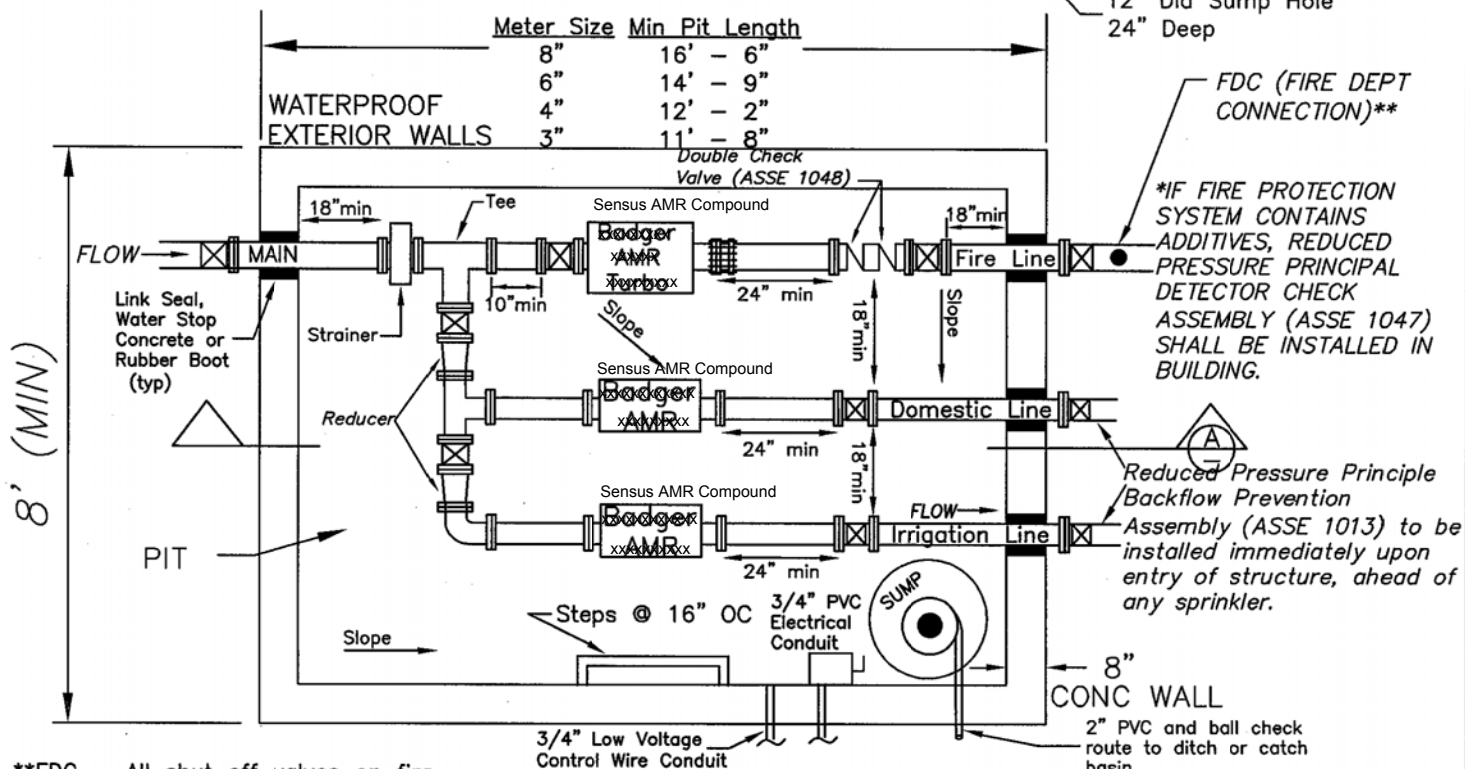
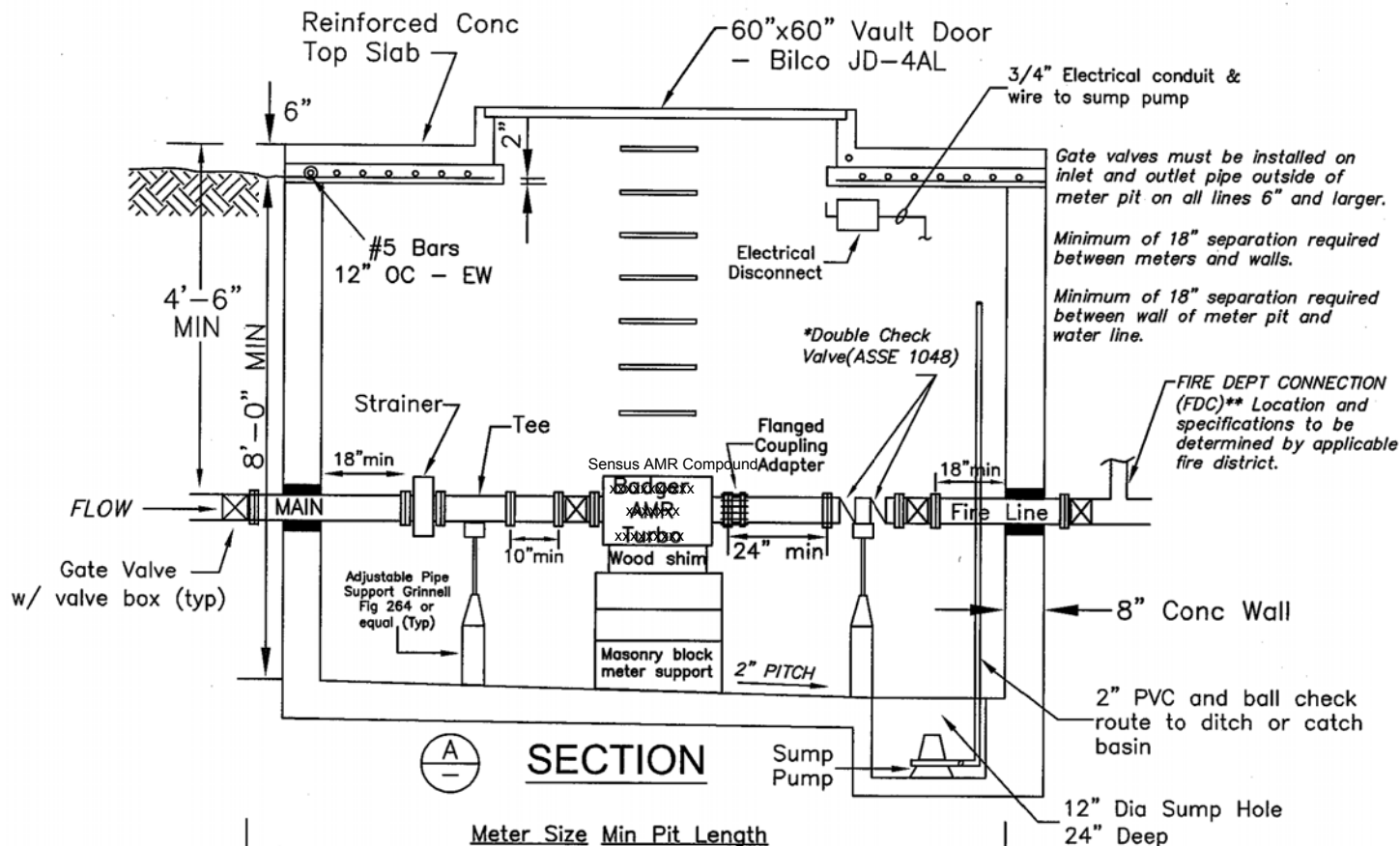
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WARREN COUNTY STANDARD DETAILS
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STANDARD NUMBER

W-14



**FDC - All shut off valves on fire line shall be electronically monitored per applicable Fire District and Warren County Building Dept.

PLAN
NOT TO SCALE

ALL PRIVATE FIRE LINES TO BE INSPECTED BY WARREN CO. BUILDING DEPARTMENT AND LOCAL FIRE DEPARTMENT.

LARGE WATER METER PIT W/ FIRE LINE, DOMESTIC LINE & IRRIGATION LINE

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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

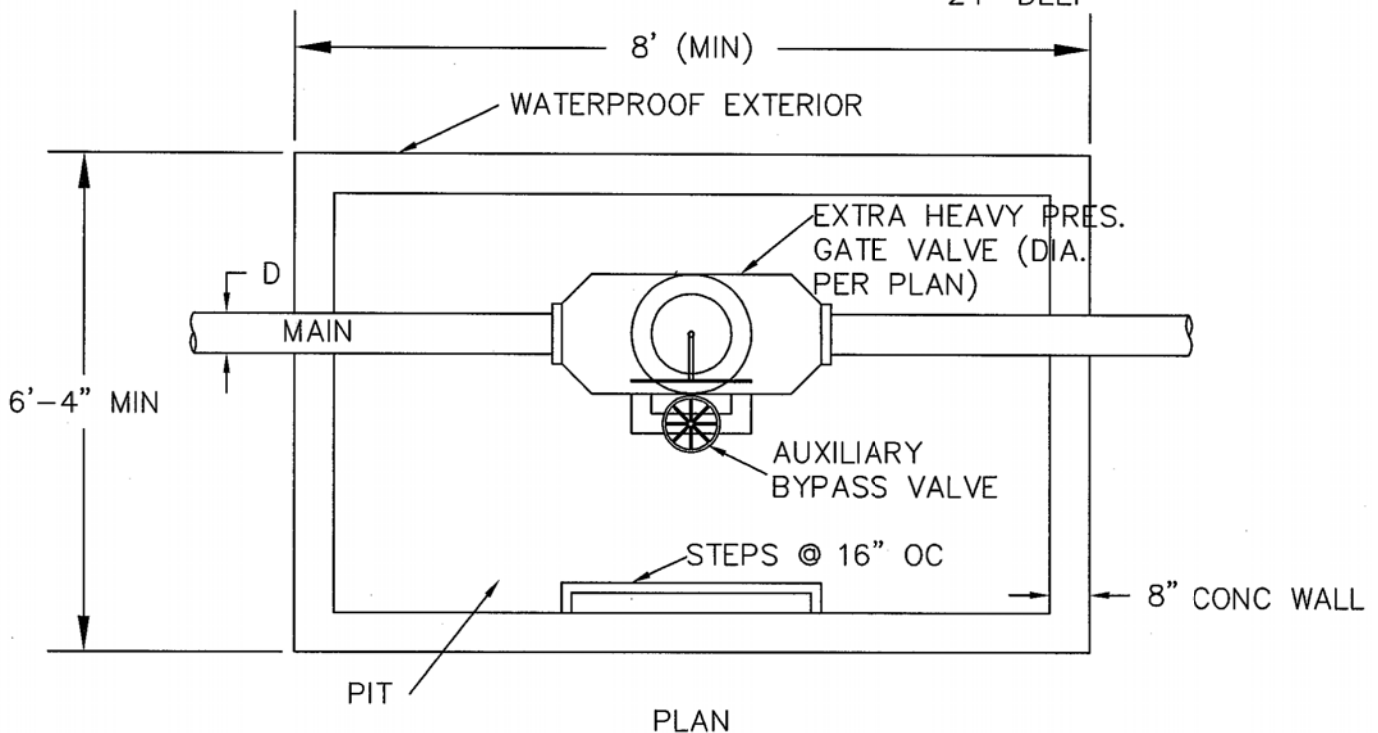
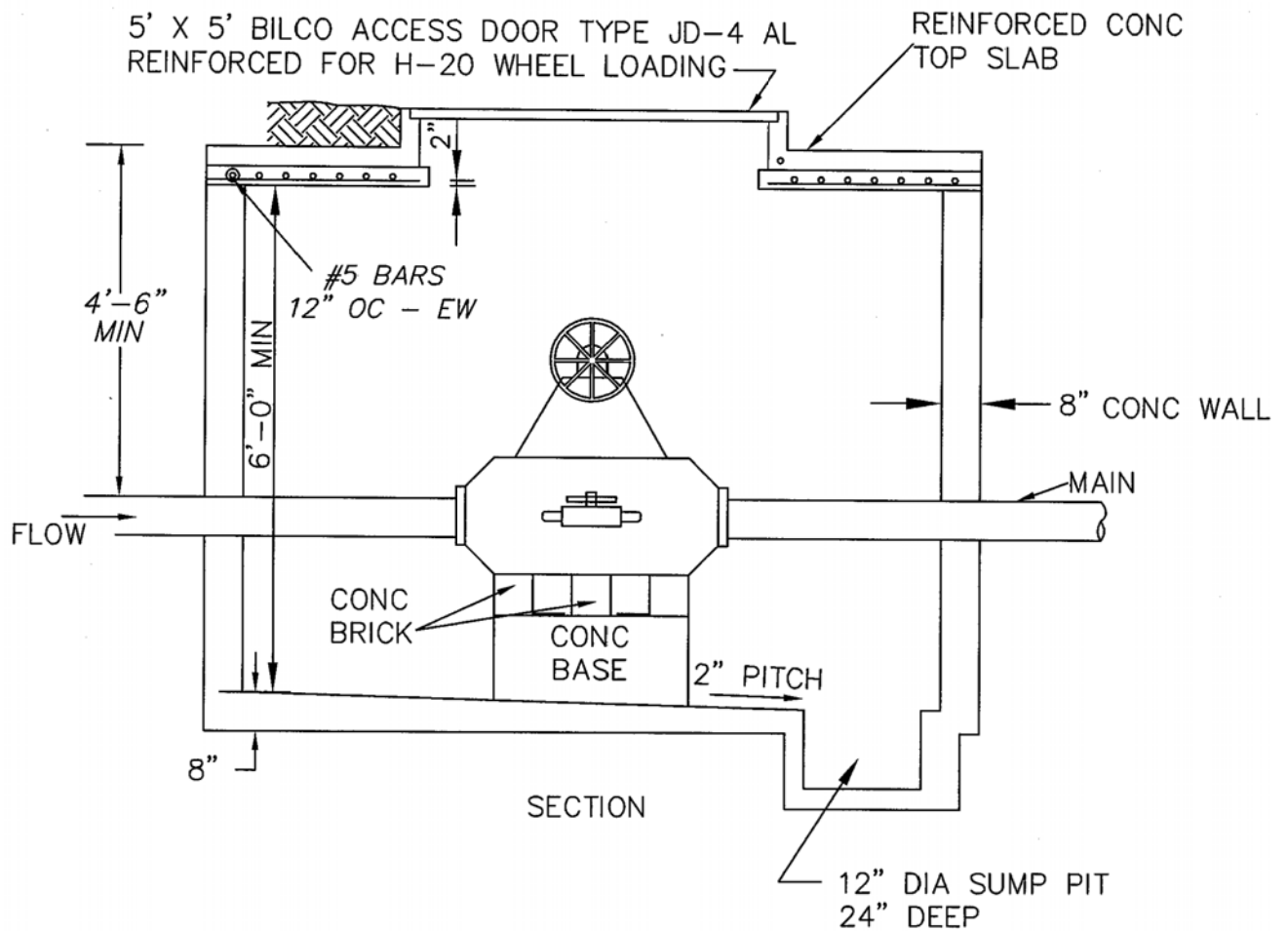
STANDARD NUMBER

W-15B

<u>Gate Valves</u> -	AWWA Resilient Seated with cast iron body, bronze mounted, flanged connections, nonrising stem, fusion epoxy coating, 400 PSI hydrostatic rated. Valve shall be Metro Seal 250 by US Pipe or equal.
<u>Flanged Coupling Adaptors</u> -	Flanged adaptor connections for plain end pipe at fittings and valves shall be Dresser Style 127 or 128, or equal.
<u>Vault Door</u> -	60" x 60" double leaf aluminum diamond plate with hold open arm locks. Green space area hatches rated for 300 PSF. Traffic areas shall be AASHTO H-20. Doors shall be JD-4AL or JD-4AL H20 by Bilco or equal.
<u>Strainer</u> -	Strainers 6" or smaller must be Badger Bronze Plate Strainers or equal. Screens must be made of non-corrosive 316 stainless steel with 3/16" or 1/4" perforations. Strainers 8" or larger must be Badger Model ML-MS Plate Strainers or equal. Screens must be made of non-corrosive stainless steel.
<u>Sump Pump</u> -	Submersible pump with automatic level control, 115V single phase, discharge 25 - 30 gpm at 10 ft TDH. Sump pump operation and maintenance is the responsibility of the owner.
<u>Piping</u> -	All piping 3" and larger shall be Class 52 ductile iron with flanged fittings. Piping smaller than 3" shall be threaded steel. Domestic and sprinkler lines shall be Type K Copper through the vault.
<u>Backflow Preventer</u> -	<p>FIRE: ASSE 1048 Double Check Detector or ASSE 1047 Reduced Pressure Principle Detector if additives in system. ASSE 1047 to be installed in the building.</p> <p>DOMESTIC: ASSE 1013 Reduced Pressure Principle Backflow Prevention Assembly installed immediately upon entry of structure.</p> <p>IRRIGATION: ASSE 1013 Reduced Pressure Principle Backflow Prevention Assembly installed immediately upon entry of structure and before any sprinklers.</p> <p>The operation and maintenance of all backflow preventers is the responsibility of the property owner.</p>

LARGE WATER METER PIT EQUIPMENT SCHEDULE

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VALVE PIT

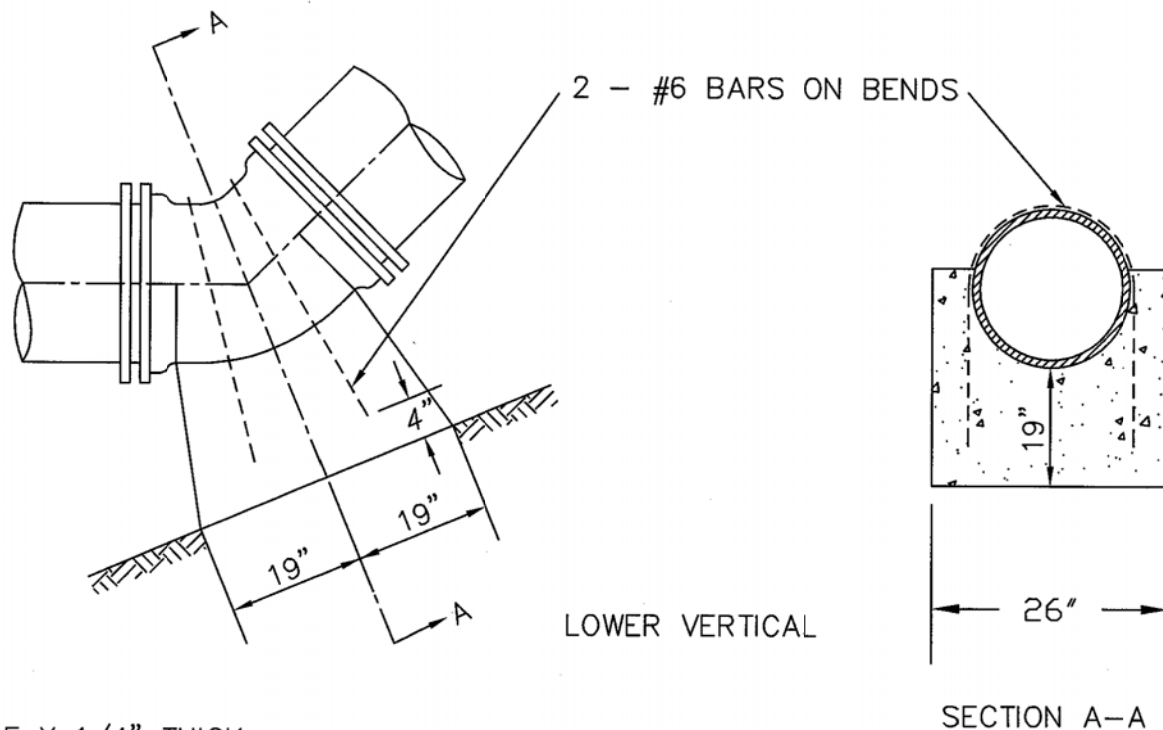
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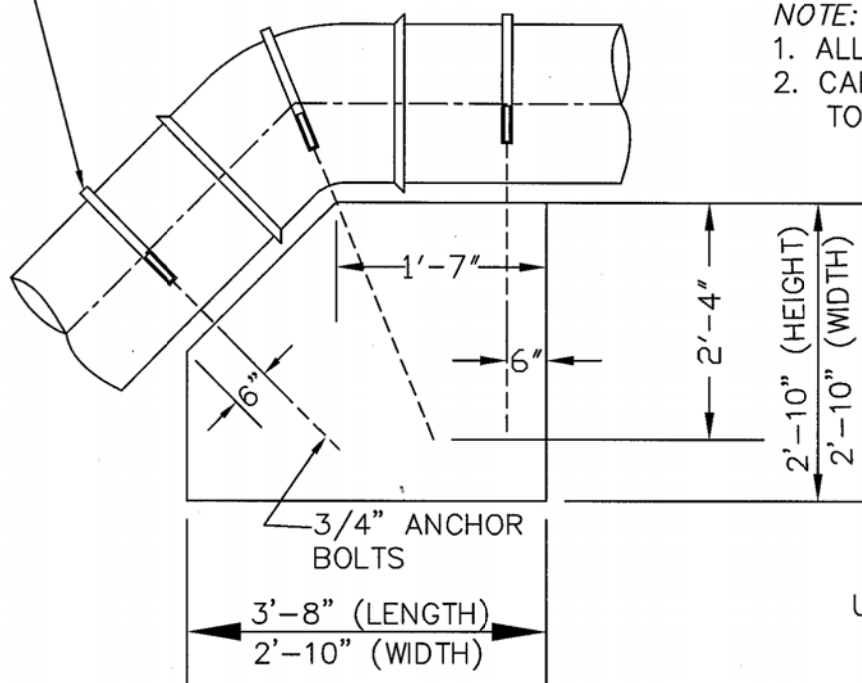
WARREN COUNTY STANDARD DETAILS
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STANDARD NUMBER

W-16



2" WIDE X 1/4" THICK STRAP



NOTE:

1. ALL CONCRETE 4200#
2. CARRY ALL BEARING SURFACES TO FIRM BEARING.

ANCHORS & BUTTRESSES FOR VERTICAL BENDS

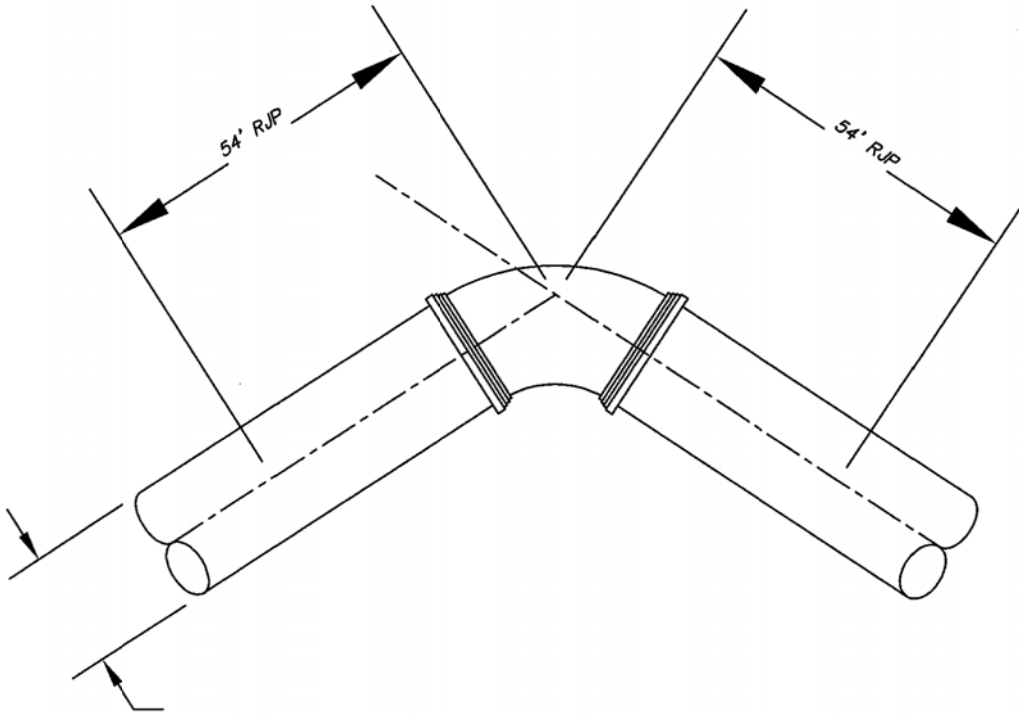
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-17



MINIMUM 54' OF RESTRAINED JOINT PIPE (RJP) IS REQUIRED BEFORE AND AFTER ALL BENDS. REFER TO TABLE BELOW.

RESTRAINT OPTIONS:

MECHANICAL JOINT W/ MEGALUGS ~ ALL SIZES OF PIPE
MJ FIELD LOCKS ~ < 24" PIPE

TABLE
REQUIRED LENGTH OF RESTRAINED JOINTS
d—DIAMETER OF PIPE
l—LENGTH OF PIPE

d	4"	6"	8"	10"	12"	16"	20"	24"
l	54'	54'	54'	54'	66'	98'	125'	145'

REQUIRED RESTRAINED JOINTS FOR BENDS

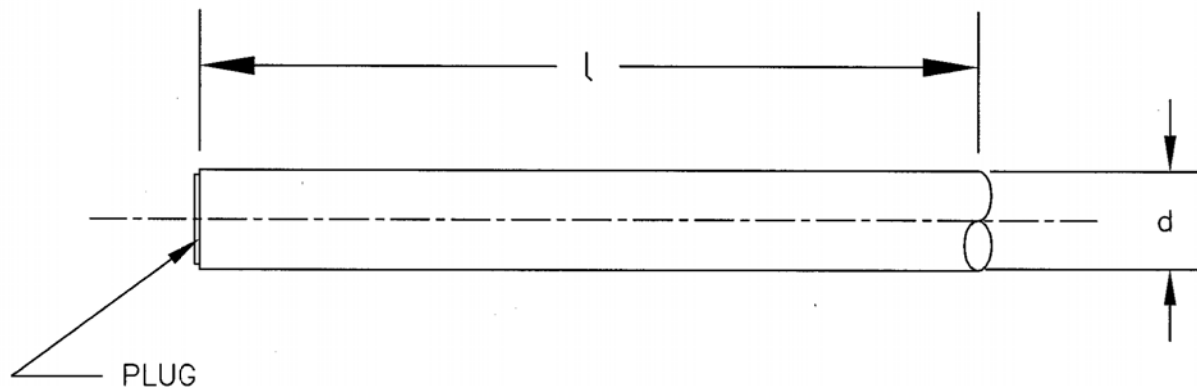
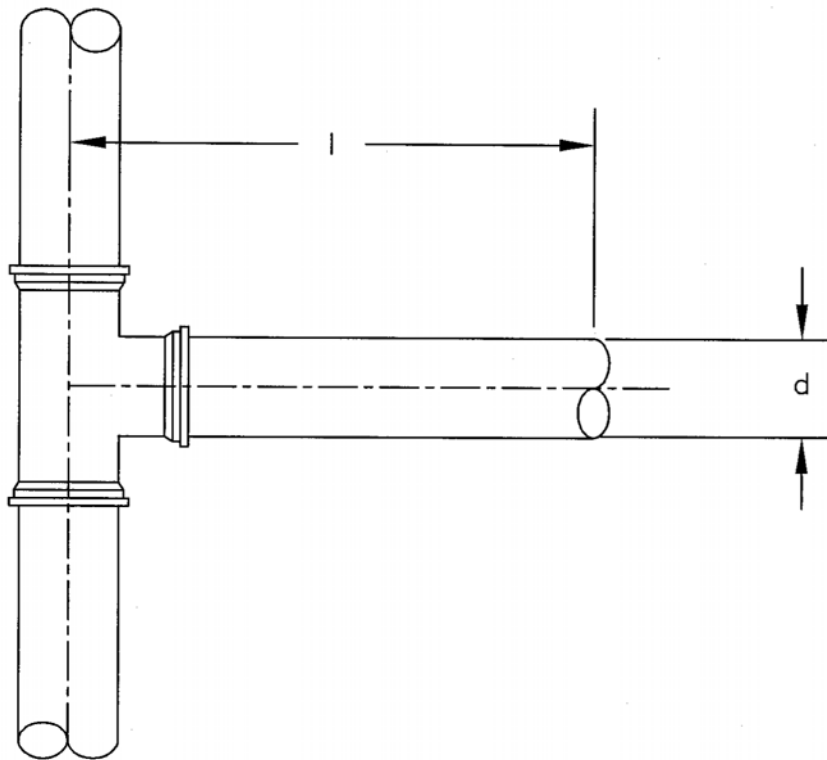
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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-18



MINIMUM 54' OF RESTRAINED JOINT PIPE (RJP) IS REQUIRED BEFORE AND AFTER ALL BENDS. REFER TO TABLE BELOW.

TABLE
REQUIRED LENGTH OF RESTRAINED JOINTS
d—DIAMETER OF PIPE
l—LENGTH OF PIPE

d	4"	6"	8"	10"	12"	16"	20"	24"
l	54'	54'	54'	54'	66'	98'	125'	145'

REQUIRED RESTRAINED JOINTS — DEAD END VALVES, PLUGS, CAPS & TEES

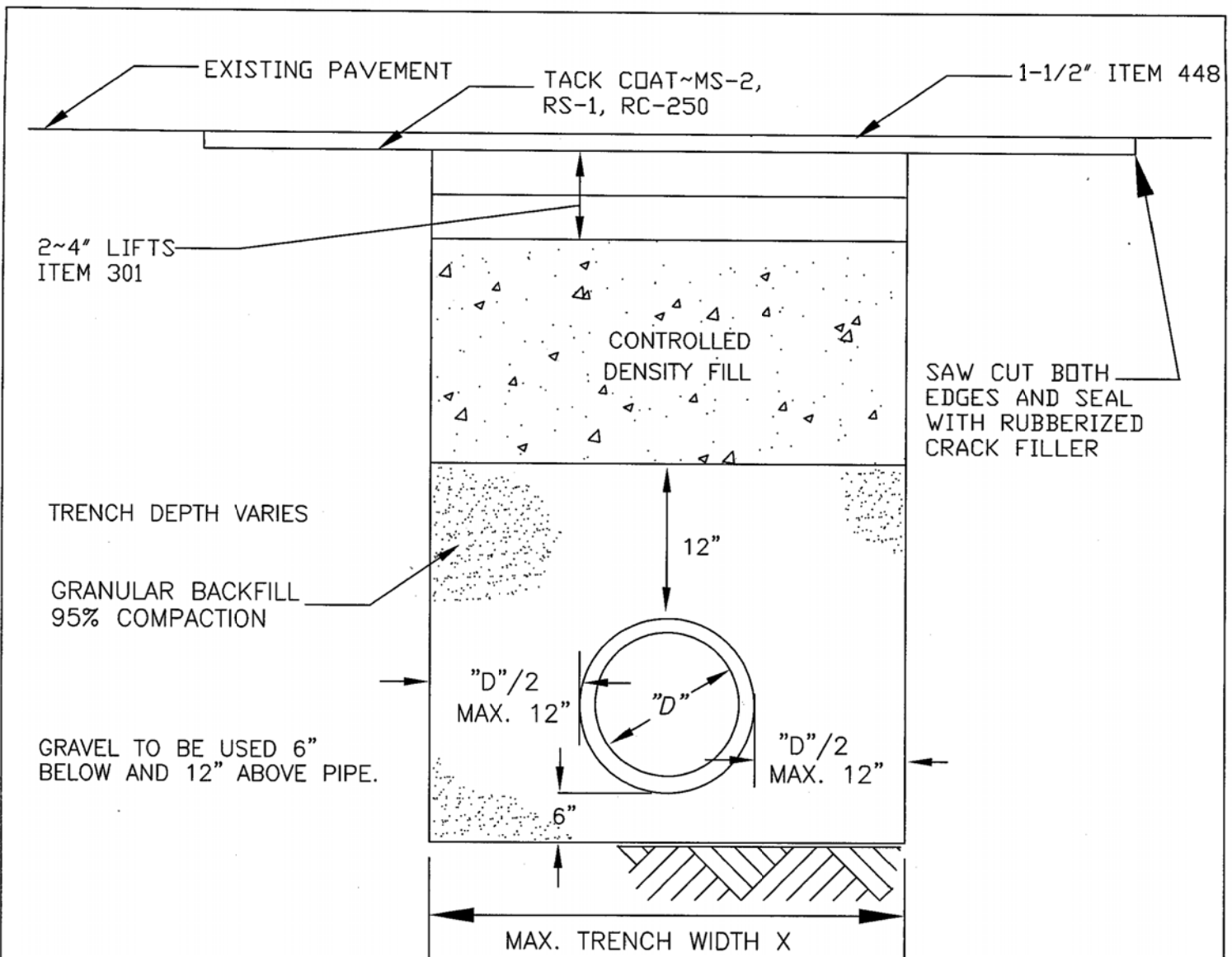
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-19



ALL DIMENSIONS ARE MINIMUM – ACTUAL TO BE PER COUNTY ENGINEER OR ODOT INSTRUCTIONS & PERMIT.

TRAFFIC MUST BE MAINTAINED AT ALL TIMES; LIGHTS, SIGNS, BARRICADES AND IF NECESSARY, FLAGMAN AND WATCHMEN TO BE ON JOB FOR PROTECTION OF THE PUBLIC. STREET PLATES MUST CONFORM TO COUNTY ENGINEER OR ODOT REQUIREMENTS.

FLASHFILL OR CONTROLLED DENSITY FILL TO A MINIMUM DISTANCE OF 5 FEET BEYOND THE EDGE OF PAVEMENT. TRENCH BACKFILL AND PAVEMENT RESTORATION MUST CONFORM TO THE APPLICABLE WARREN COUNTY ENGINEER OR ODOT SPECIFICATIONS.

EXISTING PAVEMENT EDGES SHALL BE NEATLY AND SQUARELY TRIMMED AND/OR MILLED. PAVEMENT MUST MATCH EXISTING ROAD THICKNESS OR AS SPECIFIED BY COUNTY ENGINEER OR ODOT.

ROAD PAVEMENT CUT AND RESTORATION AT ROADWAY CROSSING

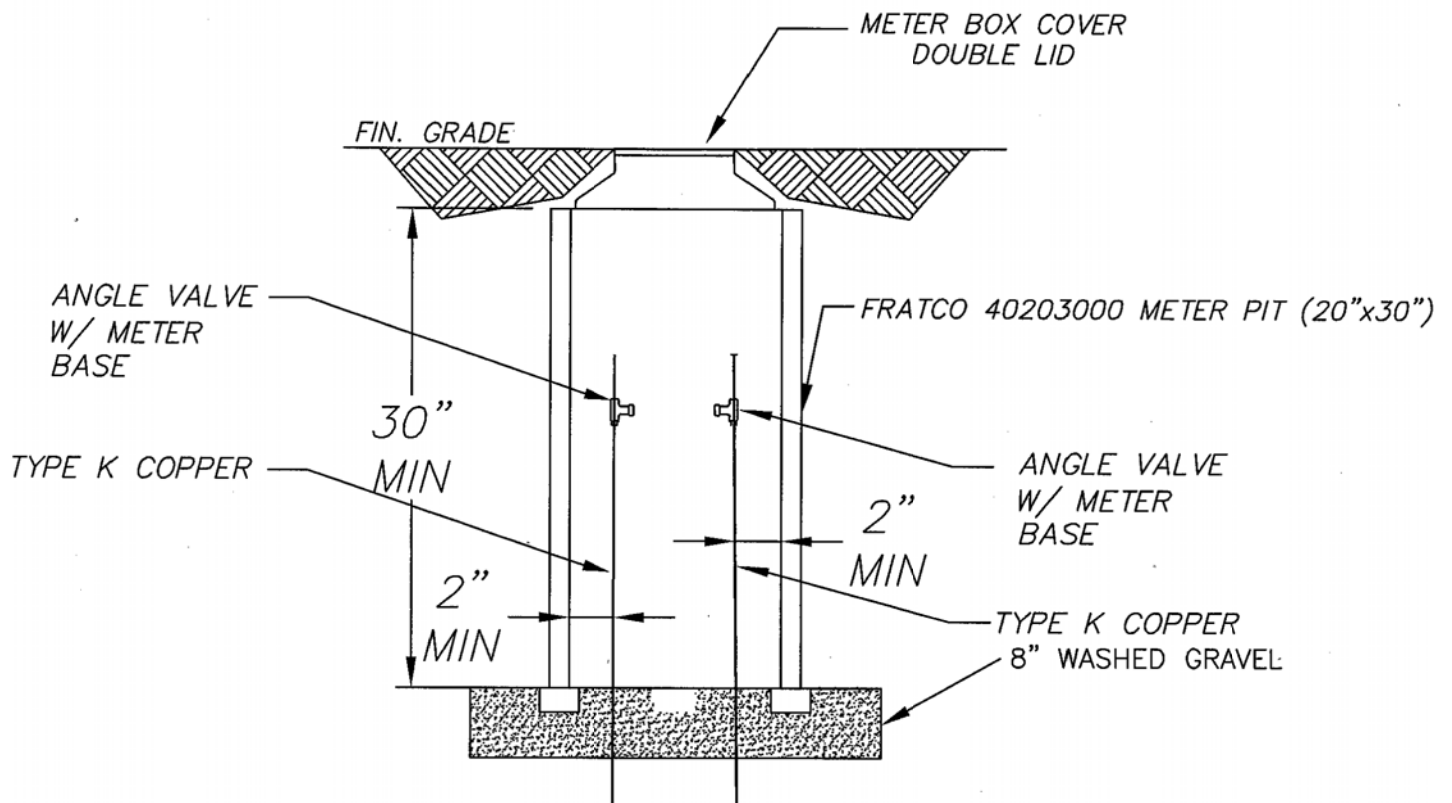
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-20



NOTE:

CONNECT ON BOTH SIDES OF MAIN LINE GATE VALVE WITH 3/4" TYPE K COPPER CORP STOPS. INSTALL METER PIT & LID WITH 3/4" TYPE K COPPER LINES A MINIMUM OF 18" BELOW METER LID. ONE (1) ANGLE VALVE WITH METER BASE SHALL BE INSTALLED ON BOTH LINES.

METER TEST PIT AT CREEK CROSSING

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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

W-21

WATER

1. ALL WATER MAINS SHALL HAVE A MINIMUM COVER OF 4'-6".
- A) ALL WATER SERVICE LATERALS SHALL HAVE A MINIMUM COVER OF 42".
2. ALL WATER MAINS SHALL BE DUCTILE IRON CONFORMING WITH AWWA SPEC. C-151 CLASS 52 IN SIZES 4"-16" AND PSI CLASS 350 FOR 20" AND ABOVE.
3. COMPACT FITTINGS ARE PERMITTED.
4. ALL WATER VALVES MUST OPEN LEFT. ALL VALVE BOX LIDS MUST BE CAST/STAMPED "WCWD" IN 1 1/2" LETTERS AND BE NEENAH NF-19130002 OR EQUAL. ALL VALVE EXTENSIONS TO HAVE SET SCREWS.
5. A CONCRETE SLAB MUST BE PROVIDED AT FINAL GRADE AROUND ALL MAIN VALVE BOXES. THE SLABS MUST BE EIGHTEEN INCHES (18") SQUARE /CIRCLE AND NINE INCHES (9") THICK. PRE-FABRICATED CONCRETE RINGS ARE ACCEPTABLE.
6. WATER AND SEWER LINES SHALL HAVE A MINIMUM OF TEN FEET (10') HORIZONTAL SEPARATION AND/ OR TWO FEET (2') VERTICAL SEPARATION.
7. NO GATE VALVE, METER PIT, BLOW OFF OR CORPORATION STOP SHALL BE LOCATED UNDER OR WITHIN THREE FEET (3') OF DRIVEWAYS, ROADWAYS OR SIDEWALKS.
8. NO DRIVEWAY SHALL BE INSTALLED WITHIN FIVE FEET (5') OF A FIRE HYDRANT.
9. A MINIMUM OF THREE FEET (3') IS REQUIRED BETWEEN CORPORATION STOPS. NO TAP SHALL BE MADE WITHIN THREE (3') OF A BELL.
10. THE LOCATION OF WATER SERVICE LATERALS MUST BE STAMPED IN THE CURB AT THE TIME THE CURB IS PLACED TO PERMANENTLY INDICATE THE LOCATION OF SAID LATERALS.
11. THE LOCATION OF ALL WATER SERVICE LATERALS, BENDS, TEES, ETC. MUST BE PROVIDED ON THE AS-BUILT PLANS. ALL OF THESE APPURTENANCES SHOULD BE SURVEYED IN STATE PLANE COORDINATES AND ELECTRONICALLY DELIVERED WITH AS-BUILTS.
12. CONTRACTOR SHALL SUBMIT AS-BUILT PLANS OF SANITARY AND WATER LATERALS TO THE OWNER.
13. ALL WATER MAINS CROSSING UNDER STORM DRAINS SHALL BE BACK-FILLED WITH GRANULAR MATERIAL, O.D.O.T. ITEM 310.02, BETWEEN MAINS AND DRAINS.

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WARREN COUNTY STANDARD DETAILS
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STANDARD NUMBER

WG-1A

WATER

14. EACH SERVICE LATERAL MUST BE A CONTINUOUS PIECE OF PIPE FROM THE CORP STOP TO THE METER. COUPLINGS SHALL NOT BE ALLOWED. TYPE K COPPER SHALL BE USED FOR 3/4" AND 1" SERVICES. POLYETHYLENE 200 PSI (COPPER TUBE SIZE) MAY BE USED FOR 1 1/2" AND 2" SERVICES. TRACER WIRE MUST BE USED WITH POLY AND SDR 21.
15. SERVICE LINES 1" AND LARGER MUST BE EITHER TYPE K COPPER, POLY 200 PSI (ASTM D-2737) OR SDR 21 (SLIP JOINT) (ASTM-2241). TRACER WIRE MUST BE TAPED EVENLY EVERY 3' ON POLY AND SDR 21 FROM THE METER PIT INTO THE STRUCTURE BEING SERVED (A 3' LEAD IS REQUIRED INSIDE THE PIT).
16. 1 1/2" AND 2" SERVICE LINES FROM THE CORP STOP TO THE METER PIT MUST BE TYPE K COPPER OR POLYETHYLENE 200 PSI. POLY MUST HAVE A TRACER WIRE. SEE W-10B.
17. FIRE HYDRANTS MUST BE PROVIDED AT THE ENTRANCE TO ALL SUBDIVISIONS AND AT ALL STREET INTERSECTIONS.
18. AN APPROVED BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED ON ALL WATER SERVICE LATERALS BY THE PROPERTY OWNER PRIOR TO ANY POINT OF CONNECTION OR USAGE. THE FOLLOWING DEVICES AND LOCATIONS ARE REQUIRED.
 - A) RESIDENTIAL DWELLING UNITS (3 FAMILY OR LESS): LOCATED IMMEDIATELY UPON ENTRY OF STRUCTURE. DUEL CHECK VALVE A.S.S.E. 1024.
 - B) LANDSCAPE IRRIGATION SYSTEMS: REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY A.S.S.E. 1013. LOCATED IMMEDIATELY UPON ENTRY OF STRUCTURE.
 - C) FIRE PROTECTION SYSTEMS: DOUBLE CHECK DETECTOR CHECK ASSEMBLY A.S.S.E. 1048 OR REDUCED PRESSURE PRINCIPLE DETECTOR CHECK A.S.S.E. 1047 IF SYSTEM CONTAINS ADDITIVES; A.S.S.E. 1048 LOCATED IN VAULT AND A.S.S.E. 1047 LOCATED IN BUILDING.
 - D) NON-RESIDENTIAL SERVICES: REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY A.S.S.E. 1013, LOCATED IMMEDIATELY UPON ENTRY OF STRUCTURE.
19. SWAB PIPE WITH 50 PPM CHLORINE SOLUTION BEFORE INSTALLATION.
20. ALL NEW WATER MAINS SHALL BE PRESSURE TESTED FOR 2 HOURS AT 200 PSI, WHICHEVER IS GREATER. ALLOWABLE LEAKAGE SHALL BE PER TABLE 6A OF AWWA C-600.
21. DEDUCT METERS SHALL NOT BE ALLOWED.
22. NO IRRIGATION CONNECTIONS SHALL BE ALLOWED IN THE METER PIT.
23. BACK FLOW PREVENTER THAT COMPLIES WITH A.S.S.E. 1013 IS TO BE INSTALLED AHEAD OF ANY SPRINKLER BUT NOT IN METER PIT.
24. ALL MATERIALS USED SHALL BE DOMESTIC, MADE IN THE UNITED STATES OF AMERICA.

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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

WG-1B

PROCEDURE FOR CONNECTION TO EXISTING WATER SYSTEM

1. MUST NOTIFY WARREN COUNTY WATER DEPARTMENT THREE (3) DAYS IN ADVANCE OF ANY SHUT DOWN. WARREN COUNTY WILL ISSUE THE SHUT DOWN NOTIFICATION AND/OR BOIL ADVISORY TO AFFECTED CUSTOMERS PER OHIO EPA REQUIREMENTS IF DETERMINED NECESSARY BY WARREN COUNTY.
2. EXPOSE EXISTING MAIN AT PROPOSED CONNECTION POINT. NO WET TAP SHALL BE MADE WITHIN THREE (3) FEET OF A BELL OR PIPE CONNECTION.
3. COUNTY PERSONNEL TO OPERATE CLOSING OF APPROPRIATE VALVES TO ISOLATE LINE TO BE TAPPED.
4. INSTALL PROPER TAPPING SLEEVE AND TAPPING VALVE. THE TAPPING SLEEVE AND VALVE SHALL BE TESTED AT 200 PSI FOR A PERIOD OF AT LEAST 5 MINUTES. THE PIPE SLUG MUST BE REMOVED AND INSPECTED BY COUNTY PERSONNEL.
5. IF THE TAPPING SLEEVE AND VALVE WILL BE UNDER FUTURE PAVEMENT, THE BURIED VALVE MUST BE LEFT OPEN AND A NEW VALVE SET OUT OF PAVEMENT.
6. FIELD CUT EXISTING MAIN AS NECESSARY TO ACCOMMODATE TEE AND CLOSE COUPLED VALVES AT EACH END OF TEE. CARE IS TO BE TAKEN SO AS NOT TO GET DIRT IN EXISTING MAIN.
7. THOROUGHLY CLEAN AND DISINFECT PIPE AND APPURTENANCES TO BE INSTALLED.
8. INSTALL TEE AND VALVES – DRESSER COUPLINGS CAN BE USED IF NECESSARY. PROPOSED MAIN VALVE IS TO BE CAPPED AND SHUT OFF. EXISTING MAIN IS THEN TO BE RETURNED TO SERVICE BY COUNTY PERSONNEL.
9. CONSTRUCTION OF PROPOSED MAIN IS TO BE COMPLETED WITHIN A JOINT OF CONNECTION TO TEE AND VALVES INSTALLED ABOVE.
10. ENTIRE LINE IS TO BE PRESSURE TESTED AND DISINFECTED TO COUNTY STANDARDS.
11. ENTIRE LENGTH OF PIPE IS TO BE THOROUGHLY CLEANED AND DISINFECTED PRIOR TO INSTALLATION. PERMATHEX CHLORINE TABLETS TO BE USED FOR DISINFECTION. DOSAGE SHALL BE PER MANUFACTURER'S SPECIFICATIONS BASED ON PIPE MATERIAL.
12. NEW MAIN IS TO BE PUT INTO SERVICE BY COUNTY PERSONNEL.
13. TAPPING SLEEVES/SADDLES TO BE TWO-PIECE CAST IRON OR DUCTILE IRON (MUELLER H615). JCM412 OR FORD FTSS TAPPING SLEEVES PERMITTED ON C-900. SIZE ON SIZE TAPPING SLEEVES ARE NOT PERMITTED.

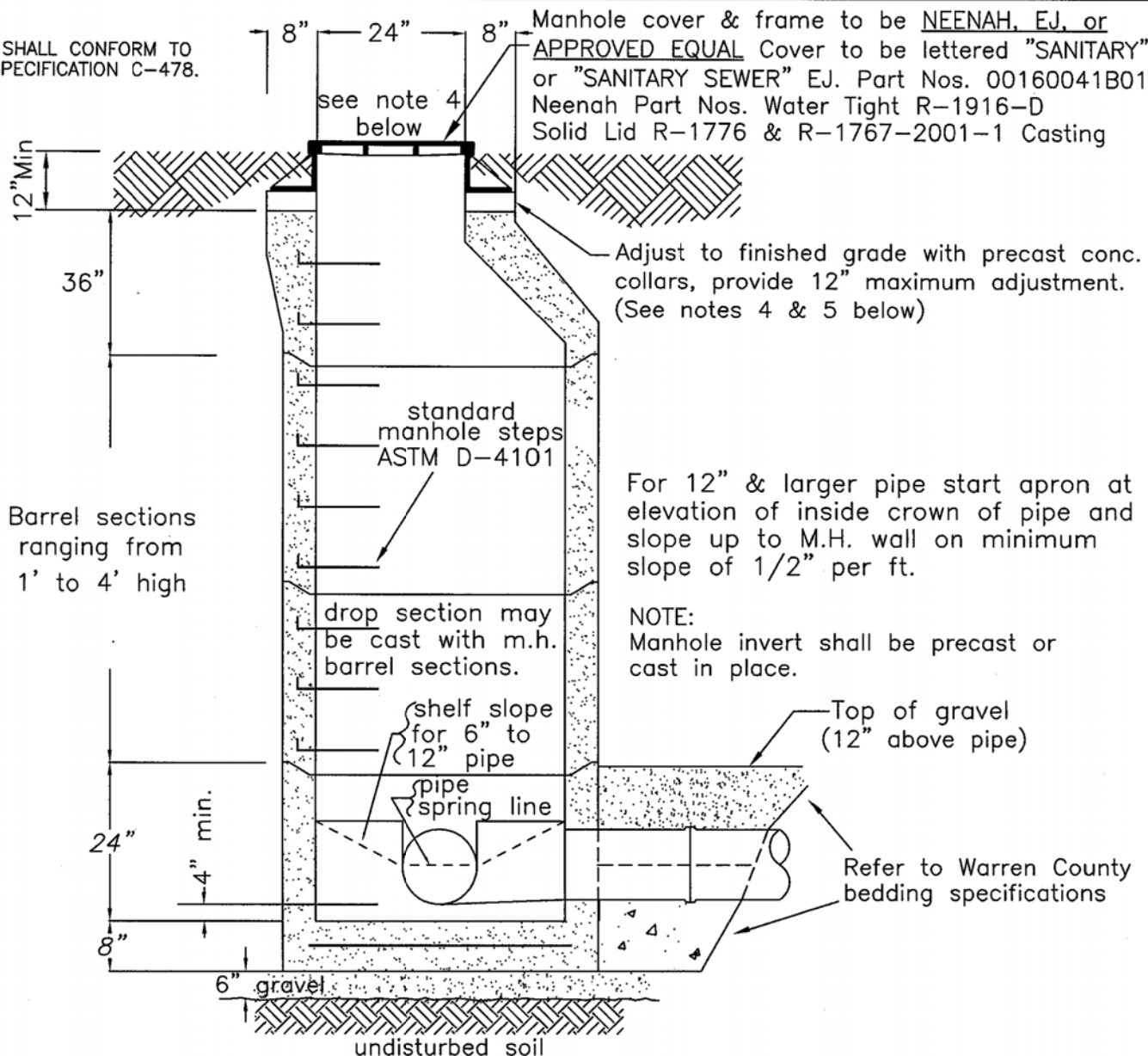
APPROVED/REVISED	WARREN COUNTY STANDARD DETAILS	STANDARD NUMBER
MARCH, 2018	DEPARTMENT OF WATER & SEWER	WG-2

PROCEDURE FOR RELOCATING OR LOWERING SERVICE LATERAL
AND RELOCATING OR BRINGING TO GRADE METER PITS

1. ALL AFFECTED USERS MUST BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE AS TO THE TIME AND DURATION OF THE SHUTOFF. ANY DISCONTINUANCE OF SERVICE MUST BE COORDINATED THROUGH WARREN COUNTY PRIOR TO ANY SHUT DOWN.
2. ALL WORK MUST BE PERFORMED ACCORDING TO ALL WARREN COUNTY SPECIFICATIONS, PARTICULARLY W-10A, W-10B, AND W-12.
3. EACH SERVICE LATERAL MUST BE A CONTINUOUS PIECE OF PIPE FROM THE CORP STOP TO THE METER. COUPLINGS SHALL NOT BE PERMITTED. TYPE K COPPER SHALL BE USED FOR 3/4" AND 1" SERVICES. POLYETHYLENE 200 PSI MAY BE USED FOR 1 1/2" AND 2" SERVICES.
4. METER PITS MUST BE ADJUSTED TO GRADE USING RING RISERS OR PIT RISERS. METERS MUST BE ADJUSTED WITH METER RESETTERS (FORD V42).
5. ALL PROCEDURES MUST BE DISCUSSED AT A PRECONSTRUCTION MEETING PRIOR TO THE INITIATION OF CONSTRUCTION.

APPROVED/REVISED MARCH, 2018	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER WG-3
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MANHOLE SHALL CONFORM TO
A.S.T.M. SPECIFICATION C-478.



NOTES:

- 1.) Minimum wall thickness and steel reinforcing to conform with A.S.T.M. designation C-478. Steel shall be cold drawn wire in accordance with A.S.T.M. designation A-82.
- 2.) Water tight gaskets are required at all joints (C-443 for rubber type joints).
- 3.) Except as otherwise noted on the sewer staking plan, where pipe sizes change at the manhole, the inside tops of pipes to be set at the same elevation.
- 4.) Top of casting shall be even with finished grade at paved locations (roadways and parking lots) and at developed lots. In undeveloped lots, top of casting to be a minimum of 12" above finished grade or as otherwise shown on plan.
- 5.) Within a new subdivision, temporary adjusting collar must be provided 1 foot above rough/finished grade. Risers (12" maximum) are permitted. Manholes shall be lowered to finished grade when subdivision improvements are completed and the lot is built on.
- 6.) No manhole, or any portion of a manhole, shall be located under a sidewalk or driveway. Manholes shall only be allowed in roadway pavement upon permission by the County Sanitary Engineer.
- 7.) A minimum drop of 0.20' must be maintained between inlet and outlet inverts.

PRECAST MANHOLE

APPROVED/REVISED	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER
MARCH, 2018		S-1

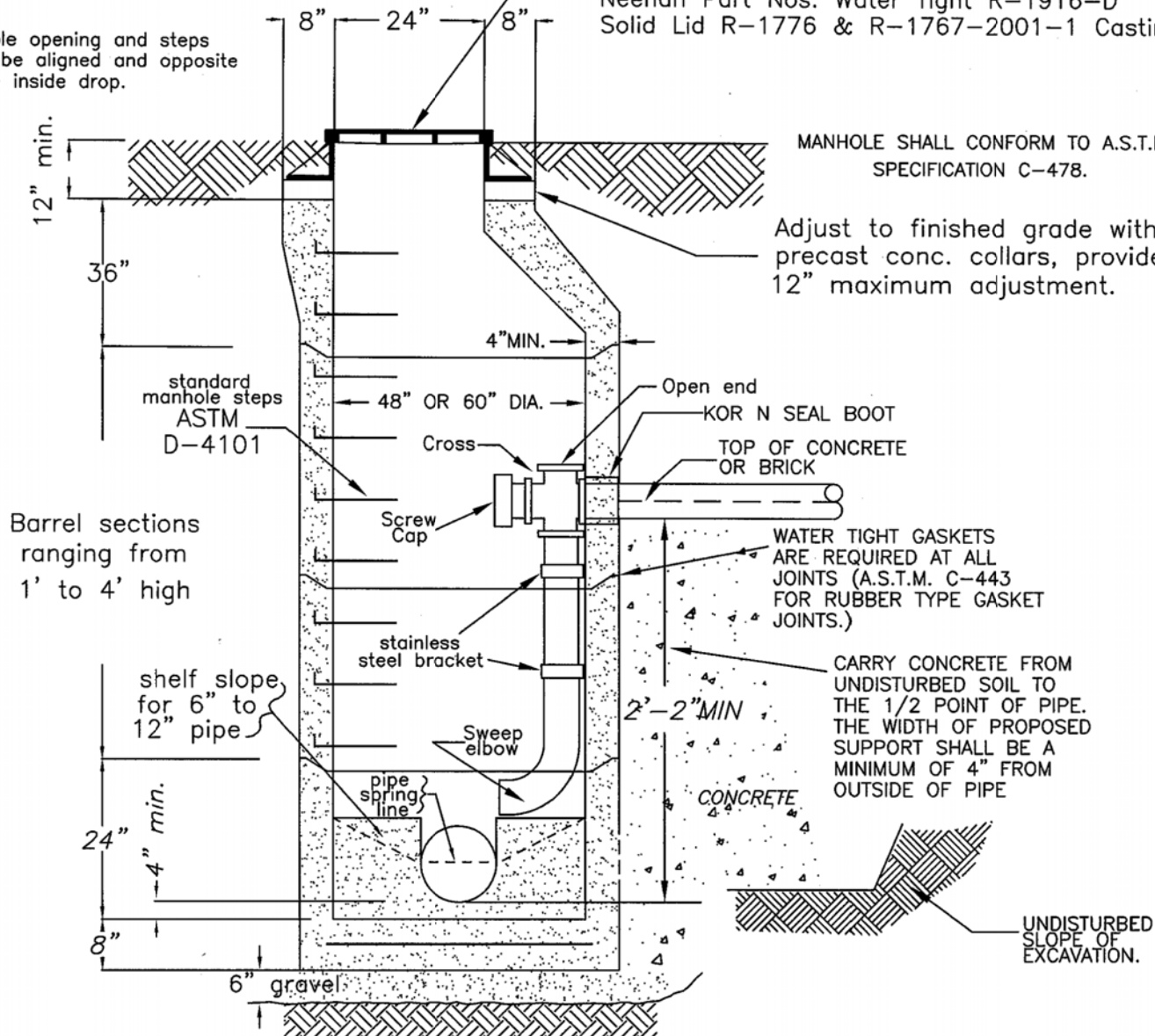
NOTE: Top of casting shall be at finished grade at paved locations (roadways and parking lots) and at developed lots. In undeveloped lots, top of casting to be a minimum of 12" above finished grade or as shown on plan.

Manhole cover & frame to be NEENAH, EJ, or APPROVED EQUAL.
 Cover to be lettered "SANITARY" or "SANITARY SEWER"
 EJ. Part Nos. 00160041B01
 Neenah Part Nos. Water Tight R-1916-D
 Solid Lid R-1776 & R-1767-2001-1 Casting

Manhole opening and steps must be aligned and opposite of the inside drop.

MANHOLE SHALL CONFORM TO A.S.T.M. SPECIFICATION C-478.

Adjust to finished grade with precast conc. collars, provide 12" maximum adjustment.



Note:
 Except as otherwise noted on the sewer staking plan, where pipe sizes change at the MH, the inside tops of pipes to be at the same elevation.

Minimum wall thickness and steel reinforcing to conform with ASTM designation C-478. Steel shall be cold drawn wire in accordance with ASTM designation A-82.

No manhole, or any portion of a manhole, shall be located under a sidewalk or driveway. Manholes shall only be allowed in roadway pavement upon permission by the County Sanitary Engineer.

Within a new subdivision, temporary adjusting collar must be provided 1 foot above rough/finished grade. Risers (12" maximum) are permitted. Manholes shall be lowered to finished grade when subdivision improvements are completed and the lot is built on.

PRECAST MANHOLE INSIDE DROP CONNECTION

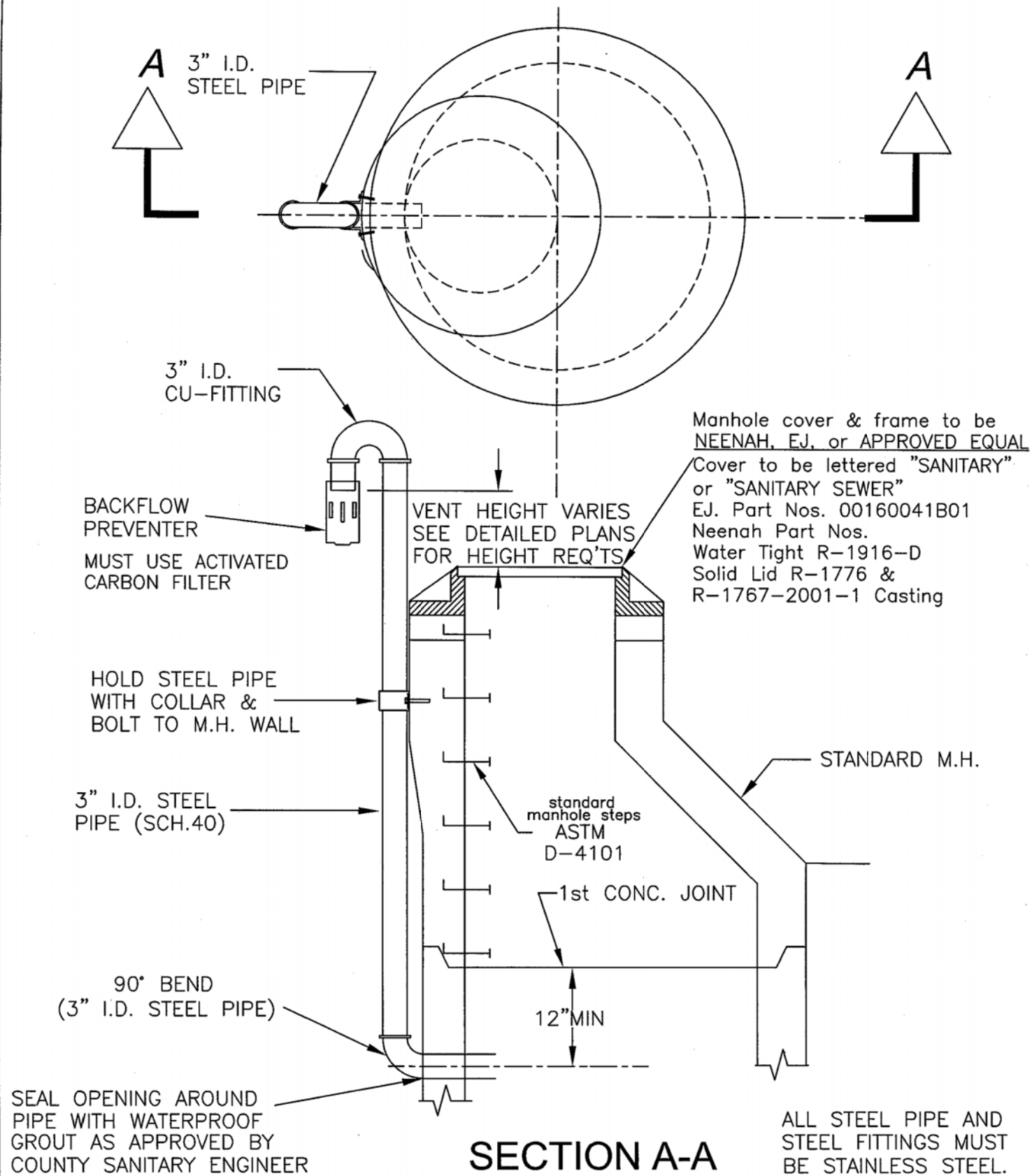
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WARREN COUNTY STANDARD DETAILS
 DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-2



VENTED MANHOLE

APPROVED/REVISED

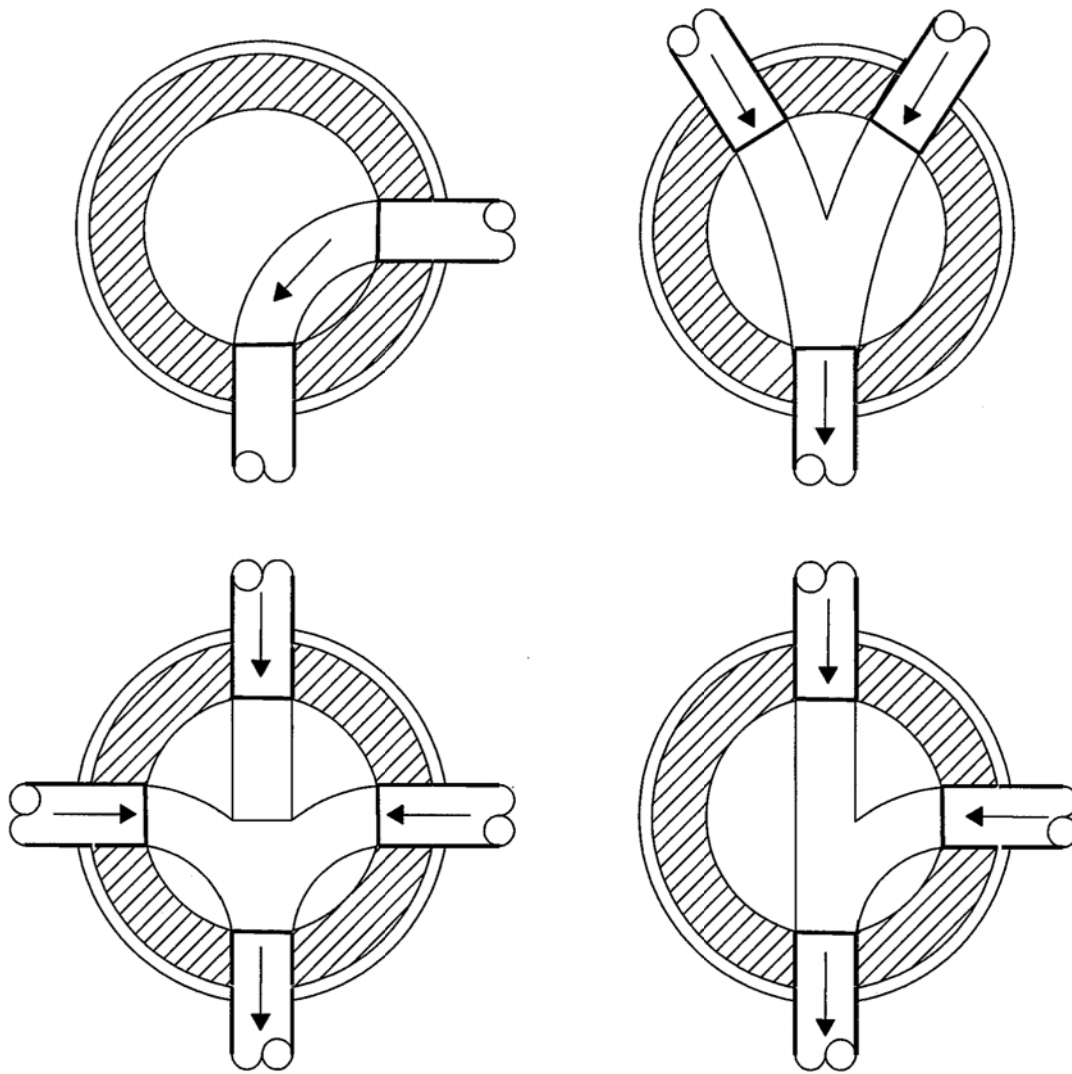
MARCH, 2018

WARREN COUNTY STANDARD DETAILS
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STANDARD NUMBER

S-3

A minimum drop of 0.20' must be maintained between inlet and outlet inverts.



NOTE: MODIFY MANHOLE CHANNEL ENTRANCE CONDITIONS SHOWN TO SUIT ENTRANCE NEEDS OF INDIVIDUAL CASES, MAINTAINING CHANNEL CONCEPT.

CHANNELS MUST BE SUITABLE FOR INSTALLATION & REMOVAL OF EXPANSION PLUG USED FOR FLUSHING.

ALL CONSTRUCTION DETAILS & DIMENSIONS ARE TO CONFORM TO THOSE SHOWN FOR STANDARD MANHOLES.

ALL CHANNELS MUST BE SMOOTH AND UNIFORM. TRANSITION MUST NOT CREATE OBSTRUCTION TO FLOW.

MANHOLE CHANNELS

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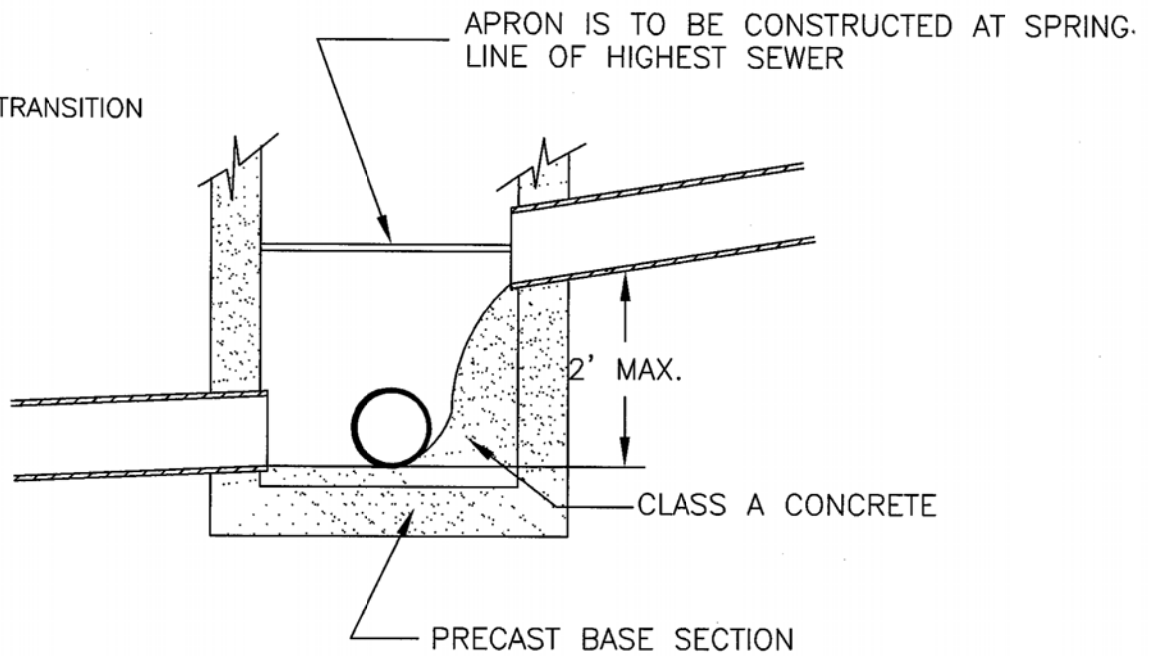
MARCH, 2018

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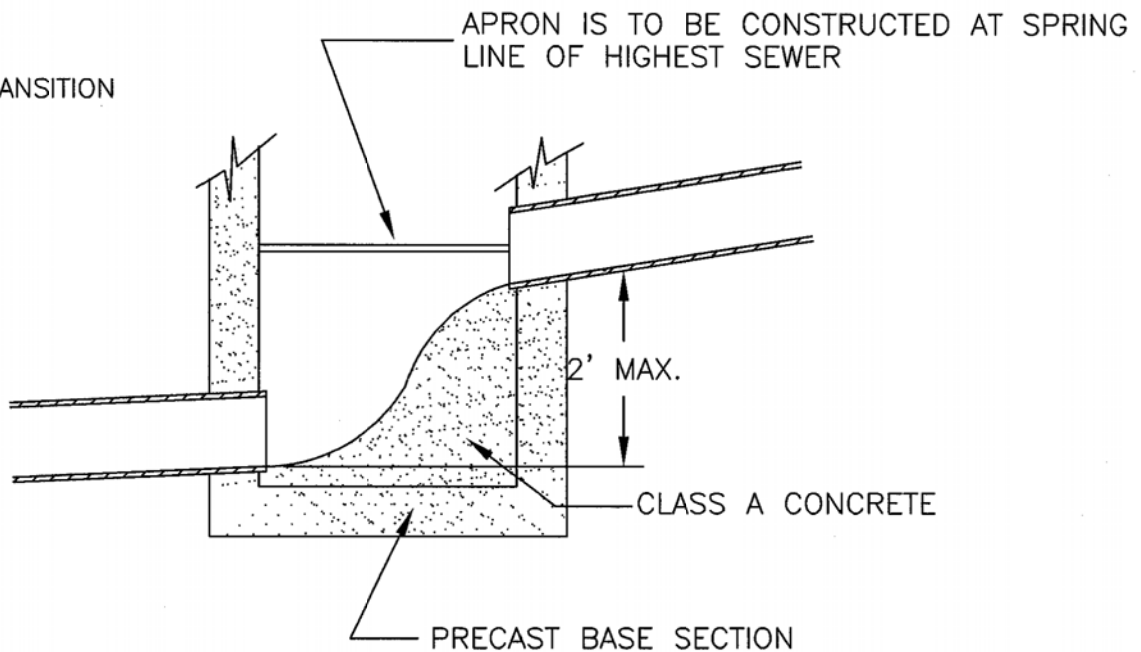
STANDARD NUMBER

S-4

THREE PIPE TRANSITION



TWO PIPE TRANSITION



NOTE:

Drop manholes are to be used when the sewer entering the manhole is two (2) feet or greater above the manhole invert.

SANITARY M.H. INVERT TRANSITION BASE SECTIONS

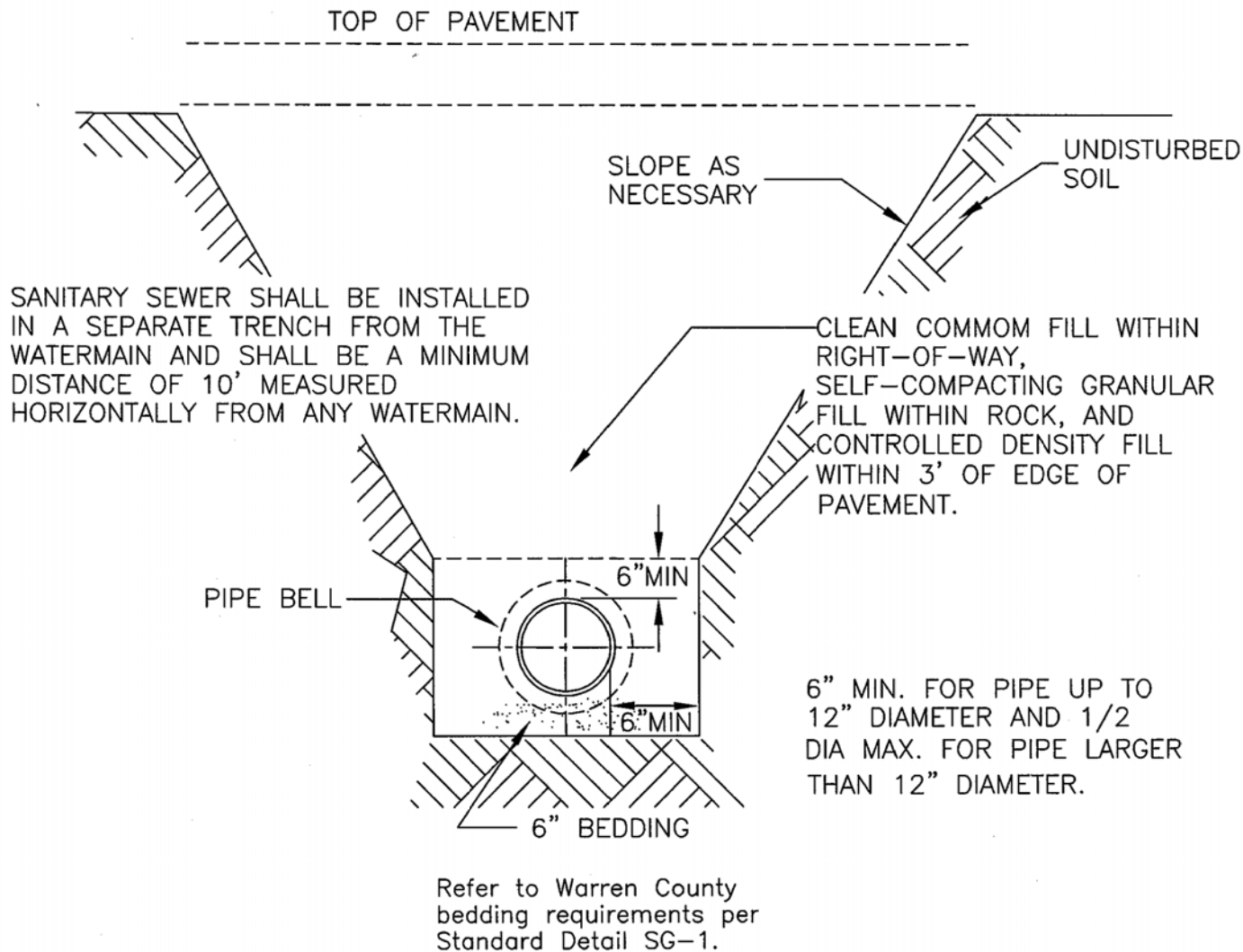
APPROVED/REVISED

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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-5



NOTES:

1. TRENCH SIDES SHALL MEET OSHA REQUIREMENTS.
2. TRENCH SHALL HAVE FLAT BOTTOM SO THAT PIPE WILL BE SUPPORTED UNIFORMLY ALONG THE BARREL.
3. NO SUPPORT BY BLOCKING IS PERMITTED.

SANITARY GRAVITY SEWER TRENCH DETAIL

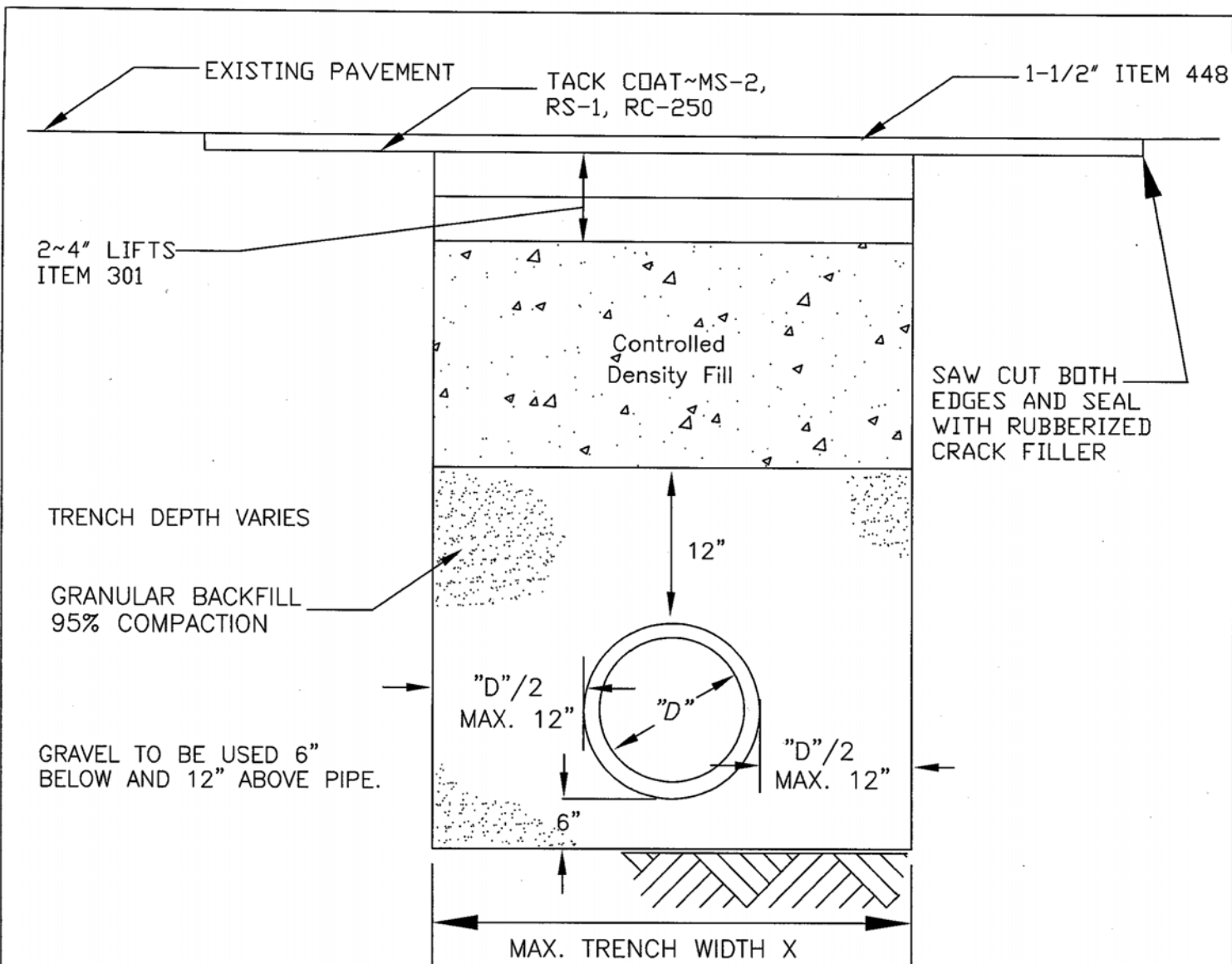
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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-6



ALL DIMENSIONS ARE MINIMUM – ACTUAL TO BE PER COUNTY ENGINEER OR ODOT INSTRUCTIONS & PERMIT.

TRAFFIC MUST BE MAINTAINED AT ALL TIMES; LIGHTS, SIGNS, BARRICADES AND IF NECESSARY, FLAGMAN AND WATCHMEN TO BE ON JOB FOR PROTECTION OF THE PUBLIC. STREET PLATES MUST CONFORM TO COUNTY ENGINEER OR ODOT REQUIREMENTS.

FLASHFILL OR CONTROLLED DENSITY FILL TO A MINIMUM DISTANCE OF 3 FEET BEYOND THE EDGE OF PAVEMENT. TRENCH BACKFILL AND PAVEMENT RESTORATION MUST CONFORM TO THE APPLICABLE WARREN COUNTY ENGINEER OR ODOT SPECIFICATIONS.

EXISTING PAVEMENT EDGES SHALL BE NEATLY AND SQUARELY TRIMMED AND/OR MILLED. PAVEMENT MUST MATCH EXISTING ROAD THICKNESS OR AS SPECIFIED BY COUNTY ENGINEER OR ODOT.

ROAD PAVEMENT CUT AND RESTORATION AT ROADWAY CROSSING

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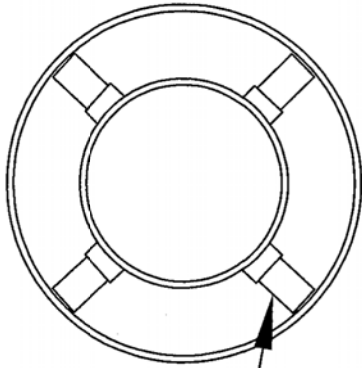
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-7

SEWER PIPE SIZE — CARRIER PIPE SIZE (O.D.)—THICKNESS

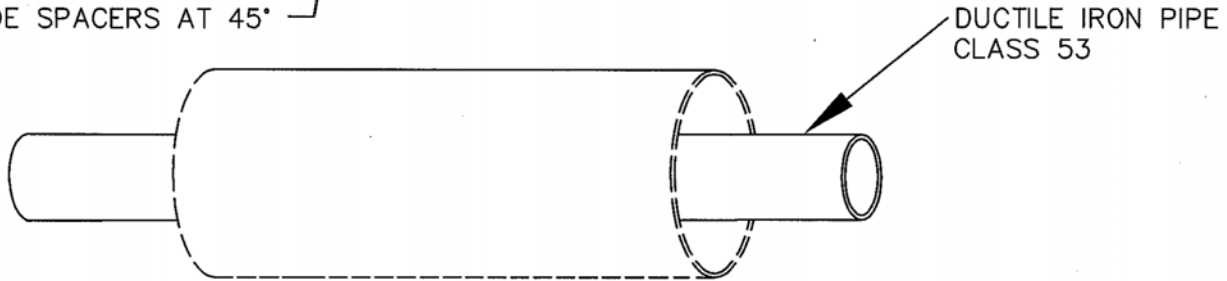
8"	18"	3/8"
10"	20"	3/8"
12"	24"	1/2"
15"	24"	1/2"
18"	30"	1/2"
21"	30"	1/2"
24"	36"	1/2"



NYLON AND
STAINLESS STEEL
CASCADE SPACERS AT 45°

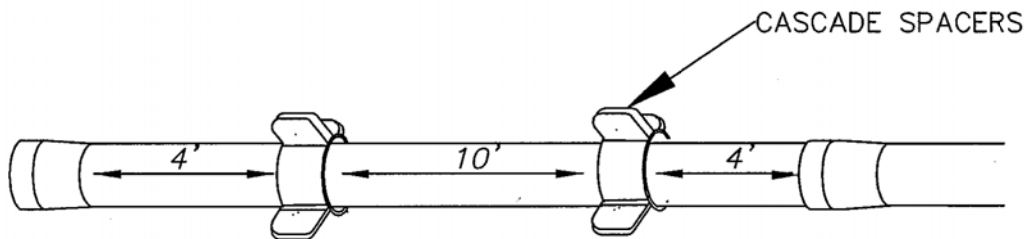
SO THAT PIPE WILL BE CENTERED IN CARRIER PIPE,
THE FOLLOWING INFORMATION IS NEEDED:

1. TYPE & O.D. OF PIPE
2. TYPE OF JOINT/RESTRAINT
3. TYPE & I.D. OF CASING
4. 2 SPACERS PER LENGTH OF PIPE (18")
(SEE STANDARD PLACEMENT BELOW)



NOTE:

1. RESTRAINED JOINT TO BE USED WITHIN LIMITS OF CASING.
2. SEAL END OF CASING WITH RUBBER BOOT OR BRICK AND MORTAR.
3. CASING SPACERS TO BE USED THRU CARRIER PIPE.



RECOMMENDED STANDARD PLACEMENT

SEWER IN CASING

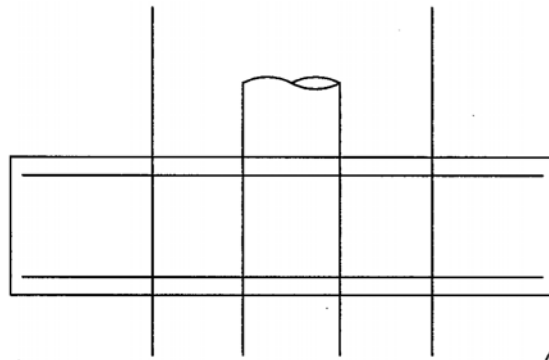
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MARCH, 2018

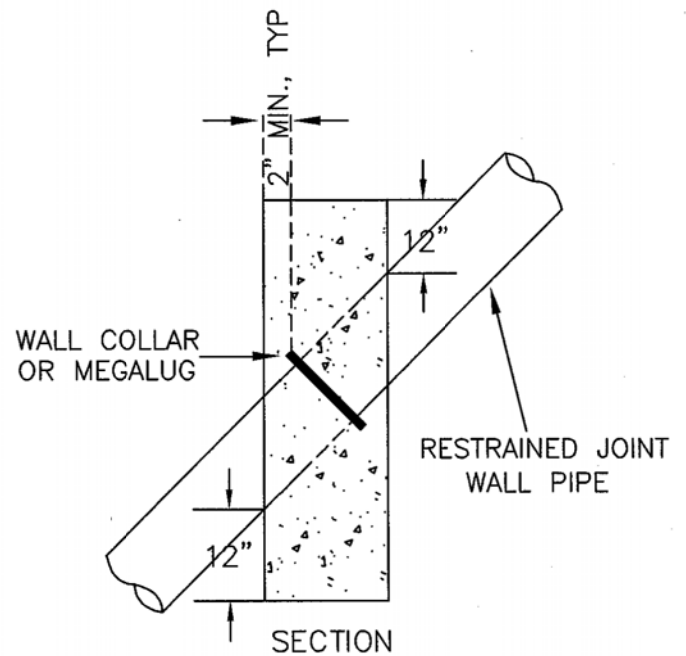
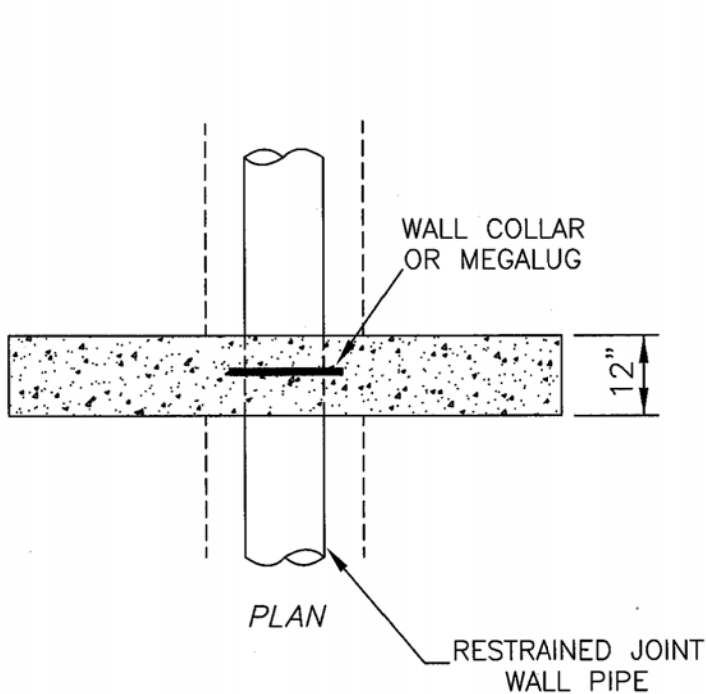
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-8



4000 PSI CONCRETE



Sewers on 20 percent slope or greater shall be Class 53 Restrained Joint Ductile Iron anchored with concrete anchors spaced as follows:

- 1) Not over 36 feet center to center on grades 20 percent to 35 percent.
- 2) Not over 24 feet center to center on grades 35 percent to 50 percent.
- 3) Not over 16 feet center to center on grades 50 percent and over.

CONCRETE ANCHOR

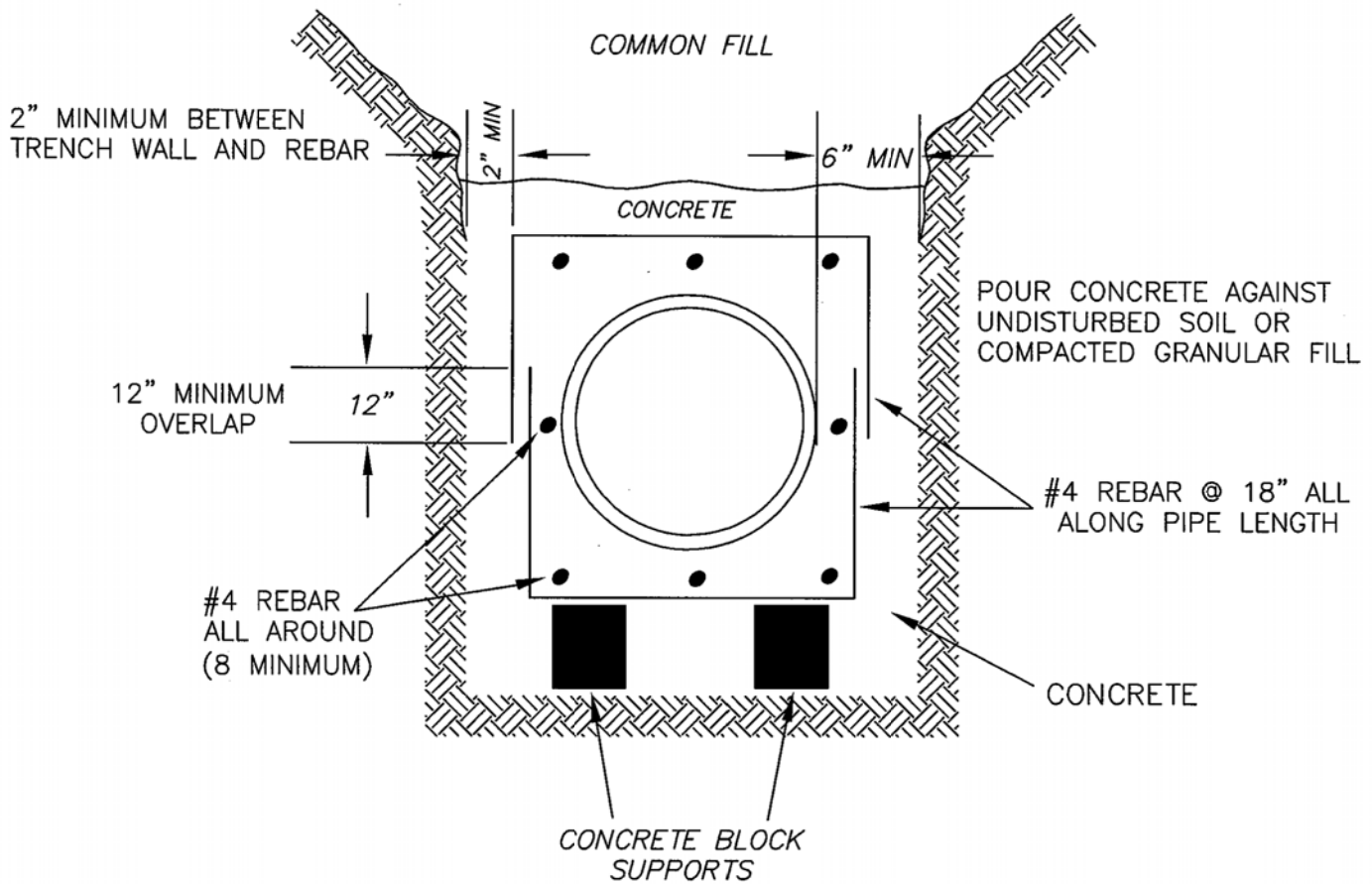
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-9



NOTES:

- 1) CONCRETE SHALL BE 3000 P.S.I. MINIMUM 28 DAYS STRENGTH (4" SLUMP).
- 2) SUPPORT PIPE AND REBAR CAGE ON CONCRETE BRICKS DURING CONCRETE PLACEMENT.
- 3) CONCRETE ENCASEMENT SHALL BE TERMINATED AT PIPE JOINTS ONLY.

FULL CONCRETE ENCASEMENT

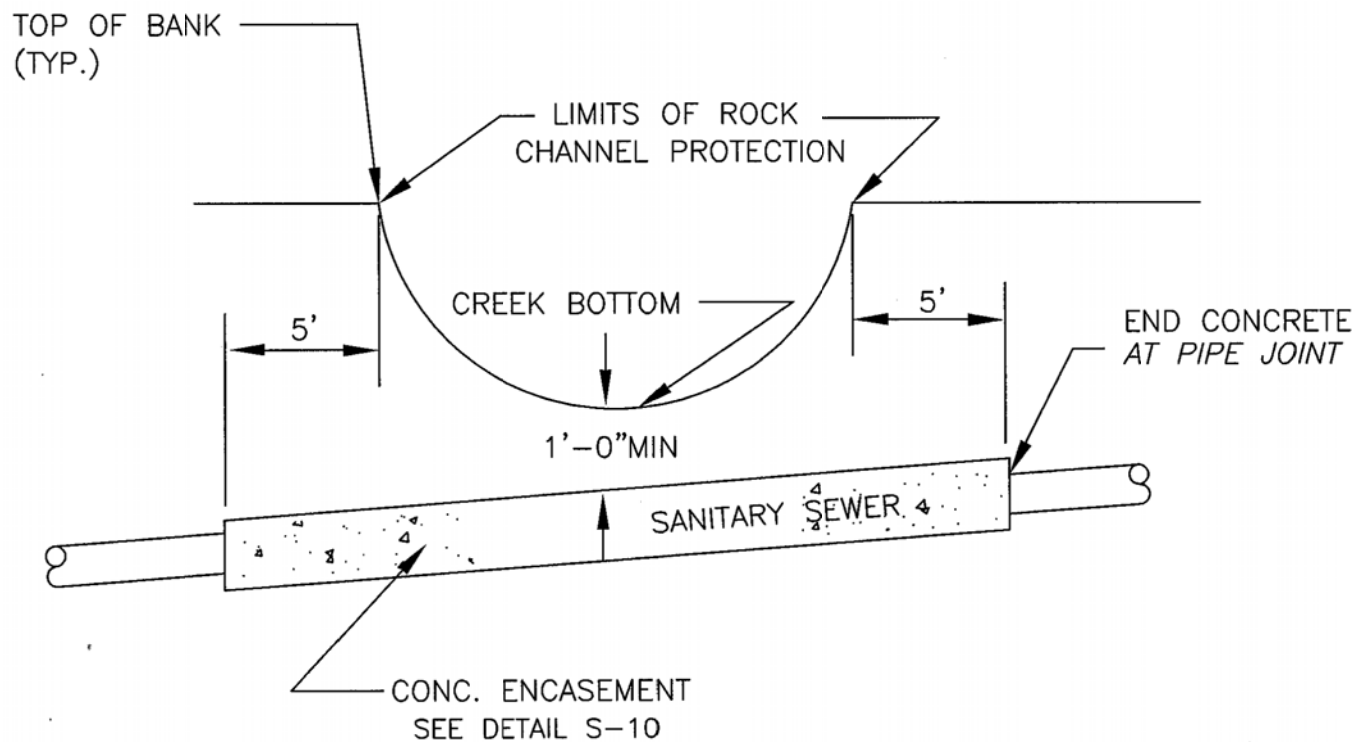
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-10



SANITARY SEWER CREEK CROSSING

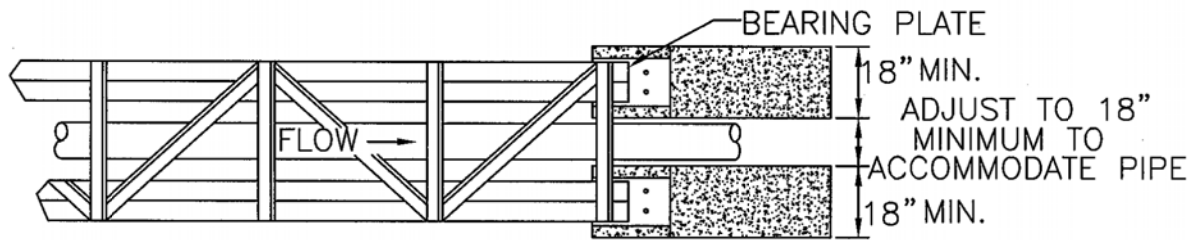
APPROVED/REVISED

MARCH, 2018

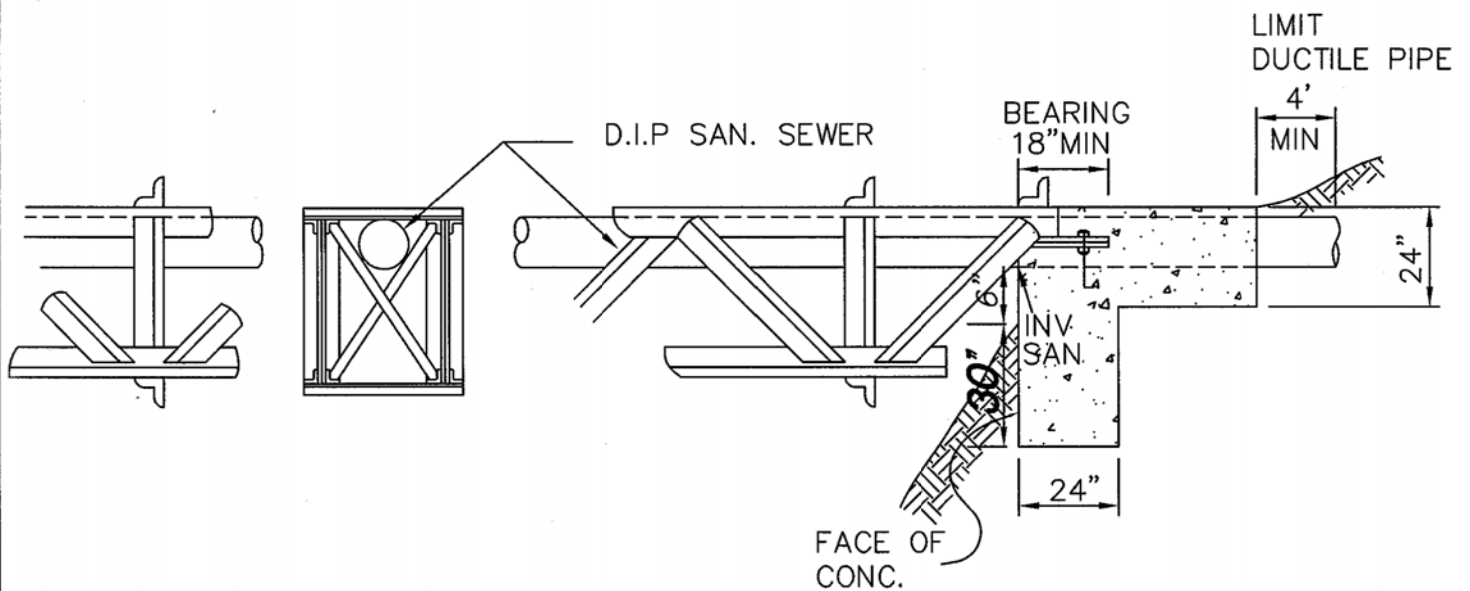
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-11



PLAN



ELEVATION

NOTES:

1. Structural design, calculations and drawing shall be prepared and stamped by an Ohio registered Professional Engineer and submitted to the County for review.
2. Submit complete drawings including, but not limited to:
 - a. Complete details with structural section and material properties for all proposed sections (beams, columns, decking, etc.)
 - b. Cast-in-place concrete.
 - c. Structural calculations, prepared and stamped by an Ohio registered Professional Engineer.
 - d. Protective coatings.

AERIAL SANITARY SEWER CROSSING

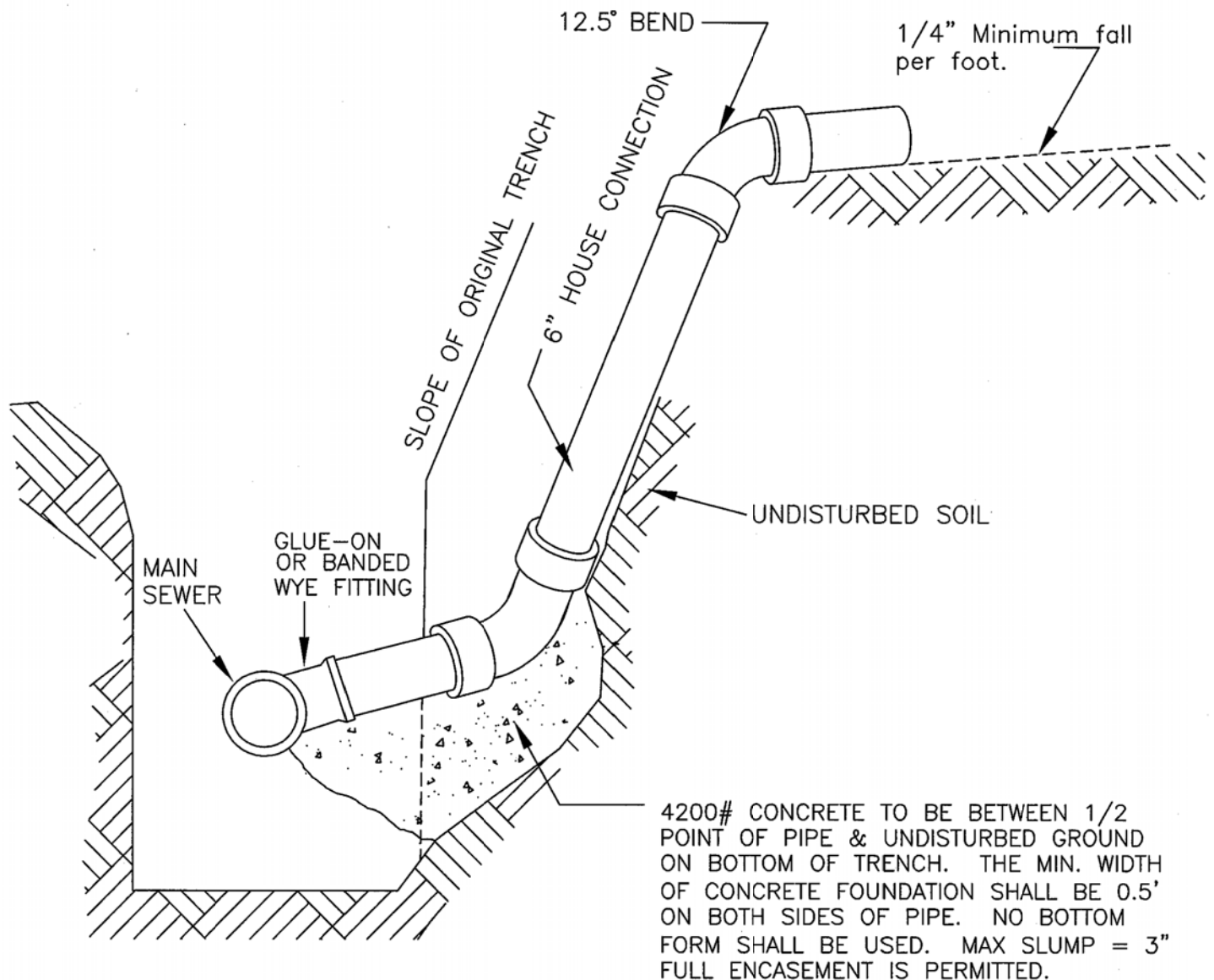
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-12



NOTES:

1. ALL JOINTS SHALL BE WATER TIGHT.
2. PIPE TO BE BEDDED SO THAT PIPE LOADS ARE NOT IMPOSED ON EXISTING WYES OR SADDLES.
3. EXCAVATION CLOSER THAN TWO FEET (2') FROM PIPE, WYES OR SADDLES SHALL BE DONE BY HAND.
4. DEEP HOUSE CONNECTION TO BE USED WHEN HOUSE CONNECTION IS MADE TO A SEWER DEEPER THAN 12'.

DEEP HOUSE CONNECTIONS

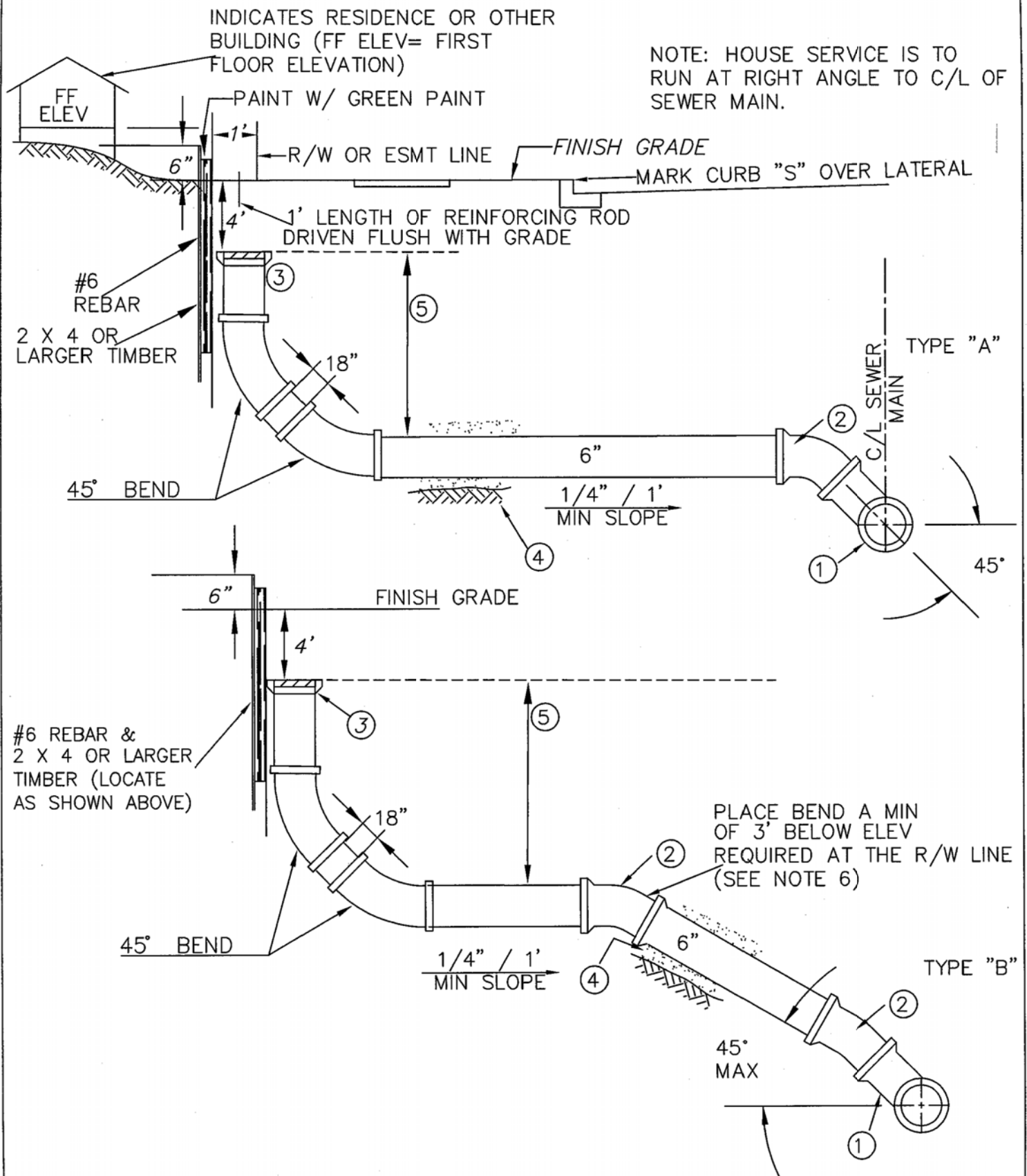
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-13



HOUSE CONNECTIONS

SHT 1 OF 3

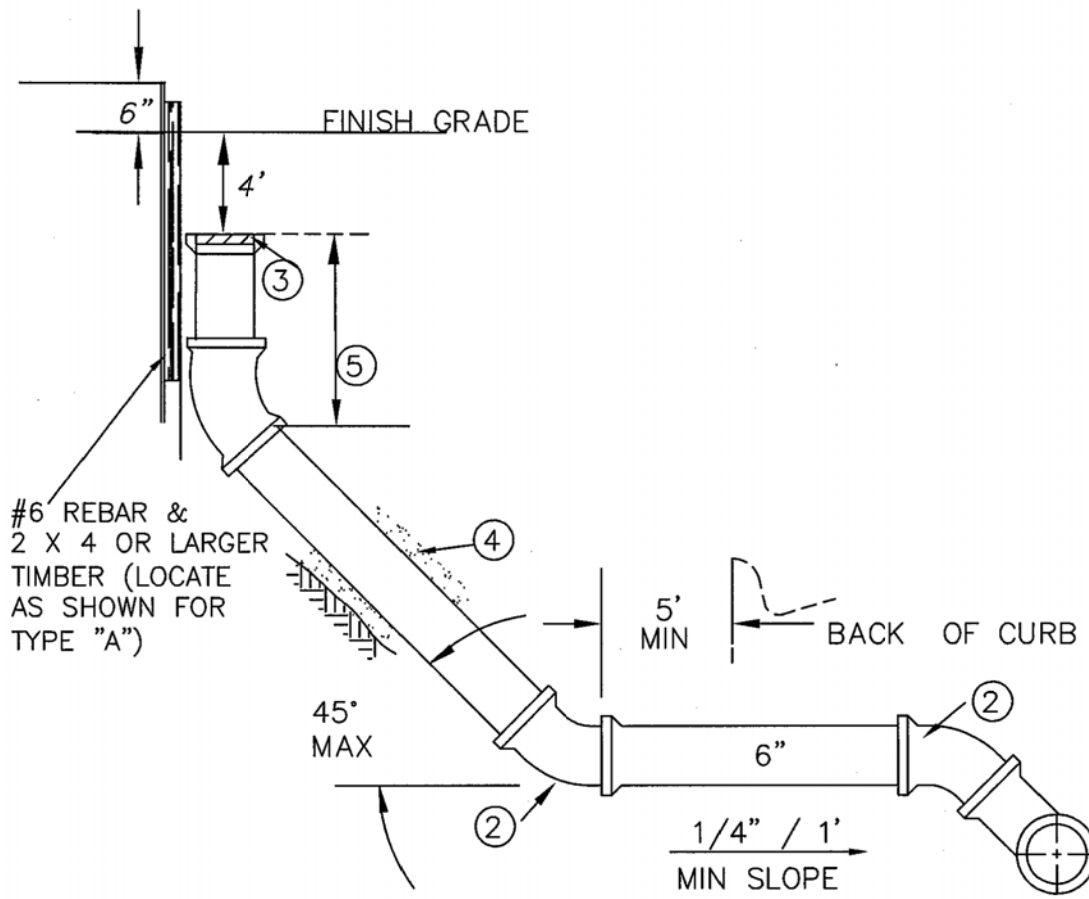
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-14A



TYPE "C"

HOUSE CONNECTIONS

SHT 2 OF 3

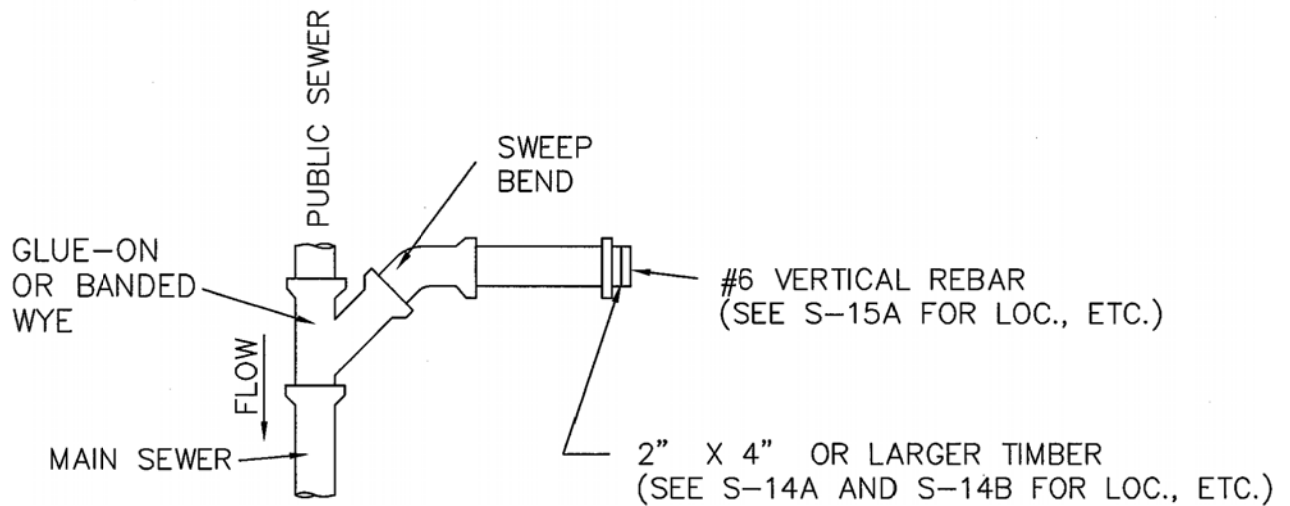
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-14B



- ① 6" TEE OR WYE - ROTATE 45° FROM HORIZONTAL WHEN "⑤" DIMENSION IS ATTAINABLE.
- ② 6" 1/8 BEND OR 1/16 BEND AS NEEDED.
- ③ CAP UNLESS JOINING EXISTING HOUSE LOCATION.
- ④ BED PIPE WITH 4" GRANULAR MATERIAL AND BACKFILL WITH GRANULAR MATERIAL TO 4" ABOVE PIPE.
- ⑤ 6' FOR HOUSES ON SLAB.
8' FOR HOUSES WITH CRAWL SPACE.
10' FOR HOUSES WITH BASEMENT.

NOTE: USE TYPE "B" WHEN SEWER INVERT ELEVATION IS 5' TO 10' BELOW THE ELEVATION REQUIRED AT R/W LINE. USE DHC (S-13) WHEN SEWER INVERT ELEVATION IS 10' OR MORE BELOW THE ELEVATION REQ'D AT R/W LINE. IN ALL OTHER CASES USE TYPE "A" OR TYPE "C".

HOUSE CONNECTIONS

SHT 3 OF 3

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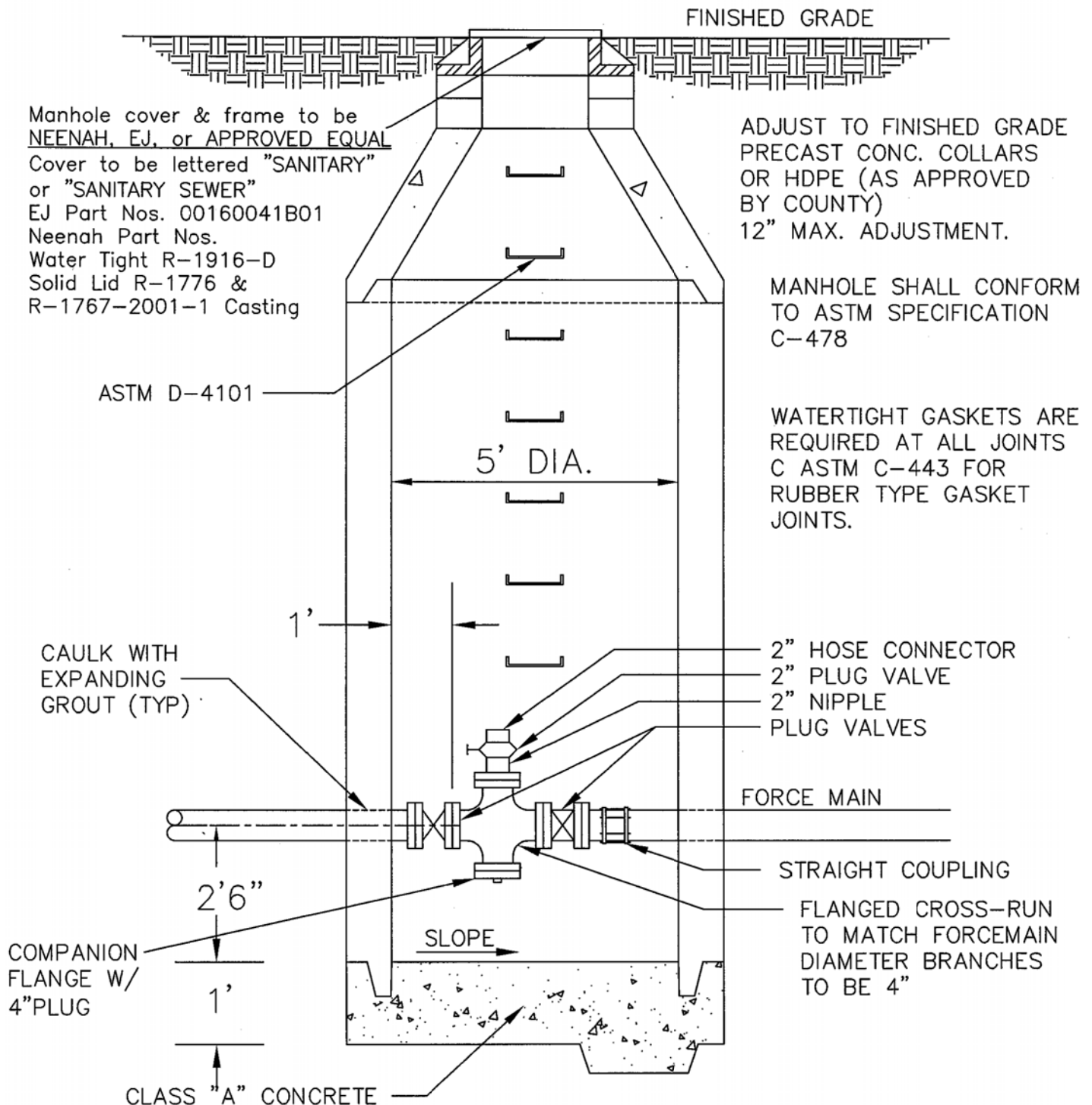
MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-14C

NOTE: Top of casting shall be at finished grade at paved locations (roadways and parking lots) and at developed lots. In undeveloped lots, top of casting to be a minimum of 12" above finished grade or as shown on plan.



FORCEMAIN CLEANOUT

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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

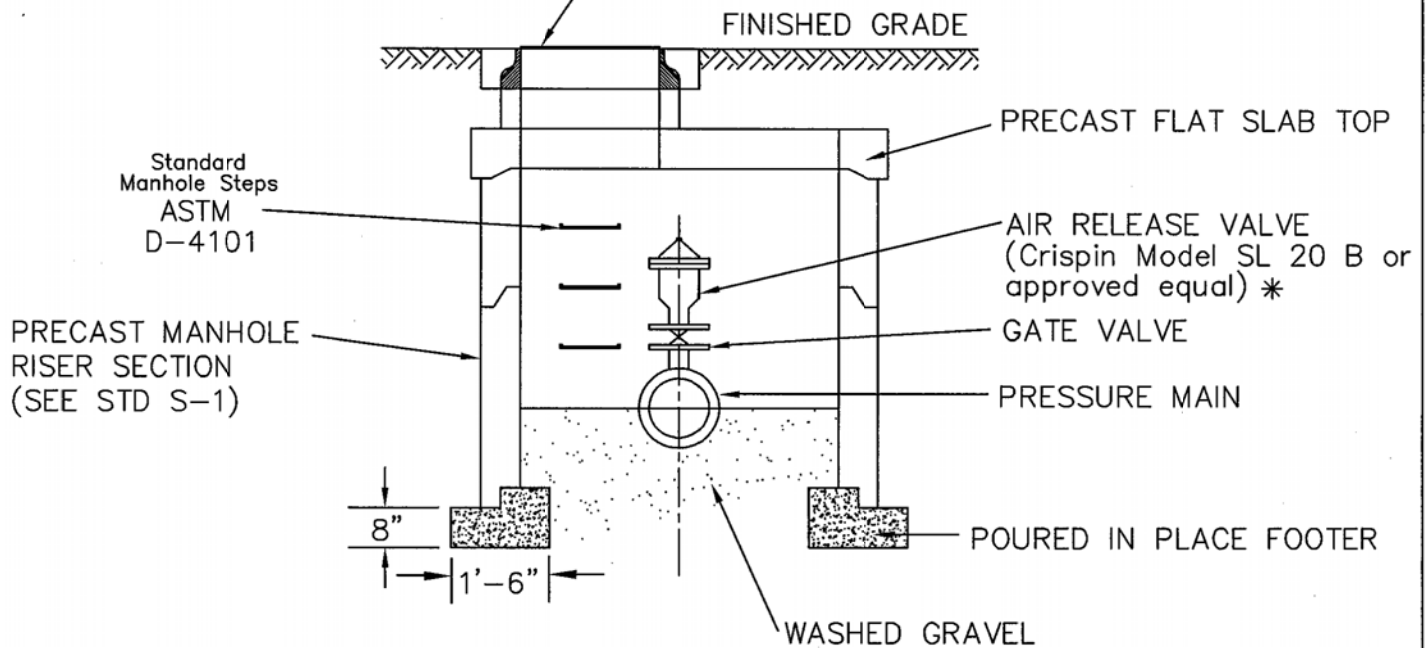
STANDARD NUMBER

S-15

NOTE: Top of casting shall be at finished grade at paved locations (roadways and parking lots) and at developed lots. In undeveloped lots, top of casting to be a minimum of 12" above finished grade or as shown on plan.

MANHOLE SHALL CONFORM TO ASTM SPECIFICATION C478

Manhole cover & frame to be NEENAH, EJ, or APPROVED EQUAL
Cover to be lettered "SANITARY" or "SANITARY SEWER"
EJ Part Nos. 00160041B01
Neenah Part Nos. Water Tight R-1916-D
Solid Lid R-1776 & R-1767-2001-1 Casting



NOTE: IN WET AREAS SEAL BOTTOM WITH POURED CONCRETE BASE OR PRECAST MANHOLE BASE.

ADJUST TO FINISH GRADE
PRECAST CONC COLLARS—
12" MAX ADJUSTMENT

* Model no. may vary depending on application.

WATERTIGHT GASKETS ARE
REQUIRED AT ALL JOINTS
(ASTM C-443 FOR RUBBER
TYPE GASKET JOINTS.)

AIR RELEASE VALVE ASSEMBLY

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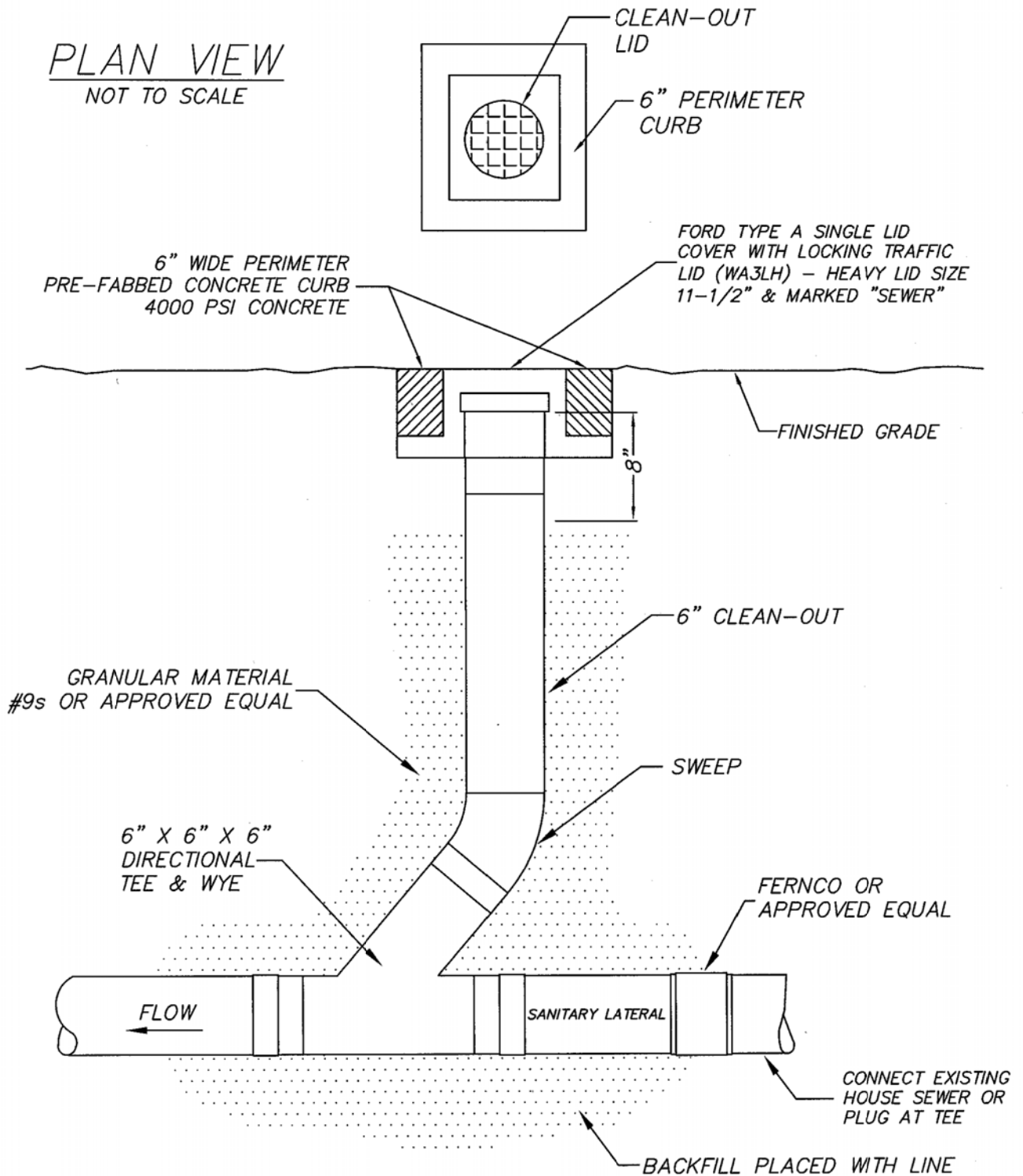
MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-16

PLAN VIEW
NOT TO SCALE



NOTES:

CLEANOUTS SHALL BE INSTALLED AT ALL 45° BENDS.

ALL STRUCTURES MUST HAVE A CLEANOUT THAT IS ACCESSIBLE WITHIN TWO FEET (2') FROM THE POINT OF ENTRY INTO THE STRUCTURE.

SANITARY CLEAN-OUT

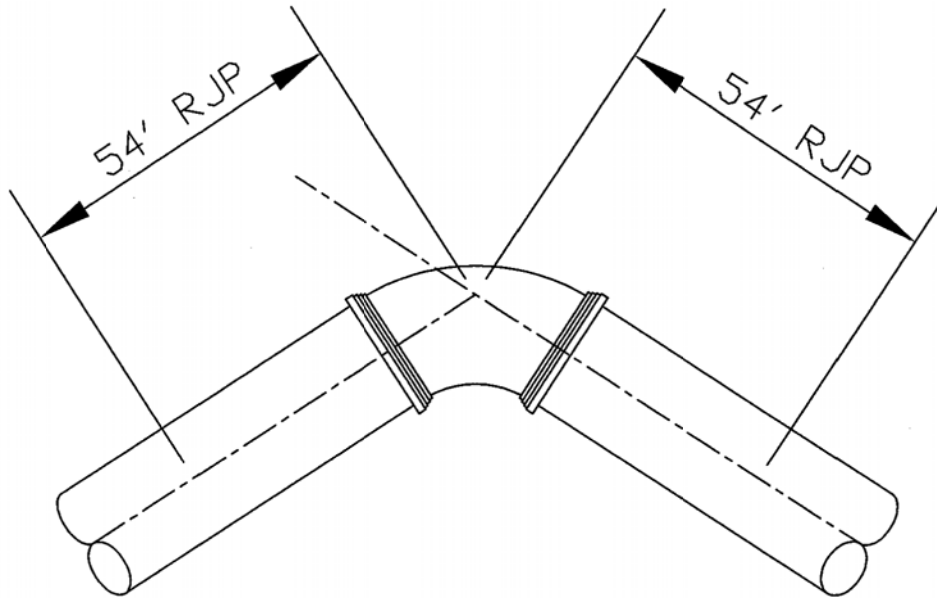
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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-17



MINIMUM 54' OF RESTRAINED JOINT PIPE (RJP) IS REQUIRED BEFORE AND AFTER ALL BENDS. REFER TO TABLE BELOW

RESTRAINT OPTIONS:
MECHANICAL JOINT W/ MEGALUGS OR FIELD LOC GASKETS.

TABLE
REQUIRED LENGTH OF RESTRAINED JOINTS
d—DIAMETER OF PIPE
l—LENGTH OF PIPE

d	4"	6"	8"	10"	12"	16"	20"	24"
l	54'	54'	54'	54'	66'	98'	125'	145'

REQUIRED RESTRAINED JOINTS FOR FORCEMAIN BENDS

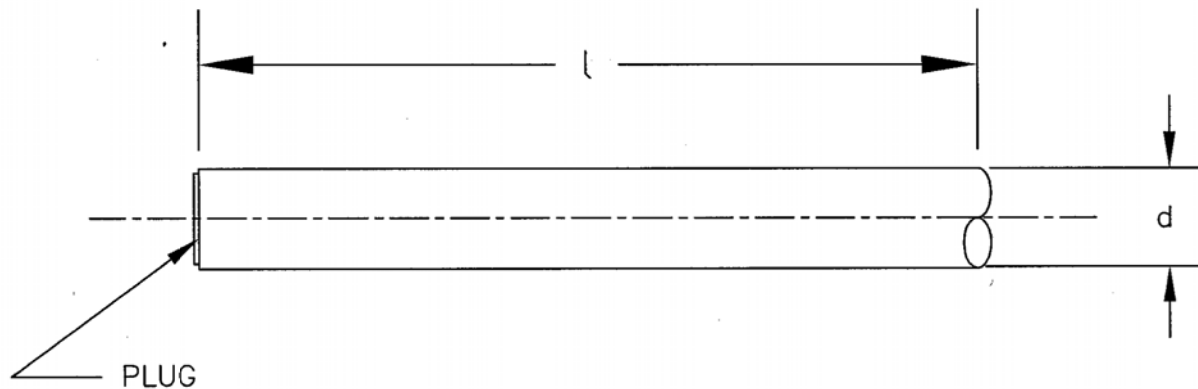
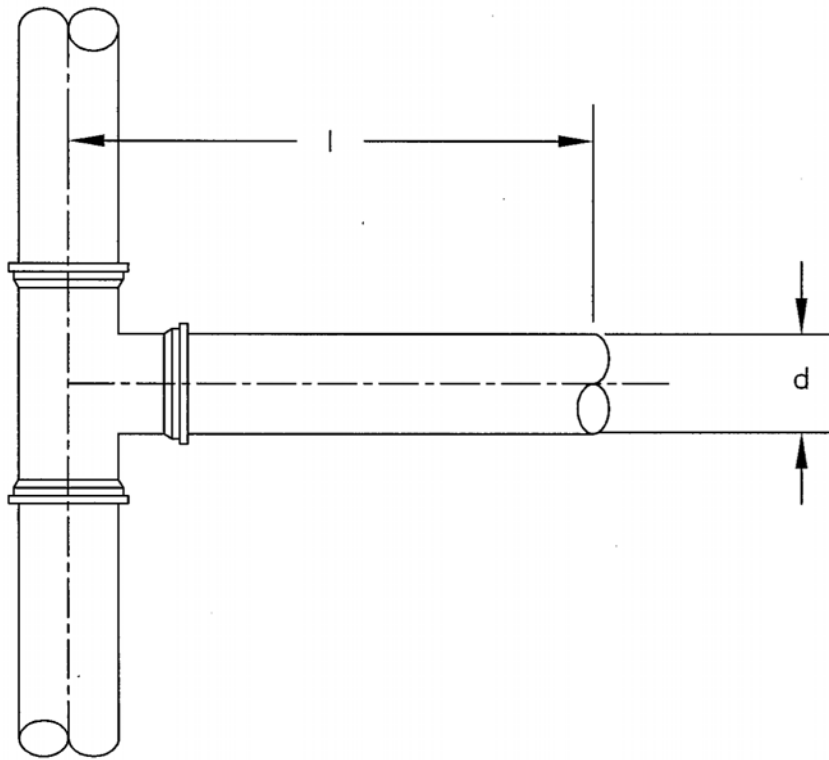
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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-18



MINIMUM 54' OF RESTRAINED JOINT PIPE (RJP) IS REQUIRED BEFORE AND AFTER ALL BENDS. REFER TO TABLE BELOW.

TABLE
REQUIRED LENGTH OF RESTRAINED JOINTS
d—DIAMETER OF PIPE
l—LENGTH OF PIPE

d	4"	6"	8"	10"	12"	16"	20"	24"
l	54'	54'	54'	54'	66'	98'	125'	145'

REQUIRED RESTRAINED JOINTS-DEAD END VALVES, PLUGS, CAPS & TEES

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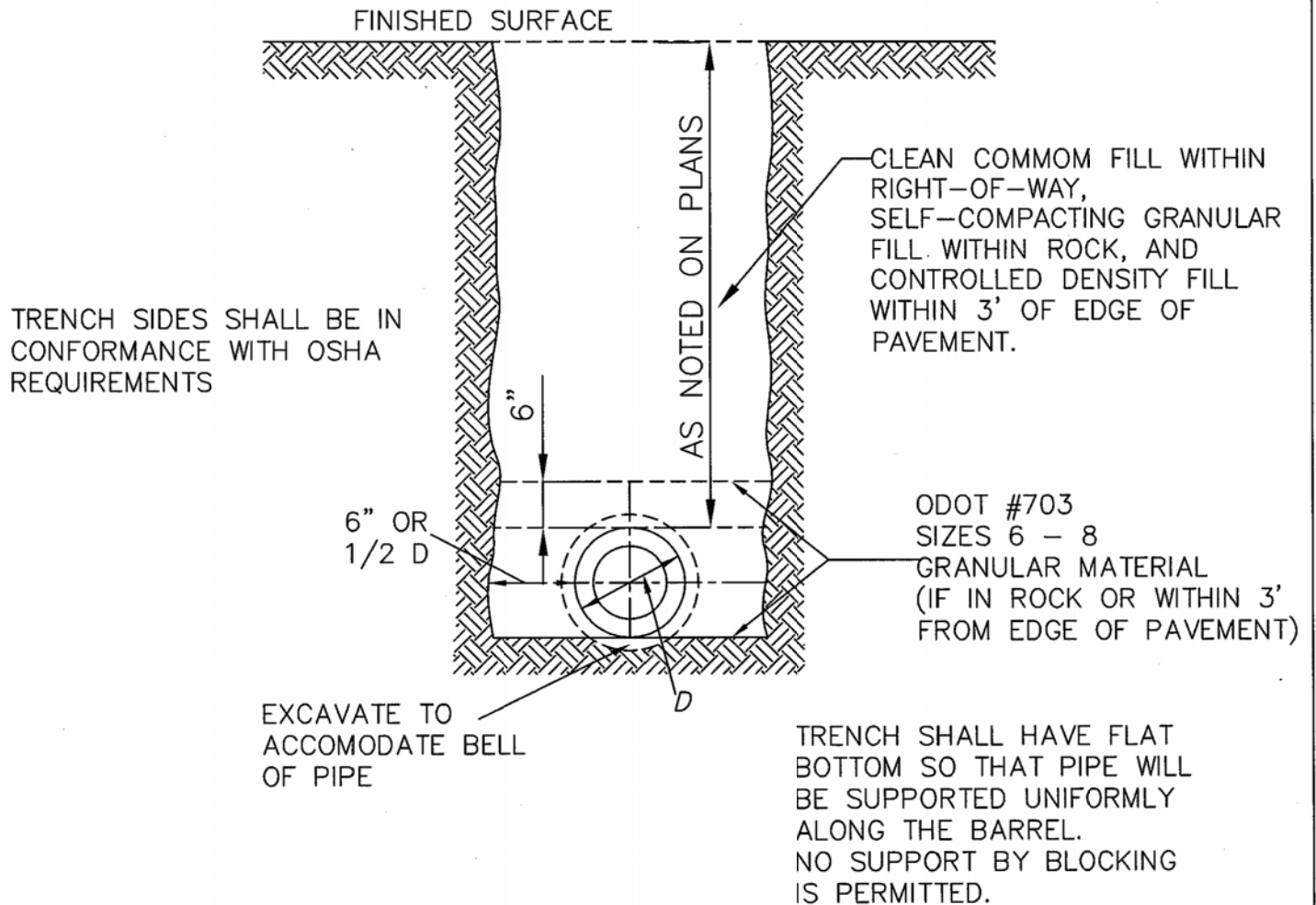
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-19

FORCEMAIN SHALL BE INSTALLED
IN A SEPARATE TRENCH FROM ANY
WATERMAIN AND SHALL BE A
MINIMUM DISTANCE OF 10' MEASURED
HORIZONTALLY FROM THE WATERMAIN

BACKFILL AND RESTORATION OF
PAVEMENT MUST CONFORM TO
THE APPLICABLE WARREN COUNTY
ENGINEER OR ODOT SPECIFICATION



FORCEMAIN TRENCH DETAIL

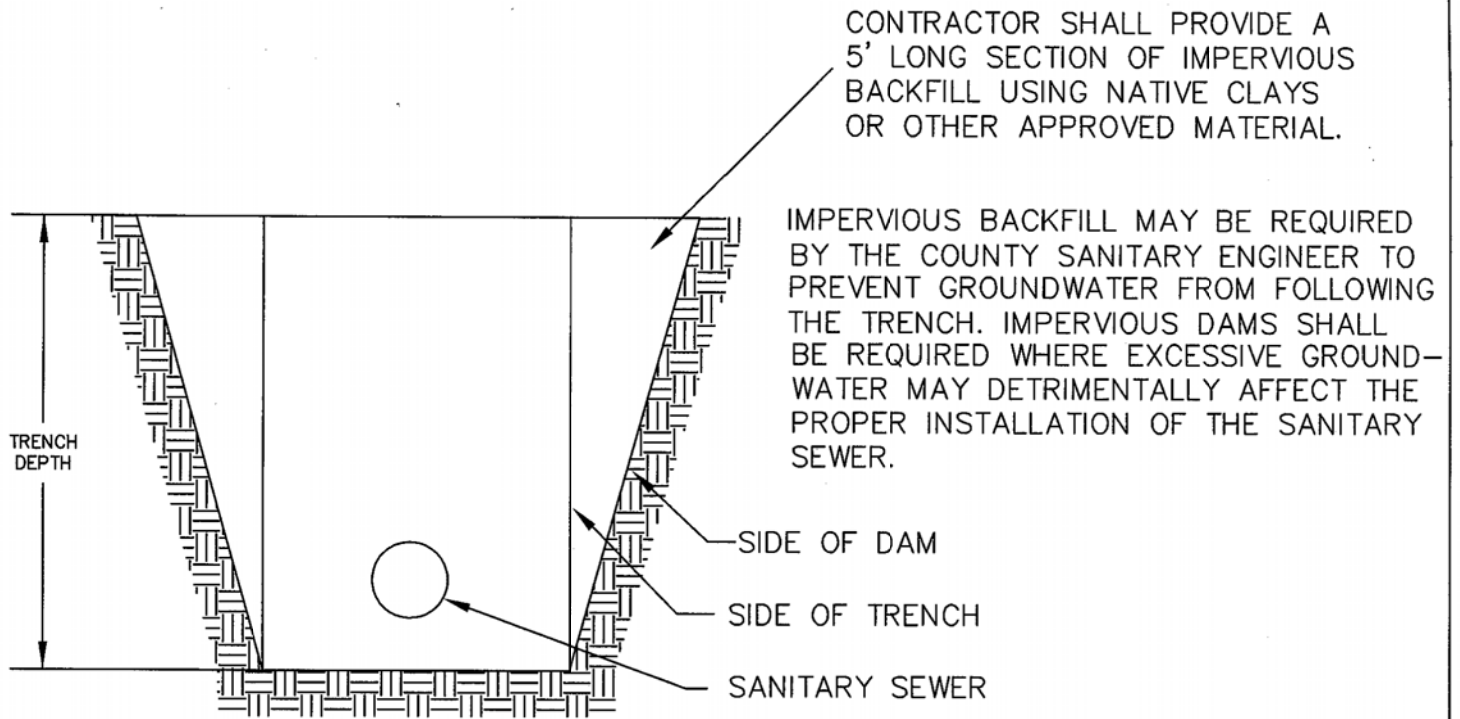
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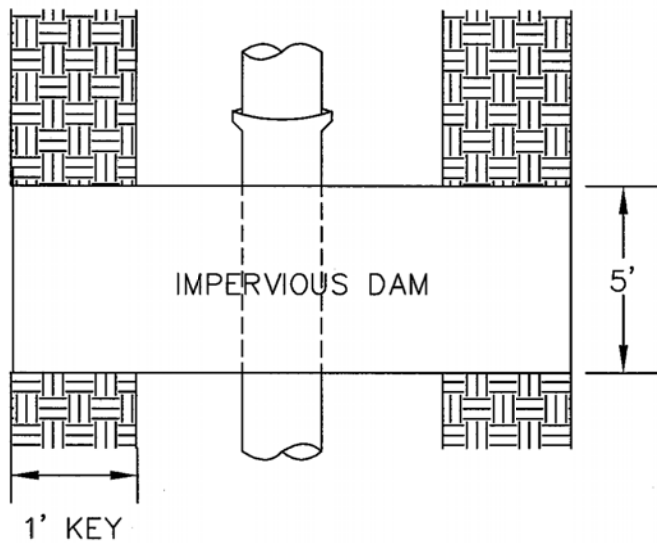
WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-20



IMPERVIOUS DAM DETAIL ELEVATION



DAM PLAN

THE CONTRACTOR SHALL PLACE CUTOFF TRENCH DAMS OF NATIVE CLAY OR IMPERVIOUS SOIL ACROSS AND ALONG THE TRENCH AS SPECIFIED BY THE COUNTY SANITARY ENGINEER.

THE TRENCH DAMS SHALL BE CAREFULLY COMPACTED AND SHALL BE 5 FEET IN LENGTH (MEASURED ALONG THE TRENCH CENTERLINE) AND SHALL BE BENCHED INTO THE UNDISTURBED TRENCH SIDES.

IMPERVIOUS DAM DETAIL

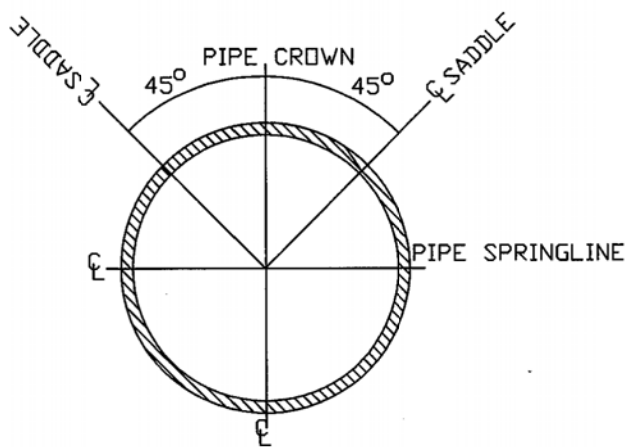
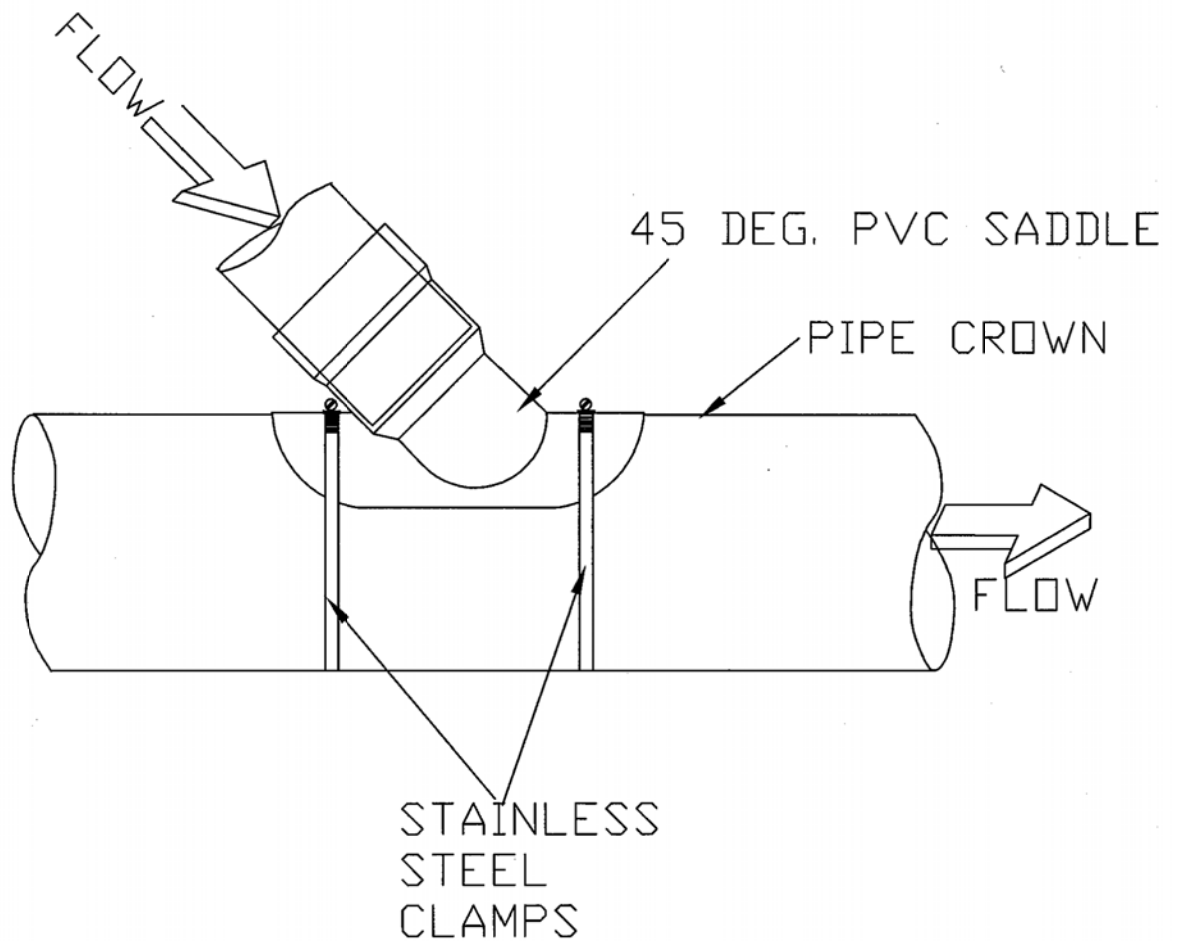
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-21



LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE

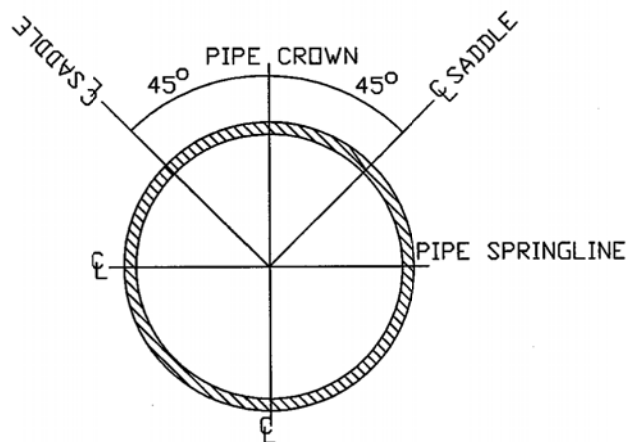
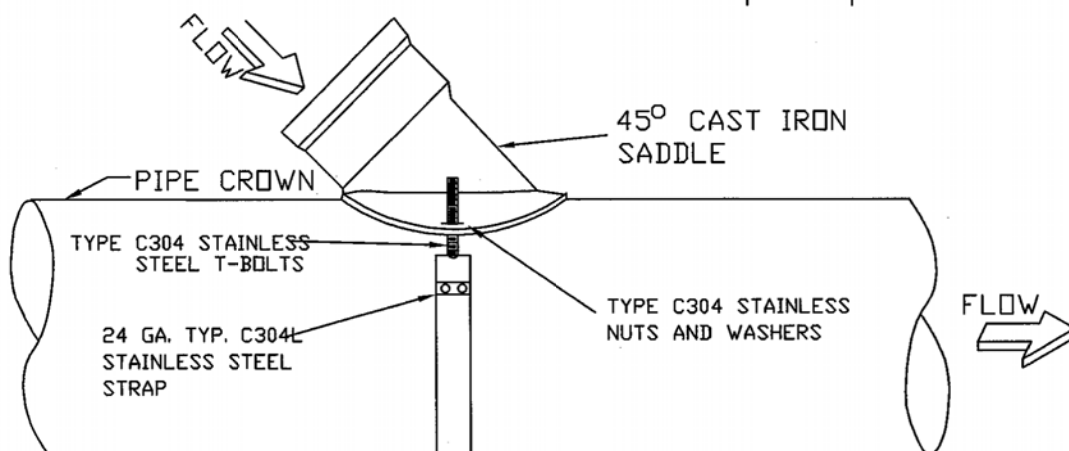
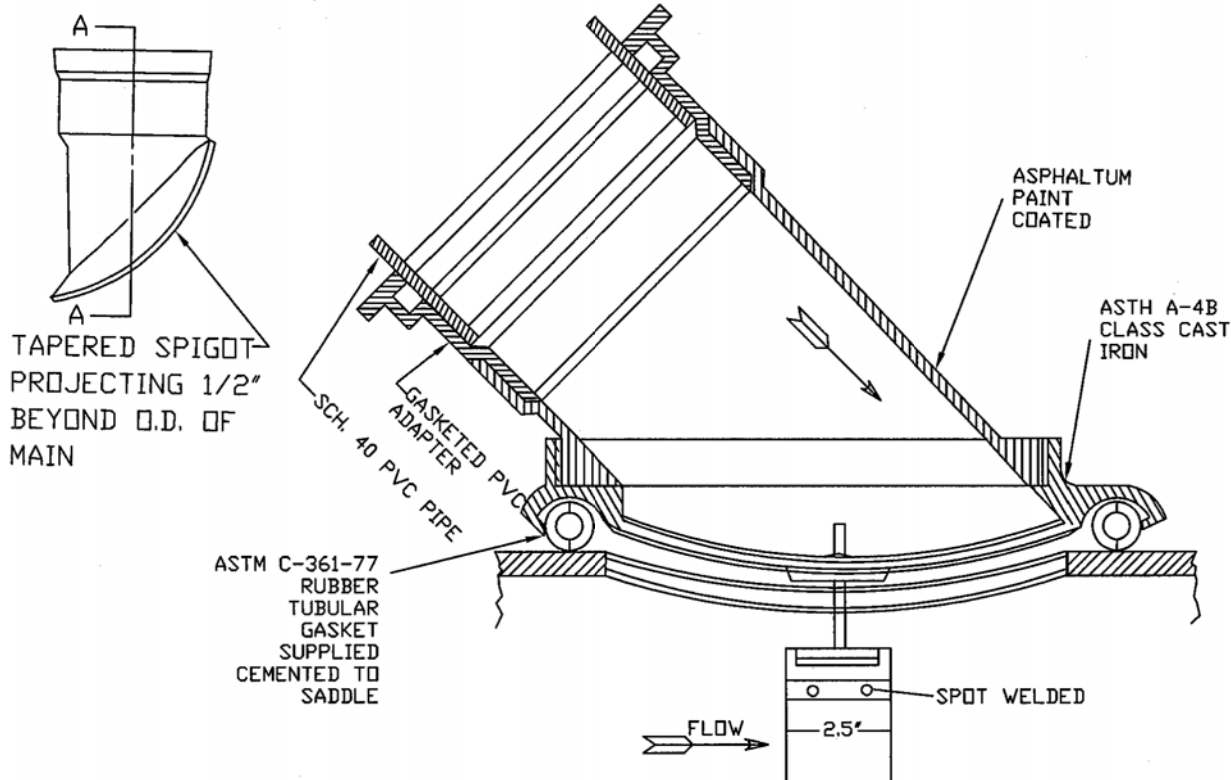
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WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-22



LATERAL SADDLE INSTALLATION DETAIL FOR VCP AND DUCTILE IRON PIPE

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MARCH 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

S-23

DETAILED PROCEDURES FOR SANITARY SEWER

1. PROCEDURE FOR MAKING SEWER LATERAL CONNECTIONS TO EXISTING SEWER:
 - A. IF ABS COMPOSITE – EXCAVATE TO POINT OF LATERAL ON MAIN; CLEAN EXISTING PIPE; ALIGN SADDLE TO PROPER POSITION AND MARK AREA TO BE CUT; CUT HOLE IN PIPE AS REQUIRED MAKING SURE THE CUT OUT DOESN'T ENTER THE MAIN; ATTACH AND SEAL SADDLE WITH STAINLESS STEEL STRAPS AND MASTIC SEALER BETWEEN SADDLE AND PIPE. INSERTA TEES ARE NOT PERMITTED.
 - B. IF CLAY OR CONCRETE – EXCAVATE TO POINT OF LATERAL ON MAIN; PLUG OUTLET PIPE AT UPSTREAM MANHOLE – PUMP TO DOWNSTREAM MANHOLE IF NECESSARY; REMOVE CLOSEST LENGTH OF PIPE AND REPLACE WITH TEE LATERAL SECTION OF PIPE OR CORE EXISTING PIPE IN PLACE.
2. PROCEDURE FOR MAKING SEWER EXTENSIONS FROM EXISTING MANHOLES: CONSTRUCT LINE TO WITHIN ONE JOINT OF EXISTING MANHOLE; AFTER LINE PASSES LEAKAGE TEST AND WARREN COUNTY SANITARY ENGINEER GIVES GO AHEAD – CONNECTION IS TO BE MADE; PLUG OUTLET PIPE AT UPSTREAM MANHOLE – PUMP TO DOWNSTREAM MANHOLE IF NECESSARY; A HOLE IS CUT AT THE PROPOSED INLET POINT AND THE LAST JOINT IS LAID; EXISTING BENCH AND CHANNEL OF MANHOLE IS REBUILT AND SHAPED AS REQUIRED; NEW CONNECTION IS TO BE SEALED AS REQUIRED.
3. PROCEDURE FOR MAKING NEW MANHOLES ON EXISTING SEWER MAINS: EXCAVATE AND EXPOSE EXISTING SEWER AT POINT OF NEW MANHOLE; BUILD MANHOLE OVER EXISTING LINE WHILE NOT DISTURBING EXISTING LINE; BUILD NEW LINE(S) FROM NEW MANHOLE; AFTER NEW LINE(S) PASS(ES) LEAKAGE TEST AND WARREN COUNTY SANITARY ENGINEER GIVES GO AHEAD – PLUG OUTLET PIPE AT EXISTING UPSTREAM MANHOLE (PUMP TO EXISTING DOWNSTREAM MANHOLE IF NECESSARY); BREAKOUT TOP OF EXISTING SEWER AS REQUIRED AND FORM A BENCH AND CHANNEL AS REQUIRED.
4. STORM WATER AND EXTRANEEOUS FLOWS ARE PROHIBITED FROM ENTERING THE EXISTING SYSTEM DURING CONSTRUCTION. NO OPEN CUT TRENCHES WILL BE ALLOWED TO REMAIN OPEN OVERNIGHT. STORM DRAINS, DIVERSION DITCHES, PUMPS ETC., SHALL BE USED AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE SYSTEM AT ALL TIMES.
5. ALL SANITARY SEWER PIPE MUST BE BEDDED WITH NUMBER 57 STONE EXTENDING FROM A POINT NOT LESS THAN 6" BELOW THE BOTTOM OF THE PIPE TO THE SPRINGLINE OF THE PIPE. BACKFILL WITH NUMBER 9 GRITS FROM THE SPRINGLINE TO A POINT NOT LESS THAN 12" ABOVE THE CROWN OF THE PIPE. BEDDING SHALL PROVIDE A UNIFORM SUPPORT ALONG THE ENTIRE PIPE BARREL, WITHOUT LOAD CONCENTRATION AT JOINT COLLARS OR BELLS. BEDDING DISTURBED BY PIPE MOVEMENT OR BY REMOVAL OF SHORING OR MOVEMENT OF THE TRENCH SHIELD OR BOX SHALL BE RECONSOLIDATED PRIOR TO BACKFILL. BEDDING TO BE COMPACTED TO 95% PROCTOR.

APPROVED/REVISED MARCH, 2018	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER SG-1
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SEWER

1. ALL SANITARY PIPE SHALL CONFORM TO ASTM D-2680 FOR ABS/PVC GASKETED COMPOSITE PIPE (TRUSS), ASTM D-3034 FOR SDR 26 GASKETED 4" – 15" DIAMETER OR ASTM F-679 FOR SDR 26 GASKETED 18" – 30" DIAMETER. PIPE LARGER THAN 15" SHALL CONFORM TO ASTM F-949 (A2000) OR ASTM F-1803. CERAMIC COATED CLASS 53 DUCTILE IRON PIPE OR EQUAL MUST BE USED WHERE SPECIFIED BY THE COUNTY SANITARY ENGINEER. JOINTS FOR PVC GRAVITY SEWER PIPE SHALL BE PUSH-ON TYPES WITH RUBBER GASKETS. PIPE ENDS SHALL NOT BE BEVELED. PIPE ENDS MUST BE SEALED.
2. ROOF DRAINS, FOUNDATION DRAINS AND OTHER STORM WATER CONNECTIONS TO THE SANITARY SYSTEM ARE PROHIBITED.
3. NO MANHOLE, OR ANY PORTION OF THE MANHOLE, SHALL BE LOCATED UNDER A SIDEWALK OR DRIVEWAY.
4. SANITARY SEWER LATERALS SHALL BE CONSTRUCTED OF THE FOLLOWING MATERIALS:
 - A) ABS PIPE – ASTM D-2751 WITH SDR 23.5 (6" GLUE JOINT)
 - B) PVC PIPE – ASTM D-3034 WITH SDR 23.5 (6" GLUE OR GASKET JOINT)
ASTM D-2665 SCHEDULE 40
ASTM D-3034 WITH SDR 35 (6" ONLY)
 - C) DUCTILE IRON – CLASS 53 (6")
5. SEWER LATERALS MUST BE EXTENDED TO THE HOUSE SIDE OF UTILITY EASEMENTS AND SHALL BE MARKED BY TWO INCHES (2") BY FOUR INCHES (2" X 4") OR LARGER POSTS. POSTS SHALL BE PAINTED GREEN. A SIX FOOT (6') LENGTH OF #6 REINFORCED BAR SHALL BE INSTALLED AGAINST THE POST. END OF SEWER LATERAL SHALL NOT EXCEED 4' IN DEPTH UNLESS APPROVED BY THE COUNTY SANITARY ENGINEER. SEE DETAIL S-14A.
6. ONLY SANITARY WYES WITH 45° BENDS SHALL BE USED FOR SANITARY LATERAL INSTALLATION. ALL WYES TO BE GLUE JOINTS ON TRUSS AND COMPOSITE PIPE. ALL SANITARY LATERALS MUST BE SIX INCHES (6") IN DIAMETER WITHIN THE RIGHT-OF-WAY NO CONNECTION SHALL BE MADE TO THE CROWN OF THE SEWER MAIN.
7. ALL LATERALS TO BE NOT LESS THAN SIX INCHES (6") INSIDE DIAMETER.
8. THE LOCATION OF SEWER LATERALS MUST BE STAMPED IN THE CURB AT THE TIME THE CURB IS PLACED TO PERMANENTLY INDICATE THE LOCATION OF SAID LATERALS.
9. THE LOCATION OF ALL SEWER LATERALS MUST BE PROVIDED ON THE AS-BUILT PLANS.
10. MANHOLE LATERALS SHALL HAVE AN INVERT TWO INCHES (2") ABOVE MAIN-LINE INVERT.

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MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

SG-2A

SEWER (CONTINUED)

11. EXISTING MANHOLE CASTINGS ARE TO BE RAISED BY EITHER A MANHOLE ADJUSTING RING OR A BARREL SECTION ADDED. IF THE HEIGHT OF NECESSARY ADJUSTMENT IS OVER ONE FOOT (1') OR THERE IS ALREADY AN EXISTING ADJUSTMENT RING BEING USED, THE CONTRACTOR IS TO USE A NEW BARREL SECTION ONLY. EXTRA CARE IS TO BE TAKEN TO INSURE A PROPER AND TIGHT SEAL AT ALL NEW JOINTS.
12. THE CONTRACTOR MUST INSTALL MECHANICAL PLUG(S) AT THE POINT(S) OF CONNECTION TO THE EXISTING SEWER PRIOR TO INITIATING ANY CONSTRUCTION. THE BULK HEAD(S) OR MECHANICAL PLUG(S) SHALL REMAIN IN PLACE UNTIL THE NEW MAINS HAVE BEEN FLUSHED, CLEANED, TESTED, TELEVISED, AND APPROVED FOR USE BY WARREN COUNTY. THE MECHANICAL PLUG(S) CAN ONLY BE REMOVED IN THE PRESENCE OF A WARREN COUNTY SEWER INSPECTOR.
13. TRENCH SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR MUST INSURE THAT ALL APPLICABLE OSHA OPEN TRENCH SAFETY REQUIREMENTS ARE FOLLOWED. IT IS NOT WARREN COUNTY'S RESPONSIBILITY TO INSPECT EACH SITE FOR COMPLIANCE.
14. HDPE PIPE MAY BE USED FOR DIRECTIONAL BORING OF FORCE MAINS WITH APPROVAL FROM THE COUNTY SANITARY ENGINEER. ALL DIRECTIONAL DRILLING SHOULD BE ACCOMPANIED BY DRILLING LOGS AT 25' STATION INCREMENTS, PVC PIPE SHALL BE PERMITTED FOR FORCE MAINS SIX INCHES (6") OR SMALLER IN DIAMETER. FORCE MAINS EIGHT INCHES (8") OR LARGER MUST BE CLASS 53 DUCTILE IRON WITH AN INTERIOR LINING OF EPOXY OR CERAMIC. PVC SHALL CONFORM TO AWWA C900 REQUIREMENTS AND HAVE AN EQUIVALENT OUTSIDE DIAMETER OF DR 14.
15. MINIMUM SLOPE SHALL BE AS FOLLOWS:

<u>PIPE SIZE</u>	<u>MINIMUM SLOPE (%)</u>
6"	2.00
8"	.50
10"	.35
12"	.28
15"	.19
18"	.15

16. ALL MATERIALS USED SHALL BE DOMESTIC, MADE IN THE UNITED STATES OF AMERICA.

APPROVED/REVISED

MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

SG-2B

PIPE CONNECTIONS INTO MANHOLES

SEWER PIPE TO MANHOLE CONNECTIONS ON ALL SANITARY SEWERS SHALL BE FLEXIBLE AND WATERTIGHT. SEWER PIPE SHALL BE SEALED IN THE MANHOLE SECTION PIPE OPENINGS WITH A RESILIENT CONNECTOR MEETING THE REQUIREMENTS OF ASTM C923. THE CONNECTION MAY BE ANY OF THE FOLLOWING TYPES:

1. RUBBER SLEEVE WITH STAINLESS STEEL BANDING
 - A) KOR-N-SEAL AS MANUFACTURED BY POLLUTION CONTROL SYSTEMS, INC.
 - B) LOCK JOINT FLEXIBLE MANHOLE SLEEVE AS MANUFACTURED BY INTERSPACE CORPORATION
 - C) OR EQUAL
2. RUBBER GASKET COMPRESSION
 - A) PRESS WEDGE II AS MANUFACTURED BY PRESS-SEAL GASKET CORPORATION
 - B) DURA-SEAL MANUFACTURED BY DURA TECH, INC.
 - C) OR EQUAL

RESILIENT CONNECTOR SHALL BE CAST INTEGRALLY INTO THE WALL OF THE MANHOLE SECTION AT TIME OF MANUFACTURE OR SHALL BE INSTALLED BY MECHANICAL MEANS IN OPENINGS CUT INTO MANHOLE WALL PER ASTM C923.

ANY CONNECTION TO AN EXISTING MANHOLE MUST BE MADE BY CORING THE MANHOLE. ANY CORE TO A MANHOLE MUST BE CENTERED IN THE BARREL SECTION. NO CORE SHALL BE MADE ALONG THE SEAM OF THE BARREL SECTION(S).

APPROVED/REVISED <i>MARCH, 2008</i>	WARREN COUNTY STANDARD DETAILS DEPARTMENT OF WATER & SEWER	STANDARD NUMBER SG-3
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SEWER TESTING

1. THE CONTRACTOR MUST INSTALL MECHANICAL PLUG(S) AT THE POINT(S) OF CONNECTION TO THE EXISTING SEWER PRIOR TO INITIATING ANY CONSTRUCTION. THE MECHANICAL PLUG(S) SHALL REMAIN IN PLACE UNTIL THE NEW MAINS HAVE BEEN FLUSHED, CLEANED, TESTED, TELEVISED, AND APPROVED FOR USE BY WARREN COUNTY. THE MECHANICAL PLUG(S) CAN ONLY BE REMOVED IN THE PRESENCE OF A WARREN COUNTY SEWER INSPECTOR.
2. ALL NEW MANHOLES SHALL BE VACUUM TESTED. A VACUUM OF 10" OF MERCURY SHALL BE DRAWN ON THE MANHOLE. FOR A 4' MANHOLE LESS THAN 20' DEEP, MANHOLE SHALL HOLD 9" OF MERCURY FOR AT LEAST 1 MINUTE.
3. ALL SANITARY SEWER MAINS MUST BE AIR TESTED. THE STANDARD TEST IS AN AIR PRESSURE TEST OF 5.0 PSI FOR A FIVE (5) MINUTE PERIOD WITH A MAXIMUM OF 1.0 PSI LOSS.
4. ALL NON-TRUSS PIPE SHALL BE TESTED FOR DEFLECTION AFTER BACKFILLING IS COMPLETED (30 DAY MINIMUM REQUIRED). A DEFLECTION TEST WITH A NINE POINT MANDREL WILL BE REQUIRED. NO MECHANICAL PULLING DEVICE SHALL BE USED. A VERTICAL RING DEFLECTION GREATER THAN FIVE PERCENT (5%) WILL NOT BE ALLOWED. THIS DEFLECTION IS DEFINED AS A FIVE PERCENT REDUCTION IN THE VERTICAL BASE OR AVERAGE INSIDE DIAMETER.
5. AT THE TIME THE SANITARY SEWER IS TESTED, THE SEWER MUST BE CLEANED AND TELEVISED WITH VIDEO DOCUMENTATION (DVD) PROVIDED TO WARREN COUNTY. THE VIDEO MUST INCLUDE AUDIO IDENTIFICATION OF PIPE SPANS FROM MANHOLE TO MANHOLE, FLOW DIRECTION, TILT AND PAN OF ALL LATERALS AND CALL OUT ANY SUSPECT PROBLEMS IN THE SYSTEM. ALL PROBLEMS MUST BE IDENTIFIED BY THE CONTRACTOR. THE NECESSARY REPAIRS MUST BE MADE AND THE SEWER MUST THEN BE RE-CLEANED, RE-TESTED AND RE-TELEVISED.
6. A SECOND VIDEO INSPECTION IS REQUIRED ONE YEAR AFTER INSTALLATION AND/OR PRIOR TO THE RELEASE OF THE MAINTENANCE BOND. IF A DEFICIENCY IS IDENTIFIED DURING THIS TELEVISED INSPECTION, THE FAILED SEWER PIPE MUST BE TESTED AND REPAIRED TO THE SATISFACTION OF THE COUNTY SANITARY ENGINEER.
7. THE DEVELOPER SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE THELEVISIONING, TESTING AND REPAIRS OF THE SANITARY SEWER.

APPROVED/REVISED

MARCH, 2018

WARREN COUNTY STANDARD DETAILS
DEPARTMENT OF WATER & SEWER

STANDARD NUMBER

SG-4