

ORDINANCE NO. 2010- 228
BOROUGH OF AVONDALE
CHESTER COUNTY, PENNSYLVANIA

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Appendix

- A. Standard Specification for Sewer Construction**
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ORDINANCE NO. 2010-

**BOROUGH OF AVONDALE
CHESTER COUNTY, PENNSYLVANIA**

AN ORDINANCE ESTABLISHING REGULATIONS FOR PERMITTING, CONSTRUCTING, SURVEILLING AND APPROVING WORK ON BOROUGH SANITARY SEWER MAINS AND FACILITIES, EXTENSIONS OF SANITARY SEWER MAINS AND/OR NEW FACILITIES TO BE DEDICATED FOR PUBLIC USE, AND PRIVATE SERVICE CONNECTIONS TO THE BOROUGH'S SANITARY SEWER SYSTEM; ESTABLISHING OR PROVIDING FOR APPLICATION, PERMIT, SURVEILLANCE AND OTHER FEES AND CHARGES; REQUIRING CONNECTION TO AND USE OF THE BOROUGH'S SANITARY SEWER SYSTEM; ESTABLISHING REGULATIONS ON THE USE OF SANITARY SEWERS; ESTABLISHING VIOLATIONS AND PENALTIES; AUTHORIZING THE BOROUGH ENGINEER TO RESOLVE DIFFERENCES IN DESIGN DETAILS AND SPECIFICATIONS BETWEEN THIS ORDINANCE AND THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND REPEALING INCONSISTENT AND CONFLICTING REGULATIONS AND REQUIREMENTS IN ALL OTHER ORDINANCES.

The Council of the Borough of Avondale ("Borough"), Chester County, Pennsylvania, hereby ORDAINS as follows:

ARTICLE I GENERAL PROVISIONS

§ Section I-1. Definitions.

Unless the context specifically indicates otherwise, the meaning of terms used in this Ordinance shall be as follows:

Borough. Avondale Borough, Chester County, Pennsylvania, or any municipal authority or entity created by the Borough for the purpose of carrying out the provisions of this Ordinance.

Borough Code Enforcement Officer. The person or entity appointed by Borough Council to enforce Borough codes and Ordinances.

Borough Engineer. The person, corporation, partnership or other legal entity appointed as the Borough Engineer by Borough Council.

Building Sewer. The extension, of the sanitary sewer system servicing an existing or proposed building, to the lateral from the Borough's sewer system.

Building Trap or Trap. A device, fitting, or assembly of fittings installed on the building sewer line to prevent circulation of air between the drainage system of the building and the building sewer.

Commercial Establishment. Any structure intended to be used wholly or in part for the purposes of carrying on a trade, business, or profession or for social, amusement, religious, educational, charitable or public uses. Exclusive of a home occupation as defined by the Borough Zoning Ordinance provided non-industrial wastes are discharged.

DEP. The Pennsylvania Department of Environmental Protection.

EDU. Equivalent dwelling unit. The unit of measure based on the estimated average daily flow of sewage, measured in gallons per day, from a typical living unit. Also, the unit used to assess tapping fees. At the time of adoption of this Ordinance an EDU was equal to two hundred and fifty (250) gallons of sewage per day.

Engineer. A professional currently registered and certified in the state of Pennsylvania as a Professional Engineer. Unless specifically identified or inferred otherwise, Engineer shall mean the Borough Engineer.

First Class Bedding. First Class Bedding- A Cradle of AASHTO #57 stone with a minimum depth of 6" below pipe and 6" above pipe as shown on the Borough's Standard Trench Detail. Form a cradle in the bedding material by means of a template conforming to the curvature of the outside surface of the bottom of the pipe, or another approved

method, to provide uniform contact under, around, and above the pipe. See Drawing SL-3 in appendix.

Fresh Air Vent. A direct connection leading from the building trap to the outer air.

Grease Trap. A device(s) (tank, compartment, or chamber) used to capture animal fat when melted or soft, any oily substance present in raw wool, or any oil or viscous lubricant or similar materials which prevents same from entering the sanitary sewer conveyance and/or collection system. Also, referred to as an interceptor.

Industrial Establishment. Any structure intended to be used wholly or in part for the manufacturing, fabricating, processing, cleaning, laundering, or assembly of any product, commodity, or article.

Industrial Waste. Any solid, liquid, gaseous substance, water borne wastes, or a form of energy rejected or escaping, other than human fecal wastes and wastes directly associated therewith, from any industrial, manufacturing, trade, or business process or from the development, recovery, or processing of natural resources, as distinct from sanitary sewage. Industrial sewage is to be treated by the owner, on site, to domestic waste strength and composition.

Lateral. That part of the sewer system extending from the Borough's sewer main to the curb line, or if there is no curb line, to the limits of the Borough easement or the Street Right-of Way line. If no such lateral is provided, then lateral shall mean that place in the sewer system main provided for connection of the building sewer.

Living unit. Any structure, or portion thereof, utilized for separate purposes, having a separate or common kitchen and/or separate or common sanitary facilities, including but not limited to a living apartment, dwelling, or any other one family living unit.

Multiple Unit Building. Any house, apartment building, or any other structure having more than one living unit.

Ordinance. This Ordinance together with any amendments hereto.

Owner. Any person vested with legal, equitable, sole, or partial ownership of any property served directly, or indirectly, by the sewer system.

PennDot. The Pennsylvania Department of Transportation.

Plumbing Inspector/Inspector. The person, persons, or agents of said persons appointed by the Borough to enforce the terms of this ordinance.

Property. Any parcel or parcels located in whole or in part within the Borough upon which there is erected a structure intended for continuous or periodic habitation for a living unit, occupancy, or use by human beings or animals and from which structure

sanitary sewage and/or industrial wastes shall be or may be discharged to the Sewer System.

Property Accessible to the Sewer System. Any property which adjoins, abuts on, or is adjacent to the sewer system. See definition of property above.

Sanitary Sewage. The normal water conveying household and toilet wastes from residences, institutions, commercial, and industrial establishments.

Sewer Clean-Out. A cleanout on the service line located just inside or outside the building wall through which the sewer may be cleaned.

Sewer System. All facilities operated by the Borough for the collection, transportation, treatment, or disposal of sanitary sewage.

§ Section I-2. Appendices Incorporated.

All the Appendices are incorporated herein and made a part hereof. Compliance with all relevant designs, details, specifications, materials, dimensions and practices shown and/or described in the Appendices is required for all activities, construction and work regulated hereby.

§ Section I-3. Connection to Public Sewers Required.

- A. The owner of any property accessible to and whose occupied building(s) is within one hundred fifty (150) feet of the sewer system, shall connect the property therewith, in the manner the Borough sets forth in this Ordinance, as amended, within sixty (60) days after notice to such owner from the Borough.
- B. The notice by the Borough to make a connection to the sewer, shall be consistent with the provisions of this Ordinance and shall consist of a written or printed document requiring the connection. The notice will specify that the connection shall be made within sixty (60) days from the date such notice is given. Such notice may be given at any time after the sewer is in place and is operational. Such notice shall be served upon the owner by personal service, registered mail, or by such methods as may be required by law.
- C. Exception. Any existing residential living unit, as of the date of enactment of this Ordinance, which such living unit can not make a connection without the assistance of a sewage pump, is exempt from the mandatory section of this Ordinance. However, this applies only to residential living units with functioning on site systems that have not been the subject of any Chester County Health Department or DEP violations or complaints. Any violations or complaints received from the foregoing agencies will automatically require the owner to purchase, install a pump, and make the connection to the sewer system. Living units with holding tanks are not exempt

and will be required to make the connection. The installation and the pump purchased require approval and inspection by the Borough Engineer.

§ Section I-4. Use of Connection.

- A. No new connection to the sanitary sewer system shall be used until the installation has been inspected, tested, and approved in accordance with procedures herein set forth.
- B. No use of the sanitary sewer system will be permitted until the collection system, pumping facilities, and treatment plant have been made ready to accept the proposed sewage flows for disposal and have been approved for such use by the Engineer in writing.
- C. Maintenance, repair, or replacement of the building sewer between the sewer main and the building served by the building sewer shall be the responsibility of the property owner. However, if the Borough originally installed the lateral, and the repair, replacement, or maintenance of the lateral, or that portion of the lateral constructed by the Borough, is necessitated by a defect in the lateral or any portion of the lateral, which said defect was not caused by the property owner, the Borough shall be responsible for the maintenance, repair, or replacement of the lateral or that portion of the lateral, if said defect in the lateral or that portion of the lateral so affected was caused by improper construction and/or installation by the Borough, or in the event the defect in the pipe is the result of a manufacturing defect.
- D. No sump pumps for the discharge of groundwater or stormwater of any kind shall be permitted to be connected and or discharged into the sanitary sewer system.

§ Section I-5. Certain discharges prohibited.

A. Disposal of Certain Materials

- 1. From and after the passage of this Ordinance, it shall be unlawful for any person, firm, or corporation to use any sanitary and/or storm sewer within the Borough for the disposition of any residue, whether liquid or solids, removed from any cesspool, septic tank, leeching well, or any other container or reservoir used for the on-site disposal of sewage, located within or without the boundaries of the Borough.
- 2. Cleaning Solvents, Grease, and Grease Traps. It shall be unlawful for any person, firm or corporation to dispose any cleaning solvent from any dry-cleaning establishment, or any residue from any grease trap, or any similar solid or liquid other than human sewage, into any municipal sanitary sewer line. Provided, however, that if such other waste, materials or refuse can be separated from such sewage or drainage by the use and installation of a grease trap, then such grease trap may be installed. Provided that such installation shall be first approved in

writing by the Borough and installed under its supervision, and the refuse or contents of such grease trap shall not be disposed of, drained, or poured into the municipal sanitary or storm-water sewer lines, mains or systems. All such installations shall and must be in accordance with the provisions of Section II-4 B.

3. Any industrial or commercial entity discharging into the sewer system shall comply with the provisions of Article VI of this Ordinance.

§ Section I-6. Unlawful discharge of sewage or industrial wastes declared a nuisance.

Any person who erects, constructs, uses or maintains a privy, cesspool, sinkhole, septic tank or on lot individual sewage system on any property accessible to the sewer system, or otherwise erects, constructs, uses or maintains any pipe, conduit, drain or other facility for the discharge of sanitary sewage or industrial wastes in violation of this Ordinance, shall be declared to be erecting, constructing and/or maintaining a nuisance and/or engaging in a nuisance activity, which nuisance the Borough is hereby authorized and directed to abate in the manner provided by law.

§ Section I-7. Connections to comply with requirements.

No connection shall be made to the sewer system, except in compliance with the ordinances and resolutions, as well as such rules and regulations as may from time to time be enacted, adopted, approved or promulgated by the Borough, and until all connection and tapping fees are paid.

§ Section I-8. Failure to connect.

After the expiration of the particular periods specified in § I-2 of this Ordinance, if any owner of an occupied building on property, accessible to the sewer system, shall have failed to connect such property with the sewer system as required by said § I-2, the Borough shall cause to be served on the owner of such property so failing to connect to said sewer system, and also upon the occupants of the building in question, a copy of this Ordinance and a written notice requiring such connection to be made, and such notice shall further state the requirements shall be complied with within 30 days from the date thereof.

§ Section I-9. Borough Engineer's powers and authority, right to have access and observe.

- A. The Borough Engineer shall have access to all parts of a premises during the construction of the sewer system, sewer laterals, and building sewers to observe existing conditions and all work and materials.

- B. The Borough Code Enforcement Officer shall have access to all parts of a premises to inspect for defective and/or illegal connections to the Borough System upon receiving evidence of such connection.
- C. The property owner, of a premises where an illegal connection is found, shall give the Borough Code Enforcement Officer prompt access into the premises to verify such illegal connection has been corrected, and shall assume all associated costs incurred by the Borough for such observation.
- D. The Borough Engineer may act directly or through other engineers, agents, assistants, inspectors and/or representatives acting under the supervision and direction of the Borough Engineer. The Borough Engineer is authorized by the Borough to observe all activities within the scope of this Ordinance, the Requirements and The Subdivision and Land Development Ordinance of the Borough of Avondale of 1996, Ordinance No. 171, as amended (the "Subdivision Ordinance"). All persons engaged in activities subject to observation by the Borough Engineer hereunder shall make all work and materials available to the Borough Engineer, for observation, as, when and in such manner as the Borough Engineer shall direct. If the Borough Engineer determines that any work is not and/or is not being done in compliance with these Requirements and all other applicable regulations, the Borough Engineer is authorized, by the Borough, to order the work to stop and/or be done over and/or replaced, in compliance with all applicable regulations, all at the sole cost and expense of the person or entity responsible therefor.

§ Section I-10. Adoption of rules and regulations.

The Borough reserves the right to and may, from time to time, adopt, revise, amend, and re-adopt such rules and regulations as it deems necessary and proper for the use and operation of the sewer system, and all such rules and regulations shall be and become a part of this Ordinance.

§ Section I-11. Violations and penalties.

The provisions of this Ordinance are declared to be for the: prevention, abatement, and regulation of water pollution; preservation and enhancement of public and private water supplies; and health, safety and welfare of the citizens of the Borough. Any person violating any provisions of this Ordinance, upon conviction before any District Justice, shall be fined not more than \$1,000 and costs, or in default of payment thereof, by imprisonment for a term as provided by law for summary offenses. In cases where the violation is with respect to an occupied building or property accessible to the sewer system, which said property or building is or would be subject to a tapping fee, an annual sewer rental, or charge of more than one equivalent dwelling unit, the fine for violation of any provision of this Ordinance shall not be more than \$1,000 for each such unit or fraction thereof and costs. Or in default of payment there of, by imprisonment for a term as provided by law for summary offenses. Each thirty day period during which such violation of such provisions shall continue shall be deemed to be a separate offense.

Each occupied building, or each living unit in a multiple unit building, whether or not the owners thereof shall be permitted to connect two or more buildings or units by a single common connection to a lateral of the sewer system or shall be required to make separate connection for each occupied building or unit, shall constitute a separate and distinct unit under the provision of this Ordinance, and the persons owning occupied buildings, consisting of multiple units contained in the same structure, who violate any of the provisions of this Ordinance shall be subject to the above fines for each and every one of such occupied buildings or units which are in violation of the provisions of this Ordinance.

§ Section I-12. Conflicts and Repealer.

If any specification, detail, design and/or construction requirement of this Ordinance conflicts with or is different than the provisions of The Subdivision and Land Development Ordinance of the Borough of Avondale of 1996, Ordinance No. 171, as amended, the Engineer shall determine which provision shall be used. All inconsistent and conflicting provisions, in Ordinances other than Ordinance 171, as amended, are hereby repealed to the extent of the inconsistencies and/or conflict.

§ Section I-13. Effective Date.

This Ordinance shall be effective five days from the date of enactment.

§ Section I-14. Severability.

If any of the provisions, sections, sentences, clauses, or parts of this Ordinance or the application of any provision hereof shall be held invalid, such invalidity shall not affect or impair any of the remainder of this Ordinance, it being the intention of the Borough Council that such remainder shall be and remain in full force and effect.

ARTICLE II
Building Sewers and Laterals

§ Section II-1. Permits, regulations, and fee schedule.

For each and every building or property, a separate permit to connect to the sewer system will be required. A separate building sewer for each building will be required. A single building sewer shall be provided for a school, apartment building, commercial use, or other multi-unit structure where the entire building is held in single ownership. If the Borough determines it to be impractical to provide separate connections, a single or joint connection may be authorized for more than one property. This must be approved by the Engineer.

A. Permits requirements and regulations.

1. No person shall uncover, connect with, make any opening into or use, alter, or disturb, in any manner, any sewer or the sewer system without first making application for and securing a permit, in writing, from the Borough.
2. Application for a permit shall be made by the owner, or by his authorized agent of the property to be served
3. Permits for work to be performed within the right of way of any Federal or State Highway shall be secured from the agency with jurisdiction thereover. For work to be performed in the right of way of any Borough road, a permit shall be secured from the Borough.

If a building sewer or lateral terminates on any property beyond the existing macadam surface or improved but unpaved cartway of any Borough road, but such terminus is still within the Borough's right-of-way and, further, if the construction of the building sewer will not disturb any existing curb or curbing, the necessity for securing a permit otherwise required by this Section may be waived. This requires the owner to submit a written application to the Borough. After review by the Engineer such waiver may be granted.

4. Permits are required for any blasting that may be required within the Borough. No explosives may be stored within the Borough.

B. Inspection fees and regulations.

1. Any contractor who has scheduled an inspection, and upon arrival of the Inspector fails to be prepared for said inspection, shall receive a failed inspection and be responsible to pay a fee of \$120.00.

2. Any contractor who fails an inspection shall be responsible to pay a fee of \$120.00 for said failed inspection. All subsequent inspections, whether passing or failing, will be \$120.00.
3. All inspections will be done during regular business hours of 8:00 am to 4:30 pm, Monday through Friday, excluding holidays. Any contractor who requires the Borough agent to remain on the job site after 4:30 pm, to perform an inspection or any other work, will be required to advise the home owner as to why the request must be made. The contractor must further assume the associated costs for said inspections, with a minimum of two hours of time to be paid at \$120.00 per hour. For hours more than two, the rate will be at time and a half or \$180.00 per hour. Absolutely no inspections will be scheduled on weekends or holidays unless agreed to, in advance, by the inspector.
4. All associated fees with regard to failed inspections of a contractor shall be paid prior to the construction of another building sewer or lateral by said contractor.

§ Section II-2. Permits: Procedures and requirements for obtaining permits.

No person shall make or cause to be made a connection of any property to the sewer system until such person has fulfilled each of the following conditions:

- A. Notified the Borough of the desire and intention to connect their property to the sewer system.
- B. Made application for and obtained a permit from the Borough. The permit application shall include a sketch of the existing and proposed building sewer.
- C. Notified the Borough at least 48 hours before the time such connection will be made, in order that the Borough may inspect the work of connection and witness necessary testing.
- D. Has paid to the Borough any connection and/or tapping fee imposed by the Borough.
- E. Such person shall provide certification from the contractor to the Borough that any contractor hired to construct the facilities to be connected to the sewer system shall possess or have purchased the instruments or insurance required by Sections (1) through (7) below:
 1. Performance and payment bonds as security for the faithful performance of the work and payment of all obligations incurred for construction and connection of the facilities to the sewer system.
 2. Insurance as required by workmen's compensation laws and supplied the certificate to the Borough.

3. Liability insurance for not less than 500,000 dollars for personal injury or wrongful death to any one person and in an amount of not less than 1,000,000 dollars per any one occurrence.
 4. Property damage liability insurance in an amount not less than 500,000 dollars for damages per any one occurrence and in an amount not less than 1,000,000 dollars for damages for all occurrences to one property.
 5. Automobile bodily injury liability insurance in an amount no less than 500,000 dollars for injuries, including wrongful death to any one person, and subject to the same limit for each person, in an amount not less than 500,000 dollars per one occurrence.
 6. Automobile property damage liability insurance in an amount not less than 500,000 dollars for damage per any one occurrence and in an amount not less than 1,000,000 dollars for damages per all occurrences.
 7. Builder's Risk Insurance in complete value form for 100 percent of the insurable value of the work, including fire and extended coverage, and also covering vandalism and malicious mischief on structures, equipment, and materials.
- F. Has received approval of all plans, specifications, contracts, or agreements and the issuance of any permits or approvals pursuant to the provisions of this Ordinance. Any regulations issued or adopted pursuant thereto shall not constitute a representation, guarantee, or warranty of any kind by the Borough or by any official, employee, agent, or advisor of the Borough as to the practicability, adequacy, functioning, or safety of any use, improvement, facility, or system installed or maintained pursuant to the aforementioned approved plans, specifications, contracts, agreements, permits, and regulations and shall not create any liability upon the Borough, its officials, employees, agents, and advisors.

§ Section II-3. Plumbers and Contractors to be licensed.

Persons performing work on facilities to be connected to the sewer system shall be registered plumbers having a current license to perform work in the Borough, to the extent required by the Borough.

§ Section II-4. Building sewer connection rules and regulations.

A. General

1. Existing properties, with on lot septic systems. The existing building sewer line will be exposed and inspected by the Engineer. If the line is of sufficient structural integrity to allow continued use the property owner will be allowed to break said building sewer line on the building side of the sewage disposal system and continue from that point to the sewer lateral. Attachment shall be made with

proper fittings to extend the sewer line to the public sewer. No cap, stopper, or plug shall be removed or punctured until permission has been granted by the Engineer. No portion of an existing building sewer that is constructed of bituminous fiber (Orangeburg) pipe or asbestos cement pipe shall be used as part of the new building sewer.

2. The contractor shall determine the difference in grade between the points of connection. If a minimum grade of 1/4 inch, or a maximum grade of 1 inch, per foot is obtained, permission will be granted to proceed. Permission to use a minimum gradient of 1/8 inch per foot may be granted by the Borough in special circumstances. An appropriate notation shall be made on the permit form if 1/8 inch per foot is used. Under no circumstances is the trench to be dug before it is determined that the minimum fall can be obtained.
3. No portion of any sanitary sewer lateral or building sewer shall be used until air tested and approved in accordance with these rules and regulations.
4. All costs and expenses of construction and connection of a building sewer to the sewer system shall be borne by the owner of the property to be connected. The owner shall indemnify and save harmless the Borough from all loss or damage that may be occasioned, directly or indirectly, as a result of said construction.
5. The building sewer shall be connected to the sewer system at the lateral location determined by the Borough.
6. The invert of a building sewer, at the point of connection, shall be at a higher elevation than the invert of the sewer system. A smooth, neat joint shall be made and the connection of a building sewer to the lateral shall be made secure and watertight. If elevations prevent gravity flow, the owner shall furnish, install, and maintain a pump at their expense. The pump must be one approved by the Borough. Refer to § Section I-2(C) for exceptions.
7. No building sewer shall be covered until it has been inspected and approved by the Engineer. If any part of a building sewer is covered before being inspected and approved, it will be uncovered for inspection at the cost and expense of the owner of the property.
8. Every building sewer is to be maintained in a sanitary and safe operating condition by the owner of the property. If any person shall fail or refuse, upon receipt of a written notice from the Engineer, to remedy any unsatisfactory condition with respect to a building sewer, within sixty (60) days of receipt of such notice, the Borough has the right to not permit such person or entity to discharge into the sewer system. The unsatisfactory condition(s) must be remedied to the satisfaction of the Borough or, at its option it may make such repairs at the expense of the property owner and file a lien.

9. Every excavation for a building sewer must comply with OSHA requirements including sheeting, shoring, and confined space entry where applicable and shall be guarded adequately with barricades and lights to protect all persons from damage and injury. Streets, sidewalks, and other public property disturbed in the course of installing the building sewer shall be restored, at the cost and expense of the owner of the property being connected, in a manner satisfactory to the Borough.
10. Whenever unique physical conditions are encountered during the construction of a building sewer, and such unique conditions require additional safeguards or the observation of specifications more stringent than those in this ordinance, the building sewer shall be constructed in accordance with such additional safeguards or specifications. Provided, however, that the unique special physical conditions and any additional specifications necessary to ensure the integrity of the building sewer shall be listed and set forth in the Rules and/or Regulations adopted by the Borough pursuant to this section of the Ordinance.
11. The Borough reserves the right to adopt, from time to time, additional rules and regulations as it deems necessary and proper relating to connection to the sewer system, which additional rules and regulations, to the extent appropriate, shall be construed as part of this Ordinance.

B. Grease Interceptors.

1. **General Requirements.** Grease or any other insoluble material capable of obstructing, damaging or overloading the building drainage or sewer system, or capable of interfering with the normal operation of the sewage treatment processes, shall not be deposited, by any means into such systems.
2. **Interceptors Required.** Interceptors for grease and other soluble material shall be provided as required in this section. An interceptor shall not be required for individual living units, or for any private living quarters not used for commercial purposes.
3. **Approval by the Borough Engineer.**
 - a. Users requiring interceptors shall provide the Engineer with sufficient information describing the discharge, including drainage volumes and grease concentrations from the proposed fixtures and equipment which will be producing grease-laden discharges or drainage, and showing the materials and features of the interceptor.
 - b. The Engineer shall make the final decision concerning which fixtures and equipment shall require drainage or discharge through grease interceptors. Such decision will be based on a review of the above stated information as

well as an actual inspection of the proposed fixtures and equipment on the site.

- c. No interceptor shall be installed until the interceptor design and location have been approved by the Borough Engineer.

4. Design and Use.

- a. Interceptors shall be sized to have a grease retention capacity of not less than two (2) pounds for each gallon per minute of discharge or drainage flow. The size of each interceptor shall be approved by the Engineer. The rated capacity of each interceptor shall be identified by a permanent plate attached to the interceptor cover confirming the official Plumbing Drainage Institute (PDI) rating in gallons per minute. The design of the grease interceptor shall conform to the specifications as shown in the included appendix or an equal approved by the Engineer.
- b. Interceptors shall be equipped with devices to control the rate of discharge or drainage flows through the interceptor so that its rated flow is not exceeded.
- c. Wastewater and drainage flows, other than, those requiring grease separation, shall not be discharged into any interceptor. Food waste grinders shall not discharge into any interceptor.

5. Construction. In general, interceptors shall conform to PDI-G101. The Engineer shall give approval for each interceptor type, including the material composition and configuration thereof, on an individual case basis. Drawings and specifications of approved grease interceptors shall be available for inspection at the Borough office. The following interceptor types shall apply:

- a. Cast Iron Type. Composed of a cast iron body and cover with the manufacturer's applied acid-resisting coating inside and outside. The unit interior design shall incorporate removable flow baffles, threaded inlet and outlet, and internal air relief, a double wall trap with internal cleanout, and a scoriated cover with neoprene sealing gasket.
- b. Fabricated Steel Type. Composed of a welded steel body and cover with the manufacturer's applied, acid-resisting, rust-inhibitive, coating inside and outside. The unit interior design shall incorporate removable flow baffle through arrangement, threaded inlet and outlet, and internal air relief, double wall internal trap or deep seal external trap, floor level cleanout provisions, and an anti-skid cover with a neoprene sealing gasket.
- c. Special Types. Special type interceptors shall include those units which are not of the types stated previously, and are usually of greater capacity. Special interceptors may be of precast concrete construction for reasons of economy due to the larger size of such units.

6. Location. Interceptors shall be located outside for all installations. Each unit shall be serviceable on grade with the cover completely removable. The cover shall be surrounded by a house keeping pad of concrete construction. The interceptor shall be accessible at all times to the Engineer. Each proposed interceptor location shall be approved by the Engineer prior to installation.
7. Maintenance. The Engineer shall initially require a written report indicating biweekly interceptor grease draw off quantities over a three (3) month time period. Such report shall be submitted in a letter form and shall clearly indicate the owner's name and address as well as the information requested herein. The Engineer shall review the submitted report and shall make the determination as to the frequency of interceptor grease draw-off. This schedule of grease draw-off shall be strictly followed on a continual basis until such time as the grease laden discharge or drainage is discontinued by the owner's operations, or unless subsequent experience demonstrates the need for more frequent draw-off. The Engineer reserves the right to change the schedule of grease draw-off by increasing or decreasing the frequency of draw off times, based on site inspections and observations of operations.

§ Section II-5. Building sewer specifications and details.

See Appendices A and B.

§ Section II-6. Grinder and ejection pumps.

- A. No privately owned grinder or ejection pump may be connected to the sewer system until the applicant or property owner has:
 1. Fully complied with this article and other rules and regulations of the Borough, the Chester County Health Department, and DEP; and
 2. Received prior written approval of the Borough through the issuance of a sewer connection permit.
- B. All privately owned grinder and ejection pumps, and the installation, operation, maintenance and service thereof, shall comply with the technical specifications of the Borough as set forth in rules and regulations in effect from time to time. All privately owned grinder and ejection pumps shall be connected to the sewer system in full compliance with the rules and regulations of the Borough in effect from time to time.
- C. The owner of the property served by a privately owned grinder or ejection pump shall have the responsibility for maintaining, operating, repairing, and replacing the pump.
- D. The Borough shall have no responsibility for the purchase, operation, repair, or replacement of any privately owned grinder or ejection pump.

§ Section II-7. Abandonment of existing on lot system.

No privy vault, cesspool, sinkhole, septic tank, or similar receptacle shall be used or maintained upon any property connected to the sewer system or which shall be required by this Ordinance to connect to the sewer system. Every such privy vault, cesspool, sinkhole, septic tank, or similar receptacle in existence shall be abandoned when the connection to the sewer system is made. It shall be cleansed and filled under the direction and supervision of the Engineer. Failure to comply with this provision shall constitute a nuisance and such nuisance may be abated as provided by law, at the expense of the owner of the property.

**ARTICLE III
Sewer Extensions**

§ Section III-1. Approval procedures.

- A. The following procedures are intended to facilitate proper design, material selection and installation of new sewerage facilities for the purpose of protecting the public interest upon dedication of the facilities to the Borough.
- B. The procedures consist of the following three phases:
 - 1. The application phase, which covers the period from project inception through final approval of the construction by the Borough, inclusive of permits and execution of agreements.
 - 2. The construction phase, which covers the period from pre- construction conference through testing and certification of satisfactory construction.
 - 3. The warranty phase, which covers submission of record plans, dedication and an eighteen month warranty period.

§ Section III-2. Application phase.

- A. General procedures. Any applicant desiring extension of the sewerage facilities shall make preliminary application in writing to the Borough on the prescribed form and accompanied by appropriate fees. There are three stages in the application process. Each stage requires approval by the Borough before proceeding with subsequent stages. These stages are:
 - 1. Sketch plan.
 - 2. Preliminary plan.
 - 3 Final plan.
- B. Sketch plan. When a subdivision and/or land development sketch plan is submitted to the Borough, the following shall apply:
 - 1. Sketch plan requirements. The sketch plan shall show the property boundaries and their relationship to adjoining tax parcels. The plan shall provide the approximate sewer layout and the point of connection to the sewer system with manhole number of the connecting sewer indicated. Plan sheets shall be at least 22 inches by 34 inches but no larger than 30 by 42 inches.

2. Purpose of the sketch plan. The principal purpose of the sketch plan is to provide the Borough with information on proposed additions to the sewerage facilities and to afford the opportunity for the prospective developer(s) and the Borough to work out problems related to the timing and location of service and determine whether an easement or other arrangements are needed to serve adjacent properties. This stage of planning is not intended to provide information with regard to the final design of the sewers.
3. Potential wetland involvement. Along with the sketch plan, a readable photocopy of the appropriate soils and wetland mapping shall be included. The sources for this information shall be the Soil Conservation Service's County Soil Survey and the United States Fish and Wildlife Service's National Wetland Inventory Maps. The copies shall be no less than 8 1/2 by 11 inches in size with the proposed project area highlighted or outlined so as not to alter or conceal any soil groups, streams, springs, wetlands or other distinguishing features. The principal purpose of providing the soil and wetland maps is to ensure early recognition of potential wetland involvement.
4. Application fee. An application fee is required by the Borough at the time of submission of the sketch plan and application. The application fee shall be established by resolution of the Borough Council.
5. Review of proposed sewer layout. The Engineer shall evaluate the existing sewerage facilities and proposed routing to ensure it is situated to serve the best interest of the public and that is consistent with the Borough's overall sewerage planning. This will include an analysis to determine whether adjacent properties may receive sewerage service through the proposed extension. If further study is deemed appropriate, in the sole discretion of the Borough, the applicant will be advised that a feasibility study of extensions of the system beyond the planned area of development will be conducted by the Engineer. An estimate of the cost of the feasibility study will be provided to the applicant for establishment of an escrow to reimburse the Borough for work conducted by the Engineer. The Borough will make such comments, including technical comments from the Engineer, if any, as it deems appropriate. Significant changes and corrections to plans based on these comments must be satisfactorily addressed before sketch plan approval will be issued.

C. Preliminary plan.

1. The developer and his engineer shall meet with the Engineer prior to the preparation of preliminary plans to establish the technical requirements and the format for plan presentation.
2. The preliminary plans shall include the detailed design of the sewerage facilities, including, but not limited to, the location and grade of sewers. The plans must be prepared under the supervision of or by a Pennsylvania registered professional

engineer acceptable to the Borough whose seal, signature and registration number shall appear on each sheet of the plans. All plans must meet the current requirements of the DEP, CCA, and other controlling agencies.

3. The following specific submittals are also required, if applicable:
 - a. Rights of way and easements. If any sewer lines or other facilities are proposed outside of areas to be publicly dedicated or where off-site rights-of-way are involved, such property plats and legal descriptions and indications of ownership or transfer negotiation status shall be included. Sanitary sewer easements a minimum of 25 feet wide, with a main centered in the middle, shall be provided. The easement must extend to a publicly dedicated area to facilitate vehicular access. The width of the easement may increase dependent on the depth of the sewer. Where two sanitary easements intersect or join at a ninety-degree angle, the easement shall include the fillet area of each intersection. The fillet area shall have a minimum radius of 25 feet. Additionally, should the easement be required for future construction of sewers, an easement of 40 feet may be required. All sewerage facilities must be accessible by vehicle, and easements shall be graded accordingly. Where an easement must be accessed from a road, the curb will be depressed to allow vehicle ingress and egress. Standard rights-of-way agreement(s) with legal description must be executed before final approval will be issued.
 - b. Sewage other than domestic waste. If any sewage other than domestic waste, including industrial waste, is to be discharged, the applicant shall demonstrate compliance with all applicable requirements, including those of the CCA, including any required industrial waste discharge permits or agreements.
 - c. Wetlands. If wetlands or other valuable natural resources are involved or in close proximity to the proposed project area, boundaries of these areas must be shown on the site plan. Also if permit(s) are required in association with the natural resources delineated above, a list of permits applied for shall be provided to the Borough, including the type of permit, the agency involved, the date the application was submitted, the agency's reference number and the agency's contact person.
 - d. Overall sewer routing. The overall sewer routing shall be presented on a site plan which indexes the applicable plan and profile pages. Each plan and profile page shall include a key index to the overall site with the presented area highlighted. Where sewer runs extend onto subsequent pages, cross reference information shall be provided.
 - e. Planning module procedures. If required by DEP, the applicant must process a postcard application for sewerage facilities through the Borough to DEP. From the information provided on the form, DEP will identify the appropriate modules to be prepared. The applicant shall prepare the planning module

components deemed appropriate by DEP for submission in the name of the Borough. The complete planning module package must be submitted to the Borough. Evidence of module approval from DEP must be furnished to the Borough prior to obtaining final approval.

- f. Cost estimate. An itemized estimate of cost of the sewer project (materials, cost of installation, including excavation and restoration of unpaved surfaces and repaving of existing roads).
 - g. Written application for capacity. Written application requesting capacity shall be made on the form provided by the Borough. Such application shall not be approved nor guaranteed until final plan approval by the Borough and payment of the applicable tapping fees.
4. Upon receipt of the preliminary application, required submittals, and escrow deposit, the Borough will submit the same to the Borough Engineer for review and comment. An incomplete submittal will not be accepted.
 5. A written report from the Engineer will be provided to the applicant for use by his engineer in revising the preliminary plans. The applicant will be required to revise the plans. The response shall include written correspondence responding to the Borough Engineer's comments item by item. Once the plans satisfy the requirements herein, the Borough Engineer will recommend preliminary plan approval. Upon receipt of the Borough Engineer's recommendation, the Borough will review the preliminary application and advise the requesting party of the results of the review.
 6. Financial Security.
 - a. Escrow deposit. Escrow deposit in the amount of 2% of the itemized cost estimate for the project for reimbursement to the Borough for administrative and engineering services in reviewing the application, plans, and modules. A minimum deposit of \$2,000 is required. In the event the charges against the escrow are projected to exceed 85% of the deposit, the applicant will be notified by letter from the Borough to supplement the amount to cover the projected balance of charges. Any unused portion of the escrowed amount will be applied to the Borough's costs for inspection and testing during and after construction.
 - b. A determination will be made by the Borough Engineer as to what degree the developer's plans affect the Sewage Facilities Act 537 plan of the Borough. Based on said determination and the estimated expenses thereof, an escrow account will be created to pay for any and all costs associated with the modifications of the Sewage Facilities Act 537 Plan of the Borough. No plan can reach final approval stage without approval from DEP for any amendments or alterations to the Act 537 Plan.

D. Final plan.

1. Schedule of construction. Each application shall include a time schedule for construction and connection.
2. Plan content and review procedure. The final plans shall contain the completed design for all sewers or other facilities required. They shall be prepared in compliance with the comments and/or conditions of the Borough resulting from the review of preliminary plans. The Borough Engineer and the applicant's engineer will work together to resolve all technical issues. When the Borough Engineer is satisfied that all comments have been addressed, the construction plans will be submitted to the Borough for approval.
3. Wetlands. If wetlands (or other natural resources) are involved, evidence of permit(s) approval shall be submitted to the Borough. All permits applied for as outlined in the preliminary plan must be addressed by either providing evidence of the approval or written explanation indicating why the permits were not applied for.
4. Rights-of-way. If rights-of-way are involved, property plats and legal descriptions of the easement conveyed to the Borough must be submitted, together with the Borough's standard agreement and executed deeds of dedication in the form prescribed by the Borough.
5. Water quality management permit. When required by DEP, final plans shall be accompanied by a completed water quality management permit application prepared in the name of the Borough and accompanied by two sets of final plans as required by DEP.
6. Standard agreements. The following standard agreements must be executed by the applicant and returned to the Borough before final approval may be granted. All agreements prepared to the satisfaction of the Borough solicitor must be submitted no less than 10 days prior to the Borough's regularly scheduled monthly meeting. If the agreements are incomplete and/or incorrect, they will not be included on the Borough's agenda.
 - a. Tapping agreement.
 - b. Sewer extension agreement.
 - c. Rights-of-way agreement (if applicable).
 - d. Construction escrow agreement.
 - e. Reimbursement agreement (if applicable).

- f. Industrial waste discharge agreement (if applicable).
7. Financial security.
- a. The final application shall include the posting of financial security to ensure completion of the construction in accordance with approved plans and the requirements of the Borough. Financial security may be federal or commonwealth chartered lending institution irrevocable letters of credit and restrictive or escrow accounts posted with a federal or commonwealth chartered lending institution satisfactory to the Borough, if the lending institution is authorized to conduct such business within the commonwealth. Such security shall provide for and secure to the Borough the completion of the improvements within one year from the date of posting the security. The amount of financial security shall be equal to 110% of the cost of the required improvements for which financial security is to be posted. The cost shall be established by estimate acceptable to the Borough Engineer.
 - b. If more than one year from the date of posting such financial security is required for completion of the required improvements, the amount of financial security may be increased by an additional 10% for each one-year period beyond the first anniversary date from the posting of financial security or to 110% of the cost of completing the improvements as reestablished on or about the expiration of the preceding one-year period.
8. Inspection escrow. The final application shall include a deposit of 15% of the cost of the required improvements with the Borough in escrow to pay for inspection during the construction, testing and inspection as construction is completed, and incorporation of as built drawings. The minimum deposit is \$2,500. Any unexpended balance in the escrow will be returned; however, release of funds will not be authorized until after the Borough accepts dedication.

§ Section III-3. Construction phase.

Upon final plan approval by the Borough, the applicant must follow the following procedures:

A. Pre-construction.

- 1. Pre- construction meeting. The applicant or his designated construction manager must schedule a pre-construction meeting with the Borough's representative to review all aspects of the proposed project and construction schedule. It is the contractor's responsibility to maintain a current construction schedule and to notify the Borough of any changes to the schedule.
- 2. List of contractors. A list of contractors, subcontractors, and material suppliers must be submitted for the Borough's approval. The list shall include the name and

telephone number of the person in charge of the contract for each contractor and subcontractor. Where paving is involved, a point of contact and phone number shall be provided to ensure the immediate repair of temporary paving deficiencies. A phone number for non working hours, evenings and holidays must be provided.

3. Material samples. Material samples and material compliance certifications shall be provided at the request of the Borough.
 4. Highway occupancy permit. The highway occupancy permit, if applicable, will be obtained by the applicant in the name of the Borough. The applicant is responsible for the cost of the occupancy permit and the securing of any other municipal permits or blasting bond.
 5. Start of construction. Construction shall not begin until 45 days after a letter of approval is issued by the Borough. It may begin sooner with written permission by the Borough.
 6. Wetlands. If wetlands or other natural resources of concern are involved, these areas shall be delineated in the field by a qualified professional. The delineation shall be in such a manner that it is easily recognizable during all phases of construction.
 7. Pre-construction video. Where construction is proposed to traverse existing properties, a pre- construction video shall be made to establish the original condition of the improved properties.
- B. During construction. Complete construction details are provided in Article VII Standard Specifications for Construction of Sanitary Sewers and Appurtenances.

1. Inspection by Borough.

- a. All construction must be conducted in accordance with the latest edition of the Borough's technical specifications covering sanitary sewage facilities. The Borough will designate an inspector to act on the Borough's behalf during construction. The cost for inspections performed by the inspector will be paid from the escrow established from the deposit of 15% of the cost of the required sewerage improvements.
- b. The Borough's inspector shall make periodic visits to the site to observe the progress and quality of the executed work and to determine, in general, if the work is continuing in accordance with the Borough's specifications. He will not make exhaustive or continuous on-site inspections to check the quality of the work unless he determines it is necessary due to his dissatisfaction with the contractor's work. This determination will be solely at the discretion of the Borough and the Borough Engineer. Notification of full time inspections

will be issued to the contractor stating the reasons for such action. The contractor is obligated and shall pay any and all costs of said inspection time at a rate determined by the Borough Engineer.

- c. Neither the inspector's authority to act nor any decision made by him in good faith, either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the inspector to the applicant, contractor, any subcontractor, any of their agents or employees or any other persons performing any of the work.
 - d. The inspector will not be responsible for the construction means, methods, techniques, sequences or procedures or the safety precautions and programs incident thereto, and he will not be responsible for the applicant's or contractor's failure to perform the work in accordance with the construction documents and the Borough's specifications.
 - e. The inspector will not be responsible for the acts or omissions of the applicant, contractor, any subcontractor, any of their agents or employees, or any other persons performing the work.
2. Defective work. The inspector shall have the authority to disapprove or reject work which is defective, unsatisfactory, faulty, or does not conform to the requirements of the Borough's specifications.
 3. As-built drawings. The developer/applicant shall be responsible for maintaining and submitting as built drawings.
 4. Partial releases of financial security. As the work of installing the required improvements proceeds, the party posting the financial security may request the Borough to authorize the release of portions of the financial security, as long as the progress of work remains satisfactory to the Borough. The time frame for requests for progress releases will be established at the pre-construction meeting and may not be less than 30 days. Any such request shall be in writing to the Borough, in accordance with the following:
 - a. At least 10 days prior to submitting the first application for a progress release, the applicant shall submit a schedule of values for the work, including quantities and unit prices aggregating the project estimate, satisfactory in form and substance to the Borough, and subdividing the work into component parts in sufficient detail to serve as a basis for progress releases during construction. This schedule should include a category for as-built drawings and for the Borough's engineer to prepare the computer model and mapping. Component parts should include cost per foot for pipe installations and road restoration unit costs for manholes, etc.

- b. If the Borough approves the application, the Borough will, within 45 days of the presentation of a partial release estimate, authorize a release to the applicant on the basis of the approved partial release estimate.
- c. The Borough will not authorize release of more than 90% of the amount due the applicant on account of partial estimates. The retainage will be held until the Borough issues a certificate of satisfactory construction.

B. Following construction.

1. Inspection. Each lateral connection must be inspected by the Borough's inspector before being backfilled. For connections going online immediately, connection and tapping fees must be paid and a connection permit obtained before connection is made. The connection will be inspected to check fitting-to-main-co-installation, confirm no additional connections have been made, and examine materials used.
2. Testing.
 - a. Testing must be conducted in the presence of the Borough's inspector and in accordance with the technical specifications. The costs for testing will be paid from the inspection escrow.
 - b. Each section of pipe between manholes must be tested in accordance with the technical specifications before any lateral connections are made. No lateral connections shall be made until all sections and manholes downstream of the lateral have been deemed acceptable by the Borough's inspector.
3. Guidelines for completeness.
 - a. When the applicant considers the entire work ready for its intended use, the applicant shall, in writing to the Borough's inspector, certify the work is substantially complete and request the inspector issue a certificate of satisfactory completion. Within 15 days there after, the applicant and the Borough's inspector shall make an inspection of the work to determine the status of completion. If the inspector does not consider the work substantially complete, he will notify the applicant, in writing, giving his reasons therefor. If the inspector considers the work substantially complete, he will prepare and deliver to the applicant a certificate of satisfactory construction. There shall be attached to the certificate a detailed list of each and every uncompleted item and a reasonable cost of completion.
 - b. Before the certificate of satisfactory completion is issued, the Borough requires the posting of financial security to secure the structural integrity of said improvements for a period of 18 months. The financial security shall be 15% of the actual cost of installation of the improvements.

- D. Sewerage facility extensions shall be designed to utilize gravity interceptors. If necessary, after evaluation of alternate means is exhausted, use of a pump station may be approved, subject to the Borough's plans and specifications for pump stations. Where a pump station or low pressure sewer system is proposed, the Borough Engineer will investigate gravity alternatives before a pump station or low pressure system is approved.
- E. The applicant shall bear all costs incident to the application, permits, construction, inspection and dedication of the facilities.
- F. The applicant is also responsible for all costs in upgrading limiting capacities in existing down stream sewerage facilities to serve the ultimate needs of the designated area. A sufficient balance must be maintained in an escrow account to reimburse the Borough for costs associated with evaluating limiting sections.
- G. The applicant must execute the appropriate agreements, in a form acceptable to the Borough solicitor.

§ Section III-6. Connection of private sewage systems.

No private sewerage system shall be connected to the Borough's sewer system, except in accordance with the Borough's sewer regulations, as amended from time to time. Said regulations shall apply to any existing system as of the effective date of this Ordinance which is not yet connected to the Borough's sewer system. As a condition of making connection to the sewer system, the owner of the private system shall grant to the Borough a perpetual easement and right of entry over the private system for the purpose of periodic inspections of said system by authorized representatives of the Borough. In addition, the owner of the property desiring to connect a private system to the sewer system shall cause the installation at his sole cost and expense of a sewage flow meter(s) at appropriate point(s) of connection between the private sewer and public sewer, as determined by the Borough. The meter and meter pit shall conform to the technical specifications of the Borough. Where possible, the meter pit shall be installed within a public right of way. If it is not possible to install the meter pit within the public right of way, the Borough shall be granted a perpetual easement so as to enable the Borough to have direct access to the meter. The costs of reading, maintaining, repairing and replacing the meter and the meter pit shall be the responsibility of the owner of the private system.

ARTICLE IV
Prohibited Wastes and Pollutant Limitations

§ Section IV-1. Purpose.

The purpose of this article is to protect the public health, welfare, and the environment, by controlling and regulating the discharge to the sewer system of harmful or injurious substances, or unacceptable quantities or volumes of waste or water.

§ Section IV-2. Industrial Pre-Treatment Ordinance

All users within the Municipal limits of the Borough of Avondale and users outside the municipal limits of the Borough of Avondale who, by connection to, discharge waste effluent which is ultimately treated by the Borough Sewage Treatment Plant shall be subject to Ordinance 178, "Avondale Pre-Treatment Ordinance of 1997, an ordinance governing and regulating the use of the Avondale Sewer collection system, establishing criteria for industrial waste, defining industrial waste, defining industrial users, and establishing criteria for pre-treatment of industrial waste by industrial users.

§ Section IV-3. Prohibited wastes and pollutant limitations.

- A. No person shall discharge or cause or allow to be discharged into the sewer system, directly or indirectly, any substance, pollutant, wastewater, sewage, stormwater, or combination of such which will, alone or in conjunction with other discharges, cause or contribute to interference or pass through, release flammable, toxic or irritating gasses or vapors, create toxic or dangerous conditions within the sewer system, or otherwise pose a threat to human health, property, or the environment.
- B. Where necessary to carry out the provisions and purposes of this article, the discharge of industrial wastes or wastes other than domestic wastewater may be prohibited, or may be regulated as to volume, rate of flow, concentration or mass of pollutants or other substances, or in such other manner as may be necessary. To effect such regulation, there may be established a system of permits or licenses to discharge, or other means of control of individual sources of wastewater discharge. Conditions imposed in permits may include monitoring and reporting requirements, operational or management requirements, and such other provisions as may be necessary to ensure that the purposes of this article are carried out.
- C. In order to ascertain whether the purposes of this article, including compliance with any permit or order issued hereunder, are being met, the Borough may enter and inspect, at any reasonable time, without advance notice, any place, building, structure, enclosure or equipment that generates or discharges, or may generate or discharge wastes or water, or where records or data are kept, prepared or stored. Unreasonable delay or denial of entry shall constitute a violation of this article, subject to the penalties provided herein and such other remedies as shall be available at law or in equity.

§ Section IV-4. Adoption of rules and regulations.

- A. The Borough may adopt such additional rules and regulations, regarding the discharge of sewage within the Borough, as it deems necessary and proper to carry out the purpose of this article. Administration and enforcement of such additional rules and regulations shall be the sole responsibility of the Borough.

§ Section IV-5. Penalties.

- A. Any person who violates any provision of this article, including any of the rules and regulations adopted thereunder or provisions in permits or orders issued according to the rules and regulations, is guilty of a summary offense and shall upon conviction thereof, in a summary proceeding, be sentenced to pay a fine of not more than \$1,000 and costs. For the purpose of this section, each day that a violation occurs or continues to occur shall be a separate offense, and each pollutant limitation that may be violated shall be a separate offense.
- B. The provision of penalties in this article does not preclude the Borough from seeking such legal or equitable relief as may be available for violations of this article or the rules and regulations adopted hereunder. Nor shall the provisions of this article preclude proceeding under the provisions of the Publicly Owned Treatment Works Penalty Law, Act 9 of 1992, 35 P.S. §752.1 et seq. Penalties provided by this article may be sought concurrently with other non-monetary remedies, as deemed appropriate by the Borough.
- C. Should the violation of any provision of this article by any person contribute to or result in violation of any state or federal law or regulation, for which the Borough is held liable, whether by judicial or administrative order or the settlement of a judicial or administrative penalty action, the person shall indemnify the Borough for the amount of that liability in addition to paying any penalty and costs and any damages that may be imposed for the violation under the provisions of this article.
- D. Copies of this Ordinance will be available at the office of the Borough Secretary for review. If one wishes to purchase this Ordinance the prices are as follows:
1. A complete Ordinance Articles I through VIII is \$75.00.
 2. The above prices may be changed by Resolution of the Borough.

ARTICLE V

Standard Specifications for Construction of Sanitary Sewers and Appurtenances

§ Section V-1. Scope.

The items covered by these specifications require the contractor to furnish all labor, materials, equipment, apparatus, and tools. This includes all pipe, materials for joint connections, manholes, appurtenant structures, and sewer laterals to points of connection with building drains at the side of public or private rights-of-way, or beyond public utilities paralleling the sewer, including specials and fittings. They also require the contractor to perform all operations to complete the construction of sanitary sewers, sewer laterals, and appurtenances thereto, as shown on the drawings and as herein specified. The contractor shall install, equip, adjust, and put in operation, the completed work so as to produce a satisfactory operating whole in conformance with plans and these specifications.

These specifications are not intended to cover every procedure and work sequence. However, all safety procedures including, but not limited to, sheeting, shoring, confined space entry, and blasting shall be in accordance with the rules and regulations as set forth by OSHA. All Ordinances of the Borough as well as any County, State, or Federal regulations shall apply. If there is a conflict between regulatory agencies, the stricter of the regulations will apply.

§ Section V-2. Additional Definitions. In addition to the definitions in Article I, Section I-1, unless the context specifically indicates otherwise, the meaning of terms used in this Section shall be as follows:

Approved, etc. The words approved, acceptable, satisfactory, or of like import, shall mean approved by the Engineer for general conformity with design concepts, unless another meaning is plainly intended or otherwise specifically stated. This approval shall not relieve the contractor of the responsibility for producing a complete and satisfactory end result.

Authority. Any Federal, State, or Municipal agency.

Completion Certificate. The certificate of the Engineer and approved by the Borough, indicating general conformance to plans and specifications of all work performed under the contract.

Contractor. The contractor employed to construct sanitary sewers and appurtenances and his agents, representatives, superintendents, or employees in accordance with Borough approvals, specifications, and supervision. Contractor is used as an all encompassing term to include: a developer;

a person hired by an individual home owner to install building sewers; plumbers; and so on. All contractors and subcontractors, performing sewer installation related activities, must be licensed by the Borough.

Contractor's Engineer. The licensed professional engineer, or his authorized representative, retained by the contractor to provide plans and specifications for the project.

Construction Observation. The observation of the work performed by the contractor to ascertain its conformity with Borough standards and specifications.

Contract. The written agreement executed between the entity requiring the work to be performed and the contractor performing the work. It covers performance of the work and the furnishing of labor, materials, and equipment in the construction of sewer extensions and appurtenances to the sewage collection system.

Corresponding Authority. The authority in charge of the item in question.

EPA. The Environmental Protection Agency, a Federal organization.

Plans. All plans or reproductions relating to the construction of the project and made a part of the contract, and additional plans as may be required, from time to time, in order to more fully clarify contract plans and details not shown thereon.

Plans and Specifications. The Plans and Specifications are complementary to each other, and the requirements of any one shall be considered as requirements for all.

Project. The scope of work under the contract described in the specifications and shown on the plans incorporating performance, services, and materials for the whole, entirely complete, and in full.

Specifications. Contained in the specifications, inclusively, all definitions, descriptions, requirements, terms, stipulations, and all written supplements, made or to be made thereto pertaining to the contract, and all materials, equipment, and workmanship to be furnished under the contract.

Subcontractor. This term includes only those having a direct contract with the contractor, one who furnishes material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes materials.

Work. The term "work" of the contractor or a subcontractor includes labor, materials, equipment, transportation, and other facilities necessary to complete the contract.

§ Section V-3. Shop drawings and specifications .

- A. The contractor's Engineer shall furnish all necessary copies of drawings and specifications to the Borough and the Engineer for review. Shop drawings shall be submitted in quadruplicate to the Borough with promptness as to avoid delay in the work. After review of these drawings by the Engineer, the contractor shall make any corrections required, providing the Borough four (4) corrected copies and such other copies as may be needed for proper prosecution of the work. The Engineer's approval of shop drawings shall not relieve the contractor from responsibility for errors or discrepancies in such drawings. All shop drawings shall be identified with the name of the project and contractor, and numbered in consecutive order. Shop drawings will be required to be furnished for manufactured manholes, frames and covers, and other required appurtenances.
- B. The contractor, when submitting the shop drawings for approval, shall do so with the understanding he has checked said drawings before submission and is satisfied they meet the requirements of the plans and specifications and will present no difficulties in completing the contract. He shall clearly note his approval on all shop drawings prior to their submission. Failure of the contractor to note his approval will be reason for the Engineer to return such submission without review. If it appears the submitted shop drawings have not been properly checked, even though the contractor's approval has been noted thereon, it will also be considered reason for the Engineer to return such submission.
- C. If the shop drawings show variations from the contract requirements because of standard shop practice or other reasons, the contractor shall make specific mention of such variations in his letter of submission so that, if accepted, suitable action may be taken for proper changes in the contract. Otherwise the contractor will not be relieved of the responsibility for executing the work in accordance with the contract even though the shop drawings have been approved.
- D. The approval of shop drawings will be general and shall not relieve the contractor from the responsibility for proper fitting and construction, or from furnishing materials and work required by the contract not indicated on the shop drawings when approved.
- E. The approval of any plans, specifications, contracts, or agreements or the issuance of any permits or approvals pursuant to the provisions of this ordinance or any regulations issued or adopted pursuant thereto shall not constitute a representation, guarantee, or warranty of any kind by the Borough or by any official, employee, agent, or advisor of the Borough as to the practicability, adequacy, functioning, or safety of any use, improvement, facility, or system installed or maintained pursuant to the aforementioned approved plans, specifications, contracts, agreements, permits, and regulations, and shall not create any liability upon the Borough, or its officials, employees, agents and advisors.

- F. Each submission of shop drawings must be accompanied by a transmittal letter with a list of the number of drawings. All drawings must be marked with the name of the project, the name of the contractor, and be numbered consecutively. All drawings must be complete in every respect and bound in sets.
- G. The contractor shall keep one copy of all drawings and specifications on site, in good order, and available to the Borough Engineer and his representatives.
- H. All drawings or plans pertaining to the project shall be submitted by the contractor, in duplicate, to the Borough Engineer for review. After review of these drawings by the Borough /Authority Engineer, the contractor shall instruct his engineer to make the required corrections and re-submit six corrected copies. The Borough Engineer's approval of the drawings shall not relieve the contractor from responsibility for errors or discrepancies in such drawings.
All drawings shall be prepared in conformance with the requirements set forth in this Ordinance and shall be identified with the name of the project and contractor, and numbered in consecutive order.
- I. All costs associated with the submittal and review of plans and drawings will be reimbursed to the Borough by the contractor. The contractor shall make payment in full for any invoice presented to him by the Borough. Payment will be made no later than ten (10) days from the date of the invoice.

§ Section V-4. Order of Completion.

The Contractor shall submit to the Engineer, prior to construction, a schedule showing the order in which the contractor proposes to perform the work. The schedule will include the dates when the contractor will start the various parts of the work and the estimated dates of completion. This schedule will be updated at least once a month during the duration of the contract.

§ Section V-5. Contractor to pay taxes.

The contractor shall comply with all tax laws for the jurisdiction in which the work is being done. He shall pay all taxes for which he may be liable as a consumer or user of goods and taxes based on income from the contract or a portion thereof. The contractor shall obtain, where applicable, sales and use tax exemption certificates.

§ Section V-6. Safety, protection, and emergencies.

- A. The contractor will be responsible for initiating, maintaining, and supervising all safety pre-cautions and programs in connection with the work. He will provide the necessary safeguards to prevent damage, injury, or loss to:
 - 1. All employees on the work and other persons who may be affected thereby;

2. All work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and
 3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- B. The contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property. He will erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection, including posting danger signs and other warnings against hazards.
- C. The contractor shall comply with the provisions of PA Act 38, as amended, and notify owners of adjacent utilities when progression of the work may affect them.
- D. When the use of explosives or other hazardous materials is necessary for the progression of work, the contractor will comply with all aspects of Borough Ordinance 1999-10, as amended.

§ Section V-7. Observation of Work.

- A. The Engineer, the Borough, and their representatives shall at all times have access to the work wherever it is in preparation or progress. The contractor shall provide proper facilities for such access and observation.
- B. If the contract documents, the Engineer's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the contractor shall give the Engineer timely notice of its readiness for inspection. Inspections by the corresponding authority shall be promptly made and, where practicable, at the source of supply. If any work should be covered up without the approval of the corresponding authority it must be uncovered for examination at the contractor's expense. The contractor is responsible to pay all corresponding authority expenses for inspections.

§ Section V-8. Superintendence and supervision.

- A. The contractor shall have, available on site, a competent superintendent and any necessary assistants while any work is in progress. The superintendent shall represent the contractor in his absence and all directions given to him shall be as binding as if given to the contractor. Important directions shall be confirmed in writing to the contractor. Other directions shall be so confirmed if there is a written request. The contractor shall give efficient supervision to the work, using his best skill and attention.
- B. If the contractor finds any discrepancy between the drawings and the physical conditions of the locality, any errors or omissions in the drawings or layout, as given

by points and instructions, it shall be his duty to immediately inform the contractor's Engineer, in writing. The contractor's Engineer shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the contractor's risk.

§ Section V-9. Indemnity.

- A. The contractor shall indemnify and save harmless the Borough Council of Avondale Borough and their representatives from and against all losses and all claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against them by reason of any act or omission of the said contractor, his agents, or employees, in the execution of the work or in the guarding of it, and shall defend and pay the costs of defending any such suit or suits.
- B. The contractor is directed to maintain and pay for such insurance, issued in the name of the contractor, the Borough and their representatives as will protect them from their contingent liability under any and all contracts.

§ Section V-10. Rights of various interests.

Wherever work being done by the Borough contiguous to work covered by a contract, the respective rights of the various interests involved shall be established by the Borough Engineer, in order to secure the completion of the various portions of the work in general harmony.

§ Section V-11. Subcontracts.

- A. The contractor shall, as soon as practicable after the execution of the contract, notify the Engineer, in writing, of the names of subcontractors proposed for work. He shall not employ any the Engineer may, within a reasonable time, object to as incompetent or unfit.
- B. The contractor agrees he is as fully responsible to the Borough and for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions or persons employed by himself.

§ Section V-12. Provisions of law.

Every provision of law, and every clause required by Municipal, Federal, or State Regulation are required to be inserted in the contract shall be deemed to be inserted herein. The contract shall be read and enforced as though it were included herein and, if through mistake or otherwise, any such provision is not inserted, or not correctly inserted, then upon the application of either party, the contract shall forthwith be amended to make such insertion. The contractor shall give all notices required by law or regulation and shall comply with all laws, ordinances, rules, and regulations applicable to the work.

§ Section V-13. Workmen's Compensation Act.

The contractor shall accept the provisions of the Workman's Compensation Act of 1917, as amended, covering any work performed by him, his partners, associates, employees, or those of any subcontractor he may employ. He must also file, with the Engineer, any Certificate of Exemption from insurance from the Bureau of Workmen's Compensation of the Department of Labor and Industry.

§ Section V-14. Insurance.

- A. The contractor shall not commence work until he has obtained all insurance required under this section from a responsible insurance company(s), authorized and qualified to do business under the laws of the Commonwealth of Pennsylvania. The insurance must be approved by the Borough. The contractor shall not permit any subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been so obtained and approved.
- B. The contractor shall obtain, pay for, and maintain: Employers Liability; General Public Liability with contractual indemnity coverage; and Automobile Liability Insurance that will protect the contractor, any subcontractor, owner, the Borough, and their agents from claims for damages for personal injury, accidental death, and property damage which may arise from operations under the contract. This includes coverage whether such operations are performed by himself, any subcontractor, or anyone directly employed by either of them. In the event the contractor is unable to obtain the aforesaid coverage in a single policy of insurance, he shall furnish a policy covering his liability and that of his subcontractors and, in addition, an owners protective policy with respect to the liability of the Borough and their agents.
- C. The amount of such insurance shall, unless otherwise specified as a special term of a contract, be as follows:

General Liability

Each Occurrence	\$1,000,000
Damages to Rented Premises	\$ 500,000
General Aggregate	\$2,000,000
Products – Comp/OP Agg	\$2,000,000

Excess / Umbrella Liability

Each Occurrence	\$2,000,000
Aggregate	\$2,000,000

Automobile Liability (Owner, non-owned, and hired automobiles)

Bodily Injury	\$1,000,000
Property Damage	\$1,000,000

If there is a possibility of special hazards existing in the work contemplated, they shall be covered by rider(s) to the policy or policies, as required by the Borough Engineer.

- D. The contractor, during the progress of the work, shall maintain Builders' Risk Fire and Extended Coverage Insurance. Such insurance shall cover: labor and materials connected to or adjacent to the property insured; materials in place or to be used as part of the permanent construction, including surplus material, shanties, protective fences, bridges, temporary structures, miscellaneous materials, and supplies incident to the work; and such scaffolding, staging, towers, forms, and equipment not owned or rented by the contractor. The cost of which is included in the cost of work. This insurance shall not cover any tools owned by mechanics, any tools, equipment, scaffolding, or staging, the capital value of which is not included in the cost of the work. Such insurance shall be in the names of the contractor, the Engineers, and the Borough as their respective interests may appear. All such insurance policies shall be open to the inspection of the Borough and their representatives at all times.
- E. Copies of the policies shall be provided with each executed copy of the contract. Renewal endorsements shall be delivered as necessary, for the duration of the contract.
- F. The risk of damage to the work required to be covered by the said insurance, is that of the contractor and his surety. Failure by the contractor to maintain such insurance, or failure to collect the proceeds thereof, in case a claim, shall in no way relieve the contractor from the responsibility of completing his contract.
- G. The contractor shall, upon executing the contract, deliver to the Borough proper proof of the insurance required hereunder and under § Section V-9, Indemnity. Certificates will be proof of Public Liability, Property Damage and Workmen's Compensation Insurance. Certificates shall include type, amount, class of operations, effective dates and date of expiration of policies. An original policy for Fire Insurance must be submitted.
- H. All policies and certificates must contain an endorsement stating the policy cannot be canceled or amended without first giving Borough at least 10 days notice in writing.

§ Section V-15. Contractor's understanding.

It is understood and agreed the contractor has, by careful examination, satisfied himself as to the nature and location of the work; conformation of the ground; character, quality and quantity of the materials to be encountered; character of equipment and facilities

needed to accomplish the prosecution of the work; general and local conditions; and all other matters which can in any way affect the work under the contract. No verbal agreement or conversation with any officer, agent, or employee of the Borough, either before or after the execution of the contract, shall affect or modify the terms or obligations herein contained.

§ Section V-16. Surveys, lines, and grades.

The contractor's Engineer will furnish all the surveys, plans, measurements (workmen's lines and benches excepted), and other information necessary to properly construct the contemplated improvements as to the lines, grades, and dimensions as specified and called for by the plan. The contractor shall provide reasonable opportunities and facilities for setting points and making measurements. He shall not proceed until he has made timely demand upon the contractor's Engineer for, and has received from him, such points and instructions as may be necessary as the work progresses. The work shall be done in strict conformity with such points and instructions. The contractor shall protect all stakes and reference points.

§ Section V-17. Existing utilities and Pennsylvania One Call.

- A. The existence and location of underground utilities, whether or not indicated on the plans, are not guaranteed and shall be investigated and verified in the field by the contractor before starting work. Excavation in the vicinity of existing structures and utilities shall be carefully done by hand. Special care must be used by the contractor to avoid interference or damage to any operating utilities or plants. Where there is any possibility of any interference or damage, the contractor shall make arrangements with officers or owners of the utilities concerning the precautions to be used during the performance of the work. All work will be prohibited if these preparations are not completed before construction begins.
- B. The contractor must adhere to the provisions Pa Act 287, of 1974 as amended by PA Act 181 of 2006, 73 P.S. 176 et, seq., enacted by the General Assembly of the Commonwealth of Pennsylvania and approved by the Governor on December 12, 1991. The Act specifies the responsibilities in regard to public health and safety during excavation and demolition operations in areas of underground utilities.
- C. In order to comply with Act 287, as amended, the contractor shall call 1-800-242-1776 a one number calling system in direct contact with many utilities within the Commonwealth of Pennsylvania.

§ Section V-18. Working conditions.

No night or Sunday work requiring the presence of the Borough Engineer, or his representative, will be permitted except in cases of emergency, and then only with the written consent of the Engineer.

§ Section V-19. Service of Notice by the Borough.

The service of any notice by the Borough to the contractor shall be considered accomplished upon completion of any one of the following procedures:

- A. When delivered, in writing or by facsimile, to the person in charge of the office used by the contractor to conduct business;
- B. When delivered, in writing, to the contractor, or any of his authorized agents, in person;
- C. When delivered, in writing or by facsimile, to the contractor, or any of his agents, at the office used to conduct the business of the Contractor at or near the work site; or
- D. When deposited in the United States Mail, postpaid, and addressed to the party intended for such service at his/her office used for conducting the business of the contract.

§ Section V-20. Materials, appliances, and employees.

- A. Unless otherwise stipulated, the contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for the execution and completion of the work.
- B. Unless otherwise specified, all materials shall be new. Both workmanship and materials shall be of good quality. The contractor shall, if requested, furnish satisfactory evidence as to the kind and quality of materials, original composition, and manufacture of all materials used in the project.
- C. The contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ any unfit person or anyone not skilled in the work assigned to them.

§ Section V-21. Accidents.

- A. The contractor shall provide, on site, such equipment and medical facilities necessary to provide first-aid service to anyone who may be injured in connection with the work.
- B. The contractor must promptly report in writing to the Borough all accidents what so ever arising out of the performance of the work. This applies whether on, or adjacent to the site. The report shall include any injury causing death, personal injury, or property damages.
The report must provide full details and statements of witnesses. In addition, if death, serious injury, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Borough and Engineer.

- C. If any claim is made against the contractor or any subcontractor because of an accident, the contractor shall promptly report the facts in writing to the Borough and Engineer, providing the full details of the claim.

§ Section V-22. Preservation of monuments.

All property line and survey monuments shall be properly tied into fixed points before being disturbed, and properly reset by the contractor upon completion of the work.

§ Section V-23. Private property.

- A. Where sewer lines cross private property, all rights of way and entry will be acquired by the contractor. In opening trenches across private property, the contractor shall use every means to protect all property. This includes lawns, trees, shrubbery, fences, buildings, walls, roads, water courses, natural features, or any improvements which may exist. All damages resulting from the contractor's operation shall be repaired, without charge, to the satisfaction of the Borough. Upon the contractor's refusal to do so, the repairs will be done by the Borough at the expense of the contractor. The contractor shall confine his operations to the width of the right-of-way.
- B. Before any work is to be done on private property, the contractor will provide a video tape of the entire easement area. Approval of the scope by the Borough Engineer is required before commencing any work.

§ Section V-24. Other Permits and regulations.

- A. All permits, licenses and approvals, including, without limitation, those required by the Borough, pursuant to other Ordinances and regulations, as well as those required by federal, State, County and/or municipal authorities, necessary for the completion of the work, such as blasting permits, trenching, etc., shall be secured and paid for by the contractor from the corresponding Federal, State, County, or Municipal authority.
- B. Any blasting within the Borough is to comply with all applicable Borough requirements.
- C. The contractor shall comply with the laws, ordinances, rules, and regulations pertaining to the work as drawn and specified. If the contractor observes the drawings and specifications are at variance therewith, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in the applicable regulations. If the contractor performs any work knowing it is contrary to such laws, ordinances, rules, and regulations, or without such prior notice to the Engineer, the contractor shall bear all costs required to correct the defects and achieve compliance with all applicable regulations.

§ Section V-25. Temporary provisions for public travel.

- A. The contractor shall perform his work in a manner as to interfere, as little as possible, with the use of any roads or adjoining property. No excavation shall be left open or other obstructions allowed to remain any longer than is absolutely necessary. The contractor shall provide all safeguards and temporary passageways necessary for the convenience and protection of all persons using said highway by day or night.
- B. The contractor shall provide, place, and maintain all signs, sign mounts, flashers, steady burn lights, barricades, temporary lighting, and all other associated traffic maintenance devices in order to adequately protect the public from harm for the duration of the construction project.
- C. When permission for detouring traffic is granted, the contractor shall post signs and maintain all detour routes to the satisfaction of the corresponding authority. No State Highway shall be closed to traffic and no work performed on a State Highway without first obtaining approval for closing from PennDot. On a State Highway, all warning signs for construction and detouring must be in accordance with PennDot current standards.
- D. At no time, during construction, shall any materials, spills, rocks, or other debris impede the flow of traffic through the job site. Any debris that has entered the traffic lanes shall be immediately cleaned up and removed. The contractor shall make every effort to protect traffic, both pedestrian and vehicular, against any possible injury or damage.
- E. The contractor shall construct and maintain bridges over excavated areas as may be necessary, or as directed by the corresponding authority, and said bridges must have sufficient structural integrity to accommodate its purpose, whether vehicular and/or pedestrian traffic. The proposed bridge shall be approved by the corresponding authority.
- F. All fire hydrants, water valves, gas valves, fire alarm boxes, and mail boxes shall be left accessible for use.
- G. If the contractor should fail to provide the necessary safeguards, as specified, the corresponding authority may provide the same and charge the cost to the contractor.

§ Section V-26. Damage due to high water.

The contractor shall be responsible for all damage done, to his work, by heavy rains or floods. He shall take all reasonable precautions to protect adjoining property, by building such temporary channels to carry off the stormwater as required.

§ Section V-27. Partially completed work.

Partially completed work shall mean work which is in progress, such as trenching, pipe laying, and material in place.

§ Section V-28. Completed work.

- A. Completed work is defined as work which is entirely done, including removal of all tools, equipment, excess material, rubbish and debris and the clearing of sidewalks, rights-of-way, and the restoration of street surfaces to original or better condition. The same applies for lines installed on private property.
- B. The Engineer permitting a full release of funds for completed work shall in no way relieve the contractor, or his representative, of repairing defective work which may not be detected until after the said release of funds.

§ Section V-29. Condemned work and materials.

- A. The contractor shall promptly remove, from the premises, all materials condemned by the Engineer. This includes materials failing to conform to the contract, whether incorporated in the work or not, and the contractor shall promptly replace his work in accordance with the contract. He shall bear the expense of making good all work of other contractors damaged by such removal or replacement.
- B. Failure or neglect on the part of the Borough Engineer to condemn or reject any inferior work or materials shall not be construed as an acceptance of such work or materials, should the same become evident at a later date, prior to delivery of completion certificate by the Borough to the contractor.

§ Section V-30. Acceptance, final estimate, and payment.

Upon the completion of the contract, including clean up, the contractor shall notify the Borough the work is ready for final inspection. If the contract is complete, the Engineer will notify the Borough of satisfactory completion so that a Completion Certificate may be issued and outstanding funds released.

§ Section V-31. Cleaning up.

The contractor shall, at all times, keep the project site free from accumulations of surplus material, rubbish, and waste materials resulting from his operation. The contractor shall also restore all lawns and shrubbery damaged in the course of construction.

§ Section V-32. Sanitary facilities.

The contractor shall provide toilet facilities for the use of all personnel working on the project.

Facilities shall be of the portable type and shall be kept in a clean and sanitary condition.

§ Section V-33. "Or Equal" Clause.

- A. Any reference to an item of equipment or material by a specific manufacturer's brand or trade name is intended merely as a standard. Products or materials of other manufacturers, which in the opinion of the Engineer are the equal of that specified, considering quality, workmanship, economy of operation, and are suitable for the intended purpose, will be acceptable.
- B. The contractor shall not, under any circumstance, substitute an alternate manufacturer's product or material without prior written approval of the Borough Engineer.

§ Section V-34. Special Requirements.

Should there be any conflict with the General or Special Conditions, the following requirements shall govern:

- A. Where reference is made to government specifications, or to those of well known organizations such as ASTM., AWWA., etc., the latest editions shall apply;
- B. The contractor will be required to maintain, at all times during construction, the flow of sewage in the existing sewerage systems;
- C. Connections to existing sewers shall be made providing a watertight installation. Where manholes are broken into for connections, they shall be restored to original condition using materials similar to those in the existing structures;
- D. Where sewers will be constructed within State Highway rights-of-way, the contractor will make necessary applications for permits to construct such sewers through the Borough Council. It shall be, however, the responsibility of the contractor to construct the sewers in strict conformance with the requirements of the Borough and PennDOT
- E. Where sewers are to be installed within the limits of streets, all removal and replacement of street paving and restoration of shoulders shall be in strict conformance with the requirements of the Borough and PennDOT;
- F. Streets shall not be unnecessarily obstructed. The contractor shall take measures to keep the streets or roads open and safe for traffic after working hours;

- G. When sewer lines cross telephone, telegraph, electric, cable TV, gas, oil, or water lines, no excavation or pipe laying shall be done at those crossings without the presence of an authorized representative from the office of the corresponding utility and/or their successors;
- H. The contractor should plan his work to provide adequate protection during storms. Certain portions of the work may be affected during storms and floods. Provisions for preventing damage should be made available at all times. Sewer lines and other work shall be protected at all times against damage from uplift due to high ground water levels;
- I. The contractor shall provide a competent and reliable person delegated to be readily available and have full authority to act in his behalf in case it is necessary to deal with an emergency situation arising during after working hours.
- J. The contractor shall provide a list of responsible parties to contact on a normal or emergency basis. The list shall include telephone, fax, pager, and cell phone numbers.

**Article VI
GENERAL SPECIFICATIONS**

§ Section VI-1. Standards.

Municipal, Federal, and State Specifications and Standards will govern in any situation not covered in Appendix A, Standard Specifications for Sewer Construction, and/or Appendix B, Standard Sewer Details.

§ Section VI-2. Traffic Control.

- A. The contractor shall provide and maintain access to and from all properties along the line of the work. He shall also provide temporary by-passes and bridges and maintain them in a safe and usable condition whenever, in the opinion of the Engineer, detouring of traffic to parallel routes cannot be done without hardship or excessive increase in travel by the public.
- B. Where single lane by-passes are provided, the contractor shall furnish signal men to control traffic operations and minimize delays.
- C. Where directed by the Borough Engineer, the contractor shall perform excavating, paving, and other operations on one-half of the road at a time to allow for movement of traffic.

§ Section VI-3. Detours.

The contractor shall set up and maintain all necessary detours to the satisfaction of the Engineer and PennDOT. He shall supply and erect all necessary signs along the routes approved by the Engineer and PennDOT. He shall notify police, fire, school, and Borough officials, as well as adjacent municipalities. All proposed detours shall be marked clearly on a map and submitted to the Engineer two weeks in advance of the time the detour will go into effect. The Engineer will submit the plans to PennDOT for approval.

§ Section VI-4. Safeguards.

- A. The contractor shall provide, erect, and maintain adequate barricades, warning signs and lights at all excavations, closures, detours, and points of danger.
- B. Dust control. It will be the responsibility of the contractor to control dust during the project by sweeping and/or the proper use of chemicals such as Calcium Chloride.
- C. Maintenance of public ways. Streets, cross walks, and sidewalks shall be kept broom clean, clear, and free for the passage of vehicles or pedestrians, unless otherwise authorized by the Engineer. Additional passageways may be required where deemed necessary.

- D. All applicable regulations of the Occupational Safety and Health Act (OSHA.) shall be complied with during the performance of the contract, including the Provisions of Confined Space Entry. Safety provisions shall be enforced by O.S.H.A. as required by law and not by the Borough-/Authority or its representatives.
- E. The safety provisions of applicable laws and regulations of the Pennsylvania Department of Labor and Industry, and building and construction codes shall be observed. Machinery, equipment, and other hazards shall be guarded in accordance with safety provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America, to the extent that such provisions are not in contradiction of applicable State and local laws.
- F. Special attention is drawn to the regulations of the Pennsylvania Department of Labor and Industry relating to trenches and excavations, tunnel construction, equipment, materials, labor, safety, sanitation, and other regulations of which the contractor shall be fully informed and he shall fully comply. Observance of and compliance with said regulations shall be solely, and without qualification, the responsibility of the contractor, without reliance on supervision or direction by the Borough or Engineer.

§ Section VI-5. Certification of materials.

- A. The contractor shall forward to the Engineer a certification for each material used on the site. This certification shall state the materials used on the site conform with the specifications set forth herein and shall be signed by the person having responsible charge of the plant or company producing such materials.
- B. All material used in sewer construction not herein before specified, or specified on the plans, shall conform to the Material Specifications of the A.S.T.M. for that material.

§ Section VI-6. Inspectors duties.

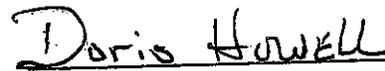
- A. Duly authorized inspectors, performing their duties under the direction of the Engineer, may be assigned to all or any part of the work. They shall be authorized to inspect the result of work and materials furnished. If any dispute arises as to the materials furnished, or the acceptability of the final work, they shall have the authority to reject materials and/or work until the issue can be decided by the Engineer. All fees incurred by the inspectors and Engineer are paid by the contractor to the Borough.
- B. The contractor shall furnish the inspector with records, as required, of the materials delivered or materials incorporated in the work.
- C. All pipe laying, concrete pouring, and masonry construction shall be done only in the presence of an inspector representing the Engineer unless specifically waived by the Engineer.

08/04/10

Passed by Borough Council, this 17 day of August, 2010.

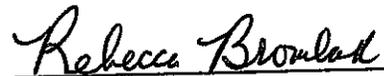

Albert F. Bryan
President, Borough Council

Approved by the Mayor, this 17 day of August, 2010.


Doris Howell
Mayor

Enacted, this 17 day of August, 2010.

BOROUGH OF AVONDALE


Rebecca Brownback
Borough Secretary

08/03/10

ORDINANCE NO. 2010-
BOROUGH OF AVONDALE
CHESTER COUNTY, PENNSYLVANIA

APPENDIX A

STANDARD SPECIFICATIONS
FOR
SEWER CONSTRUCTION

08/03/10

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08/03/10

SPECIFICATIONS FOR SANITARY SEWER CONSTRUCTION

SECTION I – SPECIAL PROVISIONS

Act 287

The contractor's attention is directed to the provisions of Pa Act 287, of 1974 as amended by PA Act 181 of 2006, 73 P.S. 176 et, seq., which specifies the contractor's responsibilities in regard to public health and safety during excavation and demolition operations in areas of underground utilities.

In order to comply with Pa Act 287, of 1974 as amended by PA Act 181 of 2006, 73 P.S. 176 et, seq., the contractor shall call-1- 800-242-1776 which is a one number calling system in direct contact with many utilities within the Commonwealth of Pennsylvania.

Maintenance and Protection of Traffic During Construction

The contractor shall provide, place, and maintain all signs, sign mounts, flashers, steady burn lights, barricades, temporary lighting and all other associated traffic maintenance devices in order to adequately and effectively protect and save the public from harm for the duration of the sewer construction project.

When permission for detouring traffic is granted the contractor shall post signs and maintain all detour routes to the satisfaction of the governing Authority. No State Highway shall be closed to traffic and no work performed on a State Highway without first obtaining approval for such closure of work from the Pennsylvania Department of Transportation. On a State Highway all warning signs for construction and detouring must be in accordance with Penn DOT's most recent standards.

During the construction process at no time shall any materials, spills, rocks, or other debris impede the flow of traffic through the job site. Any debris that has entered the traffic lanes shall be immediately cleaned up and removed. The contractor shall make every effort to protect traffic, both pedestrian and vehicular, against any possible injury or damage.

The contractor shall construct and maintain bridges over excavated areas as may be necessary or as directed by the Borough and said bridges must have sufficient structural integrity to accommodate its constructed purpose that being vehicular and/or pedestrian traffic. The proposed bridge shall be approved by the Borough Engineer.

All fire hydrants, water valves, gas valves, fire alarm boxes and mailboxes shall be left uncovered and readily accessible for use.

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Erosion and Sedimentation Control Practices

Erosion and Sedimentation Control Practices shall be carried out in strict accordance with the construction drawings and the Erosion and Sediment Control Program Narrative Report. In the event that no narrative report has been established and notes concerning same are not specifically addressed on the construction drawings guidelines for the mitigation of erosion and sediment control shall be carried out in accordance with the guidelines of "Soil Erosion and Sedimentation Control Manual" prepared by the Pennsylvania Department of Environmental Resources dated April 1991 including the most recent additions thereto. Also any measures undertaken must meet the current practices of Chester County Conservation District and are subject to the approval of the Borough Engineer.

The Contractor shall also conform to the following Erosion and Sedimentation Control Practices.

1. Reduce by the greatest extent practicable the area and duration of exposure of readily erodible soils.
2. Protect the soils by use of temporary vegetation or seeding and mulch, or by accelerating the establishment of permanent vegetation. Complete and protect segments of work as rapidly as is consistent with construction schedules.
3. Retard the rate of runoff from the construction site and control disposal of runoff.
4. Trap sediment resulting from construction in temporary or permanent silt holding basins. This includes pump discharges resulting from dewatering operations.
5. Sprinkle or apply dust suppressors or otherwise keep dust within tolerable limits on haul roads and at the site.
6. Use temporary bridges or culverts where fording of streams is objectionable. Borrow areas should be at a location where pollution from the operation can be minimized. Locations should be avoided where pollution would be inevitable.
7. Should construction operations be suspended for any appreciable length of time, temporary measures for the control of erosion must be utilized.
8. Provision must be made for protection against discharge of pollutants such as chemicals, fuel, lubricants, sewage, etc., into any stream.
9. All operations shall be conducted in such a manner to minimize turbidity in any stream at and below the site of the structure.

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10. The Contractor shall, at all times, keep the premises free from accumulation of waste material or rubbish caused by his employees or work.

Protection of Property

The Contractor shall be responsible to protect from direct or indirect damage, all buildings, inlets, manholes, conduits, pipes, poles, tracks, walls, real property, personal property, and other structures whether above or below ground in the area of work. The Contractor shall at all times take every precaution possible by which damage to property can be prevented, for example by having on hand a sufficient quantity of materials available by which unforeseen occurrences can be mitigated such as, fencing and having sheeting for excavations and for sustaining and supporting any structures that are uncovered, underdrained, endangered, threatened or weakened. Also the contractor shall replace any drain pipe that has been encountered and removed through excavation even though the pipe may appear not to be in use or damaged.

Obstructions and Maintaining Utilities

The Contractor shall be responsible for notifying each respective utility of the need for the relocation, adjustment or, protection and restoration of their facilities that will be required as part of the construction project. The Contractor shall also be responsible for uncovering and supporting said utility structures located within or crossing the limits of his/her trench.

All utilities services shall be maintained at all times by providing for a continuous flow in all existing conduits, electric, gas, sewer, telephone, and water lines, petroleum products or any other structure encounter above or below the ground during the construction process.

The Contractor shall be responsible for any and all expenses resulting from a track crossing including the maintenance of rail service, and vehicular and pedestrian traffic.

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SECTION II - EXCAVATION AND BACKFILL

Excavation in General

The Contractor shall furnish all labor, tools, materials and equipment necessary in order to accomplish all work, including but not limited to the clearing and grubbing of areas of work, removal of existing paving, excavation of trenches to the depth shown on plans, support of all utility lines where the proposed sewer line crosses, and the maintenance of all excavated areas and trenches including sheeting and shoring, the removal of all water, and the disposal of excess fill including all incidental work thereto in order to complete the project in a first class workmanlike manner as shown on the drawings and/or as specified and directed by the Borough.

Excavation shall include all materials excavated regardless of character, including rock excavation. Excavation shall be in open cut, unless written permission is granted by the Borough to excavate by other methods and/or other methods are specified on the construction drawings. The Borough shall be empowered to require that hand excavation be employed by the Contractor where deemed necessary for proper construction.

All openings to be made within State Highway shall be made in accordance with the most recent standards and specifications prescribed by the Pennsylvania Department of Transportation including any provisions established as conditions of approval for a Penn DOT State Highway Occupancy Permit.

All openings to be made in Local roads or streets shall be made in accordance with the permit issued by the Borough.

Rock Excavation

All excavation shall be considered unclassified. No additional compensation shall be made for Rock or unstabilized soils.

Blasting

Where blasting will be required and only when permitted by the Borough, blasting shall be performed by experienced and approved blasters. All blasts shall be carried out in strict accordance with the ordinances of the State, County and/or Borough governing same and also all Federal Blasting regulations relating thereto. Explosives shall be only of such character and magnitude as may be safely handled and detonated in the area of work and for the specific task intended, that being to aid in the excavation process, provided such explosives are permitted to be used under all Federal, State and local regulations pertaining thereto. Blasts shall be fired at

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such times as may be directed by the Borough and subject to approval by the fire marshal. The Municipality shall also have the right, if it becomes necessary, to regulate the number and size of charges. At all times the contractor and his/her sureties shall be solely liable for any damage that arises as a result of the blasting operations.

Excavation in General

A permit must be secured from the Pennsylvania Fish Commission if blasting is to be done in or along a stream. All materials shall be unclassified. The contractor shall include the cost of rock excavation in the Item Prices for sewers, manholes and other items concerned. No additional compensation will be made for rock excavation.

Rock Excavation-Procedure

Boulders where encountered shall not be returned to the trench without first being broken up in small pieces. The trench shall be excavated into the rock for a depth of six inches (6") below the bottom of the bell, and the bottom backfilled to grade with fine, well compacted earth, sand, granular material, etc.

Blasting

Compliance with Laws

Where blasting will be required for excavation, the Contractor must comply with all Federal and State Laws and other regulations relating thereto. Explosives shall be only of such character and strength as may be permitted by such laws and regulations. The Contractor shall provide at his expense, magazines and magazine houses for the storage of explosives in such locations as may be approved by the local authorities having jurisdiction over such work. The magazine and magazine houses shall be plainly marked with large red letters "EXPLOSIVES-DANGEROUS" and shall be kept under lock, the key to which shall be in possession of the Superintendent or other trustworthy person.

Quantity to be Stored

No larger quantity of explosives shall be kept on the site of the work than will be necessary for the twelve (12) hours of work next ensuing. The caps and exploders shall not be kept in the same place as dynamite or other explosives.

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Time of Blasting

Blasting shall be done only at such times as the Consulting Engineer shall approve, and before blasting, the Contractor shall notify all persons having interest therein of his intention to do blasting work. If required, in special cases, ordinary blasting powder in small charges may be used. The Contractor and his sureties shall be solely liable for any damage done during blasting operations.

Lengths of Trench to be Opened

The Borough Engineer shall have the right to limit the length of trench to be left opened in advance of work. The Borough may at anytime be empowered to require the contractor to backfill open trenches over completed lines and, in some instances to backfill open trenches where pipe has yet to be laid if such trench is being left opened for an unreasonable period of time and/or only overnight, if it is deemed necessary by the Borough to be in the best interest of the health, safety and welfare of the public to have the trenches backfilled. Such backfilling shall be performed by the contractor even if the contractor must stop other work in order to backfill the trenches. The contractor shall not again open said trench until he is prepared to complete the structure therein. If the contractor refuses to backfill same the Borough shall be authorized to do so and expenditures for said work shall be the sole responsibility of the contractor. Excavation of all trenches fully completed unless authorized for otherwise shall not exceed twenty (20) feet in advance of pipe laying.

Width and Depth of Trenches

The trenches shall be at a width and depth shown on the construction drawings, and specified herein or as directed by the Engineer in order to provide for the intended grade. Side of trenches shall be kept as vertical as possible. The width of trench shall be taken as the nominal diameter of the pipe at the bell plus an additional one (1) foot on either side. Where sheeting is used this trench width shall be taken as the measured distance between interior faces of sheeting. In no case shall stringers and waling strips be placed in such a way as to interfere with the proper compaction of earth and/or granular material around the pipe.

Where the proposed foundation for the pipe, as determined by the Borough Engineer, is to be situated on a suitable earth material for bedding purposes, the contractor shall excavate the trench along the grade to receive the pipe with the bottom around the bell being excavated in such a way as to insure the pipe's bedding throughout the pipe's length and to provide room for properly making the joint connections. This may be done without the use of a granular or coarse aggregate foundation, except that when P.V.C. pipe is being used a six (6) inches minimum coarse aggregate foundation shall be provided for its entire length. Where trenches have been excavated below proper grade (over excavated) the contractor shall be required to bring the bedding to its

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proper grade by the use of a coarse aggregate foundation unless other suitable material is found to be acceptable by the Engineer. Trenches that have been over-excavated and subsequently filled to proper grade with suitable material shall be properly and thoroughly compacted prior to pipe installation. The adequacy of the tamped trench to receive the pipe will be determined at the direction of the Engineer.

Relocation of Guide and Alignment of Trenches

The Borough reserves the right to change the alignment and grade of the proposed pipe installation as shown on the construction drawings. These changes may be due to the presence of obstructions or other conditions that make the realignment and/or grade adjust necessary, more desirable or advantageous to the Borough. Such changes will not entitle the contractor to additional compensation over the agreed cost for installation. Also the contractor shall not be entitled to claim damages from the Borough as a result of these changes, even if these changes require the contractor to abandon trenches already excavated. These excavated trenches, however, shall be backfilled at the Contractor's expense.

Trench Foundation Preparation

Irregularities and cavities occurring in all earth or rock excavation, at trench bottoms or tunnels, shall be filled to the required elevation with clean earth, or other approved suitable material and firmly compacted before the installation of pipe lines. It should be noted, however, that if in the opinion of the Engineer, the proper grade for pipe installation has been encountered and the soil condition composed of unsuitable foundation material, the bottom of the trench shall be excavated to an additional depth. This additional depth shall be filled with gravel and/or crushed aggregate placed and properly compacted to the proposed grade as directed by the Engineer.

Tunnelling

Only when permission is granted by the Borough shall tunnelling operations be used as a method for pipe installation unless specifically called for in the specifications or noted on the construction drawings.

When tunnelling operations are undertaken sufficient openings shall be provided to allow for the joining of pipe sections, placement of sleeves, and proper backfilling and compaction around the pipe or pipe structure. Tunnels shall make use of timber or steel sheeting and shall be constructed by approved construction standards and are subject to the approval of the Borough and/or the Borough Engineer.

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Removal of Water from Excavation

The contractor is responsible for keeping all excavations free of water during the construction process at his/her sole expense. The contractor shall at all times during construction have ample equipment and means available on the construction site by which he/her may de-water the excavated areas or trenches. The equipment and means shall include but is not limited to pumps, power source, labor, and other tools by which the contractor can bail or otherwise promptly remove and properly dispose of water and/or sewage found in or entering the areas of excavation and/or trenches within the work area. Well points are an acceptable means by which dewatering may be propagated and shall be utilized wherever necessary in order to maintain dry conditions by which pipe installation can continue.

Any methods proposed by the contractor as a means to de-water excavated areas are subject to the approval of the Engineer.

Clearing and Grubbing and Storage of Materials

The contractor shall clear and grub the surface over the proposed trench line in accordance to Section 200 of the Pennsylvania Department of Transportation Specifications including the most recent revisions thereto. Curbs, Sidewalks, gutters, flagstones, and paving material which may be removed including excavation from trenches shall be stored at the locations approved and/or designated by the Engineer. Any curbs, sidewalks, gutters, flagstones, paving material, or suitable trench backfill that become damaged or loss thereof through the careless removal, wasteful storage, neglect, disposal, or use shall be the responsibility of the contractor.

The Contractor shall be responsible for permanently restoring, repaving and replacing any and all areas that are disturbed as a result of excavating trenches for a greater width than is necessary, or excavation outside the limits of work, or disturbing areas through negligence.

Miscellaneous Excavation

The contractor shall do miscellaneous excavating work as may be necessary and directed by the Borough. All miscellaneous excavation shall be subject to the same conditions and requirements specified herein for trench excavation.

Miscellaneous excavation shall include additional excavation for any special structures, outside the scope of trench excavation that may have been omitted from the construction drawings or specifications, where such excavation is performed at the direction of the Borough.

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Condition of Excavation

The contractor shall be solely responsible for the conditions of all his/her excavations including the maintenance thereof. Any slides or cave-ins shall be promptly removed.

Regardless of whether or not the use of bracing or sheeting and shoring has been mandated by the Borough the contractor shall be solely responsible for the condition of his/her excavations. Failure or refusal of the Borough to give orders or direction concerning the size of timber sections, or sheet piling, and/or the methods of placement of piling, sheeting, bracing and shoring shall not relieve the Contractor of any responsibility for the condition of the excavation or obligations under the contract. Any delay that requires keeping an excavation open longer than would otherwise have been necessary, shall not relieve the contractor from his obligation to properly and adequately protect the excavation from slides cave-ins, or slipping. Also the contractor shall still be obligated under the contract to save from harm any injury to persons or personal and real property.

Test Pits

Test pits ordered in advance of work by the Borough shall be made by the Contractor along the line and site of work in order to determine the composition of subsurface materials and/or the exact location of utility lines.

These test pits shall be considered incidental to their work.

BACKFILLING

Backfill in State Highways

Backfilling in all State Highways shall be done in strict accordance with Penn DOT regulations and requirements.

Backfill in Existing Borough Roads and Streets

Backfilling in all existing Borough roads and streets shall be done in strict accordance with the Borough Road and Street Specifications.

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Backfill in Proposed Roads and Streets and Other Areas

The Contractor shall backfill all excavations as rapidly as practicable, following the inspection and approval of work by the Borough.

No part of a pipe line or other structure that needs to be tested, located or measured, shall be filled over or around until required tests and measurements have been made by the Borough and their permission so given to backfill. Any backfilling done without authorization shall be uncovered by the Contractor.

Material

No ashes, putrescible refuse, large stones, or other material of an unsatisfactory character shall be used in backfilling. All suitable excess material from trenches and other excavations on the contract shall be used for backfill.

Method

The space between pipe and side of trench shall be backfilled by hand and thoroughly tamped with a light tamper in layers not to exceed four (4) inches in thickness to a depth of at least one (1) foot above top of pipe.

The method of backfilling above one (1) foot over top of pipe to grade or bottom of paving shall then be filled and compacted by tamping or rolling. The backfill material shall be evenly spread in built up layers not exceeding eight (8) inches before tamping or power rolling, subject to approval of the Engineer. No stone will be allowed in refilling until earth of selected backfill has been placed at least one (1) foot above pipe or structure as directed above. Backfill material placed above earth or selected backfill may contain some rock but in no case shall it exceed more than twenty (20) percent by volume.

Disposal of Material

After completion of backfill, all material not used therein, shall be removed and disposed of by the Contractor in such a manner and at such point or points he may select, subject to the approval of the Borough. All roads, sidewalks, and other places on line of work shall be left free, clean and in good order.

All removal and cleaning-up shall be the responsibility of the Contractor. If the contractor fails to do such work within a reasonable time, after receipt of notice, the work can be performed by the Borough and the cost charged to the Contractor.

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Maintenance of Trenches

The Contractor shall maintain all backfilled excavation in proper conditions as specified. All depressions appearing in backfilling excavation shall be promptly repaired by the Contractor. If the Contractor fails to make repairs within forty eight (48) hours after receipt of written notice from the Borough, the Borough may backfill said depression and its cost charged to the Contractor. In an emergency, the Borough may backfill or protect any dangerous depression wherever necessary without giving previous notice to the Contractor and the cost charged to the Contractor.

Compaction of Backfill

The Contractor shall be required to compact all backfill materials to a minimum of 95% of the materials maximum dry density as determined by A.S.T.M. D-698-64T (STANDARD PROCTOR).

Testing

During or after the backfill operations the Borough may order the Contractor to take soils compactions tests in conformance with A.S.T.M. Standard Procedures or other available methods. If determined by the Borough that any lift does not meet 95% of the maximum dry density the Contractor shall be required to dig test holes, as directed by the Borough at various levels, throughout the backfill at the Contractors expense, so that additional tests may be taken. If these test indicate unsatisfactory compaction the Contractor shall remove all unsatisfactory backfill and recompact same to the required standards at his/her expense.

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SECTION III - SHEETING AND SHORING

General

The Contractor shall support the sides and ends of all excavation and/or structure wherever necessary or directed, with braces, sheeting, shores, or stringers of the quality and character hereinafter specified. All timbering under pinning or sheet piling shall be put in place or driven by men skilled in such work and shall be so arranged that it may be withdrawn as backfilling proceeds, without injury to the structures or property. If, in the opinion of the Borough Engineer, the material furnished for timbering excavations is not of proper quality or sufficient size, or not properly placed to insure the safety of the work or of adjacent structures or property, the Contractor shall, upon notice, procure and place satisfactory timbering or place said timbering in a satisfactory manner. If contractor fails to do so, the work may be ordered stopped until said notice shall have been complied with.

Materials

All timber used for sheeting, bracing, shoring forming, or in foundations, shall be of approved quality and of required dimensions. Except where allowable for temporary work, it shall be sound, straight, and free from cracks, shakes and large or loose knots. Where conditions require it, sheeting shall be tongued and grooved or grooved and splined or steel sheet piling.

Sheeting Left in Place

All timbering in excavation shall be withdrawn as the refilling is being done except where, and to such extent, as the Engineer shall order, in writing, that said timbering be left in place. The Contractor shall cut off any sheeting left in place, wherever ordered, and shall remove the materials cut off without compensation therefore. However said sheeting shall be cut off at least twelve (12) inches below finished grade.

Wherever necessary in quicksand, or in soft ground, or for the protection of any structure or property, sheeting shall be driven without extra compensation to such a depth below the bottom of the trench as may be required or directed by the Engineer.

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SECTION IV - SEWER CONSTRUCTION

General

Before any work is started, Certificates of conformance for all materials shall be submitted to the Borough in triplicate, proving conformance with specifications. All sewer pipe shall be covered by a guarantee certificate furnished by Contractor and signed by an officer of the pipe manufacturer. For clay pipe an additional endorsement of Clay Sewer Pipe Association shall be provided. The minimum sewer pipe size shall be 8 inches in diameter and the minimum lateral Pipe size for residential use shall be 6 inches in diameter, for clay and cast iron pipe and 4 inches for P.V.C. pipe from the main sewer to the curb or right-of-way.

Vitrified Clay Pipe

Vitrified Clay Pipe and extra strength vitrified clay pipe shall be of the bell and spigot type, of first quality and shall be perfectly burned. Without warps, cracks or other imperfections. Pipe may be glazed or unglazed and true to the dimensions and design for full nominal diameter. All vitrified clay pipe shall be extra strength unless approved otherwise meeting the requirements of the current A.S.T.M. Designation 6-700 except where upgraded by the National Clay Pipe Institute Specifications ER 4-67, All pipe must be shipped in unit pallets.

STRENGTH REQUIREMENTS FOR EXTRA STRENGTH VITRIFIED CLAY PIPE

Nominal Inside Diameter (in.)	Ultimate Strength Pounds Per Linear Foot
6	2,000
8	2,000
10	2,000
12	2,250
15	2,750
18	3,300
21	3,850
24	4,400
30	5,000
36	6,000

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Joints shall conform to current A.S.T.M. Designation C-425-66T Type III except that testing will be undertaken as herein specified under "Testing":

All wye branches, bends, tees, fittings and special connections and sections shall be furnished in accordance with these same specifications.

Ductile Iron Pipe

When ductile iron pipe is designated for use all pipe shall be ductile iron, push-on joint or mechanical joint, and shall conform to ASA-A21.51 (AWWA C-151). All pipes shall be coated outside and seal coated inside. All joints shall make use of rubber gaskets to effect a seal. All joints shall be in accordance with ASA Specification A21.11.

Cast Iron Soil Pipe

Every lead calked joint for cast iron hub and spigot soil pipe shall be firmly packed with oakum or hemp and filled with molten lead not less than one (1) inch deep and not to extend more than one eighth (1/8) inch below the rim of the hub. Paint, varnish, or other coatings shall not be permitted on the jointing material until after the joint has been tested and approved. Another acceptable joint is the "Slip-On" joint made by the insertions of a large rubber gasket into the soil pipe hub such as "Dual-Tite", "Multi-Tite" and "Ty-Seal".

PVC Plastic Gravity Sewer Pipe

This specification designates general requirements for unplasticized polyvinyl chloride (PVC) Plastic Gravity Sewer Pipe with integral bell and spigot joints for the conveyance of domestic sewage.

Materials

Pipe and fittings shall meet extra-strength minimum of SDR-35 of the requirements of ASTM specification D3034-74 (4" - 15") or F679 (18" - 48"). Elastomeric gasket, if rubber, should comply with the physical requirements specified in ASTM-F477 or F913.

Pipe

All pipe shall be suitable for use as a gravity sewer conduit. Provisions must be made for contraction and expansion at each joint with a rubber ring. The bell shall consist of an integral wall section with a solid cross-section rubber ring factory assembled, securely locked in place to prevent displacement. Sizes and dimensions shall be as shown in this specification. Standard Lengths shall be 20 ft. and 12.5 ft. plus or minus 1 inch. At manufacturer's option, random lengths of not more than 15% of total footage may be shipped in lieu of standard lengths.

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Fittings

All fittings and accessories shall be as manufactured and furnished by the pipe supplier or approved equal and have bell and/or spigot configurations compatible with that of the pipe.

Physical and Chemical Requirements

Pipe shall be designed to pass all tests at 73⁰ F (^{+or-} 3⁰ C)

Deflection

Deflections due to earth loadings on PVC sewer pipe shall be limited to a maximum of 5%, as calculated by the Spangler equation (Note: Refer to the 1970 edition of the American Society of Civil Engineers Manual of Practice No. 37, Chapter 9, Section E. Subsection 1).

Pipe Stiffness

Minimum pipe stiffness: (F/ y) at 5% deflection shall be 46 psi for all sizes when tested in accordance with ASTM Method of Test D2412, External Loading Properties of Plastic Pipe by Parallel-Plate Loading.

Joint Tightness

Two sections of pipe shall be assembled in accordance with the manufacturer's recommendation. Joint shall be tested in accordance with ASTM D3212, "Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Seals."

Flattening

There shall be no evidence of splitting, cracking or breaking when the pipe is tested as follows:

Flatten specimen of pipe, six inches long between parallel plates in a suitable press until the distance between the plates is forty percent of the outside diameter of the pipe. The rate of loading shall be uniform and such that the compression is completed within two to five minutes.

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Drop Impact Test

Pipe (6" long section) shall be subjected to impact from a free falling tup (20-lb. Tup A) in accordance with ASTM Method of Test D2444. No shattering or splitting (denting is not a failure) shall be evident when the following energy is impacted.

Nominal size (inches)	4	6	8	10	12	15
Ft. lbs.	150	210	210	220	220	220

Installation

PVC piping installations should be made in accordance with ASTM D-2321, "Underground Installation of Flexible Thermoplastic Sewer Pipe", and with the following supplementary recommendations.

- (a) The particle size of Class I materials should be 1/4 inch to 1 1/2 inch.
- (b) Class I and Class II backfill materials as listed in ASTM-D-2321 are to be normally used with PVC sewer pipe. Class III materials are permissible upon consent of the Engineer. Class IV and Class V materials are not recommended for bedding, haunching or initial backfill.
- (c) Where high water tables or flowing water is, or is likely to be present, it is recommended that Class I materials should be used for bedding, haunching and initial backfill. If water is present, the trench should be dewatered during construction.
- (d) When compacting the soil around the pipe, care should be employed to only compact that on the sides.
- (e) Joint assemblies shall be made in accordance with the manufacturer's recommended procedure.
- (f) SDR-35 PVC/P shall not exceed a depth of 15 feet
SDR-26, C-900 or Ductile Iron Pipe may be used at depths of 15 feet to 20 feet
All Pipe in excess of 20 feet in depth shall be Ductile Iron Pipe

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ASSEMBLY & SPIGOT DETAILS

Pipe Sizes (inches)	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>
O.D.	4.215 ^{+/-} .007	6.275 ^{+/-} .009	8.400 ^{+/-} .010	10.500 ^{+/-} .013	12.500 ^{+/-} .016
D-8	4.240 ^{+/-} .010	6.308 ^{+/-} .013	8.440 ^{+/-} .020	10.548 ^{+/-} .024	12.554 ^{+/-} .024
D-5	4.250 ^{+/-} .020	6.318 ^{+/-} .023	8.460 ^{+/-} .040	10.570 ^{+/-} .047	12.575 ^{+/-} .047
T	0.125 ^{+/-} .020	0.180 ^{+/-} .028	0.240 ^{+/-} .031	0.300 ^{+/-} .039	0.360 ^{+/-} .043
C	2.50	3.50	4.50	5.00	5.25
N min.	2.598	3.622	4.646	5.197	5.472

SIZE, DIMENSIONS AND TOLERANCES (inches)

Outside Diameter

Nom. <u>Size</u>	<u>Average</u>	<u>Tolerance</u>	<u>Min. Wall Thickness</u>
4	4.215	^{+/-} 0.007	0.125
6	6.275	^{+/-} 0.009	0.180
8	8.400	^{+/-} 0.010	0.240
10	10.500	^{+/-} 0.013	0.300
12	12.500	^{+/-} 0.016	0.360
15	15.300	^{+/-} 0.021	0.440

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Steel Casing Pipe

Shall have a minimum diameter as shown on drawings or specified herein and have a minimum yield strength of 35,000 p.s.i.. Pipe shall be uncoated and of the following minimum thickness:

<u>Diameter</u>	<u>Minimum Thickness</u>
8	.322
10	.365
12	.375

Joints shall be of the butt and weld type construction suitable for jacking.

Brick

Sewer Brick shall conform to the requirements of AASHTO Designation M91 for Grade SS sewer bricks.

Castings

Ferrous castings shall be manufactured of uniform quality, free from blowholes, porosity, hard spots, shrinkage distortion or other defects. Also castings shall be smooth and well cleaned by shotblasting. Materials used in the manufacturer of castings shall conform to the requirements of ASTM A48-76, Class 30 or better, for Gray Iron or ASTM A36-77 for Ductile Iron. The castings shall be coated with asphalt paint which shall result in a smooth casting tough and tenacious when cold and not tacking or not brittle. All manholes frames and covers shall be watertight unless written authorization is receive from the Borough approving and alternative. The contractor shall submit details of the watertight frames and covers he/she proposes to use to the Engineer for approval prior to their installation. All covers shall have cast in raised letters not less than 2" in height which state "AVONDALE SANITARY SEWER"

Concrete

All concrete shall be ready-mixed concrete and shall conform in every respect with the latest requirements for materials, quality, mixing, delivery and tests as set forth in the Standard Specifications for Ready-Mixed Concrete, Serial Designation C-94, as adopted by the A.S.T.M., and the General Specifications herein.

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The following table gives the general specification for the quality of concrete to be used in all classes of sewer construction. The contractor shall assume responsibility for the manufacturer's design of the concrete mixture and shall furnish to the manufacturer every item listed for the class of construction required.

Class of Construction	Minimum Compressive Strength At 28 days	Size of Coarse Aggregate Cu. Yd.	Minimum Cement Content Lbs. Per Cu. Yd.	Percent Air	Air Entraining Slump On the Job	
					Max.	Min.
	3500 psi	1-inch	625	3 to 5	4"	2"

The basis for final acceptance of concrete shall be the specified minimum allowable compressive strength at 28 days in terms of tests of standard specimens cured under standard laboratory conditions for moist curing as determined on samples taken from the transportation unit at the point of discharge.

The Contractor shall provide the Engineer with a carbon copy of each original delivery ticket accompanying loads of ready-mixed concrete for each day's pour. The manufacturer shall certify on each delivery ticket that the proportions selected will produce concrete of the quality specified and that the mix has the desired air content and slump.

The Contractor shall also furnish a statement to the Engineer giving the proportions by weight (dry) of cement and of fine and coarse aggregates used in the manufacture of each class of concrete.

All rejected concrete shall be promptly removed and replaced at the expense of the Contractor.

Steel Reinforcement

Steel Reinforcement shall conform to A.S.T.M. Specifications A-15, A-16, A-160 and A-305.

Welded Wire Fabric

All Welded Wire Fabric shall conform to A.S.T.M. Specifications A-82 and A-185.

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Testing of Material

During the progress of the work, compression test specimens may be required by the Engineer. All tests shall be made in accordance with A.S.T.M. Standards C-31 and C-39.

The Contractor shall assume all cost of all preliminary and field tests on the concrete as well as any corrective measures.

Forms

Forms shall conform to the shape, lines and dimensions of the members as called for on the plans, and shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape. The Engineer may require that only wooden forms be used on certain structures.

Removal of Forms

Depending on the method of curing the used forms shall not be removed within forty-eight (48) hours after the concrete has been placed unless approved by the Engineer. No rubbing to correct irregularities will be permitted until the full curing period has elapsed.

Finishing of Concrete

After removal of forms and once the curing period has elapsed all unsightly ridges or lips shall be removed and undesirable local bulging on the surfaces shall be remedied. All voids and holes left by the removal of tie rods shall be reamed and neatly filled with dry-patching mortar (pre-shrunk) mixed with one (1) part cement and two (2) parts fine aggregate or as directed by the Engineer. The cement used in the mortar shall be a blend of Portland Cement and White Portland Cement properly proportioned so that the final color of the cured mortar will be the same as the color of the surrounding concrete. Defective concrete shall be repaired by removing or cutting out the unsatisfactory material and placing new concrete which shall be formed with keys, dovetails or anchors to attached it securely in place as directed by the Engineer. Concrete for patching shall be drier than the usual mixture and shall be thoroughly tamped into place. All unformed surfaces of concrete that are not to be covered by additional concrete or backfill, shall have a wood float finish without additional mortar.

Curing

All concrete shall be kept damp for a period of at least three (3) days. Moisture-retaining covers such as burlap, cotton or jute mats are to be used. The covers shall be kept constantly moist enough to provide a film of moisture on the concrete surface. Curing by any other standard methods shall be subject to the approval of the Engineer.

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Cold Weather Requirements

Adequate equipment shall be provided for heating of concrete materials and protecting the concrete during freezing or near-freezing weather. No frozen materials or materials containing ice shall be used.

All concrete materials and all reinforcement, forms, fillers and earth with which the concrete is to come in contact shall be free from frost. Whenever the temperature of the surrounding air is below 40⁰F, all concrete placed in the forms shall have a temperature of between 70⁰F, and 80⁰F, and adequate means shall be provided for maintaining a temperature of not less than 70⁰F for three (3) days or 50⁰ F for five (5) days except that when high-early-strength concrete is used the temperature shall be maintained at not less than 70⁰F, for two (2) days or 50⁰F, for three (3) days or for as much more time as is necessary to insure proper curing of the concrete.

The housing, covering or other protection used in connection with curing shall remain in place and intact at least twenty four (24) hours after the artificial heating is discontinued. No dependence shall be placed on salt or other chemicals for the prevention of freezing.

Connections

Connections shall be made by the Contractor at such a time and in such a manner as the Borough may direct. Any customers to be affected by the plugging of mains shall be notified by the Contractor and all plugs will be placed by the Contractor under the direction of the Borough representative. Connections shall be completed as quickly as possible to keep inconvenience at a minimum. If deemed necessary by the Borough, connections will be made at night by the Contractor. Any existing facilities that must be removed to make connections shall be removed by the Contractor.

Crushed Aggregate or Granular Backfill

Where specified crushed aggregate backfill shall conform to Pennsylvania Department of Transportation Specifications including latest revisions for AASHTO Number 57 modified stone. Formerly acceptable 2B modified as specified in Penn DOT form 408, Granular backfill when specified shall consist of 226 aggregate as specified in Penn DOT Form 408 including latest revisions.

Mortar

All mortar specified herein shall consist of one (1) part cement to two (2) parts sand or fine aggregate. One volume of sand shall be one cubic foot; one volume of cement shall be ninety four (94) pounds.

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Portland Cement

All portland cement shall conform to A.S.T.M. C-150 Type I

Reinforcement

All reinforcing base shall be free from rust or other material that will inhibit the bonding process with concrete. Placement, splicing, tying, bending and protection of reinforcing bars shall be in accordance to the Pennsylvania Department of Transportation 1994 Specifications including latest revisions, for like materials.

Construction Joints

All construction joints necessary that are not indicated on the construction plans shall be constructed and formed as to least impair the strength of the structure. Where a joint is to be made, the abutting concrete surfaces shall be thoroughly cleaned. Also all vertical joints shall be thoroughly wetted and slushed with a coat of neat cement grout immediately preceding the placement of the new concrete.

Watertight Joints

Whenever new concrete surfaces abut old concrete surfaces, the contractor shall provide a water-tight joint. The joint sealant shall be an Igas joint sealant. The joint shall be primed with Igas primer and the joint shall be made in strict accordance with the manufacturer's recommendations.

Sand

Sand shall conform to the requirements of A.S.T.M. C-144.

Stone or Gravel Foundations

Stone or Gravel Foundation shall consist of local crushed stone or "run of pit" gravel that shall be clean, sharp, trap rock, and free of loam, organic matter, soft or flaky materials or other deleterious material. Prior to the stone or gravel being brought on the site, the size, type and source of stone and gravel must be approved by the Engineer. Maximum permissible stone size for foundations shall be No. 2 stone, approximately 3/4", as specified by Penn DOT Pub.408. Under the Penn DOT 1994 Specifications AASHTO number 67 stone shall be considered acceptable.

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Water

Water used in mixing or curing of Portland Cement Concrete shall be reasonably clean, free from vegetable matter, oil, acid, alkali, sugar, or other substance injurious to the finished product.

Manholes and Manhole Construction

Manholes shall be constructed of concrete channels and bottoms, brick or concrete walls, galvanized wrought iron or aluminum alloy steps and/or cast iron frames and covers as indicated. All manholes shall be watertight.

Manhole Construction shall conform to design of applicable standard details made part of these specifications and other details set forth herein. In constructing the base, a slab of concrete shall first be poured. After slab has set the walls forming the sides of manhole shall be constructed. The base shall then be completed by constructing channels, using formwork for straight or curved channels, and filling in the space around forms with concrete up to a point equal to two-thirds of the diameter of the largest pipe passing thru the manhole. The top surface shall be neatly trowelled-off and given a slight slope from sides toward center.

The precast concrete sections shall have a four (4), five (5) or six (6) foot internal diameter, with a two (2) foot diameter at the top of the cone section. The joints shall be Manufacturer's Standard "Pipeline" tight, with embeco type mortar grout joint with approved epoxy additive. The risers and cone sections shall be adequately reinforced in accordance with A.S.T.M. C-478 specifications.

All brick wall manholes shall have both inner and outer walls parged.

All concrete manholes shall be bitumastic coated in accordance with A.S.T.M. 450-78 specifications.

Pipe Installation

All pipe installed shall be accomplished only in the presence of the Engineer or his authorized representative. Adequate and suitable equipment, tools and materials for safe and convenient handling of pipes and pipe installation shall be used.

Prior to being lowered into the trench, each pipe and fitting shall be carefully inspected and those not meeting specifications or are otherwise defective shall be rejected and removed from the project. Pipes shall be thoroughly cleaned before they are laid and shall be kept clean until acceptance of completed work. Open ends shall be provided with a stopper carefully fitted so as to keep dirt and other substances from entering the main. Unless approved otherwise by the Borough a stopper shall be kept in the end of the line when work is not in progress.

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Pipe shall be laid so that when completed, the interior bore will conform accurately to grades and alignment indicated by the construction drawings or as directed by the Engineer.

Before joints are made, each pipe shall be well bedded and no pipe shall be brought into position until the preceding length has been thoroughly secured in place. Coupling or bell holes shall be dug sufficiently large to insure the making of a proper joint. All joints shall be made in strict conformance with the manufacturer's recommendation.

The excavation into which the pipe is being laid shall be kept free from water and no joints shall be made under water. Water shall not be allowed to rise in excavation until joint is complete. Care shall be used to secure watertightness and to prevent damage to joints during backfilling. All pipe joints shall be watertight within allowances established by these specifications.

No pipe shall be placed upon a foundation into which frost has penetrated, nor at any time when the Borough shall deem that there is a danger of the formation of ice or penetration of frost at the bottom of excavation. Where the foundation is unstable or consists of rock, stone or gravel foundation, shall be placed and tamped to form an acceptable bed for the pipe at the depths and locations directed by the Engineer.

The lateral Pipe shall be installed in a trench separate from the water service and the two lines shall have a minimum horizontal separation of 10 feet and the pipe shall be of cast iron or P.V.C. SDR-35 to the point where it connects to the public sewer, laid on a grade of 1/4" per ft. In special cases 1/8" per ft. will be allowed. Where the lateral pipe must be installed in the same trench as the water service, the two lines shall be separated by a bench of undisturbed earth. Water and sewer connection lines shall have a horizontal separation of no less than three (3) feet and the top of the sewer shall be at least 18 inches below the invert of the water main. The sewer pipe material shall be cast iron or P.V.C. SDR-35 to the point of connection to the public sewer and shall be installed with approved joints which shall remain watertight and rootproof.

Where conditions prevent the above vertical separation or when the water service must cross beneath a Lateral Pipe, the bottom of the Lateral Pipe shall be at least eighteen (18) inches above the top of the water service line and the Lateral Pipe shall be of cast iron pressure pipe with push-on or mechanical joints, at least ten (10) feet on either side of the crossing.

When a Lateral Pipe is installed on filled or unstable ground, it shall be push-on or mechanical joint cast iron pressure pipe.

Every joint between cast iron piping and vitrified clay piping shall be made either of hot poured bitumastic compound or by a preformed elastomeric ring. This ring shall, after ramming, completely fill the annular space between the cast iron spigot and the vitrified clay hub.

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SECTION V - RESTORATION AND CLEAN UP

GENERAL

The contractor shall maintain the surface of all trenches and shall repair all depressions, settlements, washouts or other potential hazards, as determined by the engineer, until such time as the contractor is notified by the engineer in writing that the trench surfaces are satisfactory for permanent repaving or restoration.

The contractor shall replace all guiderails or fences, sidewalks, curbs and gutters, driveways, or other items as directed by the engineer, which have been damaged or removed in the course of the work. They shall conform in size and shape, and be equal in quality of material and workmanship to the original structures prior to being disturbed.

All materials specified in this Section shall be as described in the specifications of the Pennsylvania Department of Transportation (Penn DOT) Pub. 408.

Maintenance, temporary and permanent repaving, and restoration of trenches in State Highways and Municipal Roads shall be in accordance with the specifications of Penn DOT Pub. 408 and 67 PA Code, Chapter 459, latest revisions.

TEMPORARY REPAVING

In streets, highways, alleys, driveways, or sidewalks, after the trench has been backfilled and properly compacted to the depths below the street or pavement grade hereinafter described, temporary repaving shall be installed as follows:

Sidewalks

Trenches shall be temporarily restored by placing and compacting eight (8) inches of 2A Subbase aggregate.

Paved and Unpaved Shoulders in State Highways

Trenches shall be temporarily restored by placing and compacting eighteen (18) inches of 2A Subbase aggregate in layers not to exceed four (4) inches. See Plans for Details.

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State Highways

Temporary restoration of trenches on flexible and concrete base state highways shall be in accordance with the specifications of Penn DOT Pub. 408 and 67 PA Code, Chapter 459, latest revisions.

Unpaved Shoulders

Trenches shall be temporarily restored by placing and compacting eight (8) inches of 2A Subbase aggregate, and as shown on the Plans where applicable.

Municipal Paved Streets

Trenches shall be temporarily restored by placing and compacting twelve (12) inches of 2A Subbase aggregate followed by 2" Hot laid asphalt. Cold patch shall not be used without approval of the Engineer.

PERMANENT REPAVING

Sidewalks

Unless otherwise ordered by the engineer, or required by local regulations, the contractor shall remove or compact the top four (4) inches of aggregate and a concrete sidewalk four (4) inches thick shall be constructed to replace sidewalk removed as a result of the work. Sidewalk width shall be the same as the width of sidewalk replaced unless shown otherwise on the drawings. All concrete shall conform to the specification, shall be air entrained and the total air content shall be six (6%) percent ($\pm 1\%$) by volume. The air-entraining admixture shall conform to ASTM C 260.

Unpaved Shoulders in State Highways

Permanent restoration of unpaved shoulders in State Highways shall be in accordance with the specifications of Penn DOT Pub. 408 and 67 PA Code, Chapter 459, latest revisions.

Paved Shoulder in State Highway

Permanent restoration of paved shoulders in State Highways shall be in accordance with the specifications of Penn DOT Pub. 408 and 67 PA Code, Chapter 459, latest revisions and shall be made with materials equal to or greater than the quality and thickness of those existing prior to start of construction.

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State Highways - Plain or Reinforced Cement Concrete Pavement

Prior to replacement of the base, one (1) foot from each edge of the trench shall be sawed or cut, in a neat straight line, to a depth of at least three (3) inches, and the detached material shall be removed. Drilling shall not be permitted where sawing or cutting is required. The replacement base shall consist of high early strength concrete equal in depth to the original concrete pavement. On existing reinforced cement concrete pavements, reinforcing steel and expansion tie bolts shall be placed in accordance with Roadway Construction Detail RC-26. The surface shall be cured in accordance with Section 501.3(n), Pub. 408. After surface corrections have been completed and just before the concrete becomes non-plastic, the surface shall be given a textured finish in accordance with Section 501.3(m)4, Pub. 408.

If the trench excavation exceeds four (4) ft. in width, #6 reinforcing bars placed at six (6) inch center to center with two (2) inch clear on each end and three (3) inch clear on the bottom must be installed in the concrete base course.

State Highways - Plain or Reinforced Cement Concrete Pavement with Bituminous Overlay

Prior to replacement of the base, one (1) foot from each edge of the trench shall be sawed and the detached material shall be removed. Drilling shall not be permitted. The base shall be replaced with a minimum of eight (8) inches of high early strength concrete to the elevation of the existing bituminous surface course(s). The high early strength concrete shall then be cured in accordance, with Section 501.3(n), Form 408. If a trench exceeds four (4) feet in width, No. 6 reinforcing bars shall be installed in the concrete base, placed at six (6) inch centers measured longitudinally in the direction of the trench, with a two (2) inch clearance on each end and a three (3) inch clearance on the bottom. Following the concrete curing, a tack coat of E-1 bituminous material or SR tack coat shall be applied in accordance with Section 460, Pub. 408. After the tack coat has cured, the bituminous binder and/or wearing course shall be placed to conform to the existing type of road binder and wearing courses.

State Highways - Flexible Base Pavement

Base and surface restoration of flexible base pavements shall be done in accordance with one of the two methods listed below, as specified in the permit.

High Early Strength Concrete Restoration Method

Prior to replacement of the base course, one (1) foot from each edge of the trench

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shall be sawed or cut, in a neat straight line, to the bottom elevation of the existing base course, and the detached material shall be removed. Drilling shall not be permitted. The base course shall be replaced with a minimum of eight (8) inches of high early strength concrete to the elevation of the existing crushed aggregate base course. The high early strength concrete shall then be cured in accordance with Section 501.3(n),

Form 408. If a trench exceeds four (4) feet in width, No. 6 reinforcing bars shall be installed in the concrete base course, placed at six (6) inch centers measured longitudinally in the direction of the trench, with a two (2) inch clearance on each end and a three (3) inch clearance on the bottom. Following the concrete curing, a tack coat of E-1 bituminous material or SR tack coat shall be applied in accordance with Section 460, Pub. 408. After the tack coat has cured, the bituminous binder and/or wearing course shall be placed so as to conform to the existing type of road binder and wearing courses.

90 Day Temporary Restoration Method

Prior to making the permanent restoration, one (1) foot from each edge of the trench shall be sawed or cut, in a neat straight line, to the bottom elevation of the existing base course, and the detached material shall be removed. Drilling shall not be permitted. Temporary restoration shall be made and kept in place for a minimum of 90 days. The base material shall consist of either a minimum eight (8) inch stone base, a minimum five (5) inch aggregate bituminous base, a minimum five (5) inch aggregate lime pozzolan or a minimum (4) inch bituminous concrete, with a surface of two (2) inch bituminous material. Where the existing pavement structure includes a course of subbase material, it shall be replaced to a depth equal to the existing course depth with material meeting the requirements of Section 350, Pub. 408. After the minimum 90 day period, but before 210 days, the temporary restoration shall be removed and permanent restoration made. The permanent base course shall consist of bituminous concrete meeting the requirements of Section 305, Pub. 408 and having a minimum depth of five (5) inches or a depth equal to the existing base course, whichever is greater. The permanent binder and surface course shall be placed in accordance with the depths of the existing bituminous surface, but in no case shall the HMA binder course be less than one and one-half (1-1/2) inches and the HMA wearing course be less than one (1) inch.

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State Highways - Additional Restoration

All disturbed portions of the highway, including all appurtenances and structures such as guide rail or drain pipes, shall be restored to a condition equal to that which existed before the start of any work authorized by the contract. If the contractor opens the highway pavement, whether to install a new facility or to modify an existing facility or for any other reason, and the wearing course is less than five (5) years old, the contractor shall, in addition to the minimum restoration conditions outlined above, overlay the highway pavement in accordance with the following conditions:

When a longitudinal opening longer than ten (10) feet and wider than three (3) feet is made in the highway pavement, the contractor shall overlay the traffic lane(s) in which the opening was made, for the entire length of highway that was opened.

When two (2) or more transverse trench openings are made in the highway pavement less than 100 feet apart, the contractor shall overlay all traffic lanes in which the openings were made, for the entire length of highway between such openings.

Regardless of the age of the wearing course, when both longitudinal and transverse trench openings are made in the highway pavement, the Department of Transportation may require the contractor to overlay all traffic lanes in which such openings were made, for the entire length of highway that was opened, if the Department of Transportation determines that the present serviceability index of the highway has been impaired by the openings.

Unpaved Shoulders

Permanent restoration of unpaved municipal streets and shoulders shall be a minimum of eight (8) inches thick of PennDOT 2A Subbase crushed aggregate, well rolled and compacted.

Municipal Streets - Rigid Concrete Pavement

Permanent restoration of municipal concrete streets shall be the same as described in paragraph above under State Highways High Early Strength Concrete Restoration Method

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Municipal Streets - Flexible Base Pavement

The temporary restoration shall be removed to the depths required and the existing paving shall be cut, sawed, or removed in such a manner as to provide a clean cut in the cartway surface and base without undue disturbance to subgrade or fragmentation of surrounding areas for a distance of twelve (12) inches on both sides of trench area. Prior to the placement of permanent materials, the area shall be thoroughly rolled and compacted. Permanent restoration shall consist of a six (6) inch thick HMA bituminous concrete base course (Section 305 -Form 408), and a two (2) inch thick HMA bituminous concrete wearing course. See Plan Details.

Bituminous Sealer

When the wearing course is placed adjacent to curbs to form a bituminous gutter, upon existing bituminous material, or adjacent to structures, utilities, etc., it shall be sealed with AC-20 for a distance of twelve inches (12") from curbs, structures, utilities, etc., or six inches (6") on both sides of a bituminous joint in order to prevent accelerated deterioration caused by natural elements. On concrete surfaces, all joints between existing and new construction shall be sealed with AC-20.

TOPSOIL, SEEDING AND LANDSCAPING

Temporary Seeding

All areas shown on the DRAWINGS, all disturbed areas where construction activity has or will cease, and where otherwise directed by the ENGINEER shall be seeded with the following, according to season, at a rate of one (1) lb. per one thousand (1,000) sq. ft.

- a. Annual Rye grass - March 1 to June 15
- b. Sudangrass- May 15 to August 15
- c. Winter rye- September 15 to October 15

All seed shall be labeled, dated and of quality consistent with paragraph 10:04.2.

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Permanent Seeding and Landscaping

Whenever the surface of the ground has been disturbed in the course of work under this contract, the final grade surface shall be stabilized by seeding, sodding, planting or other methods approved by the engineer to prevent erosion.

A minimum of four (4) inches of topsoil shall be spread over areas to be seeded. Topsoil shall be free of stones, sticks, waste material and similar debris. Frozen ground shall not be spread as topsoil, and topsoil shall not be spread on frozen ground. Topsoil shall be spread only when the contractor is prepared to follow up with fertilizing and seeding. Fine grading to finished lines, grades and contours, fertilizing and seeding shall be done at such times as approved by the engineer.

After spreading and raking the topsoil, the following shall be spread and worked in to depths of three (3) to four (4) inches:

- a. Hydrated lime or Agricultural ground limestone -90 to 100 lbs. per 1000 sq. ft.
- b. 0-20-20 Fertilizer - 50 to 75 lbs. per 1000 sq. ft.

Seeding shall be done during periods from April 15th to June 1st and from August 15th to October 1st, unless otherwise directed by the ENGINEER.

Grass seed shall not be planted after a heavy rain or watering and not sooner than one (1) week after applying lime and fertilizer, as described above.

Immediately before seeding, the following shall be spread and worked in to a depth of one (1) inch:

- a. 10-10-10 Fertilizer - 10 to 12 lbs. per 1000 sq. ft.

All seed used shall be labeled in accordance with the U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act in effect at the time of purchase, which shall be later than the date of this CONTRACT. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable. Seed shall not be more than two (2) years old and shall be re-tested for germination rate no more than ninety (90) days prior to use.

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Seeding and planting shall be as follows:

a. Sloped Areas Less Than 3H:1V

<u>Seed</u>	<u>Parts</u>	<u>Purity Percentage</u>	<u>Spreading Rate/1000 SF</u>
Kentucky 31 Fescue	100	100	8 lbs.
Or			
Kentucky blue grass	100	100	2.5 lbs.

b. Sloped Areas Greater 3H:1V

<u>Seed</u>	<u>Purity Parts</u>	<u>Percentage</u>
Penngift Crown Vetch	25	99
Kentucky tall fescue	75	95

Spreading rate - 3.0 lbs. per 1,000 sq. ft.

The contractor shall maintain the seeded and planted areas until all of the work under the contract has been completed and accepted by the engineer and the owner.

The maintenance shall consist of refilling rain-washed gullies, reseeding, replanting, mowing, and watering during periods of drought and removal of large and obnoxious weeds, all as directed by the engineer.

Mulching

After temporary or permanent seeding, the contractor shall furnish, place, anchor and maintain mulch at the locations shown on the drawings, and as directed by the ENGINEER. Mulching material shall be either hay or straw, or a combination of both, free from any seed-bearing stalks and roots of noxious weeds. Mulch shall be placed within forty-eight (48) hours after seeding and shall be applied at a rate of seventy-five (75) to one hundred (100) pounds per one thousand (1,000) square feet.

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Erosion Control Blanket

Erosion Control Blanket shall be placed as shown on the drawings or as otherwise directed by the engineer. Erosion control blanket shall be a machine-produced mat of 100% agricultural straw. The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with lightweight photodegradable polypropylene netting having an approximate 1/2 inch (1.3 cm) x 1/2 inch (1.3 cm) mesh. The blanket shall be sewn together on 1.5 inch (3.8 cm) centers with degradable thread.

It shall be furnished in rolls not less than forty-eight (48) inches wide. After soil areas have been prepared and seeded, the erosion control blanket shall be unrolled parallel to the direction of flow without stretching and be anchored as described below with No. 8 gage steel wire staples, bent U-shaped with a throat width of one (1) to two (2) inches, and with an effective driving depth of not less than six (6) inches. The erosion control blanket shall be spread evenly and smoothly and be in contact with the soil or mulch at all points. The up channel end of each roll or section shall be buried a minimum depth of six (6) inches in a vertical slot, which shall be backfilled and tamped, and shall be overlapped twelve (12) inches by any subsequent up channel sections.

Where two or more widths of erosion control blanket are placed side by side, the upper mat shall overlap the lower by not less than four (4) inches, and shall be stapled along the overlap at three (3) foot intervals. The unlapped edges of all matting shall be stapled at six (6) foot intervals.

The contractor shall maintain the erosion control blanket until all the work has been completed and accepted by the engineer and the owner.

MAINTENANCE AND RESTORATION

In paved and unpaved highways, streets, alleys, sidewalks and shoulders, temporary repaving shall be maintained for a minimum of ninety (90) days, or as otherwise directed by the engineer, before permanent paving is installed. During this period, any sinking or other deterioration of the trench shall be repaired in accordance with the requirements of the specifications. No dirt or loose material will be allowed on the trench.

Along private rights-of-way, trenches shall be maintained for a minimum of ninety (90) days after backfilling, or as otherwise directed by the engineer before permanent restoration is made. During this period, any sinking of the trench shall be repaired by constructing to grade with clean, approved fill material.

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Trenches shall be restored to the condition existing prior to start of work; and shall include, but not be limited to, reseeding or re-sodding lawns, replacing trees and shrubbery damaged by the contractor, and replacement of curbing, driveways, walkways, guide rails or fences.

The contractor shall repair any sinking or defective trench, in a manner approved by the engineer, occurring during the maintenance period as required by the Agreement between the contractor and borough.

Clean-Up

During the progress of the work and until the completion and final acceptance thereof, all pipe lines and their appurtenances shall be kept thoroughly clean throughout. Obstructions or deposits, at any time discovered, shall be removed at once by the Contractor without extra compensation. After completion of work and prior to testing of pipe lines, all pipe lines and their appurtenances shall be left clean, free, and in good order.

On or before the completion of the work, the Contractor shall, without charge therefore, tear down and remove all trailers, temporary buildings and other structures built by him, shall remove all rubbish and debris of all kinds from any grounds which he has occupied and shall leave the line of the work in a clean and neat condition.

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SECTION VI – TESTING SEWERS

General

The Borough may order tests to be made on all mains built under this contract. The Contractor shall cooperate and furnish all equipment, labor and assistance necessary to perform the tests as specified herein and as directed by the Borough. Before being tested mains shall be backfilled to a safe level and carefully plugged. Where directed pipe lines shall be thoroughly flushed to remove all foreign material which may have entered the mains during construction. All water for flushing and testing shall be furnished by the Contractor.

The testing of newly constructed lines is considered incidental to the construction of the project and as such no additional compensation will be made by the Borough to the Contractor for the testing of pipelines.

Gravity Sewers

Upon completion and after backfill, the Borough may conduct a MIRROR TEST. The test will be accomplished by flashing a light from one end upon a mirror on the other end to check for poor alignment, misplaced pipe or other defects.

Sewers below the ground water line shall be subject to being tested by the INFILTRATION METHOD. This test shall be made by measuring the amount of water infiltrating into the pipe. Measurement will be made by means of a weir installed at the lower end.

Sewers above ground water line shall be subject to being tested by the EXFILTRATION METHOD. This test shall be made by plugging the lower manhole; filling the pipe with water and measuring the quantity of water drop at the manhole. Water shall be maintained at levels directed by the Borough for a period of at least twenty (20) hours prior to test.

The allowable infiltration or exfiltration for sewers shall not exceed one-hundred (100) gal. per inch of diameter per mile per day for any section of the system. The exfiltration or infiltration test shall be performed with a minimum positive head of two feet.

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Sewers either above or below the ground waterline are subject to testing by "Low pressure Air Testing". The minimum requirements for air testing are as follows:

1. All openings shall be plugged for the pipe section being tested.
2. The pipe shall be subjected to air pressure of one half (0.5) psi Per foot of depth of sewer provided that the minimum permissible pressure shall be four (4.0) psi.
3. The test pressure shall be held for a minimum duration of (ten) 10 Minutes and that the maximum permissible pressure loss shall be five (5.0) percent.

The Contractor shall repair all defects or leaks of any nature on mains failing to meet the above tests and shall retest same until acceptable to the Borough.

Deflection Test

All flexible composite pipe shall be tested for deflection if in the Borough Engineer's evaluation it is found necessary. The installed pipe shall not be tested before 30 days following final completion of backfill.

All pipe that exceeds a deflection of 5 percent shall be removed and replaced at the cost of the contractor.

The deflection tests that are to be run shall be performed without pulling devices of any sort. Rigid bells or mandrels if used shall have diameters equal to 95 percent of the inside diameter of the pipe being tested.

Manhole Testing

All manholes shall be tested for exfiltration by water or vacuum testing. In the water test, exfiltration shall not exceed a rate of 0.019 gallons a day per inch of manhole diameter per vertical foot of manhole during a continuous four-hour test period. The vacuum testing shall be in accordance with the testing equipment manufacturers written instructions and test results compared to the manufacturers published vacuum test tables.

TV Inspection by Borough

In addition to testing for water leakage by the Contractor, the Borough reserves the right to inspect the inside of all sewer lines by the T.V. camera method.

All defects found shall be repaired and/or replaced by the contractor at his expense, to the full satisfaction of the Borough.

08/03/10

SECTION VII - CONFORMANCE TO REQUIRED RULES & REGULATIONS

Prior to proceeding with any work the Contractor (Builder, Developer, etc.) shall secure the necessary permits from all of the governing regulatory agencies and municipal bodies.

The contractor prior to proceeding with any work shall provide 3 VHS Video Tape copies of the project area and any areas that it may effect to the Borough of Avondale for there review and record.

The contractor upon completion of this project shall provide 3 additional VHS Video Tape copies of the completed project area along with any areas disturbed by their construction to the Borough of Avondale.

During the execution of the work the Contractor (Builder, Developer, etc.) shall comply with all applicable rules and regulations of the governing regulatory agencies and municipal bodies including, but not limited to OSHA, DEP, EPA, Penn DOT and the Municipality.

In accordance with the provisions of Pennsylvania Act 287, of 1974 as amended by PA Act 181 of 2006, 73 P.S. 176 et, seq., which specifies the contractor's responsibilities in regard to public health and safety during excavation and demolition operations in areas of underground utilities, the Contractor shall be responsible for verifying the location of all existing underground utility installations within the project area. Owners of the respective utilities involved shall be notified by the Contractor at least 72 hours in advance of the commencement of any excavation by the Contractor in the project area.

08/03/10

SECTION VIII – BUILDING SEWERS

A. Pipe Requirements. Piping installations from the sanitary sewer lateral to the building drain shall be constructed of any one, or approved combination of, the following materials:

1. Extra Heavy Cast iron Soil Pipe conforming to American Standard Assoc. and ASTM Standards, latest revision, together with neoprene gaskets. The gaskets must be made to conform with the particular brand of pipe being used and conform to ASTM C564, latest revision. All joints shall be made in accordance with the pipe manufacturer's instructions.
2. Wherever the use of cast iron pipe is mandated in this ordinance for cleanouts, Cleanout risers, screw-type plugs for cleanout risers, fresh air vents and/or fresh air vent risers, PVC may be substituted as herein provided:
 - a. The PVC is SDR 35 or Schedule 40 solid PVC which meets the requirements of ASTM D-2665;
 - b. The top elevation of all cleanout and/or vent risers shall not be less than six inches (6") above ground level;
 - c. All riser caps are made of cast iron; and
 - d. PVC Ring-tite pipe conforming to ASTM D3034-74, SDR 35 Type PSM, together with necessary fittings conforming to ASTM D1784. All pipe and fittings shall utilize rubber gasketed joints shall comply with ASTM-D-3212.
3. It is recommended that all building sewer connections use a cast iron vent and trap assembly located outside of the building and constructed in accordance with the standard drawing. Although the Engineer recommends and prefers the use of cast iron for vent and trap assemblies, where the use of cast iron is mandated in this Ordinance for vent and trap assemblies, PVC fittings may be substituted for vent and trap assemblies provided:
 - a. Such fittings conform to the requirements of ASTM F477 for use with SDR 35 Gravity Sewer Pipe, latest revision;
 - b. All such fittings utilize rubber gasket joints and rubber gaskets which comply with the requirements specified in ASTM D-3212, F477, OR F913, latest revision; and
 - c. Vent and trap assemblies are encased with a minimum of six (6) inches or more of concrete.

08/03/10

4. Cleanouts shall be provided for all building sewers and service connections where length of line exceeds 50 feet for 4" diameter pipe and 75 feet for pipe 6" diameter or larger. Cleanout risers shall be constructed of cast iron pipe.
5. Building sewers passing under any stream or creek shall be constructed of Ductile iron water main pipe ANSI A21.51 and AWWA C151, Class 5 1, with mechanical joints.
6. No sewer connection pipe shall be reduced in size between the house and the sewer. All pipe shall be a minimum inside diameter of 4 inches. Pipe sizes for apartments and commercial buildings must be approved by the Borough. Joints shall be permanently tight and shall prevent the admission of ground water.
7. A minimum cover of 3 feet of earth shall be provided to protect pipe from frost action and surface loading. Concrete encasement shall be provided where cover is less. All changes in grade and alignment (direction) shall be made with pipe fittings. No fittings exceeding 45 degrees will be permitted.
8. No transformation from one pipe size to another, or from one pipe material to another, will be made without the use of adapters manufactured and designed for that purpose.
9. In the specific case of PVC piping, no transformations from one pipe size to another, or from one pipe material to another will be made without the use of Fernco Joint or equivalent equal adapters manufactured and designed for that purpose. Substitute adapters must be approved by the Engineer. No cement joints will be permitted.
10. All connections to the sewer system must be made into the lateral stub, tee, or Wye left for the purpose, if one exists. Where no lateral stub, tee, or wye has been provided, the sewer shall be tapped with an opening to fit a 45 degree cast iron or PVC wye saddle or 90 degrees cast iron or PVC tee saddle. The saddle shall be securely fastened by stainless steel straps provided with suitable bolts to tighten securely. The pipe and saddle shall be completely encased with 6 inches of 3,000 PSI test concrete. When the opening in the pipe has been cut too large to fit the saddle, the Borough's sanitary sewer pipe must be replaced by a manufactured pipe section with a tee or wye branch of the proper size. The construction must be inspected and approved before the remainder of the connection may be made. In the case of PVC, a wye or tee saddle shall be installed using stainless steel straps provided with suitable bolts to tighten securely.

08/03/10

11. Whenever a tee or wye branch has become broken in removing its cap in preparation to make a sewer connection, the protruding branch must be removed and a cast iron tee or wye saddle installed as described above.
12. Whenever an existing Borough lateral or stub is broken, the broken end must be cut square and fitted with a duplex coupling, or that section of pipe must be replaced.
13. The mouth, or opening, of the completed building sewer shall be kept properly closed and water tight at all times during construction.
14. Cleanouts. Building sewer lines shall be vented, trapped, and a cleanout provided as follows:
 - a. Where the main sewer is in the road a cleanout shall be provided at the right-of-way line;
 - b. Where the main sewer is in an easement the cleanout shall be located one (1) foot from the permanent easement limit;
 - c. Cleanouts shall be provided in each sanitary sewer lateral at 50 foot intervals for 4" diameter pipe and at 75 foot intervals for all pipe 6" diameter and larger. Such intervals shall include lengths of lateral installed by the Borough. Cleanouts shall be installed immediately downstream of any change in grade or alignment. Cleanouts shall be constructed using a sanitary tee fitting in the run of the pipe and a cast iron riser to the ground surface. The riser pipe shall be provided with a screw type plug and shall be water tight; and
 - d. A minimum of one cleanout is required per building sewer line.
15. Fresh Air Vents. A vent shall be placed as close to the building as possible, in the case of existing construction and also in the case of new construction when, in the opinion of the Engineer, adequate venting has not been provided for. Vent risers shall extend a minimum of six inches above the ground surface and shall be capped with a mushroom vent or double bend. Fresh air vents shall be at least four inches in diameter, and must be constructed of cast iron.
16. Every cleanout and vent shall be properly supported by 2 RC, 2B crushed stone or concrete in the bottom of the trench.

08/03/10

17. New connections to the sewer shall not be placed through a cesspool or septic tank. They must be placed on solid ground on the building side of a cesspool or septic tank excavation area. With the exception that, under special circumstances, cast iron water pipe (AWWA C 151 and ANSI A 21.51 Class 5 1, with mechanical joints) may be used to span a cesspool or septic tank when properly supported and anchored against shearing forces from surface loading or other settlement.
 18. The contractor shall have sufficient pumping equipment ready for use at all times on the site. All ground water which may be found in the trenches, and any other water which may get into them from any cause whatsoever, shall be pumped or bailed out so that the trench shall be dry during pipe laying and backfilling. Water shall be kept away from any mortar or concrete work until it has thoroughly set. When water is encountered, no less than 6 inches of 2B coarse aggregate shall be used for the foundation for the pipe. No storm or surface water shall be allowed to enter the sanitary sewer system. If, for any reason, construction is delayed or stopped, the pipe connected to the sewer main must be capped with a water proof stopper.
 19. The contractor shall fill all existing septic tanks or cesspools with crushed stone or clean earth. Tanks shall be pumped after connection to the sewer and before backfilling.
- B. Pipe Bedding. In all trenches (both earth and rock trenches) First Class Bedding shall be provided as a foundation for all pipe, unless a concrete cradle or concrete encasement or other type of bedding is required by the Engineer.
1. When extra heavy cast iron pipe is being installed, First Class Bedding shall consist of shaping the bottom of the earth trench to fit the pipes and bells in order to support the pipe over its entire length. A minimum of 6 inches of No. 2B crushed stone bedding will be provided when rock is encountered or when required by the Engineer.
 2. When PVC SDR #35 is being installed, First Class Bedding shall provide a minimum of 6 inches of crushed stone under the pipe, with backfill using the stone up to, or beyond, 6" over the pipe. Bedding material shall consist of crushed stone conforming to PenDot Publication 408, as amended, grading and quality for No. 2B course aggregate. A concrete encasement, or cradle, shall be required where extraordinary trench and surface loading can be anticipated.

08/03/10

3. Regardless of the type of pipe used, unsuitable material encountered in excavation, such as ashes, muck, and unstable soil, shall be removed from the site and shall not be used as backfill. When the bottom of the trench has been dug too deep, it shall be refilled to grade with 2-RC aggregate backfill, or No. 2B crushed stone backfill, and thoroughly compacted.
4. Whenever rock or water is encountered in the trench bottom, a minimum of 6 inches of 2-RC aggregate or 2B crushed stone bedding shall be required for all pipe.

C. Air test

1. The Inspector shall witness an air test of the building sewer from the lateral to the point of connection at the building. Both ends of the building sewer shall remain uncovered until the air testing has been completed and the installation approved. Such approval shall be noted in writing on the permit and no other evidence of such approval shall be accepted. Persons utilizing air test equipment must be familiar with its use and be familiar with the criteria for judging acceptance based on various ground water conditions encountered. The air test shall be conducted by the building sewer contractor under the direction of the Inspector, and made at the expense of the property owner.
2. The air test shall be made by attaching an air compressor or other testing apparatus to any suitable opening in the section of the pipe to be tested. All other openings of the pipe section being tested shall be plugged. The pipe shall be subjected to a minimum uniform air pressure of 4.0 PSIG on the entire section of pipe being tested. This pressure shall be maintained for a minimum duration of ten (10) minutes and that the maximum permissible pressure loss shall be five (5.0) percent.
3. The Contractor shall repair all defects or leaks of any lines failing to meet the above tests and shall re-test same until acceptable to the Borough.

D. Backfilling

1. Upon completion of the building sewer installation, the trench, to a height of at least one (1) foot above the pipe, shall be refilled with clean earth or select stone backfill (2RC or 2B crushed aggregate) deposited in 6 inch layers. No stones or rock other than previously noted shall be permitted in the one foot backfill. Each layer shall be solidly tamped and rammed down around the sewer pipe with hand or mechanical tampers. Care shall be exercised not to disturb the pipe. In filling to the height specified, the earth shall be thrown in with hand shovels. Under no circumstances will backfilling by heavy equipment be permitted.

08/03/10

2. All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, or other material which, in the opinion of the Inspector is unsuitable. However, from a point of 1 foot above the top of the pipe to the finish grade (or subgrade of pavement, driveways, walks, etc.) material containing stones up to 6 inches in greatest dimensions may be used. The trench shall be thoroughly compacted without displacement of the grade or alignment of the building sewer. Backfill material shall be free of ice and no partially open trench shall be permitted to be left open during the night when temperatures below 28° F degrees are predicted.

E. Clean-up.

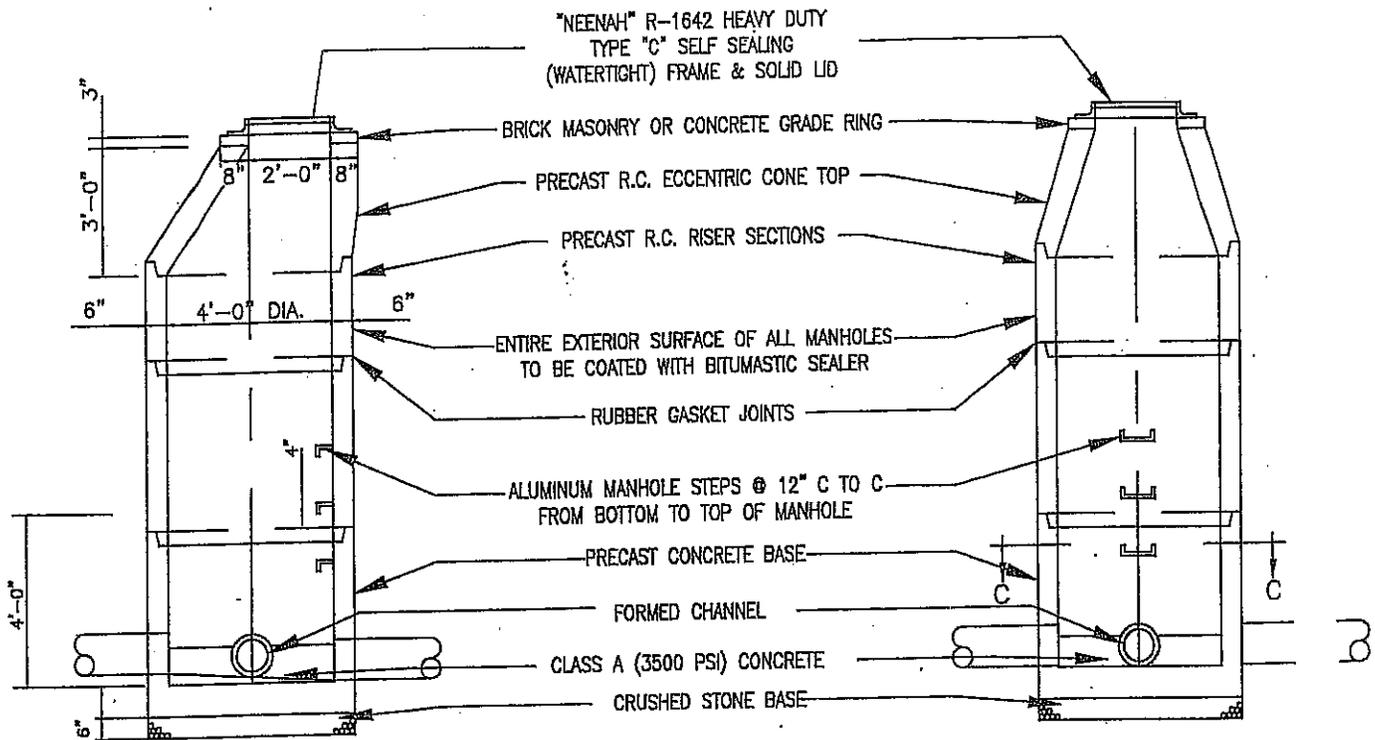
Removal of debris, which may have been stored within the public rights-of-way, including road, cartway, or sidewalk, shall be removed within 24 hours of completion of the building sewer work. Any concrete sidewalk or curb removed for the purpose of making a sewer connection must be temporarily restored within 48 hours, and permanent replacement must be completed within thirty (30) days from the time installation has been approved.

08/03/10

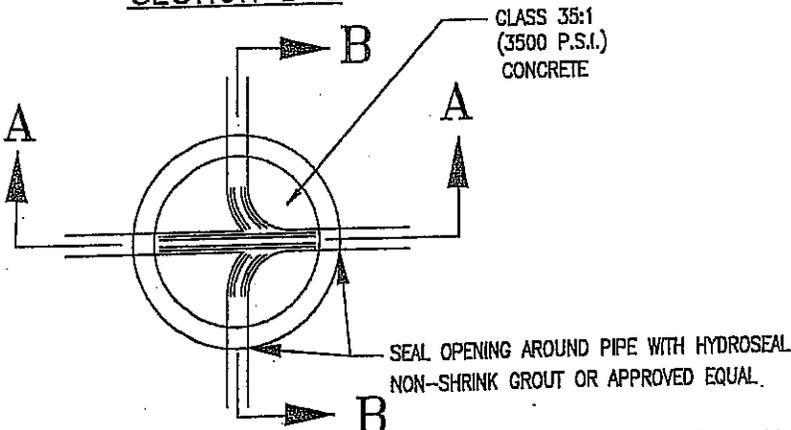
ORDINANCE NO. 2010-
BOROUGH OF AVONDALE
CHESTER COUNTY, PENNSYLVANIA

APPENDIX B

STANDARD SEWER DETAILS



SECTION B-B



SECTION C-C

PRECAST R.C. JUNCTION MANHOLE
N.T.S.

SECTION A-A

NOTES

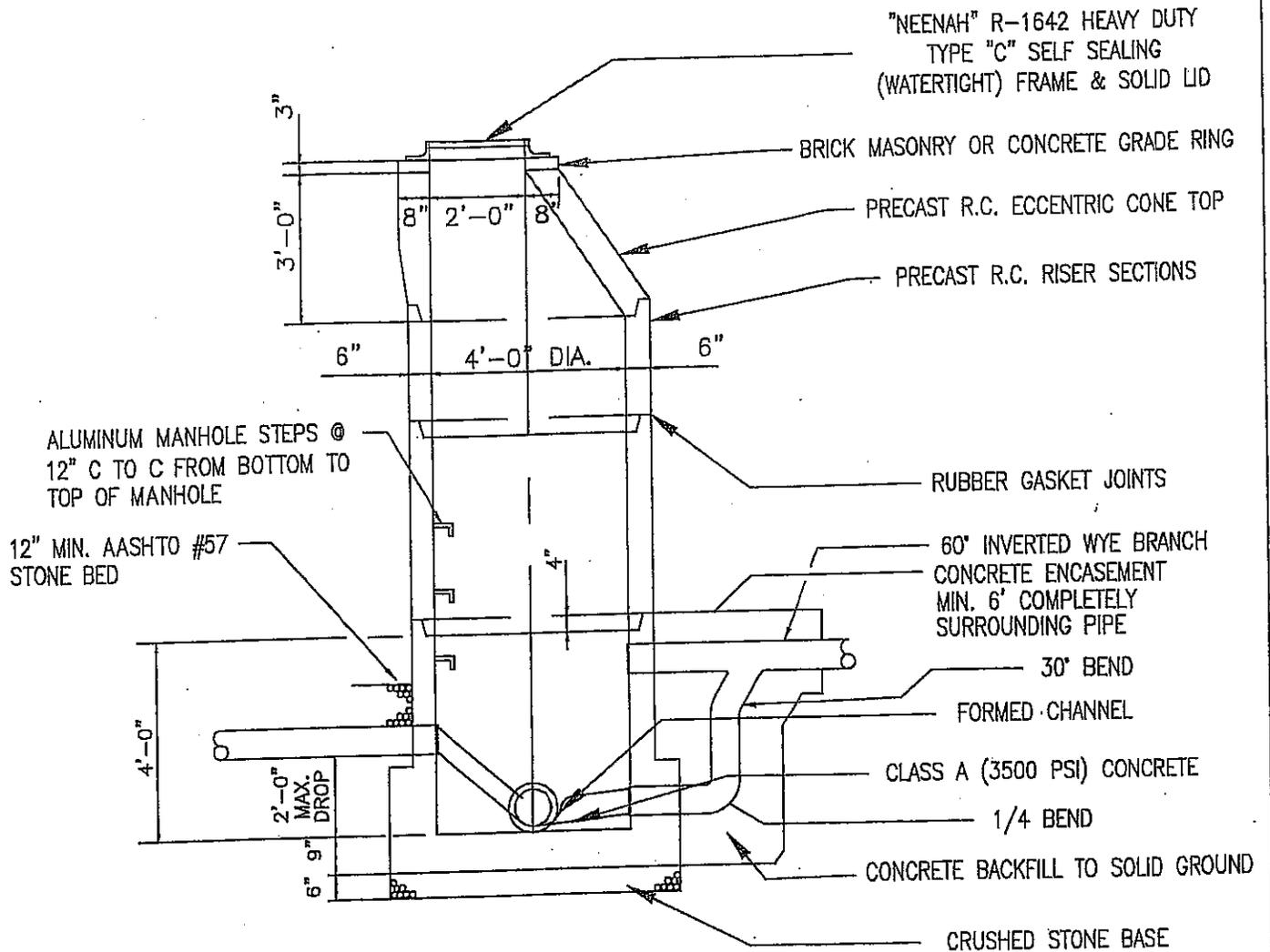
1. PRECAST R.C. ECCENTRIC CONE TOP RISER SECTIONS AND BASE SECTION SHALL CONFORM TO A.S.T.M. C-478.
2. RUBBER GASKETS SHALL CONFORM TO A.S.T.M. C-990.

AVONDALE BOROUGH

DATE
6/14/10

TYPICAL SANITARY MANHOLE

DRAWING #
SD-1



NOTES

1. PRECAST R.C. ECCENTRIC CONE TOP RISER SECTIONS AND BASE SECTION SHALL CONFORM TO A.S.T.M. C-478.
2. RUBBER GASKETS SHALL CONFORM TO A.S.T.M. C-990.
3. ENTIRE EXTERIOR SURFACE OF ALL MANHOLES TO BE COATED WITH BITUMASTIC SEALER.

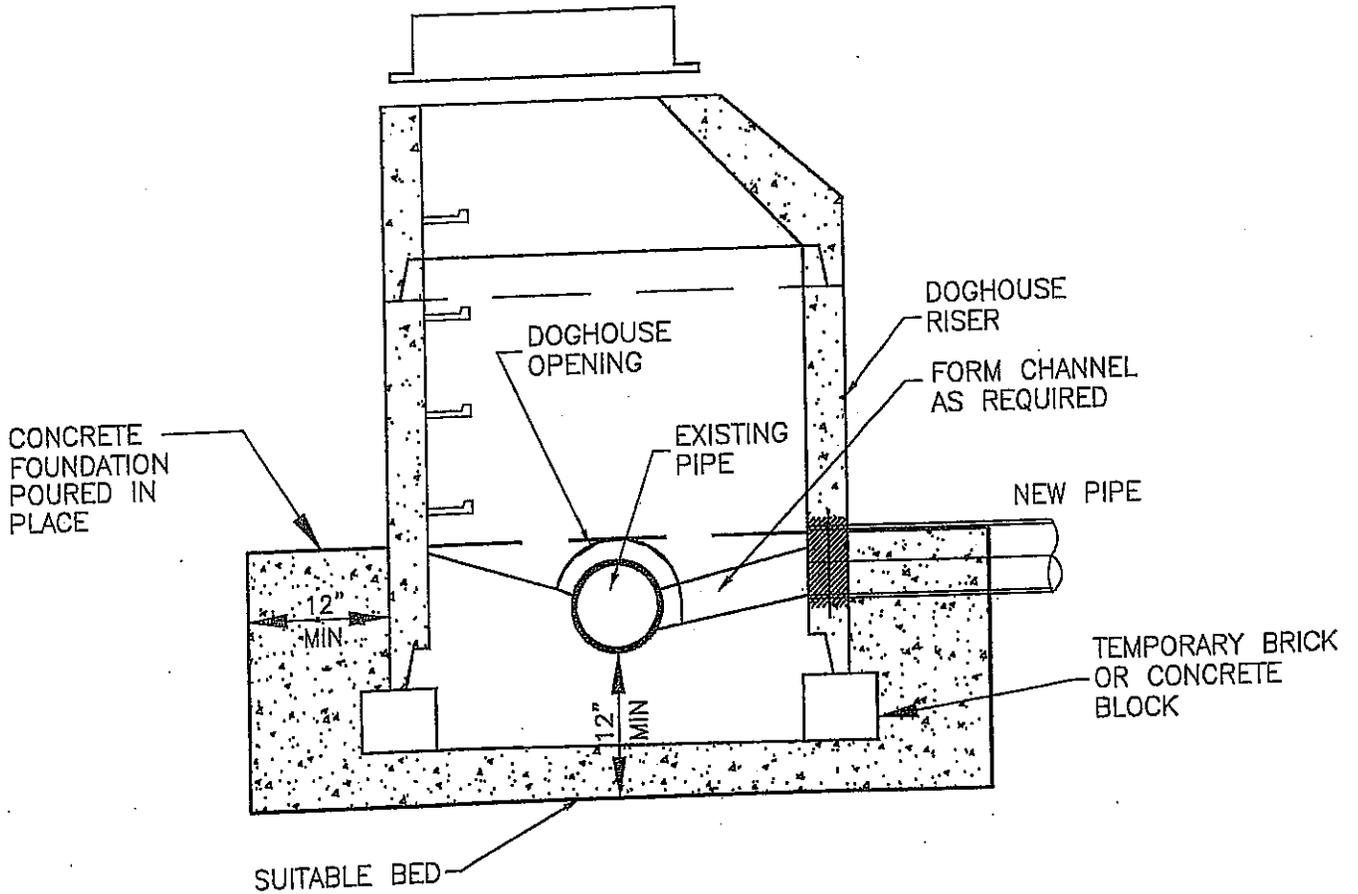
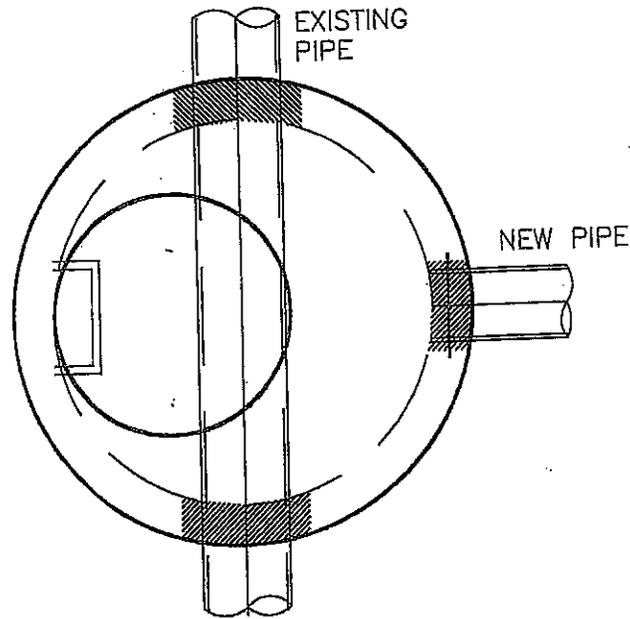
DROP MANHOLE DETAIL
N.T.S.

AVONDALE BOROUGH

DATE
6/14/10

TYPICAL DROP MANHOLE

DRAWING #
SD-2



DOGHOUSE MANHOLE

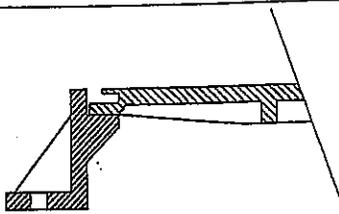
N.T.S.

AVONDALE BOROUGH

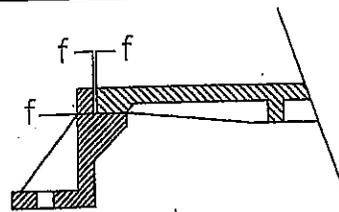
DATE
6/14/10

TYPICAL DOGHOUSE MANHOLE

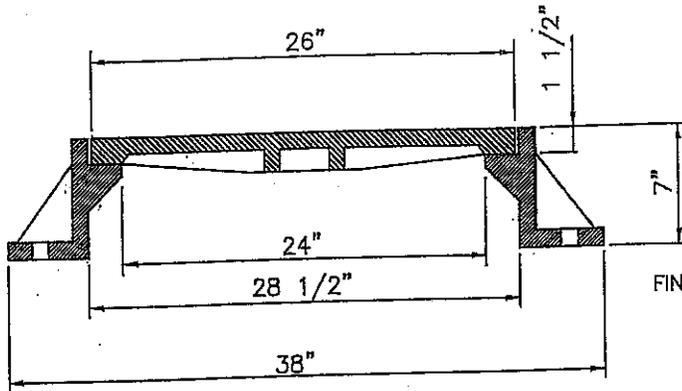
DRAWING #
SD-3



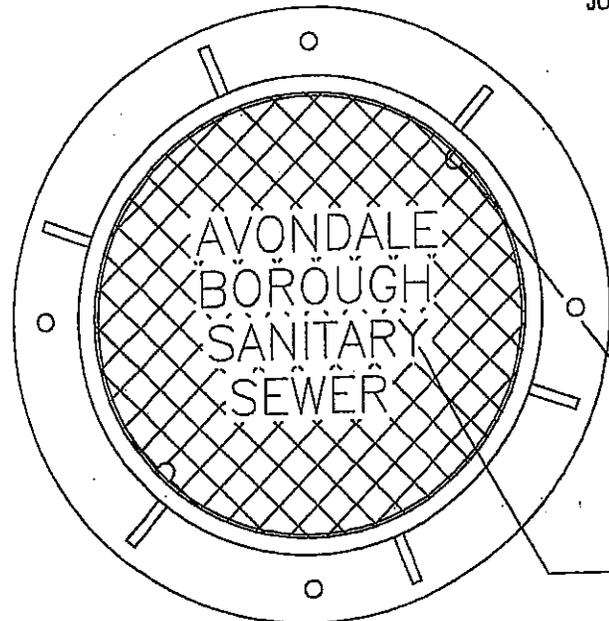
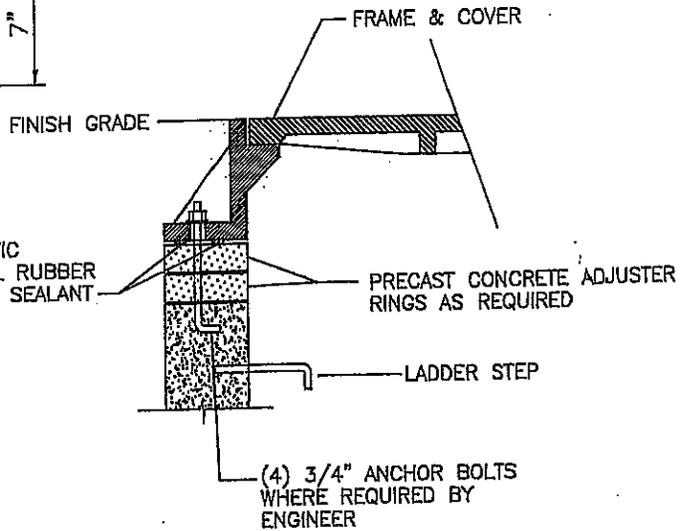
PICKHOLE DETAIL



MACHINED HORIZONTAL
VERTICAL BEARING SURFACE



SECTION



CONCEALED PICKHOLE
(2 REQUIRED)

2" WIDE STANDARD FLAT FACE
GOTHIC LETTERS

"NEENAH" R-1642 HEAVY DUTY
TYPE "C" SELF SEALING
(WATERTIGHT) MANHOLE FRAME & SOLID LID OR APPROVED EQUAL
A.S.T.M. A48, CLASS 30 OR BETTER FOR GRAY IRON
A.S.T.M. A36, FOR DUCTILE IRON

TYPICAL MANHOLE FRAME AND COVER
N.T.S.

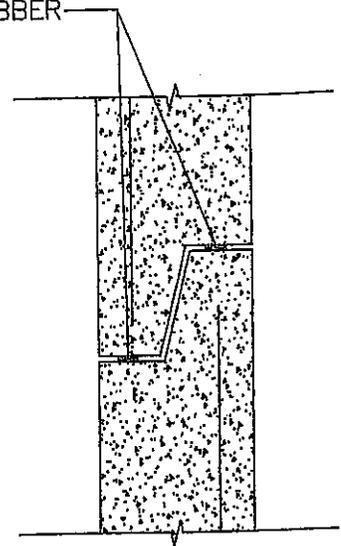
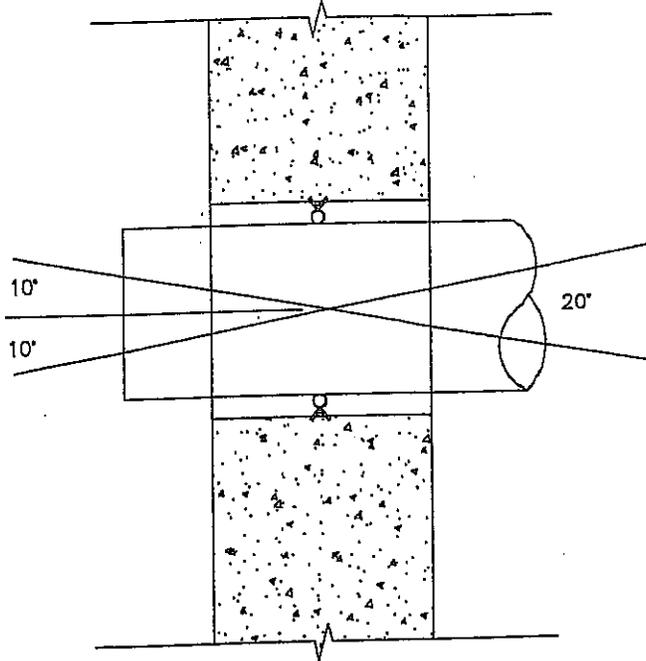
AVONDALE BOROUGH

DATE
6/14/10

TYPICAL MANHOLE FRAME AND COVER

DRAWING #
SD-4

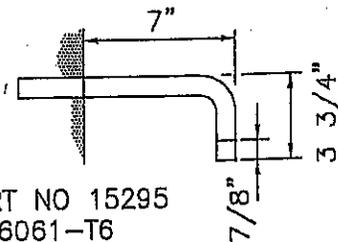
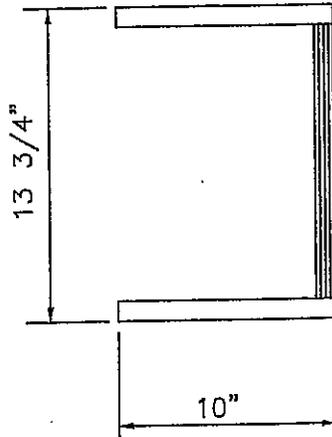
PLASTIC BUTYL RUBBER
JOINT SEALANT



MANHOLE JOINT DETAIL
N.T.S.

A-LOK GASKET PER A.S.T.M. RUBBER
GASKET SPECS. C923, CAST INTEGRALLY
IN MANHOLE WALL AND LOCATED AS
REQUIRED. GASKET DESIGNED TO MEET
TEST AND PERFORMANCE REQUIREMENTS
OF A.S.T.M. PIPE JOINT SPECS. C425.
JOINT ALLOWS 10° OMNIDIRECTIONAL
DEFLECTION.

PIPE TO MANHOLE SEAL
N.T.S.



ALCOA PART NO 15295
ALLOY 6061-T6
DROP FRONT DESIGN
OR EQUAL

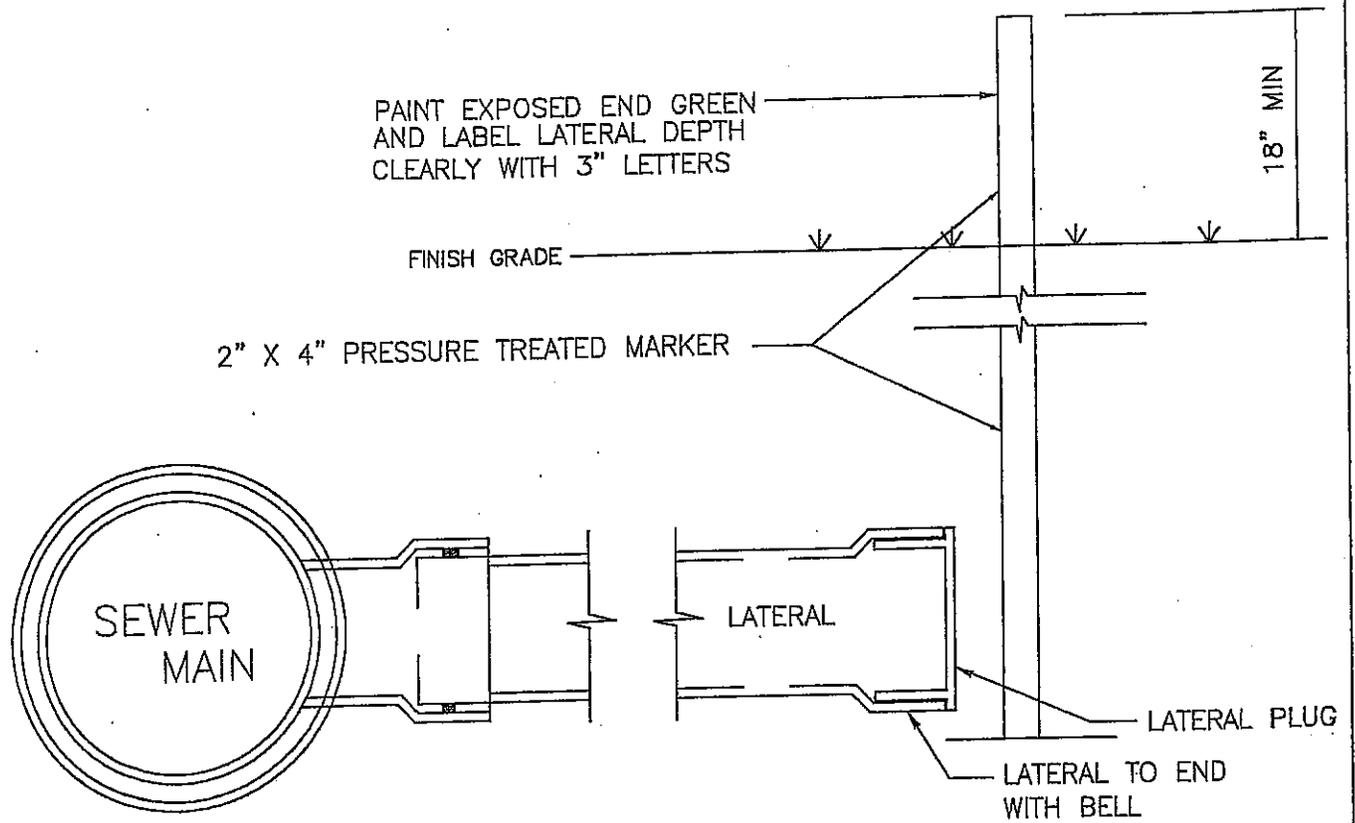
LADDER RUNG
N.T.S.

AVONDALE BOROUGH

DATE
6/14/10

MANHOLE DETAILS

DRAWING #
SD-5



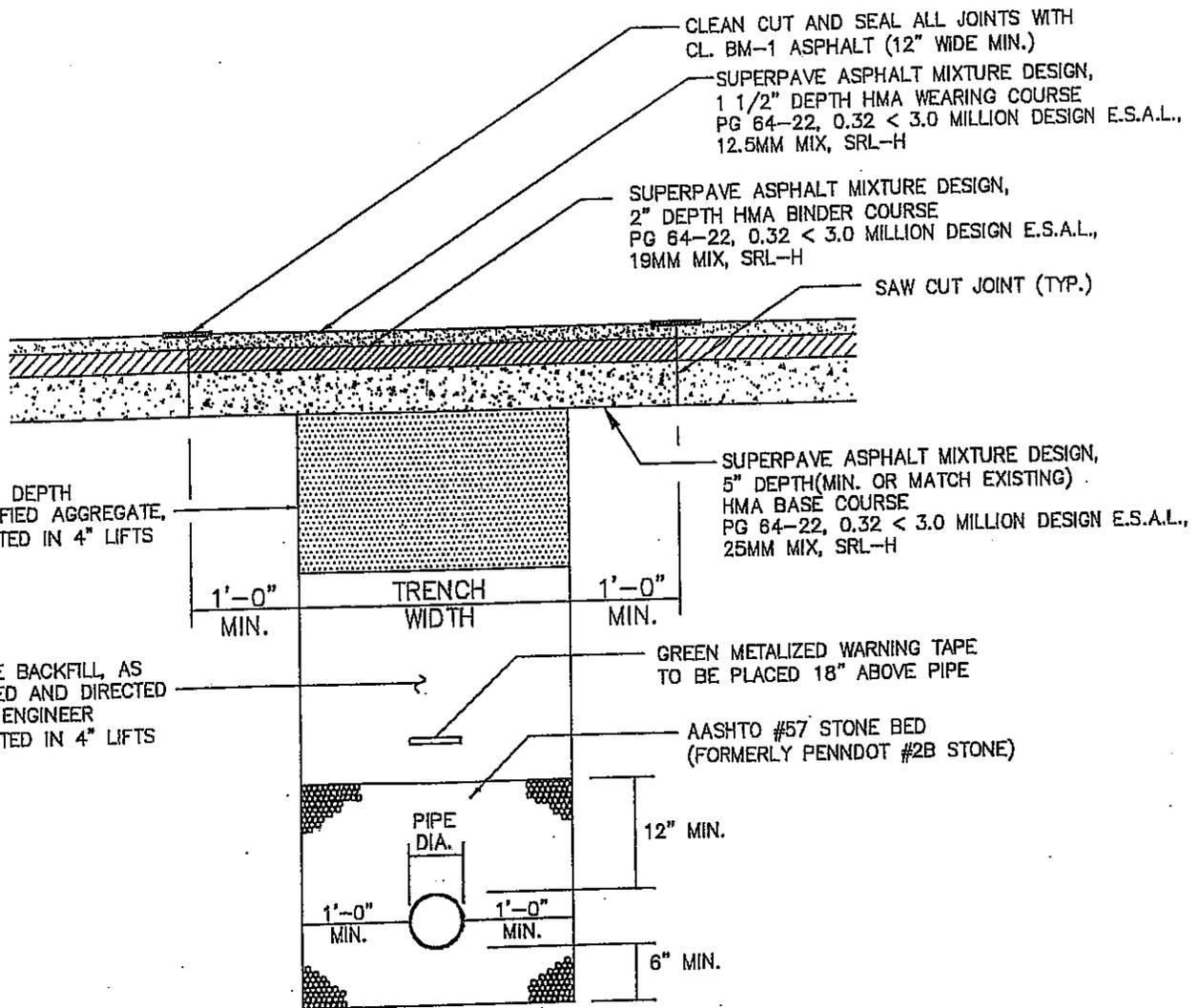
LATERAL MARKER DETAIL
N.T.S.

AVONDALE BOROUGH

DATE
6/14/10

TYPICAL LATERAL MARKER

DRAWING #
SD-6



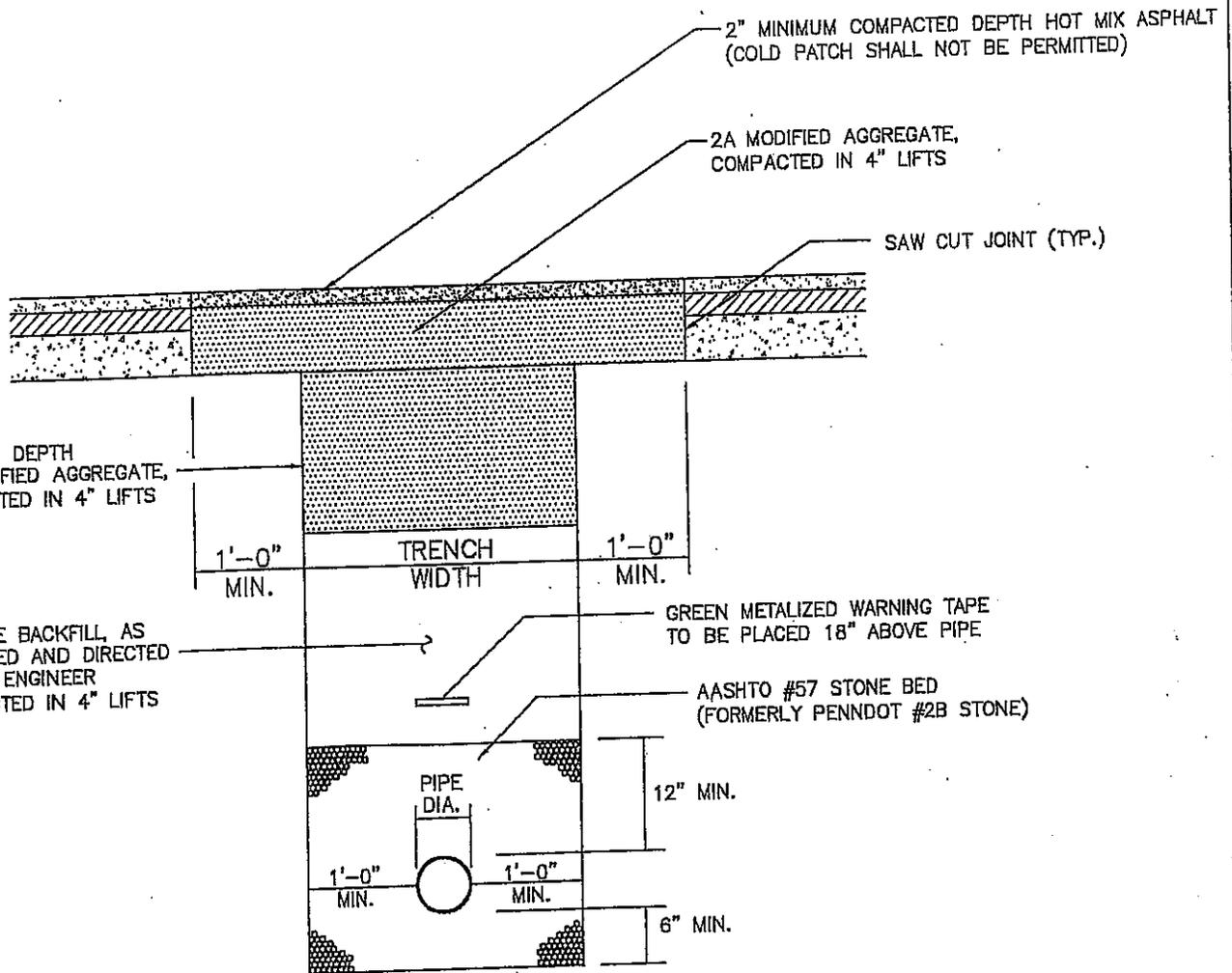
PAVEMENT RESTORATION DETAIL
 (LOCAL HIGHWAY)
 N.T.S.

AVONDALE BOROUGH

DATE
 6/14/10

PAVEMENT RESTORATION - LOCAL ROAD

DRAWING #
 SD-8



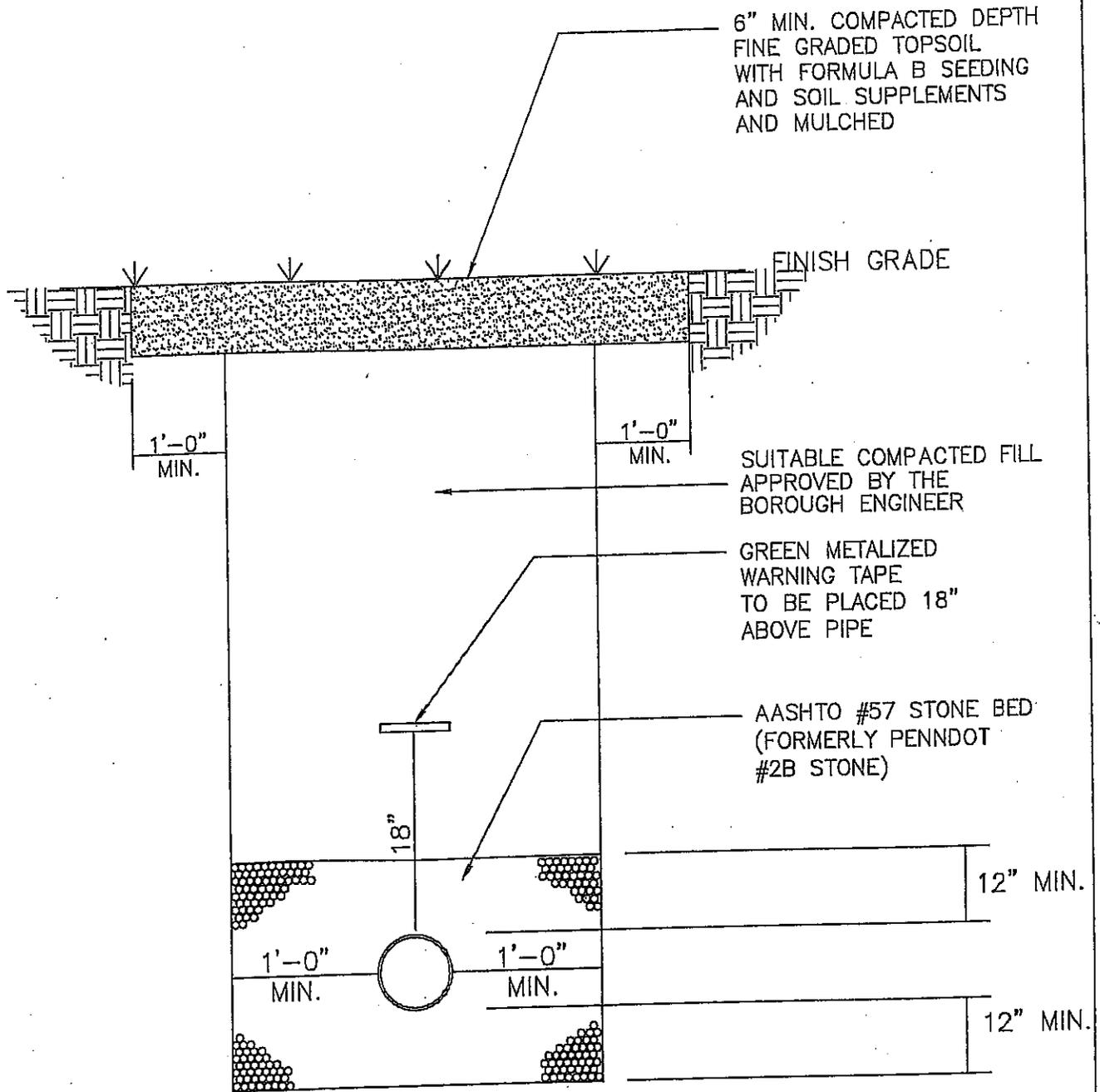
PAVEMENT RESTORATION DETAIL
(LOCAL HIGHWAY)
N.T.S.

AVONDALE BOROUGH

DATE
6/14/10

TEMPORARY PAVEMENT RESTORATION - LOCAL ROAD

DRAWING #
SD-9



TYPICAL TRENCH DETAIL

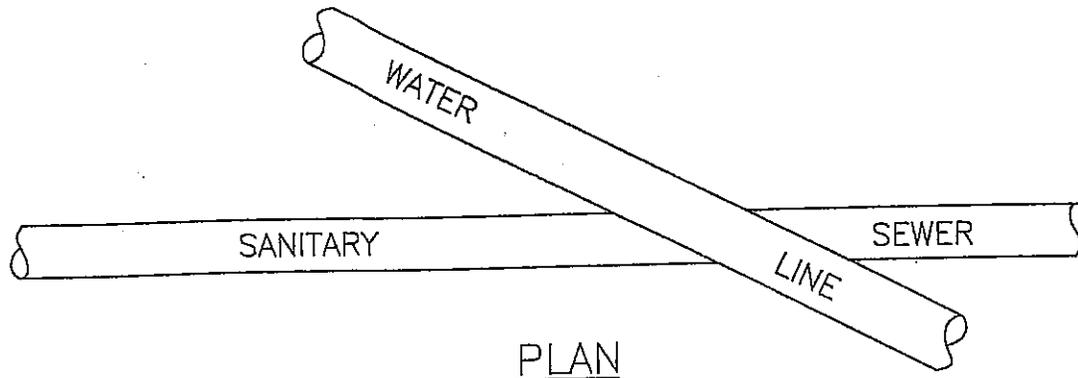
N.T.S.

AVONDALE BOROUGH

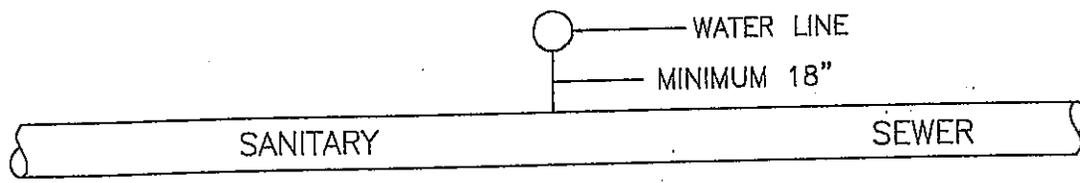
DATE
6/14/10

TYPICAL TRENCH RESTORATION

DRAWING #
SD-10

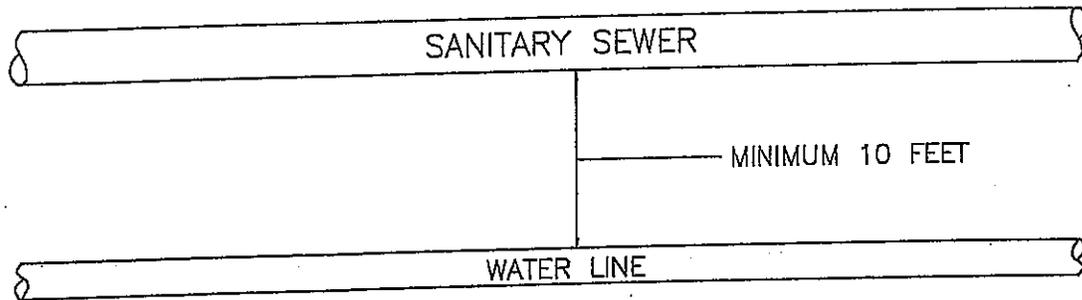


PLAN



PROFILE

WATER AND SEWER LINE CROSSINGS
N.T.S.



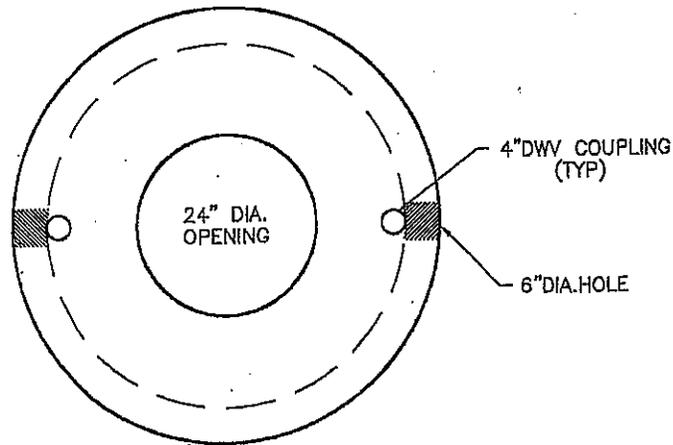
PARALLEL WATER AND SEWER LINES
N.T.S.

AVONDALE BOROUGH

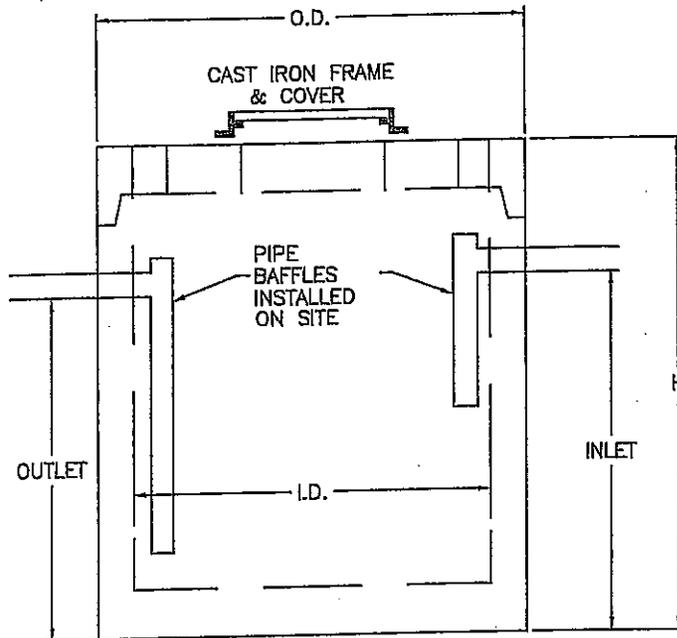
DATE
6/14/10

TYPICAL WATER AND SEWER LINE CROSSINGS

DRAWING #
SD-11



DESIGNED TO
ACCOMMODATE HS-20 LOADING



HEAVY DUTY 280 TO 860 GALLON GREASE INTERCEPTOR

TANK SIZE	ID	OD	H	INLET	OUTLET
280	48	58	65	46	43
590	60	72	81	60	57
860	72	86	81	60	57

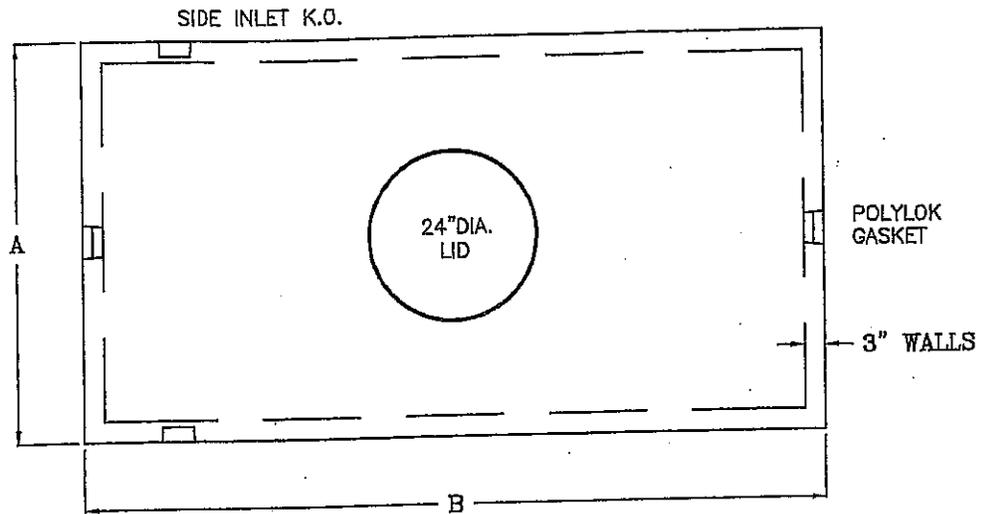
As Manufactured By
MODERN PRECAST CONCRETE PRODUCTS

AVONDALE BOROUGH

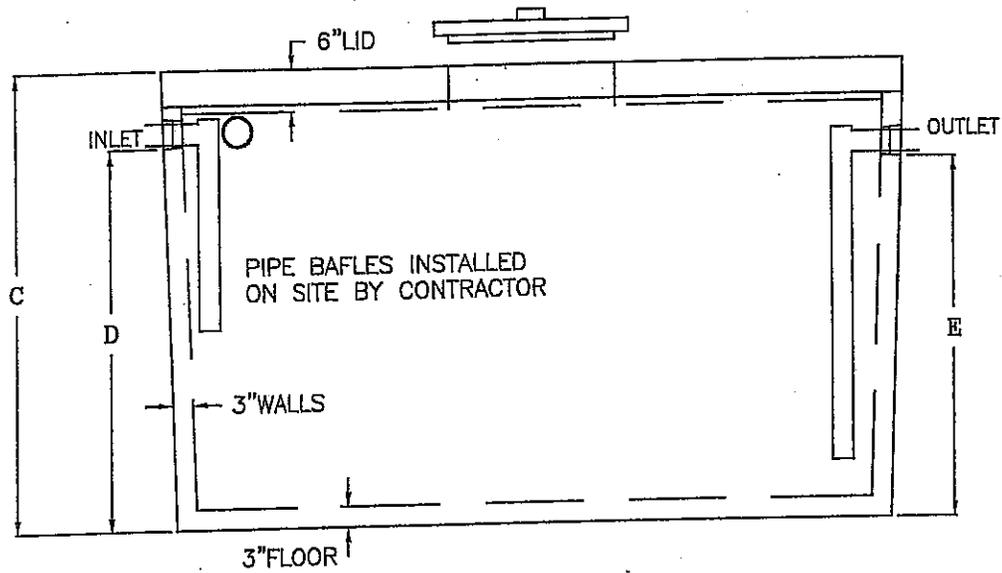
DATE
6/14/10

TYPICAL GREASE TRAP

DRAWING #
SD-12



NOTE: MAXIMUM 4' OF COVER
 NOT INTENDED FOR CONSTRUCTION VEHICLES
 TO DRIVE ON OR OVER



TANK SIZE	"A"	"B"	"C"	"D"	"E"
500	54"	78"	58"	43"	40"
1000	68"	96"	62"	51"	48"
1250	68"	114"	64"	51"	48"
1500	68"	132"	68"	54"	51"
1750	68"	144"	69"	57"	54"

500 TO 1750 GALLON GREASE INTERCEPTOR

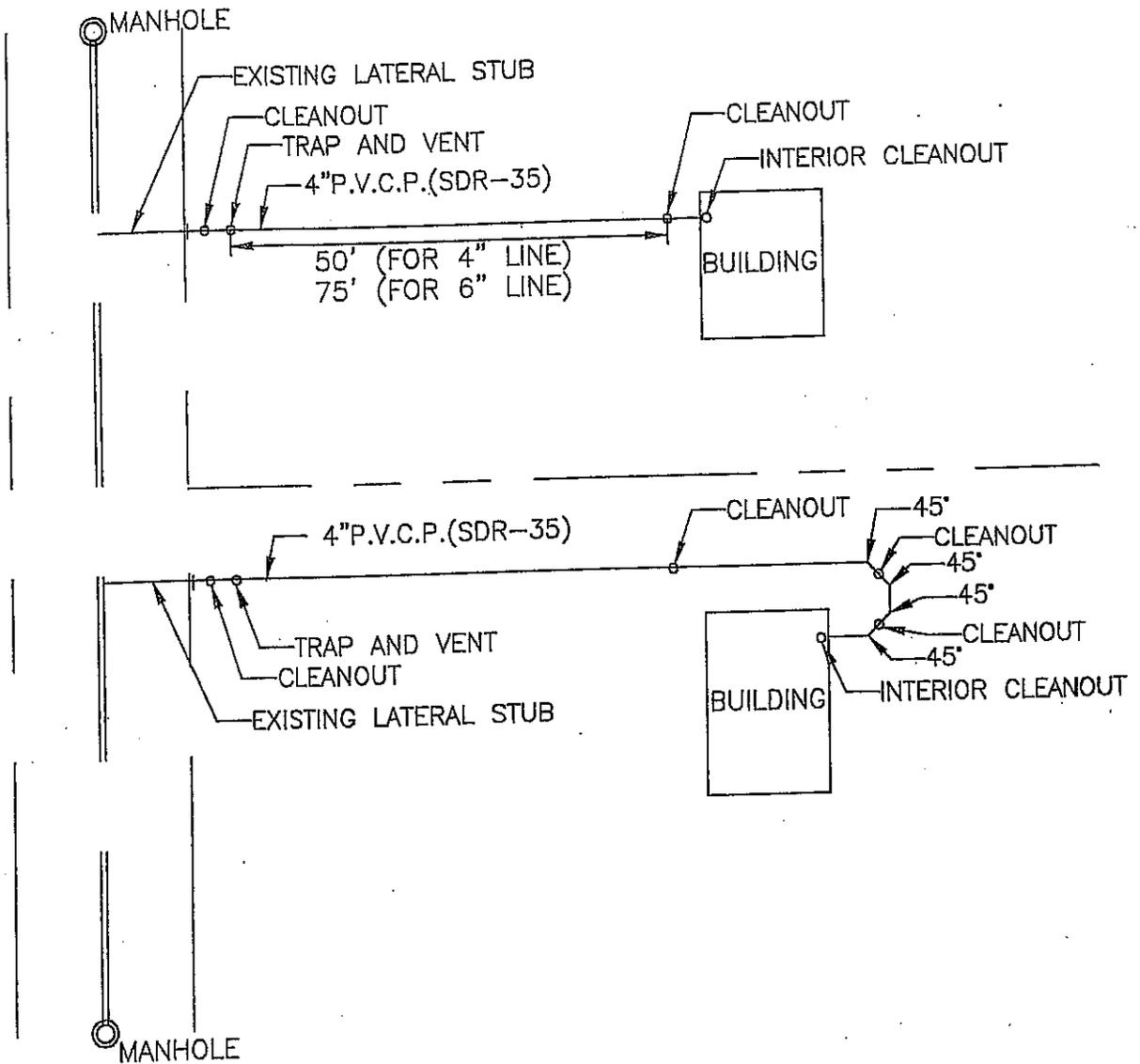
As Manufactured By
 MODERN PRECAST PRODUCTS COMPANY

AVONDALE BOROUGH

DATE
6/14/10

TYPICAL GREASE TRAP

DRAWING #
SD-13



NOTES:

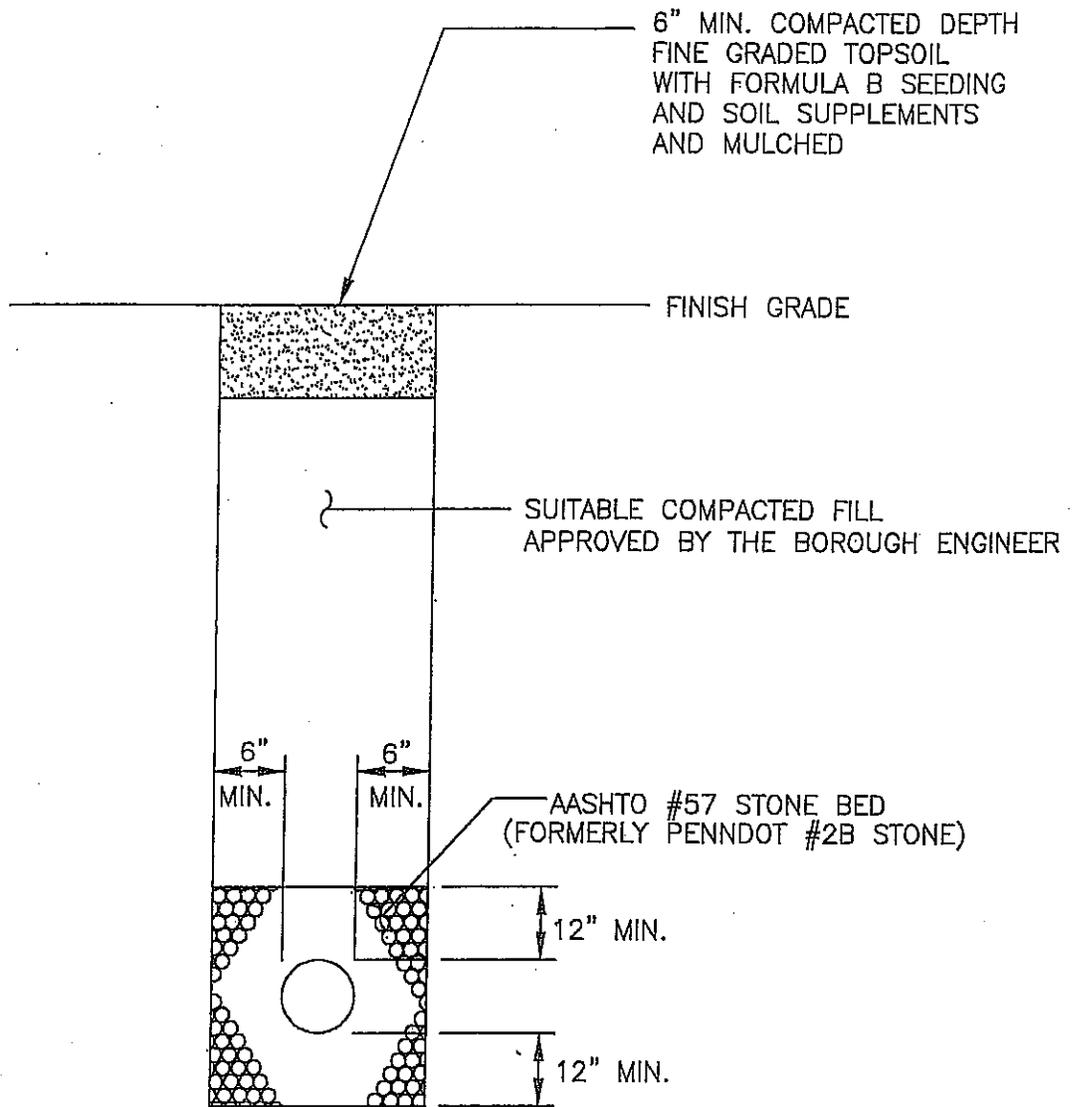
1. ALL PIPES ARE TO BE BEDDED AND COVERED WITH #57 STONE 6" UNDER AND OVER PIPES.
2. EXISTING CESSPOOL TO BE PUMPED AND BACKFILLED.
3. P.V.C.P. (SDR-35) SHALL HAVE "HARCO" FITTINGS CONFORMING TO ASTM D1784,D3034, F477, OR F913.
4. CONNECTIONS TO EXISTING BUILDING DRAINS SHALL BE SCHD 40 TO SDR-35 ADAPTOR (SOLVENT WELDED PIPE TO GASKETED PIPE) OR CAST IRON TO SDR-35 DOUBLE HUB CAST IRON COUPLING OR "FERNCO JOINT".

AVONDALE BOROUGH

DATE
6/14/10

TYPICAL LATERAL LOCATION

DRAWING #
SL-1



AVONDALE BOROUGH

DATE
6/14/10

TYPICAL TRENCH DETAIL

DRAWING #
SL-3