



FISHER
LAND SURVEYORS
CIVIL ENGINEERS

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(1) 10/20/14 REVISED WATER AND SANITARY PROFILES PER REVIEW (SHEETS C-300, C-300)
(2) 05/21/14 REVISIONS PER AEC REVIEW
(3) 05/21/14 REVISIONS PER TDP CO. HIGHWAY REVIEW
(4) 05/21/14 REVISED SANITARY PROFILE DATA
(5) 7/14/2014 REVISED SMH 102 & 104 RIM ELEVATIONS
(6)
(7)
(8)
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DRAWING REVISIONS

SANITARY SEWER NOTES

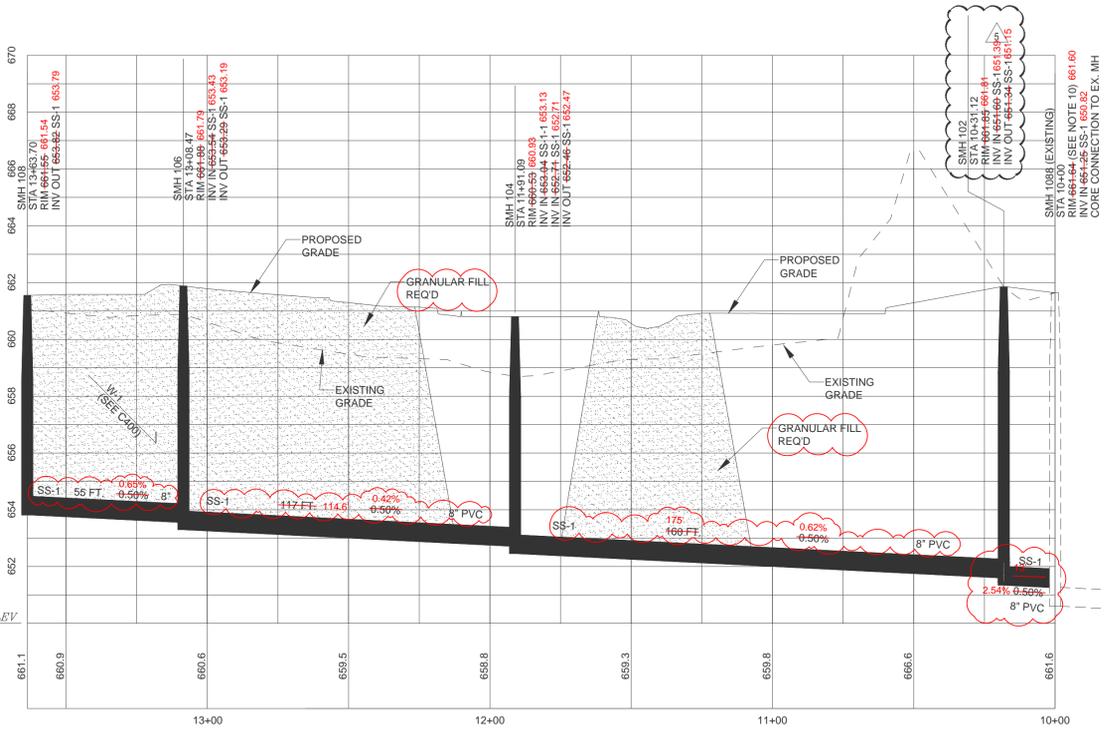
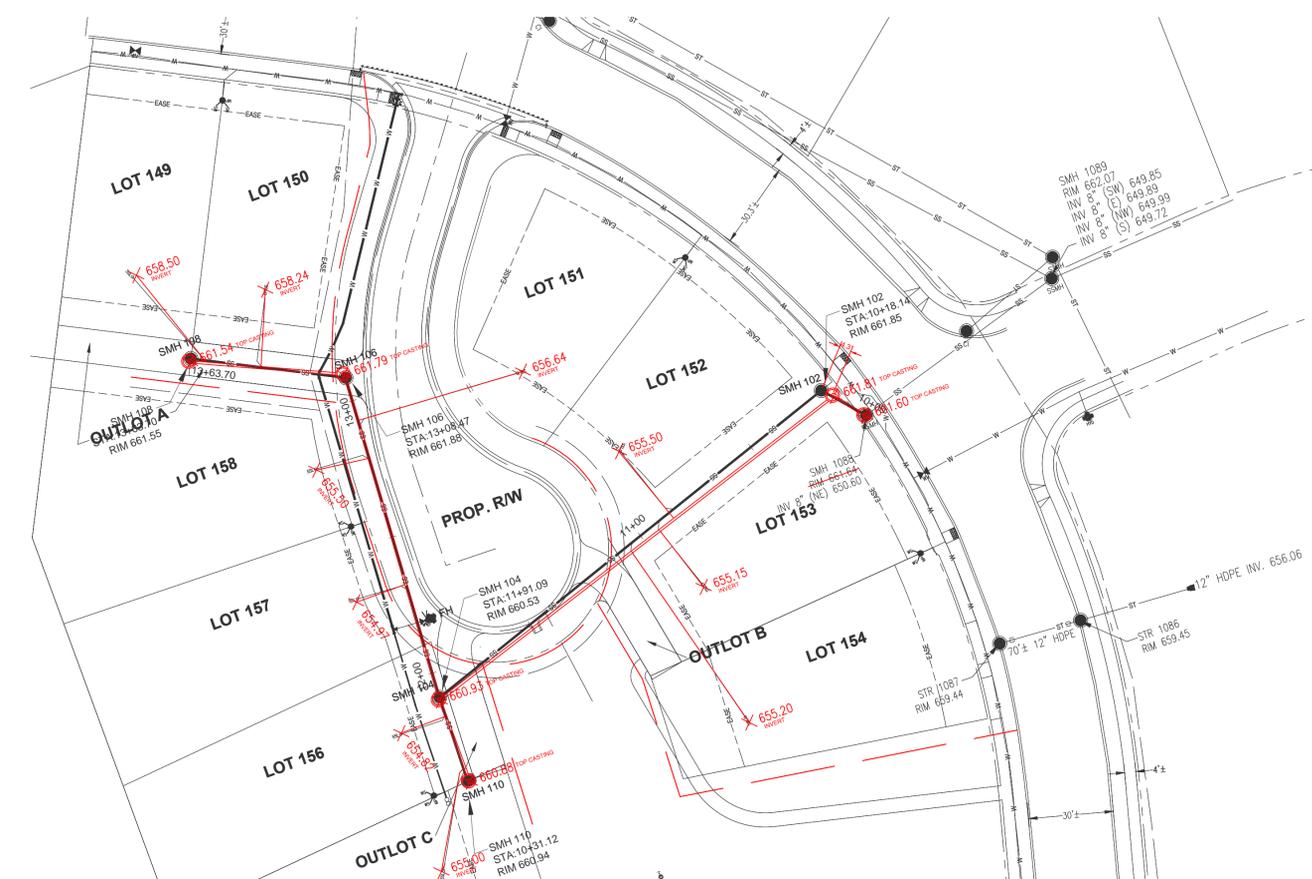
- REFER TO THE APPROPRIATE DETAILS AND SPECIFICATIONS CONTAINED HEREIN FOR FURTHER INFORMATION ON INDIVIDUAL CONSTRUCTION PRACTICES, PIPE MATERIAL AND SPECIFICATION, AND TESTING REQUIREMENTS.
- SANITARY SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH LOCAL SANITARY SEWER SPECIFICATIONS AND REQUIREMENTS.
- MAINTAIN MINIMUM OF 3-FOOT COVER OVER ALL SANITARY SEWER PIPE.
- TOP OF MANHOLE FRAMES TO BE SET AT PROPOSED YARD OR SIDEWALK GRADE WHEN LOCATED IN FRONT AREA OF LOT OR RIGHT OF WAY.
- NO EXCAVATIONS WERE MADE TO VERIFY THE LOCATION OF ANY EXISTING SANITARY LATERALS DURING THE TOPOGRAPHIC SURVEY. CONTRACTOR SHALL EXCAVATE AND VERIFY THE LOCATION AND ELEVATION OF ANY LATERAL AND REPORT THE RESULTS TO THE ENGINEER PRIOR TO CONSTRUCTING PROPOSED SANITARY SEWER SERVICE LINE. IF ANY EXISTING SANITARY SERVICE LATERALS ARE FOUND TO BE IN UNUSABLE CONDITION, CONTRACTOR SHALL MAKE THE CONNECTION DOWNSTREAM OF THE UNUSABLE PORTION OF SEWER. IF THE CONTRACTOR IS UNABLE TO SALVAGE ANY EXISTING LATERAL, A SADDLE CONNECTION TO THE EXISTING SANITARY SEWER MAY BE USED AS AN ALTERNATE CONNECTION.
- ALL SANITARY SEWER IMPROVEMENTS AND APPURTENANCES SHALL BE PUBLIC FACILITIES. ALL SANITARY SEWER LATERALS AND APPURTENANCES WITHIN THE PROJECT BOUNDARY, BETWEEN THE MAIN AND BUILDING, SHALL BE PRIVATE FACILITIES.
- MAINTAIN 10-FOOT HORIZONTAL SEPARATION BETWEEN OUTSIDE OF WATERMAIN AND OUTSIDE OF SANITARY SEWER. MAINTAIN 8-FOOT SEPARATION BETWEEN OUTSIDE OF WATERMAIN AND OUTSIDE OF SANITARY MANHOLES. WHEN SUCH HORIZONTAL SEPARATION CANNOT BE MAINTAINED, SUCH AS WITH CROSSINGS, 18-INCHES VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN WATERMAIN AND SANITARY SEWER. MAINTAIN 10-FOOT HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND SANITARY SEWER LATERALS.
- ALL SANITARY SEWER MAIN AND LATERAL INSTALLATIONS UNDER EXISTING OR PROPOSED PAVEMENT AREAS SHALL HAVE GRANULAR FILL, IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS CONTAINED HEREIN.
- SANITARY LATERALS THAT GRAPHICALLY APPEAR TO TIE INTO A MANHOLE SHALL TIE INTO THE SEWER MAIN VIA A STANDARD 8"x6" WYE.
- CONTRACTOR SHALL ENSURE THAT ALL EXISTING MANHOLE STRUCTURES THAT LIE IN THE SIDEWALK ARE SET TO THE SAME ELEVATION AS THE SURROUNDING SIDEWALK SURFACE TO ENSURE EVEN GROUND.

SANITARY LATERAL LOCATIONS				
FROM SMH	TO SMH	DISTANCE	DIST OFFSET	LOT
108	106	-17.1'	29.0' LT	149
108	106	25.2'	27.1' LT	150
106	104	16.8'	60.4' LT	151
106	104	30.6'	18.6' RT	158
106	104	77.0'	18.3' RT	157
110	104	-26.6'	20.3' LT	155
110	104	24.5'	16.4' LT	156
104	102	85.7'	72.7' RT	154
104	102	98.0'	25.0' RT	153
104	102	104.8'	30.8' LT	152

SANITARY PROFILE LEGEND

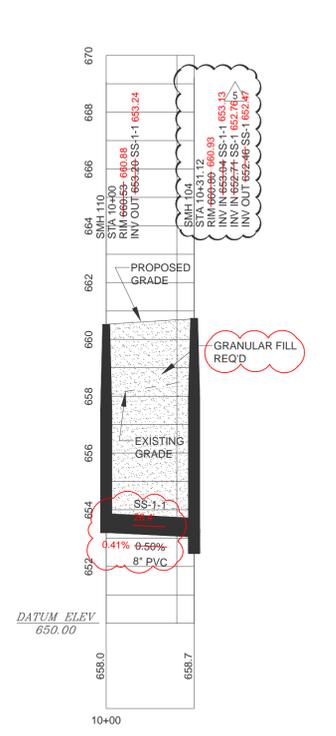
- = EXISTING EASEMENT
- - - - = PROPOSED EASEMENT
- SS = PROPOSED SANITARY SEWER
- FM = PROPOSED SANITARY FORCE MAIN
- SS = EXISTING SANITARY SEWER
- FM = EXISTING SANITARY FORCE MAIN
- = EXISTING SANITARY MANHOLE
- = PROPOSED SANITARY MANHOLE
- = PROPOSED SANITARY SEWER LATERAL
- ST = PROPOSED STORM SEWER
- ST = EXISTING STORM SEWER
- W = EXISTING WATER LINE
- W = PROPOSED WATER LINE
- ▨ = LIMITS OF GRANULAR FILL
- ☁ = REVISION #, PLEASE SEE REVISIONS BLOCK

Structure	Northing	Eastng	Structure Type	Casting	
SMH 108	MH	4901.49	5137.73	4' MANHOLE	NEENAH R-1772
SMH 106	MH	4876.57	5187.02	4' MANHOLE	NEENAH R-1772
SMH 104	MH	4759.40	5180.12	4' MANHOLE	NEENAH R-1772
SMH 102	MH	4815.30	5343.79	4' MANHOLE	NEENAH R-1772
SMH 1088	MH	4801.73	5355.82	4' MANHOLE	NEENAH R-1772
SMH 110	MH	4759.40	5180.12	4' MANHOLE	NEENAH R-1772



SS-1: 8" PVC SANITARY SEWER

HORIZONTAL SCALE : 1" = 30'
VERTICAL SCALE : 1" = 3'



SS-1-1: 8" PVC SANITARY SEWER

AS-BUILTS

I hereby certify that the "As-Built" data contained in these drawings was collected under my supervision and to the best of my knowledge represents the conditions as they exist on this project, and that the construction generally conforms to the requirements set forth in the approved construction plans.

CERTIFIED BY: JAMES E. GROSS, 11/13/14



James E. Gross

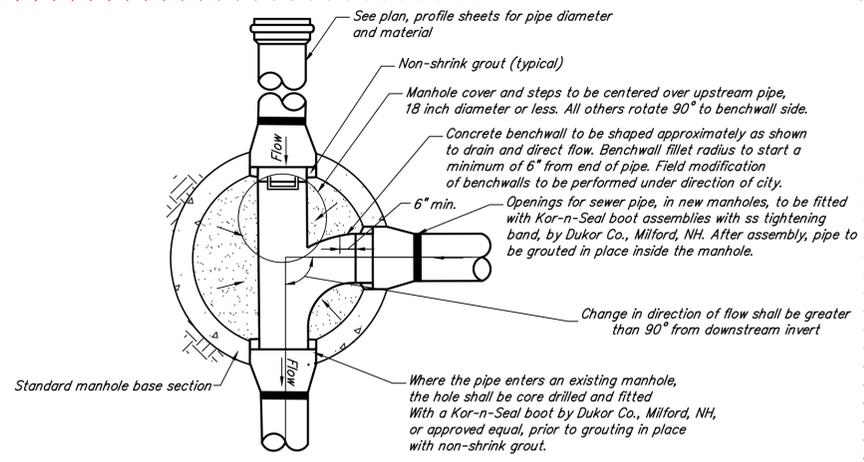
CERTIFIED BY: Kyle K. Betz, 10/21/2011



DRAWN BY: TLP
CHECK BY: KKB
DATE:
COMMISSION NO.:

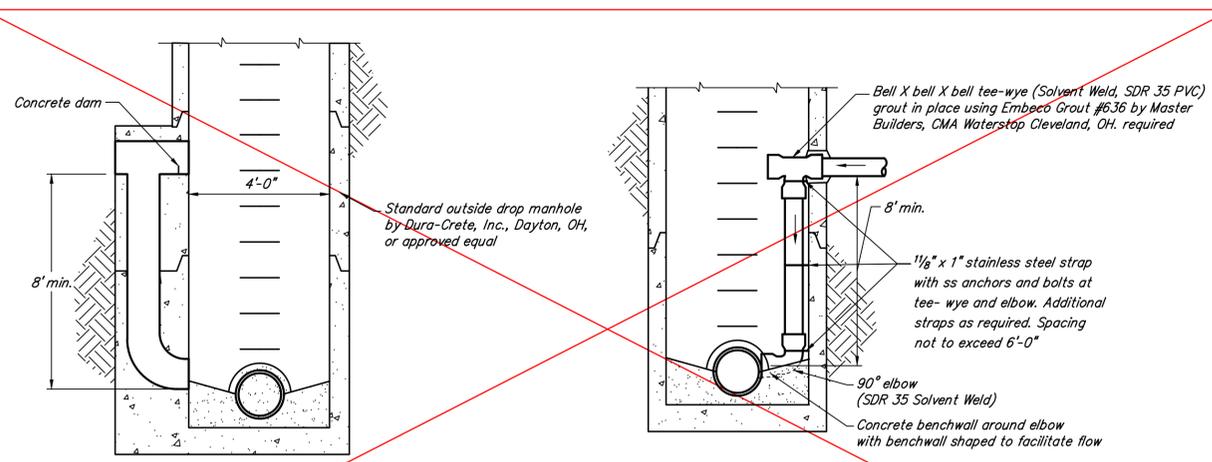
SANITARY SEWER PLAN
C-300

NOTES: 1. 10/20/14 REVISED WATER AND SANITARY PROFILES PER REVIEW (SHEETS C-300, C-300)
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6.
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STANDARD SANITARY MANHOLE PLAN

Not To Scale



PRECAST OUTSIDE DROP MANHOLE

Not To Scale

INSIDE DROP MANHOLE DETAIL

(Existing manholes only)
Not To Scale

Notes:
Prior written approval of the City is required for use of an outside drop manhole.
See standard manhole for additional details.

Notes:
Prior written approval of the City is required for use of an outside drop manhole.
See standard manhole for additional details.

Sanitary Sewer Notes:

- Sanitary sewers to be polyvinyl chloride (PVC) SDR 35 pipe and shall meet or exceed ASTM D3034 or ASTM 679 as applicable. Joints shall be gasketed, bell and spigot type with the bell made integral with the pipe. The bell shall be installed in the upstream position. See plan, profile sheets for sizes. Sanitary sewers to be SDR 26 pipe for depth 14' or greater.
- Sanitary sewer laterals for house connections shall be 6" diameter PVC SDR 35 conforming to ASTM D3034, laid at a minimum slope of 1.04%. Ends to be plugged. Joints shall be gasketed bell and spigot type with the bell made integral. The bell shall be installed in the upstream position. Pipe laterals longer than 150' require a manhole.
- Lateral connections to an existing clay or concrete sewer shall be made with a boot-n-saddle with stainless steel straps and appropriate rubber fitting. Connections to an existing flexible sewer pipe shall be made with the appropriate manufactured fittings and sealed in place.
- The completed sanitary sewer shall be high pressure water jet cleaned and subjected to an air test conforming to ASTM FL1417-92. A deflection test shall be performed with a "go-no-go" mandrel (95%) according to IDEM standards. Cleaning, televising and testing shall be performed a minimum of 45 days (or approved minimum timeframe) after installation and witnessed by the city. All costs of cleaning and testing are to be borne by the contractor. Closed circuit television inspection of the system shall be required. A copy of the video (MPEG or DVD format) shall be retained by the City. All costs of televising are to be borne by the contractor.
- Manholes shall be air tested in accordance with ASTM C1244-93. Standard test method for concrete sewer manholes by the negative air pressure (vacuum) test.
- 1'-6" vertical separation and 10'-0" horizontal separation to be maintained between watermain hydrants and sewers (sanitary and storm).
- Trenches under paved areas (excluding sidewalks) shall be backfilled with granular material per INDOT Standard Specifications, latest edition, and compacted in lifts. Granular material to extend 5 feet beyond the limits of the paved area with a 1:1 slope to the bottom of the trench.
- Connections to existing manholes to be core drilled and fitted with a Kor-n-Seal boot by Dukor Co., Milford, NH, prior to grouting in place with non-shrink grout.
- All sewer lines shall have a 0.1 ft. drop through the manhole. Where sewer lines change direction, the manhole invert elevation shall drop 0.25 ft. (typical) thru the manhole.
- Sewer permit and City inspection required for all connections to storm or sanitary sewer systems. Sewer permit required on site during any sewer construction.
- Top of manhole frames to be set at proposed yard or sidewalk grade when located in front yard area of lot or right-of-way. When manhole is in a traveled way, the top of the lid shall be flush with the final surface, and backfill shall be granular to the surface. In all other areas, the top of the frame shall be one 1'-0" above the surrounding grade, sloping away from the manhole for a distance of 6'-0" in all directions.
- Where proprietary equipment is specified, "or approved equal" is implied. All proposals for substitution shall be submitted to the City in writing for approval.
- Mark the locations of the sanitary sewer lateral by stamping "SS" in the curb. Similarly, stamp "MH" in the curb to mark the locations of manholes.
- All fittings to be SDR 26 PVC.
- Special consideration shall be taken into account with any grate located in an accessible traveled route. Horizontal openings in gratings shall not permit passage of a sphere more than 13 mm (0.5 in) in diameter. Elongated openings in gratings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

Television Inspection Criteria - Sanitary Sewers:

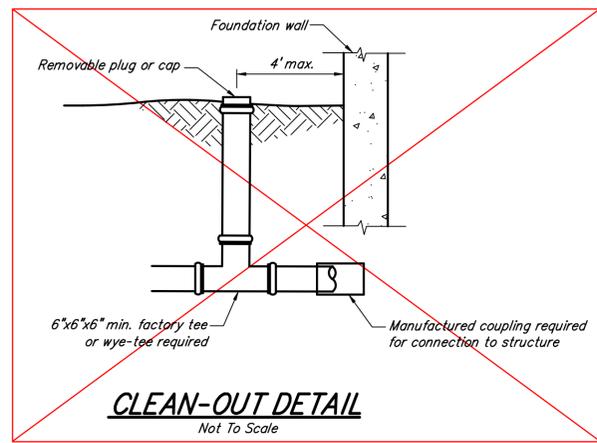
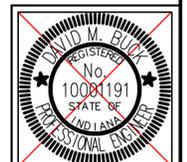
Sewers are to be "flooded" before television inspection. The image shall be clear enough to enable the City representative and others viewing the monitor to easily evaluate the interior condition of the pipe.

All unacceptable conditions found during television inspection must be corrected by the contractor and retelevised.

Unacceptable conditions are conditions that adversely effect the ability of the system to function as designed or to be properly maintained and may include, but are not limited to, the following:

- A. Protruding taps
- B. Cracked or faulty pipe
- C. Misaligned or deformed pipe
- D. Debris in line
- E. Infiltration/exfiltration
- F. Excessive gaps at joints
- G. Bellies or sags with a depth greater than or equal to 10% (or a maximum of 1-1/2") of pipe diameter and/or a length greater than 25 feet.
- H. Exposed gaskets

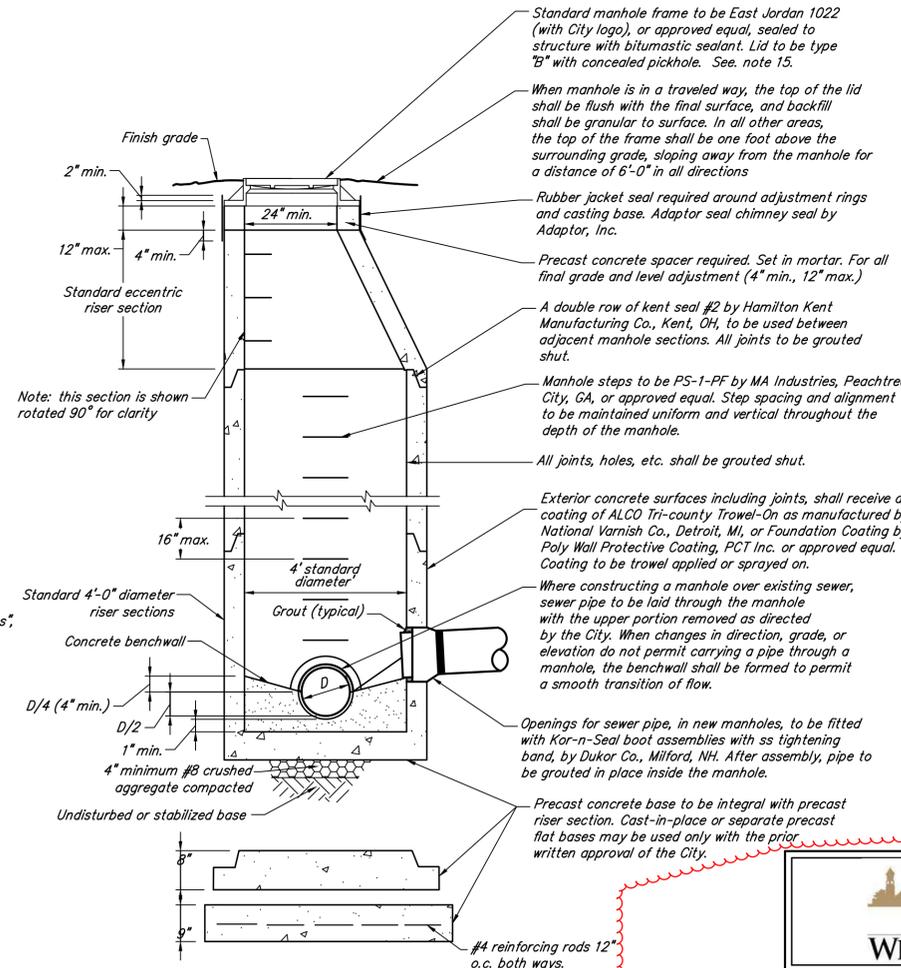
The mains shall be recorded digitally in an acceptable manner with an image clear enough for Cities review. After review of the initial taping of the sewers, any portion/portions of the sewers that are found in non-compliance with uniform slope and grade (bellies), that portion/portions shall be re-flooded and re-televised using a 3/4" diameter brass ball. The 3/4" diameter brass ball shall be provided by the contractor, pulled in front of the camera, verifying the depth of any questionable belly. Failure of the line shall be when the 3/4" brass ball is totally submerged in the dyed water. This requirement applies only to pipes with a diameter between 8"-12". Pipe diameters in excess of 12" shall use a 1" diameter brass ball in lieu of the 3/4" ball.



CLEAN-OUT DETAIL

Not To Scale

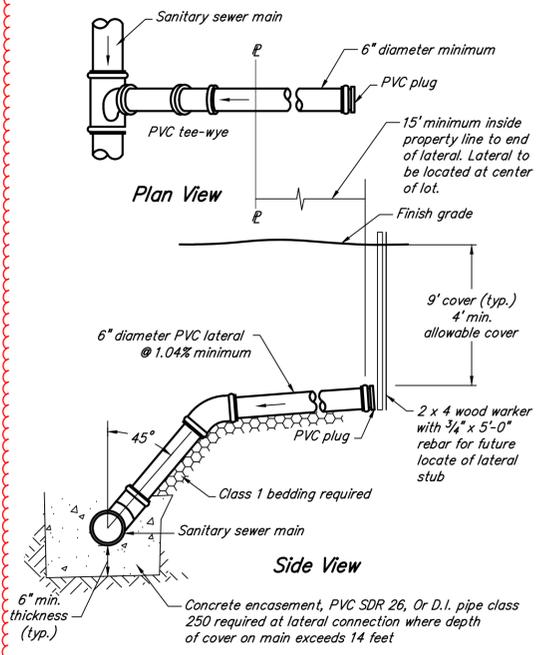
Minimum Design Slopes	
Sewer Diameter	Min. Slope in ft/100 ft (m/100m)
8" (203 mm)	0.45
10" (254 mm)	0.33
12" (305 mm)	0.27
15" (381 mm)	0.20
18" (457 mm)	0.17
24" (610 mm)	0.12
30" (762 mm)	0.10
36" (914 mm)	0.10
42" (1067 mm)	0.10
48" (1218 mm)	0.10



STANDARD SANITARY MANHOLE DETAIL

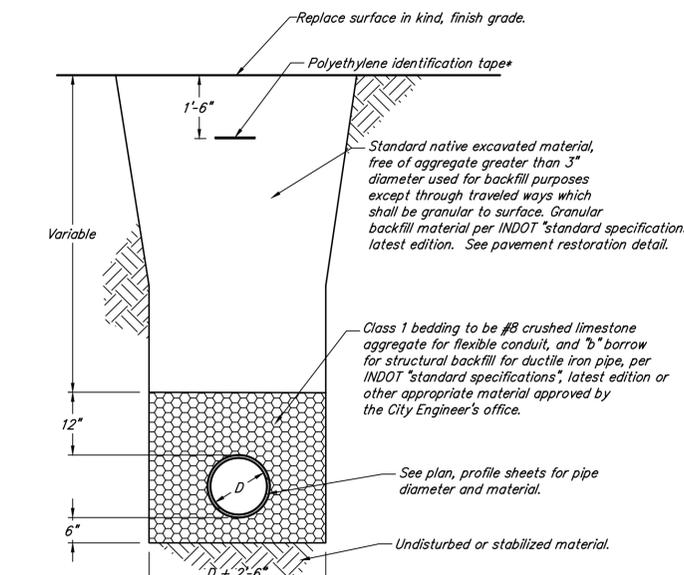
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Notes:
Precast concrete manholes shall conform to ASTM C-478



LATERAL CONNECTION DETAIL

Not To Scale



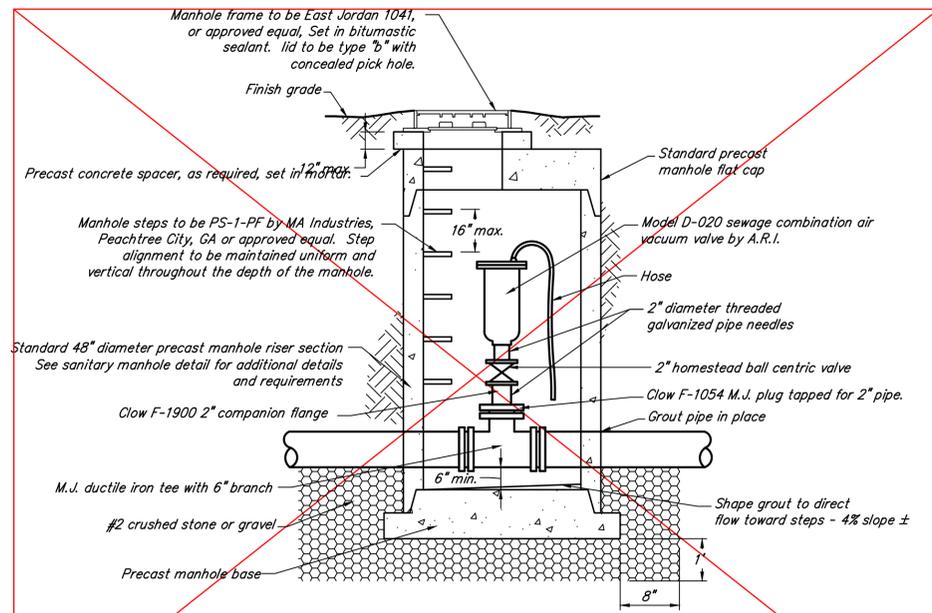
STANDARD BEDDING DETAIL

Not To Scale

Minimum trench width for flexible conduit. Maximum trench width for rigid conduit. *The polyethylene identification tape shall be metallic and have a minimum thickness of 4 mils. The tape shall read "Caution Buried Electric Storm Water, etc." Line Below" Tape shall be placed directly over pipe, 18" below final grade.

CITY OF WEST LAFAYETTE
City Hall, 609 West Navajo
West Lafayette, IN 47906
Sanitary Sewer
Details

RECOMMENDED FOR APPROVAL	<i>David M. Blum</i>	07/01/13
	CITY ENGINEER	DATE
Date:	JULY 1, 2013	Sheet 11 of 18
Holey Moley	(800) 382-5544	
City Engineer	(765) 775-5130	
Public Works Department	(765) 775-5145	
Development Department	(765) 775-5160	
Fire Department	(765) 775-5175	
Police Department	(765) 775-5200	
Project Name	Sheet Number	
	of	

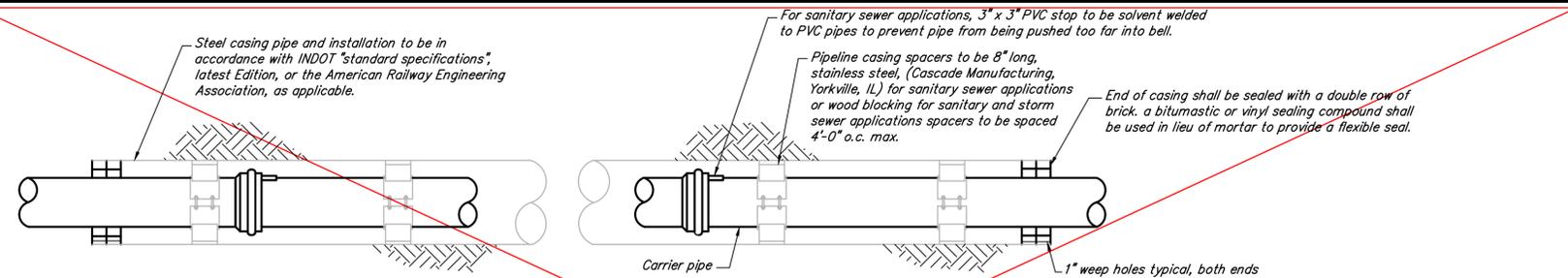


SEWAGE FORCEMAIN AIR RELEASE MANHOLE

Not To Scale

Notes:

Precast Concrete Manholes Shall Conform To ASTM C-478



PIPE CASING DETAIL

Not To Scale

Notes:

Boring pits to be located at least 30' from limited access highway pavement, at least 12' from other state and federal highway pavement, and at least 25' from the centerline of a railroad.

All work on the carrier pipe supports to be performed per the City's field instructions. Grouting of the annular space between the carrier pipe and the casing will be required on all gravity sewers. Grout mixture to be:

- 1880# cement
- 128 gallons water
- 4 gallons of 886 super plastizer
- By W.R. Grace, Inc.
- 5# grout solidifier

Carrier pipe to be PVC for sanitary sewers and ductile iron or concrete for storm sewers.

The casing pipe shall be welded steel pipe, new And unused material, in accordance with current ASTM specification A-139, Grade B For "Electric Fusion Of Welded Steel Pipe", with a minimum yield of 35,000 psi.

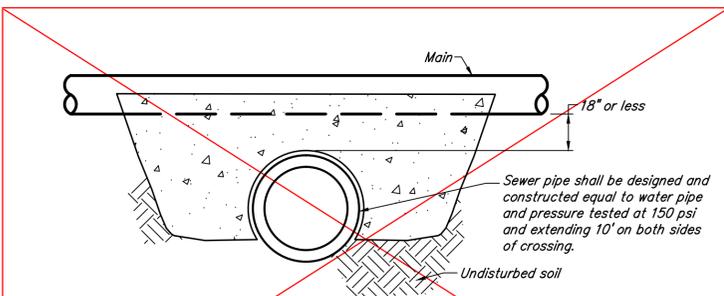
The inside diameter of the casing pipe shall be at least six (6) inches greater than the largest diameter of the pipeline joint.

The minimum wall thickness of the casing pipe shall be as listed in the following table or as shown on the applicable drawings:

Diameter of casing	Wall Thickness (in.)	
	Under highway	Under railroad
16" or smaller	0.250	0.312
18"	0.250	0.312
20"	0.312	0.344
24"	0.375	0.438
30" through 42"	0.509	0.563
48"	0.625	0.625
54"	0.875	0.875
66"	1.00	1.00

CASING SPECIFICATION

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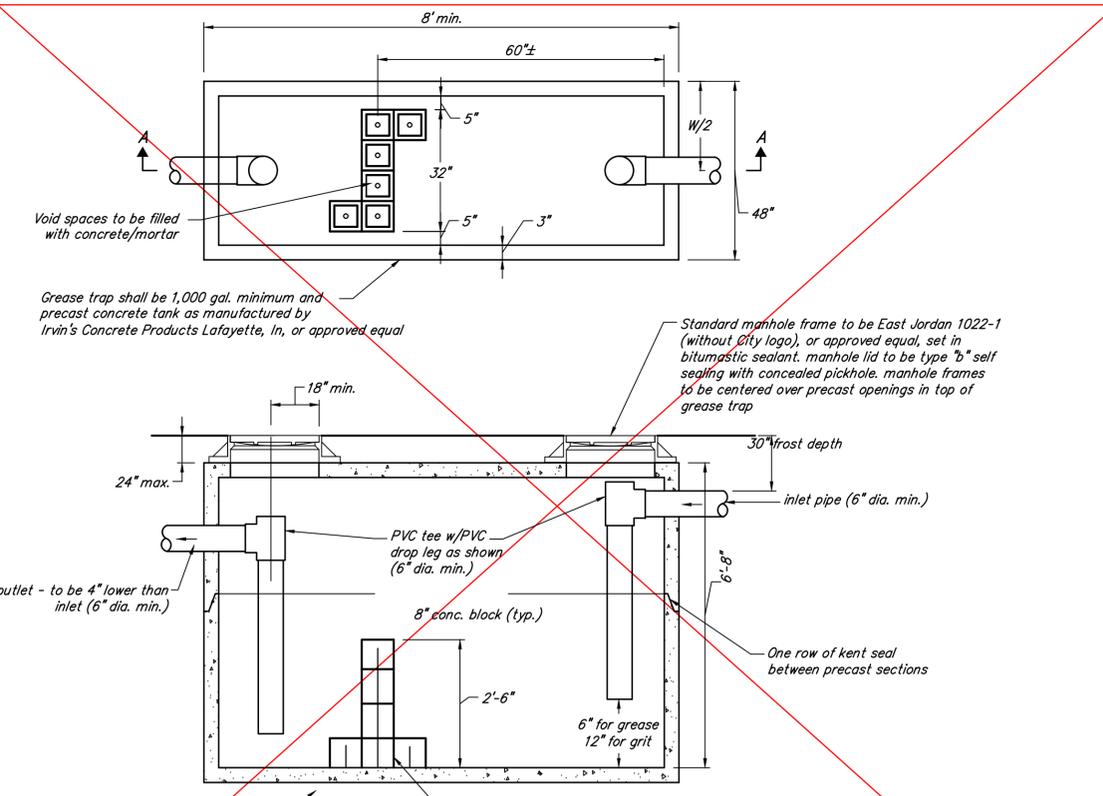


PIPE CROSSING DETAIL

Not To Scale

Notes:

This detail to be used when a main, sewer or water, crosses within 18" of another pipe or conduit.

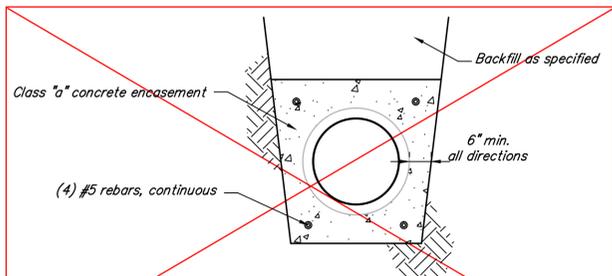


GREASE/GRIT TRAP (COMMERCIAL)

Not To Scale

Notes:

Grease trap sizing calculations shall be submitted to the Engineer's Office for approval. Sizing calculations shall be in accordance with section 501. Grease traps, of the Indiana State Board Of Health, Bulletin S.E. 13, Latest Edition, "On-site water supply and wastewater disposal for public and commercial establishments"

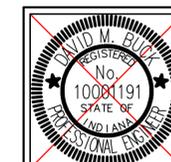


PIPE ENCASEMENT DETAIL

Not To Scale

General Notes:

1. Whenever proprietary equipment is specified, "or approved equal" is implied.
2. All proposals shall be submitted to the City in writing for their approval.
3. Shop drawings must be submitted for approval prior to approval or installation.



<p>CITY OF WEST LAFAYETTE</p> <p>City Hall, 609 West Navajo West Lafayette, IN 47906</p>		<p>RECOMMENDED FOR APPROVAL <i>David M. Blak</i> 07/01/13</p> <p>CITY ENGINEER DATE</p>
		<p>Date: JULY 1, 2013 Sheet 12 of 18</p>
<p>Sanitary Sewer and Misc. Utility Details</p>		<p>Holey Moley (800) 382-5544 City Engineer (765) 775-5130 Public Works Department (765) 775-5145 Development Department (765) 775-5160 Fire Department (765) 775-5175 Police Department (765) 775-5200</p>
<p>Project Name</p>		<p>Sheet Number</p>