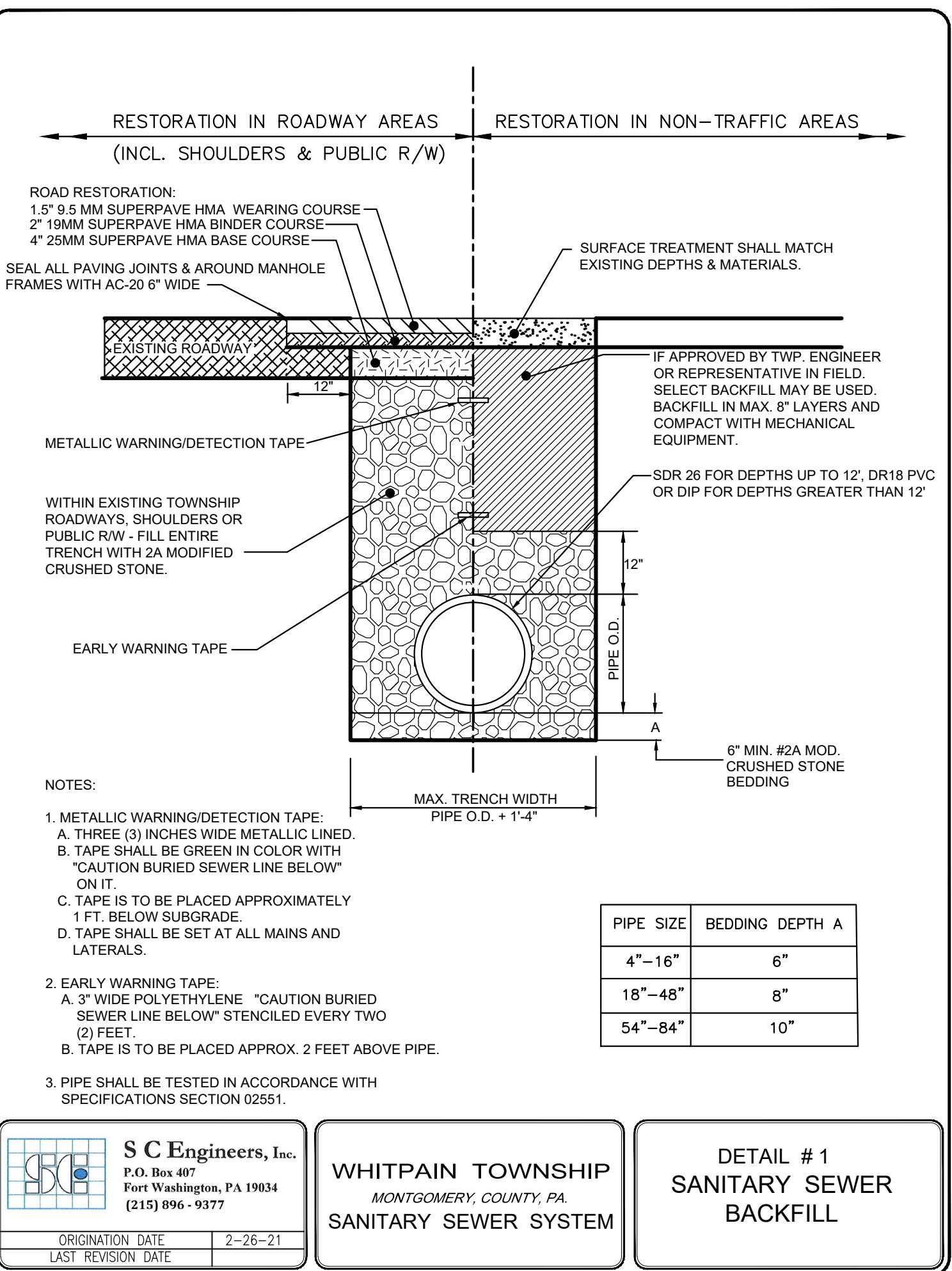
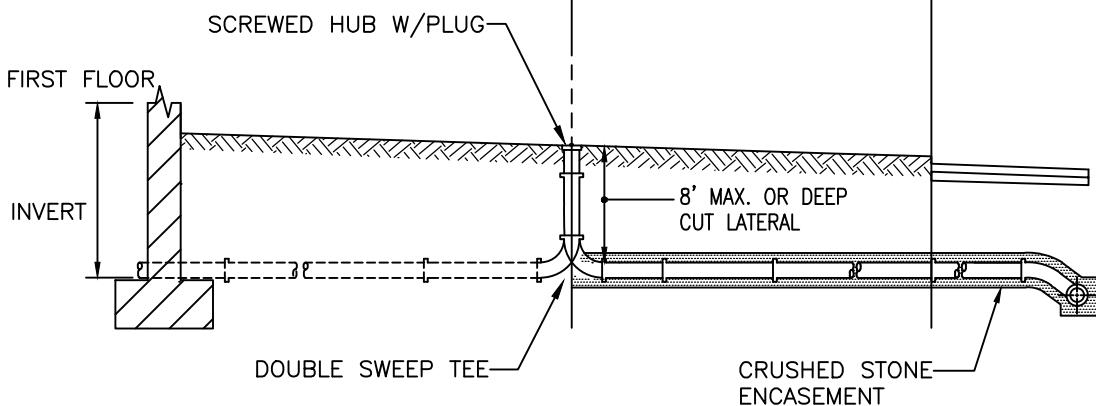
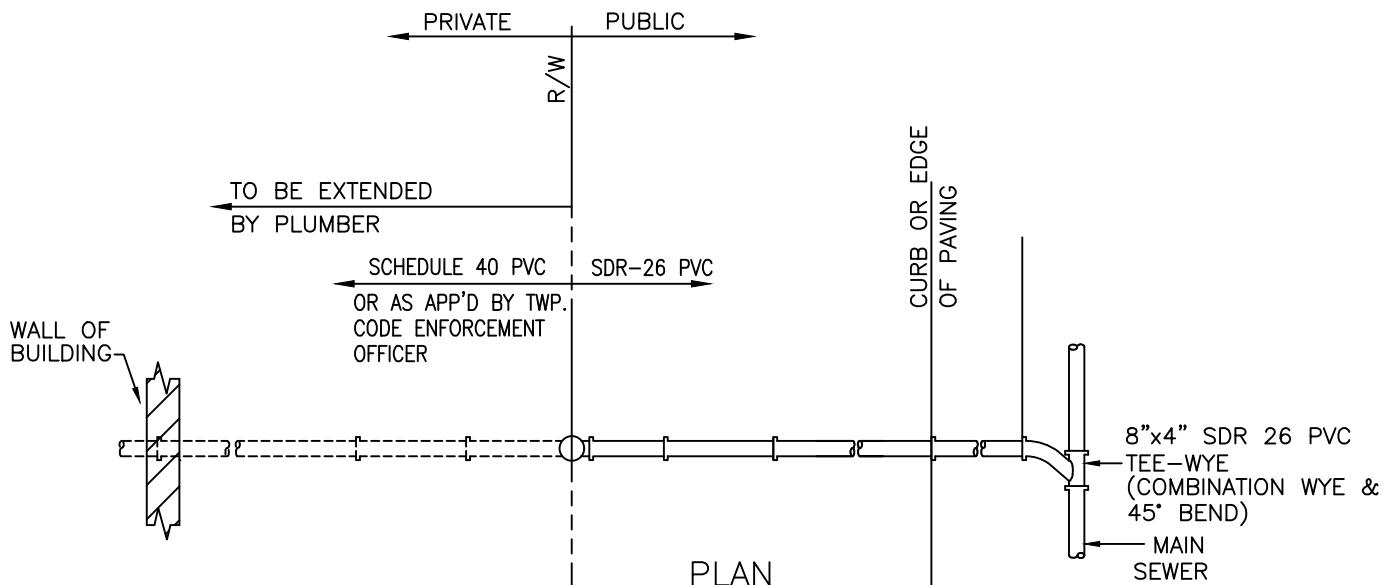


**SANITARY SEWER  
STANDARD DETAILS**

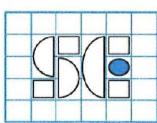
| Detail |   |                 |
|--------|---|-----------------|
| No.    | Title   | Notes           |
| 1      | Sanitary Sewer Backfill                       |                 |
| 2      | House Lateral                                 |                 |
| 3      | Saddle Connection to Existing Sewer           |                 |
| 4      | Deep-Cut Lateral Connection                   |                 |
| 5      | Concrete Encasement                           |                 |
| 6      | Sewer Protection at Pipe Crossings            |                 |
| 7      | Precast Sanitary Manhole                      |                 |
| 8      | Precast Manhole Base                          |                 |
| 9      | Precast Manhole Walls and Joints              |                 |
| 10     | Manhole Steps                                 |                 |
| 11     | Precast Manhole Top Section                   |                 |
| 12     | Standard Manhole Frame                        |                 |
| 13     | Standard Manhole Cover                        |                 |
| 14     | Watertight Manhole Frame and Cover            |                 |
| 15     | Drop Manhole                                  |                 |
| 16     | Shallow Manhole                               |                 |
| 17     | Connection to Existing Manhole                |                 |
| 18     | Doghouse Manhole                              |                 |
| 19     | Grinder Pump                                  |                 |
| 20     | Pressure Lateral Valve Assembly & Curb Box    |                 |
| 21     | Pressure Service Connection                   |                 |
| 22     | Pressure Sewer Clean-outs                     |                 |
| 23     | Pressure Sewer Air Valve Chamber              |                 |
| 24     | Pressure Sewer Junction                       | to be developed |
| 25     | Pressure Sewer Connection to Existing Manhole |                 |
| 26     | Typical Thrust Blocks                         |                 |





NOTES:

1. MINIMUM GRADE OF LATERAL =  $1/4$ " IN  $1'-0"$ , EXCEPT AS APPROVED OTHERWISE BY TOWNSHIP.
2. 48" MINIMUM COVER.
3. CLEANOUT TEE TO BE LOCATED:
  - @ ROAD RIGHT OF WAY
  - @ EDGE OF EASEMENT
  - @ AS APPROVED BY TWP.
4. MAXIMUM DEPTH OF CLEANOUT SHALL BE 8 FEET. IF NECESSARY, A DEEP CUT LATERAL CONNECTION TO THE SEWER MAIN MAY BE REQUIRED.

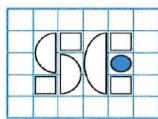
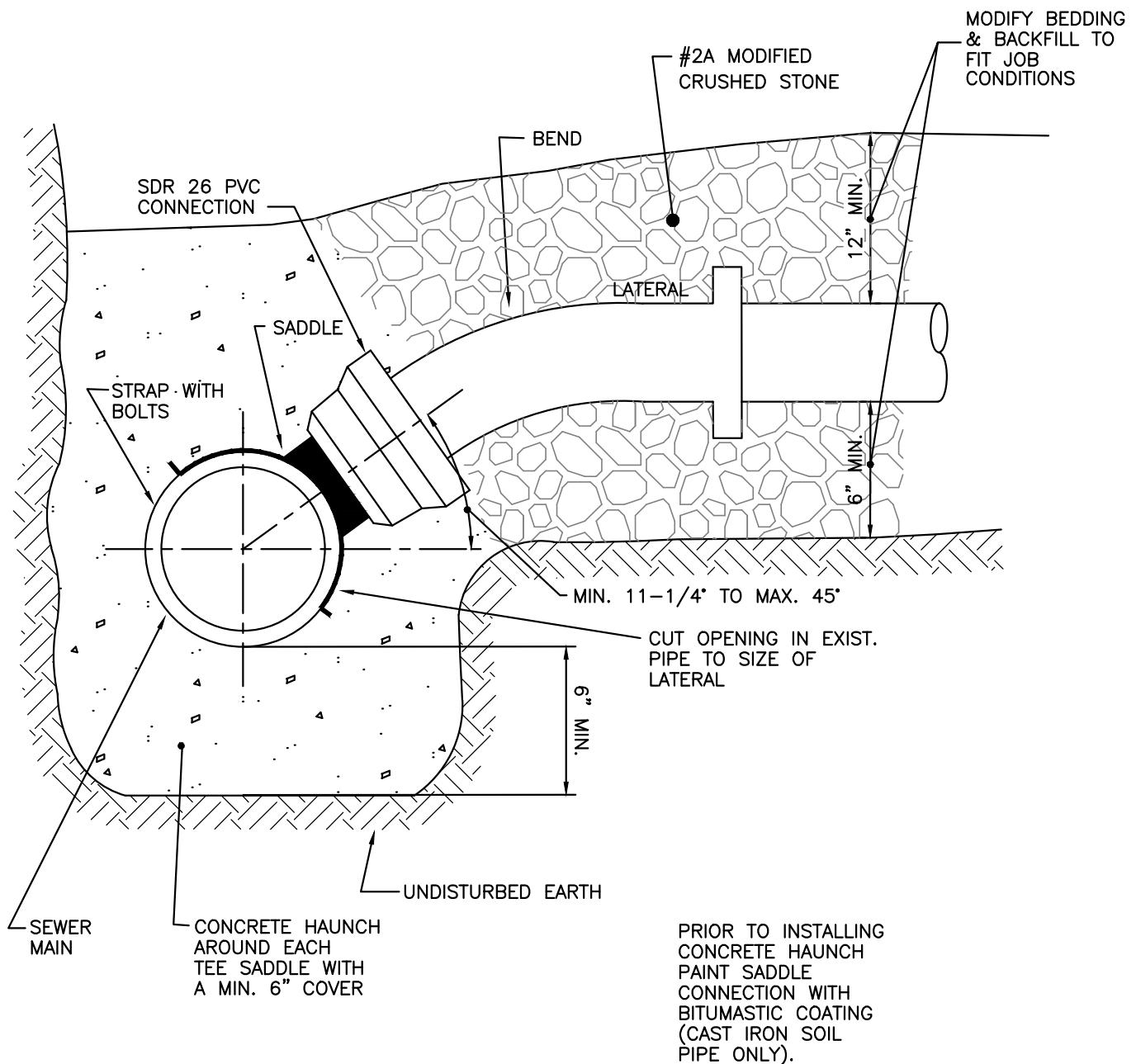


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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
**SANITARY SEWER SYSTEM**

**DETAIL # 2**  
**HOUSE LATERAL**

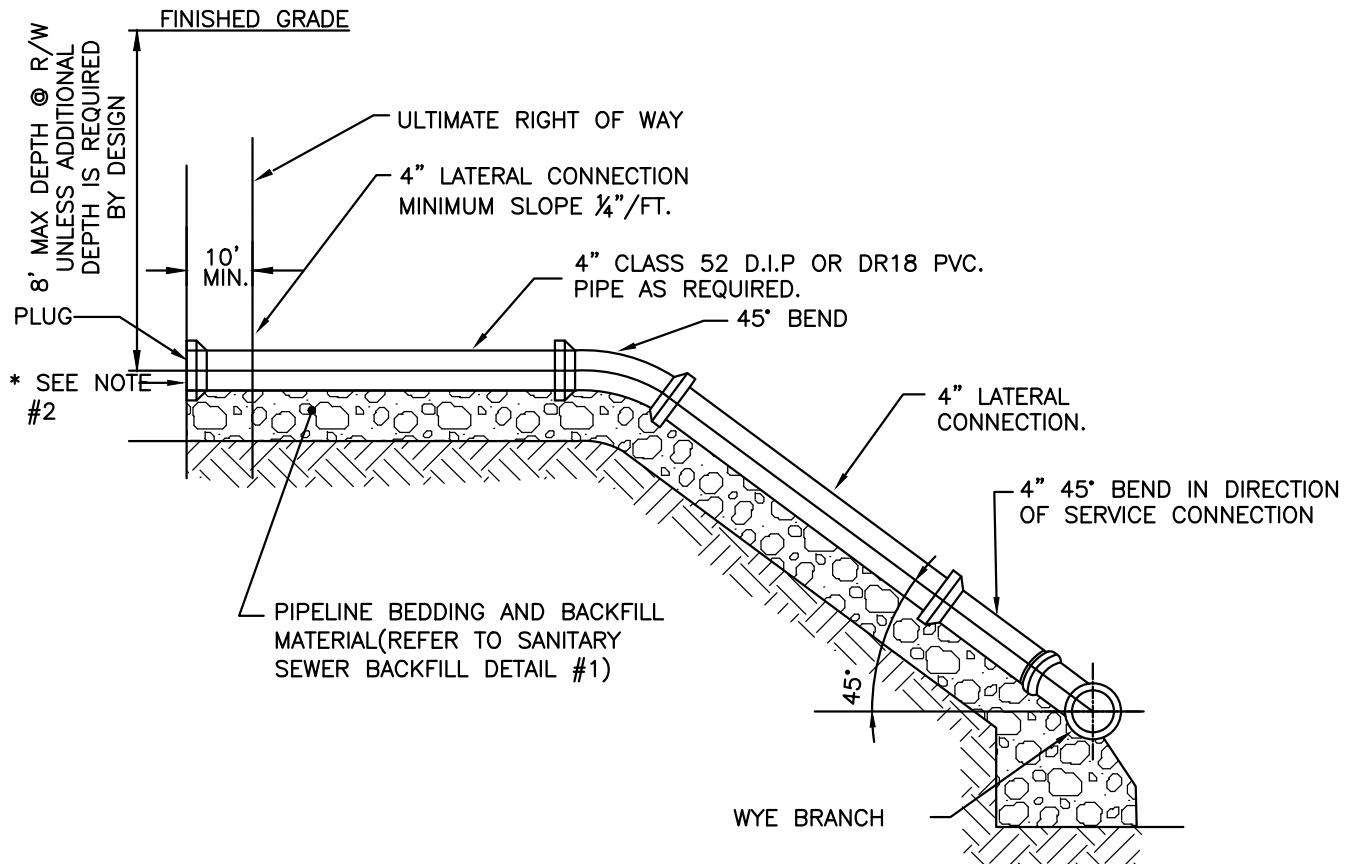


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MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

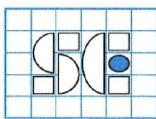
**DETAIL # 3**  
**SADDLE CONNECTION**  
(TO EXISTING SEWER)



### ELEVATION

#### NOTE:

1. 6" LATERAL TO BE EXTENDED 10 FT BEYOND ULT. R/W
2. SET 2"X 4" OAK STAKE TO EXTEND 48" ABOVE FINISHED GRADE. PAINT TOP OF STAKE GREEN, WITH LOT # OR EXISTING HOUSE # AS WELL AS DEPTH OF INVERT WRITTEN ON STAKE.

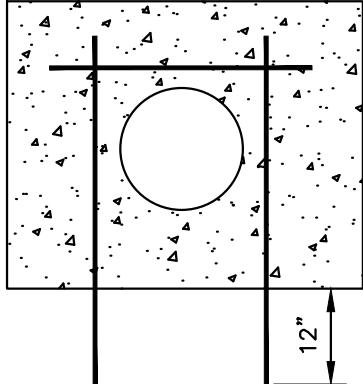
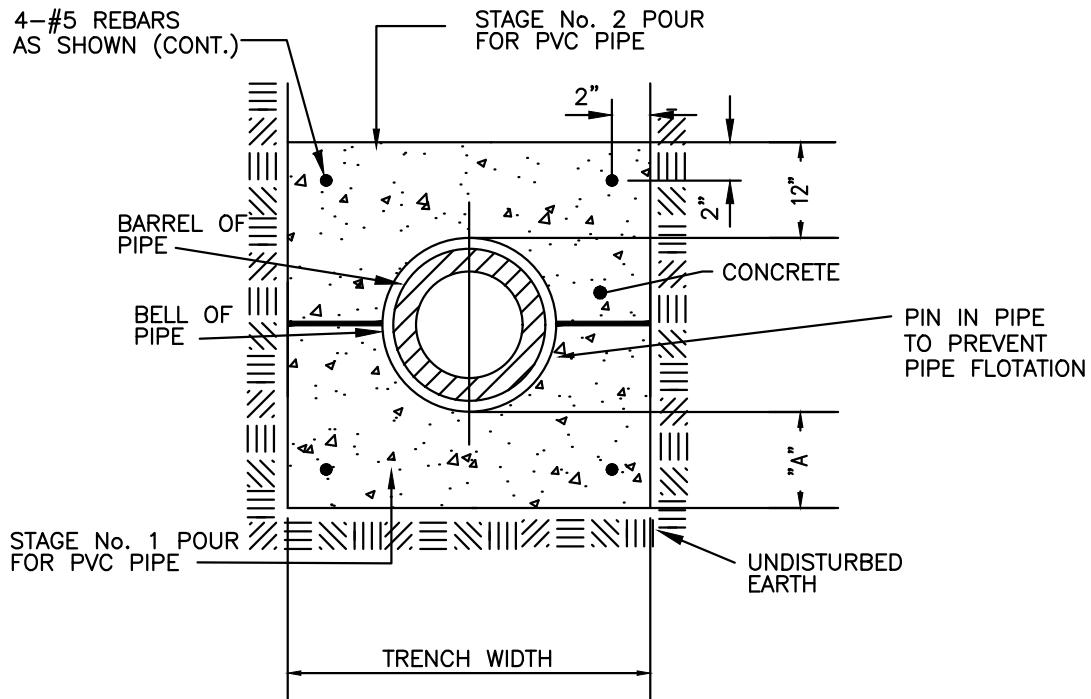


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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 4**  
**DEEP CUT LATERAL CONNECTION**



| PIPE SIZE | A   |
|-----------|-----|
| 4"-16"    | 6"  |
| 18"-48"   | 8"  |
| 54"-84"   | 10" |

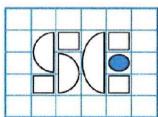
#### METHOD OF ENCASING P.V.C. PIPE IN CONCRETE

##### PIPE PINNING NOTES

1. PIN PIPE TO PREVENT PIPE FROM FLOATATION.
2. #5 REBAR SHALL BE EXTENDED VERTICALLY 12" INTO UNDISTURBED EARTH ON EITHER SIDE OF THE PIPE AT 2 FEET SPACING.
3. #5 REBAR SHALL BE PLACED HORIZONTALLY ABOVE THE PIPE AND JOINED TO THE VERTICAL REBAR WITH TIE WIRE.

STAGE No. 1—INSTALL CONCRETE FROM BOTTOM OF TRENCH TO CENTERLINE OF PIPE.

STAGE No. 2—AFTER 24 HOUR PERIOD INSTALL CONCRETE FROM CENTERLINE OF PIPE TO 12" ABOVE BARREL OF PIPE.

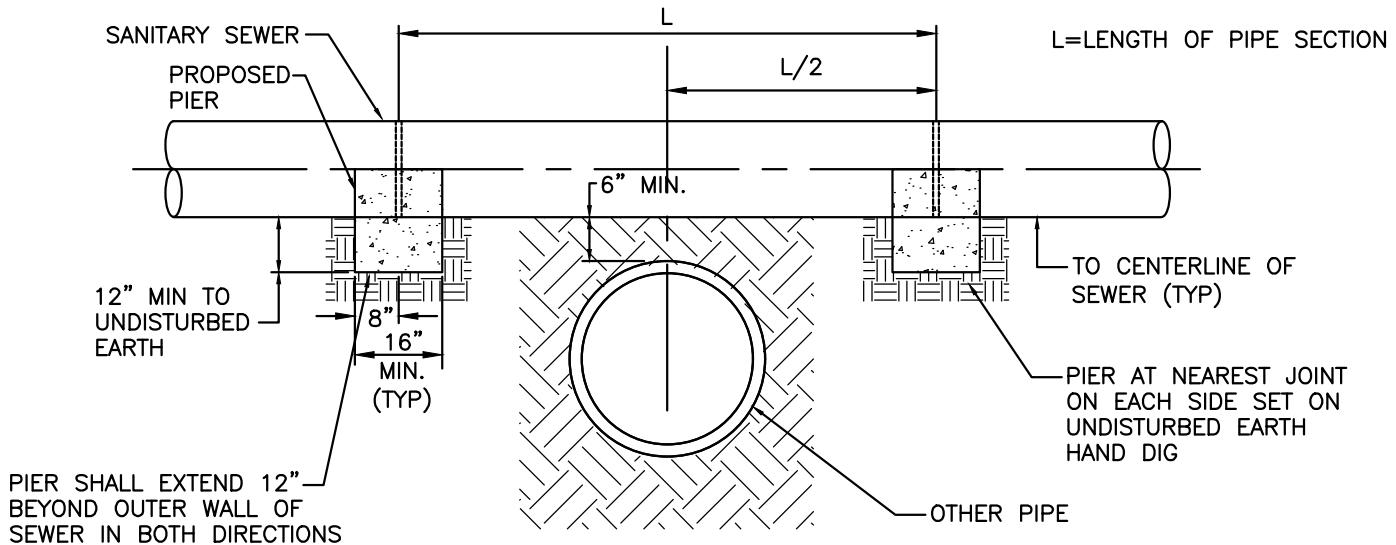


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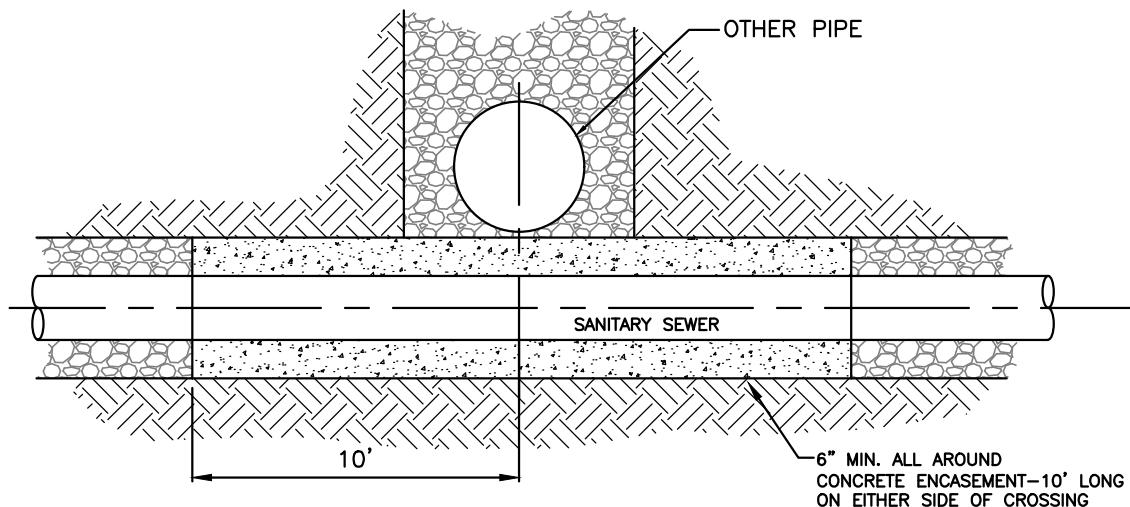
ORIGINATION DATE 2-26-21  
LAST REVISION DATE

**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 5**  
**CONCRETE**  
**ENCASEMENT**



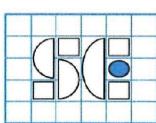
#### CROSSING ABOVE EXISTING PIPE



#### CROSSING BELOW EXISTING PIPE

##### NOTES:

1. THESE DETAILS APPLY TO CROSSINGS OF SANITARY SEWERS WITH OTHER UTILITIES, WHERE LESS THAN 18 INCHES OF VERTICAL CLEARANCE IS PROVIDED.
2. NEW PIPE(S) SHALL BE INSTALLED WITH A FULL LENGTH OF PIPE AND THE JOINTS EQUIDISTANT FROM THE CROSSING.
3. WHERE THE SANITARY SEWER IS UNDER THE OTHER UTILITY:
  - A. THE SANITARY SEWER SHALL BE CONCRETE ENCASED FOR AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING, AS SHOWN IN THE DETAIL.
  - B. WITH THE MUTUAL AGREEMENT OF THE TOWNSHIP AND OTHER UTILITY OWNER OR WHERE THE SANITARY SEWER IS EXISTING, CONCRETE SUPPORTS BEHIND THE OTHER UTILITY, AS SHOWN IN THE DETAIL, CAN BE USED RATHER THAN CONCRETE ENCASEMENT OF THE SANITARY SEWER.
4. WHERE THE SANITARY SEWER IS ABOVE THE OTHER UTILITY:
  - A. STRUCTURAL CONCRETE SUPPORTS SHALL BE PROVIDED BEHIND THE CENTER LINE OF THE SANITARY SEWER, AS SHOWN IN THE DETAIL.
  - B. IF THE OTHER UTILITY IS EXISTING, THE PIPE OWNER, WITH THE MUTUAL AGREEMENT OF THE TOWNSHIP, MAY CHOOSE TO MAINTAIN THE EXISTING BACKFILL ABOVE THE PIPE, RATHER THAN PLACE CONCRETE ABOVE THE CENTER LINE OF THE PIPE, AS SHOWN IN THE DETAIL.
5. IF THE SANITARY SEWER IS PROPOSED, MECHANICAL-JOINT DUCTILE IRON PIPE, OR OTHER PIPE AS APPROVED BY THE TOWNSHIP, SHALL BE USED FOR AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING.
6. CONCRETE ENCASEMENT OR CONCRETE BACKFILL SHALL BE IN ACCORDANCE WITH THE APPROPRIATE DETAIL.

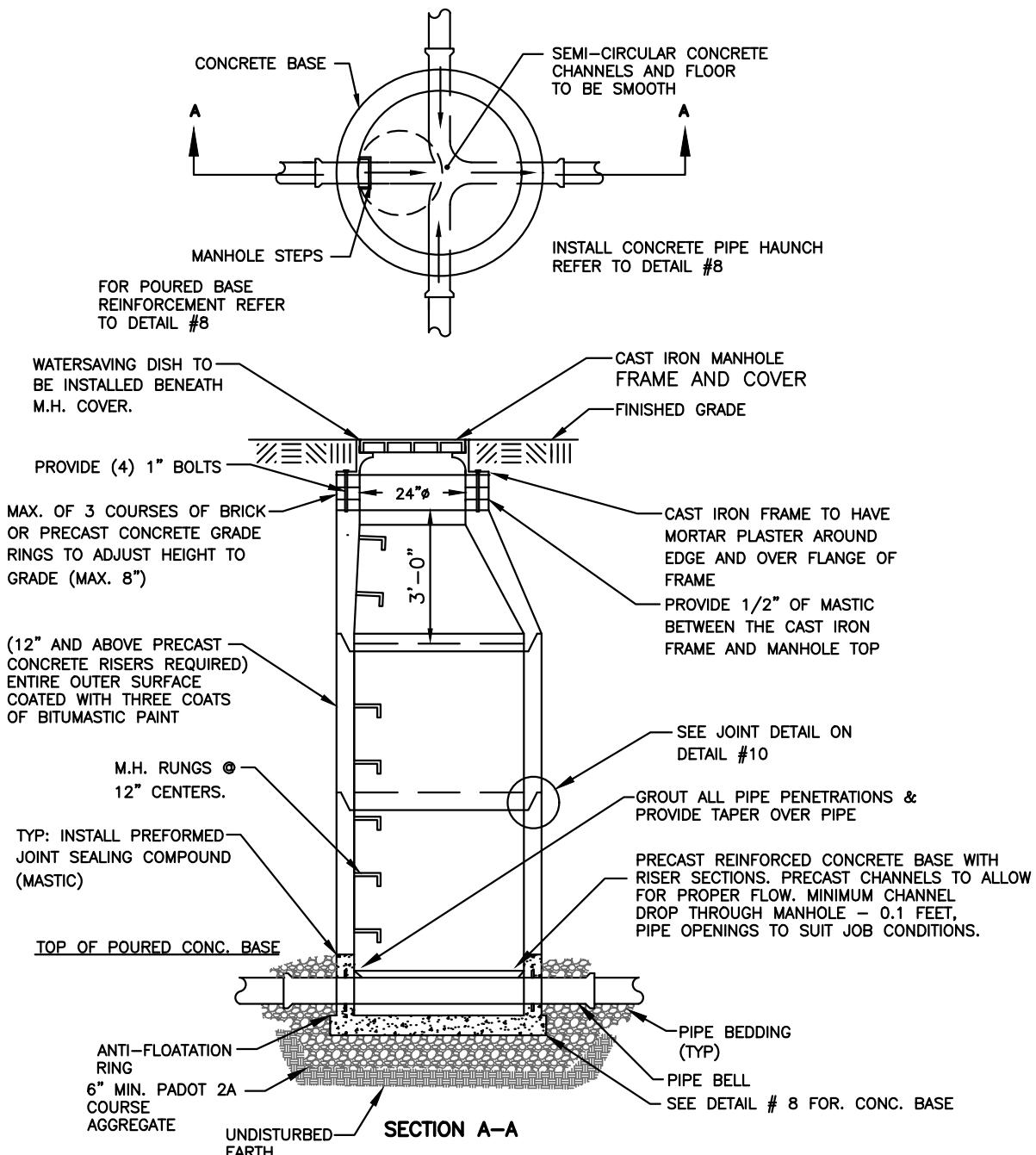


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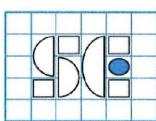
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 6**  
**SEWER PROTECTION**  
**AT PIPE CCROSSINGS**



NOTE

1. STEEL TEMPLATE TO BE SUPPLIED BY MANHOLE MFR. IN ORDER TO FORM PROPER RECESS IN CONCRETE.
2. RISER TO BE MULTIPLE LENGTHS OF 1'-0", IN ORDER TO SUIT VARIATIONS IN ELEVATION.
3. CONSTRUCT IN ACCORDANCE WITH PENNDOT PUBLICATION 408 CURRENT EDITION SECTION 714; AND ASTM C-478M-90. STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS AS MODIFIED HEREIN.
4. MINIMUM CONCRETE COMPRESSIVE STRENGTH:  
CAST IN PLACE 4000 PSI  
PRECAST 4000 PSI
5. PROVIDE STEEL REINFORCEMENT IN ACCORDANCE WITH ASTM A-185.
6. MANHOLE COATINGS: EXTERIOR COATING; COOPER BLACK NO. 760 TOP SERVICE BLACK AS MANUFACTURED BY COOPERS CREEK CHEMICAL CORP. APPROVED EQUAL. AT LEAST THREE (3) COATS SHALL BE APPLIED GIVING A TOTAL DRY FILM THICKNESS OF A MINIMUM 32.0 MILS. INTERIOR COATING: SHERWIN WILLIAMS MACRO POXY 646 WHITE. AT LEAST TWO (2) COATS SHALL BE APPLIED GIVING A TOTAL DRY THICKNESS OF A MINIMUM 12-14 MILS.
7. MANHOLES SHALL BE CONSTRUCTED WITH STEPS. REFER TO WHITPAIN TOWNSHIP DETAIL #15 FOR SPEC. OF STEPS.
8. MANHOLES SHALL BE TESTED AFTER FINAL WEARING COURSE INSTALLATION IN ACCORDANCE WITH SPECIFICATIONS SECTION 02560.

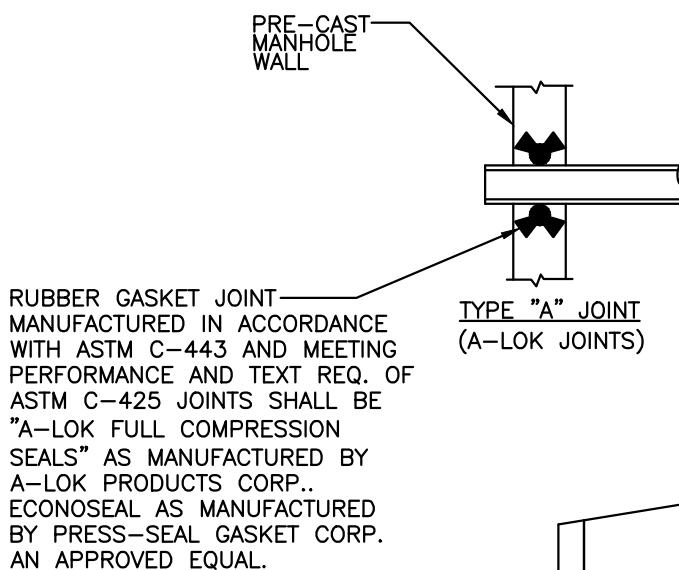


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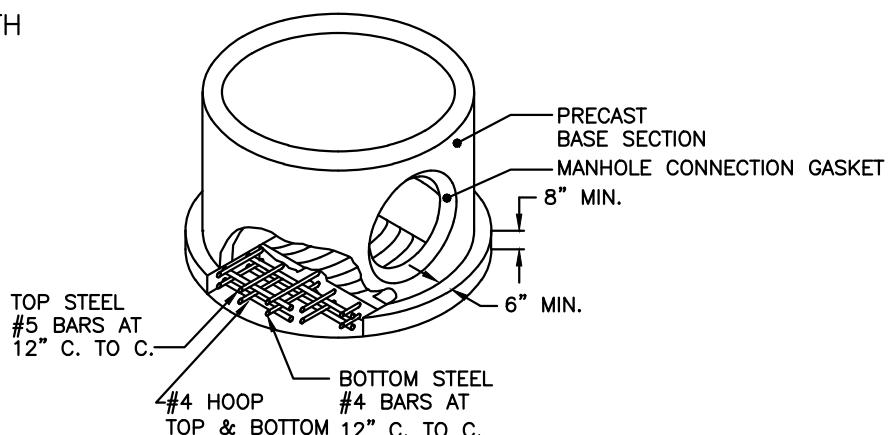
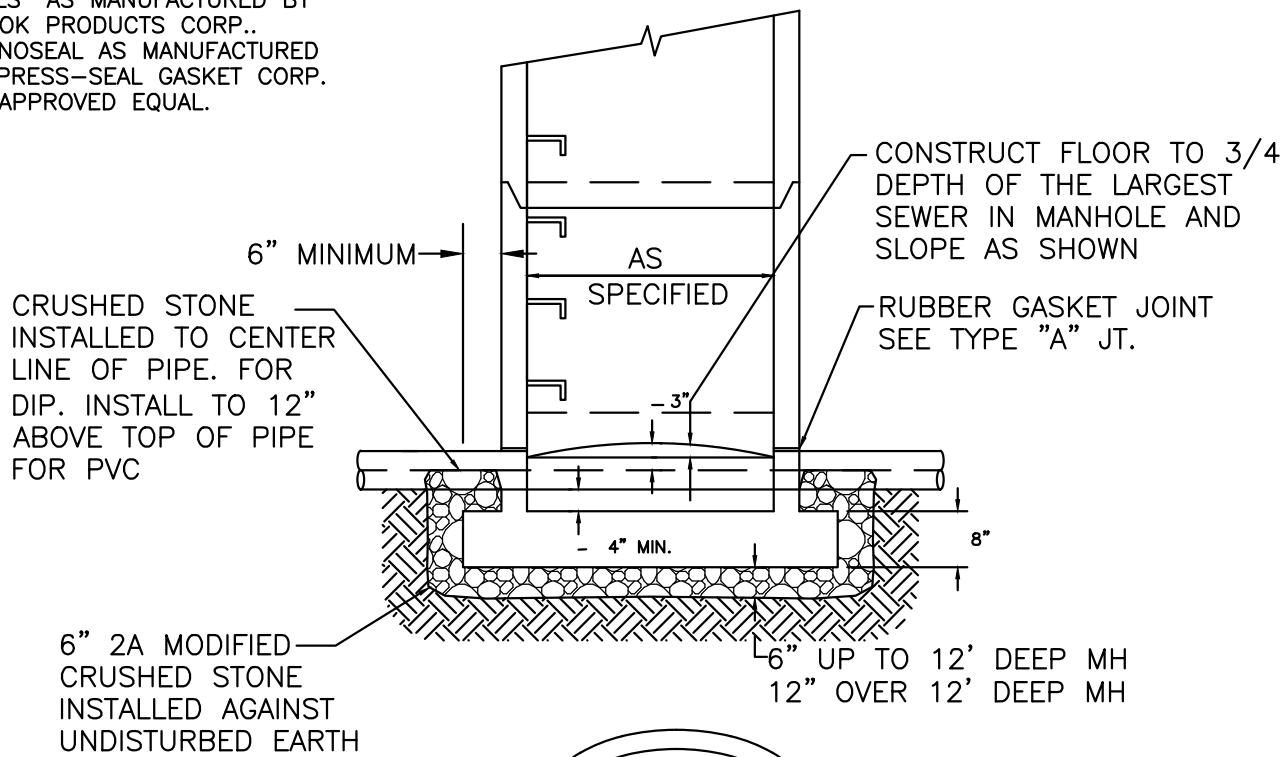
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 7**  
**PRECAST SANITARY**  
**MANHOLE**

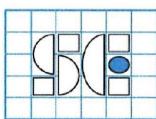


NOTES:

- 1) CONSTRUCT IN ACCORDANCE WITH PENNDOT PUBLICATION 408 CURRENT EDITION SECTION 714. AND ASTM C-478M-90. AND PENNDOT RC STANDARDS CURRENT EDITION.
- 2) MINIMUM STRENGTH OF CONCRETE CAST-IN-PLACE 4000 PSI(MIN.) PRECAST 4000 PSI(MIN.)
- 3) PROVIDE STEEL REINFORCEMENT MEETING THE REQUIREMENTS OF PENNDOT PUBLICATION 408 CURRENT EDITION SEC. 709. REINFORCE PER PENNDOT 408 CURRENT EDITION AND RC STANDARD RC-39M SHEETS 1 THROUGH 5.
- 4) FLOW CHANNEL TO BE PRECAST INTO MANHOLE BASE.
- 5) MANHOLE CONNECTION SHALL BE A-LOK OR PRESS-SEAL ECONOSEAL PER ASTM C-923.



REBAR DETAIL

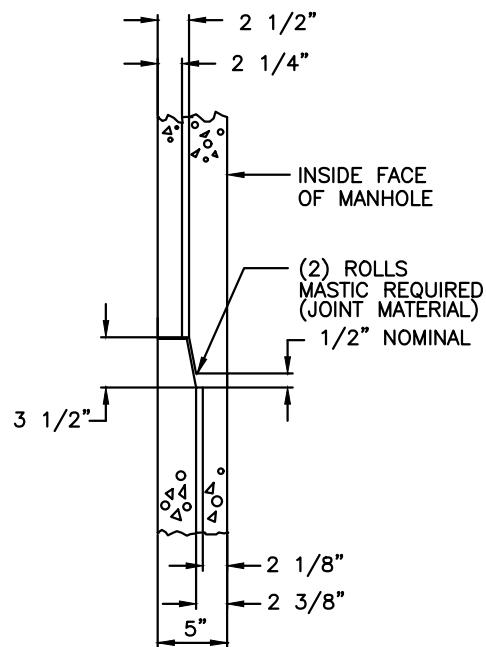
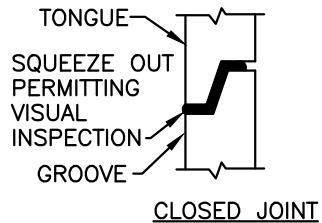
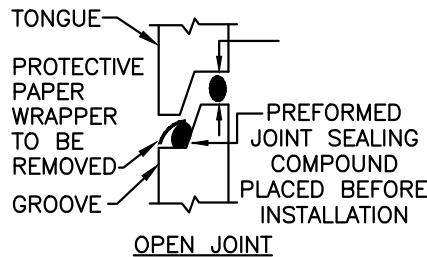


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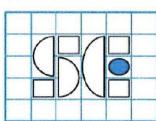
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 8**  
**PRECAST MANHOLE**  
**BASE**



| MANHOLE |      |
|---------|------|
| PIPE    | I.D. |
| 8"-15"  | 4 FT |
| 18"-24" | 5 FT |
| 27"-36" | 6 FT |
|         | 7"   |

WALL SECTION

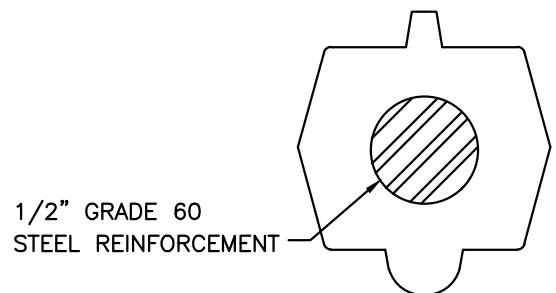
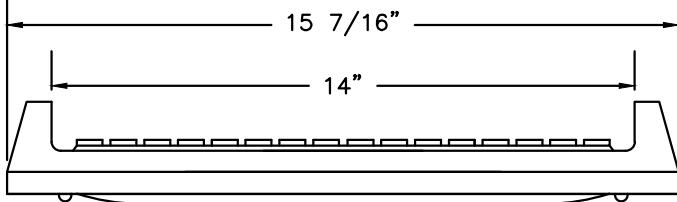
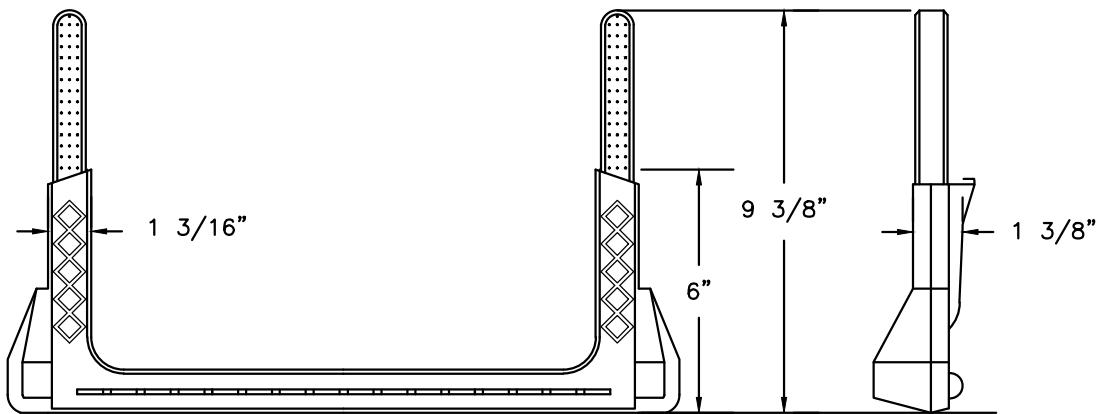


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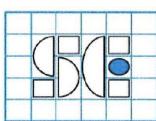
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 9**  
**PRE-CAST MANHOLE**  
**WALLS & JOINTS**



NOTES:

1. MANHOLE STEP SHALL CONFORM TO ASTM C-478.
2. MANHOLE STEPS ARE TO BE MADE OF COPOLYMER POLYPROPYLENE, CONFORMING TO ASTM D-4141-95B PP0344B3353Z202.
3. THE STEEL TO BE USED IN MANUFACTURING OF THIS PRODUCT TO BE DEFORMED  $\frac{1}{2}$ " REINFORCING ROD. THIS MATERIAL TO BE GRADE 60 AND CONFORM TO ALL THE REQUIREMENTS OF ASTM A-615.
4. MANHOLE STEPS SHALL BE TYPE PS2-B. AS MANUFACTURED BY M.A. INDUSTRIES OR APPROVED EQUAL.



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**WHITPAIN TOWNSHIP**  
*MONTGOMERY, COUNTY, PA.*  
**SANITARY SEWER SYSTEM**

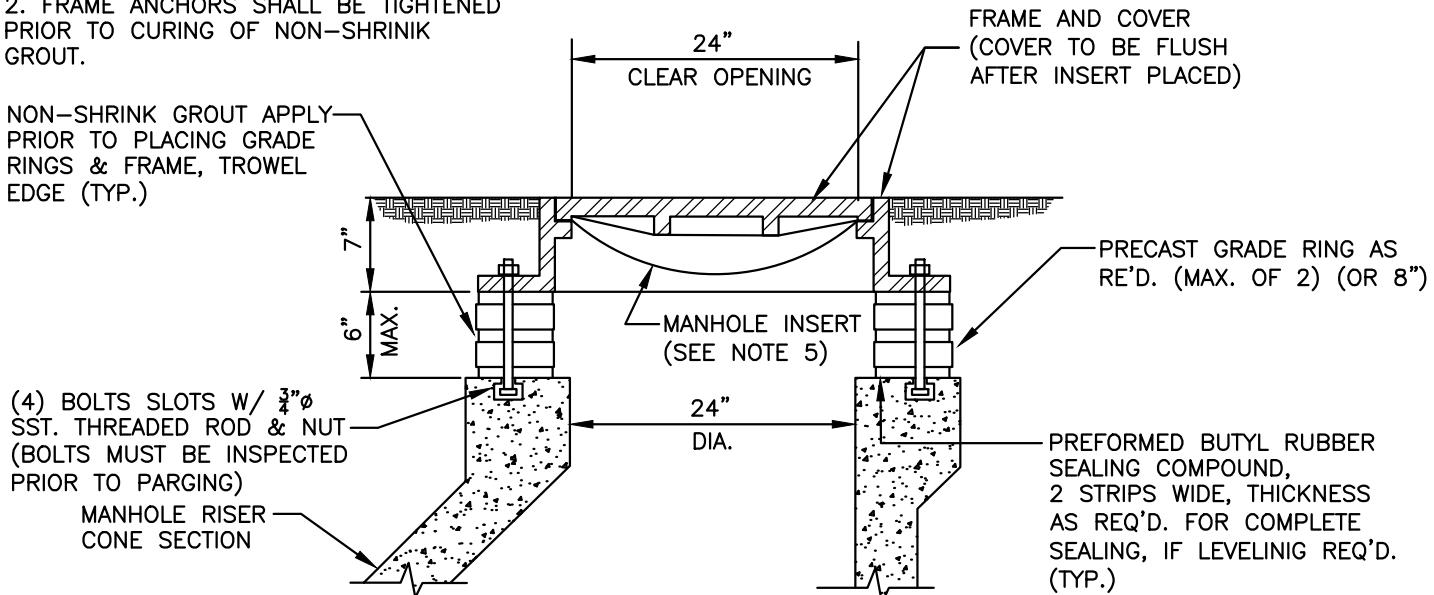
**DETAIL # 10**  
**MANHOLE STEPS**

**NOTES:**

1. ANCHOR BOLT HOLES SHALL BE DRILLED WITH A PERCUSSION OR ROTARY HAMMER DRILL UTILIZING A CARBIDE DRILL BIT. CORE DRILLING, OR ROTATIONAL ONLY DRILLING OF ANY KIND IS NOT ALLOWED.

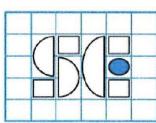
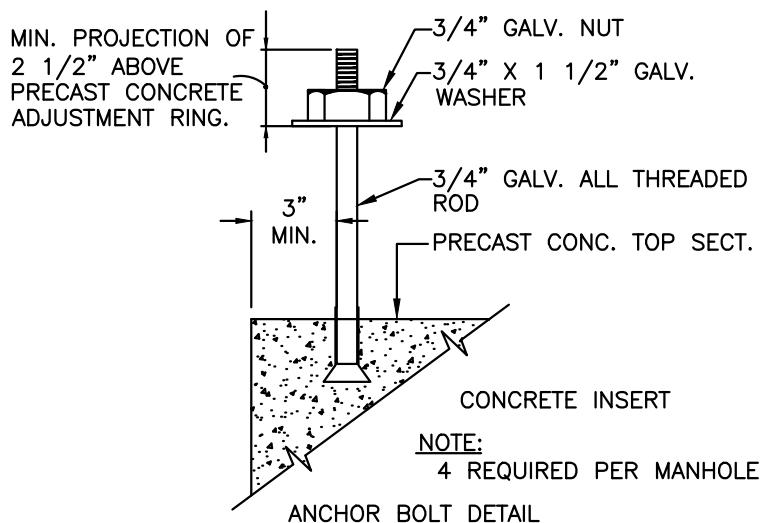
2. FRAME ANCHORS SHALL BE TIGHTENED  
PRIOR TO CURING OF NON-SHRINK  
GROUT.

NON-SHRINK GROUT APPLIED  
PRIOR TO PLACING GRADE  
RINGS & FRAME, TROWEL  
EDGE (TYP.)



## NOTES:

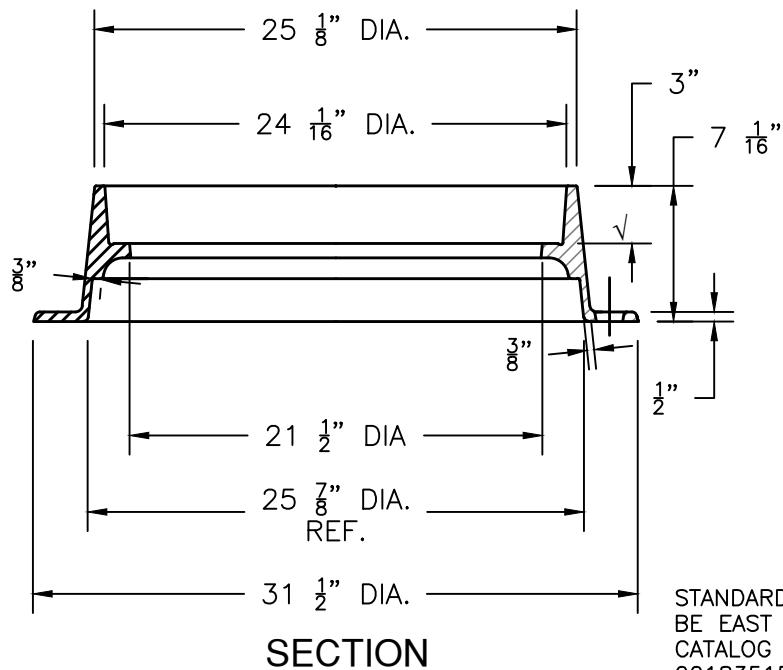
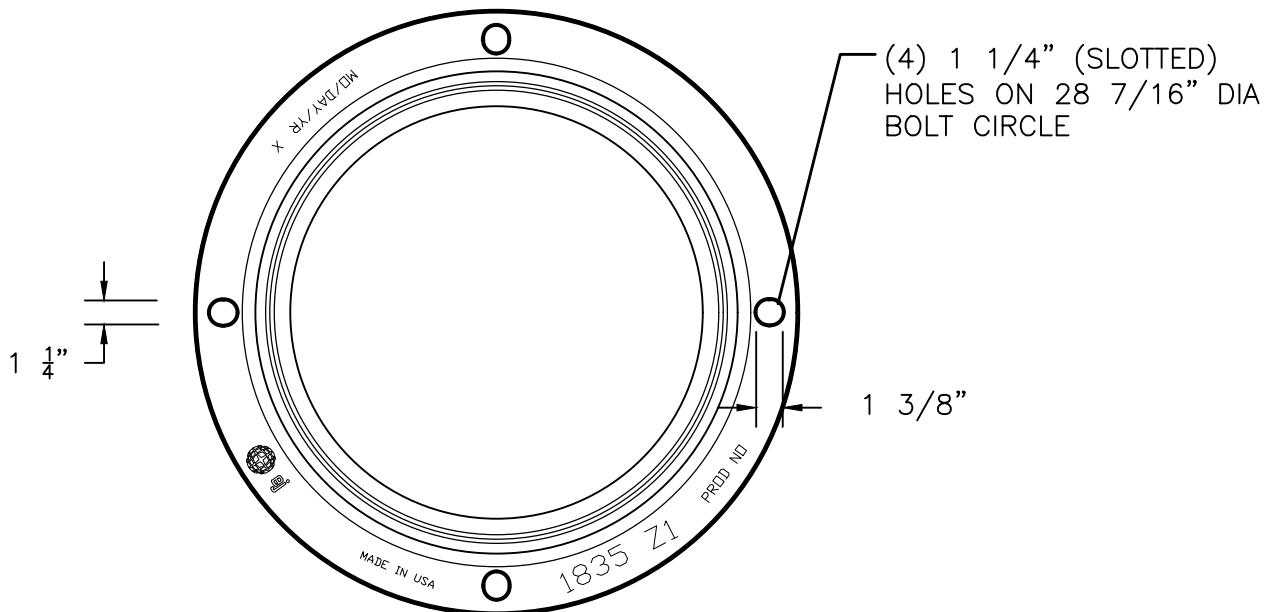
1. MANHOLE INSERT NOT REQUIRED FOR WATERTIGHT MANHOLE FRAME & COVER.
2. FRAME & COVER SHALL BE DESIGNED FOR AASHTO HS-25 LOADING.
3. MANHOLE INSERTS REQUIRED FOR ALL STANDARD FRAMES & COVERS.  
FRAMES SHALL BE SPECIALLY MACHINED TO ACCOMODATE INSERT SO THAT  
TOP OF COVER IS EVEN WITH TOP OF FRAME WHEN INSERT IS INSTALLED.
4. WATERSAVING DISH TO BE INSTALLED BENEATH MANHOLE COVER.
5. INSTALL MANHOLE ENCAPSULATION SYSTEM. EXTEND 3"-4" MINIMUM ONTO  
MANHOLE FRAME AND CONE SECTION COVERING JOINTS ON MANHOLE GRADE  
ADJUSTMENT RINGS. MANUFACTURED BY CANUSA-CPS.



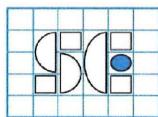
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**WHITPAIN TOWNSHIP**  
*MONTGOMERY, COUNTY, PA.*  
**SANITARY SEWER SYSTEM**

DETAIL # 11  
PRECAST MANHOLE  
TOP SECTION



STANDARD MANHOLE FRAMES SHALL  
BE EAST JORDAN IRON WORKS:  
CATALOG 1835Z1, PRODUCT NUMBER  
00183515, OR APPROVED EQUAL.

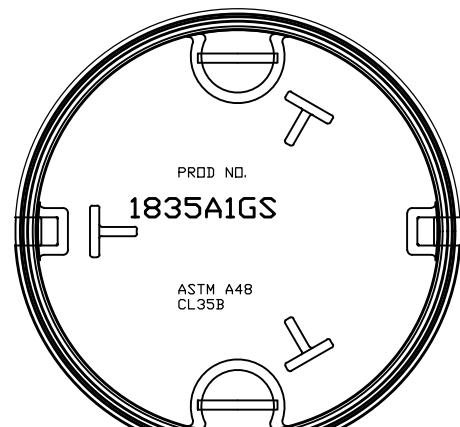
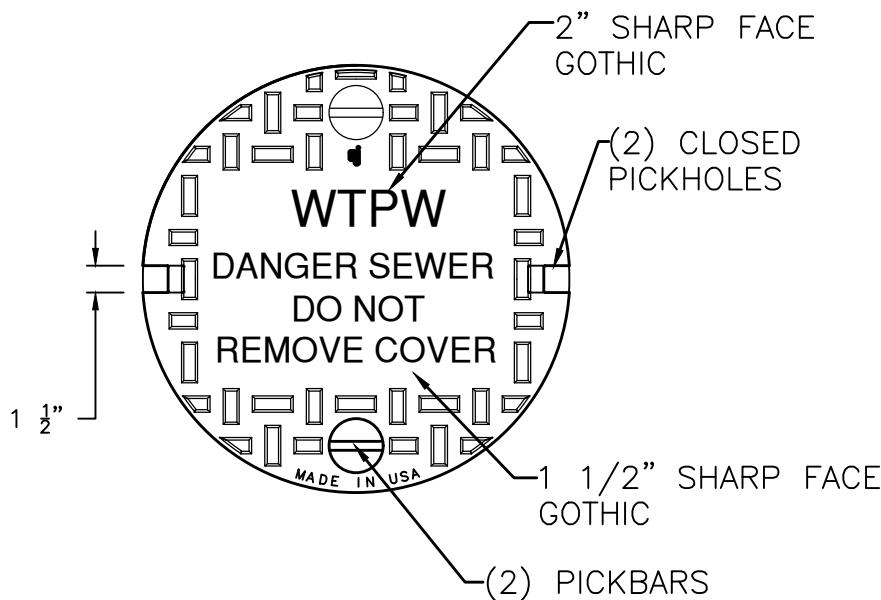


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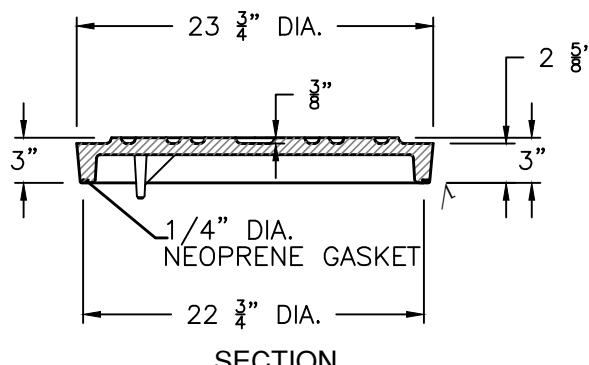
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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

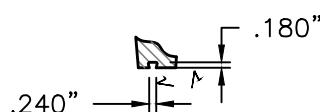
**DETAIL # 12**  
**STANDARD MANHOLE**  
**FRAME**



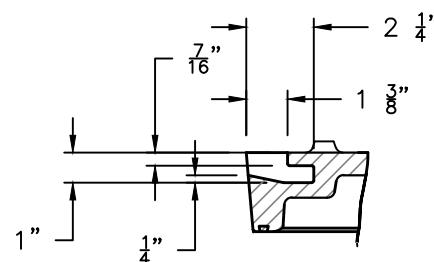
BOTTOM VIEW



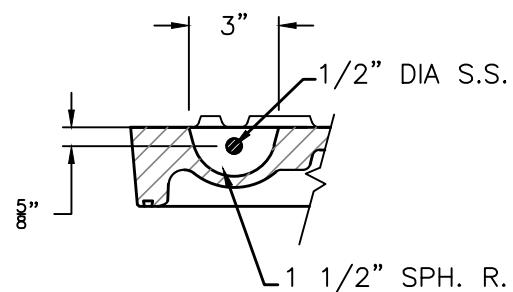
SECTION



GASKET DETAIL

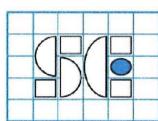


PICKHOLE DETAIL



PICKBAR DETAIL

STANDARD MANHOLE COVERS  
SHALL BE EAST JORDAN IRON  
WORKS: CATALOG 1835A1GS,  
PRODUCT NUMBER 00183549,  
OR APPROVED EQUAL

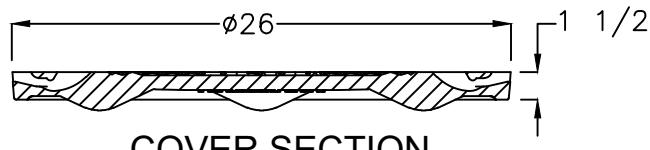
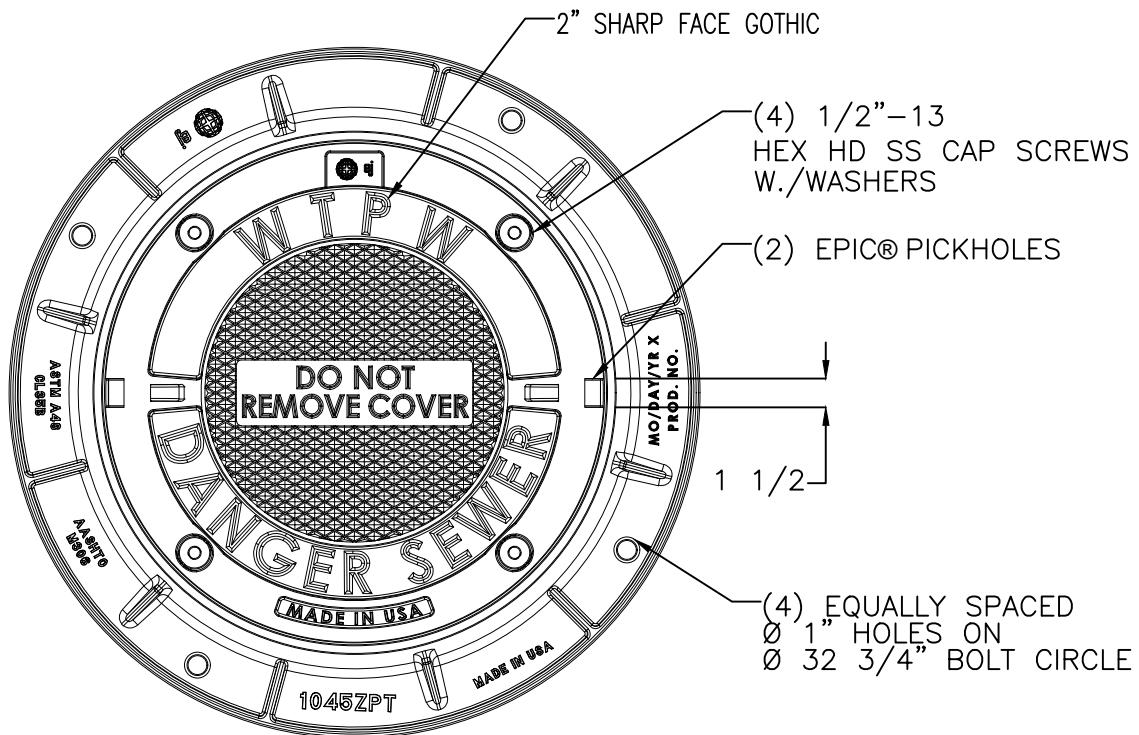


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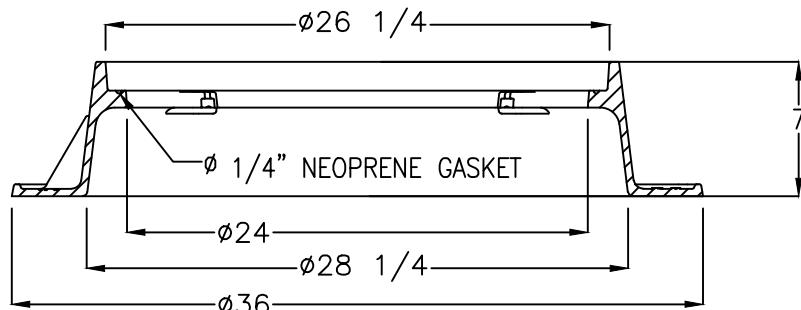
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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 13**  
**STANDARD**  
**MANHOLE COVER**

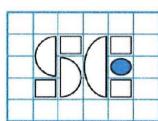


COVER SECTION



FRAME SECTION

WATERTIGHT MANHOLE FRAME AND COVER ASSEMBLIES SHALL BE EAST JORDAN IRON WORKS: CATALOG 1040APT/1045ZPT, PRODUCT NUMBER 00104637, OR APPROVED EQUAL



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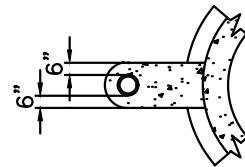
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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

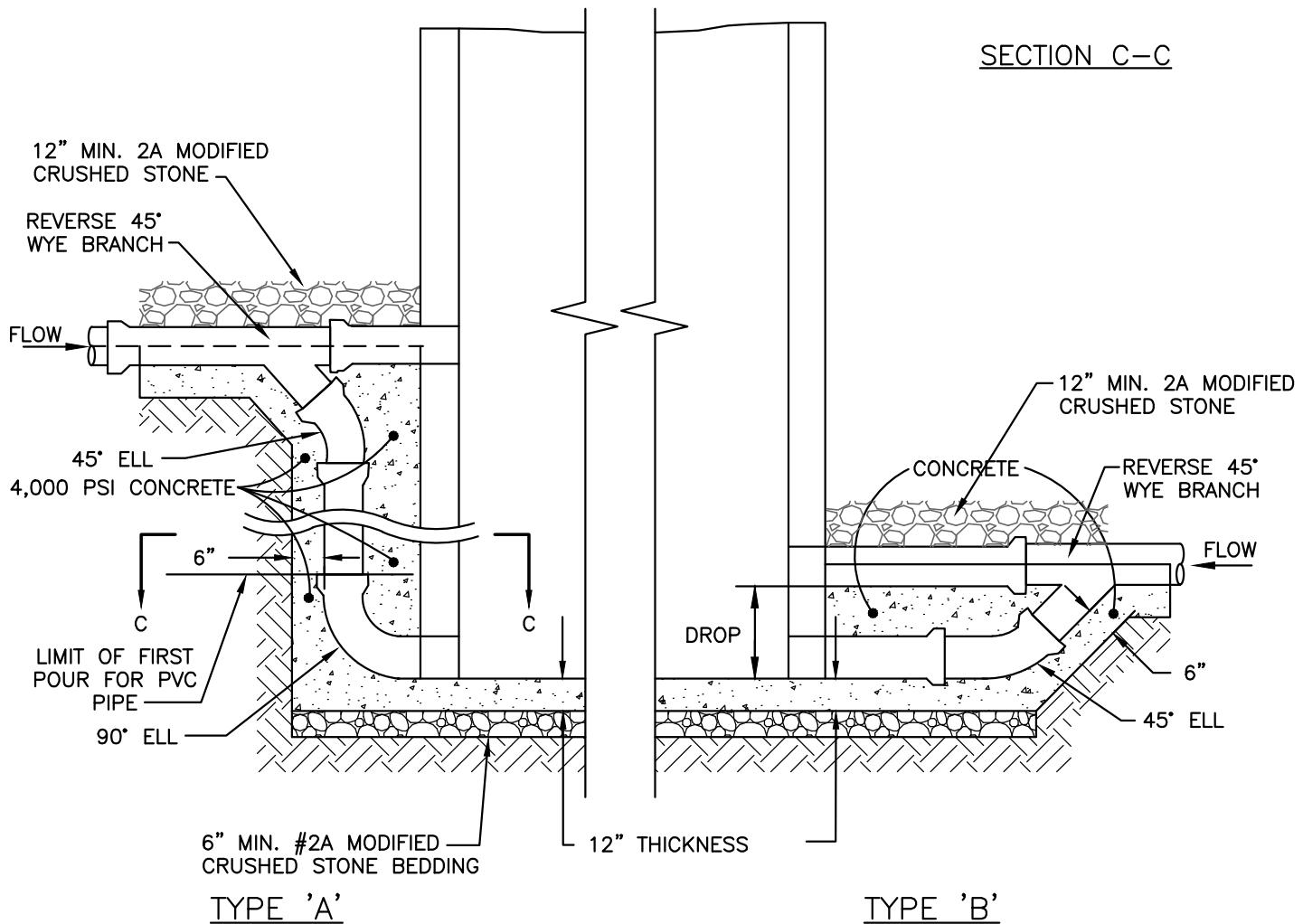
**DETAIL # 14**  
**WATERTIGHT MANHOLE**  
**FRAME & COVER**

**NOTES:**

- 1) IN LIEU OF BELLS, PROVIDE MECH. JOINTS FOR DROP ASSEMBLY WHERE D.I. PIPE IS SPECIFIED.
- 2) FOR Poured BASE REINFORCEMENT REFER TO DETAIL #8.



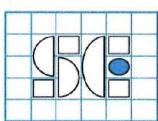
SECTION C-C



OPTION: ATLANTIC CONCRETE PRE-CAST  
DROP ASSEMBLIES MAY BE USED.

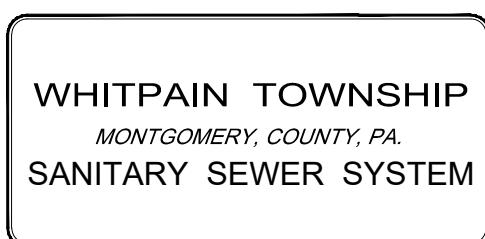
TYPE B DROP  
MINIMUM DROP

8" SEWER 15.5"  
 10" SEWER 18.2"  
 12" SEWER 22"  
 15" SEWER 25.2"



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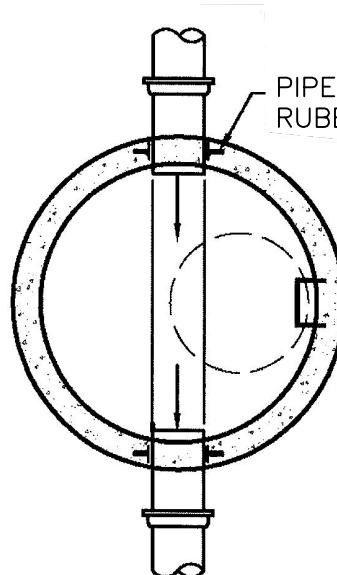


**DETAIL # 15**

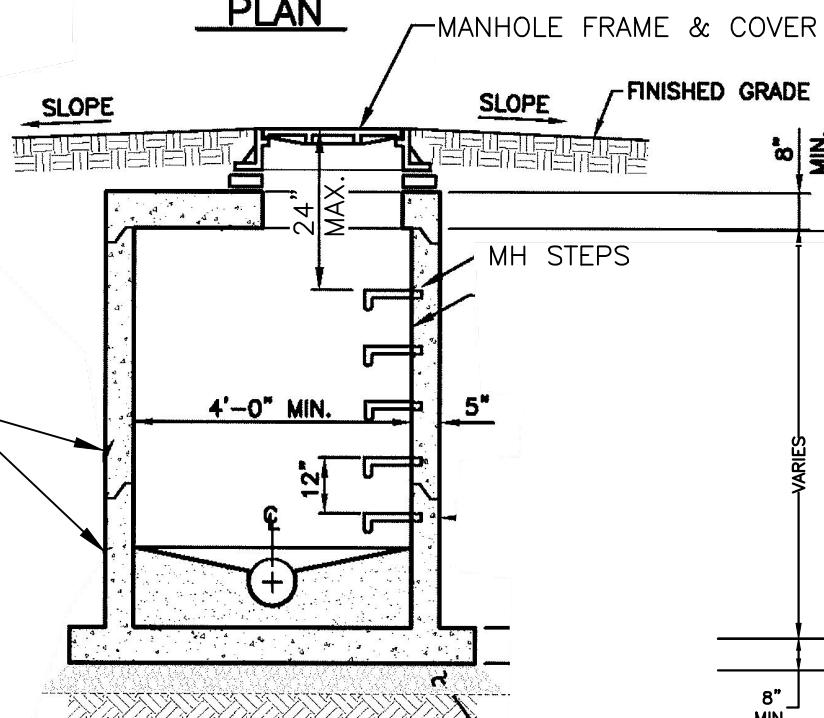
**DROP MANHOLE**

NOTES:

1. THIS STRUCTURE SHALL BE USED FOR ALL SHALLOW GRAVITY SANITARY SEWER MANHOLES LESS THAN 5 FEET DEEP.
2. ALL OTHER REQUIREMENTS FOR PRECAST MANHOLE, AS SPECIFIED ON OTHER DETAILS, SHALL APPLY.

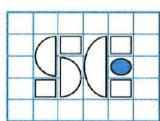


PLAN



PRECAST REINFORCED CONCRETE BASE WITH RISER SECTIONS. PRECAST CHANNELS TO ALLOW FOR PROPER FLOW. MINIMUM CHANNEL DROP THROUGH MANHOLE - 0.1 FEET. PIPE OPENINGS CAST TO SUIT JOB CONDITIONS.

SECTION



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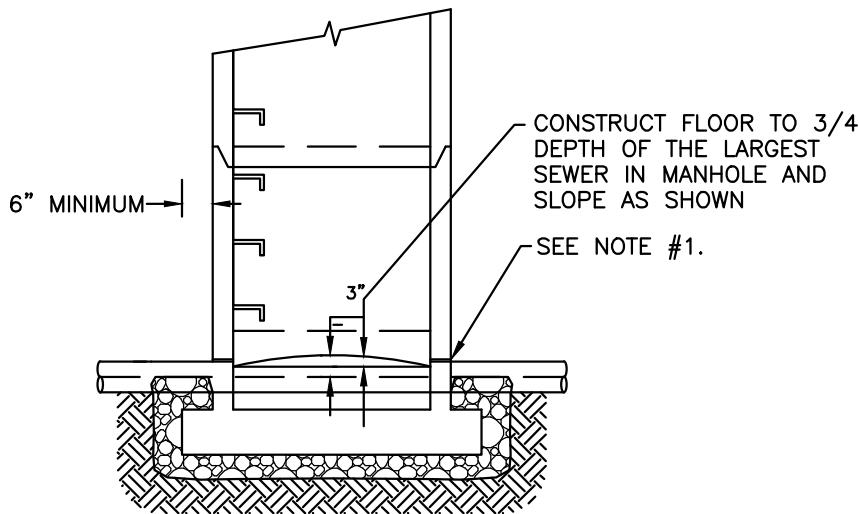
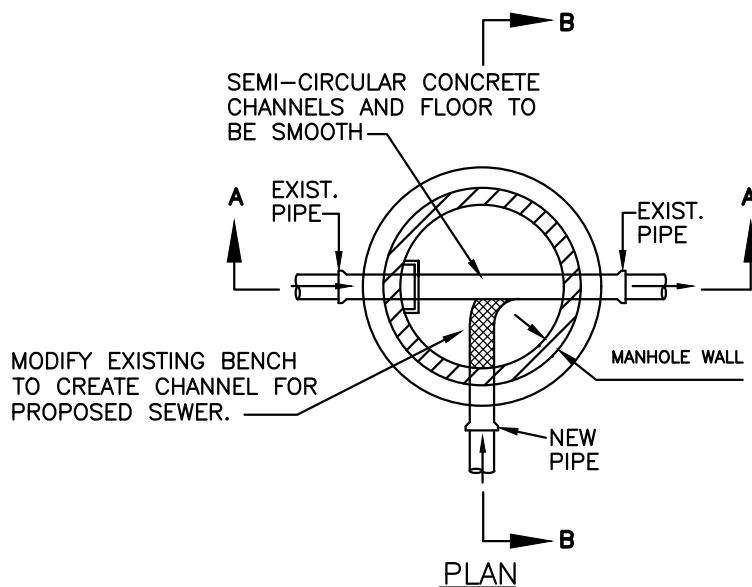
ORIGINATION DATE 2-26-21  
LAST REVISION DATE

**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

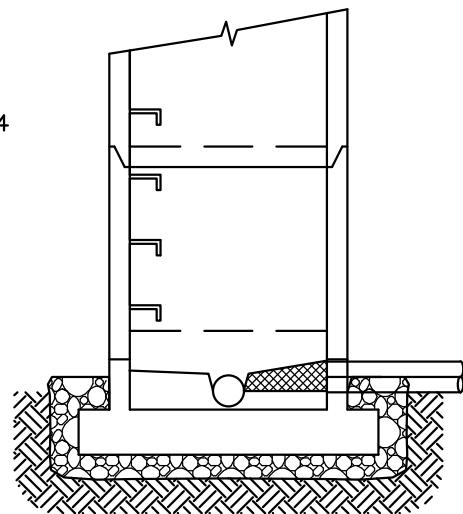
DETAIL # 16

SHALLOW MANHOLE

NOT TO SCALE



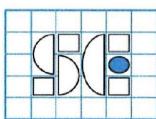
SECTION A-A



SECTION B-B

NOTES:

- 1) CORE DRILL HOLE INTO EXISTING MANHOLE WALL.
- 2) PIPE CONNECTION SHALL BE LINK-SEAL, OR FOR PVC PIPE, THE CONNECTION SHALL BE SEALED WITH PRESS-SEAL PSX; POSITIVE SEAL OR TRELLEBORG KOR-N-SEAL
- 3) RESHAPE AND OR RECONSTRUCT EXISTING CHANNEL FOR NEW FLOW PATTERN.

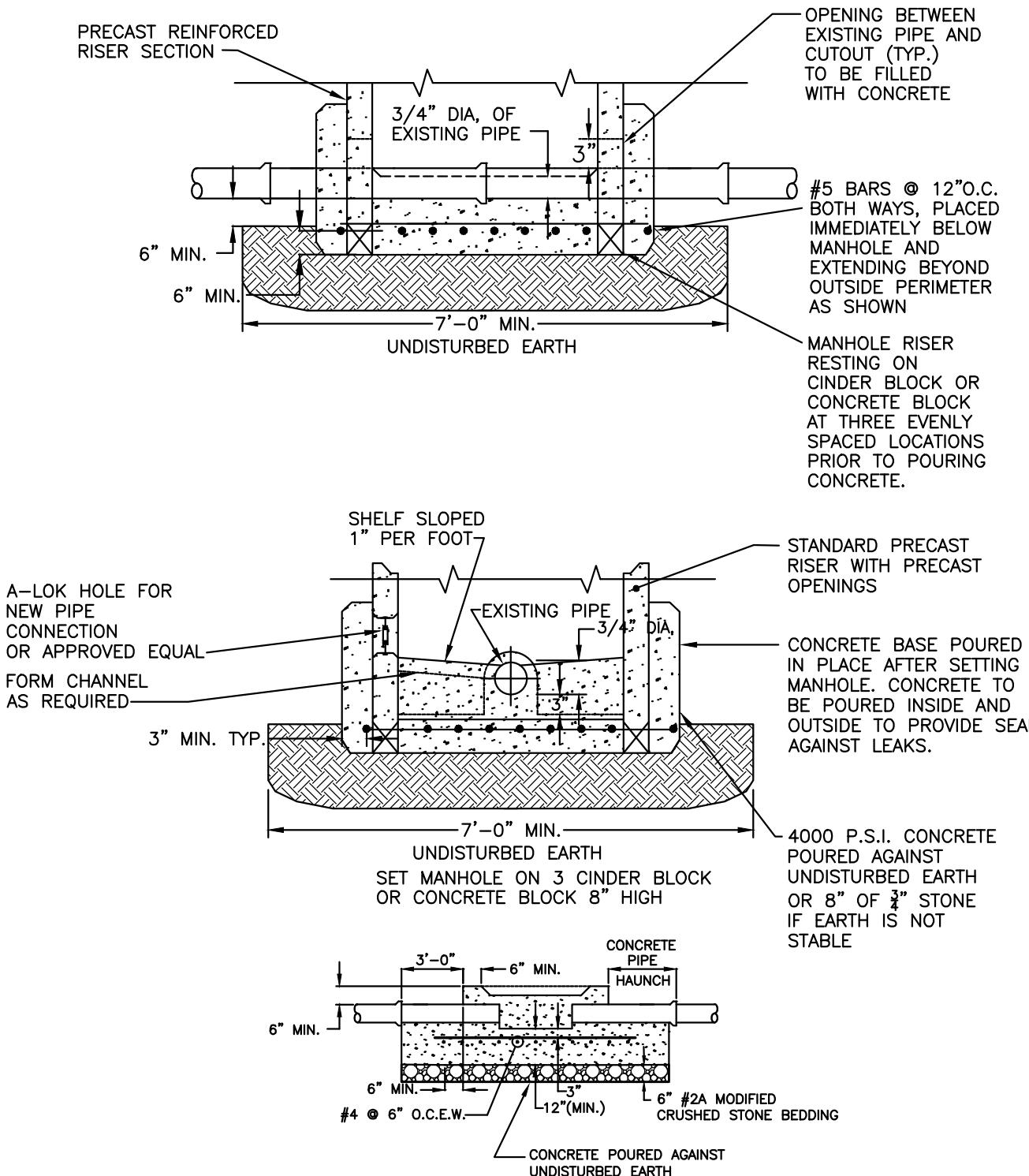


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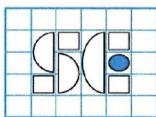
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 17**  
**CONNECTION TO**  
**EXISTING MANHOLE**



**NOTE:**

1. EXISTING PIPE TO REMAIN UNTIL SATISFACTORY COMPLETION OF MANHOLE TESTING
2. REMOVE CROWN OF EXISTING PIPE FLUSH WITH CONCRETE SHELF.



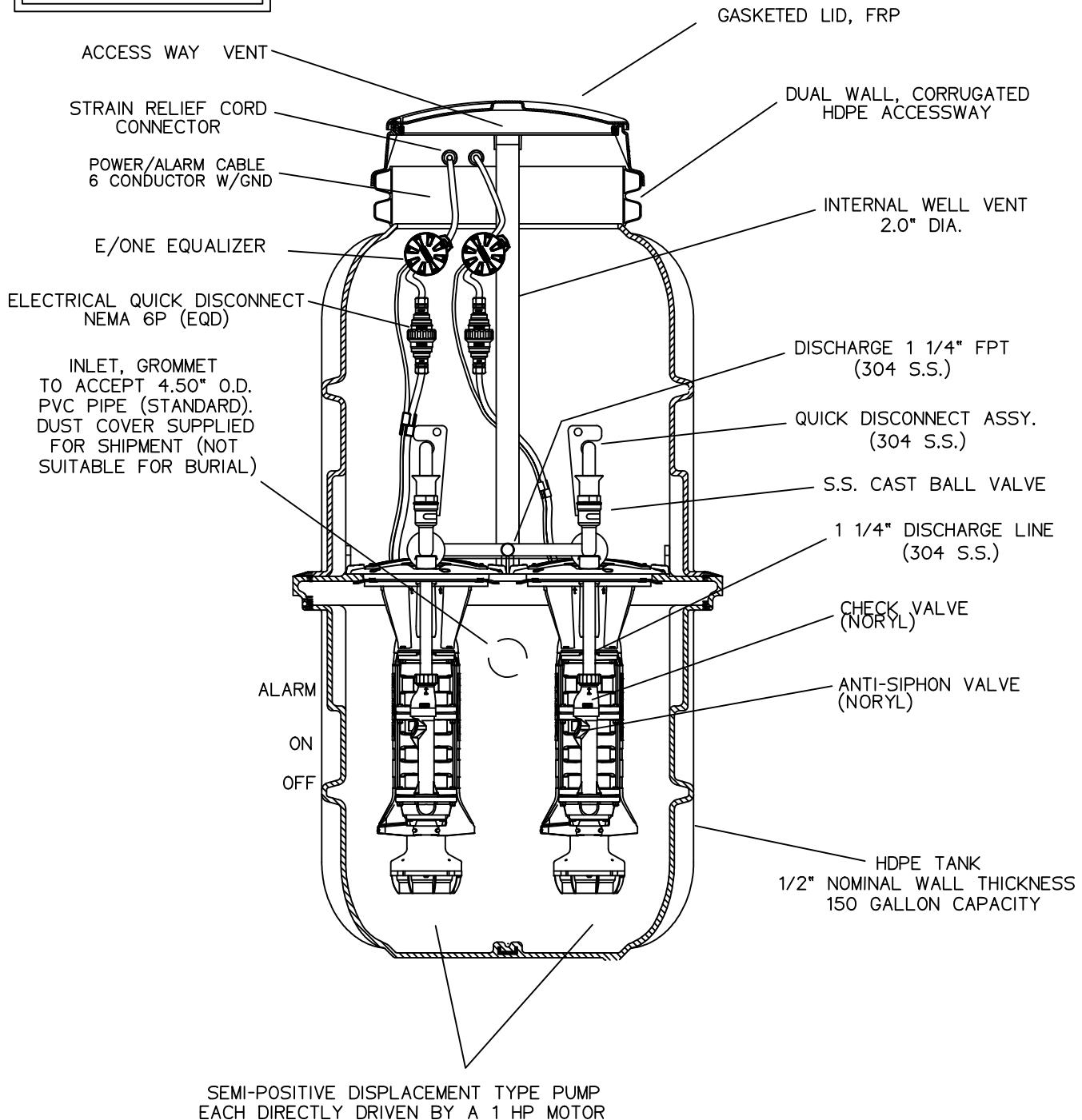
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MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

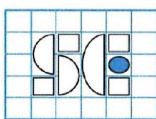
**DETAIL # 18**  
**DOGHOUSE**  
**MANHOLE**

FIELD JOINT REQUIRED  
FOR MODELS  
DH152-129 / DR152-129  
&  
DH152-160 / DR152-160



CONCRETE BALLAST MAY BE REQUIRED  
SEE INSTALLATION INSTRUCTIONS  
FOR DETAILS

GRINDER PUMPS  
SHALL BE E-ONE MODEL DH-152.

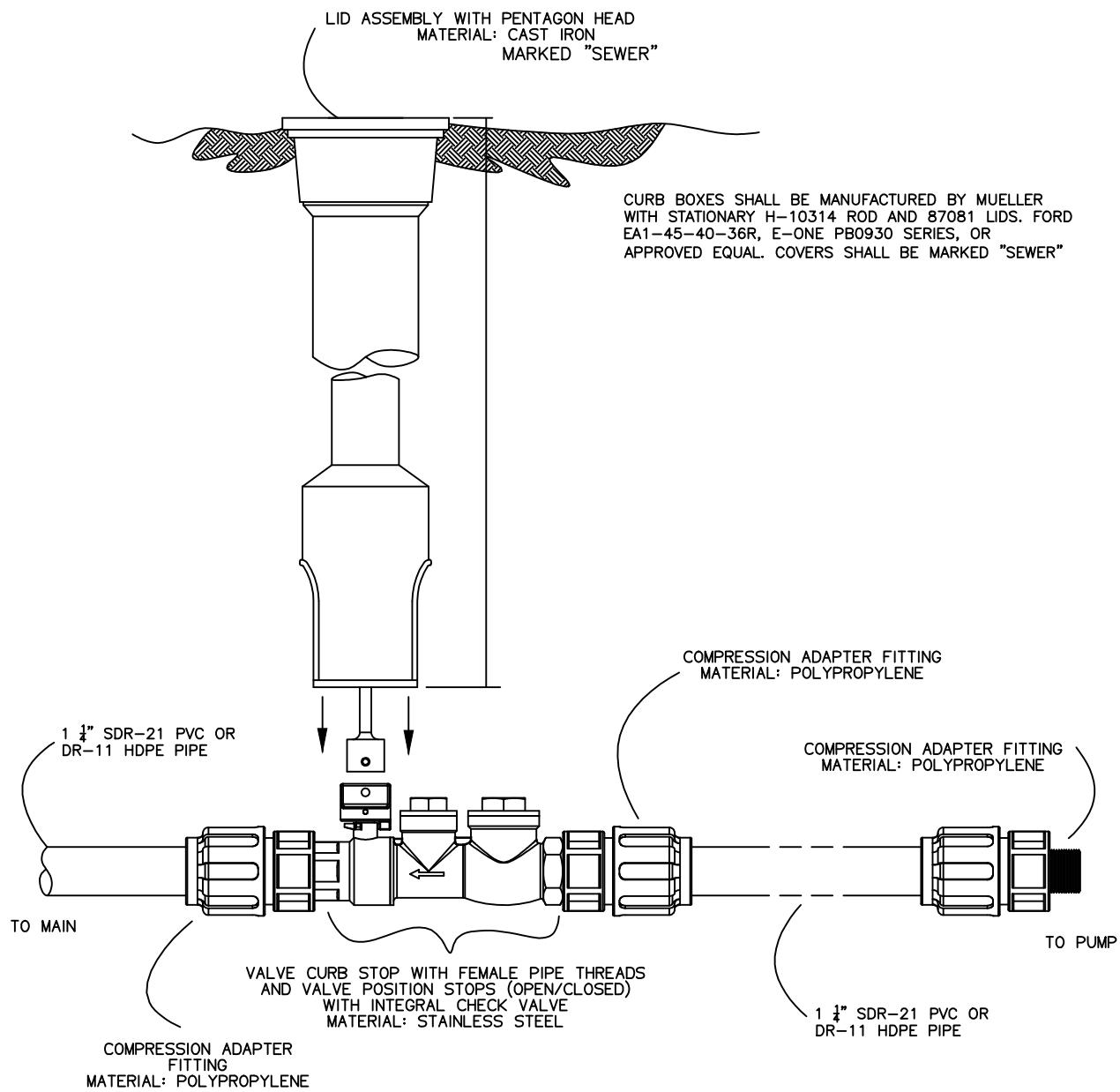


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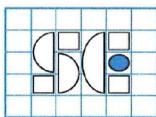
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 19**  
**GRINDER PUMP**



NOTES:

1. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND A LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS  
\*FOR SS FITTING INTO SS THREAD, USE PIPE DOPE OR TEFLON TAPE, NOT BOTH
2. ASSEMBLY IS TO BE PRESSURE TESTED
3. ASSEMBLY IS TO BE USED WITH DR-11 HDPE PIPE OR SDR-21 PVC PIPE
4. LATERAL VALVE ASSEMBLY SHALL BE E-ONE #NC0193G01.
5. CURB BOX IS PROVIDED SEPARATELY.

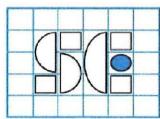
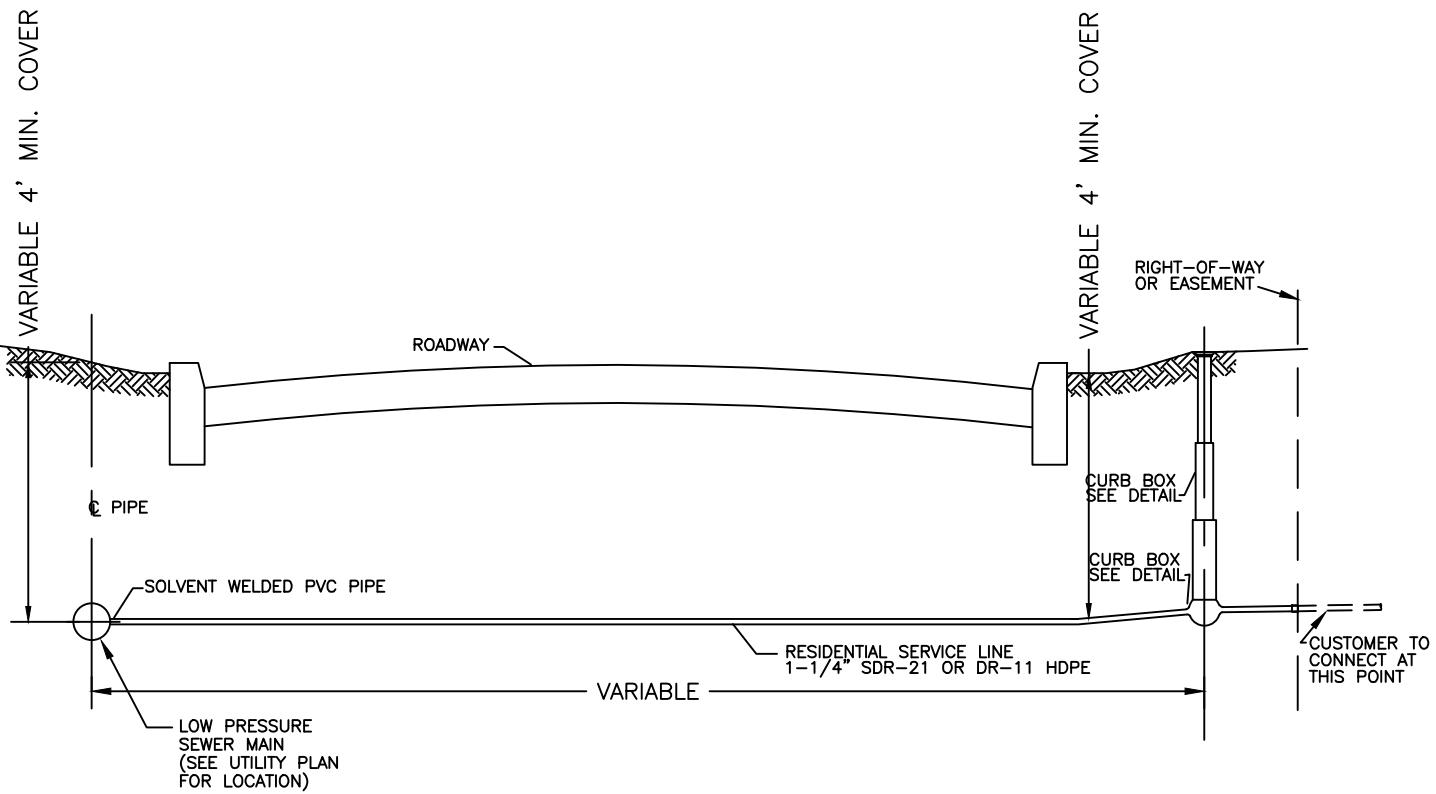


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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 20**  
**PRESSURE LATERAL**  
**VALVE ASSEMBLY**  
**& CURB BOX**

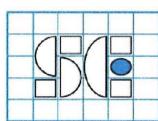
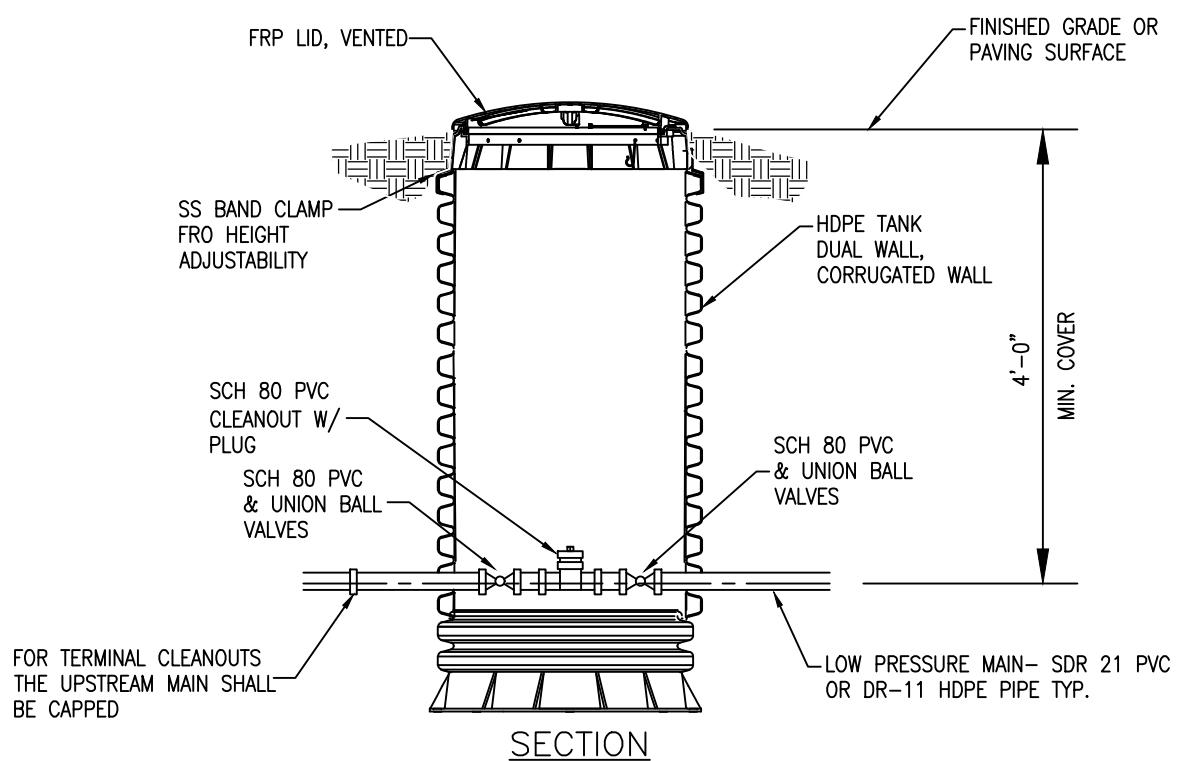
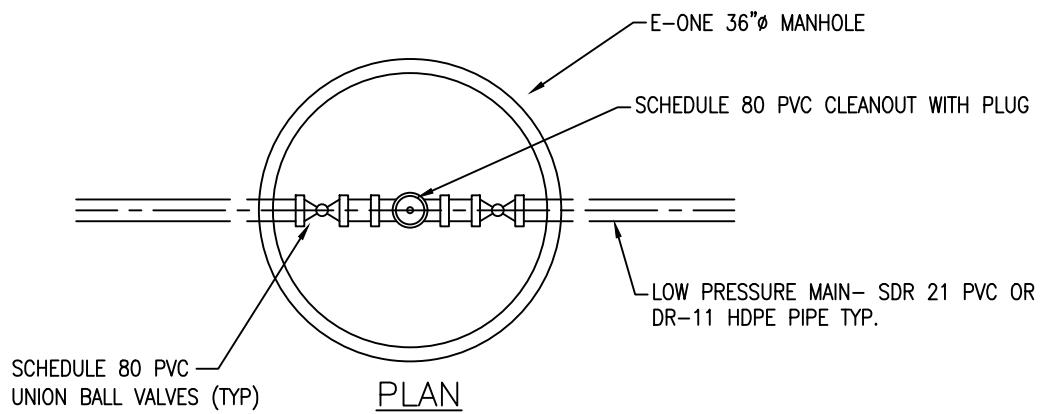


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**WHITPAIN TOWNSHIP**  
*MONTGOMERY, COUNTY, PA.*  
**SANITARY SEWER SYSTEM**

**DETAIL # 21**  
**PRESSURE SERVICE**  
**CONNECTION**

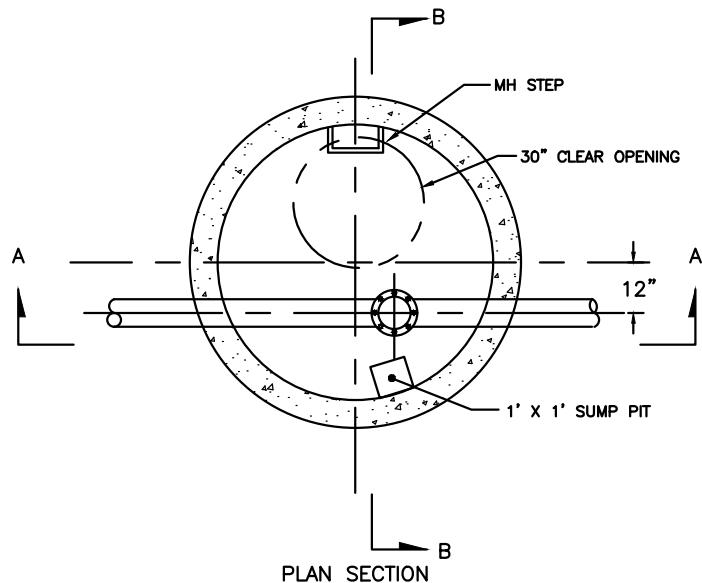


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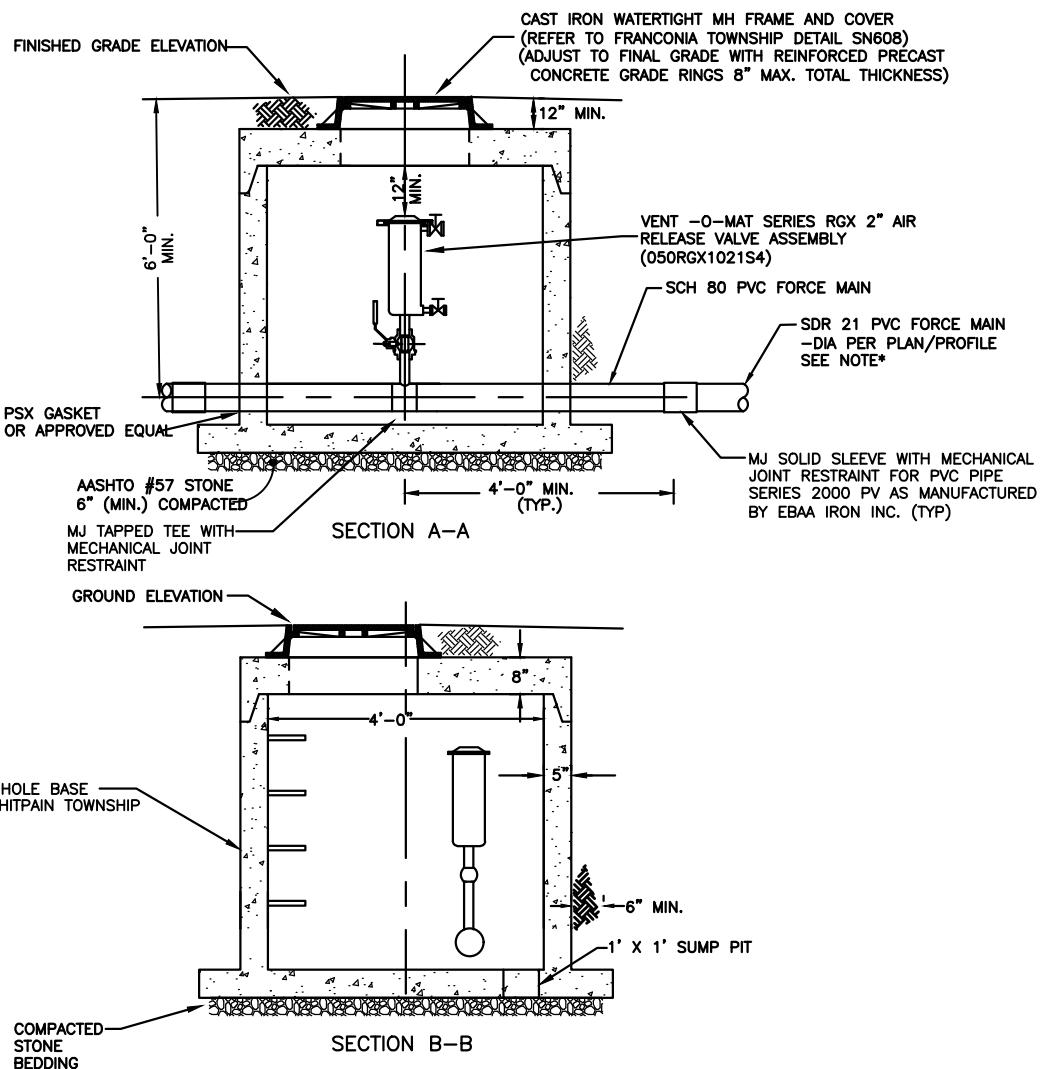
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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
**SANITARY SEWER SYSTEM**

**DETAIL # 22**  
**PRESSURE SEWER**  
**CLEANOUT**



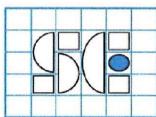
PLAN SECTION



SECTION A-A



SECTION B-B



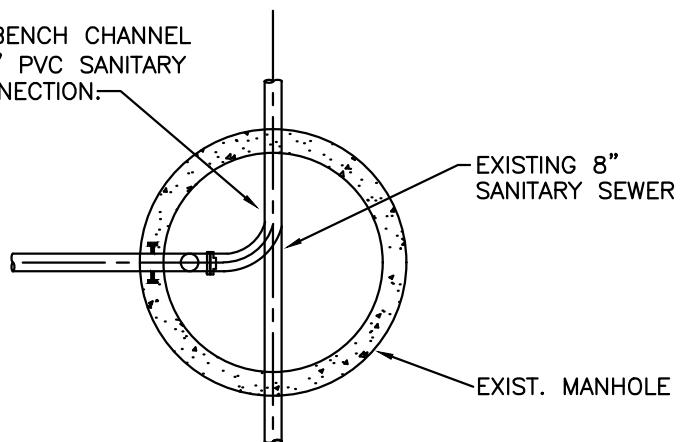
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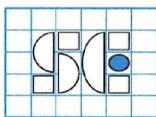
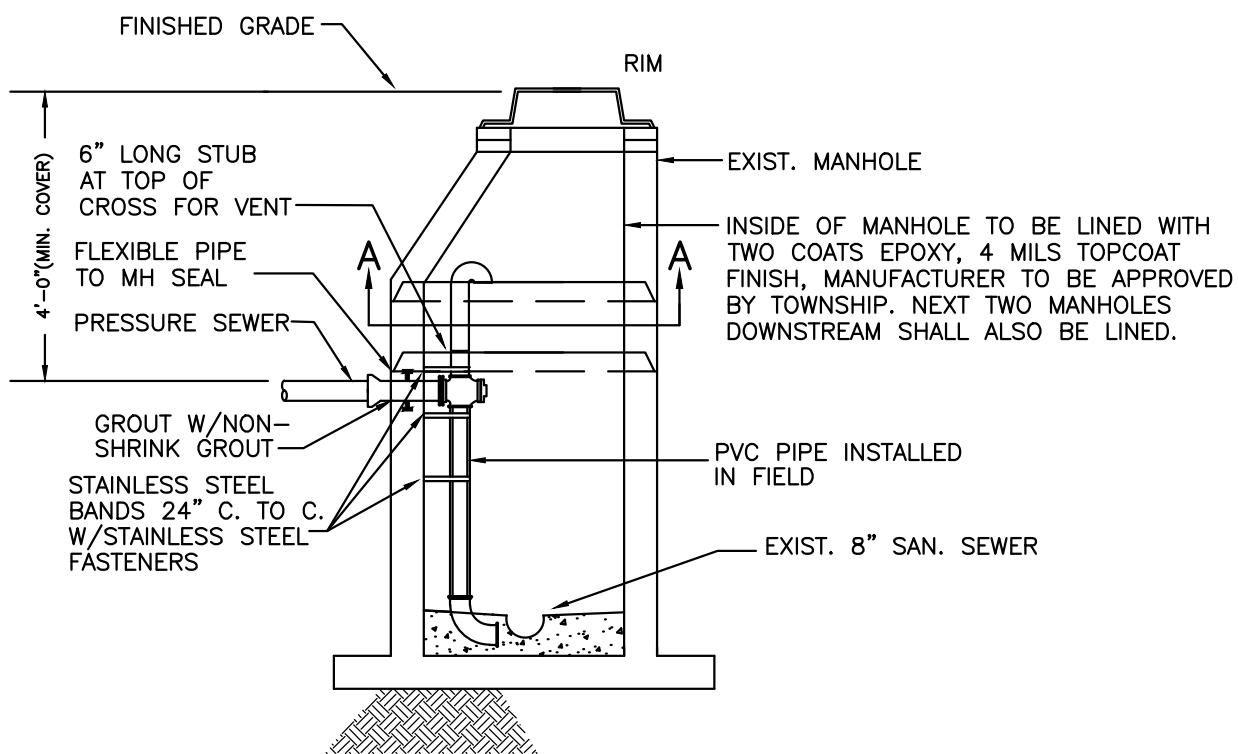
**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 23**  
**PRESSURE SEWER**  
**AIR VALVE CHAMBER**

MODIFY EXISTING BENCH CHANNEL  
FOR PROPOSED 8" PVC SANITARY  
SEWER DROP CONNECTION.



### SECTION A-A

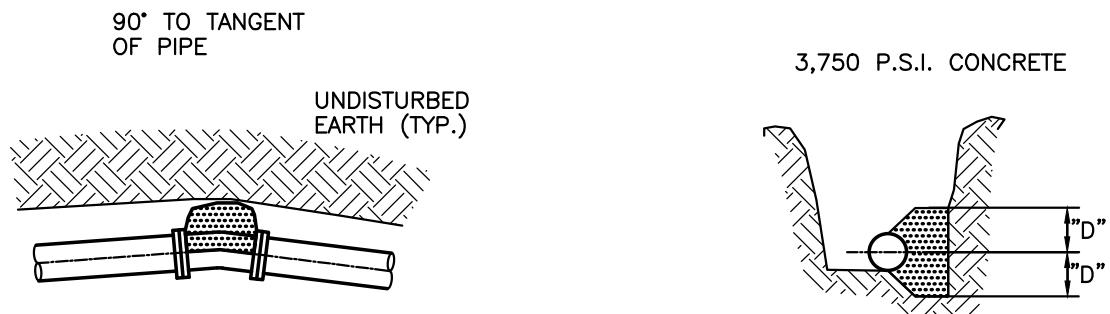


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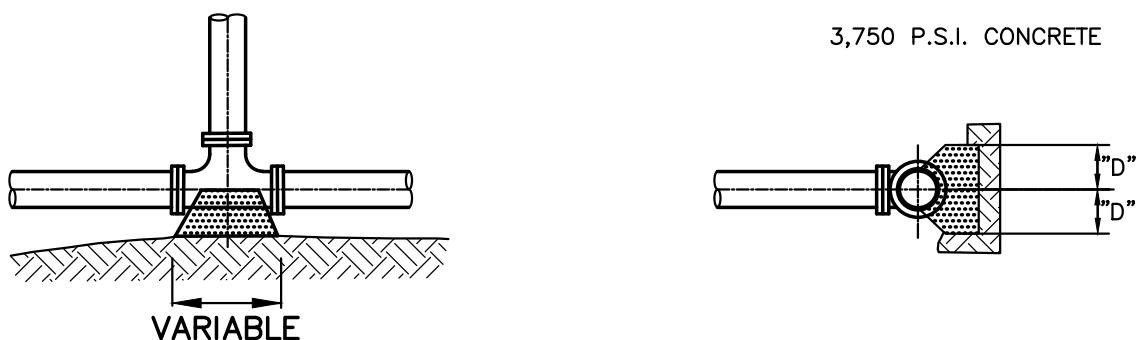
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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
**SANITARY SEWER SYSTEM**

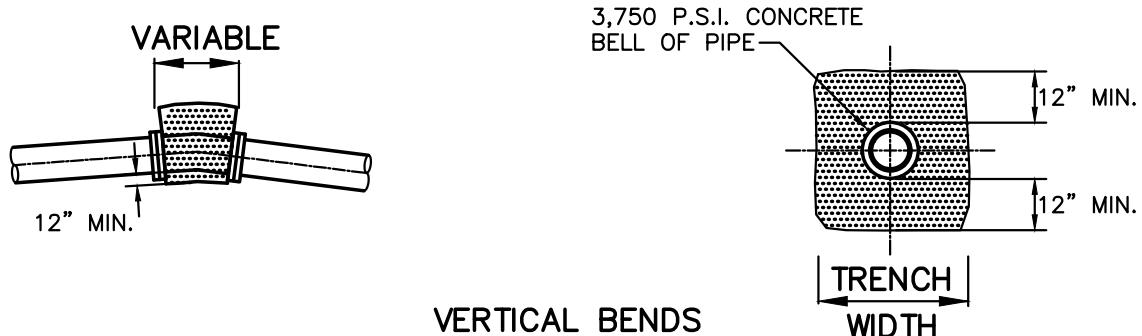
**DETAIL # 25**  
**PRESSURE SEWER**  
**CONNECTION TO**  
**EXISTING MANHOLE**



### HORIZONTAL BENDS



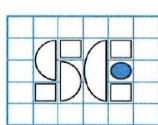
### HORIZONTAL TEES



### VERTICAL BENDS

#### NOTES:

1. THRUST BLOCKS MUST BEAR AGAINST UNDISTURBED EARTH.
2. SIZE OF THRUST BLOCKS TO BE DETERMINED INDIVIDUALLY AT TIME OF CONSTRUCTION.
3. HARNESS OR RESTRAINT PIPE IF ORDERED.
4. "D" IS EQUAL TO DIAMETER OF PIPE.



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**WHITPAIN TOWNSHIP**  
MONTGOMERY, COUNTY, PA.  
SANITARY SEWER SYSTEM

**DETAIL # 26**  
**TYPICAL THRUST BLOCKS**