

BOROUGH OF FOX CHAPEL

Minimum Construction Standards and Details

January 2015

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**APPENDIX A: BOROUGH OF FOX CHAPEL RULES AND REGULATIONS COVERING
HOUSE OR BUILDING SANITARY SEWER CONNECTIONS**

I. GENERAL REQUIREMENTS

A. OVERALL REQUIREMENTS

1. Submit 110% cost of construction Performance Bond, 10% cost of construction Escrow Deposit and a Certificate of Insurance with the Borough of Fox Chapel and Borough Engineer as additional insured.
2. Submit Maintenance Bond for 18 months from the date of the Certificate of Completion for an amount of 15% the cost of construction.
3. At month 16 of the Maintenance Bond period, CCTV all sewer lines and submit videos and data to the Borough.
4. Escrow Deposit shall remain in place until the expiration date as set forth in any agreements entered into between the Borough of Fox Chapel and the Developer or unless otherwise agreed to by the Borough of Fox Chapel.

B. CONTACTS

Borough of Fox Chapel
401 Fox Chapel Road
Pittsburgh, Pennsylvania 15238
412-963-1100 / 412-963-1819 (Fax)

Mr. Gary J. Koehler
Borough Manager
Email: gkoehler@fox-chapel.pa.us

Mr. Robert John Smith
Code Enforcement/Zoning Officer
Email: rjsmith@fox-chapel.pa.us

Mr. Dempsey D. Bruce
Public Works Department
Superintendent
Email: dbruce@fox-chapel.pa.us

Mr. Kevin A. Brett, P.E., Principal
Lennon, Smith, Souleret Engineering, Inc.
846 Fourth Avenue
Coraopolis, Pennsylvania 15108-1522
412-264-4400 / 412-264-1200 (Fax)
E-mail: kbrett@lsse.com

Mr. Charles E. Smith
Superintendent of Sanitary Sewers
Email: csmith@fox-chapel.pa.us

Mr. A. Bruce Bowden, Esquire
Leech Tishman Fuscaldo & Lampl, LLC
525 William Penn Place, 30th Floor
Pittsburgh, Pennsylvania 15219
412-227-5551 / 412-298-5897 (Fax)
E-mail: abbowden@LeechTishman.com

This Section specifies permit and easement acquisition, guidelines and requirements.

C. PERMITS AND EASEMENTS OBTAINED BY DEVELOPER / CONTRACTOR

1. Prepare and submit to the proper authority, utility or State agency all information required for the issuance of required permits or easements. Pay all costs thereof including agency inspections and easement costs unless specifically provided otherwise in the Project. Comply with all terms and conditions and permit requirements contained in such permits.
2. Provide a copy of each permit to the Borough prior to pursuing any work covered by the permit.
3. When required by the permit and during work progress covered by the permit, the work shall be inspected by the issuing agency.
4. Provide a copy of the completed permit with the issuing agency acceptance or easement owner release.
5. Permits and easements, including those obtained by the Developer and/or Contractor, must be posted at the site of the work on the Project Notification Board. This Board to contain copy of all permits, emergency contact information, Owner of the development/home and other state and local review employee posters.
6. Developer / Contractor Obtained Permits:
 - a. Environmental Advisory Council
 - b. Environmental Permits: All permits to be obtained by the Developer / Contractor. These permits generally include:
 - i. General Permits – Pennsylvania Department of Environmental Protection (PaDEP)
 - ii. Joint Permits or Small Projects Permits – PaDEP
 - iii. Erosion and Sedimentation Control Plan – Allegheny County Conservation District (ACCD) approval, under one acre of disturbance (for all disturbance in excess of 5,000 square feet, an adequacy letter is required)
 - iv. NPDES Permit – PaDEP (over 1 acre).

- v. Part II Permit
 - vi. Sewage Planning Module
7. Utility Easements: The Developer/Contractor is responsible for the acquisition of any and all easements for utility extensions that will service the subject site. Easement must be a minimum of 20' width for permanent with an additional 15' on each side of the permanent easement for construction and maintenance of facilities.

D. SUBMITTALS

1. Procedural requirements for submittals required for performance of the Work, including;
 - a. Contractor's construction schedule for entire project by major item of work (i.e. erosion and sedimentation, stormwater, sanitary, water, gas, electric, roadway and final restoration).
 - b. Submittal schedule.
 - c. Daily construction reports.
 - d. Shop Drawings.
2. Submittal Preparation: Submit six (6) copies. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 - a. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - b. Include the following information on the label for processing and recording action taken.
 - i. Project name, Contract Number and Name, Owners Name and address.
 - ii. Date.
 - iii. Name and address of Developer's Engineer.

- iv. Name and address of Contractor.
 - v. Name and address of subcontractor.
 - vi. Name and address of supplier.
 - vii. Name of manufacturer.
 - viii. Number and title of appropriate Specification Section.
 - ix. Drawing number and detail references, as appropriate.
3. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
- On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from approved plan and document requirements, including minor variations and limitations. Include Contractor's certification that information complies with approved documents.
- 4. Contractor shall review and approve each submittal before forwarding the submittal to the Engineer. Contractor shall Stamp, date and initial as "reviewed and approved" each submittal before forwarding to Engineer.
 - 5. Submit a fully developed Construction Schedule. The schedule to indicate the coordinated work of all Contractors. Additionally, provide 48 hour notice to the Borough and the Borough Engineer of construction activities requiring Borough of Fox Chapel observation.

E. INSPECTION AND TESTING – GENERAL REQUIREMENTS

- 1. Inspections and Testing
 - a. The Developer / Contractor must hire a third party testing / quality control firm to conduct monitoring and testing for earthwork compaction, asphalt, cast-in-place concrete, grout, and other independent monitoring as required or as requested by the Borough or Borough Engineer. Testing, as defined in this paragraph and inspection will be paid by the Contractor / Developer.

- b. The Developer / Contractor to provide all labor, equipment and apparatus necessary for in-place testing to mainlines, and manholes as described in the Technical Specifications.
- c. Retesting and reinspection required because of defective work will also be completed by a third party consultant paid by the Developer / Contractor.

2. Submittals

- a. Third party independent consultant must be submitted to the Borough for approval.
- b. Developer / Contractor to submit two copies of all test reports to the Project Representative.

3. Developer's Responsibilities

- a. Provide to the independent representative samples of materials to be tested in the required quantities.
- b. Furnish labor, equipment, and facilities:
 - i. For access to work to be tested.
 - ii. To obtain and handle test samples at the site.
 - iii. To facilitate inspections and tests including traffic control and safety systems.
 - iv. For laboratory's exclusive use for storage and curing test samples until removed to the laboratory.
 - v. To repair any test areas in order to match original conditions.
 - vi. For all testing and inspection in supplier's facilities.
- c. Items of work not meeting the as approved requirements must be removed and replaced.

F. GUARANTEES

1. Determination of Guarantee Dates

- a. The guarantee date(s) shall be established prior to Final Acceptance.

2. Documentation

- a. Guarantee dates and the durations of the guarantee period shall be recorded and submitted to the Borough in a form acceptable to the Borough Solicitor.
- b. The guarantee information shall be documented by Specification section in the same order as presented in the operations and maintenance manuals.
- c. Vendor information including point-of-contact, company name, company address, and company emergency phone number shall be included for applicable equipment and components of the facility.

3. Guarantee Response

- a. The Developer's Representative shall be the point-of-contact for response to guarantee-related issues during the two year guarantee period.
- b. For special guarantees extending beyond the two year guarantee period.
- c. Guarantee items requiring response within the two year guarantee period, will have a completely new two year guarantee period established from the time of repair. Upon completion of the repair, provide written verification of the newly established guarantee period to the Developer/Contractor Representative.

G. RECORD DRAWINGS – AUTOCAD FORMAT

1. Submittals

- a. One neatly and legibly marked set of full-size record drawings.
- b. As-Built CAD drawings. Electronic format shall be AutoCAD 2010 or newer, or as specified by the Borough Engineer.

2. General

- a. The record drawing set shall be kept separate from other construction drawings and shall not be used for other purposes.
- b. Use waterproof red felt-tip pens to make fully dimensional changes on the drawings. Notations are to be neat, legible, clear and concise. Show changed dimensions by striking through the planned dimension with a single line and by placing the new value within a circle.
- c. Show the actual as-built location along with all changes made during construction within AutoCAD Plans.

3. Drawing Requirements

- a. Provide additional drawings or mark on the Drawings to show the following:
 - i. Underground utilities and other items including the location of lines and appurtenances. Show the actual size and types of material used. Show locations by facility coordinates or dimensioned to permanent surface structures. Minimum requirements for accuracy as specified in the following table:

Description	Location	Elevation	Notes
Temporary Facilities and Construction Materials left at end of Project	CL ± 1 ft	CL ±1 ft	Includes shoring, all underground items, and concrete.
Pressurized piping.	CL ± 1 ft	CL ±0.50 ft	Includes water and process lines.
Storm drains, sewer lines inverts and cleanouts.	CL ± 1 ft	CL ±0.01 ft	Recalculate slope if shown on the Drawings.
Sewer interceptors and trunks.	Coordinates, stations, and offsets. CL ± 1 ft.	IE ±0.01 ft.	Recalculate actual slopes.
Laterals and Side Sewers	CL ± 1 ft	CL ±0.50 ft	Include measurements based on fixed objects (i.e. house corners)

Description	Location	Elevation	Notes
Stormwater Cross Connection	CL ± 1 ft	CL ± 0.50 ft	Include measurements based on fixed objects (i.e. house corners)

CL = Centerline
 IE = Invert Elevation
 FT = Feet

- ii. The actual arrangement and routing of embedded conduit and piping is relative to its location and proportion to other work. The location does not need to be dimensioned or drawn to scale.
 - iii. Other Drawings as may be required by the Borough or the Borough Engineer.
 - iv. Provide dimensions from more than one permanent structure where required for accurate location.
4. CAD Drawings
- a. All construction plans must be submitted in electronic format compatible to AutoCAD 2010, or as specified by the Borough Engineer.
 - b. Record drawings will be reviewed and accepted prior to acceptance of work.
 - c. Record Drawings and Schedules. Following Substantial Completion but prior to Final Acceptance of the work, provide D-size (24 inches high by 36 inches long) sepia reproducible prints. Prints shall reflect the final constructed state of the systems. The *.DWG or *.DGN files, if used by the Developer/Contractor, shall be completely brought up to date to show the systems as-installed. The *.DWG or *.DGN files shall be turned over to the Project Representative on CD-R format.

II. SANITARY SEWER REQUIREMENTS

A. PROJECT COMPLETION CHECKLIST FOR SANITARY SEWERS

1. Submit 110% cost of construction Performance Bond, 10% cost of construction Escrow Deposit and a Certificate of Insurance with the Borough of Fox Chapel and Borough Engineer as additional insured.
2. Installation of sanitary sewers per the approved plans and per Borough of Fox Chapel Regulations.
3. Complete and submit Record Drawings (As-Builts) of sanitary sewers for review and approval by the Borough of Fox Chapel. Record Drawings must be accepted before any sewage permits will be issued for a development and all sewer rights-of-way must be recorded and conveyed to the Borough of Fox Chapel.
4. After the sewer line has been installed for 30 days, testing will need completed per Borough of Fox Chapel Regulations. Tests shall include:

Manhole Vacuum Test for each manhole
Pressure Air test of the entire sewer line
Mandrel(Deflection) Test of the entire sewer line
5. Submit Maintenance Bond for 18 months from the date of the Certificate of Completion of sanitary sewers for an amount of 15% the cost of construction.
6. At month 16 of the Maintenance Bond period, CCTV all sewer lines and submit videos and data to the Borough.
7. Escrow Deposit shall remain in place until the expiration date as set forth in any agreements entered into between the Borough of Fox Chapel and the Developer / Contractor or unless otherwise agreed to by the Borough of Fox Chapel.

B. SANITARY SEWER MATERIALS REQUIREMENTS

1. Sewer Pipe and Fittings:
 - (a) For pipe joints, use rubber gaskets designed to sustain positive and negative (vacuum) pressure and suitable for conveying domestic sewage.

(b) Ductile Iron Pipe (DIP):

- 1) Pipe: ANSI A21.50 and ANSI A 21.51. (3 - 54 inches).
- 2) Wall Thickness Class 52.
- 3) Fittings: Gray iron or ductile iron ANSI A21.10. Fittings larger than 48 inches AWWA C100 Class B (up to 60 inches).
- 4) Joints:
 - i. Rubber-Gasket Joints (Buried): ANSI A 21.11
 - a For buried gravity pipe installation, provide push-on or mechanical joints except where other types of joints are indicated on the Contract Drawings or required by the Specifications.
 - b For buried pressure pipe installation, provide fully restrained joints except where other types of joints are indicated on the Contract Drawings or required by the Specifications.
- 5) Lining and Coating:
 - i. Line ductile iron piping for sanitary sewer service with an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment (ceramic epoxy).
 - ii. Apply ceramic epoxy lining to the ductile iron pipe with 40 mils nominal dry film thickness.
 - iii. Cover the interior surfaces of the pipe and fittings with ceramic epoxy lining from the interior of the spigot end to a point sufficiently forward in the bell socket such that the gasket, in the assembled joint, seals over the end of the lining.
 - iv. Repair the cut end as per the manufacturer's written procedure where pipes are cut in the field.

- v. Pipe Lining: Provide Protecto 401™ as manufactured by Induron® or an approved equal meeting the requirements of this specification.
 - vi. Pipe and Fitting Lining: Manufacturer's ceramic epoxy lining single thickness.
 - vii. Pipe and Fitting Exterior Coating: Manufacturer's standard asphaltic coating, approximately one mil thick in accordance with AWWA C151, applied to the outside of pipe and fittings only.
- (c) Polyvinyl Chloride Pipe (PVC):
- 1) Pipe, Solid Wall, 4 through 6 Inch Diameters: Type PSM SDR-35, ASTM D3034.
 - 2) Pipe, Solid Wall, 8 through 15 Inch Diameters: Type PSM SDR-35, ASTM D3034, or Type PS-46, ASTM F789 (to 18 inch diameter).
 - 3) Pipe, Solid Wall, 18 through 27 Inch Diameters: Type PS-46, SDR-26 ASTM F679.
 - 4) Fittings: Commercially manufactured molded fittings conforming to same applicable ASTM Specification requirements for pipe.
 - 5) Joints: Push-on with elastomeric gasket, ASTM D3212; and ASTM F477 for gasket specifications.
 - i. Pipe Bell: Provide a gasket with a locked in a groove design so as to prevent displacement when pipes are joined.
2. PVC Waterstop: Gasket type waterstop composed of virgin polyvinyl chloride (PVC) such as manufactured by Fernco Joint Sealer Co.; CMA Concrete Manhole Adapter (CMA Waterstop distributed by The General Engineering Company, Frederick, Maryland), or approved equal. (For connection to existing manhole.)
3. Flexible Pipe Coupling: Clamped design with virgin PVC coupling and two type #305 stainless steel bands, such as manufactured by Fernco Joint Sealer Co. For lines 8 inch diameter and smaller use Fernco Proflex

shielded specialty couplings. (Flexible Couplings, or approved equal distributed by The General Engineering Company, Frederick, Maryland). Flexible couplings are not permitted for repair of existing PVC pipe. Only gasketed couplings may be used.

4. Polywrap: Two ply cross laminated high density polyethylene per AWWA C105, Section 4.1.2, Type III Class C (Black) Grade 33, 5,000 psi tensile strength, minimum elongation 100 percent, nominal 0.004 inch (4 mil) thickness.
5. Detectable Mylar Marking Tape:
 - (a) Install a detectable mylar marking tape over all PVC and HDPE lines. Provide detectable marking tape bearing the words "CAUTION - SEWER LINE BURIED BELOW". Place printing under mylar so as to be readable through the clear mylar. Provide tape green in color and 3" in width. Bury detectable marking tape 1' to 2' below finish grade. Place tape into backfill and allow to settle into place in the backfill.
6. Service Connection Pipe and Fittings:
 - (a) Ductile Iron Pipe (DIP): As specified for Sewer Pipe and Fittings; six inch diameter.
 - (b) Polyvinyl Chloride Pipe (PVC): As specified for Sewer Pipe and Fittings; six inch diameter.
 - (c) Pipe Plugs: Designed for permanent installation and removable. Obtain plugs for various types of pipe used from the respective pipe manufacturer.

C. MAINLINE SANITARY SEWER INSTALLATION REQUIREMENTS

1. All sanitary sewer installations must comply with the Borough of Fox Chapel Sewer System Rules and Regulations, all other Borough codes and requirements, the Allegheny County Health Department Plumbing Code, and all other local, county, state, and federal codes and regulations.
2. Verify all existing utilities in the field prior to start of excavation work. Comply with One Call (Act 38) requirements. Contact all utility companies that may have facilities within the work area.

3. Field check and verify benchmark elevations for all work before start of construction. Verify all existing sanitary sewer inverts and confirm sanitary sewer grades prior to initiation of construction. Prepare and submit cut sheet survey. Set/adjust final grades for proposed sanitary sewer lines and service lines after all existing utilities and other obstructions have been located by test holes. Dig all necessary test holes to locate any existing utilities that may be in conflict with the alignment and grade of the proposed sanitary sewer or sanitary sewer service lines.
4. A pipeline in-line laser level must be used for all pipeline installations.
5. Set the actual location, pipeline stationing, elevation and the termination of all sanitary sewer service lines at the time of construction to best accommodate each structure to be served. For new service line installations and existing reconnections, perform all required preparatory work including digging any required test holes to confirm or establish final connection or reconnection point and confirm those elevations.
6. Maintain and protect traffic during construction per MUTCD. Coordinate all work with local emergency response and transportation agencies. Provide all required signage for temporary traffic control. Maintain all roads, sidewalks, steps and traveled ways clean, free of mud or dust, and in a condition usable by residents in the area during construction. Maintain access to all residential and commercial driveways during construction.
7. Maintain all existing sanitary sewers in service during construction. Contain sanitary sewage to sanitary sewers. Do not discharge to the ground surface or to groundwaters. Provide bypass pumping as required to maintain sanitary sewage to sanitary sewers.
8. Confine all activity to authorized rights-of-way.
9. Implement and maintain an Erosion and Sedimentation Control Plan.
10. Restore all private property disturbed by construction activities within two weeks of construction work. Replace mailboxes and driveway cross drains immediately. Restore yard areas which are disturbed as a result of the work with four inches (4") of topsoil, seed, and mulch. Adjust all existing and new inlets, manholes, valve boxes, curb boxes and all other similar items located within paved areas as required to match final paving grade tilt as required with approved spaces to match. Provide minimum six inch (6") depth asphalt cold patch with eighteen inch (18") 2A stone

interim trench cap in all roadways. Perform final trench restoration per the Borough detail.

11. Cut and plug all existing sanitary sewer lines to be taken out of service. Plug with suitable waterproof non-shrink grout at least one foot (1') into pipe. Remove manholes to minimum three foot (3') below grade plug inlet and outlet pipes as directed. Backfill to grade with suitable material. Return castings to the Borough of Fox Chapel. Grout all abandoned sewers solidly in place.
12. Maintain daily as-built record information including wye stationing. Give the Borough's Representative copies of all delivery slips for all materials delivered to the project.
13. Notify the Borough and Borough's Engineer a minimum of 48 hours in advance of starting the project.
14. Pipeline acceptance testing includes low pressure (5 psig for 5 minutes), mandrel, and manhole vacuum testing. Low pressure test service lines simultaneously with main line.
15. Protect public at all times from all open excavation, cover all open excavation with suitable steel plates at the end of each workday.
16. Trench backfill requirements:

Pipe Zone:

PVC pipe full stone bedding [2A crushed limestone (no slag)] and

RCCP stone bedding [2A crushed limestone (no slag)]

Wrap all D.I. pipe with 2-ply cross laminated high density polyethylene

Intermediate Zone:

Improved areas full trench stone vibratory compact in 8" lifts

Unimproved areas select backfill vibratory compact in 8" lifts

Final Zone: As specified.

D. TESTING REQUIREMENTS FOR SANITARY SEWER INSTALLATION

TESTING SANITARY SEWERS (GRAVITY)

Each section of sewer including service laterals constructed as part of this contract, shall be cleaned, tested and inspected. All repairs shown to be necessary by the tests are to be made promptly. Broken or cracked pipe shall be replaced

and all deposits removed and the sewer left true to line and grade and entirely clean. Each length of sewer is to show a full circle of light from manhole to manhole.

Pressure Air Test -- All sewers (mains and service lines) shall be air tested for leakage and any section of sewer showing leakage in excess of the amount hereinafter set forth shall be rejected.

The air test shall be conducted by the Contractor under the observation of the Borough of Fox Chapel's Representative and shall be performed with AIR-LOC equipment manufactured by Cherne Industrial, Inc., Hopkins, Minnesota or approved equal.

The Contractor may desire to perform an air test for his own purposes prior to backfilling; however, the "acceptance air test" shall be performed after backfilling has been completed.

Each section of sewer being tested shall be temporarily sealed off by means of suitable plugs. All ends of lateral stubs shall be sealed with suitable removable caps securely fastened to withstand internal test pressures.

The procedure and criteria to be used for air testing shall conform to that described by the National Clay Pipe Institute.

All gauge test pressures in the test shall be increased by the amount of groundwater pressure at the crown of the pipe.

Plugs shall be properly secured and care shall be exercised in their removal. All plugs shall be blocked and carefully braced to prevent sudden release of compressed air, slippage, or blowout due to internal pressure.

No personnel shall be permitted in the manholes or at the end of the pipe test section during testing.

The pressurizing equipment shall have a safety gauge which shall limit the loading on the sewer line to 10 psi. The calibrations on all pressure gauges shall be no greater than 0.10 psi.

If the pipe installation fails to meet test requirements, the Contractor shall determine, at his own expense the source or sources of leakage, and he shall repair or replace all defective materials and workmanship.

Immediately following the testing, the entire interior of the pipe shall be inspected by a Borough of Fox Chapel Representative, and in the event any joints are found

to be leaking, they shall be properly repaired, regardless of whether or not the pipe meets the air/pressure test requirements. Under no circumstances shall infiltration in any section of pipe between two adjacent manholes exceed 200 gallon/mile/ inch diameter/day.

All sewer pipes shall be tested by inducing low pressure air, internally, into the pipe. The air shall be slowly introduced into the pipe and the pressures shall gradually be increased within the test section to 5.0 psi. The test section shall be required to **sustain that 5.0 psi minimum without loss or drop in pressure for a time period of 5 minutes.** In the event pressure loss does occur, appropriate repairs or reconstruction shall be made, the test procedure shall be made, and the test procedure shall be repeated until the test criteria (5.0 psi for 5 minutes) are successfully accomplished.

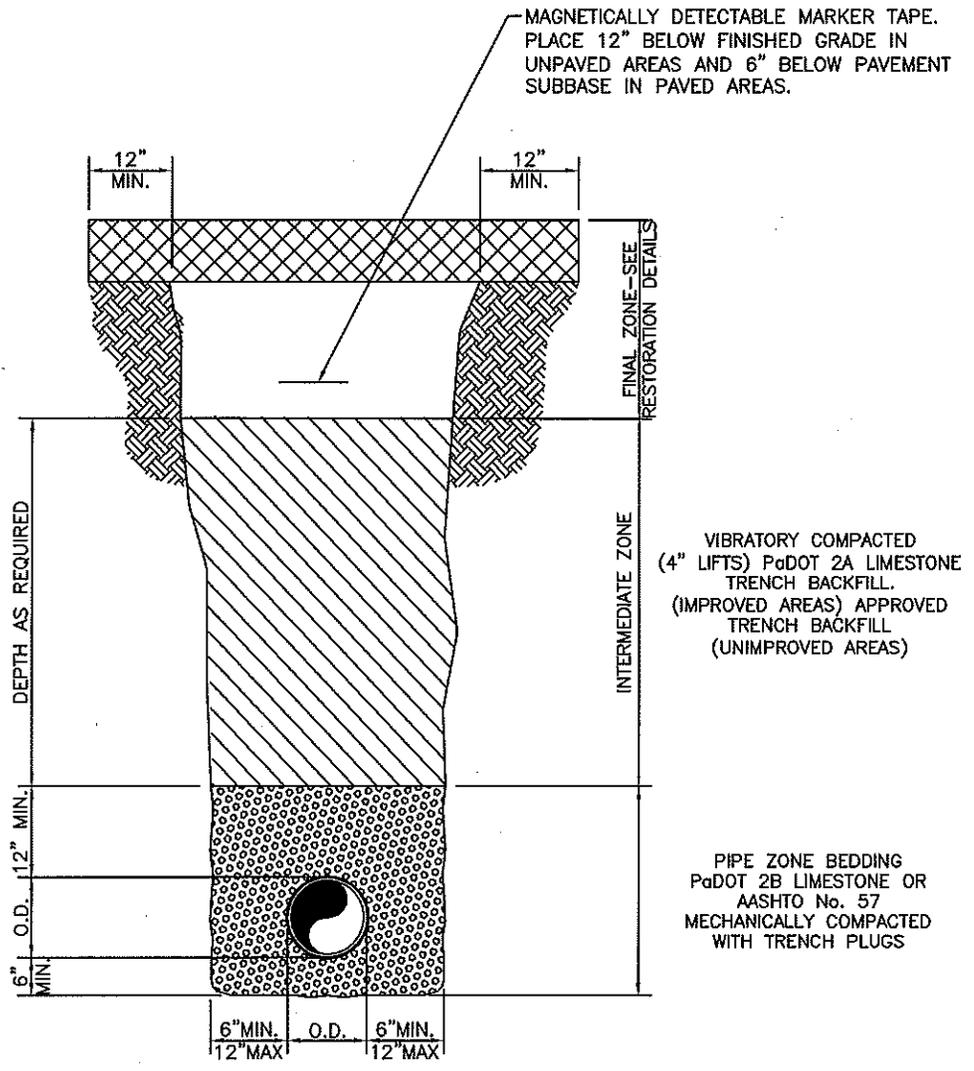
Where groundwater elevations prevail higher than the top of the sewer pipe being tested, 0.5 psi per foot of hydrostatic head above the top of the sewer pipe shall be added to the test pressure.

Mandrel/Deflection Test -- All PVC pipes shall also be tested for pipe deflection. Said tests shall not be performed until the backfill has been in place for at least thirty (30) days; maximum acceptable deflection shall be 5% of the internal diameter. Said testing may be performed with a deflectometer, calibrated internal TV equipment or a mandrel similar or equal to that manufactured by Cherne Industries, Inc. Deflection testing equipment and procedures shall be submitted for approval by the Engineer.

Vacuum Testing of Manholes -- After erection of the manholes, connection of the sewers, and placement of the backfill to approximately the finished ground elevation, each manhole shall be vacuum-tested for water tightness. Connecting pipes shall be securely plugged and a vacuum testing device similar to that manufactured by P.A. Glazier, Inc., or equal, shall be placed and sealed within the top of the precast manhole section. A vacuum of ten inches (10") of Hg shall be drawn after which the vacuum pump shall be shut off. If the indicated vacuum pressure drops to nine inches (9") in less than one minute, the test apparatus shall be removed and appropriate repairs shall be performed. The test shall be repeated, as necessary, until a time period of a minimum of one minute occurs before the vacuum pressure drops one inch (1").

E. SANITARY SEWER STANDARD DETAILS (SEE FOLLOWING PAGES)

N:\PROJ\424\Standard Details\2013\Sanitary\17 -- Trench & Pipe Zones.dwg Layout=Sanitary Sewer Trench & Pipe Zones User=Shawn Wingrove Plotted=12/26/2013 8:37 AM



Sanitary Sewer Trench & Pipe Zones

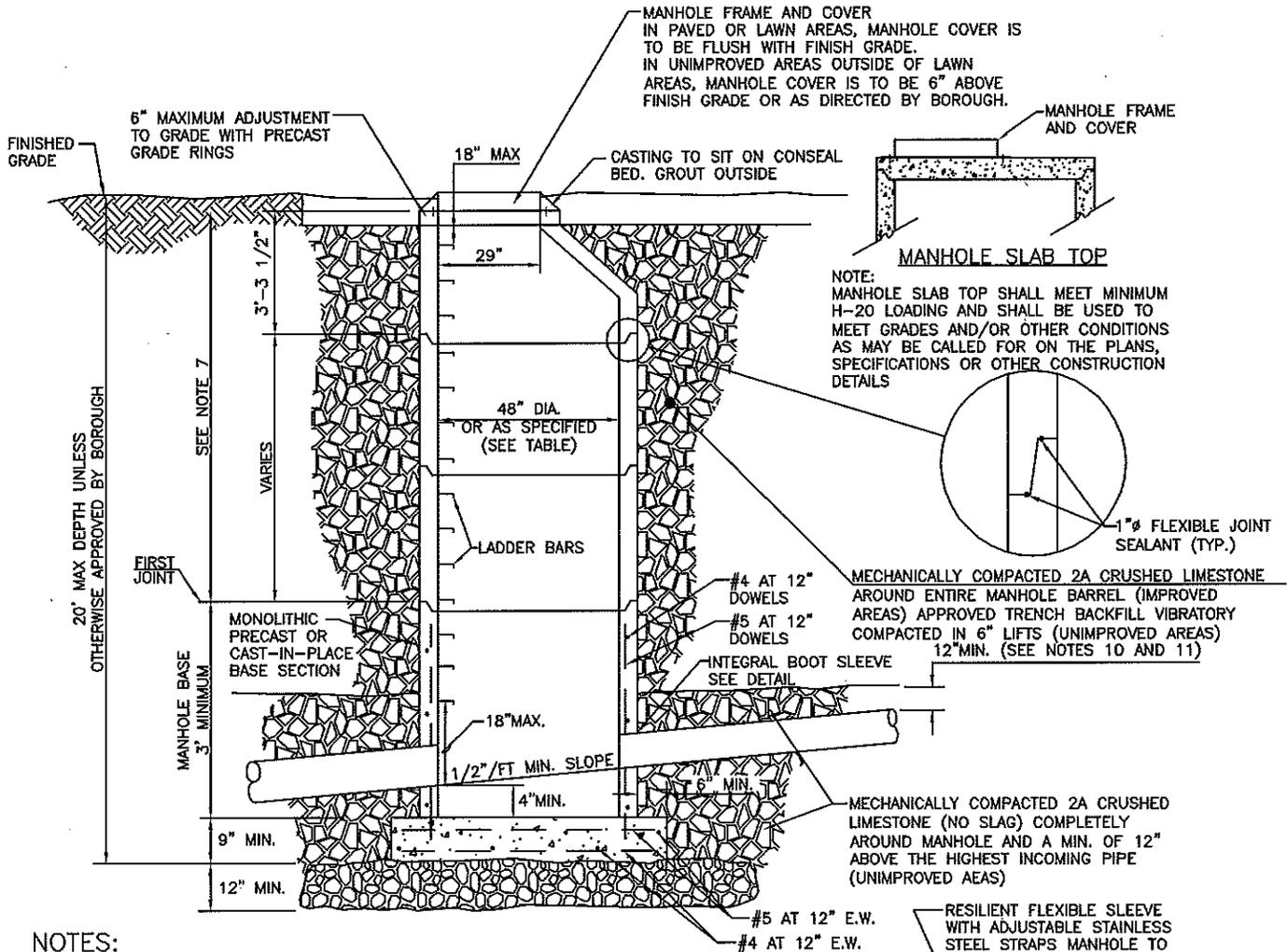
SCALE: N.T.S.

DATE: January 2014 FILE: 17 - Trench & Pipe Zones.dwg



Fox Chapel Borough
 Allegheny County, Pennsylvania
 401 Fox Chapel Road
 Pittsburgh, PA 15238





NOTES:

1. ALL CONCRETE TO BE CLASS AAA CONCRETE, 4500 PSI, 5%± 1% AIR ENTRAINED.
2. SEAL MANHOLE BARREL JOINTS WITH 2- 1"Ø FLEXIBLE BUTYL RUBBER JOINT SEALANT, USE 1/2"Ø FOR FRAME AND COVER.
3. ANCHOR FRAME AND COVER WITH 2-3/4" DIA. S.S. ANCHOR BOLTS SET PERMANENTLY INTO CONCRETE.
4. POINT LIFTING HOLES WITH NON-SHRINK GROUT, WATERTIGHT, NEAT AND SMOOTH.
5. MAXIMUM ADJUSTMENT TO FINISHED GRADE USING PRECAST GRADE RINGS IS SIX INCHES (6").
6. CONFORM PRECAST SECTIONS TO ASTM C-478 AS REVISED.
7. IF THIS DIMENSION IS LESS THAN 3'-3" USE PRECAST SLAB TOP DESIGNED TO MEET LOAD CONDITIONS (H-20 MIN.)
8. COAT EXTERIOR OF ALL MANHOLE BARREL SECTIONS WITH 2 COATS OF AN APPROVED BITUMINOUS COATING. COAT INTERIOR AFTER PLACEMENT OF MANHOLE WITH 2 COATS OF AN APPROVED BITUMINOUS AS DIRECTED BY THE ENGINEER OR BOROUGH.
9. CAST LADDER BARS INTO BARREL SECTIONS AND CONFORMING TO ASTM C-478, AS REVISED.
10. WHERE MANHOLES ARE INSTALLED IN IMPROVED AREAS, BACKFILL THE ENTIRE EXCAVATED AREA WITH MECHANICALLY COMPACTED PaDOT 2A CRUSHED LIMESTONE (NO SLAG).
11. WHERE MANHOLES ARE CONSTRUCTED IN UNIMPROVED AREAS, BACKFILL THE ENTIRE EXCAVATED AREA WITH MECHANICALLY COMPACTED PaDOT 2A CRUSHED LIMESTONE (NO SLAG) FROM THE BOTTOM OF THE EXCAVATED AREA TO 12 INCHES ABOVE THE HIGHEST PIPE ENTERING THE MANHOLE.
12. PREFORMED INVERTS NOT PERMITTED. INVERTS MUST BE FORMED IN THE FIELD FROM CAST-IN-PLACE CONCRETE.

INTEGRAL BOOT SLEEVE

PIPE SIZE	BARREL DIA
8 - 21"	4' - 0"
24 - 36"	5' - 0"
37" AND LARGER	AS DIRECTED BY BOROUGH ENGINEER

Pre-Cast Concrete Manhole & Slab Top

SCALE: N.T.S.

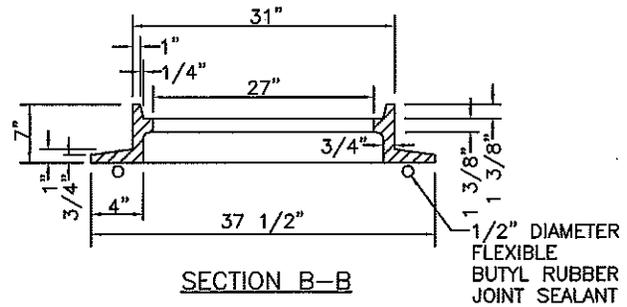
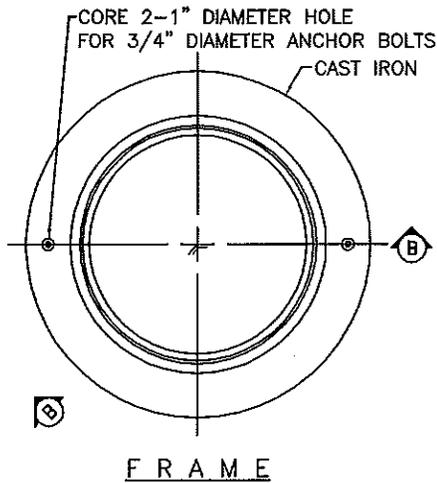
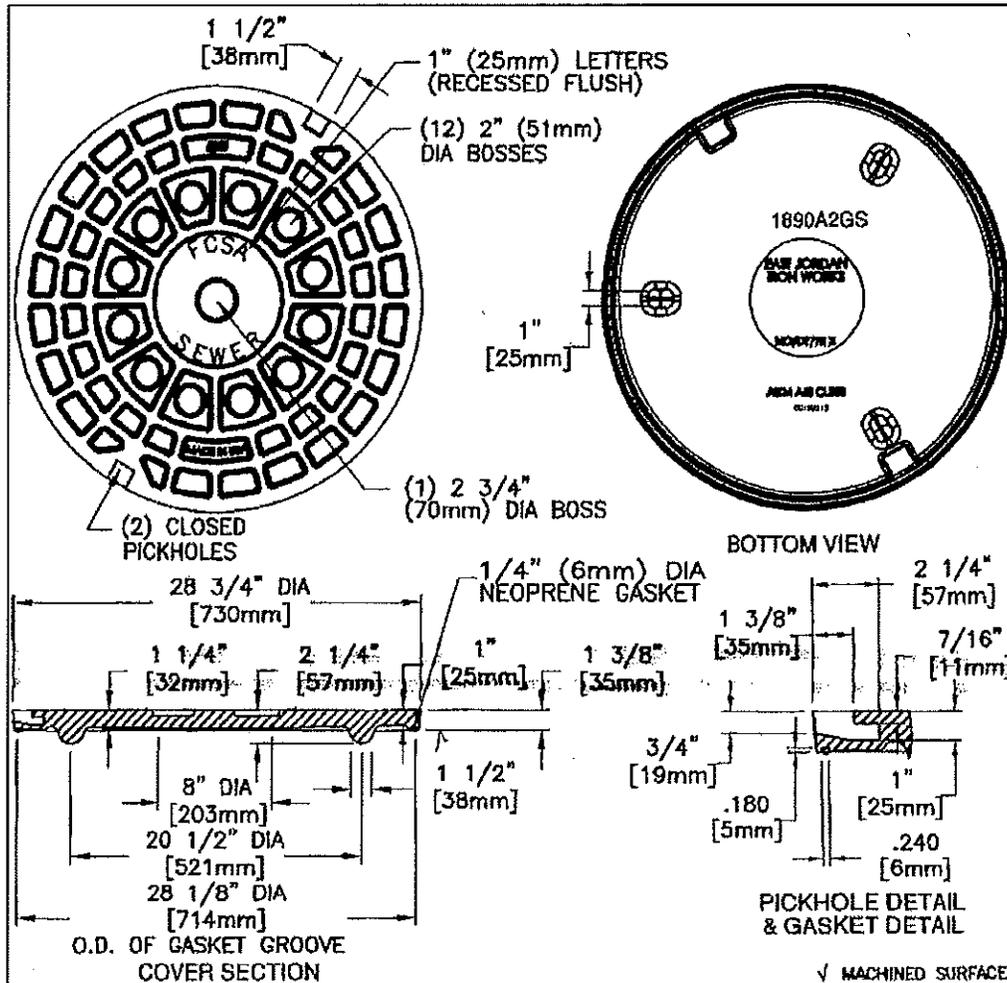
DATE: January 2014 FILE: Pre-Cast Concrete Manhole & Slab Top.dwg



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N:\PROJ\424\Standard Details 2013\Sanitary\Manhole_Frame & Cover.dwg User=Shawn Wingrove Plotted=12/26/2013 8:46 AM



NOTE:
 LID TO BE EAST JORDAN IRON WORKS CATALOG No. 1890A2GS, OR APPROVED EQUAL

Manhole Frame & Cover

SCALE: N.T.S.

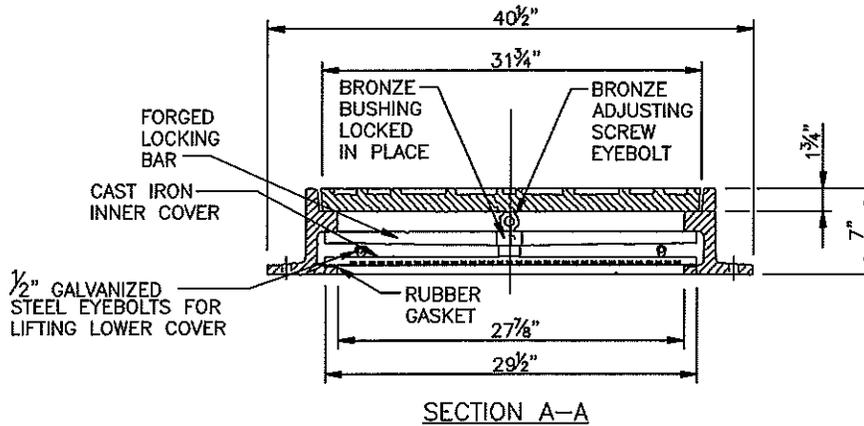
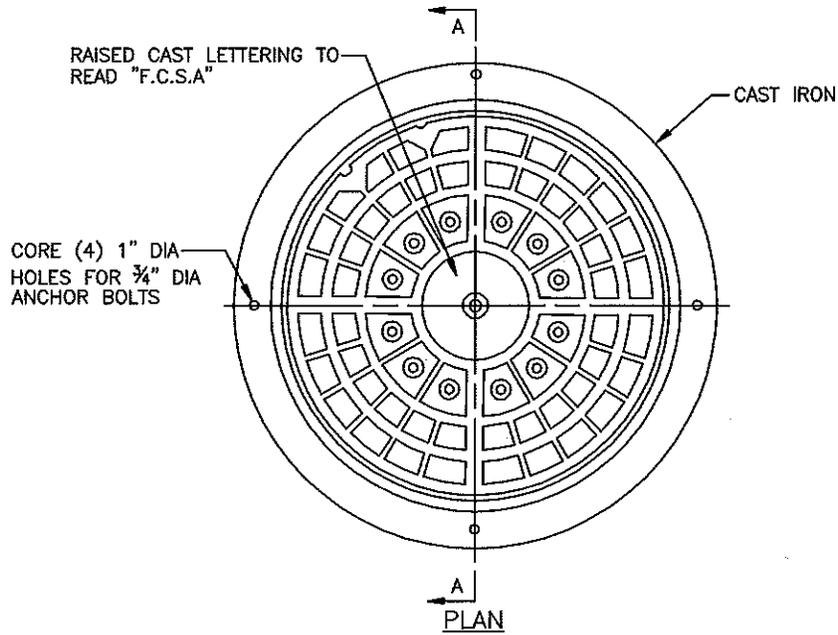
DATE: January 2014 FILE: Manhole Frame & Cover.dwg



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N:\PROJ\424\Standard Details 2013\Sanitary\W-T MH Frame & Cover.dwg Layout=Watertight Manhole Frame & Cover (With Inner Cover) User=Shawn Wingrove Plotted=12/26/2013 8:47 AM



NOTES:

- 1. ALL CONTACT SURFACES MACHINED.
- 2. PROVIDE SECURITY SADDLE OVER EYEBOLT IF SPECIFIED.
- 3. PROVIDE AS DIRECTED BY THE BOROUGH OR BOROUGH ENGINEER.

Watertight Manhole Frame & Cover (With Inner Cover)

SCALE: N.T.S.

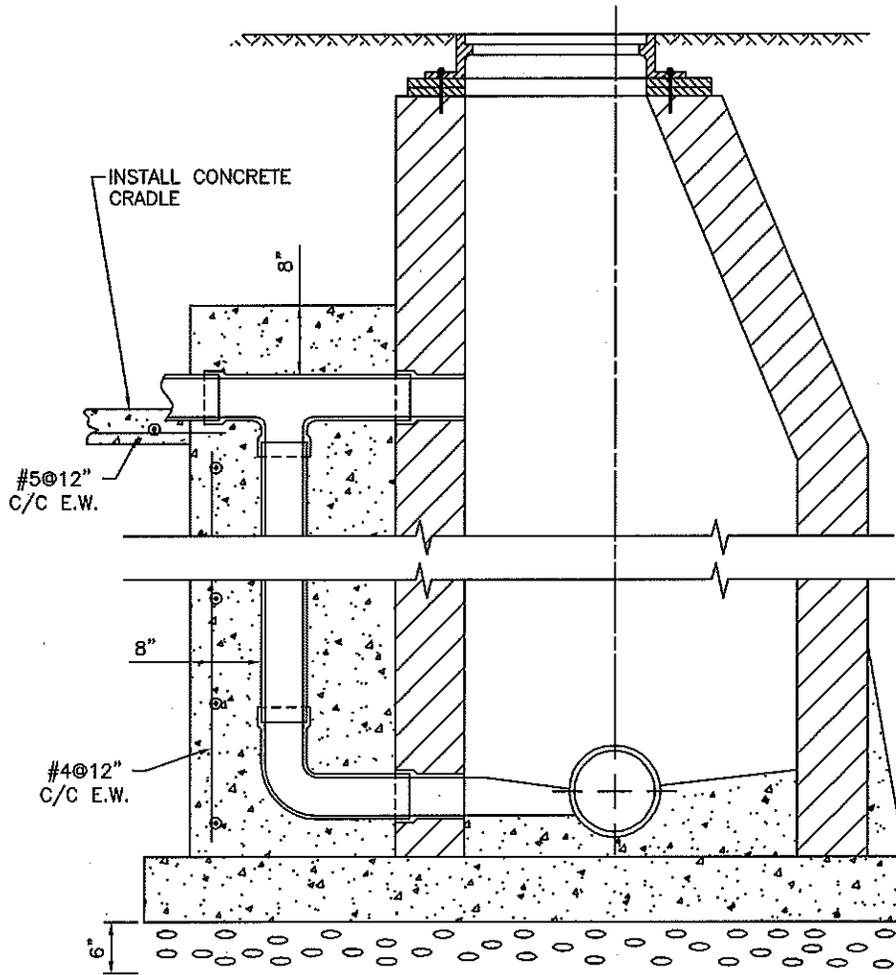
DATE: January 2014 FILE: W-T MH Frame & Cover.dwg



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N:\PROJ\424\Standard_Details_2013\Sanitary\Outside Drop Manhole Connection.dwg... Layout=Inside Drop Manhole Connection User=Shawn Wingrove Plotted=12/26/2013 8:48 AM



NOTES:

- 1. OUTSIDE DROP CONNECTIONS ARE PERMITTED ONLY WHEN CONNECTING TO EXISTING MANHOLES AND WITH APPROVAL FROM THE BOROUGH.
- 2. SEE STANDARD DRAWINGS AND SPECIFICATIONS FOR MANHOLE CONSTRUCTION REQUIREMENTS.

Outside Drop Manhole Connection

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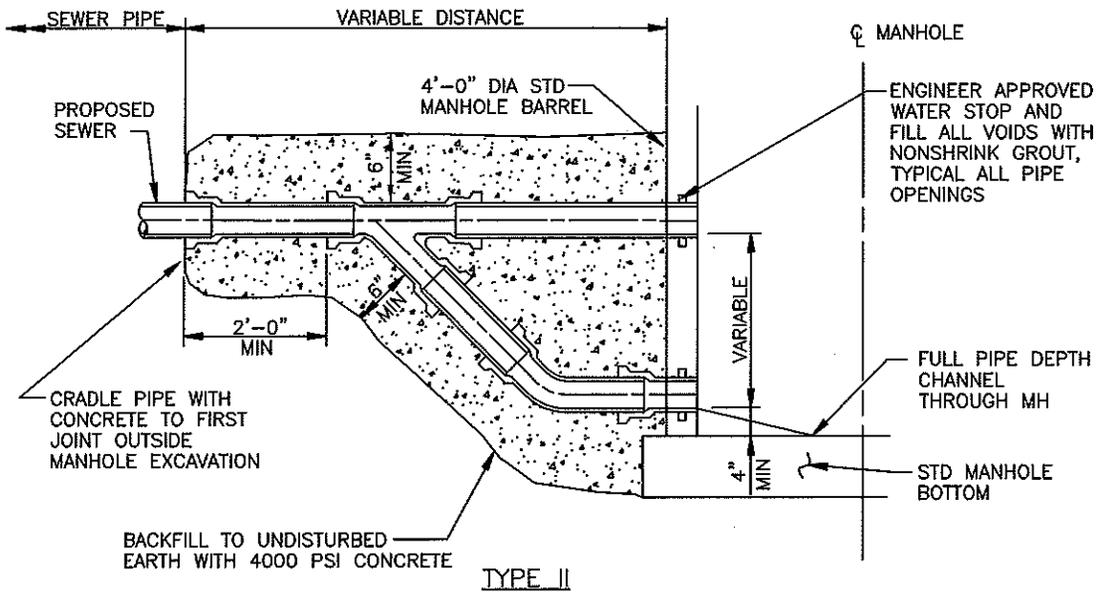
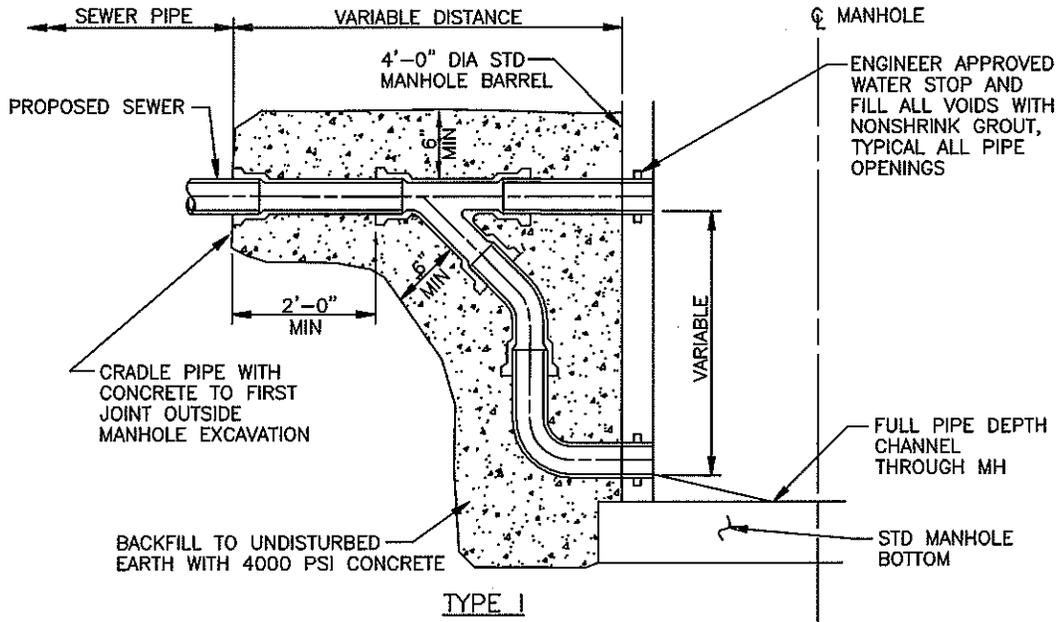
DATE: January 2014 FILE: Outside Drop Manhole Connection.dwg



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N:\PROJ\424\Standard_Details_2013\Sanitary\Optional_Outside_Drop_Manhole_Connection.dwg Layout=Outside Drop Manhole Connection User=Shawn Wnagrove Plotted=12/26/2013 8:49 AM



NOTES:

1. OUTSIDE DROP CONNECTIONS ARE PERMITTED ONLY WHEN CONNECTING TO EXISTING MANHOLES AND WITH APPROVAL FROM THE BOROUGH.
2. SEE STANDARD DRAWINGS AND SPECIFICATIONS FOR MANHOLE CONSTRUCTION REQUIREMENTS.

Optional Outside Drop Manhole Connection

SCALE: N.T.S.

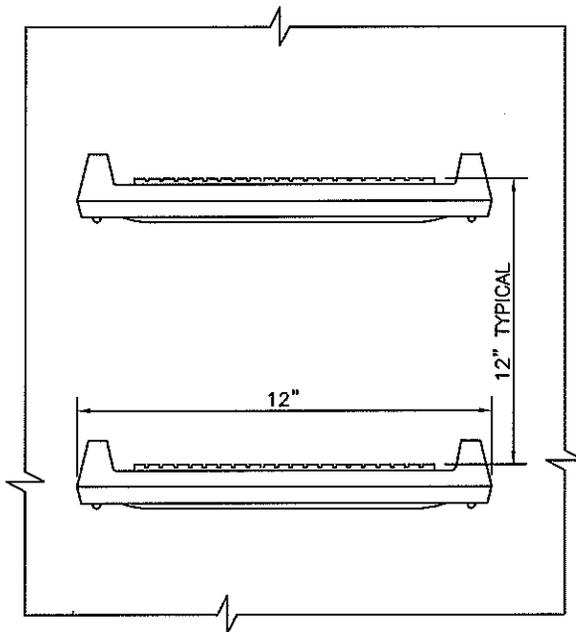
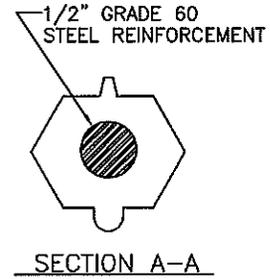
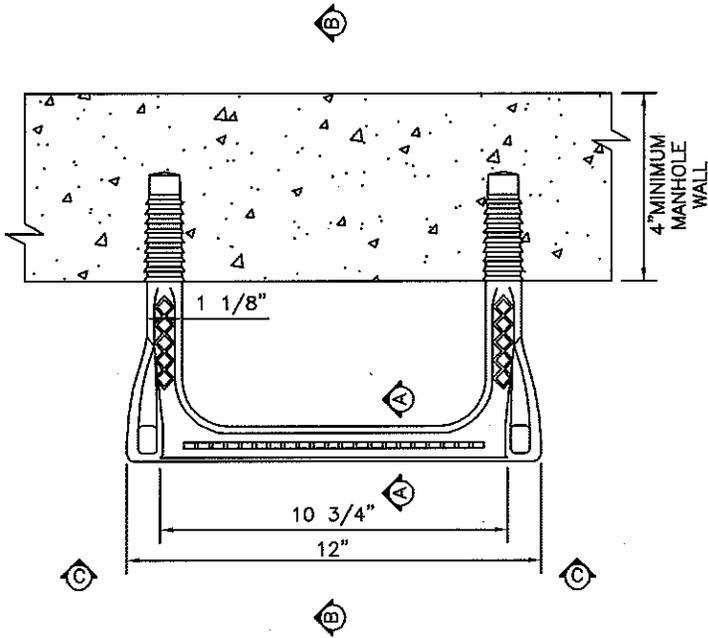
DATE: January 2014 FILE: Optional Outside Drop Manhole Connection.dwg



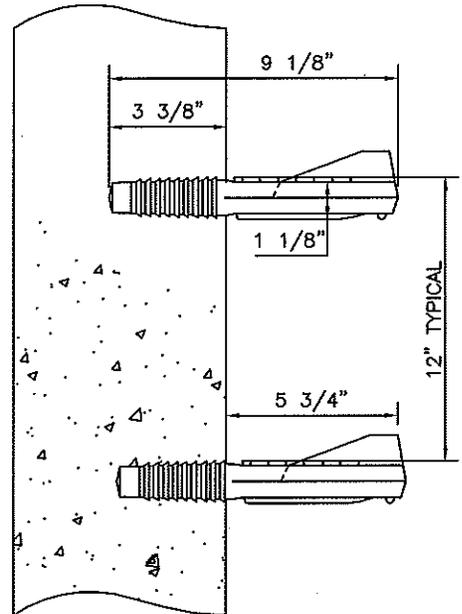
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N:\PROJ\424\Standard Details\2013\Sanitary\Ladder Bars for Manholes.dwg Layout=Ladder Bars for Manholes User=Shawn Wingrove Plotted=12/26/2013 8:50 AM



VIEW C-C



SECTION B-B

NOTE:

LADDER BARS SHALL MEET ALL MINIMUM O.S.H.A. REQUIREMENTS AND CONFORM TO ASTM C-478, LATEST REVISION

Ladder Bars For Manholes

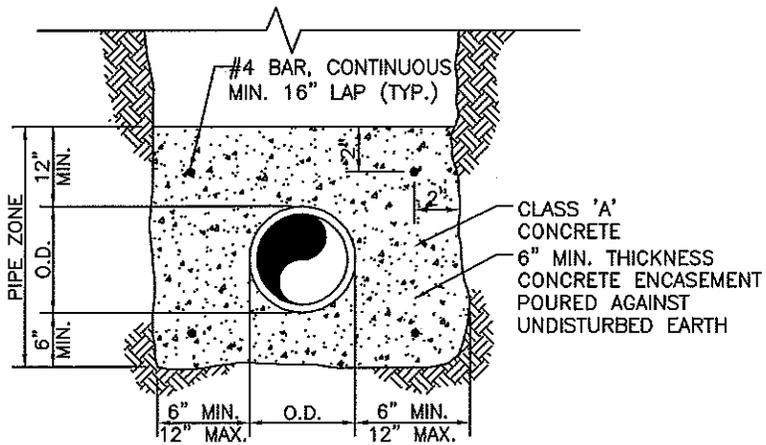
SCALE: N.T.S.

DATE: January 2014 FILE: Ladder Bars For Manholes.dwg



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Concrete Encasement

SCALE: N.T.S.

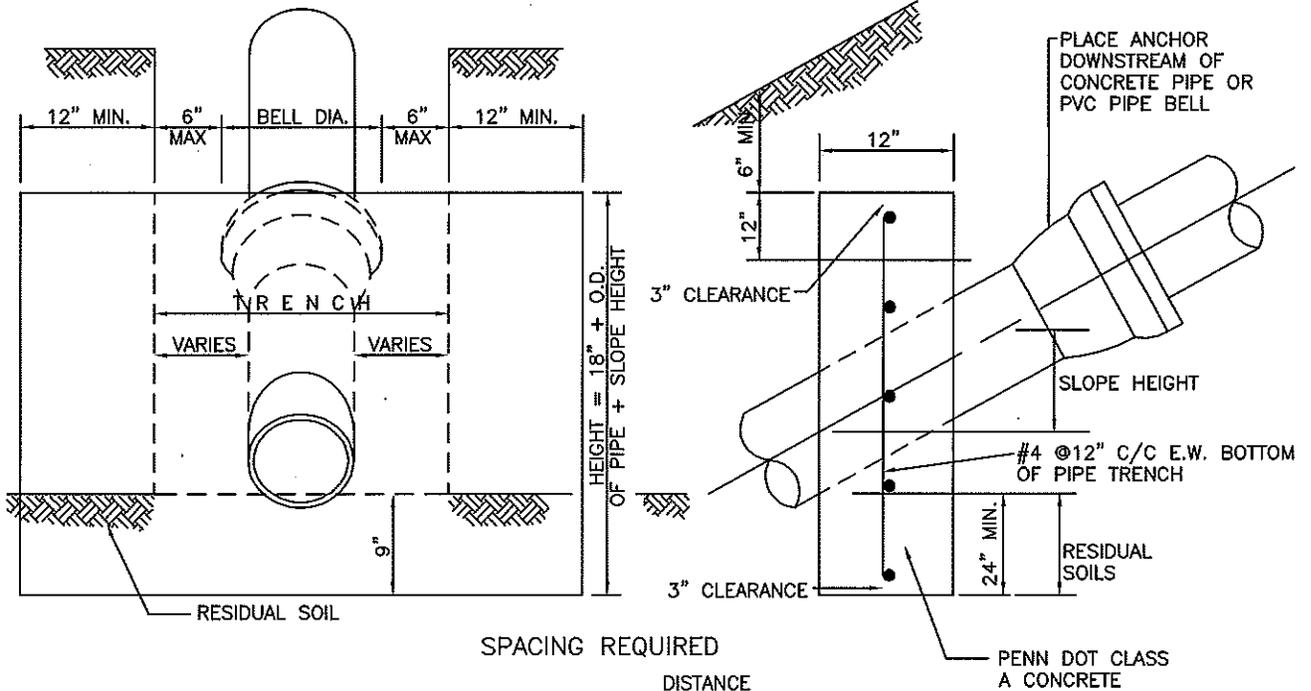
DATE: January 2014 FILE: Concrete Encasement.dwg



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SPACING REQUIRED

% GRADE	DISTANCE CENTER TO CENTER
20% TO 35%	36' C. to C.
35% TO 50%	24' C. to C.
50% +	16' C. to C.

DUCTILE IRON PIPE SHALL BE USED FOR ALL SEWERS OVER 40% GRADE.

Concrete Anchor

SCALE: N.T.S.

DATE: January 2014 FILE: Concrete Anchor.dwg



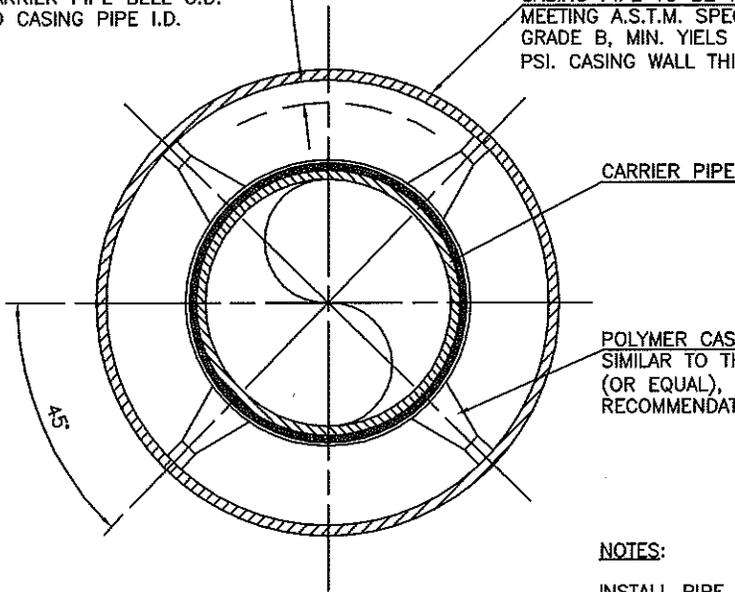
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N:\PROJ\424\Standard_Details_2013\Sanitary\Road_Boring_Steel_Casing.dwg Layout=Road Boring Steel Casing User=Shawn_Wingrove Plotted=12/26/2013 8:53 AM

2" (MIN.) CLEARANCE FROM CARRIER PIPE BELL O.D. TO CASING PIPE I.D.

CASING PIPE TO BE WELDED STEEL PIPE MEETING A.S.T.M. SPECIFICATIONS A-53, GRADE B, MIN. YIELS STRENGTH OF 35,000 PSI. CASING WALL THICKNESS = 0.375".



CARRIER PIPE

POLYMER CASIN SPACER SIMILAR TO THAT MANUFACTURED BY PSI (OR EQUAL), INSTALLED PER MANUFACTURERS RECOMMENDATIONS

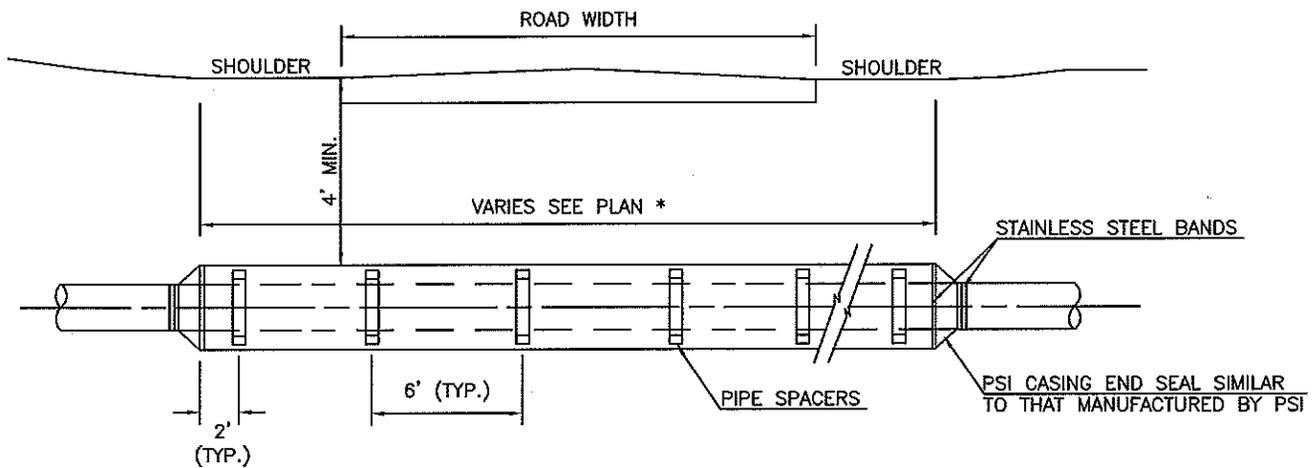
NOTES:

INSTALL PIPE SPACERS MAX. 3' FROM JOINT, MAX. OF 6' BETWEEN SUPPORTS, AND A MAX. OF 2' FROM CASING END.

LOCATE PIPE JOINT 1' MIN. OUTSIDE CASING.

UNDER 12" DIA. CARRIER PIPE, 3 EQUALLY SPACED SPACERS PER SECTION OF PIPE

OVER 12" DIA. CARRIER PIPE, 4 EQUALLY SPACED SPACERS PER SECTION OF PIPE



* EXACT LENGTH OF CASING PIPE TO BE DETERMINED IN THE FIELD.

Road Boring Steel Casing

SCALE: N.T.S.

DATE: January 2014 FILE: Road Boring Steel Casing.dwg



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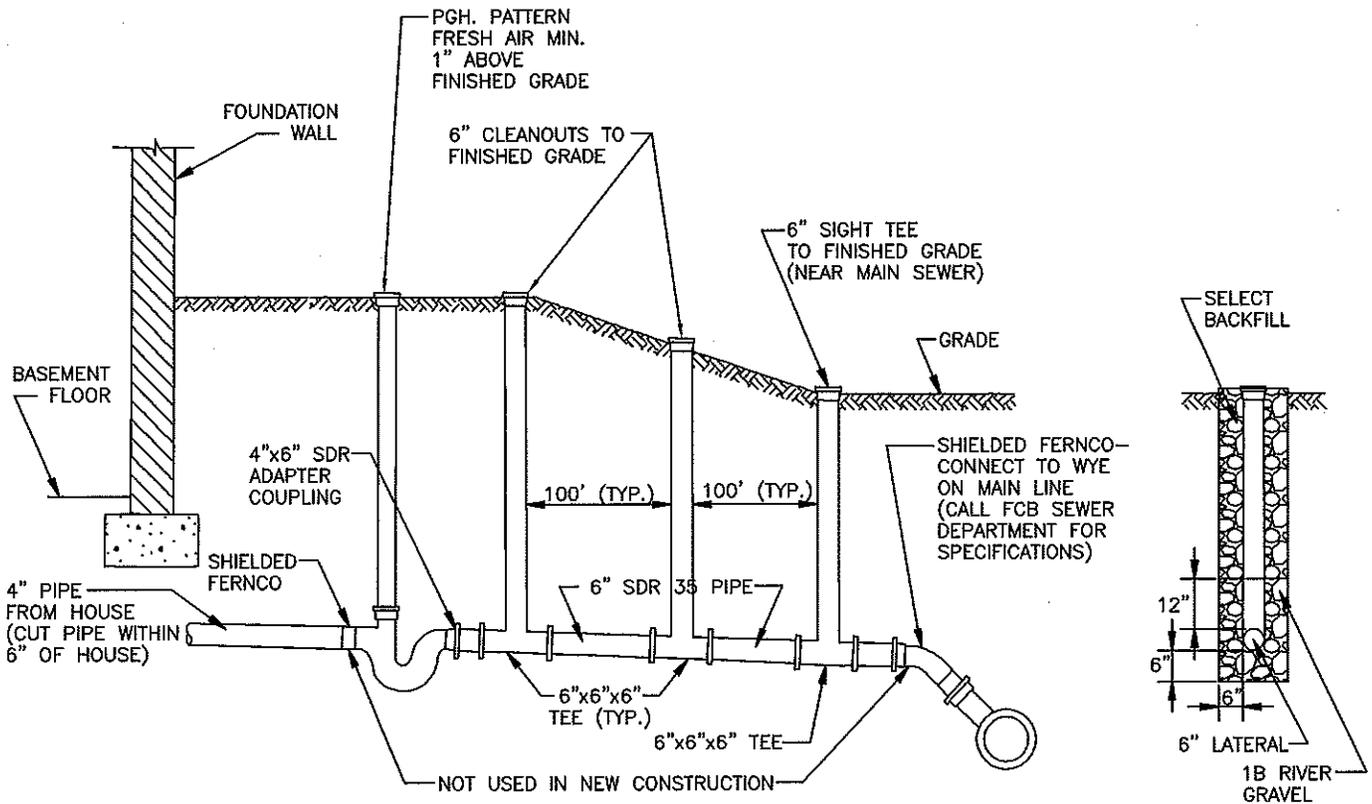


N:\PROJECTS\424\Standard Details\2013\Sanitary\Connection - New Installation.dwg Layout=Connection to Sanitary Sewer - New Installation User=Shawn Wingrove Plotted=12/26/2013 8:55 AM

THE FOLLOWING SUMMARIZES THE INSTALLATION REQUIREMENTS FOR SANITARY SEWER LATERALS IN FOX CHAPEL BOROUGH. FOR FURTHER INFORMATION, REFER TO THE "RULES AND REGULATIONS GOVERNING HOUSE OR BUILDING SANITARY SEWER CONNECTIONS."

AFTER THE 4" TRAP:

1. ALL PIPE SHALL BE 6" SDR 35 AND BEDDED IN 6" OF 1B RIVER GRAVEL.
2. ALL CLEANOUTS SHALL BE 6" STRAIGHT TEES OR SANITARY TEES ON THEIR BACK WITH 6" DIAMETER PIPE EXTENDING TO OR ABOVE GRADE. WYES MAY NOT BE USED IN CLEANOUTS OR SIGHT TEES.
3. ALL CLEANOUTS AND INSPECTION TEES SHALL HAVE AN SDR 35 PVC FEMALE ADAPTER (P1404) WITH A THREADED CAP (P1146). WHEN SUCH CLEANOUTS OR INSPECTION TEES ARE IN AN IMPERVIOUS SURFACE, A JOSUM 56046-88 CAST IRON COVER IS ALSO REQUIRED.
4. AREA AROUND PIPE TO A HEIGHT OF 12" ABOVE THE PIPE SHALL BE BACKFILLED WITH 1B RIVER GRAVEL.



REQUIRED INSPECTION BY BOROUGH:

1. ALL REPAIRS.
2. AFTER ALL PIPE AND CLEANOUTS HAVE BEEN BEDDED AND INSTALLED BUT BEFORE PIPE IS COVERED.
3. LEAK TESTING MUST BE WITNESSED BY THE BOROUGH.
4. 12" GRAVEL IN PLACE PRIOR TO BACKFILLING WITH SELECT MATERIAL.

NOTE:

ANY CONTRACTOR WHO IS NOT FULLY READY FOR THE INSPECTION AT THE SCHEDULED TIME WILL BE SUBJECT TO A REINSPECTION FEE OF \$25.

PLUMBERS MUST CALL BY 9:00 AM TO SCHEDULE INSPECTIONS
NO INSPECTIONS WILL BE MADE AFTER 2:30 PM

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Connection To Sanitary Sewer - New Installation

SCALE: N.T.S.

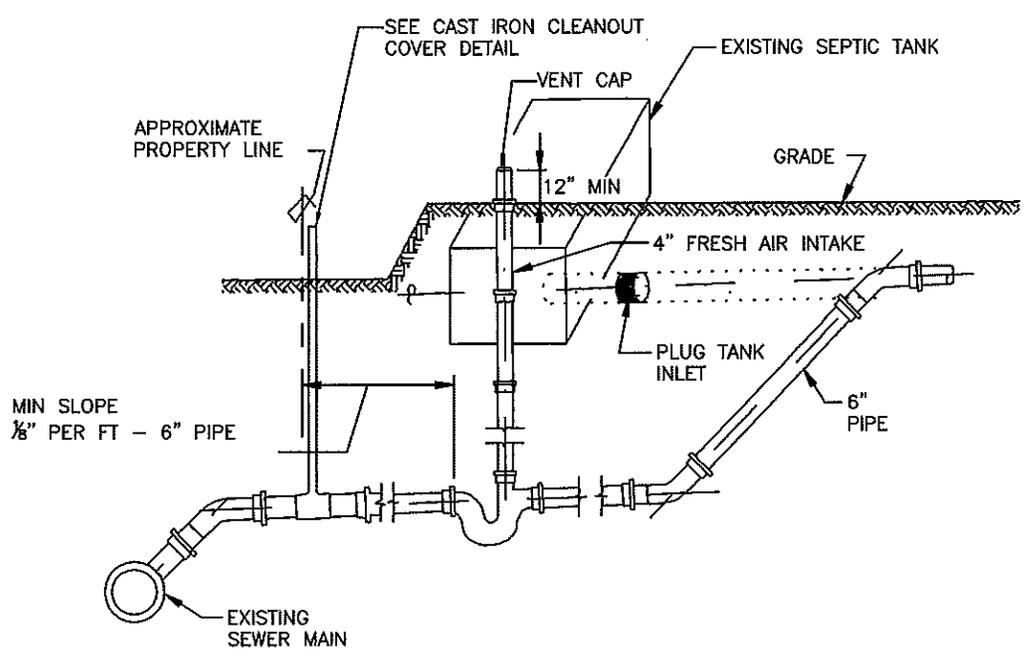
DATE: January 2014 FILE: Connection - New Installation.dwg



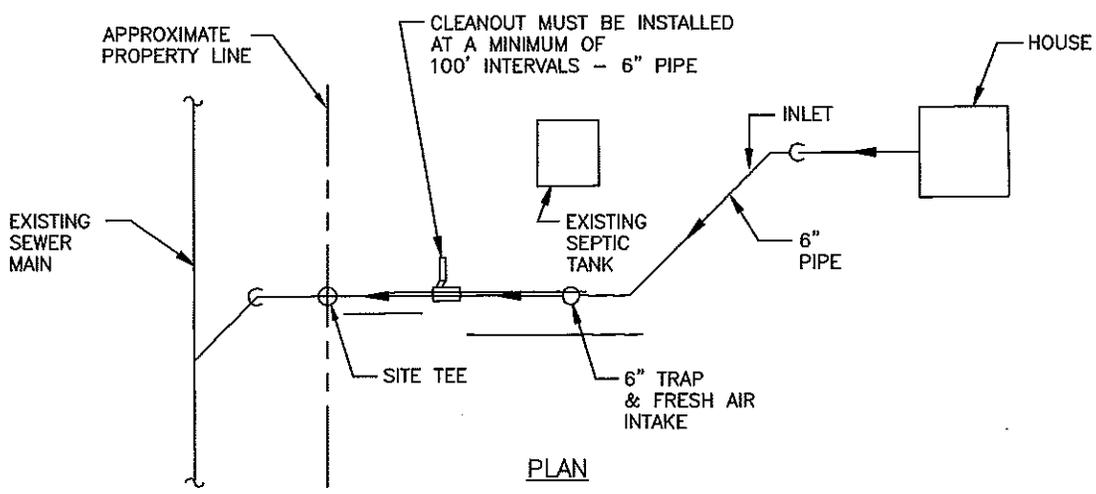
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SECTION - TYPICAL SEWER CONNECTION



PLAN

NOTE:

1. THE ENTIRE INSTALLATION MUST BE INSPECTED AND APPROVED BY THE BOROUGH OF FOX CHAPEL AND ACHD/PLUMBING INSPECTOR PRIOR TO BEING BACKFILLED.
2. CLEANOUTS INSTALLED AT MAX. 100' INTERVALS FOR 6" LATERALS OR AS DIRECTED BY THE ACHD PLUMBING INSPECTOR AND BOROUGH OF FOX CHAPEL.
3. FOR DISCONNECTIONS FROM EXISTING SEPTIC SYSTEMS, THE ENTIRE LATERAL MUST BE REPLACED TO THE CONNECTION AT THE HOUSE.

Connection To Sanitary Sewer - Existing Installation

SCALE: N.T.S.

DATE: January 2014 FILE: Connection - Existing Installation.dwg

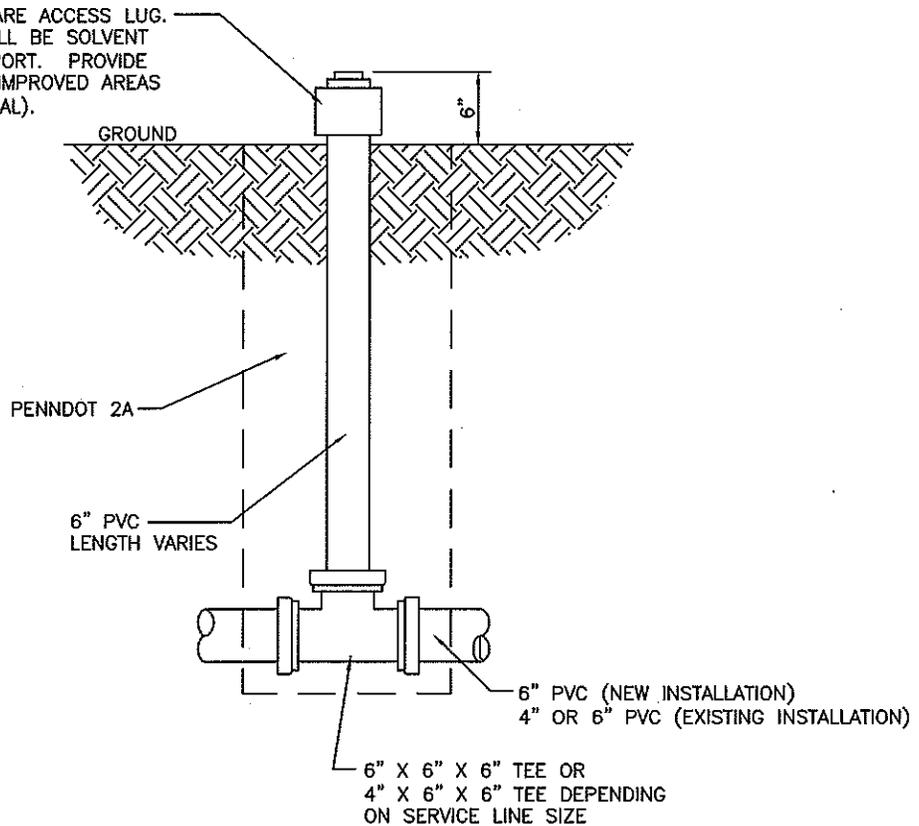


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THREADED MALE PVC PLUG WITH SQUARE ACCESS LUG. THREADED FEMALE PVC RECEIVER SHALL BE SOLVENT WELDED TO THE 6" TEST TEE/SIGHT PORT. PROVIDE CAST IRON COVER FOR SITE TEES IN IMPROVED AREAS (JOSAM 56046-88 OR APPROVED EQUAL).



NOTES:

1. CONFORM PVC PIPE TO THE REQUIREMENTS OF ASTM D-3034-SDR 26 AND ASTM D-3212 JOINTS.
2. CONSTRUCT ALL LATERALS AT A MINIMUM SLOPE OF TWO PERCENT(2%).
3. INSTALL ALL LATERALS ACCORDING TO THE TRENCH AND PIPE ZONE DETAIL.
4. THE CONTRACTOR TO COORDINATE PLACEMENT OF WYE CONNECTION, SERVICE LATERAL AND SIGHT TEE WITH THE PROPERTY OWNER AND AUTHORITY REPRESENTATIVE PRIOR TO THE START OF CONSTRUCTION.
5. TRANSITION SLEEVES WILL BE REQUIRED WHEN GOING FROM SCHEDULE 40 PVC PIPE TO SDR 35 PVC PIPE.
6. CLEANOUT SPACING - 100 FEET MAXIMUM FOR 4" AND 6" LATERALS.
7. CLEANOUT WILL BE REQUIRED AT ALL BENDS GREATER THAN 45 DEGREES.
8. PROVIDE JOSAM 56046-88 CAST IRON COVER, FLUSH WITH FINISHED GRADE, FOR ALL CLENAOUTS LOCATED IN IMPROVED AREAS.

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Cast Iron Cleanout & Inspection Port Cover

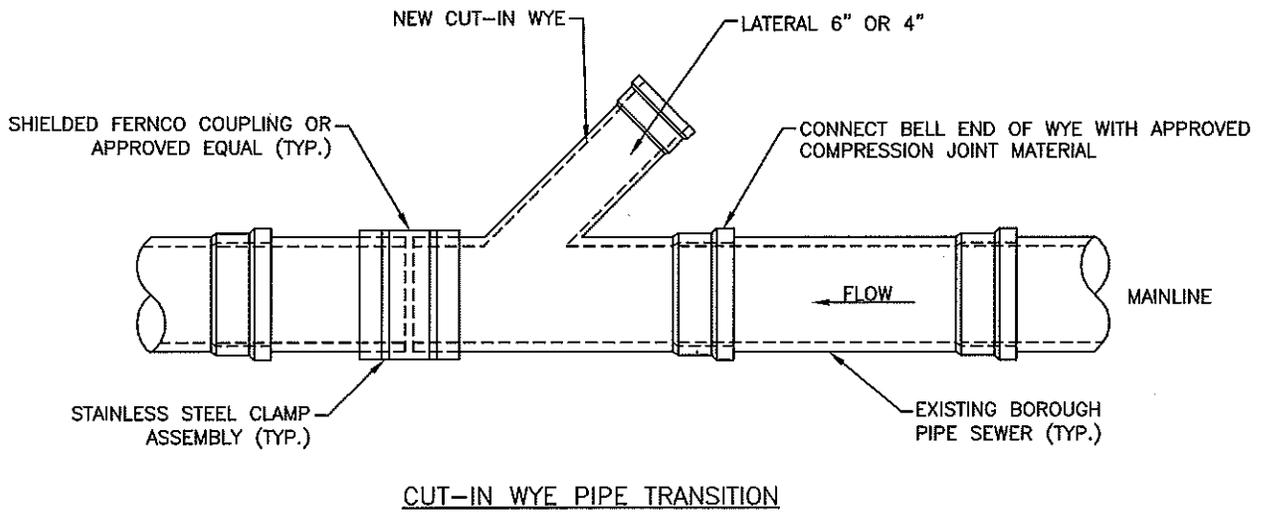
SCALE: N.T.S.

DATE: January 2014 FILE: Cast Iron CO & Inspection Port Cover.dwg



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- NOTES:**
1. SAW-CUT EXISTING PIPE SEWER, NO BREAK CONNECTIONS PERMITTED. JOINTS MUST BE INSPECTED BY BOROUGH OF FOX CHAPEL BEFORE AND AFTER FLEXIBUS COUPLINGS ARE INSTALLED.
 2. WYE MATERIAL WILL MATCH SEWER MAIN MATERIAL.
 3. PIPE MAIN I.D. OF NEW WYE SECTION WILL MATCH I.D. OF EXISTING PIPE SEWER MAIN.
 4. WYE LOCATION WILL BE LOCATED AT 2 O'CLOCK OR 10 O'CLOCK ON BARREL OF SEWER MAIN.
 5. FERNCOS ARE NOT PERMITTED FOR USE WITH PVC PIPE. ONLY GASKETED PVC FITTINGS AND COUPLINGS WILL BE ACCEPTED.

Connection - Proposed Wye

SCALE: N.T.S.

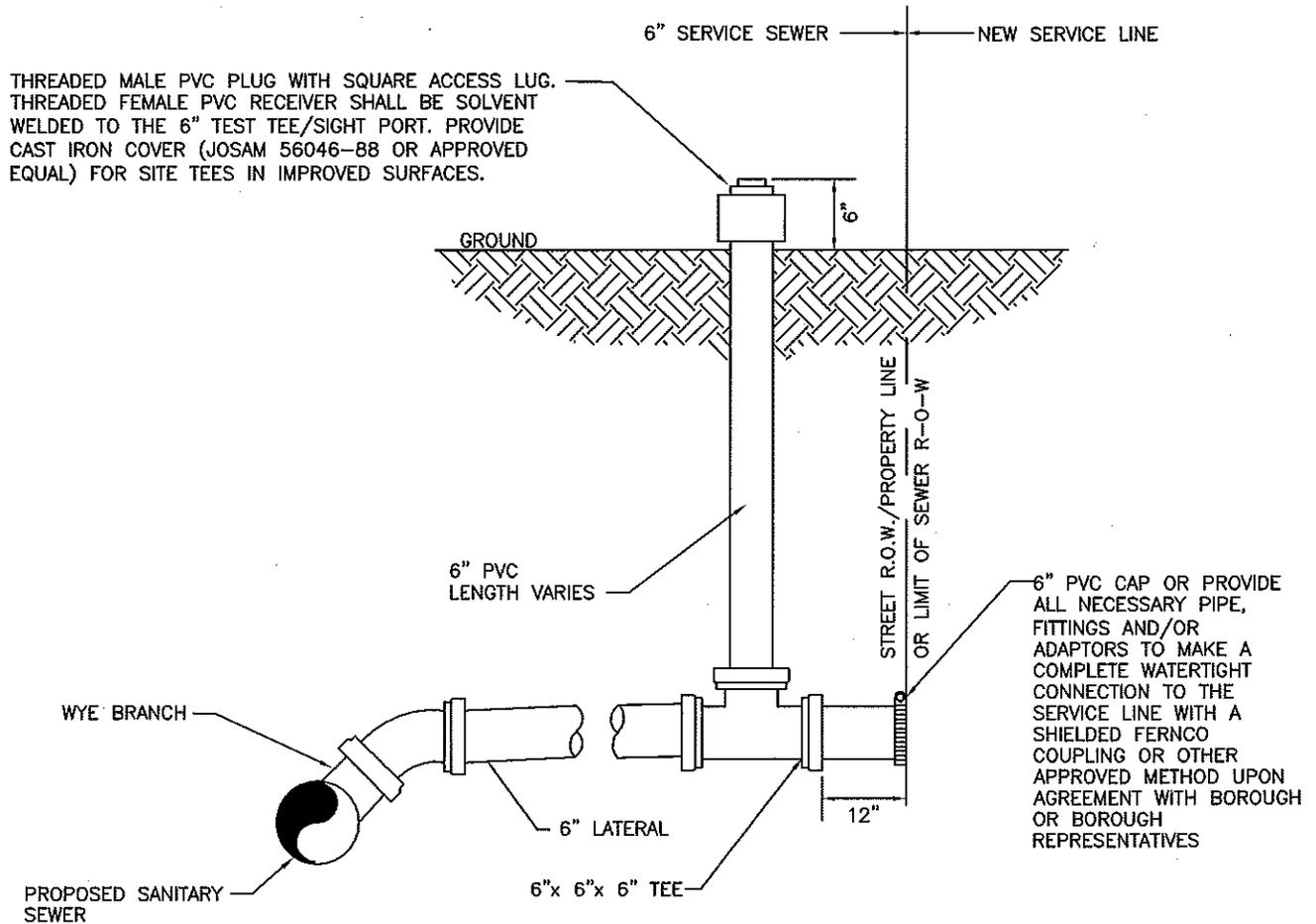
DATE: January 2014 FILE: Connection - Proposed Wye.dwg



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NOTES:

1. CONFORM PVC PIPE TO THE REQUIREMENTS OF ASTM D-3034-SDR 26 AND ASTM D-3212 JOINTS. CONSTRUCT ALL LATERALS AT A MINIMUM SLOPE OF TWO PERCENT(2%).
3. INSTALL ALL LATERALS ACCORDING TO THE TRENCH AND PIPE ZONE DETAIL.
4. THE CONTRACTOR TO COORDINATE PLACEMENT OF WYE CONNECTION, SERVICE LATERAL AND SIGHT TEE WITH THE PROPERTY OWNER AND AUTHORITY REPRESENTATIVE PRIOR TO THE START OF CONSTRUCTION.

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Service Lateral Site Tee Detail

SCALE: N.T.S.

DATE: January 2014 FILE: Service Lateral Site Tee Detail.dwg

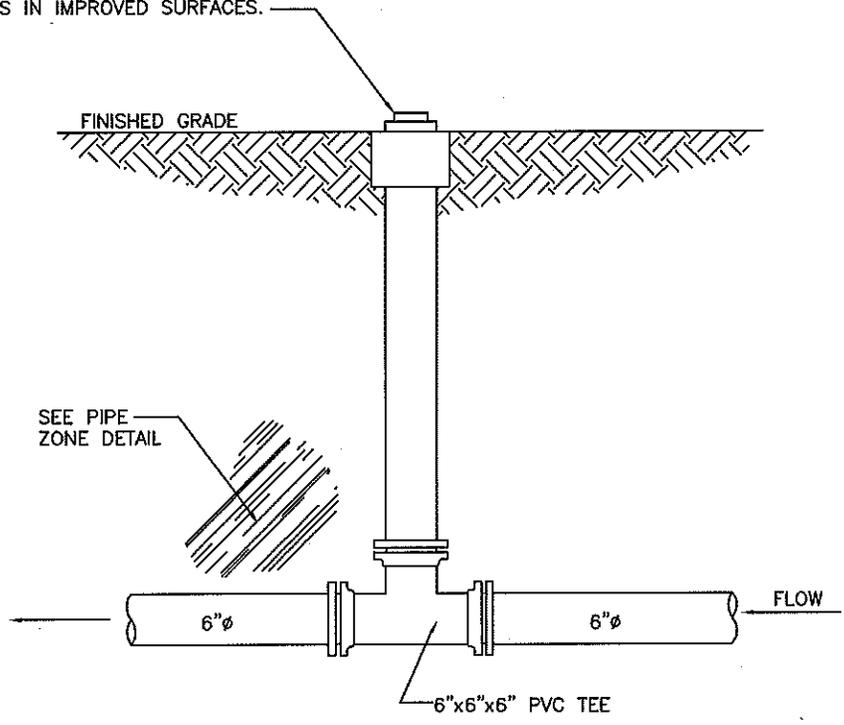


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PROVIDE CAST IRON COVER (JOSAM 56046-88 OR APPROVED EQUAL) FOR CLEANOUTS IN IMPROVED SURFACES.



Cleanout Assembly

SCALE: N.T.S.

DATE: January 2014 FILE: Cleanout Assembly.dwg



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III. ROADWAY AND STORM SEWER REQUIREMENTS

A. Project Completion Checklist for Roadways and Storm Sewers

1. Submit 110% cost of construction Performance Bond, 10% cost of construction Escrow Deposit and a Certificate of Insurance with the Borough of Fox Chapel as additional insured.
2. Installation of storm sewers and roadways per the approved plans and per Borough of Fox Chapel Regulations.
3. Complete and submit Record Drawings (As-Builts) of storm sewers and roadways for review and approval by the Borough of Fox Chapel. Record Drawings must be accepted prior to Performance Bond being released. All rights-of-way must be recorded and conveyed to the Borough of Fox Chapel prior to release of Performance Bond.
4. After the storm sewer line has been installed for 30 days, testing will need completed per Borough of Fox Chapel Regulations. Tests shall include:
 - i. Mandrel (Deflection) Test of the entire sewer line
5. Submit Maintenance Bond for 18 months from the date of the Borough's acceptance of storm sewers and roads for an amount of 15% the cost of construction.
6. At month 16 of the Maintenance Bond period, CCTV all storm sewer lines and submit videos and data to the Borough for review.
7. Escrow Deposit shall remain in place until the expiration date as set forth in any agreements entered into between the Borough of Fox Chapel and the Developer or unless otherwise agreed to by the Borough of Fox Chapel, but at a minimum until the 18-month Maintenance Bond expires.

B. ROADWAY CONSTRUCTION REQUIREMENTS

1. Contact all utility companies prior to start of work to schedule and coordinate line relocations, adjustments to utility structures, and all other work to be completed by utility companies, incidental to construction.
2. All valve boxes, manholes, and hand holes not adjusted by utility companies are to be adjusted as directed by the Borough Engineer prior to dedication of facilities. Provide all utility companies with detailed schedule, height and number of adjustments incidental to the wearing

schedule, height and number of adjustments incidental to the wearing course item. Update schedule and provide to all utility companies bi-weekly schedule, incidental to construction.

3. Provide temporary ramps (cold patch or hot mix asphalt only – no millings) to all residential and commercial driveways, and around structures (inlet, manholes, valve boxes a minimum of 3 feet in all directions), incidental to construction.
4. Remove and dispose of existing inlet grate, frame, and box where inlets are to be replaced. Install new structure and connect all existing pipes where noted. Provide all necessary pipe fittings and/or adapters to provide a complete watertight connection. Backfill excavated area with AASHTO No. 57 stone. This work is incidental to the new structure item.
5. For piping connections to existing structure including pavement base drain, core drill hole for new outlet. Air hammering is not permitted. Reparge, add brick, relay all loose brick incidental to pipe item. Field verify condition of existing structures prior to construction.
6. Maintain/replace existing monuments.
7. Adjust all manholes, valve boxes, curb boxes and inlets to match finished roadway surface grade prior to installing final wearing course.
8. Connect outlet pavement base drains to each catch basin which the underdrain passes, including providing hole through catch basin wall, all parging, etc.
9. Field verify location and elevation(s) of existing storm sewer pipes.
10. Reparge all inlets and/or repair all inverts in all existing inlets on project roadways including replacing all underdrain connections with couplers on inside and outside of box.
11. When excavating a trench for placement of pipe, conduit, inlets, manholes and other appurtenances associated with pipe or conduit construction and full depth curb, the Developer understands that the work is parallel or in close proximity to building foundations and other utilities including but not limited to overhead lines and supporting poles, gas lines, waterlines, sanitary sewers, buried cable, etc. The Developer must take the necessary precautions to protect and support those utilities or foundations to prevent movement, damage and to maintain service.

12. The Developer shall notify utility companies or building foundation owner(s) of the proximity of the trench excavation to the utilities or foundation and is responsible to ensure that the work will not affect the structural integrity of the utility or building foundation.

C. STORM SEWER INSTALLATION REQUIREMENTS

1. Verify all existing utilities in the field prior to start of excavation work. Comply with One Call (Act 38) requirements. Contact all utility companies that may have facilities within the work area.
2. Field check and verify benchmark elevations for all work before start of construction. Set/adjust final grades for proposed storm sewer lines after all existing utilities and other obstructions have been located by test holes. Hand dig all necessary test holes, per PA One Call requirements, to locate any existing utilities that may be in conflict with the alignment and grade of the proposed storm sewer. Meet all existing conditions and grades along the route of the proposed sewer lines.
3. Maintain and protect traffic during construction. Coordinate all work with local emergency response and transportation agencies. Provide all required signage for temporary traffic control. Maintain all roads, sidewalks, steps and traveled ways clean, free of mud or dust, and in a condition usable by residents in the area during construction. Maintain access to all driveways during construction.
4. Maintain all existing storm sewers and sanitary sewers in service during construction. Contain sanitary sewage to sanitary sewers. Do not discharge to the ground surface or to groundwaters.
5. Confine all activity to authorized rights-of-way. When in doubt about right-of-way limits, verify with Owner.
6. Implement and maintain an Erosion and Sedimentation Control Plan as required by Pennsylvania Code Title 25, Chapter 102.
7. Restore all private property disturbed by construction activities within two weeks of construction work.
8. Maintain daily as-built record information including wye stationing. Give the Borough's Representative copies of all delivery slips for all materials delivered to the project.

9. Coordinate and schedule all work as required with utility companies, other contractors, and local, municipal or state government agencies. Notify the Borough and Borough Engineer 48 hours in advance of starting the project.
10. Pipeline acceptance testing shall include mandrel and full moon spot light.
11. Protect public at all times from all open excavation, cover all open excavation with suitable steel plates at the end of each workday.
12. All pipe shall be corrugated polyethylene culvert pipe (CPP) smooth lined with watertight locking joints or reinforced concrete pipe (RCP) as approved.

13. Trench backfill requirements:

Pipe Zone:

CPP or RCP pipe full #57 or PennDOT 2A stone bedding (no slag)

Intermediate Zone:

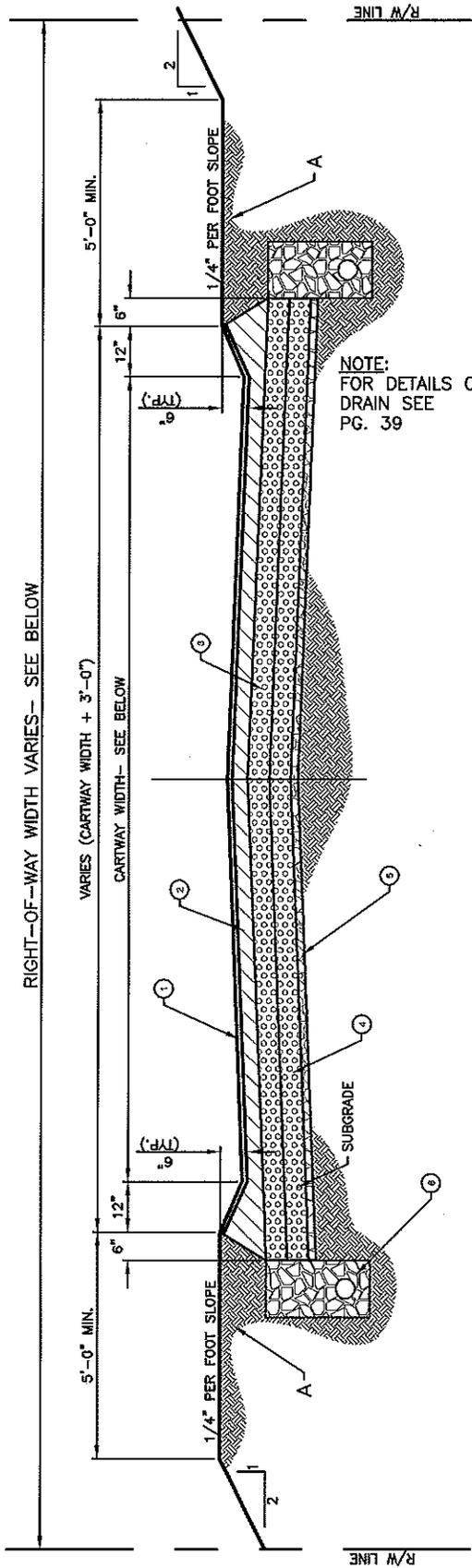
Improved areas full trench stone vibratory compact in 8" lifts (no slag), #57 or PennDOT 2A with trench plugs

Unimproved areas select backfill vibratory compact in 8" lifts.

Final Zone: As specified.

14. All storm sewer precast materials (i.e. manholes, inlets, endwalls, etc.), and inlet or manhole frames, lids, grates, and pipe must come from supplier listed in Bulletin 15.

D. ROADWAY AND STORM SEWER DETAILS (SEE FOLLOWING PAGES)



NOTES:

1. ALL DEPTHS INDICATED ARE AFTER COMPACTION.
2. BITUMINOUS WEDGE CURBS SHALL BE 18" WIDE x 4" HIGH.
3. PREPARATION FOR AND INSTALLATION OF THE FINAL 1 1/2" OF WEARING SURFACE, INCLUDING ALL REPAIRS TO PAVEMENT SECTION REQUIRED BY THE BOROUGH, SHALL BE COMPLETED IN CONFORMANCE WITH THE DEVELOPER'S AGREEMENT. THIS WORK ALSO INCLUDES BITUMINOUS LEVELING COURSE TO PROVIDE SMOOTH SURFACE FOR FINAL WEARING SURFACE TO BE INSTALLED. ALL MANHOLE LIDS, GRATES, VALVES SHALL BE ADJUSTED TO GRADE PRIOR TO INSTALLATION OF FINAL 1 1/2" WEARING COURSE.
4. ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS SET FORTH IN PENNDOT PUBLICATION 408. ALL CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH BULLETIN 15 AND THE STANDARDS SET FORTH IN PENNDOT PUBLICATIONS 70, 72M, AND 408.
5. LOCATION AND INSTALLATION OF ALL STREET SIGNS (STREET IDENTIFICATION, STOP, SPEED LIMIT, ETC.) SHALL BE IN ACCORDANCE WITH THE CURRENT MUTCD REQUIREMENTS AND AS DIRECTED BY THE BOROUGH. DEVELOPER TO PROVIDE A SIGNAGE PLAN FOR REVIEW AND APPROVAL OF BOROUGH.
6. DEVELOPER'S TRAFFIC ENGINEER TO PROVIDE TRAFFIC COUNTS AND ESALS FOR MIX DESIGN WITH SHOP DRAWING SUBMITTAL.

DESCRIPTION

- | | | |
|---|--------------|-----------------------------------------------------------------|
| ① | 1' INITIAL | BITUMINOUS WEARING COURSE |
| ② | 1-1/2" FINAL | BITUMINOUS BINDER COURSE |
| ③ | 3" | #4 AGGREGATE CHOKED WITH #1 DUST |
| ④ | 4" | #4 AGGREGATE CHOKED WITH #1 DUST |
| ⑤ | 4" | 2A LIMESTONE (NO SLAG) |
| ⑥ | 2" | SUB-SURFACE TYPE DRAIN WITH 6" PERFORATED PVC PIPE (BOTH SIDES) |

MINIMUM COMPACTED THICKNESS

- | | |
|---|---------------------------------------------------------|
| A | FILL AREAS TO BE SELECT MATERIAL - COMPACTED AND SEEDED |
| B | GRADED AND SEEDED BERMS |

ROAD CLASSIFICATION	CARTWAY WIDTH	MINIMUM CROWN	RIGHT-OF-WAY WIDTH
ARTERIAL	26'	3-1/4"	60'
COLLECTOR	24'	3"	50'
LOCAL	20'	2-1/2"	50'

Typical Pavement Section

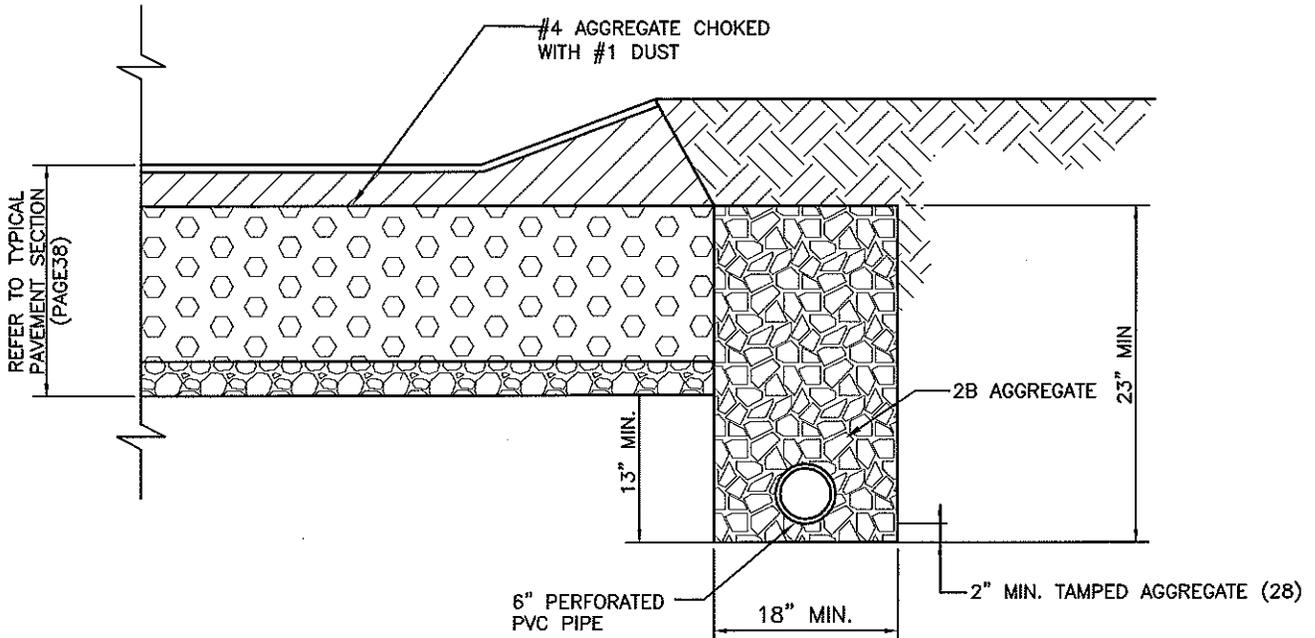
SCALE: N.T.S.

DATE: January 2014 FILE: Typical Pavement Section.dwg



Fox Chapel Borough
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Pavement Base Drain

SCALE: N.T.S.

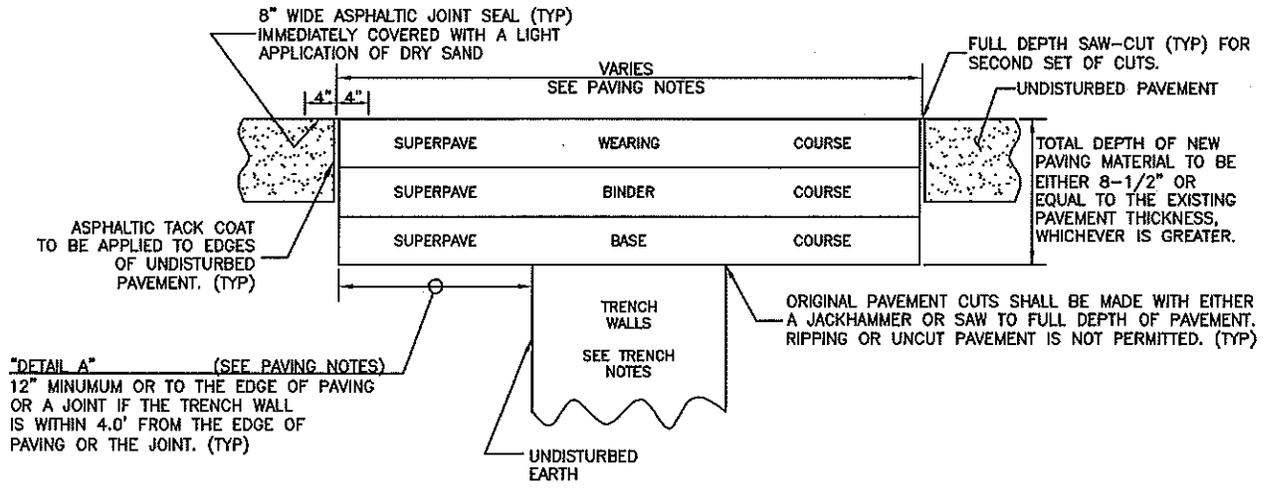
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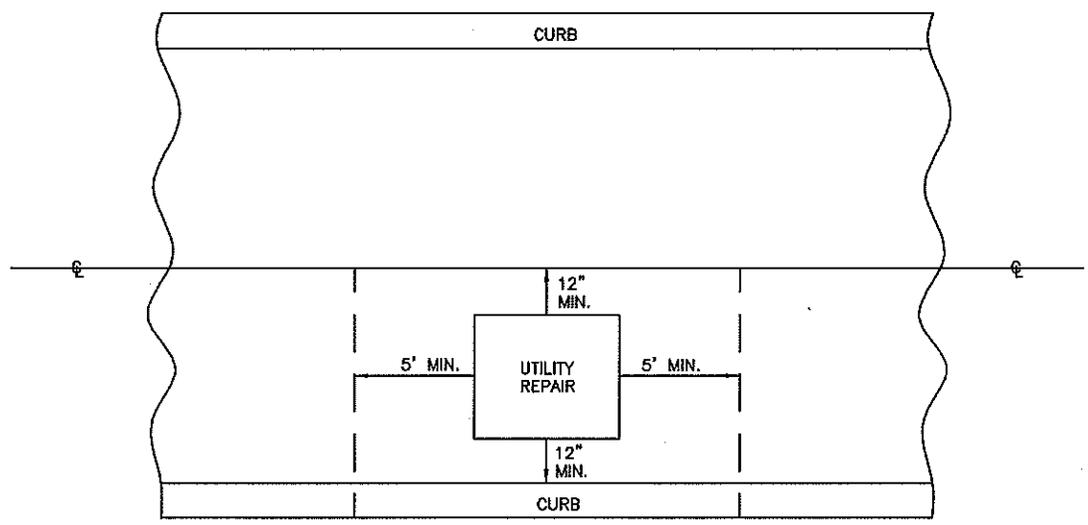
Fox Chapel Borough
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"DETAIL A" (SEE PAVING NOTES)
 12" MINIMUM OR TO THE EDGE OF PAVING
 OR A JOINT IF THE TRENCH WALL
 IS WITHIN 4.0' FROM THE EDGE OF
 PAVING OR THE JOINT. (TYP)



TRENCH NOTES

1. MAXIMUM TRENCH WIDTH = $[1.38 \times \text{PIPE DIAMETER}] + 8"$.
2. TRENCH SHALL BE BACKFILLED WITH SUITABLE MATERIAL TO A HEIGHT OF 12" ABOVE THE PIPE OR CONDUIT.
3. REMAINDER OF TRENCH FROM TOP OF SUITABLE BACKFILL TO BOTTOM OF BASE COURSE SHALL BE BACKFILLED WITH 2RC AGGREGATE OR OTHER APPROVED MATERIAL AS PER PENNDOT FORM 40B, SECTION 703.3, AND MECHANICALLY COMPACTED IN 6-INCH LAYERS.

- WEARING COURSE -SUPERPAVE WEARING, 9.5MM, 1-1/2" THICK OR EQUAL TO EXISTING, WHICHEVER IS GREATER.
- BINDER COURSE -SUPERPAVE BINDER, 19MM, 2" THICK OR EQUAL TO EXISTING, WHICHEVER IS GREATER.
- BASE COURSE -SUPERPAVE BASE COURSE, 25MM, 5" THICK OR EQUAL TO EXISTING, WHICHEVER IS GREATER.

PAVING NOTES

1. WHEN CARTWAY IS OPENED, PLACE PENNDOT SUPERPAVE WEARING FOR THE ENTIRE LANE WIDTH AND KEY INTO CENTERLINE.
2. WHEN A LATERAL CROSSING IS MADE ACROSS CARTWAY, PAVE 30' ON EACH SIDE OF TRENCH CENTERLINE AND KEY INTO EXISTING ROADWAY.
3. BOROUGH MAY REDUCE ABOVE REQUIREMENTS ON A CASE-BY-CASE BASIS IN WHICH CASE ALL RESTORATION MUST BE IN ACCORDANCE WITH "DETAIL A" ABOVE.
4. ALL PATCHES MUST BE SEALED THE DAY THE PATCH IS COMPLETE.

Bituminous Pavement Resurfacing - Street Opening Permit

SCALE: N.T.S.

DATE: January 2014 FILE: Bituminous Pavement Resurfacing.dwg



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 Allegheny County, Pennsylvania
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TYPE OF STREET *

	<u>ARTERIAL STREETS</u>	<u>COLLECTOR STREETS</u>	<u>LOCAL STREETS</u>
RIGHT OF WAY WIDTHS (RADIUS)	60'	50'	50'
CUL-DE-SAC RIGHT OF WAY RADIUS	NA**	NA**	60'
ANGLE OF STREET INTERSECTION	90°	75°-90°	60°-90°
CARTWAY PAVING WIDTH (CURB TO CURB)	26'	24'	20'
CUL-DE-SAC PAVING RADIUS - TO GUTTER LINE	NA**	NA**	40' MIN
CUL-DE-SAC CARTWAY PAVING WIDTH (CURB TO CURB)	NA**	NA**	20'
MINIMUM STREET GRADE	1.5%	1.0%	1.0%
MAXIMUM STREET GRADE	6.0%	10.0%	12.0%
MAXIMUM LEVELING GRADE (FOR 25' BEFORE NEAREST RIGHT OF WAY OF STREET BEING INTERSECTED)	6.0%	6.0%	6.0%
CURB RETURN RADIUS	40'	30'	25'
CLEAR SIGHT TRIANGLE (MAIN TO SIDE STREET)	500'/30'	200'/25'	150'/25'
HORIZONTAL CURVES MINIMUM CENTER LINE RADIUS	500'	200'	125'
VERTICAL CURVES (PLUS 20' FOR EVERY 1% CHANGE IN GRADE OVER 3%)	150'	100'	50'
BITUMINOUS WEDGE CURB	4"h x18"w	4"h x18"w	4"h x18"w

* SEE DEFINITIONS OF STREET TYPES

NA** NOT APPLICABLE

Street Design Standards

SCALE: N.T.S.

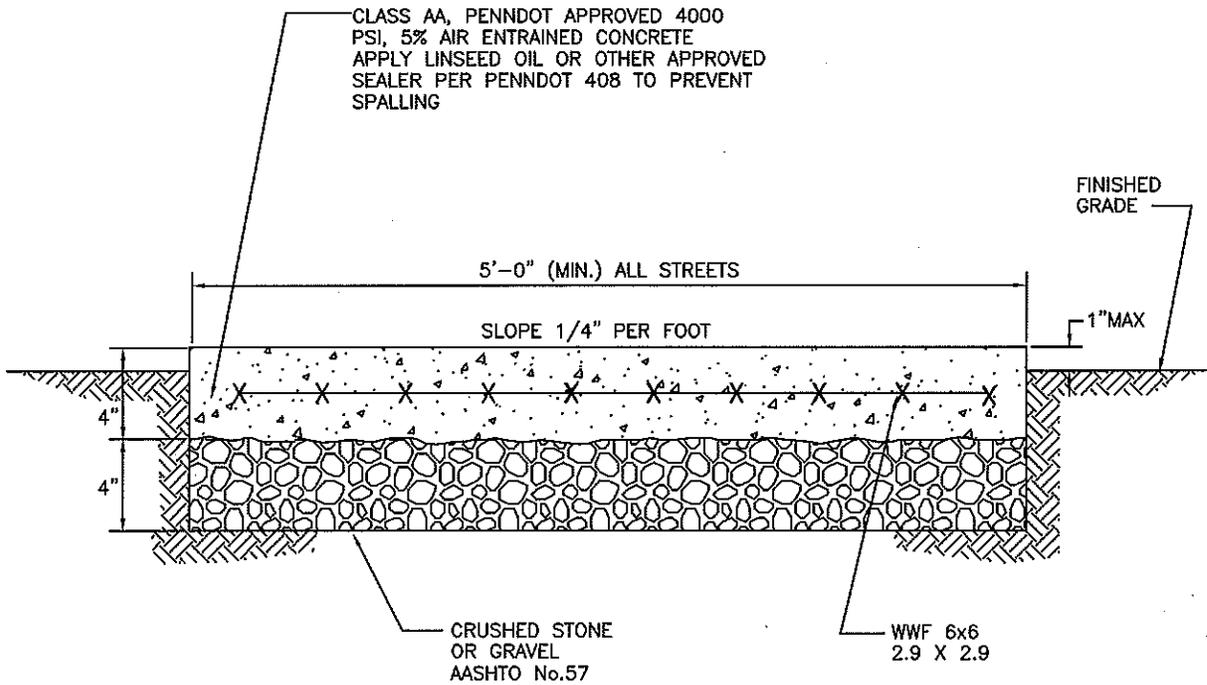
DATE: January 2014 FILE: Street Design Standards.dwg



Fox Chapel Borough
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N:\PROJ\424\Standard_Details\2013\Roads\Concrete_Sidewalk.dwg Layout=Concrete_Sidewalk.dwg User=Shawn Wingrove Plotted=12/26/2013 9:08 AM



NOTES:

1. WALK SHALL BE CROSS SCORED EVERY FIVE FEET (5'). 1/2" PREFORMED EXPANSION JOINTS EVERY 50 FEET. WALK SHALL HAVE TROWELED EDGES WITH A STIFF BROOM FINISH.
2. IF A DRIVEWAY IS TO BE CONSTRUCTED OVER A SIDEWALK, THE CONCRETE SHALL BE PLACED AT 6" DEPTH.
3. PROVIDE TWO (2) No 4 DOWELS AT PROPERTY LINES.
4. PREPATORY WORK ON REINFORCEMENT MUST BE INSPECTED BY BOROUGH PRIOR TO POURING OF CONCRETE.
5. PROVIDE ADA CURB RAMPS AT ALL INTERSECTIONS WHERE WALK EXISTS WITHIN PLAN.

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Concrete Sidewalk

SCALE: N.T.S.

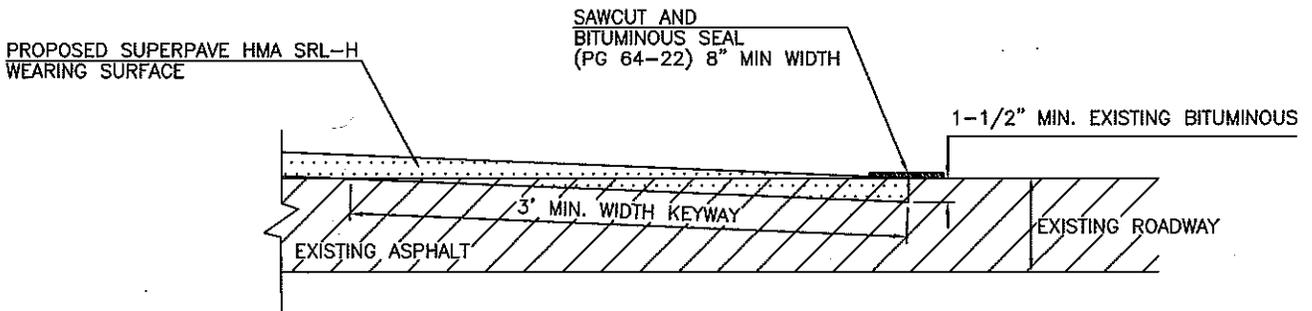
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Asphalt Keyway

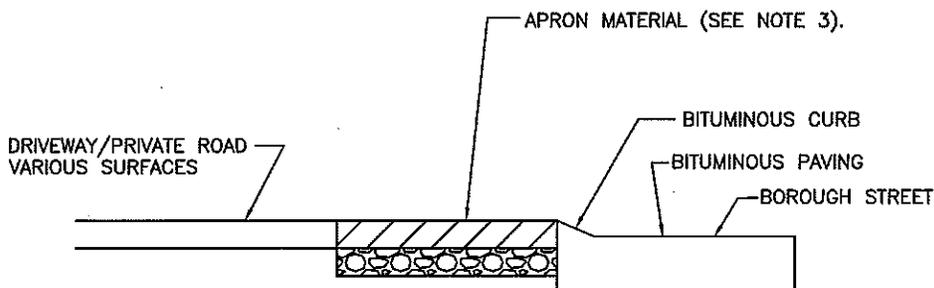
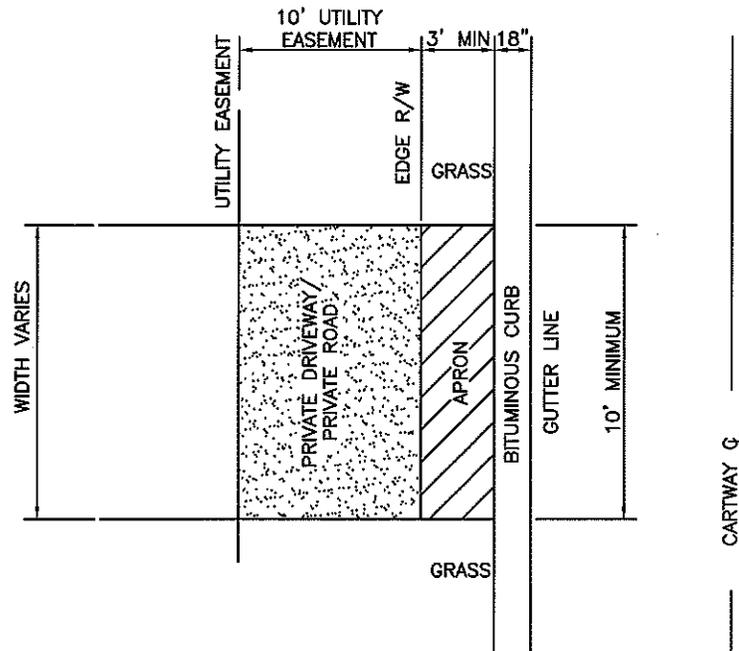
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DATE: January 2014 FILE: Asphalt Keyway.dwg



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NOTES:

1. ALL WORK TO BE COMPLETED PER PENNDOT PUB. 408.
2. ALL DRIVEWAYS AND PRIVATE ROADS USING ANY MATERIAL OTHER THAN BITUMINOUS PAVING MUST TERMINATE A MINIMUM OF 3' FROM THE PAVED PORTION OF THE ROAD.
3. ALL DRIVEWAYS AND PRIVATE ROADS USING ANY MATERIAL OTHER THAN BITUMINOUS PAVING MUST HAVE A MINIMUM 3' APRON. THE APRON MUST BE COMPLETELY SEPARATED FROM AND IN NO WAY CONNECTED TO THE DRIVEWAY. PERMITTED APRON MATERIALS INCLUDE GRAVEL, BITUMINOUS PAVING, BELGIUM BLOCK, COBBLESTONE, REMOVABLE PAVERS AND OTHER MATERIALS APPROVED BY THE BOROUGH. NO CONCRETE IS PERMITTED TO BE USED WITHIN THE APRON EITHER AS A BASE OR FINISHED MATERIAL.
4. THE DRIVEWAY/PRIVATE ROAD AND APRON SHOULD HAVE FALL AWAY FROM THE ROADWAY OR CONTAIN A SWALE FOR DRAINAGE. DRAINAGE IS NOT PERMITTED ONTO ROAD SURFACE.
5. DRIVEWAYS AND PRIVATE ROADS MAY EXTEND FROM THE RIGHT-OF-WAY LINE OF THE STREET TO THE CARTWAY OF THE STREET BUT SHALL NOT CHANGE THE GRADE OR CONTOUR OF THE STREET RIGHT-OF-WAY NOR SHALL ANY PERSON CUT INTO, FILL, OR IN ANY WAY ALTER ANY GUTTER, CURBING, DRAINAGE DITCH, OR STORM WATER OR SANITARY SEWER WITHIN THE RIGHT-OF-WAY OF A STREET OR EASEMENT WITHOUT FIRST OBTAINING A PERMIT FROM THE BOROUGH.
6. THE BOROUGH CAN REQUIRE THAT RESIDENT PROVIDE ADDITIONAL ON LOT STORMWATER MANAGEMENT FOR DRIVEWAYS AND PRIVATE ROADS.
7. DRIVEWAYS AND PRIVATE ROADS MUST BE LOCATED TO PROVIDE MINIMUM SIGHT DISTANCE AS REQUIRED BY PENNDOT FORM M-950S.
8. PRIOR TO CONSTRUCTION, A DRIVEWAY/PRIVATE ROAD PERMIT MUST BE SECURED IN ACCORDANCE WITH BOROUGH REQUIREMENTS.
9. THE BOROUGH IS NOT RESPONSIBLE FOR DAMAGE, MAINTENANCE, SALVAGE OR REPLACEMENT OF MATERIALS PLACED WITHIN THE BOROUGH ROAD RIGHT-OF-WAY OR THE DRIVEWAY/PRIVATE ROAD APRON. DURING ROADWAY CONSTRUCTION PROJECTS THE BOROUGH WILL NOT BE RESPONSIBLE FOR THE SALVAGE OF ANY MATERIALS IN THE APRON AND BITUMINOUS PAVING WILL BE INSTALLED IN THE DRIVEWAY APRON.

Driveway & Private Road Connection to Street with Curb

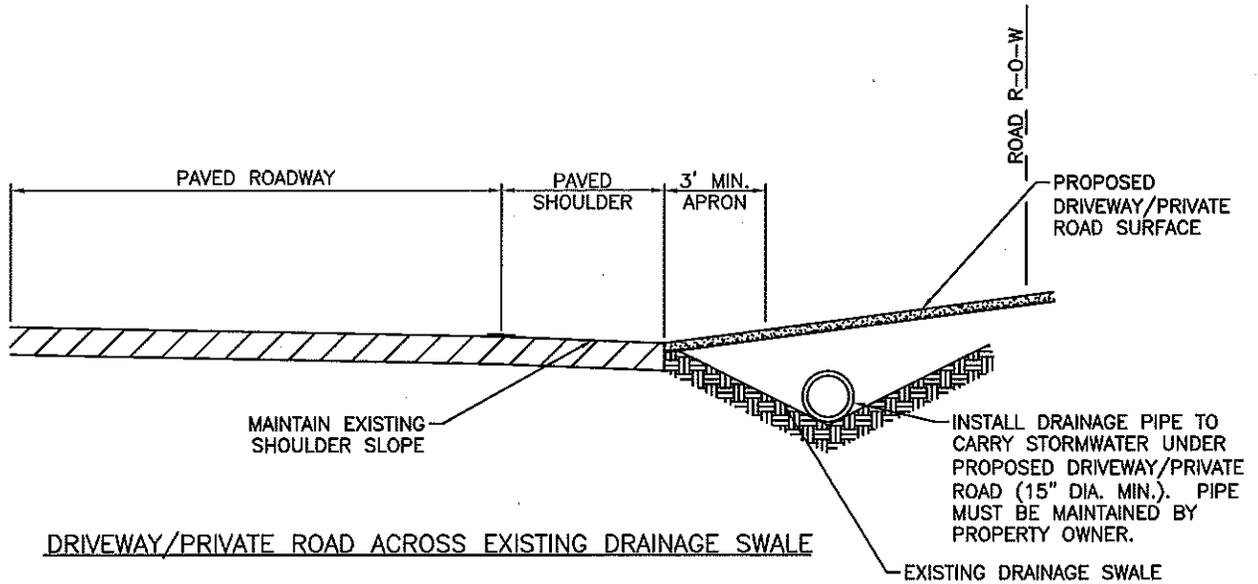
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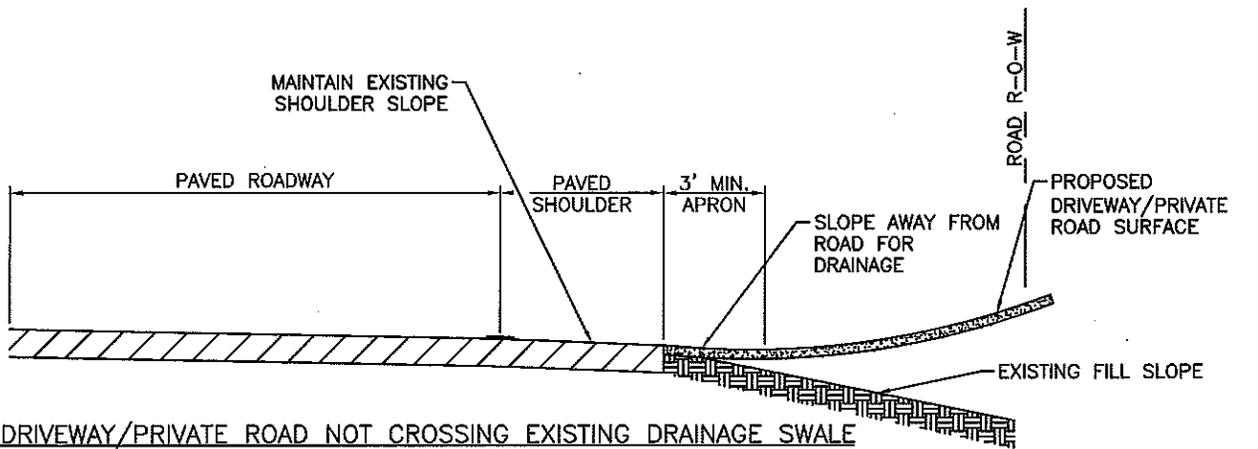


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DRIVEWAY/PRIVATE ROAD ACROSS EXISTING DRAINAGE SWALE



DRIVEWAY/PRIVATE ROAD NOT CROSSING EXISTING DRAINAGE SWALE

NOTES:

1. A DRIVEWAY OR PRIVATE ROAD WITHIN THE RIGHT-OF-WAY SHALL NOT EXCEED 10%. IF PAVED THE DRIVEWAY/PRIVATE ROAD SHALL NOT EXCEED 15% BEYOND THE RIGHT OF WAY.
2. ALL DRIVEWAYS AND PRIVATE ROADS USING ANY MATERIAL OTHER THAN BITUMINOUS PAVING MUST TERMINATE A MINIMUM OF 3' FROM THE PAVED PORTION OF THE ROAD.
- 3.
4. ALL DRIVEWAYS AND PRIVATE ROADS USING ANY MATERIAL OTHER THAN BITUMINOUS PAVING MUST HAVE A MINIMUM 3' APRON. THE APRON MUST BE COMPLETELY SEPARATED FROM AND IN NO WAY CONNECTED TO THE DRIVEWAY. PERMITTED APRON MATERIALS INCLUDE GRAVEL, BITUMINOUS PAVING, BELGIUM BLOCK, COBBLESTONE, REMOVABLE PAVERS AND OTHER MATERIALS APPROVED BY THE BOROUGH. NO CONCRETE IS PERMITTED TO BE USED WITHIN THE APRON EITHER AS A BASE OR FINISHED MATERIAL.
5. THE DRIVEWAY/PRIVATE ROAD AND APRON SHOULD HAVE FALL AWAY FROM THE ROADWAY OR CONTAIN A SWALE FOR DRAINAGE. DRAINAGE IS NOT PERMITTED ONTO ROAD SURFACE.
6. THE DRIVEWAY/PRIVATE ROAD SHALL NOT ALTER GRADES IN THE SHOULDER AREA. IF THE SHOULDER IS UNPAVED, DRIVEWAY/PRIVATE ROAD PAVEMENT MAY EXTEND TO THE EDGE OF THE ROADWAY BUT SHALL MAINTAIN THE EXISTING SHOULDER SLOPE AWAY FROM THE ROADWAY.
7. ALTERING THE ROADWAY DRAINAGE IS PROHIBITED. THE PERMITTEE SHALL NOT ALTER THE EXISTING DRAINAGE PATTERN OR THE EXISTING FLOW OF DRAINAGE WATER, OR DIRECT ADDITIONAL DRAINAGE OF SURFACE WATER ONTO OR INTO ROADWAY FACILITIES.
8. THE BOROUGH CAN REQUIRE THAT RESIDENT PROVIDE ADDITIONAL ON LOT STORM WATER MANAGEMENT FOR DRIVEWAYS AND PRIVATE ROADS.
9. LOCATE DRIVEWAY/PRIVATE ROAD TO PROVIDE MINIMUM SIGHT DISTANCES AS REQUIRED BY PENNDOT FORM M-950S.
10. PRIOR TO CONSTRUCTION, A DRIVEWAY/PRIVATE ROAD PERMIT MUST BE SECURED IN ACCORDANCE WITH BOROUGH REQUIREMENTS.
11. THE BOROUGH IS NOT RESPONSIBLE FOR DAMAGE, MAINTENANCE, SALVAGE OR REPLACEMENT OF MATERIALS PLACED WITHIN THE BOROUGH ROAD RIGHT-OF-WAY OR THE DRIVEWAY/PRIVATE ROAD APRON. DURING ROADWAY CONSTRUCTION PROJECTS THE BOROUGH WILL NOT BE RESPONSIBLE FOR THE SALVAGE OF ANY MATERIALS IN THE APRON AND BITUMINOUS PAVING WILL BE INSTALLED IN THE DRIVEWAY APRON.

Driveway & Private Road Connection To Street with No Curb

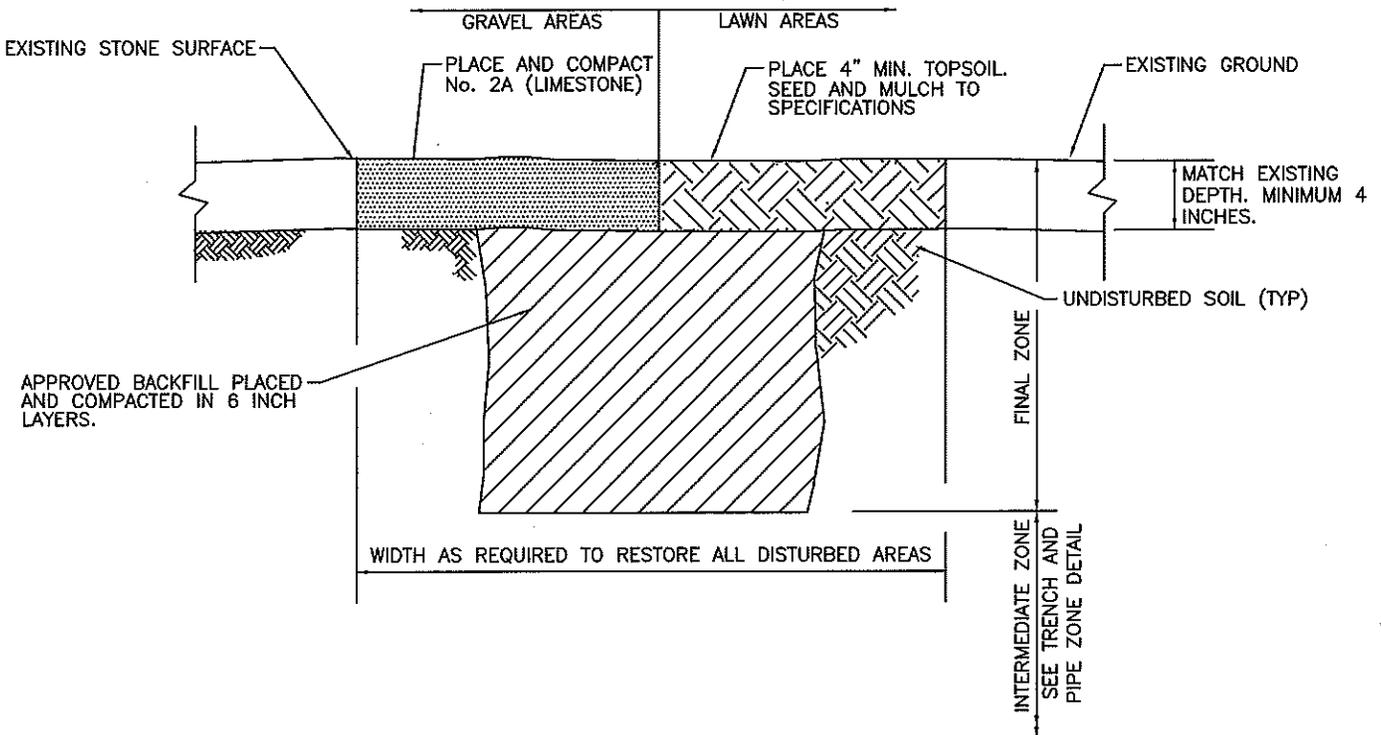
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DATE: January 2015 FILE: Driveway & Private Road Connection With No Curb.dwg



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Unimproved Area Surface Restoration

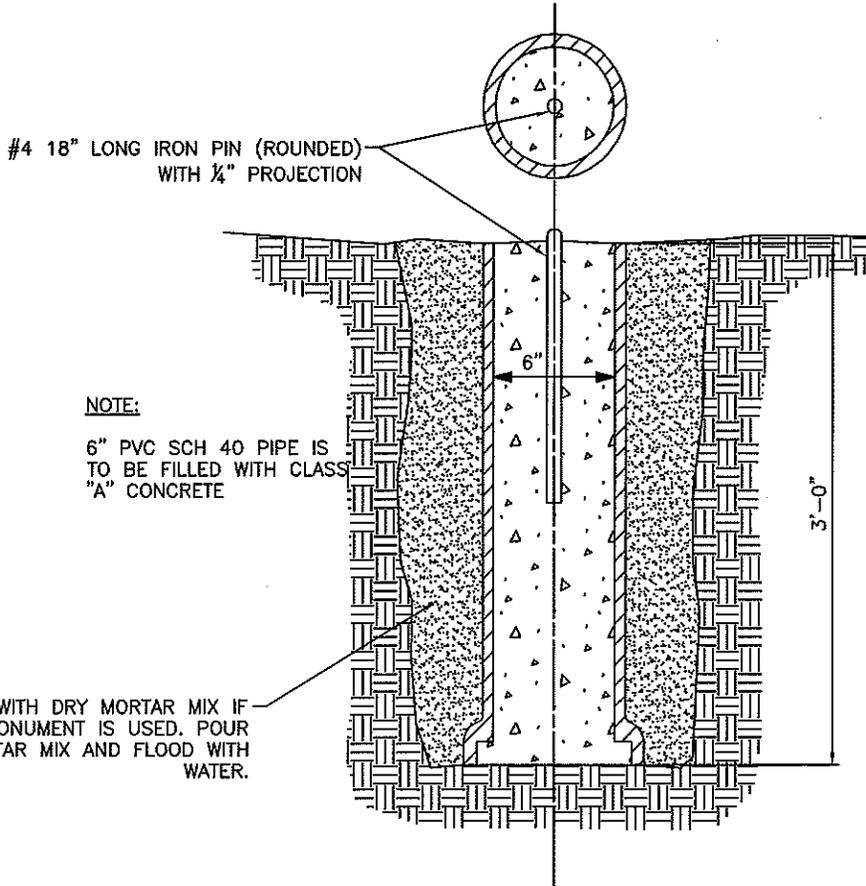
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DATE: January 2014 FILE: Unimproved Area Surface Restoration.dwg



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BACKFILL WITH DRY MORTAR MIX IF PRECAST MONUMENT IS USED. POUR IN MORTAR MIX AND FLOOD WITH WATER.

NOTE:

6" PVC SCH 40 PIPE IS TO BE FILLED WITH CLASS "A" CONCRETE

MONUMENTS TO BE INSTALLED IN SUBDIVISIONS AT DESIGNATED LOCATIONS WITHIN THE STREET RIGHT-OF-WAY 5'-0" OFF THE PROPERTY LINE

PROPERTY MUST BE ON BOROUGH MONUMENT CONTROL

Survey Monument Detail

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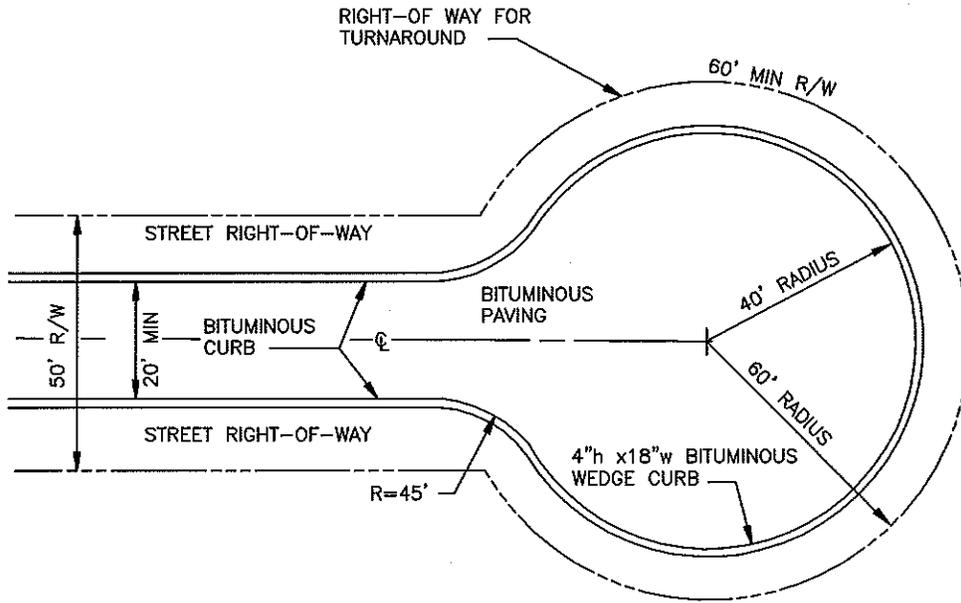
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Cul-De-Sac

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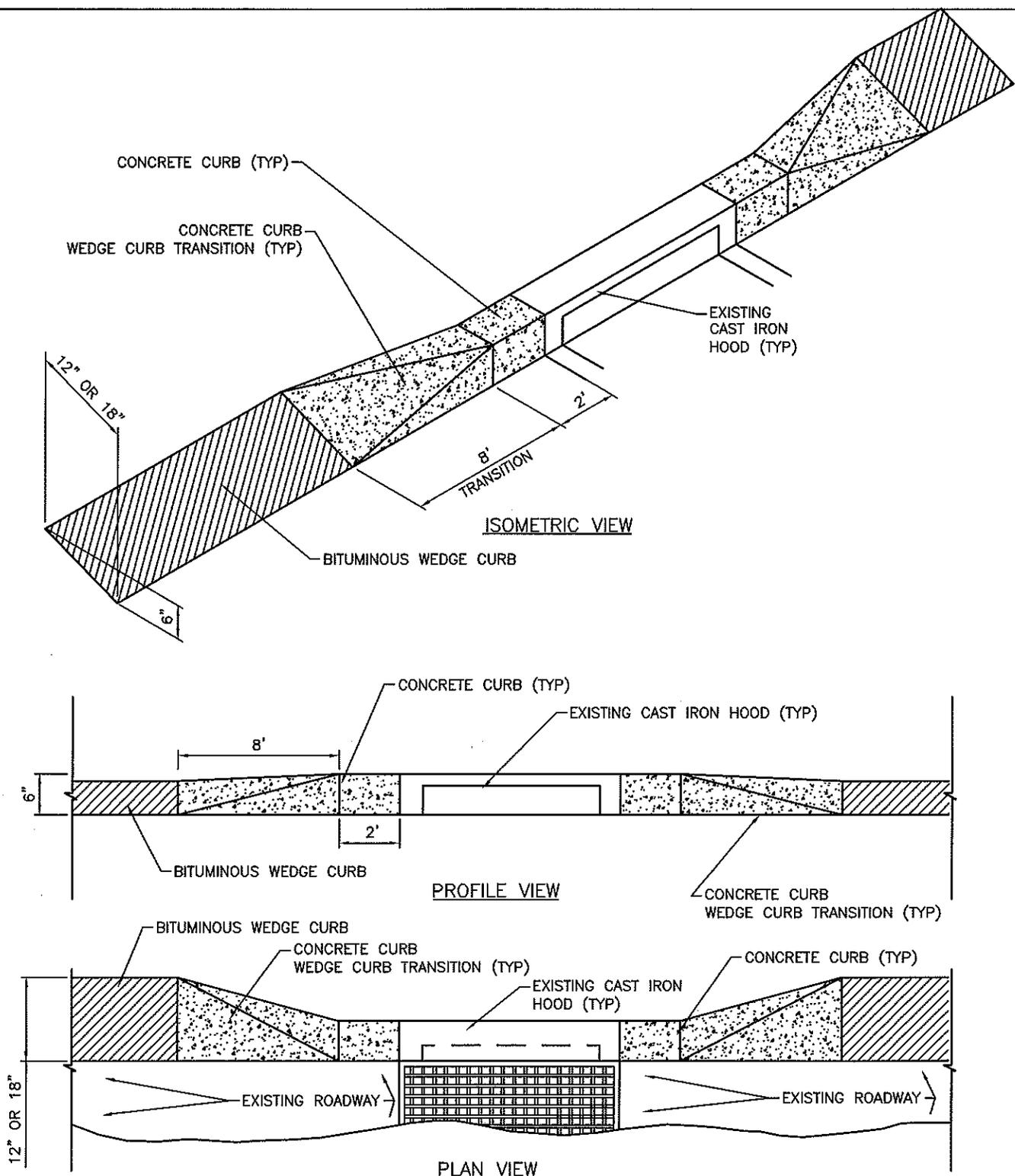
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- NOTES:**
1. DETAIL IS FOR PAVING WITH WEDGE CURBS AT EXISTING INLETS ONLY. NEW INLETS IN AREAS WITH WEDGE CURB ARE TO BE TYPE M INLETS.
 2. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408.

Wedge Curb Transition At Existing Type C Inlets

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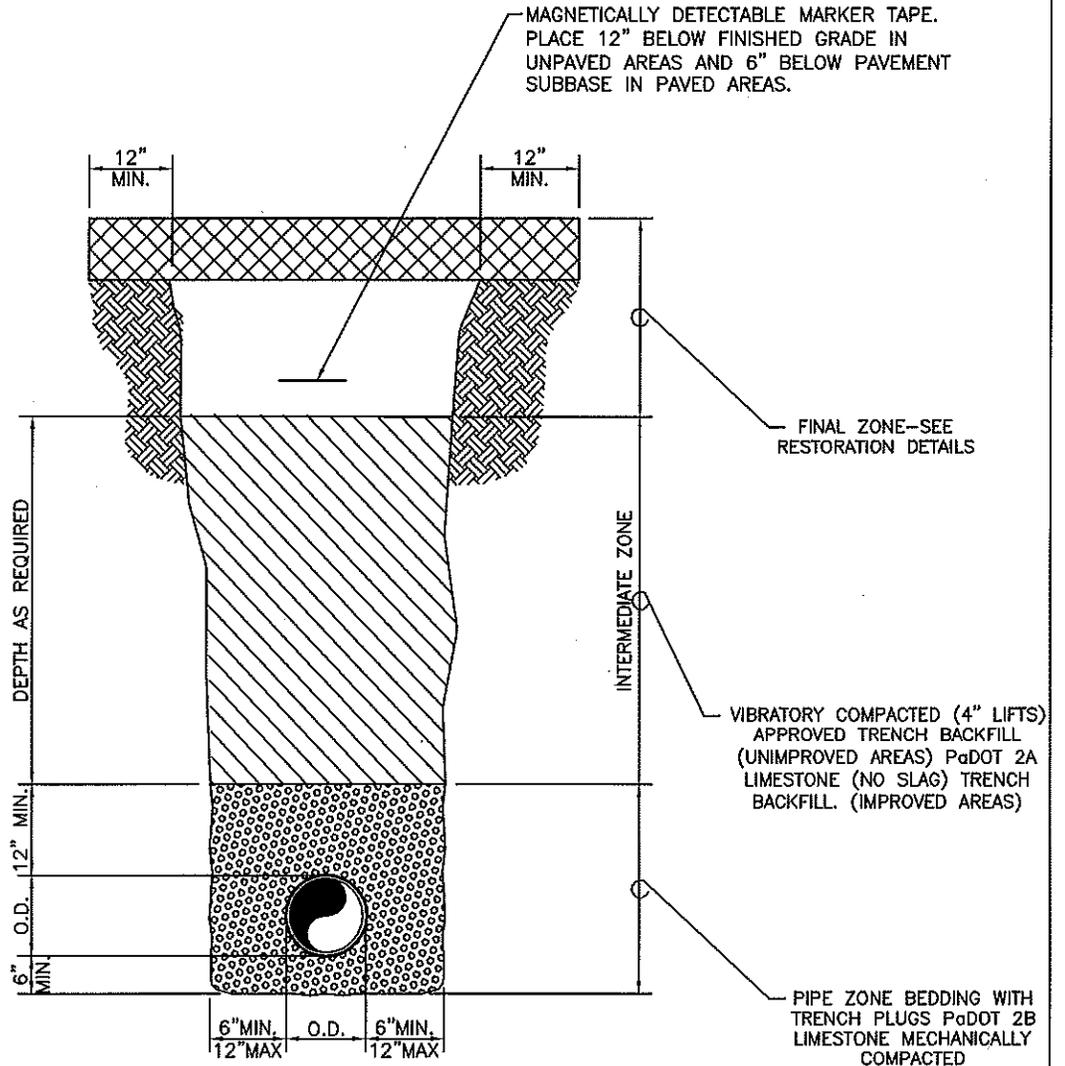
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N:\PROJ\424\Standard Details 2013\Storm Sewer Trench & Pipe Zones.dwg Layout=Storm Sewer Trench & Pipe Zones User=Shawn Wingrove Plotted=12/26/2013 9:30 AM



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Storm Sewer Trench & Pipe Zones

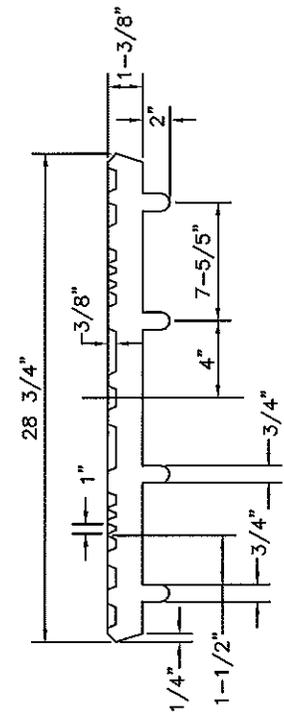
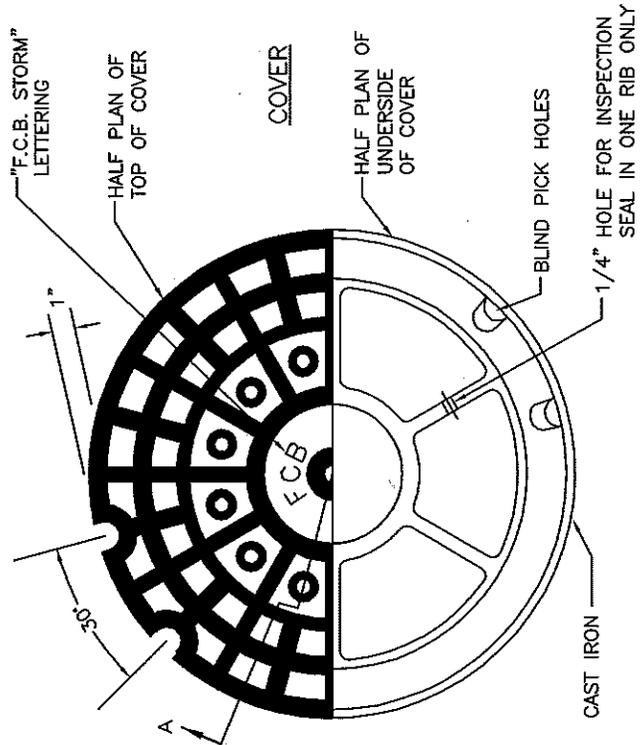
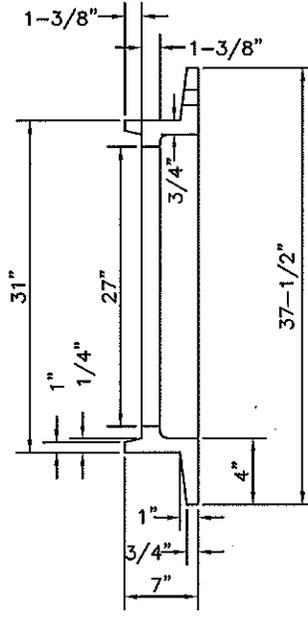
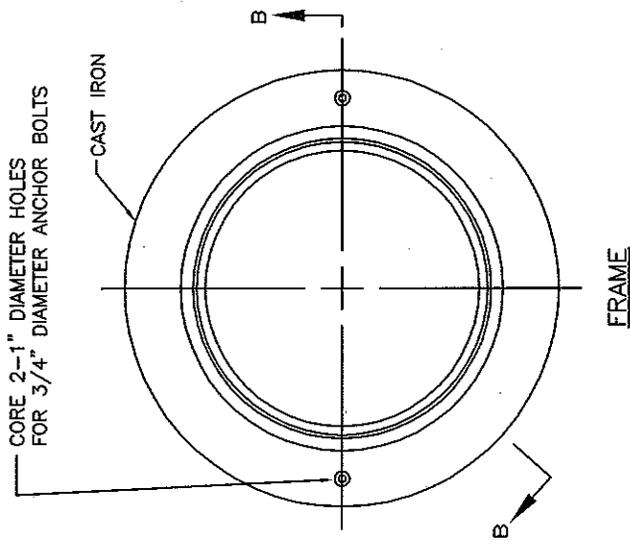
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DATE: January 2014 FILE: Storm Sewer Trench & Pipe Zones.dwg



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SECTION B-B

NOTE: LABEL MANHOLE COVER "FCB STORM"

SECTION A-A

Storm Manhole Frame & Lid

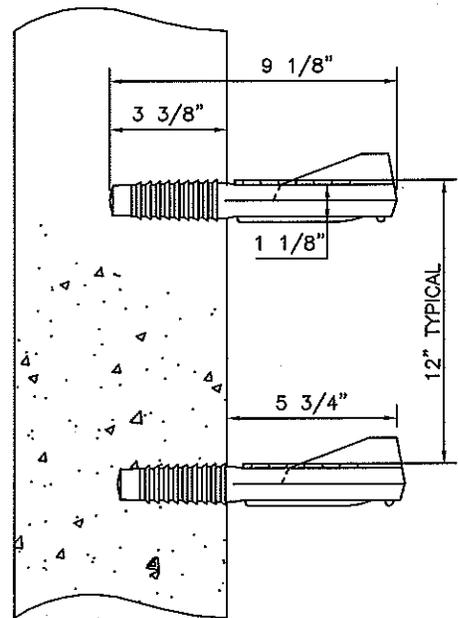
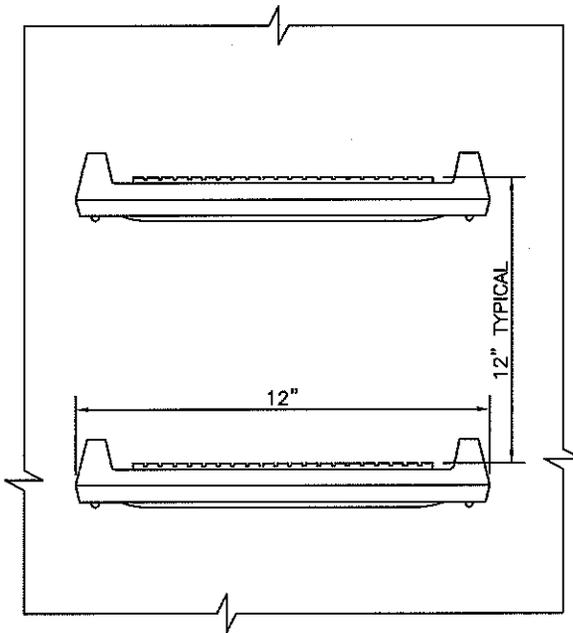
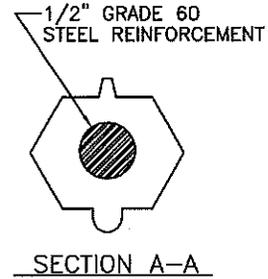
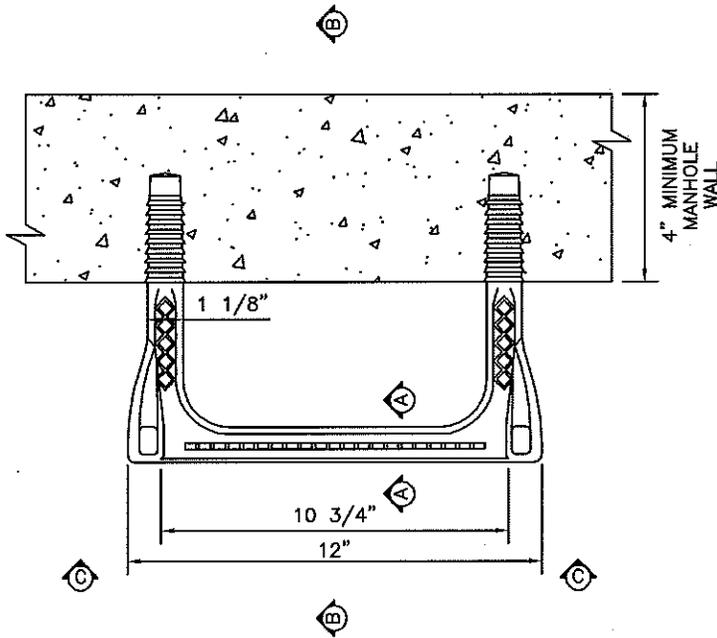
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DATE: January 2014 FILE: Storm Manhole Frame & Lid.dwg



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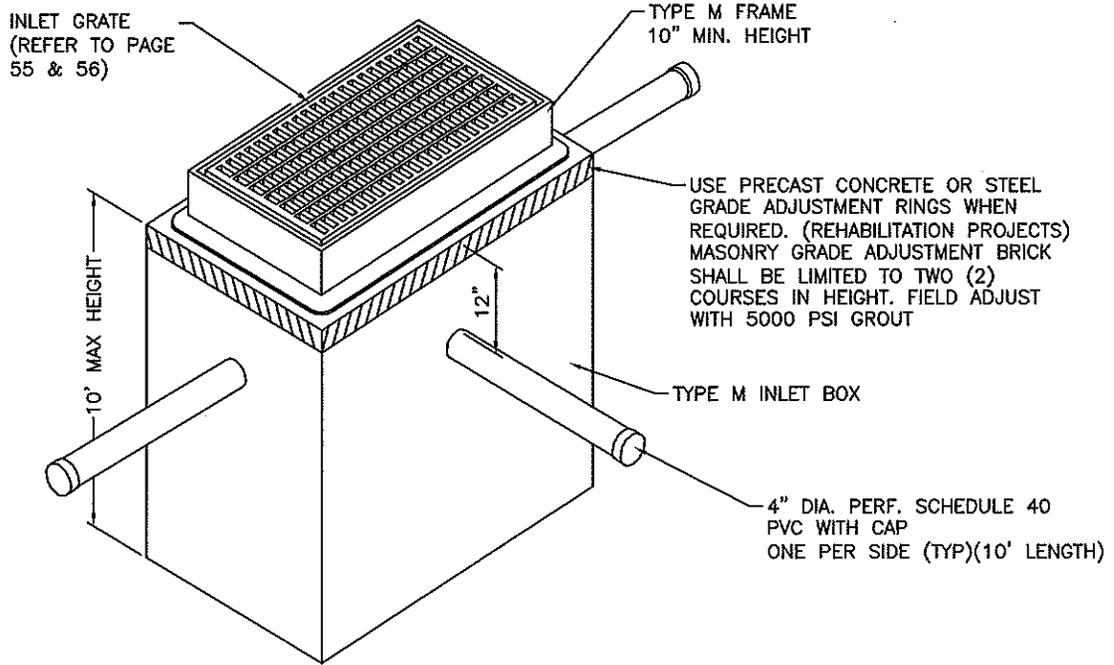
NOTE:

LADDER BARS SHALL MEET ALL
MINIMUM O.S.H.A. REQUIREMENTS AND
CONFORM TO ASTM C-478, LATEST
REVISION FOR MANHOLES AND INLETS

Ladder Bars For Manholes



N:\PROJ\424\Standard Details\2013\Storm\Details\Type M Inlet, Frame, & Grate.dwg Layout>Type M Inlet, Frame, & Grate User:Shawn Winagro Plotted=12/27/2013 8:28 AM



INLET BOX NOTES:

1. Construct inlet box in accordance with the requirements of PennDOT Publication 408, Section 605, for Cast-in-Place units and Section 714 for Precast Cement Concrete units.
2. Furnish and install inlet boxes, connections, joints, steps, and other appurtenances and details in accordance with PennDOT Publication 72M Standards for Roadway Construction, latest edition - RC-46M, Inlet Box with Type M Frame. Provide Inlet Type of smallest dimension to accommodate connected pipe openings in accordance with this Publication.
3. Only precast inlet boxes supplied by a manufacturer listed in PennDOT Bulletin 15 will be permitted.
4. Inlets that exceed the maximum height, as shown, are not permitted without approval by the Borough. A specific design will be required for review and approval.
5. Do not extend pipe block-outs into the base when base is not monolithic with the inlet walls.
6. Locate pipe or pipes, as required, with the inlet bottom shaped to channel the flow toward the outlet pipe.
7. Brick or concrete block inlets shall not be permitted.
8. Storm sewer drop connections from invert of outflow pipe to invert of inflow pipes shall be a maximum of 2 ft.

TYPE M FRAME NOTES:

1. Furnish and install cast iron or structural steel Type M Frames in accordance with the requirements of PennDOT Publication 72M Standards for Roadway Construction, latest edition - RC-45M, Type M Frame, except that the frame must have a minimum 10" height.
2. Only frames supplied by a manufacturer listed in PennDOT Bulletin 15 will be permitted.
3. Concrete frames are permitted outside of paved areas. Provide concrete frames per PennDOT Publication 72M, RC-45M.

INLET GRATE NOTES:

1. Furnish and install structural steel bicycle safe inlet grates in accordance with the requirements of PennDOT Publication 72M Standards for Roadway Construction, latest edition - RC-45M, Structural Steel Grate Bicycle Safe.
2. Vane grates may be used only with permission from the Borough. Vane grates (if permitted) must be Type "L" only (bicycle safe). If permission to use vane grates is granted by the Borough, furnish and install vane grates in accordance with the requirements of PennDOT Publication 72M Standards for Roadway Construction, latest edition - RC-45M, Cast Iron Vane Grate.
3. Cast iron grates may be used only with permission from the Borough. Do not use cast iron grates within the travel lanes. If these grates are permitted by the Borough, they must be located at the edge of outside shoulders, swales, wide median swales and infield areas that are outside the travel lanes or curb to curb roadways.
4. Only grates supplied by a manufacturer listed in PennDOT Bulletin 15 will be permitted.

Type M Inlet, Frame, & Grate

SCALE: N.T.S.

DATE: January 2014 FILE: Type M Inlet, Frame, & Grate.dwg

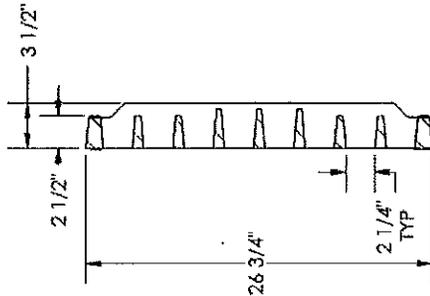


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5355M8 Grate



Product Number
00535570

Design Features
 -Materials
 Gray Iron (CL35B)
 -Design Load
 Heavy Duty
 -Open Area
 639 sq in
 -Coating
 Dipped
 -√ Designates Machined Surface

Certification
-ASTM A48

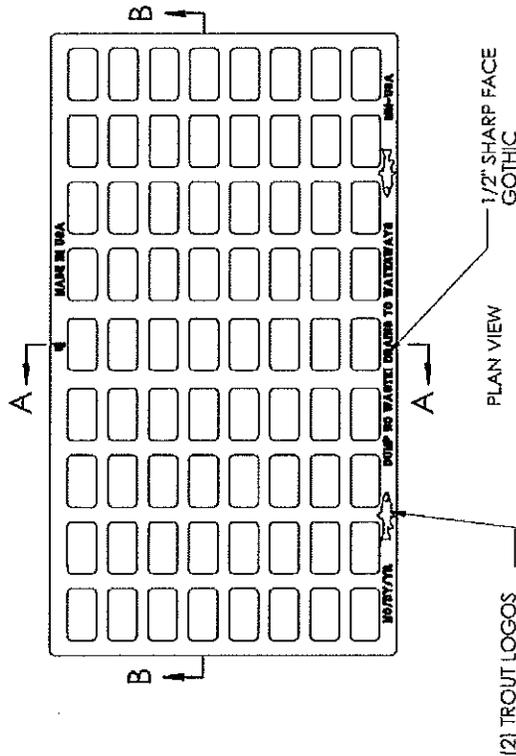
-Country of Origin: USA

Drawing Revision
8/23/2012 Designer DJH
08/10/2013 Revised By: DJH

Disclaimer
Weights (lbs/sq ft), dimensions (inches/mm) etc. are approximate. We reserve the right to modify specifications without prior notice.

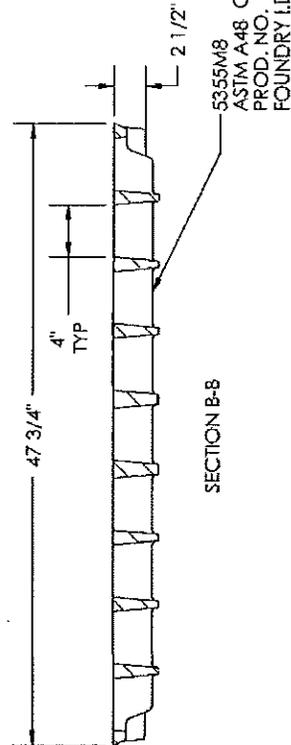
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1/2" SHARP FACE
GOTHIC

(2) TROUT LOGOS



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Inlet Grate

SCALE: N.T.S.

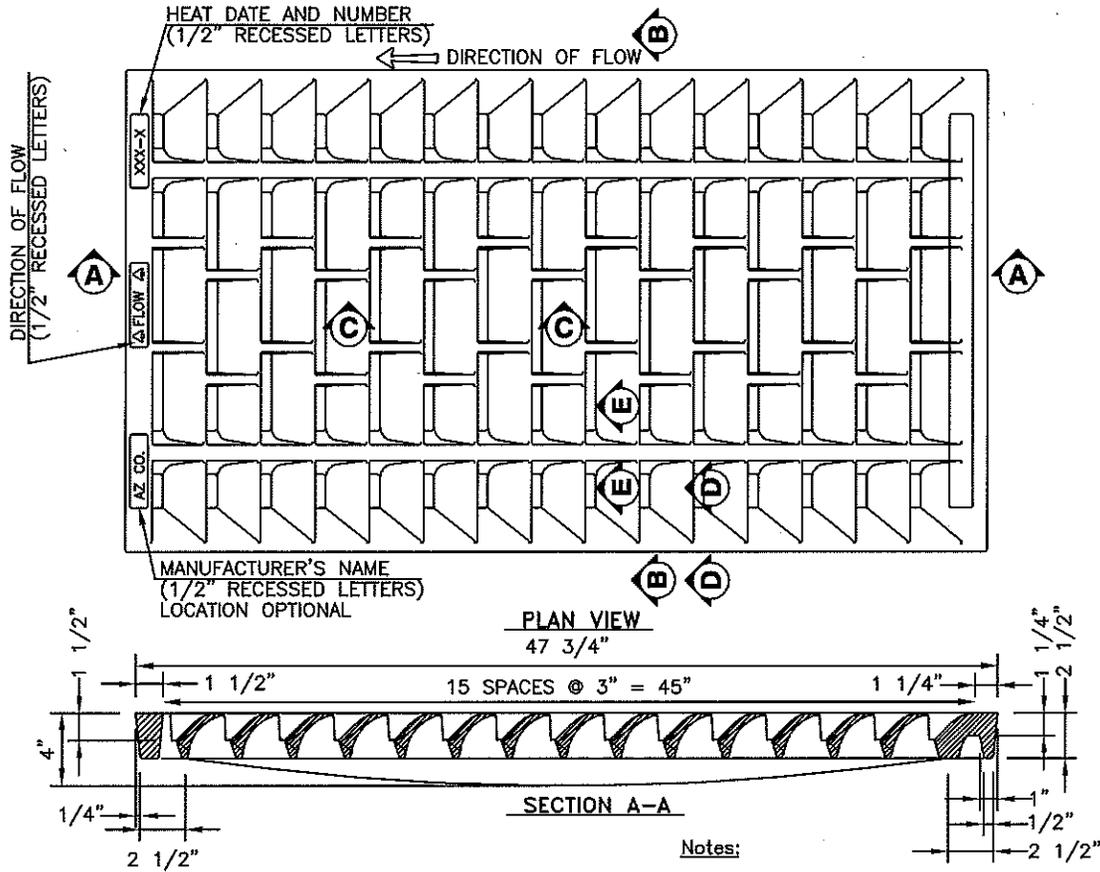
DATE: January 2014 FILE: Inlet Grate.dwg



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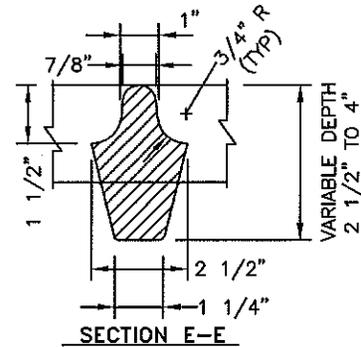
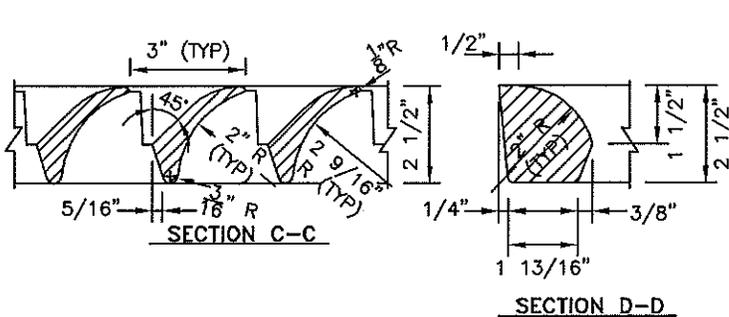
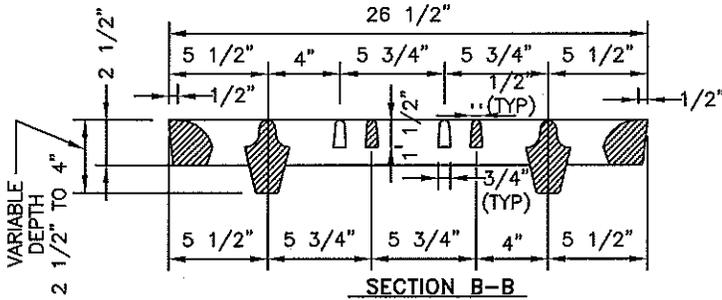


N:\PROJ\424\Standard Details 2013\Storm\Cast Iron Vane Grate.dwg Layout=Type C Inlet Frame & Grate User=Shawn Winigrove Plotted=12/26/2013 9:33 AM



Notes:

1. Provide materials and construction in accordance with the requirements of Publication 408, Sections 605, 606 and 714. Only grates and grate adjustment systems supplied by a manufacturer listed in Bulletin 15 shall be permitted. For a Bulletin 15 listing, submit a 22 x 34" reproducible shop drawing for review and approval.
2. Install vane grates with curve vanes facing the direction of flow.
3. Provide 1/8" radius (typical) for all fillets and rounds, unless noted.
4. Grate shall be (1-piece) PADOT approved as listed in Bulletin 15.
5. Source: PADOT Standards for Roadway Construction (latest edition).



Cast Iron Vane Grate

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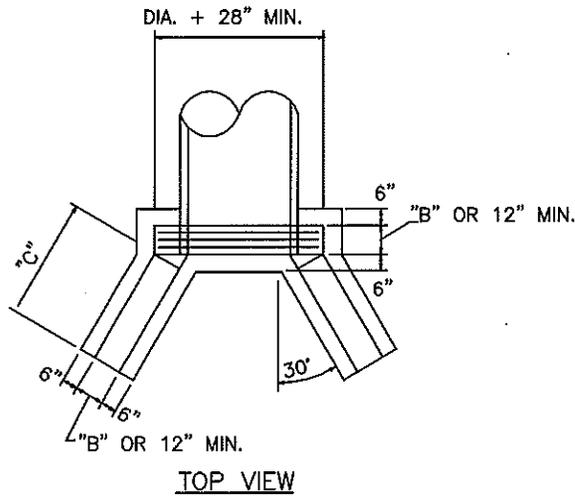
DATE: January 2014 FILE: Cast Iron Vane Grate.dwg



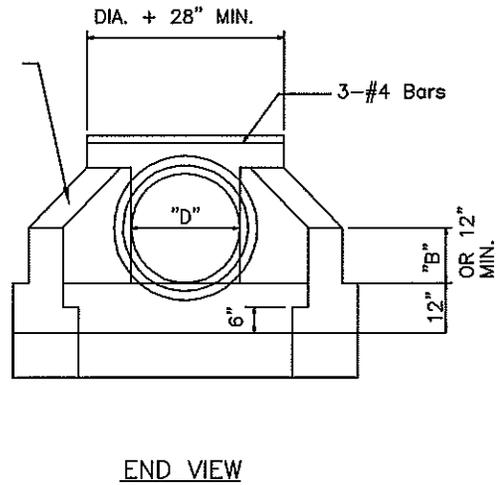
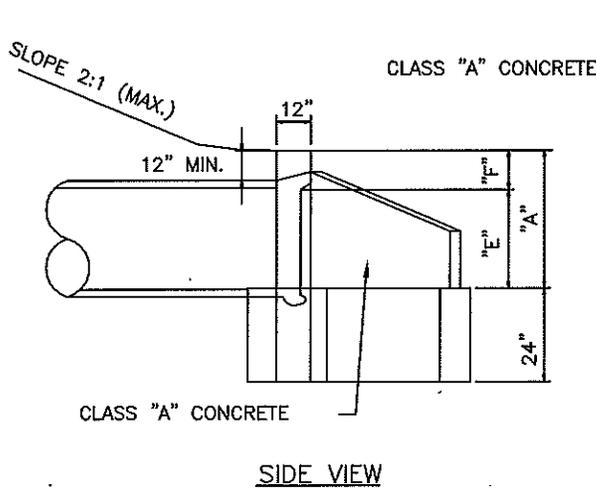
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PIPE DIA.	"A"	"B"	"C"	"D"	"E"	"B"
15"	2'-6"	9"	2'-0"	12"	1'-9"	9"
18"	2'-6"	9"	2'-0"	12"	2'-0"	9"
24"	3'-3"	9"	2'-0"	12"	2'-6"	9"
30"	4'-0"	12"	2'-6"	15"	3'-0"	12"
36"	4'-6"	12"	2'-6"	15"	3'-6"	12"
42"	5'-3"	15"	4'-3"	18"	4'-0"	15"
48"	5'-9"	15"	4'-9"	21"	4'-6"	15"
54"	6'-3"	15"	5'-3"	24"	5'-0"	15"
60"	7'-0"	15"	5'-9"	2'-3"	5'-6"	15"
66"	7'-6"	15"	7'-0"	2'-6"	6'-0"	15"
72"	8'-0"	18"	7'-0"	2'-6"	6'-6"	18"
84"	9'-0"	18"	8'-3"	2'-9"	7'-6"	18"



NOTES:

1. Construct endwall in accordance with the requirements of PennDOT Publication 408, Section 605, for Cast-in-Place units and Section 714 for Precast Cement Concrete units.
2. Furnish and install endwalls in accordance with PennDOT Publication 72M Standards for Roadway Construction, latest edition - RC-31M.
3. Only precast endwalls supplied by a manufacturer listed in PennDOT Bulletin 15 will be permitted.

Type DW Endwall

SCALE: N.T.S.

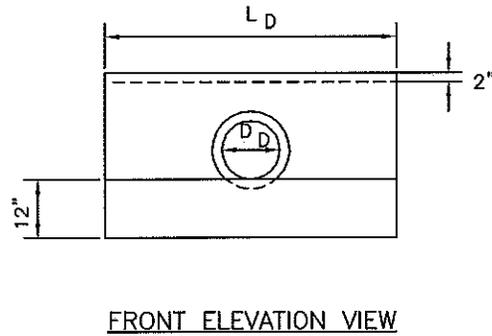
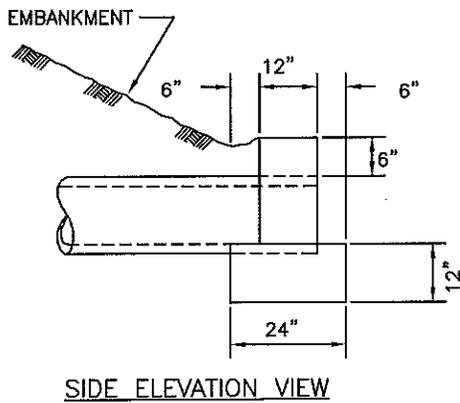
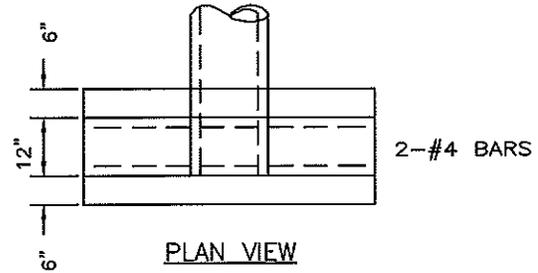
DATE: January 2014 FILE: Type DW Endwall.dwg



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DIAMETER PIPE	L D
18" AND 21"	5'
24" AND 27"	7'
30" AND 36"	9'



NOTES:

1. Construct endwall in accordance with the requirements of PennDOT Publication 408, Section 605, for Cast-in-Place units and Section 714 for Precast Cement Concrete units.
2. Furnish and install endwalls in accordance with PennDOT Publication 72M Standards for Roadway Construction, latest edition - RC-31M.
3. Only precast endwalls supplied by a manufacturer listed in PennDOT Bulletin 15 will be permitted.

Type D Endwall

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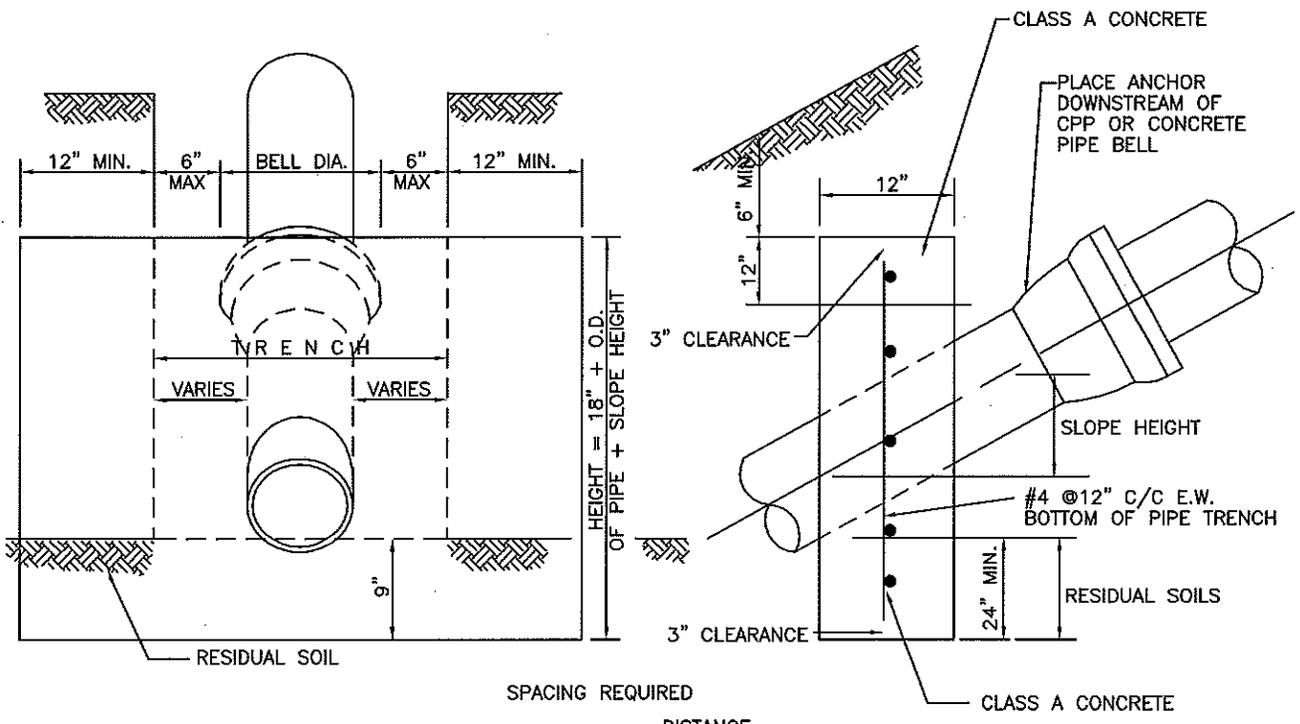
DATE: January 2014 FILE: Type D Endwall.dwg



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SPACING REQUIRED

% GRADE	DISTANCE CENTER TO CENTER
20% TO 35%	36' C. to C.
35% TO 50%	24' C. to C.
50% +	16' C. to C.

DUCTILE IRON PIPE SHALL BE USED FOR ALL SEWERS OVER 40% GRADE.

Storm Concrete Anchor

SCALE: N.T.S.

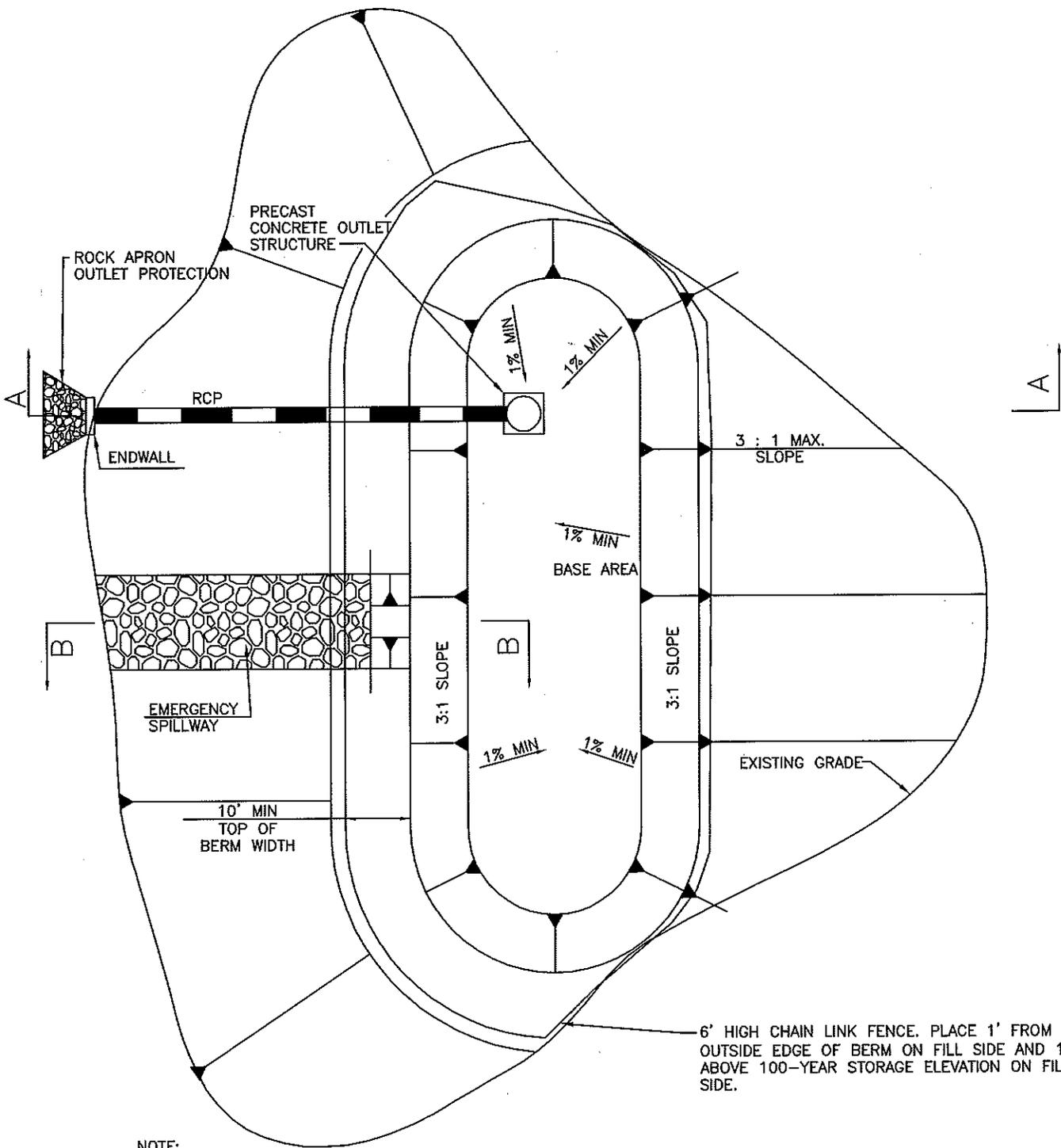
DATE: January 2014 FILE: Storm Concrete Anchor.dwg



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N:\PROJ\424\Standard Details 2013\Storm\Permanent Earth Dam - Sections B-B & C-C.dwg Layout=Permanent Earthen Dam - Plan View User=Shawn Wingrove Plotted=12/26/2013 9:36 AM



NOTE:

1. PROVIDE ACCESS ROAD TO POND EMBANKMENT. ACCESS ROAD SHALL BE MIN. 10' WIDE CONSTRUCTED OF 8" AASHTO No. 1 STONE CHOKED WITH AASHTO No. 57 STONE OVER CLASS 4, TYPE A GEOTEXTILE FABRIC. ACCESS ROAD SLOPE MIN. 1%, MAX 15%.
2. PROVIDE 10' WIDE ACCESS GATE IN POND FENCE.

Permanent Earthen Dam - Plan View

SCALE: N.T.S.

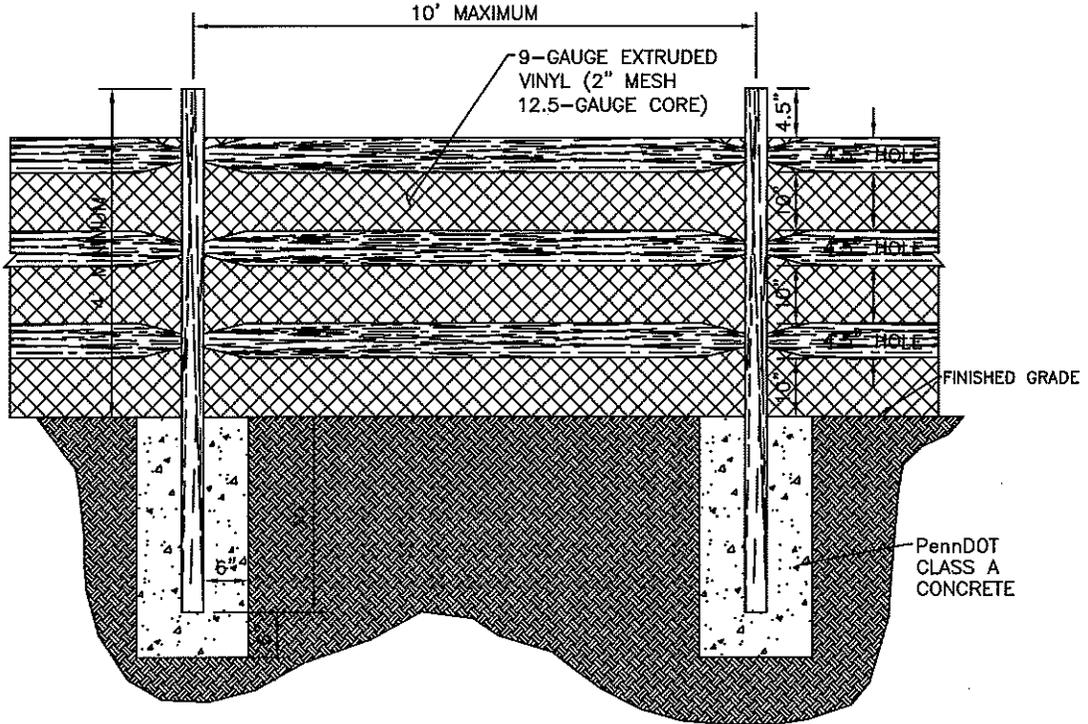
DATE: January 2014 FILE: Permanent Earth Dam - Sections B-B & C-C.dwg



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N:\PROJ\424\Standard Details 2013\Storm\Permanent Earth Dam - Sections B-B & C-C.dwg Layout=6' High Chain Link Fence User=Shawn Winarove Plotted=12/26/2013 9:36 AM



- NOTES:
1. FURNISH AND INSTALL 4' HIGH SPLIT POST AND RAIL FENCE AS MANUFACTURED BY HOOVER FENCE COMPANY OR APPROVED EQUAL.
 2. FURNISH AND INSTALL 4' HIGH (2)-5' (10' WIDE TOTAL) SWING GATE WITH GALVANIZED FRAME AS DENOTED ON THE PLAN, MANUFACTURED BY HOOVER FENCE COMPANY OR APPROVED EQUAL. (CATALOG NO. SRG-3RX5)

Cedar Split Post and Rail Fence

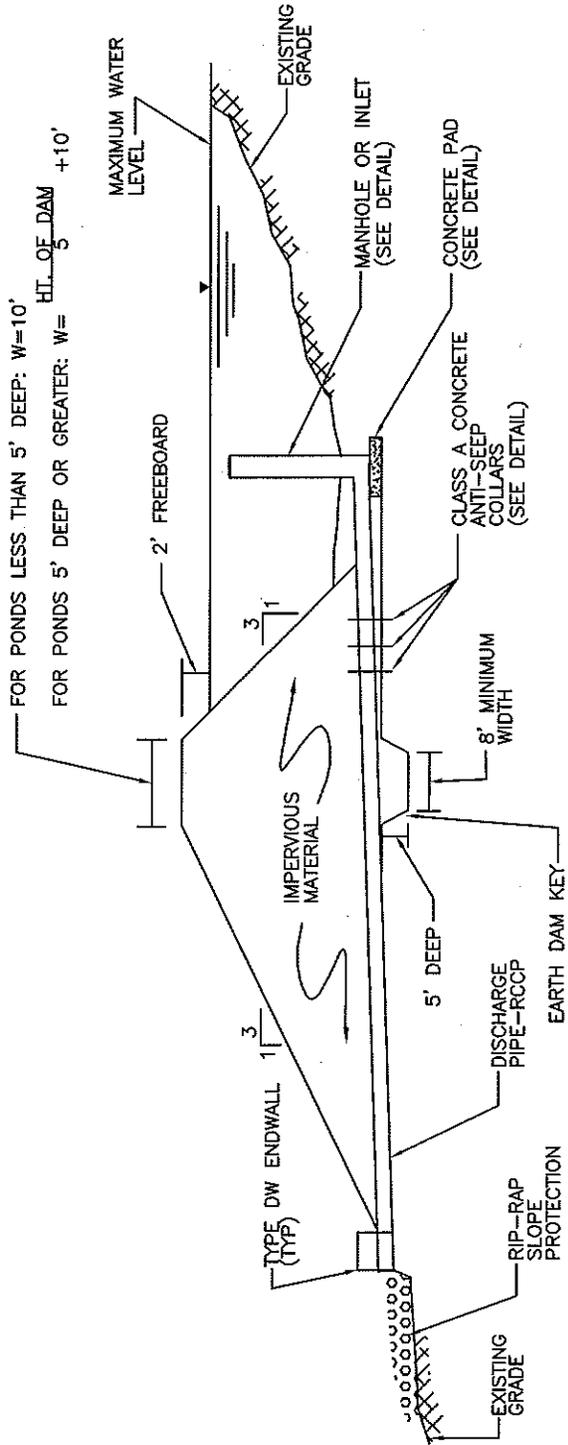
SCALE: N.T.S.

DATE: January 2014 FILE: Permanent Earth Dam - Sections B-B & C-C.dwg



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NOTES:

1. ROCK APRON OUTLET PROTECTION TO BE SIZED ACCORDING TO EXIT VELOCITY AND SHEAR CALCULATIONS TO BE SUBMITTED TO THE BOROUGH (SEE DETAILS).
2. ALL CALCULATIONS FOR BASIN SIZING, FREEBOARD, OUTLET STRUCTURES, DISCHARGE PIPES, ETC. MUST BE SUBMITTED TO THE BOROUGH.
3. TEMPORARY RISER PIPES MAY BE CMP RISERS.
4. PROVIDE COMPACTION REPORTS FOR EMBANKMENT CONSTRUCTION TO BOROUGH.

Permanent Earth Dam - Section A-A

SCALE: N.T.S.

DATE: January 2014 FILE: Permanent Earth Dam - Sections B-B & C-C.dwg

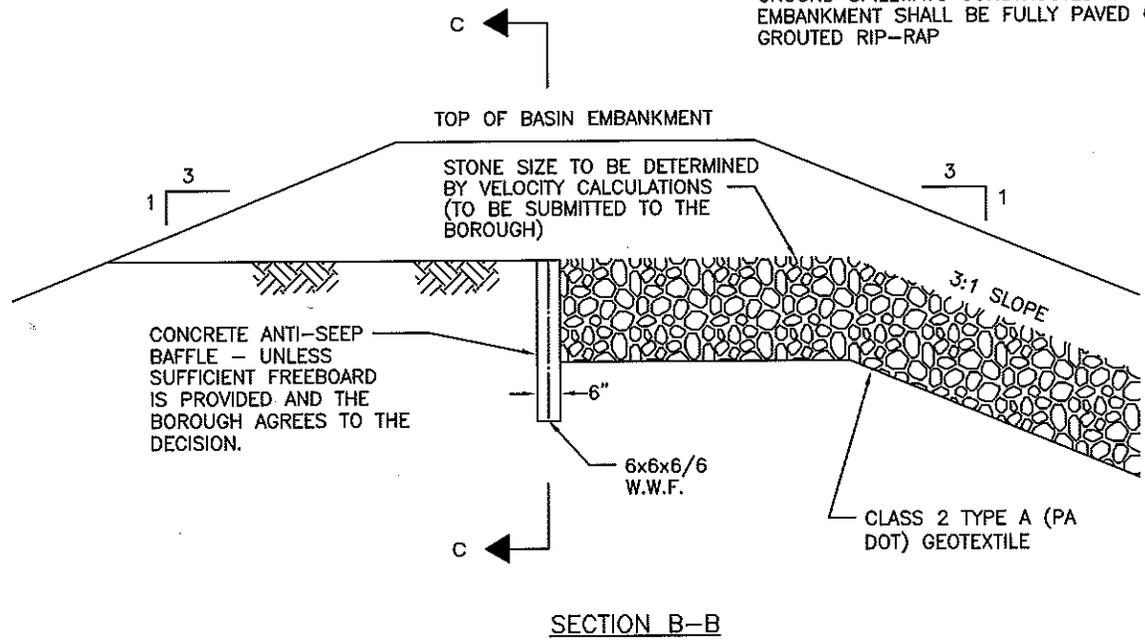


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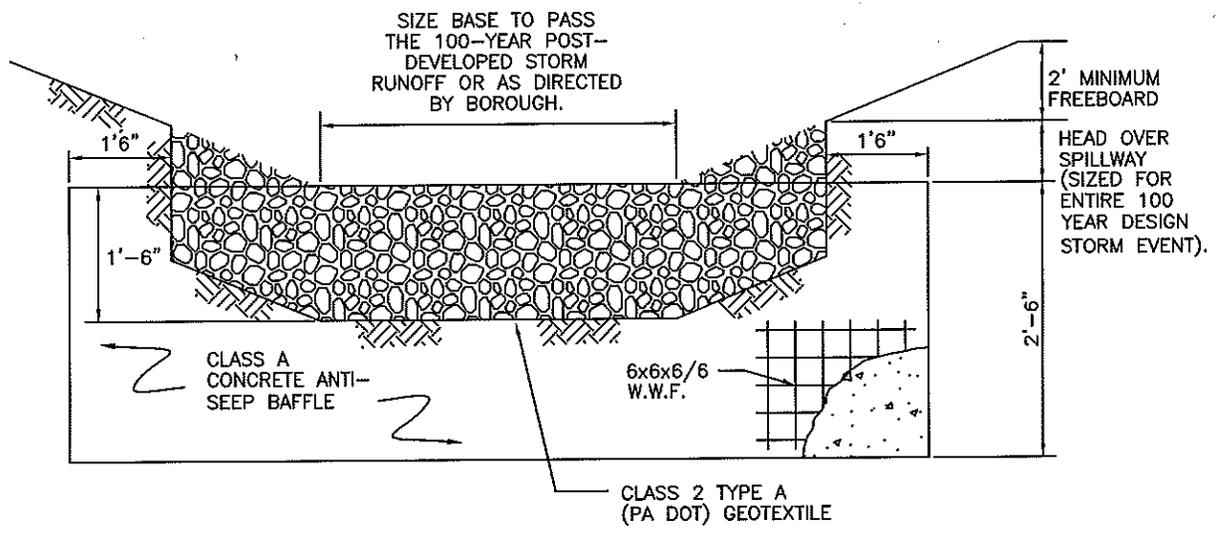


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NOTE:
 SPILLWAY TO BE CUT INTO EXISTING
 GROUND SPILLWAYS CONSTRUCTED IN
 EMBANKMENT SHALL BE FULLY PAVED OR
 GROUTED RIP-RAP



SECTION B-B



SECTION C-C

Permanent Earth Dam - Sections B-B & C-C

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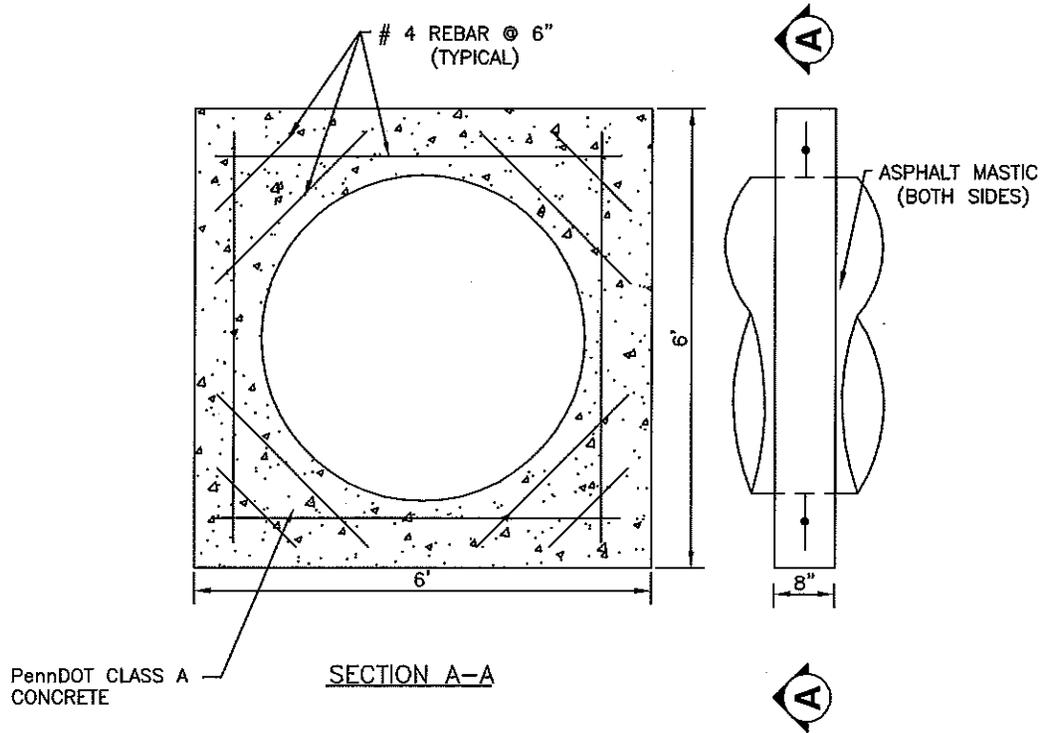
DATE: January 2014 FILE: Permanent Earth Dam - Sections B-B & C-C.dwg



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Concrete Anti-Seep Collars

SCALE: N.T.S.

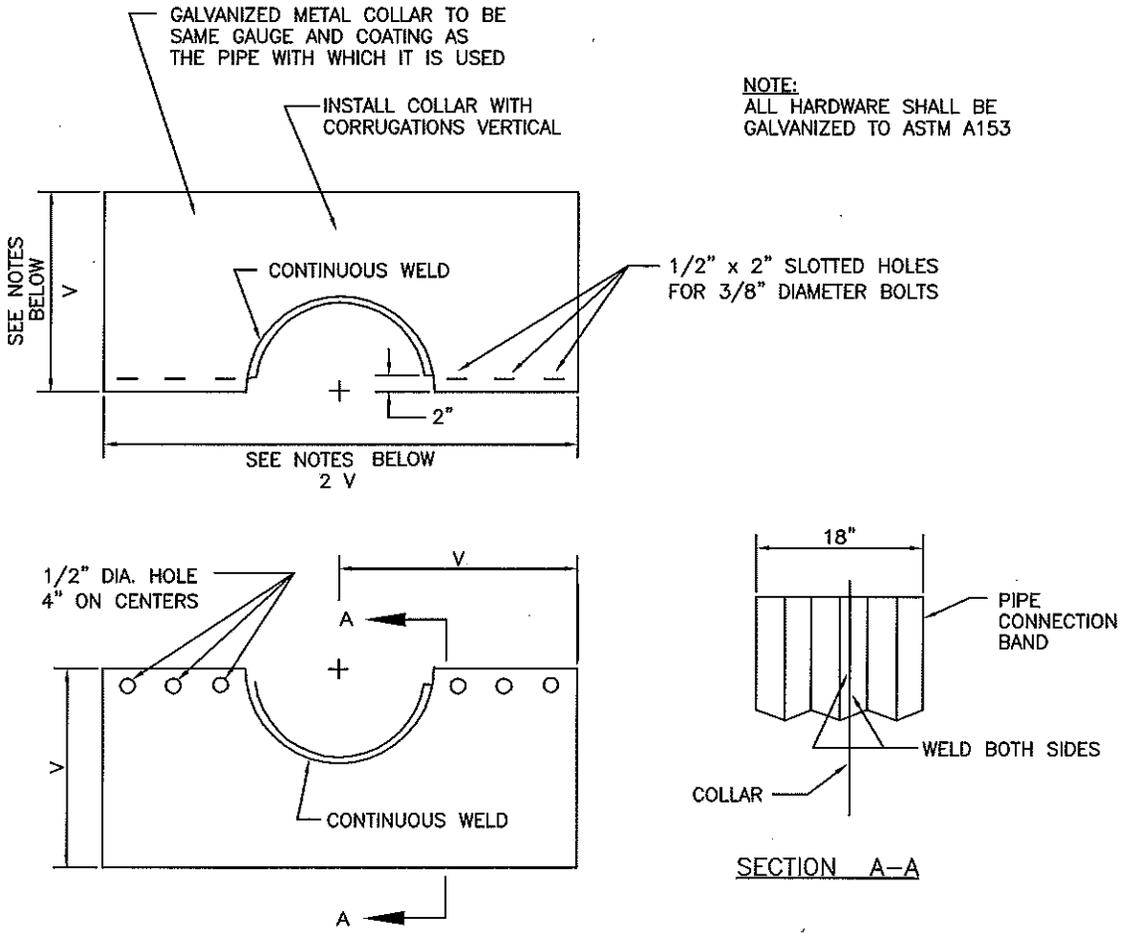
DATE: January 2014 FILE: Concrete Anti-Seep Collars.dwg



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NOTES:

- V = VERTICAL PROJECTION AND MINIMUM HORIZONTAL PROJECTION OF THE ANTI-SEEP COLLAR IN FEET
- L = LENGTH IN FEET OF THE CONDUIT WITHIN THE ZONE OF SATURATION, MEASURED FROM THE DOWNSTREAM SIDE OF THE RISER TO THE TOE DRAIN OR POINT WHERE PHREATIC LINE INTERCEPTS THE CONDUIT, WHICHEVER IS SHORTER
- N = NUMBER OF ANTI-SEEP COLLARS

THE RATIO OF THE LENGTH OF THE LINE OF SEEPAGE ($L + 2 N V$) TO L IS TO BE NOT LESS THAN 1.15. ANTI-SEEP COLLARS SHALL BE EQUALLY SPACED ALONG THAT PART OF THE BARREL WITHIN THE SATURATED ZONE AT DISTANCES OF NOT MORE THAN 25 FEET.

* TAKEN FROM U.S. DEPT. OF AGRICULTURE SCS TR-60

Corrugated Metal Anti-Seep Collar

SCALE: N.T.S.

DATE: January 2014 FILE: Corrugated Metal Anti-Seep Collar.dwg



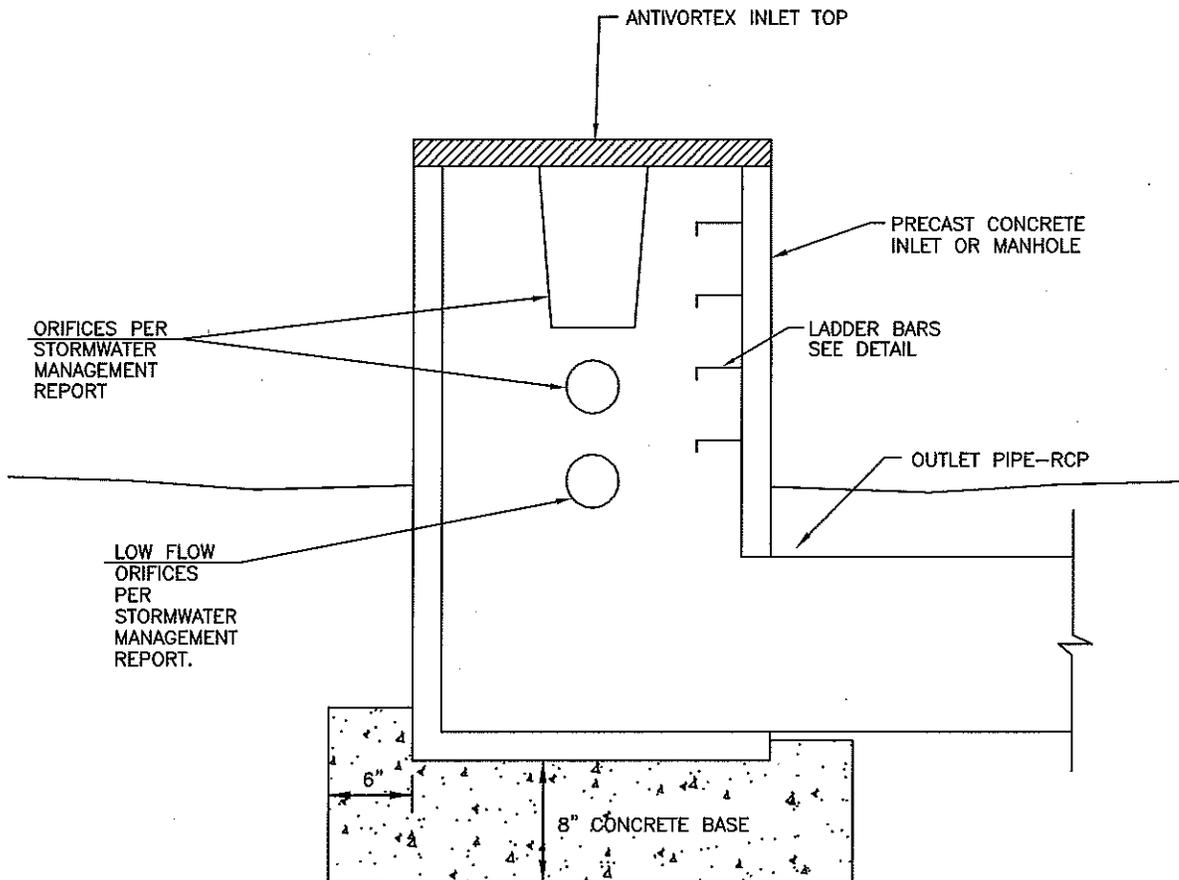
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NOTES:

1. ALL CONCRETE SHALL BE PennDOT CLASS AA CONCRETE, 4000 PSI, 5% AIR ENTRAINED
2. INLET JOINTS TO BE SEALED WITH 1" DIA. FLEXIBLE BUTYL RUBBER JOINT SEALANT, USE 1/2" DIA. FOR FRAME AND GRATE
3. FRAME AND GRATE TO BE ANCHORED WITH 2-3/4" DIA. S.S. ANCHOR BOLTS SET 6-INCHES INTO CONCRETE
4. LIFTING HOLES TO BE POINTED WITH NON-SHRINK GROUT, AND LEFT WATERTIGHT, NEAT AND SMOOTH
5. MAXIMUM ADJUSTMENT TO FINISHED GRADE USING PRECAST GRADE SPACERS SHALL NOT EXCEED NINE INCHES (9")
6. PRECAST SECTIONS SHALL CONFORM TO ASTM C-478 AS REVISED
7. INLET INVERT SHALL BE CONCRETE TO THE SPRING LINE OF PIPE WITH SIDES SLOPING 1/2" TO 1'- 0" TO INSIDE FACE OF PRECAST BASE SECTION
8. IF THE OUTLET PIPE IS 18" OR LESS, USE 4'- 0"; IF GREATER THAN 18", USE 5'- 0"
9. ALL PRECAST CONCRETE RISERS SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15 WILL BE PERMITTED.



Concrete Riser For Detention Basins

SCALE: N.T.S.

DATE: January 2014 FILE: Concrete Riser For Detention Basins.dwg



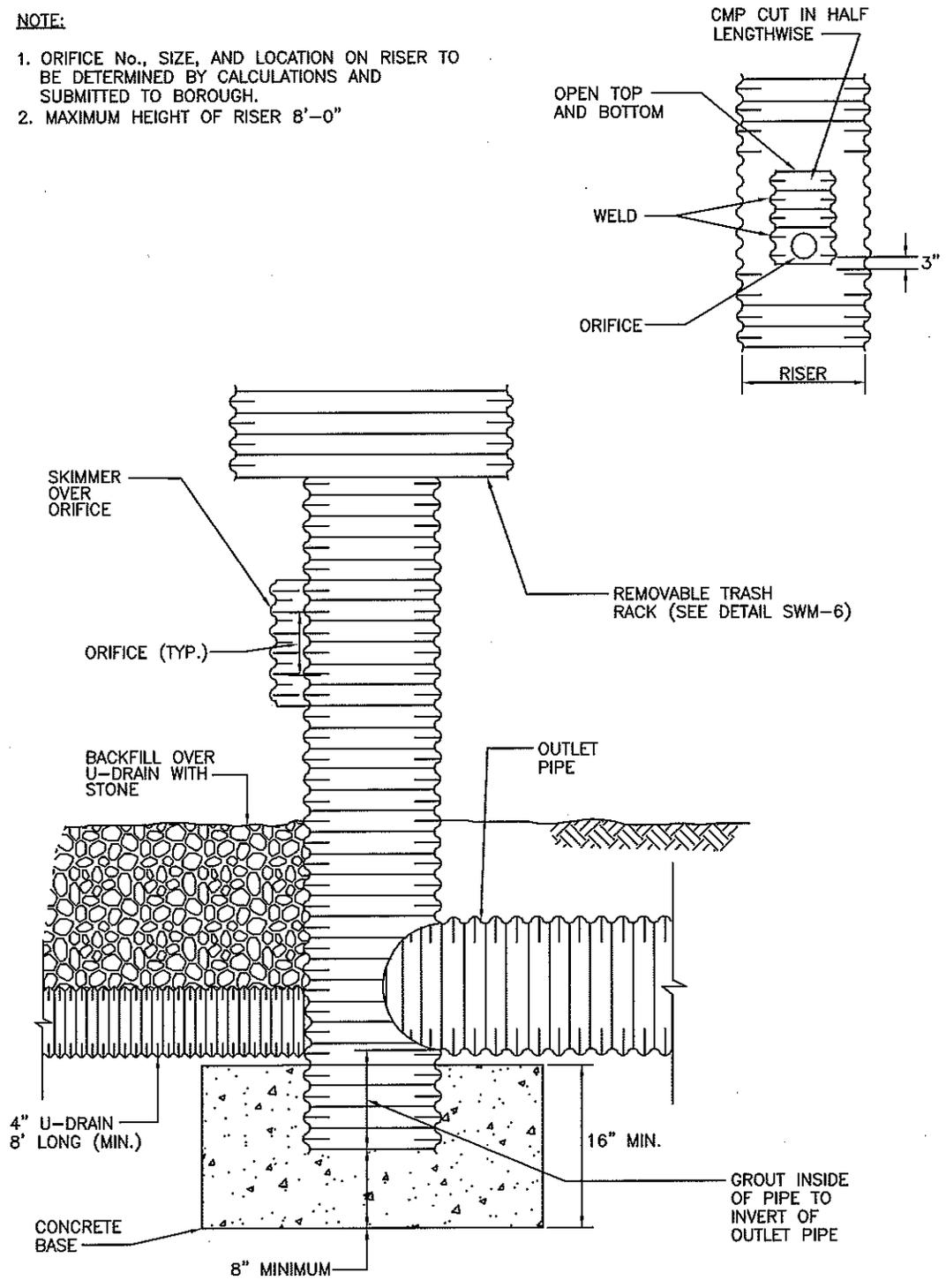
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N:\PROJ\424\Standard Details 2013\Storm\Corrugated Metal Riser for Sediment Basins.dwg Layout=Corrugated Metal Riser for Sediment Basins User=Shawn Wingrove Plotted=12/26/2013 9:58 AM

NOTE:

1. ORIFICE No., SIZE, AND LOCATION ON RISER TO BE DETERMINED BY CALCULATIONS AND SUBMITTED TO BOROUGH.
2. MAXIMUM HEIGHT OF RISER 8'-0"



USE AS TEMPORARY RISER ONLY

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Corrugated Metal Riser For Sediment Basins

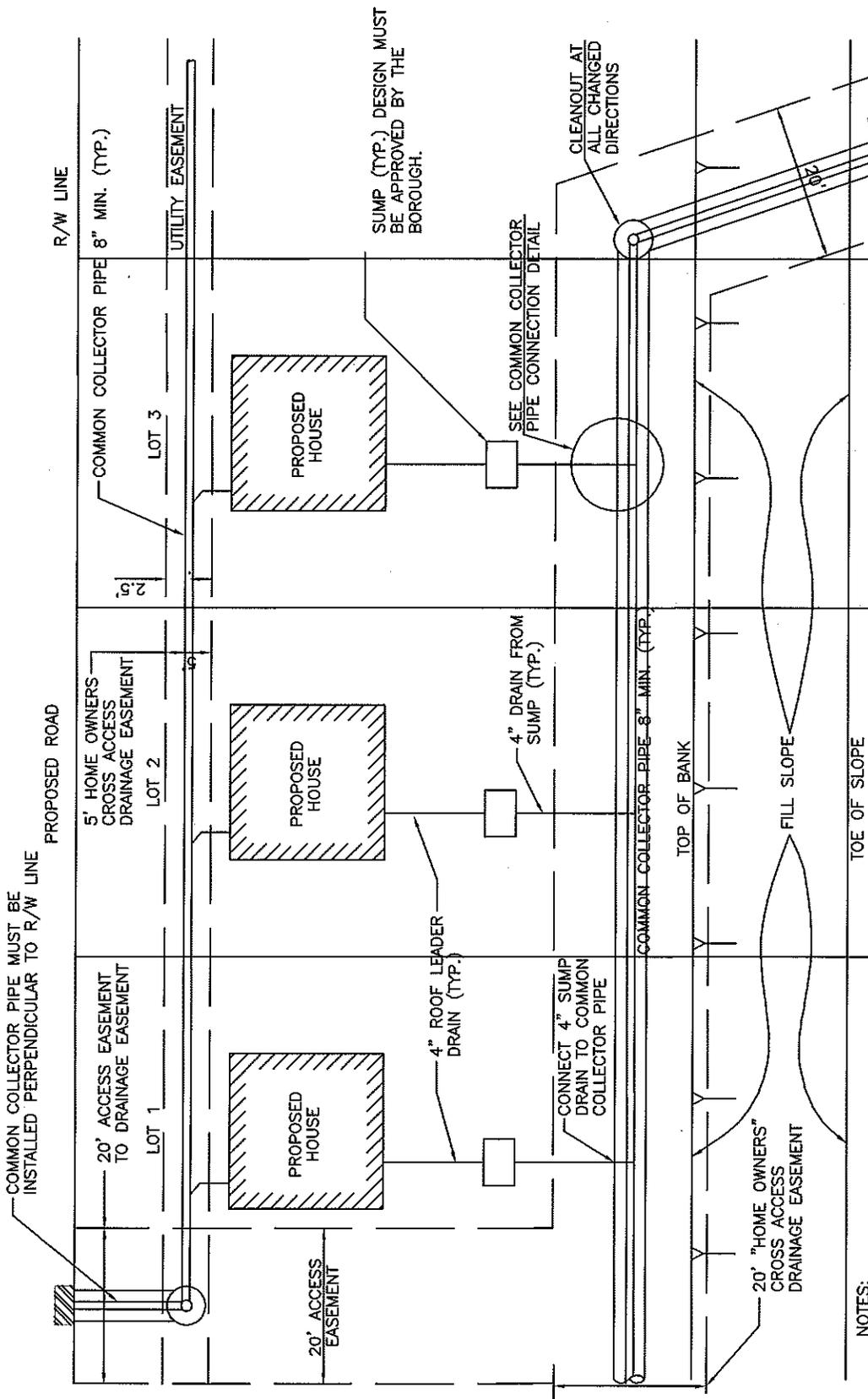
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DATE: January 2014 FILE: Corrugated Metal Riser For Sediment Basins.dwg



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NOTES:

1. THE COMMON COLLECTOR PIPE MUST BE SIZED FOR THE CONTRIBUTING AREA. THE PIPE MUST BE A MINIMUM OF 8 INCHES IN DIAMETER AND SIZED BY A PROFESSIONAL ENGINEER. THE PIPE SIZE DESIGN MUST BE APPROVED BY THE BOROUGH.
2. MAINTENANCE OF THE COMMON COLLECTOR PIPE WILL BE THE SHARED RESPONSIBILITY OF THE OWNERS OF THE HOMES SERVED BY THE PIPE OR BY A HOME OWNER'S ASSOCIATION. A NOTE SHALL BE ADDED TO THE SUBDIVISION PLAN INDICATING RESPONSIBILITY.
3. SUMPS ONLY REQUIRED IF COLLECTOR PIPE DISCHARGES UNCONTROLLED AND HAS NOT BEEN INCLUDED IN STORM WATER REPORT. DEVELOPERS GEOTECHNICAL ENGINEER MUST PROVIDE RECOMMENDATION ON SUMP LOCATIONS AND INFILTRATION TESTING AT THE TIME OF PLAN APPLICATION FOR APPROVAL.
4. COLLECTOR PIPE FOR STORMWATER MUST BE "BLACK". GREEN OR WHITE PIPE IS NOT PERMITTED.

ROCK APRON PROTECTION (DESIGNED FOR OUTFALL VELOCITIES OF WATER) DISCHARGE TO A NATURAL DRAINAGE AREA DESIGN MUST BE APPROVED BY THE BOROUGH.

Roof Drain Sump Outlet Common Collector

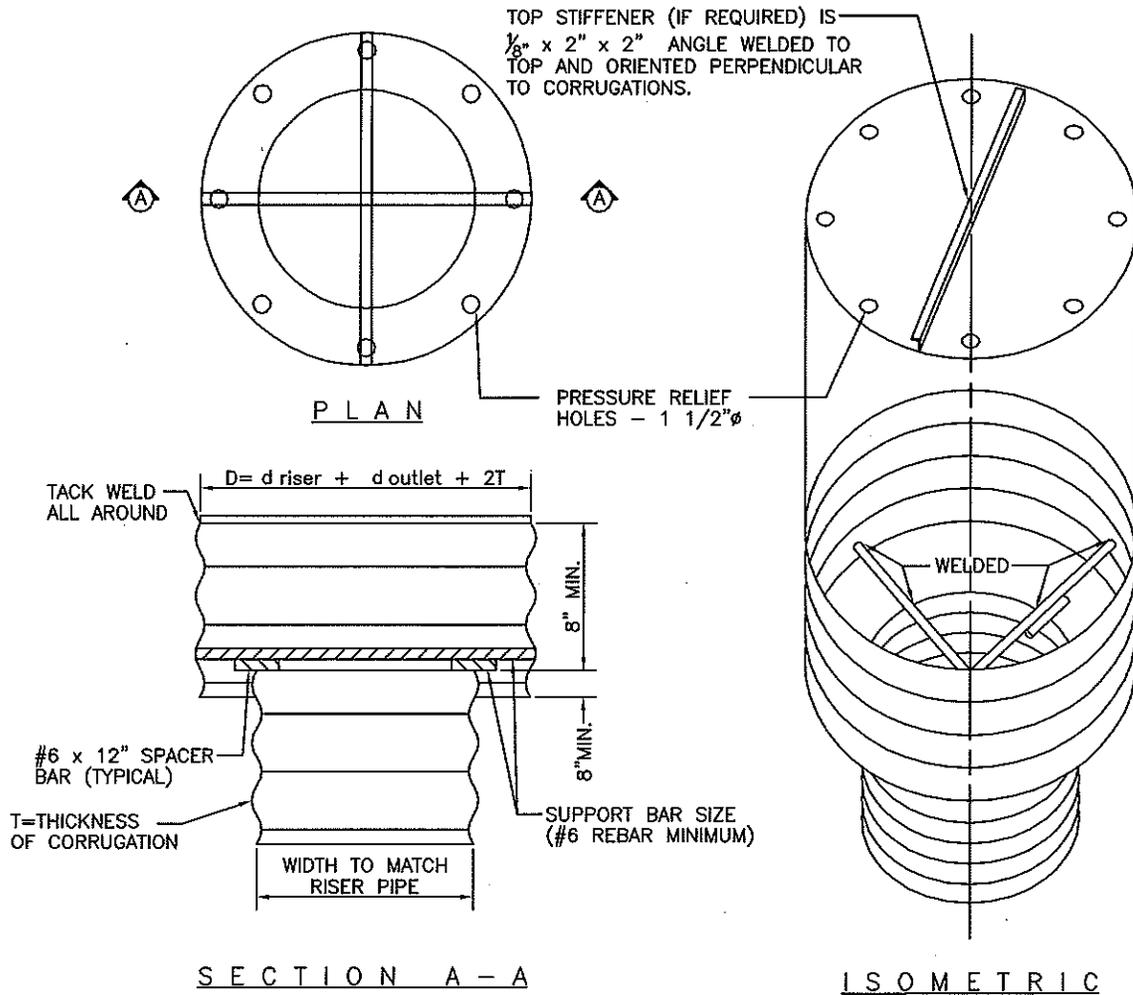
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DATE: January 2014 FILE: Common Collector Pipe Connection.dwg



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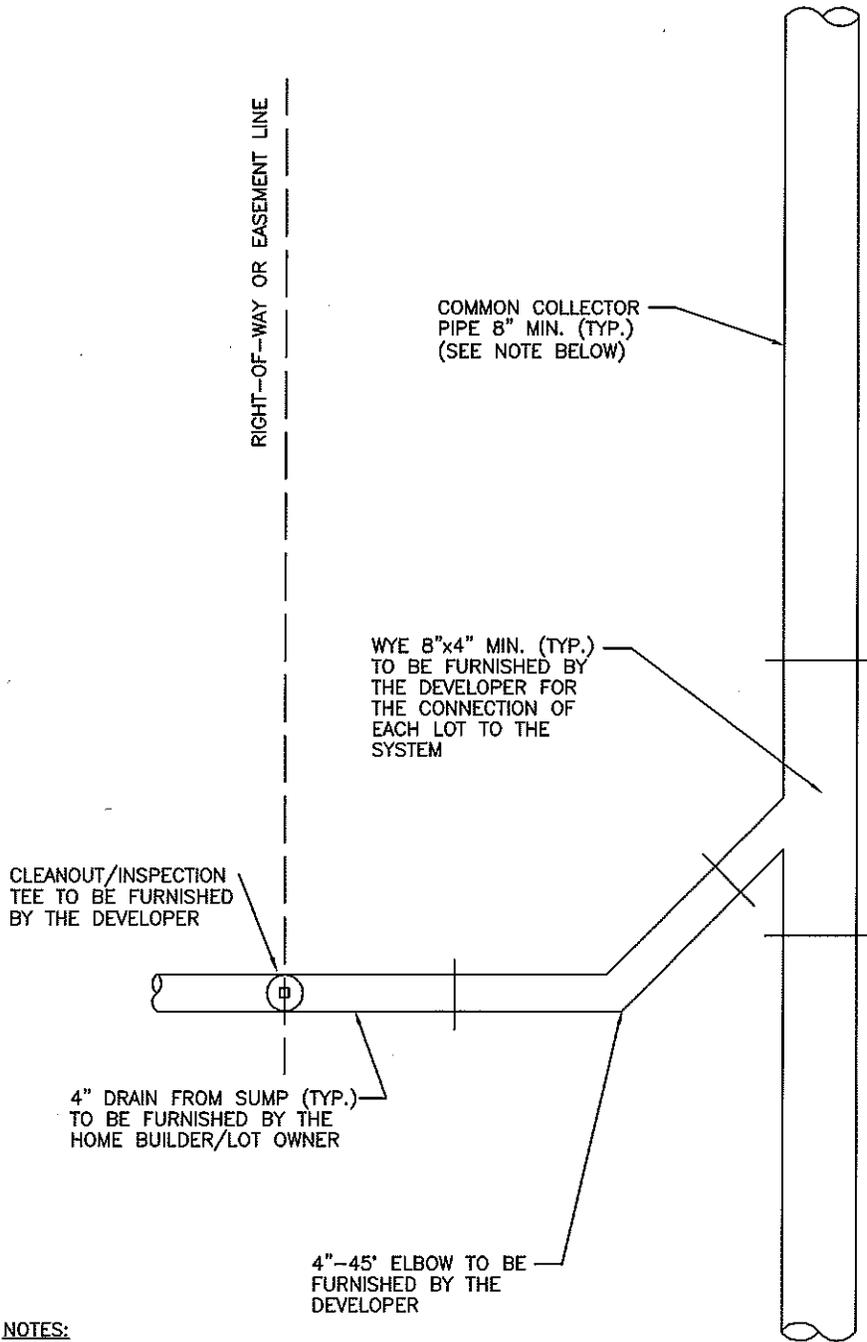


NOTE:

1. TOP IS 14 GAGE CORRUGATED METAL OR 1/8" STEEL PLATE, PRESSURE RELIEF HOLES MAY BE OMITTED, IF ENDS OF CORRUGATIONS ARE LEFT FULLY OPEN WHEN CORRUGATED TOP IS WELDED TO CYLINDER.
2. CYLINDER IS 16 GAGE CORRUGATED METAL PIPE OR FABRICATED FROM 1/8" STEEL PLATE.
3. THE CYLINDER MUST BE FIRMLY FASTENED TO THE TOP OF THE RISER.
4. SUPPORT BARS ARE WELDED TO THE TOP OF THE RISER OR ATTACHED BY STRAPS BOLTED TO TOP OF RISER.

Trash Rack & Anti-Vortex Device For Temporary Sediment Basins





NOTES:

1. THE COMMON COLLECTOR PIPE MUST BE SIZED FOR THE CONTRIBUTING DRAINAGE AREA. THE PIPE MUST BE A MINIMUM OF 8 INCHES SDR-35 "BLACK" IN DIAMETER AND SIZED BY A PROFESSIONAL ENGINEER. THE PIPE SIZE DESIGN MUST BE APPROVED BY THE BOROUGH. PIPE COLOR MUST BE BLACK WITH WARNING TAPE INDICATING STORM PIPE. ALL PIPES UNDER 8" MUST BE SDR-26 WITH COLOR "BLACK" FOR STORM SEWERS.
2. MAINTENANCE OF THE COMMON COLLECTOR PIPE WILL BE THE SHARED RESPONSIBILITY OF THE OWNERS OF THE HOMES SERVED BY THE PIPE OR BY A HOME OWNER'S ASSOCIATION. A NOTE SHALL BE ADDED TO THE SUBDIVISION PLAN INDICATING RESPONSIBILITY.

Common Collector Pipe Connection

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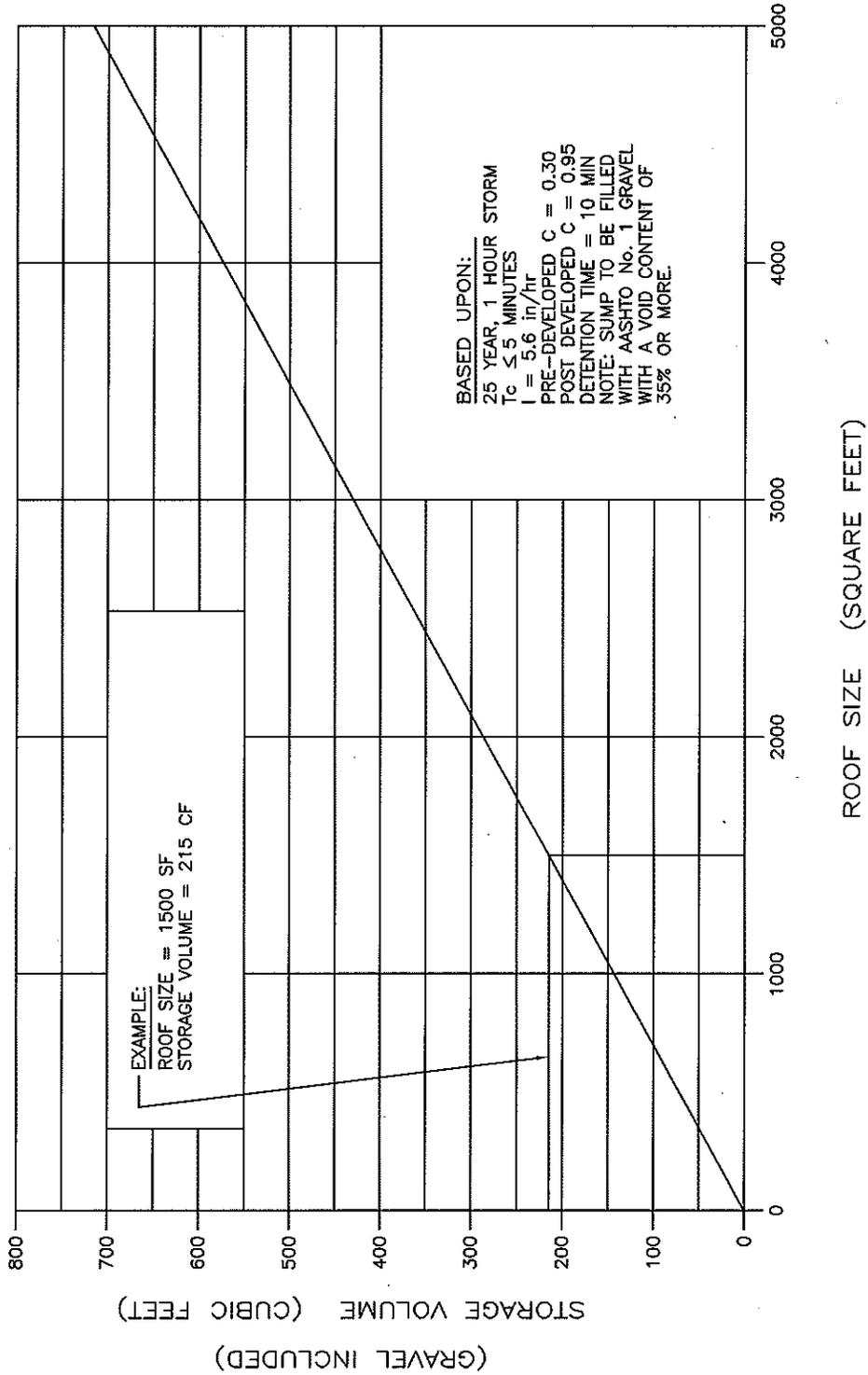
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ROOF DRAIN - SUMP STORAGE CHART
BOROUGH OF FOX CHAPEL



Roof Drain Sump Storage Chart (25-yr Storm)

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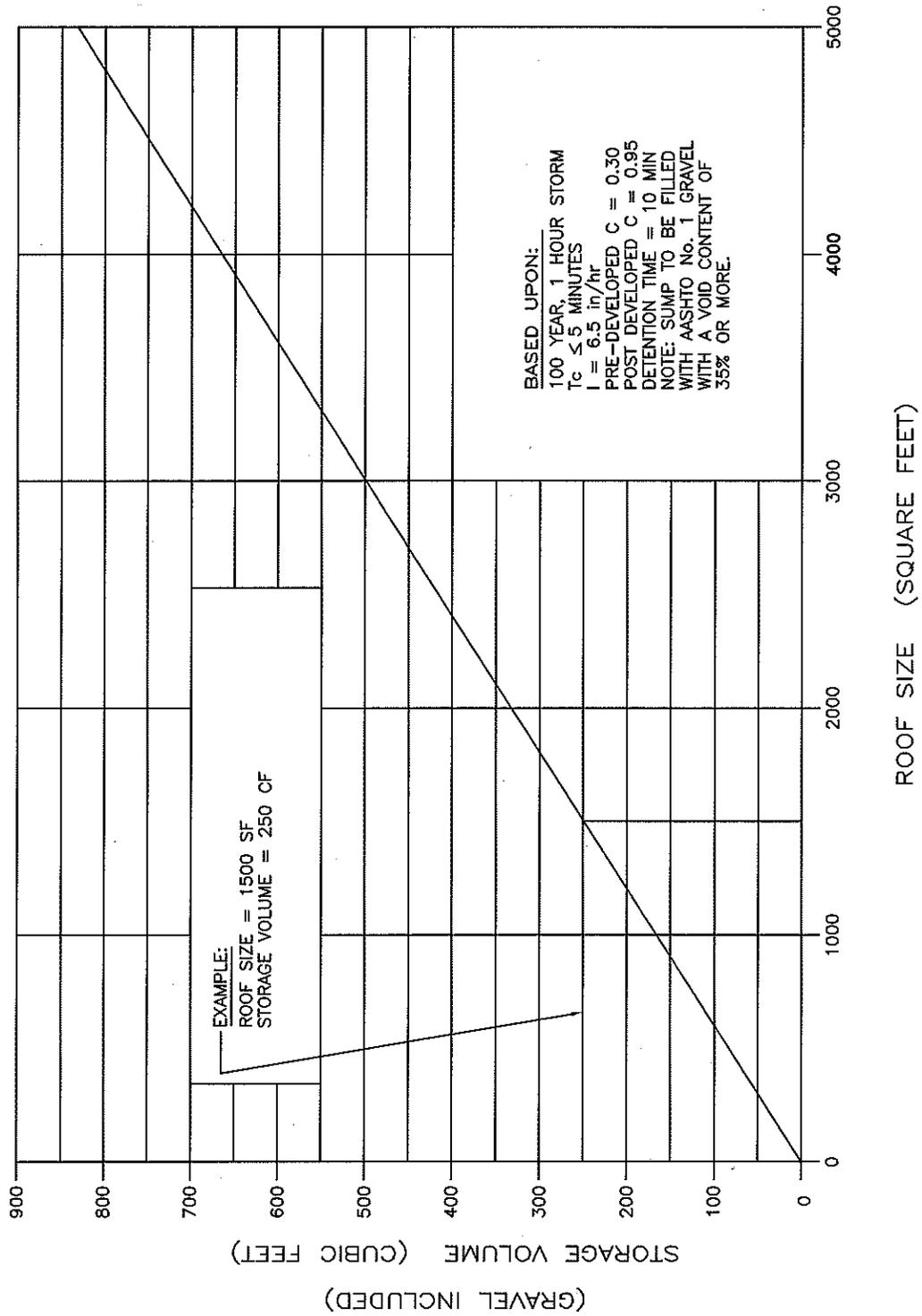
DATE: January 2014 FILE: Roof Drain Sump Storage Chart (100-yr Storm).dwg



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ROOF DRAIN - SUMP STORAGE CHART
BOROUGH OF FOX CHAPEL



Roof Drain Sump Storage Chart (100-yr Storm)

SCALE: N.T.S.

DATE: January 2014 FILE: Roof Drain Sump Storage Chart (100-yr Storm).dwg



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SINGLE STAGE ROCK SUMP
FOR SMALL PROJECT AREAS
IMPERVIOUS AREAS 400-3000 SQ FT
DESIGN PARAMETERS

DEPTH OF SUMP (FT.) →	1	2	3	4	5	SUMP VOLUME REQUIRED (CU. FT.)	
	DIAMETER OF OUTLET ORIFICE (IN.)					NET	ROCK
400	11/16	9/16	1/2	1/2	1/2	68	170
600	13/16	11/16	5/8	9/16	9/16	102	255
800	15/16	13/16	11/16	5/8	5/8	136	340
1000	1-1/16	7/8	13/16	3/4	11/16	170	425
1200	1-3/16	1-0	7/8	13/16	3/4	204	510
1400	1-1/4	1-1/16	15/16	7/8	13/16	238	595
1600	1-3/8	1-1/8	1-0	15/16	7/8	272	680
1800	1-7/16	1-3/16	1-1/16	1-0	15/16	306	765
2000	1-1/2	1-1/4	1-1/8	1-1/16	1-0	340	850
2200	1-9/16	1-5/16	1-3/16	1-1/8	1-1/16	374	935
2400	1-5/8	1-3/8	1-1/4	1-3/16	1-1/8	408	1020
2600	1-11/16	1-7/16	1-5/16	1-1/4	1-1/8	442	1105
2800	1-3/4	1-1/2	1-3/8	1-1/4	1-3/16	476	1190
3000	1-13/16	1-9/16	1-3/8	1-5/16	1-1/4	510	1275

Single Stage Rock Sump Design Parameters

SCALE: N.T.S.

DATE: January 2014 FILE: Single Stage Rock Sump Design Parameters.dwg



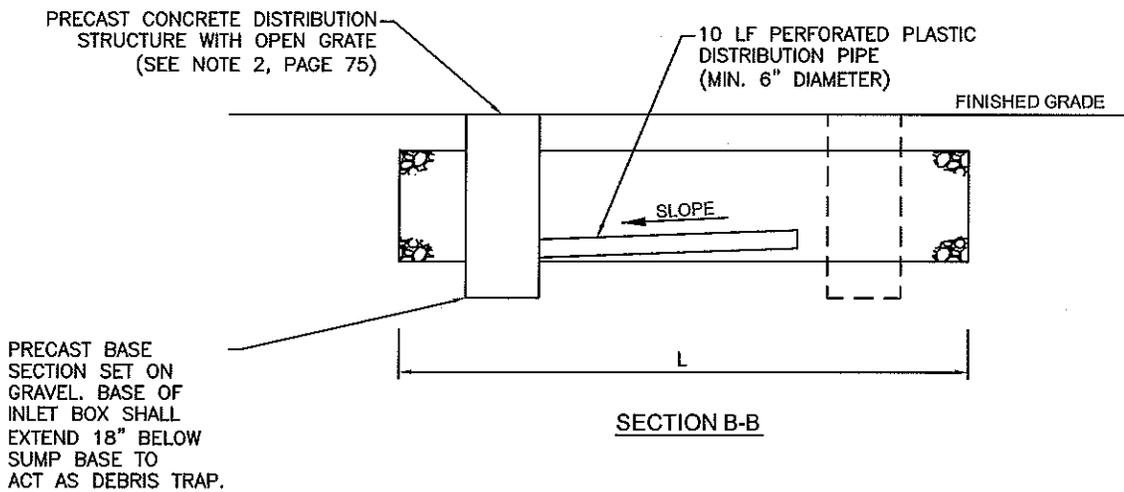
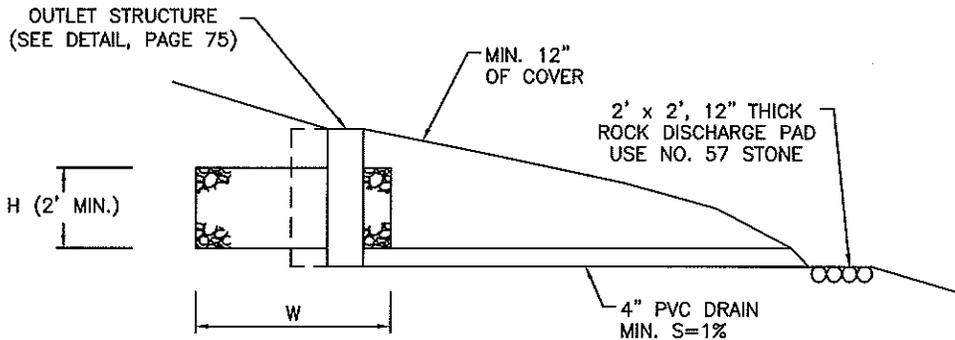
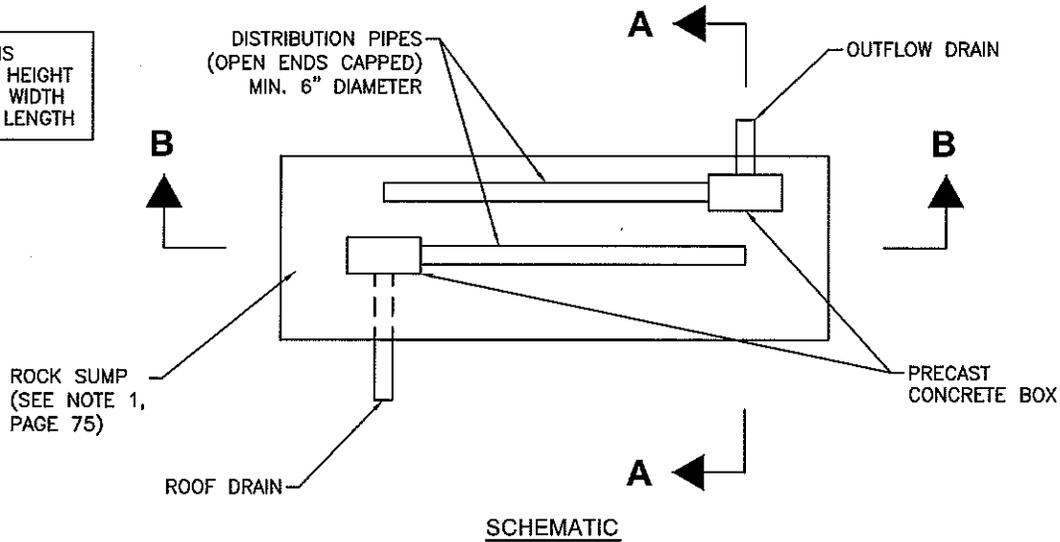
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DIMENSIONS
H = HEIGHT
W = WIDTH
L = LENGTH



Single Stage Rock Sump Small Project Areas (1 of 2)

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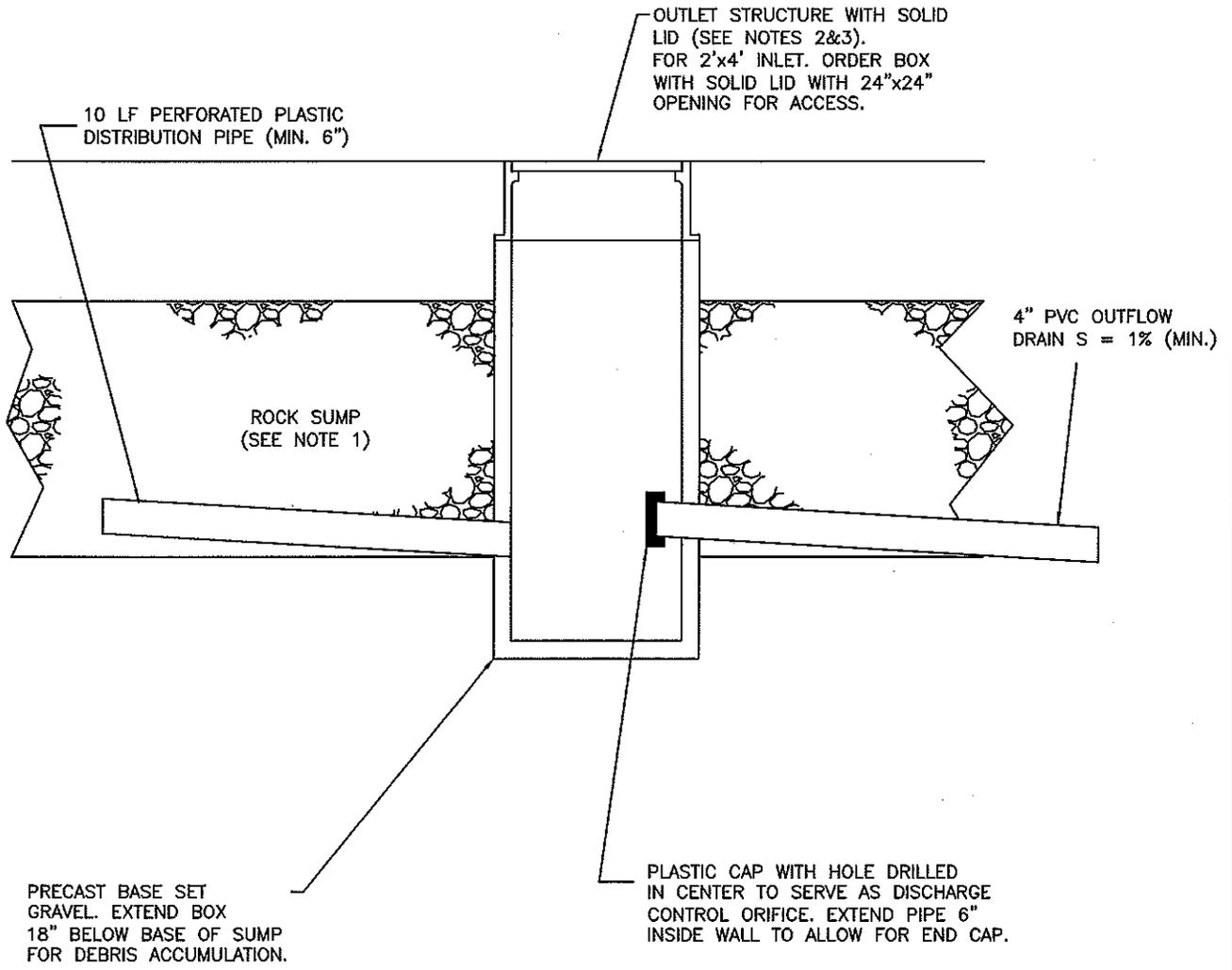
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NOTES:

1. CONSTRUCT ROCK SUMP WITH AASHTO NO. 57 LIMESTONE OR 2B (WASHED) GRAVEL. WRAP SUMP ON ALL SIDES WITH PENNDOT TYPE 2B NONWOVEN GEOTEXTILE MATERIAL.
2. ACCEPTABLE DISTRIBUTION/OUTLET STRUCTURES:
DEPTH IS TO BE MEASURED FROM THE GROUND SURFACE TO THE BASE OF SUMP
< 5 FT DEEP - USE PRECAST 2'x2' INLET BOX
> OR=5 FT DEEP - USE PRECAST 2'x4' INLET BOX
3. SOLID LID SPECIFICATIONS (EQUIVALENT ALTERNATIVE LIDS ACCEPTABLE):
2'x2' INLET BOX - USE NEENAH R-1883-G6 OR G4
2'x4' INLET BOX - INSTALL NEENAH R-1879-L OVER OPENING

PAGE 75

Single Stage Rock Sump Small Project Areas (2 of 2)

SCALE: N.T.S.

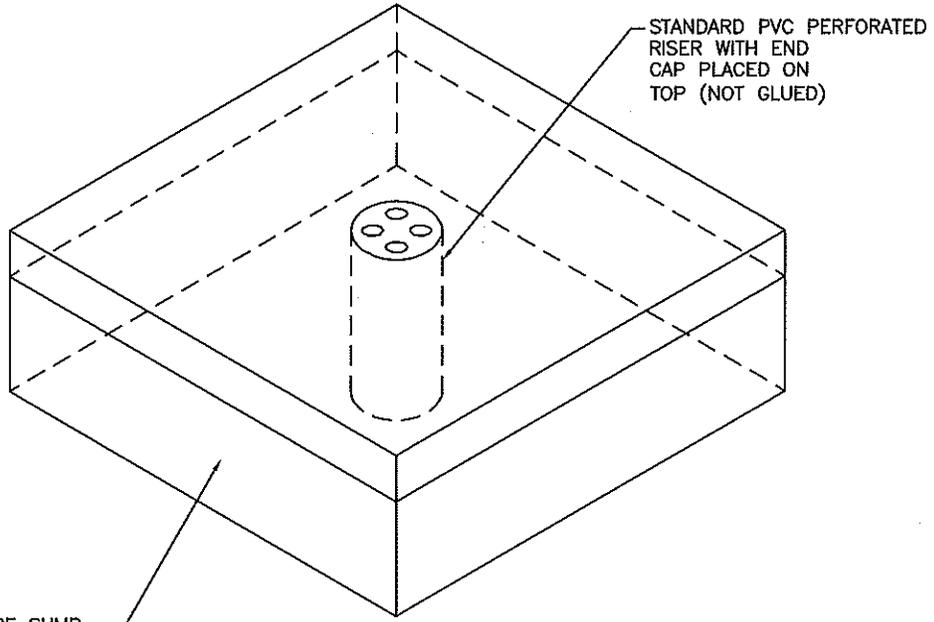
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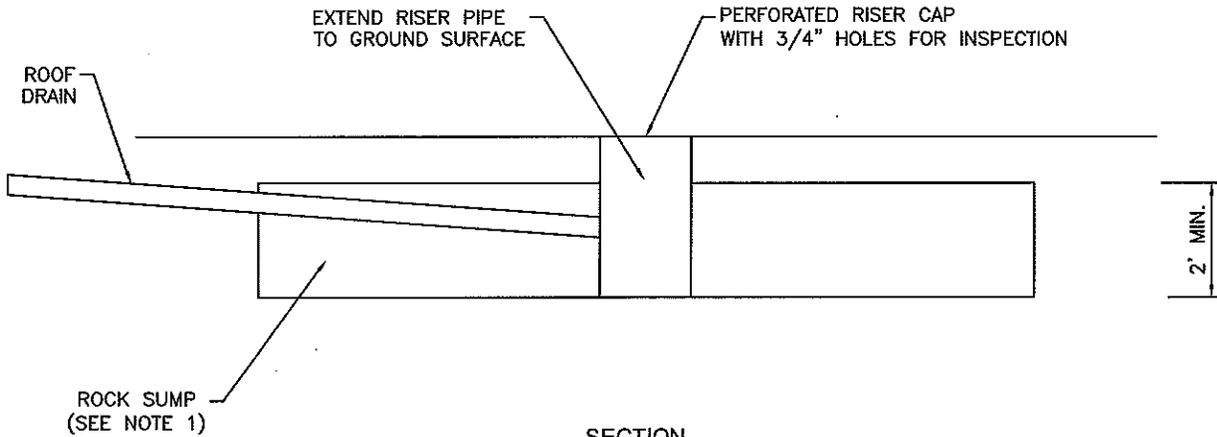
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ISOMETRIC SCHEMATIC



SECTION

NOTES:

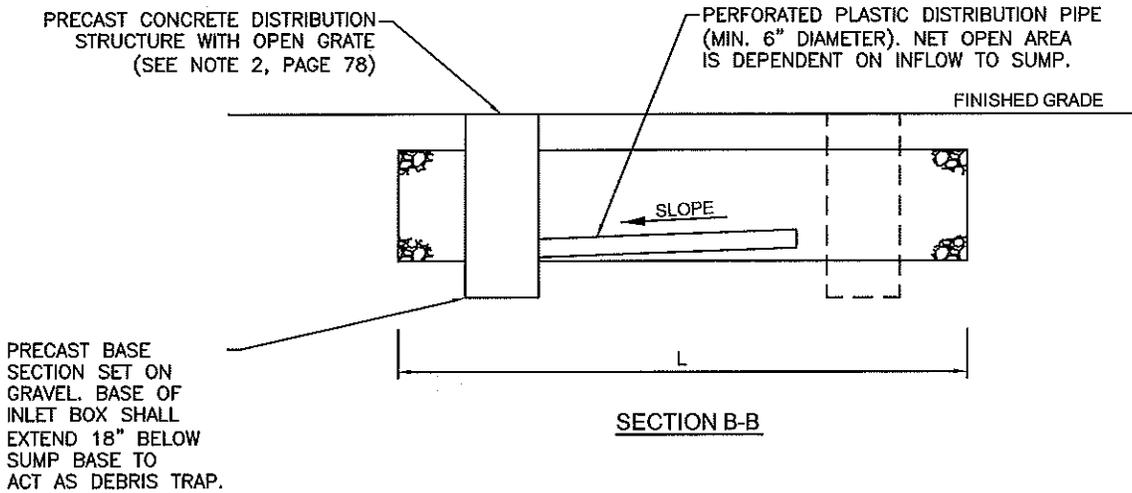
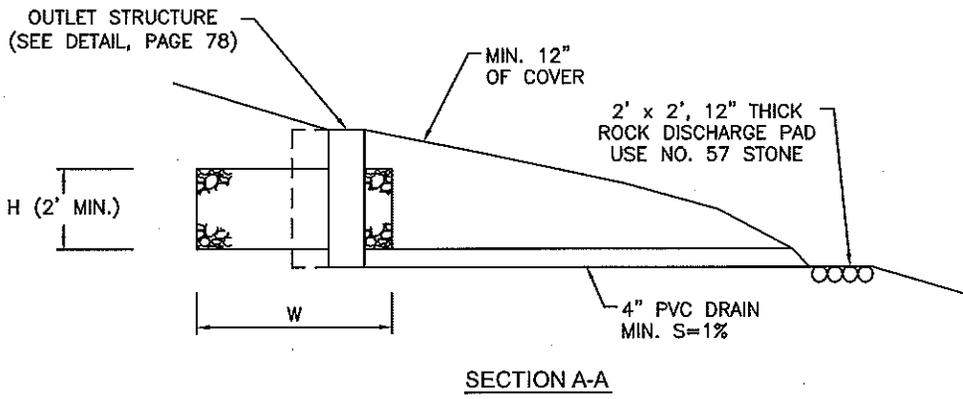
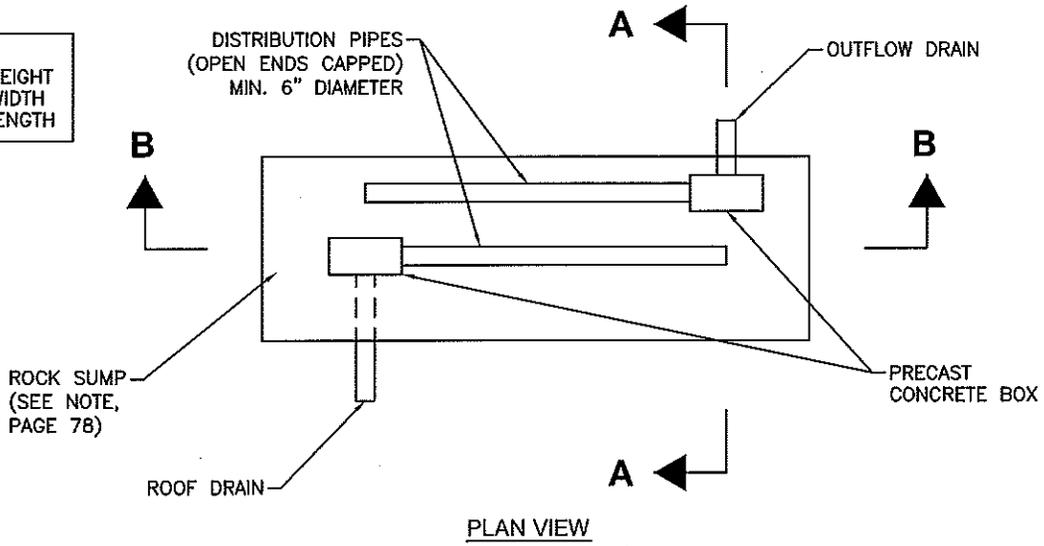
1. CONSTRUCT ROCK SUMP WITH AASHTO NO. 57 LIMESTONE OR 2B (WASHED) GRAVEL. WRAP SUMP ON ALL SIDES PENNDOT TYPE 2B NONWOVEN GEOTEXTILE MATERIAL.

Infiltration Sump-Impervious Area < 400 SF



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DIMENSIONS
H = HEIGHT
W = WIDTH
L = LENGTH



Multi-Stage Rock Sump Large Project Areas (1 of 2)

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DATE: January 2014 FILE: Multi-Stage Rock Sump Large Project Areas.dwg



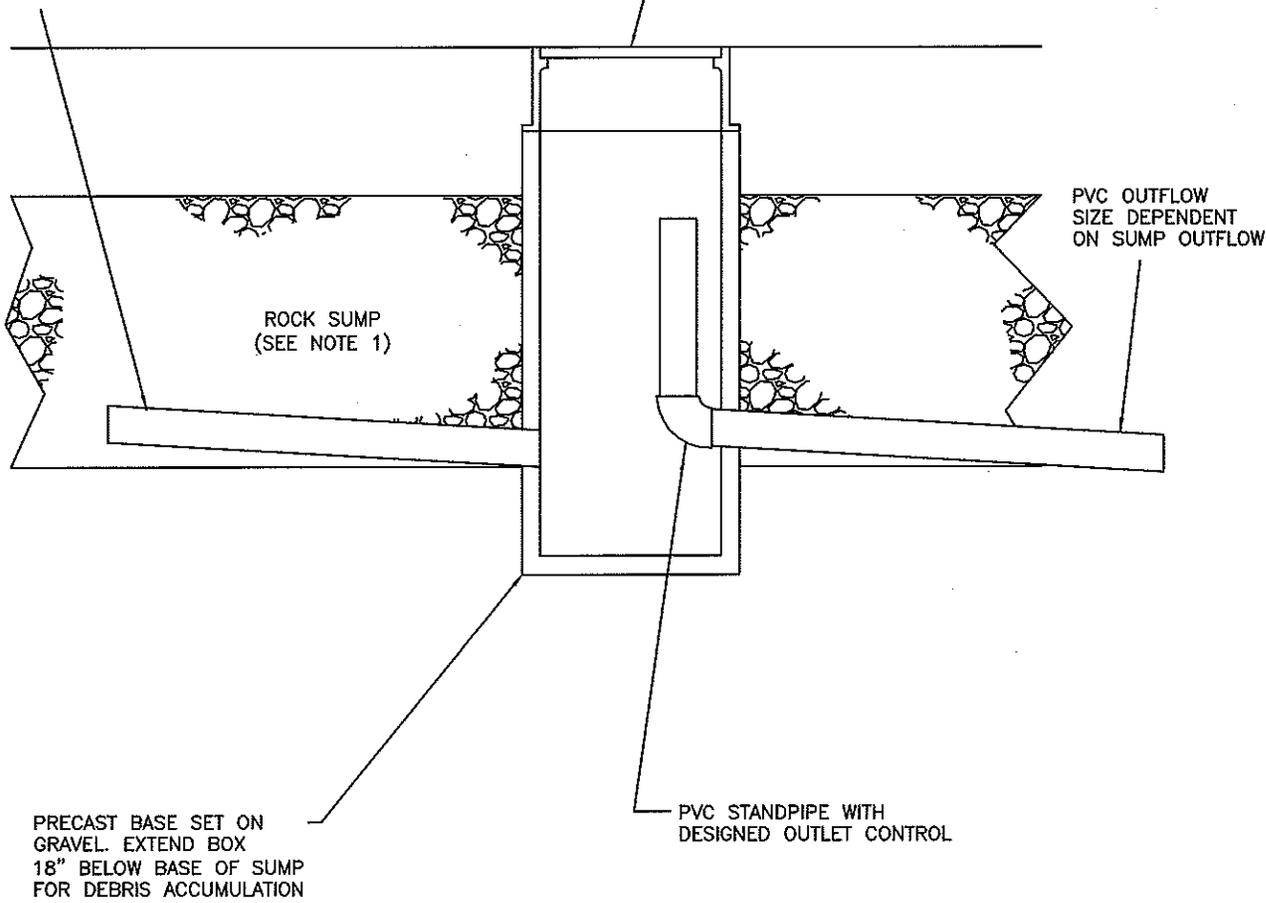
Fox Chapel Borough
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PERFORATED PLASTIC DISTRIBUTION PIPE (MIN. 6"), NET OPEN AREA IS DEPENDENT ON DESIGN OUTFLOW FROM SUMP

OUTLET STRUCTURE WITH SOLID LID (SEE NOTES 2&3). FOR 2'x4' INLET. ORDER BOX WITH SOLID LID WITH 24"x24" OPENING FOR ACCESS



ROCK SUMP (SEE NOTE 1)

PVC OUTFLOW SIZE DEPENDENT ON SUMP OUTFLOW

PRECAST BASE SET ON GRAVEL. EXTEND BOX 18" BELOW BASE OF SUMP FOR DEBRIS ACCUMULATION

PVC STANDPIPE WITH DESIGNED OUTLET CONTROL

NOTES:

1. CONSTRUCT ROCK SUMP WITH AASHTO NO. 57 LIMESTONE OR 2B (WASHED) GRAVEL. WRAP SUMP ON ALL SIDES WITH PENNDOT TYPE 2B NONWOVEN GEOTEXTILE MATERIAL.
2. ACCEPTABLE DISTRIBUTION/OUTLET STRUCTURES:
 DEPTH IS TO BE MEASURED FROM THE GROUND SURFACE TO THE BASE OF SUMP
 < 5 FT DEEP - USE PRECAST 2'x2' INLET BOX
 > OR = 5 FT DEEP - USE PRECAST 2'x4' INLET BOX
3. SOLID LID SPECIFICATIONS (EQUIVALENT ALTERNATIVE LIDS ACCEPTABLE):
 2'x2' INLET BOX - USE NEENAH R-1883-G6 OR G4
 2'x4' INLET BOX - INSTALL NEENAH R-1879-L OVER OPENING

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Multi-Stage Rock Sump Large Project Areas (2 of 2)

SCALE: N.T.S.

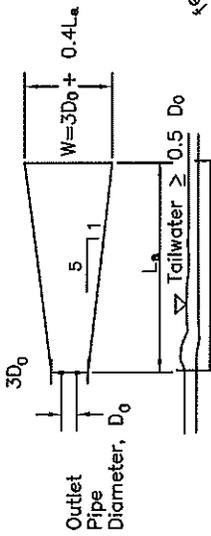
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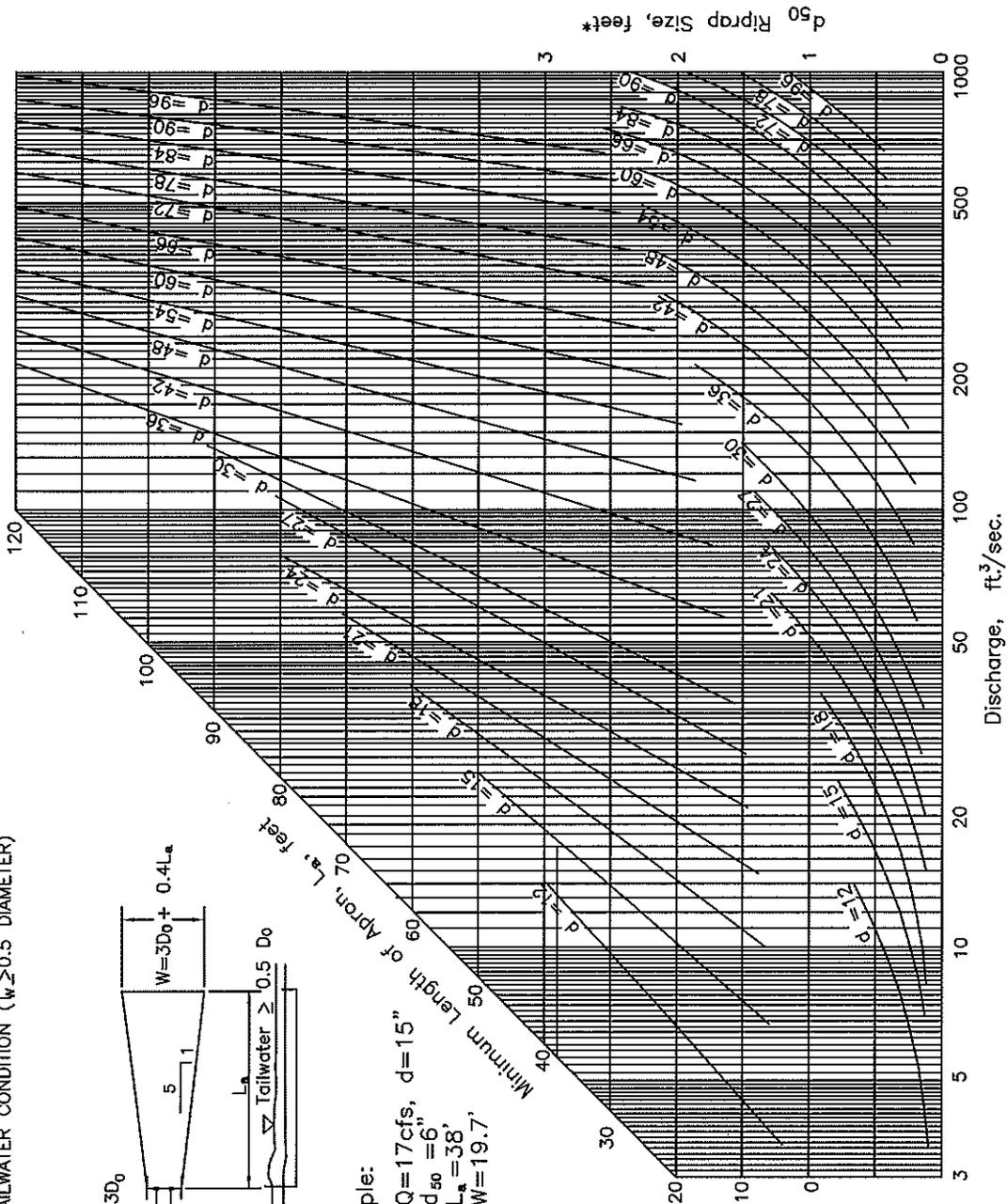
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DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL
 MAXIMUM TAILWATER CONDITION ($W \geq 0.5$ DIAMETER)



Example:
 $Q = 17 \text{ cfs}$, $d = 15''$
 $d_{50} = 6''$
 $L_a = 38'$
 $W = 19.7'$



*For discharge velocities exceeding Maximum Allowable for Rip Rap indicated, increase d stone size and/or provide velocity reduction device.

Source: DEP Erosion and Sediment Pollution Control Program Manual April 15, 2000

Outlet Protection (Maximum Tailwater Conditions)

SCALE: N.T.S.

DATE: January 2014 FILE: Outlet Protection (Tailwater Conditions).dwg



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GENERAL NOTES:

1. THE PURPOSE OF THESE STANDARDS IS TO DEFINE THE MINIMUM ACCEPTABLE QUALITY OF MATERIALS AND WORKMANSHIP. IT IS NOT INTENDED TO PRECLUDE OTHER MATERIALS OR DESIGNS. OTHER DESIGN DETAILS MAY BE USED, HOWEVER, PROVIDED THEY RECEIVE PRIOR WRITTEN APPROVAL OF THE BOROUGH AFTER RECOMMENDATION OF THE ENGINEER.

2. CONDITIONS AT THE SITE WHICH CANNOT ALWAYS BE ANTICIPATED MAY NECESSITATE DEVIATIONS FROM BOROUGH STANDARD DETAILS; THEREFORE, THE BOROUGH OF FOX CHAPEL HEREIN RESERVES THE RIGHT TO DIRECT CHANGES IN THE FIELD AS NEEDED AT ITS DISCRETION.

3. MATERIALS AND CONSTRUCTION REQUIREMENTS SHALL CONFORM TO THESE DETAILS AND TO THE LATEST EDITION OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FORM 408 (PENNDOT 408). PENNDOT MATERIALS CERTIFICATIONS TO BE SUBMITTED TO THE BOROUGH ON ALL MATERIALS DELIVERED TO SITE.

4. EROSION AND SEDIMENTATION CONTROL FACILITIES SHALL BE PROVIDED ON ALL SITES WHERE THE GROUND SURFACE IS DISTURBED PURSUANT TO BOROUGH ORDINANCES. THESE FACILITIES SHALL BE DESIGNED IN ACCORDANCE WITH CURRENT MANUALS PUBLISHED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE ALLEGHENY COUNTY CONSERVATION DISTRICT.

5. ALL DISTURBED AREAS SHALL BE PROMPTLY SEEDED, MULCHED, AND FERTILIZED. THE FOLLOWING MINIMUM SEEDING FORMULAS SHALL BE USED IN ACCORDANCE WITH PENNDOT 408:

LAWN AREAS	- FORMULA B
SLOPE AREAS 3:1 AND STEEPER	- FORMULA W
TEMPORARY SEEDING	- FORMULA E

6. ALL TRENCHES FOR UTILITIES INCLUDING STORM SEWERS, SANITARY SEWERS, WATERLINES, GAS LINES, ELECTRIC LINES, TELEPHONE LINES, AND CABLE TELEVISION LINES CROSSING OR RUNNING IN BOROUGH CARTWAYS SHALL BE BACKFILLED WITH AASHTO No. 57 OR PADOT 2RC OR 2A CRUSHED STONE MECHANICALLY TAMPED IN 4-INCH LIFTS TO PROVIDE 100 PERCENT OF THE DETERMINED DRY WEIGHT DENSITY IN ACCORDANCE WITH PTM No. 112 OR PTM No. 402. NO PIPES IN ANY RIGHT-OF-WAY SHALL BE BACKFILLED WITHOUT INSPECTION BY THE BOROUGH. ALL UTILITIES SHALL HAVE A MINIMUM COVER OF 36 INCHES. SLAG IS NOT PERMITTED AS BACKFILL. ALL UTILITY ROADWAY CROSSINGS MUST BE INSTALLED PRIOR TO ROADWAY CONSTRUCTION. ALL MAINLINE UTILITY ROADWAY CROSSINGS MUST BE MADE AT ROAD INTERSECTIONS, UNLESS OTHERWISE APPROVED BY THE BOROUGH.

7. ALL STORM SEWERS WITHIN BOROUGH ROADWAY RIGHT-OF-WAYS SHALL BE CORRUGATED POLYETHYLENE (CPP) WITH WATER-TIGHT JOINTS. ALL STORM SEWERS SHALL BE LAID TO LINE AND GRADE WITH A FULL MOON AND AT A MINIMUM ONE PERCENT GRADE. ALL STORM SEWERS THROUGH STORMWATER DETENTION BASIN ENBANKMENT SHALL BE CLASS III REINFORCED TONGUE AND GROOVE, WATER-TIGHT RCP.

8. THE BOROUGH OF FOX CHAPEL MUST BE NOTIFIED (412-963-1100) 72 HOURS PRIOR TO ANY WORK WITHIN A BOROUGH RIGHT-OF-WAY OR PRIOR TO THE START OF ANY PHASE OF CONSTRUCTION OF ANY APPROVED DEVELOPMENT PLAN.

9. ALL FIRE HYDRANT LOCATIONS AND SUPPLY LINES MUST BE APPROVED BY THE BOROUGH FIRE CHIEF AND THE MUNICIPAL AUTHORITY. ALL FIRE HYDRANTS SHALL HAVE TWO 2-1/2 INCH NOZZLES AND ONE 4-1/2 INCH STREAMER NOZZLE. 2-1/2 INCH THREAD SHALL BE 3.078 I.D. X 6 THREADS PER INCH. 4-1/2 INCH STREAMER NOZZLE SHALL BE NATIONAL STANDARD THREAD.

10. ALL PIPE BORINGS SHALL HAVE A MINIMUM COVER OF 36 INCHES FROM TOP OF UTILITY LINE TO ROAD SURFACE.

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GENERAL NOTES:

11. WHEREIN THESE STANDARDS, DESIGNATIONS TO AASHTO SIEVE SIZES ARE MADE, THEY ARE CROSS REFERENCED TO THE OLD PENNDOT DESIGNATIONS AS FOLLOWS:

<u>PENNDOT</u>	<u>AASHTO</u>
4	1
3A	3
2B	57
PA #2	67
1B	8
1A	10
2A	NONE

12. ALL PAVERS WHO WORK WITHIN EXISTING OR PROPOSED PUBLIC RIGHTS-OF-WAYS IN THE BOROUGH OF FOX CHAPEL MUST BE PENNDOT PRE-QUALIFIED.
13. ALL TRAFFIC SIGNALS INSTALLED OR MODIFIED SHALL BE DESIGNED IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PENNDOT) PUBLICATION 149 TRAFFIC SIGNAL DESIGN HANDBOOK AND PUBLICATION 148 TRAFFIC STANDARDS - SIGNALS.
14. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL INCLUDE AN ACOUSTIC EMERGENCY VEHICLE PREEMPTION SYSTEM CONFORMING TO THE CURRENT BOROUGH SYSTEM. THE SYSTEM SHALL INCLUDE CONFIRMATION BEACONS AND DETECTORS ON EACH APPROACH TO THE INTERSECTION, AS DIRECTED BY THE BOROUGH TRAFFIC ENGINEER. THE SYSTEM SHALL OPERATE ON APPROACH PREEMPTION.
15. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL INCLUDE L.E.D. RED, YELLOW, AND GREEN VEHICULAR INDICATIONS. L.E.D. WALK AND DON'T WALK INDICATIONS SHALL ALSO BE INSTALLED.
16. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL BE ON MAST ARMS PER PENNDOT STANDARDS.
17. ALL NEW ELECTRIC, TELEPHONE, AND CABLE TELEVISION MAIN LINES AND SERVICE LINES SHALL BE CONSTRUCTED UNDERGROUND.
18. ALL HANDICAPPED PARKING SPACES AND STALLS SHALL CONFORM WITH CURRENT ADA STANDARDS.
19. ACCESS TO DETENTION FACILITIES MUST BE PAVED (DEPTH EQUAL TO ROADWAY PAVING DEPTH) FROM THE ROADWAY TO THE REAR OF THE LOT. THE MINIMUM WIDTH IS 10 FEET.
20. ALL UTILITY CROSSINGS MUST BE DRILLED. NO MOLES, GOFERS, OR SIMILAR MECHANICAL BORING DEVICES WILL BE PERMITTED.
21. STORM SEWER DROP CONNECTIONS FROM INVERT OF OUTFLOW PIPE TO INVERT OF INFLOW PIPES SHALL BE A MAXIMUM OF 2 FEET.
22. ALL PRECAST CONCRETE MATERIALS MUST BE SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
23. ALL PAVEMENT MARKINGS AT SIGNALIZED INTERSECTIONS SHALL BE THERMOPLASTIC MARKINGS.
24. ALL ADA RAMPS SHALL COMPLY WITH THE PENNDOT ROADWAY CONSTRUCTION (RC) STANDARDS, LATEST EDITION.

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APPENDIX A

**BOROUGH OF FOX CHAPEL
RULES & REGULATIONS GOVERNING HOUSE OR BUILDING
SANITARY SEWER CONNECTIONS**

**SECTION I
GENERAL**

The Council of the Borough of Fox Chapel and the Board of the Fox Chapel Sanitary Authority have duly adopted the following Rules and Regulations governing the installation of house or building sewers and connections. These Rules and Regulations may from time-to-time be revised by the Borough Engineer subject to the approval of the Borough Manager.

**SECTION II
DEFINITIONS**

1. AUTHORITY - The word "Authority" whenever the same appears herein, means the Fox Chapel Sanitary Authority, a body corporate and politic, organized and existing under the laws of the Commonwealth of Pennsylvania.
2. BOROUGH - The word "Borough" whenever the same appears herein, means the Borough of Fox Chapel, a political subdivision of the Commonwealth of Pennsylvania.
3. BUILDING DRAIN - Shall mean that part of the lowest piping of a drainage system which receives the discharge from soil, waste, or other drainage pipes inside the walls of the building and conveys such discharges to the building sewer; the building drain shall be considered to extend five (5) feet outside the building wall.
4. BUILDING SEWER - Shall mean that part of the horizontal piping of a drainage system which extends from the end of the building drain and which receives the discharge of the building drain and conveys it to a public sewer, private sewer, sewage disposal system, or treatment device. (The building sewer is often referred to as the "sewer lateral".)
5. DRAINAGE SYSTEM - Shall mean all the piping within public or private premises which conveys sewage or other liquid wastes to a legal point of disposal, but does not include the mains of a public sewer system or a private or public sewage treatment or disposal plant.
6. GRADE - Shall mean the slope or fall of a line of pipe in reference to a horizontal plane. It is usually expressed as the fall in a fraction of an inch per foot length of pipe.

RULES AND REGULATIONS
SANITARY SEWER CONNECTIONS

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7. HOUSE TRAP - Shall mean a fitting or assembly of fittings installed in the building drain to prevent the entrance of sewer gas into the drainage system of the building from the building sewer or main sewer; and, to provide a circulation of fresh air for the drainage system through the fresh air inlet of the house trap and the soil and vent stacks.
8. LIQUID WASTE - Shall mean the discharge from any fixture, appliance, or appurtenance in connection with a plumbing system which does not receive fecal matter.
9. OWNER - Shall mean the person, firm, corporation, or association having an interest as Owner, or a person, firm or corporation representing itself to be Owner, whether legal or equitable, sole or only partial, in any premises which is or is about to be furnished sewage service, and word "Owners" means all so interested.
10. PERSON - Shall mean a natural person, their heirs, executors, administrators, or assigns; and, includes a firm, partnership, or corporation, its or their successors or assigns.
11. PREMISES - Shall mean the property or area, including the improvements thereon, to which sewage service is or will be furnished, and as used herein shall be taken to designate:
 - a. A building under one roof, owned or leased by one person and occupied by one residence; or,
 - b. A group or combination of buildings owned by one person, occupied by one family or one organization, corporation, or firm as a residence, church, school, or similar institution; or,
 - c. The one side of a double house having a solid vertical partition wall; or,
 - d. Each side or each part of a house or building occupied by one family; or,
 - e. A public building devoted entirely to public use, such as a town hall, schoolhouse, fire engine house; or,
 - f. A single lot in a row of houses; or,
 - g. Each house in a row of houses; or,

RULES AND REGULATIONS
SANITARY SEWER CONNECTIONS

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- h. Each dwelling unit in a building, a dwelling unit being defined as a building or portion thereof with exclusive cooking and eating facilities designed for occupancy by and used by one person or one family (household).
- 12. PRIVATE SEWER - Shall mean a sewer receiving the discharge of one or more building sewers; said sewer being privately owned and not directly controlled by the Authority or the Borough. A variance must be obtained from Borough Council to construct a private sewer.
- 13. PUBLIC SEWER - Shall mean a sewer in which all Owners of abutting properties have equal rights and is controlled by the Authority or the Borough.
- 14. SEWAGE - Shall mean the normal water-carried household and toilet wastes from residences and institutions exclusive of storm water runoff, surface water, or ground water.
- 15. SEWER SERVICE CONNECTION - Shall mean the connection of the building sewer at the public sewer.
- 16. SPRING LINE - For circular pipe, the midpoint or $D/2$ where D = Diameter of pipe.

SECTION III
CONDITIONS OF SERVICE

- 3.01 GENERAL - The Borough will furnish sewage service only in accordance with the currently prevailing, and as hereafter revised, Rates, Rules, and Regulations of the Borough and Authority, which Rates, Rules, and Regulations are made a part of every application, permit, and contract entered into between Owner or customer and the Borough.

The Borough and the Authority hereby reserve the right, so often as they may deem necessary, to alter, amend, and/or appeal the Rates, Rules and Regulations in part or in whole. New, altered, or amended Rates, Rules, and Regulations shall forthwith, without notice, become and thereafter be a part of every such application, permit, and contract for sewage service in effect at the time of such alteration, amendment, and/or adoption.

SECTION IV
APPLICATIONS & CONTRACTS FOR SEWER CONNECTIONS AND SERVICE

- 4.01 APPLICATION FOR PERMIT - A written application, prepared on the form furnished by the Borough, must be submitted to the Borough for the purpose of requesting a permit to install a building sewer for each premises or group of premises. The said application must be signed by the Owner of the premises or his duly authorized agent, except that such application may be signed by a tenant, subject to the Borough exercising the right to require that the property Owner act as guarantor for all bills as rendered if the tenant neglects to make such payments within the time specified, said application to be subject to the requirements relative to deposits and fees currently in effect. The permit, together with the Rules and Regulations of the Borough, shall regulate and control the installation of the building sewer and the sewage service to the premises. At the time of issuance of the permit, the customer will be required to sign a Contract for Sewage Service which is a lasting contract for the duration of the customer's residence on the premises. In the case of new construction, an application shall be filed at the time application is made for a building permit.
- 4.02 THE PERMIT - The permit for sewage service shall be a binding contract on both the customer and the Borough upon approval by the Borough. Rates for sewage service shall accrue from the date the sewer service connection has been installed and service is available to the premises with respect to the work and responsibilities of the Borough, subject to any time limits set forth in the Notice to Connect.
- 4.03 CONTRACTS WITH DELINQUENTS - No agreement will be entered into by the Borough with any applicant for sewage service, whether owned or tenant, until arrears for service, rents, and sewage bills or other charges, due by the applicant at any premises now or theretofore owned or occupied by him, shall have been paid or until satisfactory arrangements for payment of such unpaid bills have been made.
- 4.04 SPECIAL CONTRACT - The Borough may require, prior to approval of service, special contracts other than applications, and, as previously set forth, under the following conditions:
- a. If required by provision in the Schedule of Rates, the duration of the contract to be specified in the schedule.
 - b. If the construction of extensions and/or other facilities is necessary.
 - c. For providing temporary service.
 - d. For stand-by service.
 - e. For connections with other municipal subdivision.
 - f. If deemed necessary by the Borough.

RULES AND REGULATIONS
SANITARY SEWER CONNECTIONS

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- 4.05 CONTRACT RENEWAL - A new contract must be entered into upon the sale of any property serviced by the sanitary sewer system or a change in any tenancy where the tenant is the customer.
- 4.06 CONDITION OF PLUMBING SYSTEM - All piping and fixtures on the property of the customer are assumed to be in satisfactory condition at the time the drainage system is connected and sewage service furnished, and the plumbing and sanitary drainage system are assumed to be in accordance with these Rules and Regulations and the Borough reserves the right to require the correction of any unsatisfactory condition if such condition shall be found to exist. Prior to connecting to the public sewer or for installations involving connections to an existing building sewer (e.g. home additions, swimming pools, etc.), it must be demonstrated that the existing drainage system is sound and free of extraneous discharges. The Borough shall have the right to make any necessary repairs if the Owner refuses to do so and to bill the Owner for the cost of said repairs.

SECTION V

BUILDING SEWERS AND CONNECTIONS - DESIGN AND CONSTRUCTION

- 5.01 CONNECTIONS - No unauthorized person shall uncover or make any connections with or opening into, use, alter, or disturb any sewer owned by the Borough or the Authority without first having obtained a written permit from the Borough. All systems shall be subject to the regulations set forth herein or to regulations establishing higher standards.

All costs and expenses incident to the installation and connection of the building sewer shall be borne by the Owner. The Owner shall indemnify the Borough and/or Authority from any loss or damage that may directly or indirectly be caused by the installation of the building sewer.

The use of old building sewers generally will not be permitted and a new building sewer must be installed to the building drain. This is particularly true whenever new construction, grading or landfill operations take place over an existing building sewer. When connecting to the building drain would be excessively difficult due to topographic conditions, the Borough *may* allow the use of a portion of an existing building sewer when it is found, upon examination and testing by the Borough or other authorized persons or agencies, to meet all requirements set forth herein. In all such instances, the existing building sewer *must* be inspected by internal televising at the Owner's expense.

RULES AND REGULATIONS
SANITARY SEWER CONNECTIONS

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- 5.02 BUILDING DRAINS AND TRAPS - All sewers laid beneath the floor shall be of material approved and listed in Section 411.2 of the Borough of Fox Chapel Plumbing Code, Ordinance No. 423, (hereinafter referred to as the Plumbing Code).

Each building drain shall be provided with a horizontal intercepting trap (house trap), which shall be the same size as the building drain in which it is installed. The trap shall be provided with an accessible cleanout and relieving vent or fresh air vent, which shall terminate in a location acceptable to the Borough Code Enforcement Officer and County Plumbing Inspector but generally not more than five (5) feet outside the building wall.

Relieving vents or fresh air inlets shall be no less than four (4) inches in diameter for building drains up to and including eight (8) inches. For building drains greater than eight (8) inches, the fresh air inlet shall be one-half the diameter of the drain. The opening in the grill of fresh air inlet shall equal the area of the inlet pipe and shall be located and installed so as to prevent the inflow of surface water.

Cleanouts for house traps shall use sanitary tees with the cleanout port facing downstream and shall be six inches (6) inches in diameter.

When a cleanout or sight tee is installed in impervious surface, a Josam 56046-88 cast iron cover must be used with an SDR 35 PVC female adapter (P1406) and a threaded cap.

It is recommended that the house trap shall be placed inside the cellar or basement wall or as close thereto as practical allowing for construction circumstances. Where house traps are placed outside the buildings, they shall be placed as close as practical to the outside of the foundation wall and the fresh air inlet shall be extended above finished grade elevation. In addition, a tee or sanitary tee shall be installed on the downstream or main sewer side of the trap with a pipe extending to grade and finished with a cleanout. The cleanout shall be connected to the house sewer or trap using a 4" x 6" SDR adapter coupling.

In instances where additions are constructed over existing building sewers, the building sewer shall be removed and/or reconstructed as a building drain in accordance with this Section 5.02.

- 5.03 INTERCEPTORS AND SEPARATORS

Interceptors and separators, including grease, oil, sand, etc., interceptors, shall be provided when, in the opinion of the Borough, the Allegheny County Health Department or the Allegheny County Sanitary Authority (ALCOSAN), they are necessary for the proper handling of liquid wastes containing grease, flammable wastes, sand, glass and other ingredients harmful to the building drain system, the public sewer, the treatment plant or processes. Grease interceptors MUST be installed for all discharges from non-residential kitchens. All interceptors and separators shall be installed in accordance with Chapter 7 of the Allegheny

RULES AND REGULATIONS
SANITARY SEWER CONNECTIONS

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County Plumbing Code. Interceptors, separators and grease traps shall be maintained in efficient operating condition by periodic removal of accumulated grease, scum, oil or other floating substances and solids deposited in the interceptor, separator, or grease trap. When grease traps are installed, a maintenance schedule and records, including the hauler, shall be kept on the premise and made available upon request to the Borough, the Allegheny County Health Department or ALCOSAN.

- 5.04 BUILDING SEWERS - The building sewer shall be cast iron soil pipe, A.S.T.M. Specification A74-62 or equal or polyvinyl chloride (PVC) A.S.T.M. D 3034, Type SDR 35 or equal. Other suitable materials may be used if approved by the Borough Engineer. If the building sewer is installed in filled or unstable ground, the building sewer shall be of cast iron soil pipe, except that non-metallic material may be accepted if laid on a suitable concrete bed or cradle, as approved. Joints shall be tight and waterproof.

The size and slope of the building sewer shall be subject to approval but in no case shall the diameter be less than six (6) inches. The slope of such 6-inch pipe shall not be less than 1/4 inch per foot length of pipe.

Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. No building sewer shall be laid parallel to or within three (3) feet of any bearing wall that might thereby be weakened. The depth shall be sufficient to afford protection from frost. The building sewer shall be laid at uniform grade and in straight alignment insofar as possible. Changes in direction shall be made only with properly curved pipe and fittings and six (6) inch diameter cleanouts using sanitary tees with the cleanout port facing downstream shall be installed at each change in direction equal to or greater than forty five (45) degrees, at the sewer service connection, at the house trap and vent, at intervals not to exceed 100 feet and elsewhere as required. All cleanouts shall be fitted with a securely-fitted, watertight cover.

In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such drain shall be lifted by approved artificial means and discharged to the building sewer.

All excavations required for the installation of a building sewer shall be open trench work unless otherwise approved. Pipe laying and backfill shall be performed in accordance with A.S.T.M. Specification C12-19, except that no backfill shall be placed until the work has been inspected and approved by the Borough and the Allegheny County Health Department.

All joints and connections shall be made gastight and watertight and shall be tested therefore prior to use.

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Cast iron pipe joints shall be firmly packed with oakum or hemp and filled with molten lead, Federal Specification QQ-L-156, not less than one inch deep. Lead shall be run in one pouring and caulked tight. No paint, varnish, or other coating shall be permitted on the jointing material until after the joint has been tested and approved.

The connection of the building sewer into the public sewer shall be made at the "Y" branch, if said branch is available. If a "Y" branch is not available or accessible, then the connection to the public sewer shall be made by means of a mechanical tap. This tap shall be made by Borough personnel only. However, the public sewer shall be exposed by the Owner's contractor and made accessible to Borough personnel. The Owner shall be responsible for all costs associated with the tap. The location of the tap shall be approved by the Borough.

The spring line of the building sewer, at its point of connection with the public sewer, shall be no lower than the spring line of the public sewer. Subject to actual field conditions, the Borough reserves the right to require connections to existing manholes.

The applicant for the building sewer permit shall notify the Borough and Allegheny County Health Department when the building sewer is ready for inspection, testing and connection to the public sewer. The connection shall be made under the supervision of the Borough Engineer.

The excavation shall be of sufficient width and depth to provide adequate space for the installation of the building sewer. All excavations required shall be open trench work unless otherwise approved. The trench shall have sufficient width at the spring line of the pipe so that there will be a minimum of six (6) inches between the outside of the pipe and the side of the trench. The pipe shall be bedded true to line and grade with continuous support from a firm base. All pipe shall be bedded on a minimum of six (6) inches of pea gravel or other approved material. Bell holes shall be carefully excavated at proper intervals so that no part of the trench load is supported by the bells. In all cases, the bottom quadrant of the pipe shall be fully and uniformly supported and the full load on the pipe shall rest on the barrel of the pipe. Blocking shall not be used to bring the pipe to grade.

The trench shall be kept clean of any water by pumping, bailing, or other means while the sewer is being installed. Water shall not be permitted at any time to enter the building sewer connection or the main sewer.

The building sewer shall be laid with socket ends upgrade, firm, and even bearing along the barrel of the pipe, close joints and smooth inverts. The pipe shall be laid taking care to achieve good alignment and the bell of the previously laid section shall be braced while the spigot is pushed in so that previously made joints

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are not disturbed. The assembly shall be done by hand or with the use of a bar and block. All joints must be pushed home and seated. The interior of each pipe shall be cleaned of all foreign material before the next pipe is laid. All joints shall be gastight and watertight. No pipe shall be laid in water or when trench conditions are unsuitable.

The building sewer shall not be covered until inspected by the Borough and the Allegheny County Health Department and approved. If the work is found not satisfactory, the Owner shall immediately remedy, or remove and replace with new materials and proper construction, that part rejected.

The area around the pipe to a height of twelve (12) inches above the top of the pipe shall be backfilled with pea gravel or other approved material. (Slag shall NOT be used.) In backfilling, the space between the pipe and the bottom and side of the trench shall be filled by hand, keeping the amount balanced on each side of the pipe to prevent lateral displacement of the pipe. The material shall be placed in layers to a depth of twelve (12) inches over the pipe in a manner to avoid damage or disturbance of the completed sewer. The next twelve (12) inches of backfill above the gravel shall be select material free of all cinders, ashes, refuse, vegetable or organic material, boulders, rocks, stones, frozen or other unsuitable material. This area may be backfilled with the excavated material if such material is suitable as determined by the Borough Engineer. The remainder of the trench shall be backfilled with suitable material and compacted as required. Any portion of the trench which is on a public right-of-way shall have its entire depth backfilled in six (6) inch layers with approved granular materials and each layer thoroughly tamped. No wheel loads shall be applied to any trench unless there is at least thirty (30) inches of cover over the pipe. Minimum depth of cover over the pipe shall be three (3) feet.

In areas subject to springs or ground flow, a clay "dam" shall be placed around the pipe at the house trap and elsewhere as determined by the Borough Engineer. The "dam" shall completely encompass the pipe and completely fill the excavated trench and shall have a minimum length of twelve (12) inches and shall be constructed to prevent the flow of water along the pipe or trench.

All excavations for building sewer installations shall be made in accordance with all applicable safety regulations, including, but not limited to OSHA, and shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property in the course of the work shall be restored in a manner satisfactory to the Borough.

SECTION VI
PROHIBITED CONNECTIONS/DISCHARGES

No discharge shall be made into the building sewer other than normal, residential sewage. THE DISCHARGE OF ANY ROOF, SURFACE, SUBSURFACE, OR GROUND WATER INTO THE BUILDING SEWER IS ABSOLUTELY PROHIBITED. The Owner is responsible for the continued maintenance of the drainage system once it has been connected to the public sewer. If the Owner refuses to properly maintain the drainage system, the Borough reserves the right to make any necessary repairs to the drainage system and bill the Owner for the cost of said repairs.

SECTION VII
ENVIRONMENTAL CONTROLS

The contractor shall abide by the Commonwealth of Pennsylvania Department of Environmental Resources rules and regulations for stream crossings or work in or near a stream, and shall provide such sedimentation and erosion control measures which may be prescribed by said Department and the Borough of Fox Chapel.

SECTION VIII
ALLEGHENY COUNTY HEALTH DEPARTMENT

Effective January 1, 1988, the Allegheny County Health Department administers the installation of sewerage facilities in Fox Chapel Borough. In addition to the requirements herein set forth, all connections must comply with the requirements of the Allegheny County Health Department and must be permitted and inspected by same.

SECTION IX
EXISTING DISPOSAL SYSTEMS

In instances where the subject sanitary sewer connection is being made to replace an existing on-lot disposal system (e.g. septic tank, holding tank, etc.), the Owner/Contractor shall cause said disposal system to be pumped out, the contents thereof to be discharged to an approved treatment facility outside the Borough. The disposal system shall then be removed from the property or filled with sand or other approved material.

SECTION X
INTERNAL INSPECTION

Immediately prior to the issuance of any Certificate of Occupancy required by the Borough's Building Code or use of a new building sewer, the Owner/Contractor shall cause the building sewer to be inspected internally by television camera to verify that the building sewer has not been damaged by backfilling or other construction activity. Such televising shall be at the Owner's/Contractor's expense and shall be conducted in the presence of a representative of the Borough. Any defects identified by the televising of the building sewer shall be repaired by the Owner/Contractor to the Borough's satisfaction.

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In the event that earthmoving activity, landscaping or other construction activity takes place subsequent to the televising of the building sewer, the Borough may require the building sewer to be retelevised at the Owner's/Contractor's expense. Any defects identified by the televising of the building sewer shall be repaired by the Owner/Contractor to the Borough's satisfaction.

The requirements of this Section X are applicable to new construction only and are not intended to apply to repairs or replacement of *existing* building sewers.

April 16, 1990
Revised January 25, 2001
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Sewer Connect Regs.doc