RESOLUTION No. 05-2025

A RESOLUTION OF THE BOARD OF SUPERVISORS OF CONOY TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA, ADOPTING AMENDING AND RESTATING THE CONOY TOWNSHIP SEWER RULES AND REGULATIONS

WHEREAS The Township operates a sanitary sewer system providing sanitary sewer services to the public pursuant to Ordinance No. 1-7-8-93, as amended; and

WHEREAS the Township desires to adopt, amend and restate any and all previously established rules and regulations for the connection to and use of the Township's sanitary sewer system; and

NOW. THEREFORE, BE IT RESOLVED by the Board of Supervisors of the Township of Conoy:

1. The Conoy Township Sewer Rules and Regulations shall be and are adopted, amended and restated as set out in the document attached to and incorporated in this Resolution as Exhibit A to the same extent as if set forth here at length.

2. All Resolutions or parts of prior Resolutions inconsistent with this Resolution adopting these Sewer Rules and Regulations shall be and are expressly hereby rescinded.

3. The Effective date of this adoption, amendment and restatement of the Conoy Township Sewer Rules and Regulations shall be July 10, 2025.

DULY ADOPTED as a Resolution by the Board of Supervisors of Conoy Township, Lancaster County, Pennsylvania, in lawful session duly assembled this 10 day of July 2025.

BOARD OF SUPERVISORS OF CONOY TOWNSHIP, LANCASTER COUNTY, PA

_____
Chair

Attest:

_____
Township Secretary

Conoy Township
Sewer Rules and Regulations

July 2025

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SECTION 1. DEFINITIONS

The following terms and phrases shall have the following meanings:

"Agent" means an individual or firm acting on behalf of the Developer.

"Ammonia Nitrogen as N" means ammonia nitrogen as determined pursuant to the procedure set forth in the latest edition of "Standard Methods for the Examination of Water and Wastewater", published by American Public Health Association, Inc.

"Board" means the Conoy Township Board of Supervisors.

"B.O.D." (Biological Oxygen Demand) means the quantity of oxygen, expressed in ppm by weight, utilized in the biochemical oxidation of organic matter under standard laboratory procedure for five (5) days at twenty (20) degrees Centigrade. The standard laboratory procedure shall be that found in the latest edition of "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association.

"Building Sewer" means the extension from the sewage drainage system of any structure, including any grinder pump or related apparatus, to the Lateral of a sewer.

"Capacity Approval" means that, at the time the capacity request is made, sufficient capacity is available in the Township's system(s) to serve the development. Capacity Approval does not guarantee capacity.

"Connection Fee" means a fee based upon the actual cost of the connection of the Building Sewer of an Improved Property extending from the Township's sewer to the property line or curb line of the Improved Property so connected, including reasonable costs for inspection and restoration. A Connection Fee shall be considered the fee referred to as the "connection fee" in the Authorities Act.

"Commercial Establishment" means any structure, or any portion thereof intended to be used wholly or in part for the purpose of carrying on a trade, business or profession or

for social, amusement, religious, educational, charitable or public uses, and which contains plumbing for kitchen, toilet, water fountain or washing facilities.

"Commonwealth" means the Commonwealth of Pennsylvania.

"Contractor" means an Agent of the Developer.

"Developer" means the party or parties constructing improvements to a tract of land and/or existing units or his Agent.

"Developer's Agreement" means a formal contract between the Developer and the Township that outlines the terms and conditions under which the Developer will undertake improvements to a tract of land or existing units, including responsibilities related to infrastructure, financing, and compliance with municipal regulations.

"Development" means the creation of a subdivision or land development as such terms and defined in the Pennsylvania Municipalities Planning Code or any man-made change to improved or unimproved real estate, including, but not limited to, the erection of buildings, placement of mobile homes or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or the enlargement of a structure to add an additional domestic establishment or to expand a non-domestic establishment or establishment in such a manner that the need for public sewer service shall be increased, or the installation of public sewer facilities or connections thereto.

"Domestic Establishment" means any room, group of rooms, apartment, house trailer, building or other enclosure connected, directly or indirectly, to the Township's Sewer System and occupied or intended for occupancy as a Separate Living Unit by a family or any other group of Persons living together or by a Person or Persons living alone, excluding Non-domestic Establishments such as institutional dormitories, hotels, motels, boarding houses, and other Commercial Establishments and Industrial Establishments.

"Dwelling Unit" means any room, group of rooms, house trailer, apartment, condominium, cooperative or other enclosure connected, directly or indirectly, to the Sewer System and occupied or intended for occupancy as living quarters by an individual, a single family or other discrete group of persons, excluding institutional dormitories.

"EDU" means an equivalent dwelling unit. With regard to the Township's Sewer System, the amount of sanitary sewage discharged by an average Domestic Establishment in a day shall be calculated and established by the Township in accordance with this Rules and Regulations or in any subsequent ordinance, resolution or regulations of the Township, which shall be deemed to constitute the estimated equivalent amount of Domestic Sanitary Sewage discharged by a single-family Dwelling Unit.

"Educational Establishment" means any room, group of rooms, building or other enclosure connected, directly or indirectly, to the Sewer System and used or intended for use, in whole or in part, for educational purposes, including both public and private schools or colleges.

"Engineer" means the Sewer Engineer of Conoy Township.

"Equivalent Dwelling Unit" or "EDU" means the unit of measure by which a User Charge shall be imposed upon each Improved Property, as determined in this Rules and Regulations or in any subsequent ordinance, resolution or regulation of the Township, which shall be deemed to constitute the estimated equivalent amount of Domestic Sanitary Sewage discharged by a single-family Dwelling Unit.

"Improved Property" means any property upon which there is erected a structure intended for continuous or periodic habitation, occupancy, or use by human beings or animals and from which structure Sanitary Sewage and/or Industrial Wastes shall be or may be discharged.

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

"Industrial Wastes" means any solid, liquid, or gaseous substance, waterborne water or form of energy discharged or escaping in the course of development, recovering or processing of natural resources, but not Sanitary Sewage.

"Institutional Establishment" means any building or facility used primarily for institutional purposes, such as schools, hospitals, governmental buildings, or other similar organizations, that may contain multiple rooms or areas serving a defined purpose, and is not classified as a Domestic, Commercial, or Industrial Establishment.

"Large Consumer" means any entity or facility that significantly exceeds the average sewer demand for a typical establishment, measured in terms of the volume of wastewater used or generated, and may include industrial plants, large commercial enterprises, or multi-family residential developments.

"Landowner" means the legal or beneficial owner or owners of land, including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if he is authorized under the lease to exercise the rights of the landowner, or other persons having a proprietary interest in land. The word owner means the same as landowner and may be used interchangeably.

"Lateral" means that part of the Sewer System extending from a sewer to the curb line, or if there shall be no curb line, to the property line, or easement, or right-of-way line, or if no such Lateral shall be provided, then Lateral shall mean that portion of or place in a sewer which is provided for connection of any Building Sewer.

"Non-domestic Establishment" means any establishment or use connected, directly or indirectly, to the Sewer System which does not constitute a Domestic Establishment.

"Ordinance" means a formal regulation enacted by the Township, to govern matters within its jurisdiction, addressing specific issues related to public policy, safety, health, or welfare.

"Owner" means any Person vested with ownership, legal or equitable, sole or partial, of any Improved Property.

"PADEP" means the Pennsylvania Department of Environmental Protection.

"PennDOT" means the Pennsylvania Department of Transportation.

"Person" means any individual, partnership, association, society, estate, trust, corporation, municipality, municipal authority, or other legally recognized group or entity.

"ppm" means parts per million parts water, by weight.

"Sanitary Sewage" means normal water-carried household and toilet wastes from any improved Property.

"Sewer" means any pipe or conduit constituting a part of the Sewer System used or usable for collection of Domestic Sanitary Sewage and/or Industrial Wastes.

"Sewered Area" means the Falmouth and Bainbridge service area of the Township served and to be served by the Sewer System as determined and designated, from time to time, by the Board of the Township.

"Sewer Service" means provision by the Township for the collection, conveyance, and/or treatment of sanitary sewage as a commodity, or readiness to supply such collection, conveyance and/or treatment for any purpose, and any service related thereto.

"Sewerage System" or "Sewer System" means all facilities as of any particular time, for collecting, pumping, transporting, treating, or disposing of Sanitary Sewage and Industrial Wastes, to be owned by the Township.

"Solicitor" means the Solicitor of Conoy Township.

"Street" means any street, road, lane, court, cul-de-sac, alley, public way, or public square, including such streets as are dedicated to public use, and such streets as are owned by private Persons.

"Suspended Solids" means total suspended solids, as determined pursuant to the procedure set forth in the latest edition of Standard Method for the Examination of Water and Wastewater, published jointly by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation.

"Tapping Fee" means a fee imposed by the Township to enable the recovery of the Township's equity in the Sewer System, as appropriate, which shall be composed of a capacity part and a distribution or collection and conveyance part, as appropriate and may, in the future, if warranted, include for some customers a special purpose part and/or a reimbursement part.

"Total Phosphorus as P" means the total concentration of phosphorus in water, expressed as elemental phosphorus (P). It includes all forms of phosphorus present, such as dissolved, particulate, organic, and inorganic, and is typically measured using standard analytical methods in water quality assessments.

"Township" means Conoy Township, Lancaster County, Pennsylvania, a political subdivision of the Commonwealth, acting by and through its Board of Supervisors or, in appropriate cases, by and through its authorized representatives.

"User" means any person who contributes, causes, or permits the contribution of wastewater into the Sewer System.

"User Charge" means the rental or charge imposed by the Township hereunder, as amended from time to time, against the Landowner of each improved property, for the use or availability for use of the Sewer Systems.

"WWTP" means the Wastewater Treatment Plant owned and operated by Conoy Township.

SECTION 2. USE OF PUBLIC SEWERS REQUIRED

2.01 The Owner of any Improved Property located within the sewer service area of this Township and which is adjoining and adjacent to the Sewer System and whose principal building is within 150 feet from the Sewer System shall connect such Improved Property with and use such Sewer System, in such manner as this Township may require, by the date which is 60 days after notice to such Owner from this Township to make such connection, for the purpose of discharging all Sanitary Sewage and Industrial Wastes from such Improved Property, subject, however, to such limitations and restrictions as shall be established herein or otherwise shall be established by this Township, from time to time.

2.02 All Sanitary Sewage and Industrial Wastes from any Improved Property, after connection of such Improved Property with a Sewer, shall be required under Paragraph 2.01, shall be conducted into such Sewer; subject, however, to such limitations and restrictions as shall be established herein or otherwise shall be established by this Township, from time to time.

2.03 No Person shall place, shall deposit or shall permit to be placed or to be deposited upon public or private property within this Township any Sanitary Sewage or Industrial Wastes in violation of Paragraph 2.01. No Person shall discharge or shall permit to be discharged to any natural outlet within this Township any Sanitary Sewage or Industrial Wastes in violation of Paragraph 2.01.

2.04 No privy vault, cesspool, sinkhole, septic tank or similar receptacle shall be used at any time upon any Improved Property that has been connected to a Sewer or that shall be required under Paragraph 2.01 to be connected to a Sewer. Every such privy vault, cesspool, sinkhole, septic tank or similar receptacle in existence shall be abandoned and shall be filled with a non-compatible material (e.g., sand), at the expense of the Owner of such Improved Property, under the discretion and supervision of this Township; and any such privy vault, cesspool, sinkhole, septic tank or similar receptacle not so abandoned and filled, shall constitute a nuisance, and such nuisance may be abated, as provided by law, at the expense of the Owner of such Improved Property.

2.05 No privy vault, cesspool, sinkhole, septic tank or similar receptacle shall be connected to a Sewer.

2.06 The notice by this Township to make a connection to a Sewer, referred to in Paragraph 2.01, shall include a reference to this Rules and Regulations, including any amendments and/or supplements at the time in effect, or a summary of each Paragraph thereof, and a written or printed document requiring the connection in accordance with the provisions of the Rules and Regulations and specifying that such connection shall be made within the time limitation described herein. Such notice may be given or served at any time after a Sewer is in place that can receive and can convey Sanitary Sewage and Industrial Property.

SECTION 3. PROHIBITED WASTES

3.01 No person shall discharge or shall cause to be discharged into the Sewer System any storm water, surface water, ground water, roof runoff, subsurface drainage, building foundation drainage, cellar drainage or drainage from roof leader connections.

3.02. Except as otherwise provided, no Person shall discharge or cause to be discharged into the Sewer System any matter or substance:

A. Having a temperature which will inhibit biological activity at the WWTP, higher than 104 degrees F (40 degrees C) or less than 32 degrees F (0 degrees C);

B. Containing more than 50 mg/L of fat, oil, or grease;

C. Any liquids, solids, or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by intersection with other substances to cause fire or explosion or be injurious in any other way to the WWTP or to the operation of the WWTP. At no time, shall two (2) successive readings on any explosion hazard meter, at any point of discharge into the Sewer System or at any point in the System be more than five percent (5%) nor any single reading over ten percent (10%) of the Lower Explosive Limits (LEL) of the meter. Prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides and other substances which the Township, the Commonwealth of Pennsylvania, or the Environmental Protection Agency has notified the User is a fire hazard or a hazard to the Sewer System or the WWTP;

D. Containing any solid wastes with particles greater than one-half inch (1/2") in any dimension, resulting from preparation, cooking and dispensing of food and from handling, storage and sale of produce, which wastes commonly are known as garbage, which have not been ground by household type garbage disposal units or other suitable garbage grinders;

E. Containing any solids or viscous substances which may cause obstruction to flow in the Sewer System or other interference with the proper operation of the WWTP such as, but not limited to: animal tissues, paunch manure, bentonite, lye, building materials, rubber, bones, leather, porcelain, china, ceramic wastes, hair, hides, feathers, entrails, feathers, ashes, cinders, sand, spent lime, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, strings, wood, plastics, gas tar, asphalt residues, residues from refining, or processing of fuel or lubricating oil, mud, glass grinding or polishing wastes, dental floss, wool, other fibers, other solid or viscous substances capable of causing obstruction or other interference with the operation of the sewerage system;

F. Having a pH lower than 6.0 or higher than 9.0, or having any other corrosive property capable of causing damage or hazards to structures or equipment of the Sewer System or any Sewer or to any Person engaged in operation and maintenance of the Sewer System;

G. Containing toxic or poisonous substances in sufficient quantity, either singly or by interaction with other pollutants, to injure or to interfere with any sewage treatment process, to constitute hazards to humans or animals or to create any hazards in waters which shall receive treated effluent from the Sewer System;

H. Containing dyed or other materials with objectionable color, from any source that will result in a treatment plant effluent exceeding limits in compliance with applicable State or Federal regulations;

I. Any substance which may cause the WWTP's effluent, residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process, to be in non-compliance with sludge use or disposal criteria, guidelines, or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substance

Control Act, or Commonwealth criteria applicable to the sludge management method being used;

J. Containing radioactive substances and/or isotopes of such half-life or concentration that will result in a treatment plant effluent exceeding limits in compliance with applicable State or Federal regulations;

K. Having a chlorine demand in excess of 12 mg/L at a detention time of 20 minutes;

L. Prohibited by any permit issued by the Commonwealth of Pennsylvania or the U.S Environmental Protection Agency;

M. Containing wastes which are not amenable to biological treatment or reduction in existing treatment facilities. Specifically, non-biodegradable complex carbon compounds;

N. Having a B.O.D. content greater than three hundred (300) ppm;

O. Having a Suspended Solids content greater than three hundred (300) ppm;

P. Having a total Phosphorus as P content greater than 10 ppm;

Q. Having an Ammonia Nitrogen as N content greater than 20 ppm;

R. Having any waste containing toxic or poisonous substances in excess of the following limits, measured at the point of discharge to the Sewer System:

Substance	Maximum Concentration ppm
Arsenic	0.05
Cadmium (as Cd)	0.1
Chromium (trivalent)	1.0
Chromium (hexavalent)	0.05
Copper (as Cu)	0.5
Cyanides (free CN)	0.05
Lead	0.3

Mercury	0.002
Molybdenum	
Nickel (as Ni)	2.0
Phenolic Compounds	0.005
Selenium	
Silver	0.05
Zinc (as Zn)	1.0

S. Containing any substance not mentioned in the foregoing list that will pass through the WWTP and exceed the maximum permitted levels for such substance under the requirements of the Commonwealth or other governmental agencies having jurisdiction;

T. Any other substance prohibited by ordinance, resolution, rule or regulation of the Township hereafter enacted or adopted from time to time.

3.03 Under no circumstances shall any Person discharge or cause to be discharged into the Sewer System any of the substances listed in Paragraph 3.02 above, without first securing written permission to do so from the Township.

3.04 If more stringent limitations are imposed in Federal Categorical Pretreatment Standards, the Federal standards shall supersede the limitations imposed under these Rules and Regulations. The Township shall notify all affected Users of the applicable reporting requirements under 40 CFR, Section 403.12.

3.05 No user shall ever increase the use of process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in the Federal Categorical Pretreatment Standards, or in any other pollutant-specific limitation developed by the Township or Commonwealth unless prior written approval is received from the Township.

3.06 Whenever a Person is authorized by the Township and the appropriate governmental agencies to discharge any polluted water, Domestic Sanitary Sewage or industrial Waste containing any of the substances or possessing any of the characteristics referred to in Paragraph 3.02, such discharge shall be subject to the continuing approval, inspection and review of the Township. If, in the opinion of the Township, such discharges are causing or will cause damage to the Sewer System, the Township shall order the Person causing such discharge to cease doing so forthwith, or take other appropriate action, including exercising the remedies provided in these Rules and Regulations, to eliminate the harmful discharge.

3.07 Nothing contained herein shall be construed as prohibiting any special agreement or arrangement between the Township and the Owner of an Improved Property allowing Industrial Wastes of unusual strength or character to be admitted into the Sewer System.

3.08 Where necessary or appropriate, at the sole expense of the Owner and in the opinion of the Township, the Owner of an Improved Property shall provide suitable pretreatment facilities acceptable to the Township.

3.09 Plans, specifications and any other pertinent information relating to proposed facilities for preliminary treatment and handling of Industrial Wastes shall be submitted for approval by the Township. No construction of any such facility shall commence until approval has been obtained, in writing, from the Township, and until approval has been obtained from all regulatory bodies having jurisdiction.

3.10 Such facilities for preliminary treatment and handling of Industrial Wastes shall be continuously maintained, at the sole expense of the Owner, in good operating condition satisfactory to the Township.

SECTION 4. ADMISSION OF INDUSTRIAL WASTES

4.01 No person shall discharge or cause to be discharged into the Sewer System any Industrial Waste without prior application for and receipt of a written permit from the Township.

4.02 Any person desiring to make or use a connection through which Industrial Wastes shall be discharged into the Sewer System shall file with the Township a completed "Industrial Wastes Questionnaire", which shall supply pertinent data required by the Township, including, but not limited to, estimated quantity of flow, characteristics and constituents of the proposed discharge. The cost of obtaining all such data shall be borne by the Person desiring to make the connection to the Sewer System.

4.03 A. Ten (10) days prior to the first day of January, April, July and October of each year, each major contributor of Industrial Wastes shall file with the Township a report on the quality and quantity of their discharge. The report forms shall be supplied by the Township and shall be similar to EPA 3510-2A, Part F.

B. Major contributors shall consist of those whose total discharge exceeds 2,500 gallons per day, have in their waste a toxic pollutant or, in the judgment of the Township, would have a significant impact on the Sewer System or the quality of its effluent.

4.04 A. When required by the Township, the Owner of any Improved Property serviced by a Building Sewer carrying Industrial Wastes shall install, at his expense, a suitable control manhole, together with such necessary meters and other appurtenances and measurements of the waste flow.

B. All measurements, tests, and analysis of the characteristics shall be determined in accordance with the latest edition of "Standard Methods for Examination of Water and Wastewater", published by the American Public Health Association, Inc. and shall be determined by or under the direct supervision of a "qualified analyst" at the control manhole provided, or upon suitable samples taken at the control manhole. If no special manhole has been required, the control manhole shall be the nearest downstream manhole in the public sewer to the point at which the Building Sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the Sewer System and to determine the existence of hazards to life, limb, and property.

4.05 Any Industrial Establishment discharging Domestic Sanitary Sewage and/or Industrial Wastes into the Sewer System and contemplating a change in the method of operation that will alter the characteristics and/or volume of such wastes being discharged shall notify the Township, in writing, at least ten (10) days prior to institution of such change.

4.06 Grease traps or interceptors shall be provided for all food service establishments. Grease traps or interceptors, oil-water interceptors, or sand interceptors shall also be provided for other establishments when, in the opinion of the Township Sewer Engineer, and at the cost of the Owner, they are necessary for the proper handling of liquid wastes containing floatable grease in excessive amounts, or any flammable wastes, sand, or other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the Township Sewer Engineer and shall be located as to be readily and easily accessible for cleaning and inspection. In the maintaining of these traps or interceptors, the Owner shall (i) inspect each interceptor at least once each calendar quarter and maintain an appropriate written log of such inspections and (ii) be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates, and means of disposal which are subject to review by the Township or their representatives. From time to time, the Township may request copies of said records to be submitted for Township review. Any removal and hauling of the collected materials not performed by owner(s) personnel must be performed by currently licensed waste disposal firms. The Township shall implement other aspects and requirements of a Fats, Oils, and Grease management program as may be required.

4.07 The use of mechanical garbage grinders shall not be permitted without prior approval from the Township.

4.08 The Township may require Industrial Establishments having large variations in rates of waste discharge to install suitable regulating devices for equalizing waste flows to the Sewer System.

SECTION 5. RULES AND REGULATIONS GOVERNING BUILDING SEWERS AND CONNECTIONS TO SEWERS

5.01. Where an Improved Property, at the time connection to a Sewer is required, shall be served by its own sewage disposal system or sewage disposal device, the existing house sewer line shall be broken on the structure side of such sewage disposal system or sewage disposal device and attachment shall be made, with proper fittings, to continue such house sewer line as a Building Sewer in the manner approved by this Township.

5.02 No Building Sewer shall be covered until it has been inspected and approved by this Township. If any part of a Building Sewer is covered before so being inspected and approved, it shall be uncovered for inspection at the cost and expense of the Owner of the Improved Property to be connected to a Sewer.

5.03 Every Building Sewer of any Improved Property shall be maintained in a sanitary and safe operating condition by the Owner of such Improved Property.

5.04 Every excavation for a Building Sewer shall be guarded adequately with barricades and lights to protect all persons from damage and injury. Any street, sidewalk and other property disturbed during installation of a Building Sewer shall be restored, at the cost and expense of the Owner of the Improved Property being connected, in a manner that is satisfactory to this Township.

5.05 If any person shall fail or shall refuse, upon receipt of a written notice of this Township, to remedy any unsatisfactory condition with respect to a Building Sewer within 60 days of the receipt of such notice, this Township may refuse to permit such person to discharge Sanitary Sewage and Industrial Wastes into the Sewer System until such unsatisfactory condition shall have been remedied to the satisfaction of this Township.

5.06 This Township reserves the right to adopt. From time to time, additional rules and regulations as it shall deem necessary and proper relating to connections with a Sewer and with the Sewer System which additional rules and regulation, to the extent appropriate, shall be and shall be construed as part of this Rules and Regulations.

SECTION 6. MISCELLANEOUS

6.01. The Township shall have, to the extent permitted by applicable law, the right of access at reasonable times to any part of any Improved Property which is served by the Sewage System for the purpose of inspection, measurement, sampling, testing and other functions relating to service rendered by the Township. Without limiting the foregoing, the Township's duly authorized representatives, agents, contractors or employees bearing proper credentials and identification shall be permitted, at all reasonable times, to enter upon any premises connected or about to be connected or required to be connected to the Sewage System for the purpose of inspection, examination of connections to the Sewage System, observation, measurement, sampling and testing in accordance the Township's Rules and Regulations, to determine whether any prohibited wastes, discharges or connections exist. If any person shall refuse to permit inspection of connections, wastes, or discharges to the Sewage System, it shall be presumed that a connection, waste or discharge in violation of the Rules and Regulations exists, and such Person shall be charged the penalty rate for an improper connection or discharge as set forth herein. Upon notice to an Owner that an improper connection, waste, or discharge exists or is presumed to exist, a quarterly surcharge of fifty percent (50%) of the prevailing rate per quarter or other quarterly sewer bill is hereby imposed upon and added to every sewer billing for such property until the improper connection, waste, discharge or refusal to inspect is corrected. The Township may, in its sole discretion, grant waivers from the surcharges where strict enforcement may cause undue hardship unique to the property or where the Owner was scheduled for disconnection of the improper connection but cannot do so due to circumstances beyond the Owner's control, such as unavailability of a plumber or inclement weather. The Township also reserves the right to terminate service or take any other action permitted by law.

6.02 By having applied for permission to, and/or having connected to, the Township's sewer system, the Owner shall be conclusively deemed to have given the Township the right of access at reasonable times to any Improved Property which shall be served or is about to be served by the Sewer System as shall be required for the purposes of inspection, measurement, sampling and testing and for performance of other functions relating to service rendered by the Township through the Sewer System, and to ensure or enforce compliance with these Sewer Rules and Regulations.

6.03 Each Improved Property shall have its own individual Lateral.

6.04 Where premises in single ownership consist of more than one (1) building, the Township reserves the right to determine under circumstances of each case, whether each separate building must have an individual Lateral or whether all buildings together may use a single sewer connection. If, however, the property on which the multiple buildings are located is physically capable of subdivision so that different buildings could have separate owners, then each such building having a plumbing fixture shall have a separate sewer connection through its own Lateral.

6.04 The Owner of any Improved Property, upon the direction of the Township, shall acquire and install, at such Owner's cost and expense, a grinder pump or other apparatus satisfactory to the Township In the manner and at the location directed by the Township. Such grinder pump or other apparatus shall be installed at the time such Improved Property is connected to the Sewer System and shall be subject to Township inspection and approval together with the remainder of the Building Sewer. Maintenance, repair, tap and replacement of such grinder pump or other apparatus shall be and remain the sole responsibility of the Owner of the improved Property.

6.05 The Owner of any Improved Property shall be held liable for all acts of tenants or other occupants of such Improved Property, as may be permitted by law, insofar as such acts shall be governed by the provisions of these Rules and Regulations.

6.06 The Township shall adopt, from time to time, such additional rules and regulations as it shall deem necessary and proper in connection with the use and operation of the Sewer system, which rules and regulations shall be, shall become and shall be construed as part of these Rules and Regulations.

6.07 The enactment of these Rules and Regulations is necessary for the protection, benefit and preservation of health, safety and welfare of the inhabitants of this Township.

PART II - FEES

SECTION 1. USER CHARGE

1.01. A User Charge is hereby imposed upon the Owner of each Improved Property which shall be connected to the Sewer System, for use of the Sewer System, whether such use is direct or indirect, and for services rendered by the Township in connection therewith and shall be payable as provided herein. At the discretion of the Township, such User Charge may be imposed upon the Owner of an Improved Property who refuses improperly to connect such Improved Property to the Sewer System, as compensation for the availability of service by the Township in connection with the Sewer System.

1.02 The User Charge shall be payable by all Owners of Improved Property which shall be connected to the Sewer System, quarterly, in an amount to be established by the Board, in the manner and at the times hereinafter described, payable indefinitely.

1.03 The User Charge applicable to any Improved Property constituting a Dwelling Unit or Large Consumer shall be calculated, imposed and collected according to the method described herein.

1.04 Each Owner of an Improved Property shall pay the applicable User Charge times the number of Equivalent Dwelling Units applicable to such Improved Property, as determined by the Township. The minimum number of Equivalent Dwelling Units applicable to each Improved Property shall be determined as follows:

Description of Improved Property	Number of EDUs
Residential Uses	
Single-family dwelling, full- or part-time	1.0
Multiple family dwelling, per family	1.0
Trailer/mobile home	1.0
Apartment house, per 3 bedrooms in aggregate or fraction thereof	1.0

Description of Improved Property	Number of EDUs

Commercial, Industrial and Institutional Uses

Commercial, industrial, and institutional establishments shall be assigned a number of EDUs based on the estimated or actual sanitary sewage discharged, with such discharge determined by the highest quarterly discharge, divided by the flow per EDU set forth in the adopted tapping fee calculations. If estimated or actual sanitary sewage data is not available, the following metrics shall be used.

Hotel or motel, per 4 units or fraction thereof	1.0
Rooming House, per 4 rooms or fraction thereof	1.0
Restaurant, club, tavern, cafeteria, or other food or drinking establishment, per 15 seats	1.0
Church, per 135 seats	1.0
Community hall, per 65 seats	1.0
Retail or wholesale stores, per two (2) toilets	1.0
Gasoline service station, per two (2) toilets	1.0
Commercial mechanical service station, per two (2) toilets	1.0
Beauty/barber shop, attached or unattached to dwelling, per full-time licensed employee or equivalent	1.0
Laundromat, per washing machine	1.0
Education/Institutional Establishment, per metered water usage	1.0
Funeral Home, per two (2) toilets	1.0
Doctor’s office, per 2 examination rooms	1.0
Nursing home, per 5 full-time residents or equivalents	1.0
Factories and plants, exclusive of Industrial Wastes, per 8 employees	1.0
School, public or private, per 20 pupils or faculty	1.0

In no case shall the number of Equivalent Dwelling Units be less than (1.0) for an Improved Property. The number of EDUs assigned shall be rounded up to the nearest whole number.

SECTION 2. TAPPING AND CONNECTION FEES

2.01. No person shall connect any Improved Property with any part of the Sewer System without first making application for and securing a permit, in writing from the Township. Such application shall be made on a form to be provided by the Township and shall be submitted in the manner described in these Rules and Regulations.

2.02. A Tapping Fees shall be charged against the Owner of any Improved Property (other than such Owners who are subject to contractual or special agreements providing for payment of certain sums in lieu of Tapping Fees) whenever such Owner hereafter shall connect or be required to connect such Improved Property with the Sewer System. The Tapping Fee hereby imposed shall be the product of the then-current tapping fee multiplied by the number of Equivalent Dwelling Units applicable to the Improved Property.

2.03 The Township reserves the right to revise the Tapping Fee from time to time. The tapping fee calculation shall be available for public inspection to reflect appropriate amendments to the cost components, design capacity, or other elements of the required calculation of the Tapping Fees. Such amendments shall be deemed to revise the maximum permissible Tapping Fees of this Township set forth therein and shall be construed as part of these Rules and Regulations and be applicable to those Persons who subsequently connect to the Sewer System.

2.04 The Connection Fees shall be based on the definition contained in Part I of these Rules and Regulations.

SECTION 3. MISCELLANEOUS FEES

Administrative Fee $250.00
Escrow Account / Initial Review Deposit ..... $5,000 or such other amount as may be determined by the Township.

Conoy Township Plan Review Fees and other Engineering Services
Sewer Engineer.....Sewer Engineer's Current Rate Schedule
Township Engineer .....Township Engineer's Current Rate Schedule

Final Inspection Fees
Ten (10) or Fewer Residential Lots $125.00
Over ten (10) Residential Lots $250.00
Commercial/Industrial $250.00
Document Archive Fee $25.00

SECTION 4. PENALTIES, DELINQUENT SEWER CHARGES, AND LIENS

4.01 Quarterly charges for sewer service and quarterly connection charges shall be subject to ten percent (10%) penalty if not paid within thirty (30) days after they are due. If not paid within sixty (60) days after becoming due, the bill plus the penalty shall bear interest from the due date at the rate of one percent (1%) per month or fraction thereof until paid, and the Township shall have the right to cut off sewer service from the delinquent premises and not to restore the same until all delinquent bills against the same and the cost of cutting off and restoring service shall have been paid.

4.02 Payments made, as evidenced by the United States Post Office mark, on or previous to the end of the period during which the bills are payable at face, will be deemed to be a payment within such period.

4.03 All sewer charges, together with all penalties thereon, not paid within ninety (90) days from the date of each bill shall be deemed to be delinquent. All delinquent sewer rentals and all penalties thereon shall be a lien on the property served and shall be entered as a lien against such property in the office of the Prothonotary of Lancaster County and shall be collected in the manner provided by law for the filing and collection of such liens.

4.04 The Township may also seek a judgment against the Owner at the District Magistrate for delinquent sewer rentals and all penalties. Further, the Township reserves all legal remedies available to obtain payment for delinquent sewer rentals and penalties.

4.05 The Township establishes the following fees, as attorney's fees, for the collection of each and every past due sewer bill to be added to, and made part of the lien:

1. For all collection efforts by the Township solicitor up to and including filing of a municipal lien under the Municipal Lien Law 53 P.S. section 7101 et seq., the sum of $300.

2. For any collection activity by the Township solicitor required beyond the filing of the municipal lien, including, and without limitation, execution on such municipal lien, the rate of $400 per hour.

PART III – NEW DEVELOPMENTS AND CONNECTIONS

SECTION 1. PLAN PREPARATION

A. DESIGN STANDARDS

1. All facilities shall be designed in accordance with: (I) the PADEP Domestic Wastewater Facilities Manual; or (II) the Township's specifications, as appropriate. In case of conflict between the PADEP and Township requirements, the Township requirements shall take precedence except as otherwise required by law.

2. All designs shall be in accordance with applicable Federal, State, and local laws, ordinances, and regulations.

3. Design Parameters

    a. Domestic and Non-Domestic Establishments shall be assigned a number of EDUs in accordance with Part II of these Rules and Regulations.

4. The use of grinder pumps and pressure sewer systems shall not be allowed by new development. Exceptions to this policy will be considered only as a last resort. Furthermore, exceptions will require review and approval by the Board and adherence to the conditions placed upon the approval and the lot, including proof of full disclosure to the potential buyer and recorded notice to all future owners.

5. All sewer mains shall extend to the far property line of the last property proposed to be served by a given extension or addition to the Township's system.

6. The Township shall have the exclusive right to determine the type, size, alignment, materials, and specifications for all sewer facilities.

7. All sewer lines shall be installed in Township or State roads or road rights-of-way. Installation in easements over private property will only be considered for approval when the Township determines such installation is in the best interest of the Township and the Township is provided with an easement and/or right-of-way agreement acceptable to the Township Solicitor.

8. The Developer shall provide connections and/or laterals for existing structures and/or properties along the route of any extension of existing sewer lines to the Developer's project. Such service locations shall be identified by the Township and the required services(s) shall be noted and detailed on the plans. Reimbursement of costs of such services(s) shall be noted, detailed on the plans, and based upon the Township's fee schedule.

9. Standard forms and agreements required for processing a subdivision are available at the Township office. Some forms may need to be adapted to specific circumstances. It is the responsibility of the Developer to ascertain whether or not the standard form is appropriate for the project. Changes to the forms will be made at the Developer's expense.

10. A list of fees is provided in Part II of this Manual. A list of standard forms is provided in Part V in addition to the application required for the initial submission.

B. SKETCH PLANS

Sketch Plans are not required by the Township for sewer extensions. However, sketch plans are required for single lateral installation. Should a Sketch Plan be submitted for review for sewer extensions, it should show, at a minimum, the proposed location and point of connection to existing sewer facilities. Preliminary sewage flow estimates must be included for non-domestic, commercial, or industrial uses. Sketch Plans will be reviewed for obvious deficiencies only and a comment letter will be provided to the Developer. All costs for review shall be reimbursed to the Township by the Developer.

C. PRELIMINARY PLANS

Preliminary plans are required for all sewer extensions. Two (2) copies of the plans and specifications for all proposed extensions and/or modifications to the Township's facilities shall be submitted to the Township and one (1) copy to the Engineer. All plans and specifications shall be prepared by a professional engineer registered in Pennsylvania, or other professional registered in Pennsylvania authorized by law to prepare such plans and specifications. The plans shall clearly show the location of all sewer facilities, including all appurtenances, required for the completion of the work, as well as the field verified location of all the Township's existing facilities impacted by the proposed project.

1. Submission

Original plans and other documents and fees called for herein must be received at least twenty-one (21) days prior to the Township's meeting at which the plans are to be considered. This timeframe is required to enable prior review by the Township and its Engineer. Subsequent submittals must be received no less than twenty (21) days prior to the Township meeting by the Township and its Engineer. Documentation received after this deadline will be considered at the following Township meeting. Subsequent submittals in the form of revised plans must indicate revisions by highlight. If plan documentation is insufficient and the review has not been completed, the plan will not be placed on the meeting agenda for review.

In the case of plans and specifications which are clearly incomplete, or which are significantly non-responsive to the Township's requirements, the Township will reject the proposed plans and specifications without extensive review, pending the receipt of plans which address the Township's requirement. It shall not be the responsibility of the Township or its Engineer to design or redesign such extension or additions.

Original submissions must include the following:

a. A completed Application for Consideration of a Request to Extend and/or Connect with the Sewer System and Request for Allocation of Capacity and applicable fees, administrative fee, and escrow fund/initial review deposit as set forth in Part II hereof.

b. One (1) complete set of plans to the Township Office.

c. One (1) complete set of plans to the Engineer.

d. One (1) complete electronic set of plans to the Engineer and Township Office.

e. Application for Sewage Planning Module or Sewage Planning Module Exemption, as required by PADEP.

f. If the proposed construction includes modification of any existing facilities, the submission must contain a description of the construction procedure to ensure that continuous service will be provided to the Township's current customers.

g. If any part of a main extension intended to be dedicated to the Township is to be installed anywhere other than in publicly dedicated streets, before the Township gives its final approval of the plan, the Developer shall provide the Township with easements and/or rights-of-way in form and substance satisfactory to the Township and its Solicitor, evidencing the right of the Developer and the Township to install, maintain and reconstruct lines across private property.

The Township recognizes that some construction will require temporary interruption of service; however, such interruption must have prior written approval by the Township. The conditions of interruptions of service shall be at the sole discretion of the Township.

The Developer shall be solely responsible for the costs of the design of the facilities associated with the extension and/or modifications of the Township's facilities as required by the Township. In situations where modifications to the Township's existing facilities or where major facilities, as defined by the Township, are required, the Township reserves the right, at its sole discretion, to have the design completed by the Engineer at the Developer's expense.

1. Review

The Township will review the capacity requirements, the plans, and specifications for obvious deficiencies. The Township reserves the right to require changes to the plans and specifications at Final Plan review, should the changes be in the best interest of the Township.

As a result of the Preliminary Plan review process:

a. A Developer's Escrow shall be established during the initial review and must be submitted to the Township prior to subsequent review.

b. Sewer Extension Agreements, Easement Agreements, Grinder Pump Agreements, if applicable, and a Letter of Credit form will be forwarded to the Developer.

c. Highway Occupancy Permit Applications must be filed, if required.

d. The Township's section of Sewage Planning Module will be completed and forwarded to the Developer or his consultant.

e. Township staff will notify the Township Board of Supervisors and Planning Commission of capacity request, provided sufficient capacity exists, and further provided that the Developer has submitted to the Township all necessary applications, agreements, and fees.

f. Upon approval of the capacity request by the Board, the Developer will receive a notice of the approval which must be executed by all parties and returned to the Township office.

D. FINAL PLANS

1. Submission

Final Plans may be submitted in phases and must be received by the Township and its Engineer at least twenty-one (21) days prior to the Township's meeting. Revised Final Plans must indicate revisions by highlight and must be received at least twenty-one (21) days prior to the Township meeting by the Township and its Engineer. Final Plans received after these deadlines will be considered at the following Township meeting.

The Final Plan Submission must include the following:

a. Six (6) complete sets of the plan to the Township Office.

b. One (1) complete set of the plans to the Engineer.

c. One (1) complete electronic set of plans to the Engineer and Township Office.

d. Completed Sewer Extension Agreement.

e. Completed Easement Agreement to be recorded.

f. Cost estimates for the installation of sewer facilities. Cost estimates shall include all facilities to be offered for dedication to the Township. Estimates shall be certified to be fair and reasonable and sealed by a registered Professional Engineer.

g. Sewage Planning Module Approval from the PADEP.

h. Completed Grinder Pump Agreements (if applicable).

i. Developer's Escrow (if not previously submitted).

j. If the Final Plan was not preceded by a Preliminary Plan, all information, documents, and other submissions required for Preliminary Plans as set forth in Part I, Section 2, hereof.

2. Review

The Township will complete a thorough review of the Final Plan documents related to the sewer facilities. Final Plan approval will not be communicated until the Township Board has had an opportunity to review the Plan and approve it at a public meeting. Approvals may be contingent on the receipt of fees or any other items which the Township deems appropriate. All contingencies must be satisfied prior to final approval.

SECTION 2. FINANCIAL REQUIREMENTS

A. ESCROW FUND

Upon submittal of the Plan, the Developer shall establish an escrow fund/initial review deposit with the Township. During the first review of the Plan, the Engineer may direct that the escrow account be increased to an amount sufficient to cover the estimated costs of review, construction observation, engineering expenses, administrative expenses, legal expenses and other charges the Township may incur in the furtherance of the design, installation or dedication to the Township of the proposed municipal facilities for the Project. Any required increase in the amount of the escrow account shall be paid by the Developer to the Township prior to, or with, the next submission of the Plan. In the event said sum deposited is in excess of such costs, the Township shall refund such excess money without interest to the Developer upon completion of the work and acceptance of dedication of said mains, with the exception of a final inspection fee or other costs incurred by the Township.

The Township is irrevocably authorized to withdraw from time to time any monies deposited by Developer in escrow in order to pay expenses and fees, including legal and engineering fees, incurred by the Township pursuant to or in connection with the Project. Should the escrow account become depleted, the Developer will be required to deposit additional funds at the Township's request. The Township shall have the right to suspend work pending receipt of the sum billed.

B. LETTER OF CREDIT FOR CONSTRUCTION

Prior to seeking Final approval from the Conoy Township Board of Supervisors, the Developer shall submit to the Township an irrevocable Letter of Credit in a format provided by the Township or other form of financial security, in a format approved by the Township, in the amount of 110% of the estimated construction cost estimate approved by the Township during the Final Plan review process.

The Township, at its sole option, may consider reducing the amount of the Letter of Credit or other form of financial security as construction progresses. The Developer should present a written request to the Township for a drawdown and the installation will be inspected by the Township based upon that request. If recommended by Township staff,

the request will be presented to the Township Board for consideration at a regularly scheduled Township meeting.

C. MAINTENANCE GUARANTY LETTER OF CREDIT

At acceptance of construction, the Developer shall submit an Eighteen-Month Maintenance Guaranty Letter of Credit or other approved form of Maintenance Guaranty. The amount of the Maintenance Guaranty shall be 10% of the original construction cost unless the Developer is otherwise notified in writing by the Township. The Township shall have the sole discretion in establishing the amount of the Letter of Credit based upon the nature of the construction.

The Maintenance Guaranty for the work in PennDOT rights-of-way may be longer than 18 months. The Township reserves the right to delay acceptance of the sewer improvements to coincide with the expiration of the PennDOT Maintenance Guaranty.

D. PERMIT FEES

The Developer shall be responsible for all permits and/or processing fees of any agency, firm or authority having jurisdiction.

E. INSPECTION FEES

The Developer shall be responsible for all inspection, testing or approval costs of any agency, firm or authority having jurisdiction.

F. MAINTENANCE OF SERVICE

The Developer shall be solely responsible for all costs to provide continuous service to the Township's existing customers as directed by the Township. Such costs shall include those borne directly by the Developer or incurred by the Township. The Developer shall be responsible for all inspection, testing or approval costs.

G. OPERATING AND MAINTENANCE COSTS

The Developer shall be solely responsible for operating and maintenance costs of new or modified facilities constructed until acceptance by the Township, or some earlier date approved in writing by the Township. If the system modifications include existing

facilities required to maintain service, this responsibility will be defined in the Developer's Agreement.

H. INSPECTION AND TESTING COSTS

The Developer shall be solely responsible for all costs incurred by the Township for inspection and testing of the facility installed by the Developer. These costs shall include Township staff costs, engineering fees, inspection fees, and testing costs. Testing costs referenced in this paragraph include or are in addition to the Developer's costs defined by the technical specifications.

SECTION 3. GRINDER PUMP UNITS

A. GENERAL STATEMENT

Use of grinder pump units will be approved on a case-by-case basis. The Township reserves the right to require gravity installations wherever physically possible, including installation of special facilities by the Developer to facilitate gravity service.

B. SPECIFIC REQUIREMENTS

1. In order to provide uniformity throughout the system, all grinder pump systems must be of the size and type specified by the Township.

2. Simplex (single) grinder pump units shall be used at single-family residential properties, while either simplex or duplex (double) grinder pump units shall be utilized at multi-family, commercial, and industrial properties. The sizing of such grinder pump units must be sufficient to serve the maximum expected sewer flows of the property. The Developer's Engineer will be required to provide calculations for the sizing of grinder pump units.

3. The Township shall maintain in its possession, at all times, one (1) spare grinder pump for every ten (10) grinder pumps connected to its Sewer System. Any person seeking approval to use grinder pumps shall pay to the Township (1/10th) of the then current cost of a grinder pump for each grinder pump to be installed by or on behalf of such person. The current cost of a grinder pump shall be as determined from time to time by the Township, in the Township's sole discretion. Prior to the installation of any grinder pumps, the person desiring to install the grinder pump or pumps shall be required to enter into a Grinder Pump Agreement with the Township and shall make payment to the Township as aforesaid upon execution of the Grinder Pump Easement & Maintenance Agreement.

4. The owner of the property served by a grinder pump shall have the responsibility for maintaining, operating, repairing, and replacing grinder pumps. Each homeowner of the lots to be served by the grinder pumps shall be put on notice of such intended sewer service no later than the execution

of the sales agreement, which sales agreement shall advise the prospective homeowner of his or her obligations pertaining to the grinder pump and which sales agreement shall also refer to and incorporate by reference a copy of the Township 's specifications and resolutions regarding grinder pumps.

5. Each Subdivision requiring grinder pumps shall include in its plan notes a notification regarding grinder pumps. At the time of settlement, the Developer must include in all deeds for the lots to be serviced with grinder pumps a provision imposing on the homeowner, his or her heirs, assigns and successors in interest, the ongoing duty of maintenance, and replacement, if necessary, of the grinder pump servicing the homeowner's individual lot.

6. Except for the spare grinder pump referred to in paragraph 3 of this section, the Township shall have no responsibility for the purchase, operation, repair or replacement of grinder pumps or associated facilities.

7. If the use of grinder pumps is approved, the Developer must obtain the Grinder Pump Agreement, grinder pump specifications and homeowner information packets at the Township office.

SECTION 4. PERMITS

A. STATE HIGHWAY AND TOWNSHIP ROADS

The Developer performing the extension, or acting through its contractor, shall secure the necessary state highway and municipal permits for working within state highway and township streets. The Developer and/or his Contractor shall comply with all PennDOT and municipal laws, rules, regulations, and ordinances including, but not limited to, furnishing bonds and insurance required and costs of inspection of the work. All PennDOT inspection fees and/or other PennDOT fees or costs associated with the work shall be paid by the Developer.

Where the Township is required, by PennDOT regulations, to apply for a highway occupancy permit and to post bonds and provide insurance for an extension, the Developer constructing the extension shall be responsible for paying for or reimbursing the Township for the costs of such bonds and insurance. Furthermore, before the Township shall execute and file any application for highway occupancy permit with PennDOT, the Township shall have received from the Developer and/or Contractor an agreement of indemnity from the Developer and/or Contractor, wherein the Developer/Contractor shall agree to indemnify and hold harmless the Township and its agents from any and all liability incurred in connection with the Project and from all costs and expenses imposed on the Township by PennDOT in connection with such application and naming the Township and its Engineer as additional insureds on the Contractor's general liability policy. It is the intent of such agreement that any and all costs and expenses incurred by the Township as a result of the PennDOT application process for a highway occupancy permit shall be paid in full by the Developer. The Developer shall carry contractual liability insurance in an amount and form satisfactory to the Township, insuring the indemnification.

B. ENVIRONMENTAL

The Developer shall be responsible for all costs of filing for PADEP permits, should such permits be required for the development or connection. All PADEP permits shall be issued in the name of the Township. The Township will cooperate with the Developer in providing data required for the filing and execute the application form. If the Township is preparing the design, the Township Engineer shall prepare the application data required. However, this does not relieve the Developer from being totally financially responsible. Furthermore, before the Township shall execute and file any application for permits with

PADEP, the Township shall have received from the Developer and/or Contractor an agreement of indemnity from the Developer and/or Contractor, wherein the Developer/Contractor shall agree to indemnify and hold harmless the Township and its agents from any and all liability incurred in connection with the Project and from all costs and expenses imposed on the Township by PADEP in connection with such application and naming the Township and its Engineer as additional insureds on the Contractor's general liability policy.

SECTION 5. CONSTRUCTION

A. GENERAL REQUIREMENTS

Prior to the start of construction, the Developer shall submit two (2) copies of shop drawings and/or material specifications to the Township, unless otherwise directed by the Township, for all materials to be utilized and receive approval of such material(s). The equipment and materials described by the shop drawings and material specifications submitted shall not be incorporated into the work until approved by the Township or its Engineer. The Township reserves the right to request additional work and materials where, in its opinion, conditions warrant such work and materials.

The Developer, acting through its contractor, shall notify the Township at least seven (7) working days prior to the commencement of construction to facilitate the scheduling of inspections of the sewer installation(s). No work may be undertaken without construction observation, and any work performed without construction observation shall be re-excavated, exposed, and observed by the Township's representatives. Any defective work, or any work not conforming to the plans and specifications approved by the Township, shall be replaced to the satisfaction of the Township at the Developer's cost and expense.

B. INSURANCE

Prior to the initiation of any construction activities, the Developer and/or Contractor shall have submitted to the Township an approved Certificate of Insurance outlining the required insurance coverages. The Certificates shall contain a provision that coverages will not be canceled, materially changed or renewal refused unless at least thirty (30) days' prior written notice has been provided to the Township.

Insurance coverages are required to be written on an "occurrence basis" and be written through an insurance company rated as A- or better by AM Best. The policies of insurance shall include the Township, the Township Engineer, and the Township as additional insureds. The insurance coverages and minimum limits of liability shall be as follows:

1. Worker's Compensation:

    a. All State requirements for Workers' Compensation coverage shall be met including:

    b. Employer's liability:

Bodily Injury by Accident	“As required by law.”
Bodily Injury by Disease	“As required by law.”
Bodily Injury by Disease	“As required by law.”

2. Comprehensive General Liability:

The Comprehensive General Liability Policy shall satisfy the following requirements:

a. The aggregate limits of insurance shall be on a "per project" basis (ISO Endorsement CG 2503 or its equivalent shall be included).

b. Coverage shall be provided for completed operations and products liability.

c. The exclusion with regard to property under the care, custody and control of the Developer and/or Contractor shall be eliminated.

d. Coverage shall include contractual liability insurance.

e. Coverage shall include explosion, collapse, and underground insurance.

f. Coverage shall include personal and advertising injury insurance.

g. The minimum limits of liability shall be as follows:

Each Occurrence	
(Bodily Injury and Property Damage)	$1,000,000
General Aggregate	
(except Products-Completed Operations)	$2,000,000
General Aggregate	
(Products-Completed Operations)	$1,000,000
Personal and Advertising Injury	$1,000,000

3. Comprehensive Automobile Liability:
Bodily Injury and Property Damage: $1,000,000 each accident (combined single limit)

4. Owner's and Contractor's Protective Liability: (Separate policy)
$2,000,000 each occurrence
$4,000,000 aggregate

5. Excess Liability - Umbrella Form:
$2,000,000 each occurrence
$4,000,000 aggregate

6. Property Insurance

Developer and/or Contractor shall purchase and maintain property insurance upon the work at the site in the amount of the full replacement cost thereof subject to a deductible amount of $1 ,000. This insurance shall be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the work, temporary buildings, false work and work in transit and shall insure against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of laws and regulations, and water damage.

SECTION 6. RECORD DOCUMENTS

A. GENERAL REQUIREMENTS

The Township shall inspect and maintain records of all sewer facility installations during construction. Within two (2) months from the date of completion of the sewer facility installations, but prior to submission of final record drawings, the Developer's contractor shall contact the Engineer to arrange for a review of said contractor's draft record drawings and a comparison with the Township's record drawings. Any inconsistencies between the contractor's draft record drawings and the Township's record drawings shall be resolved to the satisfaction of the Engineer prior to submission of final as-built plans by Developer. If necessary, site visits shall be scheduled between the Developer's contractor and the Engineer to correctly locate all sewer facility installations. All costs and expenses incurred by the Township relating to the record drawings, including, but not limited to, inspection fees and expenses, record keeping fees and expenses, engineering and legal fees and expenses, shall be borne by the Developer and shall be paid from the escrow fund established with the Township by the Developer.

Within one (1) month from the date of review and approval of the draft record drawings, the Developer shall submit to the Township final record documents of the facilities. Record documents shall include drawings, manufacturer's information and instructions, Contractor field notes, and records of tests performed while demonstrating compliance with the Township's Rules, and Regulations. The Township shall review the final record documents, and approval is required prior to consideration of acceptance of the facilities.

In the event that the Developer fails to submit draft record drawings within the aforesaid two (2) month period or final record documents within the aforesaid one (1) month period, the Engineer will prepare final record documents at Developer's expense and all related fees and expenses shall be borne by Developer and shall be paid from the escrow fund established with the Township by the Developer.

B. SEWER SYSTEM RECORD PLANS

The record plans shall show the following facilities and include the following information:

1. Road or Street names and route numbers as required.
2. Lot lines and approximate house location.
3. Curb lines and right-of-way lines.
4. North Arrow.
5. Depth to service at end of service line or Lateral.
6. Finished first floor elevation of structure being served.
7. Location of Lateral or service line. Each lateral shall show distance from main to vent and clean out. Lateral locations shall be measured from lower manhole by giving distance from that manhole to the service or connection point.
8. All gravity sewer lines and force mains.
9. All appurtenances, including manholes, lateral connections, and air release/vacuum valves. Manholes with watertight covers must be identified.
10. All other facilities constructed, including pumping stations.
11. Profiles of all gravity sewer lines shall include:
    a. Sanitary sewer lines and manholes.
    b. Elevations - surface and invert.
    c. Manhole to manhole distance.
    d. Percentage of slope.
    e. Type of material and size.
    f. Utility crossings, including separation distance.

C. SUBMISSION REQUIREMENTS

The record document submission shall comply with the following requirements:

1. Only provide sewer sheets for facilities constructed.

2. All drawing sizes shall not be larger than 24" x 36"

3. Drawing submission shall consist of one (1) set of 24" x 36" prints, one (1) electronic PDF set, and one (1) electronic DWG set.

4. One (1) set of 8½" x 11" or 8½" x 14" exhibits for inclusion with the Bill of Sale.

SECTION 7. ACCEPTANCE PROCEDURE

When the installation of sewer lines is complete, Developer shall provide written notification to the Engineer and Township staff. If required by the Township, Developer shall perform the following final testing prior to acceptance by the Township:

Sewer Lines

Ninety (90) days after the sewer mains have been laid and backfilled, Developer shall hire the services of a pipeline televising firm to conduct televising of the sewer lines. The Township reserves the right to approve the pipeline televising firm selected by the Developer prior to the start of the work. The main will be flushed and televised by using specialized sewer main televising equipment to determine whether the alignment of the sewer is true and whether any pipe has been displaced, broken, developed sags, or otherwise damaged subsequent to laying. Results of the televising shall be provided to the Township prior to the installation of the paving base course. This test will be conducted a second time prior to the end of the warranty period. Each section (manhole to manhole) of sewer shall show the sewer main in a condition satisfactory to the Township. Any and all defects shall be corrected by the Developer, to the satisfaction of the Township, before financial security is released.

If the Developer fails to conduct and provide the results of the required testing, the Township shall conduct such testing at the Developer's expense. The cost of such testing shall be paid for by the Developer from the escrow fund established with the Township by the Developer. Any and all deficiencies in the sewer lines shall be corrected by the Developer to the satisfaction of the Township.

Once the construction has been inspected and finally approved by the Township, the following procedure will be completed for consideration of acceptance by the Township:

1. The Developer shall notify Township, in writing, that installation of sewer facilities has been completed and request that the Township begin the process of acceptance.

2. The Developer shall notify the preparer of the plan that record documentation and exhibits should be prepared according to the Township's procedures.

3. The Township staff or Township Engineer will perform an inspection to certify that the work has been completed and will provide a letter to that effect.

4. After all documentation has been received, including certification from the Township Engineer/Township staff that the work has been properly completed and approved, the Township will:

    a. Authorize the drawdown of the Letter of Credit to an Eighteen Month Maintenance Guaranty based on the Engineer's recommendation, except as modified by PennDOT requirements, pending receipt of a Maintenance Guaranty Letter of Credit.

    b. Provide the Developer with a copy of the Drawdown Authorization along with a Maintenance Guaranty Letter of Credit form to present to his lending institution.

    c. Authorize the Township Solicitor to prepare the Bill of Sale and Maintenance Guaranty which will be forwarded to the Developer for execution.

    d. Have the sewer record drawings copied to a disc to archive the project.

5. Acceptance will be scheduled at the meeting following the receipt of the executed Bill of Sale and Maintenance Guaranty and the Maintenance Guaranty Letter of Credit.

6. Once all legal, engineering and inspection fees have been paid, the balance remaining in the Developer's escrow account will be refunded with the exception of the Final Inspection fee and other costs incurred by the Township.

7. The Development will be inspected one (1) month prior to the expiration date of the Maintenance Guaranty and the Maintenance Guaranty Letter of Credit. If the extension fails inspection, the Developer will be notified by the Township to correct deficiencies or it will draw on the Maintenance Guaranty Letter of Credit. Surface appurtenances damaged during construction will remain the responsibility of the Developer until such time as the roadway is accepted by the Township for dedication.

APPENDIX A

TECHNICAL SPECIFICATIONS

1 - CONSTRUCTION SUBMITTALS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Submittal procedures.

B. Action on submittals.

C. Construction progress schedules.

D. Proposed products list.

E. Shop drawings.

F. Product data.

G. Samples.

H. Manufacturers' instructions.

I. Manufacturers' certifications.

J. Shop Drawing Work.

1.02 DISCLAIMER

A. Township's review of submittals is for conformance to design intent and should not be misconstrued as an approval.

B. Township's review does not relieve the Developer's Contractor from the responsibility for the proper fitting and construction of the work, or from furnishing all appurtenances, devices, material and labor required for the installation which may not be indicated on the Approved Plans, in the Township's Technical Specifications or on the submittals.

C. Failure to comply with these requirements will be reason for the Township to reject and return your submission.

1.04 SUBMITTAL PROCEDURES

D. When requested by the Township, the Developer shall submit a complete schedule of all anticipated submittal dates.

E. Developer shall transmit each submittal to the Township and Township's Sewer Engineer in accordance with the schedule.

F. Developer shall sequentially number the transmittals. All resubmittals shall have the original number with an alphabetic suffix.

G. Developer shall identify the Project, contractor, subcontractor, or supplier; pertinent Drawing sheet and detail number(s), and specification number, as appropriate. Developer shall clearly mark models, sizes, features, options, accessories, electrical characteristics, and controls.

H. Developer shall check submittals for conformity with the requirements of the approved plans and specifications; verify dimensions, conditions, features, options, accessories, electrical characteristics, and controls.

I. Developer shall submit a letter which specifically identifies deviations from Approved Plans and/or Township's Technical Specifications. Developer shall identify variations from Approved Plans and Product or system limitations which may be detrimental to successful performance of the completed Work.

J. Developer shall apply Contractor's stamp, signed or initialed, certifying that his review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the Work. Submittals not containing Contractor's stamp shall be returned. The stamp shall have the following format:

> Approved for Township Requirements
> The Developer's Contractor's signature below indicates that he has checked this submittal with the approved plans, Conoy Township's Technical Specifications, and site conditions and found it to meet all requirements of same including dimensions.

Re: [Project Name]

Drawing Sheet _____

Specification _____ Paragraph _____

Deviations from Approved Plans and/or Conoy Township Technical Specifications:

No ___ Yes ___
(letter attached)

By _____
Signature (Developer's Contractor)

K. Developer shall organize submittals by systems, if applicable, and group together in a single document with tabs defining each group.

I. Developer shall revise and resubmit submittals as required and clearly identify all changes made since previous submittal.

J. Developer shall distribute copies of reviewed submittals to concerned parties and instruct parties to promptly report any inability to comply with provisions.

K. Developer shall be and shall remain responsible for all Construction submittals and compliance with all Township Technical Specifications notwithstanding the fact that submissions may be made by his Contractor.

1.05 ACTION ON SUBMITTALS

A. Township Action: The Township will review each submittal, mark with the action taken, and where possible return within two (2) weeks of receipt. Where submittal must be held for coordination, Developer and his Contractor will be so advised by Township.

B. Submittals returned with "NO EXCEPTION TAKEN" action indicates that the information submitted was found to be in conformance with the design concept and in compliance with the requirements of the approved plans and/or Township Technical Specifications. The Developer and his Contractor remain responsible for work-related errors, deviations, and discrepancies in the submittal, but may proceed with performance of the work covered by the submittal.

C. Submittals returned with "MAKE CORRECTIONS NOTED" action indicates that the information submitted was found to be in conformance with the design concept and in compliance with the requirements of the approved plans and/or Township Technical Specifications, provided the noted clarifications or corrections are incorporated in the submitted information for Record Document purposes. The Developer and his Contractor remain responsible for work-related errors, deviations, and discrepancies in the submittal, but may proceed with performance of the work covered by the submittal. Resubmission of information is not required.

D. Submittals returned with "AMEND AND RESUBMIT" action indicate that: (1) information submitted is at least partially not in conformance with the design concept, (2) information submitted is at least partially not in compliance with the requirements of the approved plans and/or Township Technical Specifications, (3) submittal is incomplete and does not include all items required by the individual specifications, or (4) certifications or computations required by the individual specifications have not been included with the shop drawings and product data. Township will note the deficiencies or corrections required and return the submittal to the Developer and his Contractor. Performance of the work covered by the submittal shall not proceed until corrected information is submitted and approved.

E. Submittals returned with "REJECTED - SEE REMARKS" action indicates that the Township interprets the information submitted to be 'not in conformance with the design concept or not in compliance with the approved plans and/or Township Technical Specifications. This action may also indicate non-compliance with the Developer's and his Contractor's responsibility to review information and submit notification of deviations and discrepancies for the Township’s review. Performance of the work shall not proceed until new information is submitted and approved.

1.06 CONSTRUCTION PROGRESS SCHEDULES

A. If required by Township, Developer shall submit three (3) copies of initial progress schedule to Township for review and comment. Developer shall submit revisions monthly, or when requested by the Township, to reflect changes to the initially submitted schedule.

1.07 PROPOSED PRODUCTS LIST

A. If requested by Township, Developer shall submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.08 SHOP DRAWINGS

A. Each submission of shop drawings must be accompanied by a letter of transmittal listing the items in the submission. Each shop drawing must be marked with the name of the project and numbered consecutively.

1.09 PRODUCT DATA

A. Developer shall submit the number of copies which DEVELOPER requires, plus three (3) copies which will be retained by Township.

B. Developer shall mark each copy to identify applicable products, models, options, and other data. Developer shall supplement manufacturers' standard data to provide information unique to this Project.

1.10 SAMPLES

A. Developer shall, if applicable, submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Developer shall coordinate sample submittals for interfacing work.

B. Developer shall submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Township’s selection.

C. Developer shall include identification on each sample, with full project information.

1.11 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specifications, Developer shall submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

B. Developer shall identify conflicts between manufacturers' instructions and Drawings.

1.12 MANUFACTURER'S CERTIFICATES

A. When specified in individual specifications, Developer shall submit manufacturers' certificates to Township for review, in quantities specified for product data.

B. Developer shall indicate material, or product, conforms to or exceeds specified requirements. Developer shall submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Township.

1.13 SHOP DRAWING WORK

A. All work which is related to the required shop drawing review process shall not be initiated until all shop drawings have been received, reviewed, and accepted by the Township.

B. All work initiated by Developer prior to receipt of reviewed and accepted shop drawings shall be at the sole risk of Developer. Any and all rework, modifications or reinstallations necessitated by changes in the work due to changes required by subsequent approved shop drawings will be done by Developer at his expense.

END OF SECTION

SECTION 2 - TRENCHING, BACKFILLING, AND COMPACTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Excavating trenches for utilities.

B. Backfilling and compaction.

1.02 RELATED WORK

A. Boring and Jacking.

1.03 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T99, Moisture-Density Relations of Soils, Using a 5.5-lb. Rammer and a 12-inch Drop.

2. AASHTO T 191, Standard Method of Test for Density of Soil In-Place by the Sand Cone Method.

B. American Society for Testing and Materials

1. ASTM D698-Test methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using a 5.5-lb. Rammer and a 12-inch Drop.

2. ASTM D2167-Test method for density and unit weight of soil in place by the rubber balloon method.

3. ASTM D2321-Practice for underground installation of flexible thermoplastic sewer pipe.

4. ASTM D2922-Test method for density of soil-aggregate in place by nuclear methods (shallow depth).

C. Occupational Safety and Health Administration:

1. OSHA 29 CFR, Part 1926, Subpart P, Construction Standards for Excavation

D. Commonwealth of Pennsylvania Department of Transportation (PennDOT)

1. Publication 408-Specifications

a. PDT Section 703 Aggregates.

E. State Code: Commonwealth of Pennsylvania, Pennsylvania Code, Title 67, Transportation, Department of Transportation, Chapter 459, Occupancy of Highways by Utilities, as supplemental or revised (PennDOT Chapter 459).

F. State Publication: Commonwealth of Pennsylvania, Pennsylvania Code, Title 67, Transportation, Department of Transportation, Chapter 203, Work Zone Traffic Control (PennDOT Chapter 203).

G. Conoy Township

1. Roadway Requirements

2. Blasting Requirements

1.03 DEFINITION

A. Definitions:

1. Subgrade: Trench bottom prepared as specified to receive pipe bedding, concrete cradle or concrete encasement of the bottom of excavations prepared to receive pipe.

2. Utility: Any buried pipe, duct, conduit, or cable.

3. Final Restoration Elevation: Elevation of bottom of final restoration operation such as bottom of topsoil depth or paving Subgrade.

1.05 REGLATORY REQUIREMENTS

A. Work performed within State Highway rights-of-way shall be completed according to Commonwealth of Pennsylvania, Pennsylvania Code, Title 67, Department of Transportation, Chapter 459, Occupancy of Highways by Utilities and if applicable, the PennDOT Highway Occupancy Permit secured by Developer. Work within the State Highway rights-of-ways shall be subject to inspection by representatives of PennDOT.

B. All workmanship, materials, and Developer's responsibility for all Work within PennDOT right-of-way shall be in compliance with PennDOT regulations, specifications and requirements. Where information on the approved Developer drawings is contradictory to current PennDOT requirements, PennDOT requirements shall govern.

C. Work performed within Township rights-of-way shall be completed according to Conoy Township's requirements.

1.06 PROJECT CONDITIONS

A. Removal of Obstructions

1. Developer shall remove, realign or change the direction of above or below ground utilities and their appurtenant supports, if such is required in the opinion of the Township. Perform such work unless such work is done by the owner of the obstruction. However, Developer shall uncover and sustain the obstruction at own expense prior to the final disposition of obstruction. Additional precautions concerning obstructions are as follows:

A. Do not interfere with persons, firms, corporations, or utilities employing protective measures, removing, changing, or replacing their property or structures, but allow said persons, firm, corporations, or utilities to take such measures as they may consider necessary or advisable under the circumstances.

B. Break through and reconstruct, if necessary, the invert or arch of a sewer, culvert or conduit that may be encountered if the said structure is in such a position, in the judgment of the Township and/or owner, as not to require its removal, realignment or complete reconstruction.

B. Environmental Requirements

1. Do not perform trenching, backfilling, or compacting when weather conditions or the condition of materials are such, in the opinion of the Township, that work cannot be performed satisfactorily.

2. Do not use frozen materials as backfill nor wet materials containing moisture in excess of the amount necessary for satisfactory compaction.

3. Prior to use, moisten dry backfill material without having sufficient moisture to obtain satisfactory placement or compaction.

4. Plan work so as to provide adequate protection during storms with provisions available for preventing flood damage. Protect installed piping and other work against damage from uplift due to high ground water levels.

5. Accommodation of Drainage: Keep gutters, sewers, drains, and ditches open for surface drainage. No damming or ponding or water in gutters or other waterways will be permitted, except through approved pipes or properly constructed troughs. When so required, provide pipes or troughs of such sizes and lengths as required, and place the same as required. Perform grading in the vicinity of trenches so that the ground surface is properly pitched to prevent water running into the trenches.

6. Pumping: Keep excavations free from standing water. Build dams and other devises necessary for this purpose and provide and operate pumps of sufficient capacity for dewatering the excavations. Provide for the disposal of the water removed from excavations in such manner as not to cause injury to the public health, to public or private

property, to the work of others, to the portion of the work completed or in progress or produce an impediment to the use of streets, roads and highways.

7. When it is necessary to haul soft or wet soil material over roadways, use suitably tight vehicles to prevent spillage. Clear away spillage of materials caused by hauling on roadways.

8. Provide effective dust control by sprinkling water, use of calcium chloride or other method approved by the Township. Employ dust control when, where and in a manner required by the Township.

9. Do not dispose of water in trenches by draining through completed portions of the work.

C. Protection: Developer shall assume the risks attending to and presence or proximity of overhead or underground public utility and private lines, pipes, conduits and support work for same, existing structures and property of whatever nature. Damages and expenses for direct or indirect injury to such structures; whether such structures are or are not shown on the Drawings, rests solely with Developer.

1. Outside Rights-of-Way: Take necessary precautions to protect trees, shrubs, lawns, and such landscaping from damage. Complete restoration work for damaged areas.

2. Pipe Supports: Adequately support underground pipes or conduits exposed as a result of excavations. Provide adequate support along their entire exposed length. Install such supports in such manner that backfilling may be performed without dislodging such pipes or

conduits. Place and carefully compact aggregate backfill around the supports and leave such supports in place as a guard against breakage due to backfill settlement.

3. Temporary Protective Construction:

   a. Temporary Fence Barricade: Erect and maintain substantial temporary fences surrounding excavation to prevent unauthorized persons from entering such areas.

   b. Barricades: Furnish and erect substantial barricades at crossings of trenches, or along trenches, to protect the traveling public.

   c. Cover open excavation when work therein is suspended or left unattended, including the end of a workday. For such covers, use materials of sufficient strength and weight to prevent their removal by unauthorized persons.

   d. Remove temporary protective construction at the completion of work.

D. Structure Supports: Where passing buildings or any structure which by their construction or position might bring a great pressure upon the trenches, the Township reserves the right to require that such buildings or structures be underpinned or supported and protected, or special sheeting be driven or that short lengths of trench be opened at one time. Failure of Township to recommend said protection shall not relieve Developer of his responsibility to protect structures near the construction.

E. Accommodation of Traffic for Township Roads: Employ such measures as may be necessary, including flagpersons, to keep the street, road, or highway open and safe for traffic. Maintain a straight and continuous passageway on sidewalks and over crosswalks, at least three feet wide and free from obstructions. Do not obstruct Township streets or roads unless Conoy Township authorizes in writing the complete closing of the street, road, or highway. Do not obstruct fire hydrants.

F. Accommodation of Traffic for State Roads: Follow all traffic control requirements in PennDOT guidance and PennDOT permit authorization.

G. Explosives and Blasting:

1. Blasting will be permitted only in areas permitted by Conoy Township and where the proximity of structures, underground facilities or public safety does not preclude the use of explosives. Blasting must comply with Township regulations.

2. The use of explosives shall be governed by the "Regulations for the Storage, Handling and the Use of Explosives" of the Pennsylvania Department of Labor and Industry and any other applicable federal, state, or local codes that may have jurisdiction.

3. All blasts shall be properly matted and securely covered. Developer shall be solely responsible for injury to persons or property located within or beyond the area or scope of the project that may result from use of explosives.

4. Blasting work shall be supervised by personnel licensed and experienced in this type of work.

5. Explosives shall be stored in a state-approved magazine off the job site and shall be delivered to the site in vehicles clearly marked to indicate cargo.

6. Blasting within State Highway and railroad rights-of-way is not permitted unless authorized by PennDOT or the railroad. Developer shall be responsible for securing required permits.

7. Developer shall post a weekly and daily schedule of the street location of the blasting at the Municipal Offices. The schedule shall be updated daily during blasting periods.

8. Developer shall be responsible for the depths to which all blasting is performed.

9. Notify utilities having structures or other installations above or below ground in proximity to the trenching work prior to use of explosives. Such notice must be given sufficiently in advance to enable the utilities to take such steps as they may deem necessary to protect their

property from injury. Such notice shall not relieve Developer of responsibility for damage resulting from his use of explosives. The right is reserved to direct that rock within five (5) feet of pipe, conduit or other structures encountered in the trench be removed by methods other than blasting.

10. Cease blasting operations when street paving adjacent to trench is damaged. Repair damaged street paving. Submit to the Township methods to be used in subsequent blasting. Do not proceed with blasting without written approval of the Township on methods to be used in subsequent blasting.

H. Removal of Rock by Means Other Than Blasting: Where removal of rock by means other than blasting is required, in accordance with the requirements of State and local laws, rules and regulations, and Township requirements, remove by the use of mechanical surface impact equipment, or by drilling and hydraulic rock splitting equipment, or by other methods.

I. Responsibility of Condition of Excavation: Condition and results of excavation are solely the responsibility of Developer. Remove slides and cave-ins at whatever time and under whatever circumstance they occur.

J. Excess Materials: No right of property in materials is granted to Developer for materials excavated on lands not owned by Developer. This provision does not relieve Developer of his responsibility to remove and dispose of surplus excavated materials.

K. Borrow Material: When the required quantity of backfill material exceeds the quantity of suitable on-site material, provide borrowed material. If borrowed material is needed, notify the Township sufficiently in advance to permit the

Township to verify such need and to view the proposed borrow pit to determine the material suitability. Borrow excavation will be subject to Township approval whose written consent shall be obtained prior to its use. Developer shall be responsible for all sampling and testing required by the Township to determine suitability.

L. Change of Trench Location or Depth: The Township reserves the right to change the location of a trench from that indicated on the Drawings due to the presence of an obstruction, or for other causes.

M. Advance Trenching: Where existing utilities or other suspected underground obstructions as indicated on the Drawings are within close proximity of proposed pipelines, uncover and verify the exact location of utilities and other underground obstructions far enough in advance of pipe laying to allow any changes in pipe alignment or grade required to bypass the obstructions to avoid removing sections of pipe already installed. If any sections of installed pipe must be removed and reinstalled as a result of not verifying utilities or other underground obstructions far enough in advance, Developer shall remove and reinstall the pipe as a result of not verifying utilities or other underground obstructions far enough in advance.

1.07 FIELD MEASUREMENTS

A. Verify that survey benchmark, control point, and intended elevations for the Work are shown on the Drawing.

PART 2 – PRODUCTS

2.01 FILL MATERIAL

A. Earth Backfill: On-site excavated soil or soil-rock mixed materials free of topsoil, vegetation, lumber, metal, and refuse; and free of rock or similar hard objects larger than six inches in greatest dimension. Rock to soil ratio shall not exceed one-part rock to three parts soil. Suitable excavated material may only be used as backfill in certain locations and situations if approved by the Township.

B. Aggregate Backfill:

1. PennDOT 2A Coarse Aggregate conforming to PennDOT Publication 408, Section 703, as indicated on Conoy Township standard details.
2. PennDOT Select Granular Material (2RC) conforming to PennDOT Publication 408, Section 703, as indicated on Conoy Township standard details.

C. Pipe Bedding and Initial Backfill:

1. PennDOT 2A Coarse Aggregate conforming to PennDOT Publication 408, Section 703, as indicated on Conoy Township standard details.

2. AASHTO No. 67 Coarse Aggregate conforming to PennDOT Publication 408, Section 703, as indicated on Conoy Township standard details.

D. Concrete Cradle and Encasement: PennDOT Publication 408, Section 704, Type A, a 28-day compressive strength of 3,300 psi.

E. Final Backfill:

1. Within PennDOT right-of-way: Aggregate size and grading as required by PennDOT.

2. Within Township paved areas, new development residential streets, or unpaved surfaces: PennDOT 2RC, PennDOT 2A, or suitable excavated material if approved by the Township, as indicated on Conoy Township's standard details.

F. Unsuitable Bearing Replacement: AASHTO No. 3 Coarse Aggregate conforming to PennDOT Publication 408, Section 703.2.

G. Underground Warning Tape: Required for all pipe.

1. Printed polyethylene tape, three inches minimum width, color coded, one-inch minimum lettering, printed with name of utility buried below, and suitable for installation in all soil types.

2. Magnetic.

3. Provide for:

a. Sewage force main – green

b. Gravity sewer/lateral – green

PART 3 – EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.

C. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Maintain and protect above and below grade utilities which are to remain.

3.02 EXCAVATING

A. The Developer shall notify PA “One Call System” at (1-800-242-1776) in accordance with the regulations of Act 287, as amended, or latest revision. For those existing utilities on private property, contact the property owner and with their assistance locate the utilities.

B. Perform sheeting and shoring according to OSHA Standards.

C. Perform erosion and sedimentation control work according to Title 25 Chapter 102 of the Pennsylvania Administrative Code as well as the Erosion and Sediment (E&S) Pollution Control Program Manual, latest edition. If an E&S Control Plan is required for the project, also perform soil erosion and sedimentation control work according to E&S Control Plan approved by Lancaster County Conservation District.

D. General:

1. Excavation shall be performed to the lines and grades indicated on the Drawings or directed by the Township.

2. Perform excavation and backfilling using machinery except where hand excavation and backfilling is required or is necessary to protect existing structures, utilities, or other private or public properties.

3. Begin excavation in trenches for sewer lines at the control point having the lower invert and proceed upward.
4. Saw cut existing pavement. Remove and replace pavement according to Conoy Township standards and ordinances.

5. Remove rock to Subgrade at least twenty-five (25) feet in advance of pipe laying.

6. Do not interfere with 45 degree bearing splay of foundations.

7. Blasting, if approved, shall be in strict conformance with these specifications.

E. Stripping, Storing and Restoring Surface Items: The Developer shall remove all topsoil, paving, sub-paving, curbing, gutters, brick, paving block, granite curing, flagging or other similar materials, and grub and clear the surface over the area to be excavated. The Developer shall properly store and preserve such materials that may be required for future use in restoring the

F. surface. The Developer shall be responsible for any loss or damage to said materials because of careless removal or neglectful or wasteful storage, disposal, or use of the materials. Any excavated materials not required for backfill or restoration shall be disposed of by the Developer at a suitable disposal location.

G. Subgrade Preparation:

1. Do not excavate below depths indicated or specified except where unsuitable material is encountered at Subgrade.

2. Remove unsuitable material found below Subgrade to a depth determined by the Township and backfill with suitable material or as directed ty the Township to required Subgrade.

3. Remove rocks or other hard matter protruding through trench bottom at Subgrade which could damage pipe or impede consistent backfilling or compaction. Backfill with AASHTO No. 8 Coarse Aggregate to required Subgrade. Compact in four (4) inch lifts.

4. Remove rock below Subgrade if shattered due to excessive drilling impact or splitting operations and in the opinion of the Township it is unfit for foundations. Backfill to Subgrade with Concrete or other material acceptable to the Township.

5. If more materials are removed from any trench than can be backfilled over the completed pipe or stored in the street, leaving space for traffic, the excess materials shall be removed and stored at a suitable site.

6. When directed by the Township, the Developer shall furnish such other suitable materials as may be necessary to properly refill the trench.

7. The Developer shall restore all shrubbery, fences, poles or other property and surface structures, removed, or disturbed as part of the Work. To a condition equal to that before the Work began.

8. The Township may mark certain trees, shrubs, or other items that are not to be disturbed or damaged. In the event such items are disturbed or damaged, they shall be replaced or compensated for at the Developer's expense.

H. Excavated Material Storage:

1. Separate and stockpile in designated area, excavated materials suitable for use as backfill. Remove from the site excess materials and excavated materials not suitable for backfill.

2. In no case shall excavated materials be stockpiled outside of the construction easements or the permanent right-of-way if construction easements are not in place.

3. In streets, roads, and highways or in any other locations where working space is limited, remove the excavated materials from the first 100 feet of any opening, when required by the Township, as soon as such is excavated. Store and return same for backfilling if approved by the Township. In no case will Developer be allowed to cast excavated material beyond the curb or right-of-way lines or on sidewalks or lawns.

4. At all times keep excavated materials at least five (5) feet back from edge of trench to facilitate access.

I. Trench Width:

1. From Subgrade elevation to an elevation at lease twelve (12) inches above the top of the outside barrel of the pipe, excavate trench banks to vertical lines and not less than the minimum nor more than the

maximum widths specified in Table A. If sheeting is required, the Table A dimensions apply to the inside face of sheeting.

Table A	
Minimum Trench Width (Outside Diameter of Pipe at the Barrel Plus)	Maximum Trench Width (Outside Diameter of Pipe at the Barrel Plus)
12 inches	16 inches

2. From a point twelve (12) inches above at the top of the outside barrel of the pipe, maintain trench backs as follows:

   a. Vertical as possible for trenches in paved or unpaved roadways, with a maximum of forty (40) inches.

   b. In open areas, trenches may be sloped at angles required to make trench stand; however, in no case shall angle exceed one-half horizontal to one vertical.

   c. Top of trench shall not exceed limits of right-of-way or construction easement if such is in place.

   d. Maintain trenches such that there is no conflict with State or OSHA regulations.

J. Length of Open Trench:

1. Complete trench excavation at least twenty-five (25) feet but not more than one hundred (100) feet in advance of pipe laying and keep trenches free from obstructions, except that at the end of a work day or at the discontinuance of work, the pipe laying may be completed to within five (5) feet of the end of the open trench.

2. Developer shall limit all trench openings to a distance commensurate with all rules of safety.

3. If the work is stopped either totally or partially, Developer shall refill the trench and temporarily repave over the same. The trench shall not be opened until he is ready to proceed with the construction of the pipeline.

4. The Township reserves the right to request trench refilling over completed pipe if in the Township's judgment such action is necessary.

3.03.1 PIPE BEDDING

A. Place Pipe Bedding and Initial Backfill as specified herein unless indicated otherwise on the Drawings. Place material in trench for full width. Place on each side of pipe and fittings simultaneously.

B. Pipe Bedding: Carefully place on undisturbed Subgrade or compacted Subgrade as approved by the Township. Carefully place pipe bedding material from six (6) inches below outside of pipe barrel to pipe springline. Work Pipe Bedding material by hand under pipe haunching to provide adequate side support. Place in three (3) inch layers (uncompacted).

C. Initial Backfill: From pipe springline to twelve (12) inches above outside of pipe barrel carefully place Initial Backfill in four (4) inch layers (uncompacted). Place carefully so as to not disturb pipe.

D. Special Bedding:

1. Concrete Cradle and Concrete encasement: If concrete cradle and/or encasement is indicated on the Drawings and approved by the Township, the trench shall be excavated to a depth of six inches below the outside of the barrel of pipes. All excavation shall be done by machine.

2. Unstable Subgrade: Where, in the opinion of the Township, the bottom of the trench at subgrade is found to be unstable or to include ashes,

3. cinders, any type or refuse, vegetable, or other organic material, or large pieces or fragments of inorganic material, the Developer shall excavate and remove such unsuitable material to the width and depth recommended by the Township.

    a. Before pipe is laid, the subgrade shall be made by backfilling with aggregate material, as directed by the Township, in six-inch (compacted thickness) layers thoroughly tamped and the bedding prepared as specified.

3.04 BACKFILL

A. Backfill trenches to contours and elevations indicated on the Drawings.

B. Maintain optimum moisture content of fill materials to attain required compaction density.

C. Do not use frozen backfill materials or place backfill on frozen subgrades or trench subgrades.

D. Perform backfilling by methods which will result in thorough compaction of backfill material.

E. Backfill to Final Restoration Elevation: Backfill from one (1) foot above the top of pipe to Final Restoration Elevation using backfill materials specified below. Consolidate backfill materials evenly from center to side of trench to prevent arching.

1. Within the Right-of-Way Limits of Existing State Highways: Aggregate size and grading as required by PennDOT.

2. Aggregate Backfill as indicated on Conoy Township's standard details, compacted in four-inch layers to bottom of final restoration material.

3.05 COMPACTION

A. Solidly tamp each layer of backfill around the pipeline and above pipeline using proper tamping tools made especially for this purpose. Compact each layer to the densities specified using ASTM D698 Standard Proctor Test Methods determined at maximum density at optimum moisture content as determined by AASHTO T 99.

1. Within the Right-of-Way limits of existing State Highways (unless otherwise specified by PennDOT) and Township Roadways.

a. Paved Areas: 100%

b. Unpaved Areas: 92% (Up to bottom elevation of final restoration material)

2. Other Areas

a. Paved Areas: 97%

b. Stone Driveways: 97%

c. Lawns, Fields: 95% (Up to bottom elevation of final restoration material)

B. Do not use rolling equipment or heavy tampers to consolidate backfill until at least two (2) feet of backfill is placed over the top of the pipe.

C. The use of HYDRA-HAMMER for compacting backfill in trenches is prohibited.

D. The use of puddling or jetting for compacting backfill in trenches is prohibited.

E. Compaction Tests: During the course of backfilling and compacting, the Township may at various locations and depths of trenches request that the Developer make field tests, at no cost to the Township, to verify that specified compactions are being achieved. Field density tests are to be conducted

according to AASHTO T 191.

F. If compaction tests indicate that Work does not meet specified requirements Developer is to remove Work, replace, compact and retest.

3.06 STEAM CROSSINGS

A. Construct stream crossing according to drawings and issued permit(s).

3.07 CLEAN-UP AND MAINTENANCE

A. General: During construction, the surfaces of all areas including, but not limited to, roads, streets, and driveways shall be maintained on a daily basis to produce a safe, desirable, and convenient condition. Streets shall be swept and flushed after backfilling, and recleaned as dust, mud, stones, and debris caused by the Work, or related to the Work again accumulates.

B. Remove surplus excavated materials, rubbish, and other construction debris from the site after backfilling is completed.

C. Construction site shall be left clean at end of each working day to satisfaction of the Township.

END OF SECTION

SECTION 3 - BORING, JACKING AND HYDRAULIC DIRECTIONAL DRILLING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Construction of bored or jacked crossings.

B. Construction of hydraulic directionally drilled crossings.

1.02 RELATED WORK

A. Section 4 – Pipe and Fittings

1.03 REFERENCES

A. American Society for Testing and Materials:

1. ASTM A53, Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

2. ASTM A 153; Zinc Coasting (Hot-Dip) on Iron and Steel Hardware.

B. Commonwealth of Pennsylvania Department of Transportation (PennDOT)

1. Publication 408 – Specifications

a. PennDOT Section 703 Aggregates

C. State Code: Commonwealth of Pennsylvania, Pennsylvania Code, Title 67, Transportation, Department of Transportation, Chapter 459, Occupancy of Highways by Utilities, as supplemented or revised (PennDOT Chapter 459).

D. State Publication: Commonwealth of Pennsylvania, Pennsylvania Code, Title 67, Transportation, Department of Transportation, Chapter 212, Official Traffic Control Devices (PennDOT Chapter 213).

1.04 REGULATORY AGENCY REQUIREMENTS

A. Developer shall be responsible for complying with the requirements of the Township, owner of crossing or right-of-way, and/or entity having jurisdiction. Work shall not commence until the proper notice to proceed has been issued by the Township, owner, and/or entity.

B. Developer shall be responsible for making application and obtaining all permits required to complete work from the Township, owner of crossing or right-of-way, and/or entity having jurisdiction. Developer shall contact the Township for additional requirements if a permit is required to in the Township's name.

C. Work performed within PennDOT rights-of-ways shall comply with Pennsylvania Code, Title 67, Chapter 459 – Occupancy of Highways by Utilities and PennDOT Publication 408.

1.01 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Transport, handle and store materials and products specified herein in a manner recommended by the respective manufacturers of such to prevent damage and defects.

1.02 PROJECT CONDITIONS

A. Developer shall keep boring pits dewatered at all times. When water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site. When dewatering, close observation shall be maintained to detect any settlement or displacement of roadway embankment.

PART 2 – PRODUCTS

2.01 STEEL CASING PIPE

A. Unless required otherwise by owner of crossing or right-of-way or entity having jurisdiction, the following specifications hall be adhered to:

B. Steel Pipe: ASTM A 53, or ASTM A139, Grade B.

1. 35,000 psi minimum yield strength.

2. Full circumference welded joints.

3. Asphalt coated.

4. Minimum Wall Thickness: 0.50 inch.

5. Select casing pipe diameter to accommodate casing pipe joints, runners, and allowance for adequate installation space. Casing pipe diameter shall be no less than twice the diameter of the carrier pipe, unless otherwise approved by the Township.

6. Developer's Engineer is responsible for proper sizing of the casing pipe to house carrier pipe and to withstand loading demands.

2.02 CARRIER PIPE AND FITTINGS

A. Ductile Iron Pipe, as specified in Section 4 – Pipe and Fittings is to be used unless required otherwise by owner of crossing or right-of-way or entity having jurisdiction. All joints to be secured with field lock gaskets.

2.03 MISCELLANEOUS MATTERIALS

A. Casing Spacers: Use casing spacers to center and support carrier pipe inside casing pipe. Provide spacers by Cascade Waterworks Mfg. Co. Model CCS, or equal.

1. Shell: 2-piece bolt on style, stainless steel, 14-gauge minimum thickness.

2. Liner: Shell shall be lined with ribbed PVC extrusion with retaining section that overlaps the edge of the shell and prevents slippage.

3. Runners: Ultra high molecular weight (UHMW) polymer and shall be attached to risers. Runners shall have low coefficient of friction, high resistance to abrasion and sliding wear and low deflection under compression.

4. Hardware: 304 stainless steel.

B. End Seals: Provide end seals to wrap around casing and carrier pipes following installation to provide barrier to backfill and seepage. Seals shall be fabricated of 1/8" thick minimum synthetic rubber. Secure end seals to casing using 304 stainless steel straps with work mechanism for tightening. End seals shall be by Cascade Waterworks Mfg. Co. Model CCES, or equal.

C. Grout (Sand/Cement):

1. Portland Cement: ASTM C 150 Type II.

2. Sand: ASTM C 33, fine aggregate.

3. Water: Potable.

4. Grout Quality: Mixture of one part Portland Cement, three parts fine aggregate and water.

D. Water

1. Suitable water for drilling operations.

E. Drilling Fluid:

1. Liquid/clay slurry (bentonite) totally inert with no environmental risk.

2. Other Slurry Materials: Non-corrosive and environmentally safe.

PART 3 – EXECUTION

3.01 PREPARATION

A. Trenching: Excavate approach cased crossings, pits and trenches using methods specified in Section 2 – Trenching, Backfilling and Compaction.

B. Brace and shore trenches to comply with OSHA requirements.

3.02 BORING

A. Push the pipe into the fill with a boring auger rotating within the pipe to remove the spoil. When augers, or similar devices are used for pipe emplacement, the front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger and cutting head from leading the pipe so that there will be no unsupported excavation ahead of the pipe. The auger and cutting head arrangements shall be removable from within the pipe in the event an obstruction is encountered.

B. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than one-half inch. The face of the cutting head shall be arranged to provide reasonable obstruction to the free flow of soft or poor material.

C. The use of water or other liquids to facilitate casing emplacement and soil removal is prohibited.

D. Any method which employs simultaneous boring and jacking or drilling and jacking for pipes over 8 inches in diameter which does not have the above approved arrangement will not be permitted. For pipes 8 inches and less in

diameter, augering or boring without this arrangement may be considered for use only as approved by the Township.

3.03 JACKING

A. Jacking shall be conducted without handmining ahead of the pipe and without the use of any type of boring, augering, or drilling equipment.

B. Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed without stoppage except for adding lengths of pipe.

C. Accurately place guide timbers on line and grade.

D. The vertical face of the excavation shall be supported as necessary to prevent soughing.

E. Use poling boards and bulkheads as required if subgrade conditions in the heading are unstable.

F. Jacking and excavation within the pipe shall proceed simultaneously with the ground being cut no more than 2 inches above subgrade at the bottom.

G. The use of water or other liquids to facilitate casing placement and spoil removal is prohibited.

H. If voids develop or if jacked hole diameter is more than 1 inch greater than the outside diameter of the encasing conduit place grout to fill voids in manner approved by the regulatory agencies.

I. Check conduit alignment in a manner and at times required by the Township. Check alignment and grade at least once per shift as the work progresses.

J. Completely bulkhead heading at interruptions in jacking operations.

K. Completely weld joints around the circumference between sections of steel pipe encasing.

3.04 INSTALLATION AND TESTING OF CARRIER PIPE

A. Install carrier pipe one pipe length at a time. Push carrier pipe through steel casing pipe using casing spacers.

B. Assemble pipe joints with retainer glands or restrained joint before pushing.

C. Test carrier pipe as specified in Section 4 – Pipe and Fittings.

3.05 CLOSING AND CASING PIPE

A. After the pipe has been installed in the casing and has been tested, close both ends with rubberized end seals.

B. The casing end seals shall be properly installed to form a watertight seal between the casing pipe and carrier pipe.

3.06 DIRECTIONAL DRILLING

A. All horizontal directional drilling shall comply with the applicable sections in the HDD Good Practices manual authored by North American Society for Trenchless Technology. Excavate access and exit pits as necessary to horizontal directionally drill the proposed pipe alignment.

B. Comply with all provisions of the PA One Call Law. Protect existing utilities during drilling operations. Notify PA One Call (811 System) of the required amount of time for such work prior to the start of excavation work.

C. Contractor will be responsible for all soil erosion control measures as described in these specifications and as shown on the Drawings.

D. Install piping at the horizontal and vertical alignment shown on the drawings.

E. Allowable tolerances:

1. Horizontal: 1 foot.

2. Vertical: 1 foot, minimum 4 foot of cover required.

3. Clearance to other utilities – minimum of 18 inches both vertically and horizontally.

F. All slurry or other wastewater generated by the drilling process shall be captured in a tank truck (trailer) and removed from the site to a satisfactory landfill.

G. Equipment:

1. The drilling equipment must be capable of placing the pipe within the planned line and grade without inverse slopes.

2. The drilling equipment must meet the minimum thrust/pullback rating, minimum rotary torque rating, and the minimum mud flow pumping capacity to facilitate installation of the low-pressure sewer main or service line.

3. The drilling equipment shall have a guidance system that must be capable of measuring inclination, roll, and azimuth. The guidance system must have an independent means to ensure the accuracy of the installation. The guidance system shall be capable of generating a plot of the borehole survey for the purpose of an as-built drawing.

H. Pilot hole boring:

1. The entry angle and the pilot hole and the boring process shall maintain a curvature that does not exceed the allowable bending radius of the product pipe.

2. The pilot hole shall be drilled along the path shown on the plan and profile drawings to a tolerance of six inches plus or minus for both elevation and alignment. No curves will be accepted with a radius less than that shown on the plan and profile drawings.

I. Alignment adjustments and restarts:

1. The pipeline alignment shall be followed as shown on the drawings within the specifications as stated. If adjustments are required, approval must be obtained prior to making adjustments.

2. In the event of difficulties at any time during the boring operations requiring the complete withdrawal from the tunnel, a second tunnel must be approved by the Engineer. The difficulty point in the tunnel may be excavated and open cut trenched the remainder of the distance.

3. The number of access points shall be kept to a minimum. The equipment must be capable of boring and installing the proposed diameter product pipe in a continuous run of a minimum distance of 600 feet without intermediate pits.

J. Installing product pipe:

1. After the pilot hole is completed, install swivel to the reamer and commence pullback operations. Pre-ream the tunnel, as necessary.

2. The reaming diameter shall not exceed 1.4 times the diameter of the product pipe being installed.

3. The product pipe being pulled into the tunnel shall be protected and supported so that it moves freely and is not damaged by stones and debris on the ground during installation.

4. Pullback forces shall not exceed the allowable pulling forces for the product pipe.

5. Allow sufficient length of product pipe to extend past the termination point to allow connections to adjacent to pipe sections or gate valves.

6. Pulled pipes will be allowed 24 hours of stabilization prior to making tie-ins.

7. Tracer wire is to be installed with all non-ferrous pipes as per the Specifications and Drawings.

K. Inspection:

1. Provide and maintain instrumentation which will accurately perform the following functions.

   a. Locate the pilot hole.

   b. Record coordinates referenced to the drilled entry point.

   c. Measure drilling fluid flow discharge rate and pressure.

   d. Measure pullback pressure.

   e. Provide access to the Township to these instruments and readings at all times.

L. Upon completion of the pipe system installation, the system must pass pressure testing.

END OF SECTION

SECTION 4 - PIPE AND FITTINGS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Sanitary sewer pipe, force mains, fittings, and related appurtenances.

1.02 RELATED SECTIONS

A. Section 2 – Trenching, Backfilling and Compaction.

B. Section 3 – Boring, Jacking and Hydraulic Directional Drilling.

C. Section 5 – Manholes.

D. Section 7 – Cast-In-Place Concrete.

1.03 REFERENCES

A. American National Standards Institute:

1. ANSI A 21.10, Gray-Iron and Ductile-Iron Fittings, 2 through 48 inches, for Water and Other Liquids.

2. ANSI A 21.11, Rubber Gasket Joints for Cast Iron and Ductile Pressure Pipe and Fittings.

3. ANSI A 21.50, Thickness Design of Ductile-Iron Pipe.

4. ANSI A 21.51. Ductile-Iron Pipe, Centrifugally Cast, in Megal Molds or Sand-Lines Molds for Water or Other Liquids

B. American Society for Testing and Materials:

1. ASTM D 1784, Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds.

2. ASTM D 1785, Poly (Vinyl Chloride) (PVC) Plastic Pipe Schedules 40, 80 and 120.

3. ASTM D 2467. Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.

4. ASTM D 2564, Solvent Cements for Poly (Vinyl Chloride (PVC) Plastic Pipe and Fittings.

5. ASTM D 3034, Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

6. ASTM D 3312, Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

7. ASTM F 477, Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

8. ASTM F 789, Type PS-46 Poly (Vinyl Chloride) (PVC) Plastic Gravity Flow Sewer Pipe and Fittings.

9. ASTM D 3321, recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

C. American Water Works Association:

1. AWWA C110, Gray-Iron and Ductile-Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids.

2. AWWA C111, Rubber-Gasket Joints for Ductile-Iron and Gray-iron Pressure Pipe and Fittings.

3. AWWA C150, Thickness Design of Ductile-Iron Pipe.

4. AWWA C151, Ductile-Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lines Molds for Water or Other Liquids.

5. AWWA C153, Ductile-Iron Compact fittings, 3 inch through 24 inch and 54 inch through 64 inch.

6. AWWA C600, Installation of Ductile Iron Water Mains and their Appurtenances.

1.04 SUBMITTALS

A. Make submissions required by Section 1 – Construction Submittals.

1.05 QUALITY ASSURANCE

A. Design Criteria:

1. Use only one (1) type and class of pipe in any continuous line of sewer between structures, unless otherwise indicated on the Drawings.

2. Use pipe and fittings designed to withstand imposed trench loadings and conditions at various locations.

B. Laboratory Tests:

1. The Township reserves the right to require that laboratory tests also be conducted on materials that are shop tested. Furnish without compensation, labor, materials, and equipment necessary for collecting, packaging, and identifying representative samples of materials to be tested and the shipping of such samples to the Testing Laboratory.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Transport, handle and store pipe materials and other products specified herein in a manner recommended by the respective manufacturers to prevent damage and defects.

1.07 SITE CONDITIONS

A. Environmental Requirements:

1. Keep trenches dewatered until pipe joints have been made and concrete cradle and encasement, if any, have cured.

2. Under no circumstances lay pipe in water or on bedding containing frost.

3. Do not lay pipe when weather conditions are unsuitable, as determined by the Township, for pipe laying work.

PART 2 – PRODUCTS

2.01 PIPE AND FITTINGS

A. Size:

1. All pipe diameters referenced or noted shall be inside diameters.

A. Ductile Iron (DIP):

1. Manufacturers:

a. McWane.

b. U.S. Pipe.

c. Or equal.

2. Pipe: ANSI/AWWA C151/A21.51.

3. Wall Thickness Class: AWWA C150, Class 52 for buried pipe. Class designation shall be stamped on pipe.

4. Fittings: Ductile Iron, ANSI/AWWA C110/A21.10, minimum Class 250. Mechanical joints shall conform to ANSI/AWWA C111/A21.11.

5. Joints:

a. Buried Joints:

1. Push-on: ANSI/AWWA C111/A21.11.

2. Restraint push-on gasket AWWA C110 or C153 (depending on pipe size).

6. Pipe Lining: Ductile Iron pipe and fittings shall be factory coated inside with Protecto 401 as manufactured by Induron Protective Coatings or equal.

7. Pipe and Fittings Coating: ANSI/AWWA C151/A21.51, factory coated outside and bituminous paint, minimum 1 mill dry thickness.

8. Pipe shall be furnished in 18-feet or 20-feet lengths except when smaller lengths are required for the location of fittings, and/or specialties.

B. Polyvinyl Chloride Pipe (PVC) – SDR 35:

1. Manufacturers:

a. J. M. Eagle.

b. National Pipe & Plastics, Inc.

c. Or equal.

2. Pipe: Type PSM SDR-35, ASTM D 3034 (4”-15”).

3. Fittings: Conforming to same applicable ASTM Specification requirements for pipe.

4. Joints: ASTM D3212 push-on joint with ASTM F477 elastomeric gasket. Gasket shall be locked in groove of bell to prevent displacement when pipes are joined.

C. POLYVINYL CHLORIDE PIPE (PVC) – SDR21 FOR LOW PRESSURE SEWERS

1. Manufacturers:

a. J.M. Manufacturing Co.

b. National Pipe & Plastics, Inc.

c. Or equal.

2. Pipe: SDR21 PVC Pipe for 10” or smaller.

3. Thrust blocks and anchors at every direction change, in accordance with manufacturer directions.

4. Pressure sewer system operating pressures in general shall not exceed a range of 40 to 60 psi for any appreciable period of time.

2.03 PIPE COUPLINGS

A. Flexible Pipe Coupling (for gravity sewers only):

1. Manufacturers:

a. Fernco.

b. Indiana Seal.

2. Clamped design with virgin PVC coupling and two (2) type 305 stainless steel bands.

B. Steel Pipe Couplings:

1. Manufacturers:

a. Dresser, Style 38.

b. Smith-Blair, Style 411.

2. Coupling shall consist of a middle ring, two (2) follower rings, two (2) gaskets and a sufficient number of bolts and nuts.

   a. Middle Ring: ASTM A513 or ASTM A635 steel.

   b. Followers: AISI C1012 or ASME SA 36.

   c. Gasket: Resilient wedge-shaped suitable for use with raw sewage and sludge.

   d. Bolts: AWWA C111/ANSI A21.11.

2.04 SEWER SADDLES

A. Romac Style CB Sewer Saddle.

2.05 THRUST RESTRAINT

A. Developer shall use the means specified below. Length of restraint specified by the Township.

1. Concrete Thrust Blocks: Details as shown on drawings. Concrete shall be as specified in Section 7 – Cast-In-Place Concrete. 3,000 psi compressive strength (at 28 days).

2.06 PIPING SPECIALTIES AND APPURTENANCES

A. Sewer Vent and Cleanout Protection:

1. Unit shall have a cast iron body and lid suitable for traffic loadings similar to a Bingham and Taylor, Fig. No. 8250 cleanout protection box.

2. Dimensions:

   a. Length – 10 ½ inches (minimum).

   b. Diameter – 5 ¼ inches (minimum).

3. Shaft shall have continuous extension on the bottom circumference.

4. Lid shall have the work “SEWER” cast on the top.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Carefully examine each section of pipe and each pipe fitting before laying in conformance with the inspection requirements of the appropriate referenced standard.

B. The Township reserves the right to reject any pipe it deems to be unsuitable for use. Remove rejected pipe from the Project.

3.02 PREPARATION

A. Clean piping interior and mating surfaces of bell, spigot, and gasket before laying. Maintain clean until completed work is accepted.

B. Touch-up chipped, cracked, or abraded surfaces and finished joints with two (2) coats of the particular coating material.

C. Perform trenching for sewer pipe and place pipe bedding as specified in Section 2 – Trenching, Backfilling and Compacting.

D. Dig bell holes sufficiently large to permit proper joint making and to ensure pipe is firmly bedded full length of its barrel.

E. Excavate trenches in rock at least twenty-five (25) feet in advance of pipe laying. Protect pipe ends if blasting is allowed.

3.03 LAYING PIPE

A. General Requirements:

1. Lay pipe proceeding upgrade true to line and grades given. Lay bell and spigot pipe with bell end upgrade.

2. Bed pipe using materials specified in Section 2 – Trenching, Backfilling and Compaction. Gravity sewer pipe bedding must conform to AASHO T-99 to a density of 90% proctor.

3. Exercise care to ensure that each length abuts against the next in such manner that no shoulder or unevenness of any kind occurs along inside bottom half of pipeline.

4. Center spigot end in bell or socket end of previously laid pipe, shove tight and secure.

5. No wedging or blocking permitted in laying pipe unless by permission of the Township.

6. Before joints are made, bed each section of pipe full length of barrel with recesses excavated so pipe invert forms continuous grade with invert of pipe previously laid. Do not bring the succeeding pipe into position until the receding length is embedded and securely in place.

7. The interior of each pipe shall be cleaned of all excess joint and foreign material before the next pipe is laid.

8. Walking or working on completed pipeline, except as necessary in tamping and backfilling, is not permitted until trench is backfilled one-foot deep over top of pipes.

9. Take up and relay pipe that is out of alignment or grade, or pipe having disturbed joints after laying.

10. Take up and replace with new, such in-place pipe sections found to be defective.

11. Take necessary precautions to prevent newly laid pipe from floating as a result of water accumulation in the trench, or the collapse of the pipeline from any cause. Restore or replace pipe, as necessary.

12. At the close of each day's work, and at such other times when pipe is not being laid, protect open end of pipe with a tight-fitting stopper.

13. Cut pipe using only equipment specifically designed for that purpose such as an abrasive wheel, rotary wheel cutter, a guillotine pipe saw or a milling wheel saw. The use of chisels or handsaws will not be permitted. Grind smooth cut ends and rough edges. Bevel slightly, cut end for push-on connections.

14. Where cutting of pipe is necessary, minimum laying length shall be five (5) feet.

B. Specific Requirements:

1. Install ductile iron pipe, and fittings, and assemble joints according to AWWA C600.

2. Install PVC pipe and fittings and assemble joints according to ASTM D2855.

C. Joints:

1. Make pipe and fitting joints according to pipe manufacturer's specifications and to specifications previously specified for pipe.

2. Make joints watertight. Immediately repair detected leaks and defects. Methods of repair subject to the Township approval.

D. Alignment and Grade:

1. Lay and maintain all pipe at the required lines and grades as shown on the Drawings. Place fittings and valves at the required locations with joints centered, spigots forced home, and all valve stems plumb. Do not deviate from the required line and grade, except with the approval of the Township.

E. Sewer Cleanout

1. A cleanout must be installed at the right-of-way line, where the building sewer lateral connects to the public sewer system.
2. A cleanout is required every 100 feet along a lateral sewer line, and at every change in direction.
3. Cleanouts must be constructed of the same material as the building sewer.
4. The cleanout riser must extend to site grade and contain a water tight, removable cap.
5. For areas in paved and traffic areas, cleanouts must have protection. Refer to Sewer Vent and Cleanout Protection.
6. Property owner of the building connecting to the public sewer system are responsible for maintain the cleanout in good working condition.

7. Deflect pipe joints where indicated on the drawings. Deflections shall not exceed pipe manufacturer's recommended maximum allowable deflection.

8. Do not change grade or alignment with the Township's approval.

F. Drop Connections: Make drop connections where indicated on the Drawings, where drop in invert is two (2) feet or more or as required by the Township. Construct drop connection using the same pipe material used to construct the main. Construct drop connection in accordance with design shown on Standards Detail Drawings.

G. Connections to Existing Manholes or Structures: As specified in Section 5 – Manholes.

3.04 THRUST RESTRAINTS

A. General: Provide thrust restraint at all tees and bends (both horizontal and vertical) on pipelines 4 inches and larger in accordance with Standard Detail Drawings.

B. Concrete Reaction Backing: Place concrete reaction backing between undisturbed solid ground and the fitting to be anchored. The backing, unless otherwise shown or directed, shall be located as to contain the resultant thrust force and so that the pipe and fitting joints will be accessible for repairs.

3.05 EMERGENCY REPAIRS

A. Contractor shall be responsible for utilizing great care and superior judgment when working on and around the Township system(s). Contractor shall provide emergency repair service (at no cost to the Township) when a main break or leak results from Contractor's actions. Emergency repair could include isolation of the affected main, excavation, clamping, site restoration and other actions necessary to restore satisfactory service to the customers. Contractor shall notify the Township immediately when incidents and/or accidents occur that adversely affect service to the Township's customers. The Township shall provide guidance towards resolving such situations,

including approval of the emergency work and approval of any emergency main appurtenances, including but not limited to, repair saddles and clamps.

3.06 FIELD QUALITY CONTROL

A. General Requirements: Conduct tests specified herein so that each pipeline installed in the Project is tested to the Township's satisfaction.

1. Provide tools, materials (including water), apparatus and instruments necessary for pipeline testing. The Township will require payment for water used. Procedures for water usage must be approved by the Township in writing.

2. Conduct tests in the presence of and to the satisfaction of the Township.

3.07 GRAVITY LINE TESTS

A. Alignment: Ninety (90) days after the sewer mains have been laid and backfilled, Developer shall hire the services of a pipeline televising firm to conduct televising of the sewer lines. The Township reserves the right to approve the pipeline televising firm selected by the Developer prior to the start of the work. The main will be flushed and televised by using specialized sewer main televising equipment to determine whether the alignment of the sewer is true and whether any pipe has been displaced, broken, developed sags, or otherwise damaged subsequent to laying. Results of the televising shall be provided to the Township prior to the installation of the paving base course. This test will be conducted a second time prior to the end of the warranty period. Each section (manhole to manhole) of sewer shall show the sewer main in a condition satisfactory to the Township. Any and all defects shall be corrected by the Developer, to the satisfaction of the Township, before financial security is released.

B. Leakage Tests:

1. Air Testing: Developer shall test each section of sewer between manholes and all laterals to the limit of this contract using low pressure air. Testing shall not be performed until all backfilling has been completed and laterals are installed. Developer may, at his

option, test the section of sewer for his own purposes, prior to completion of backfilling. However, the requirements of tis subsection shall not be deemed to be completed until the lines have been tested after the backfilling has been completed and trench settlement has been minimized.

2. A minimum of two (2) minutes shall be provided to allow equilibrium of the air temperature with pipe wall before test readings shall commence. The rate of air loss shall be determined by measuring the time interval required for the average internal pressure to decrease by 1.0 psig.

3. The initial test pressure to be developed in the sewer and laterals shall be determined as follows:

   a. For depths six (6) feet or less, the internal pressure shall not be less than 6.0 psig.

   b. For depths greater than six (6) feet, the internal pressure in psig shall be calculated as the sum of 3.5 plus the maximum height in feed divided by 2.3 between the invert of the sewer and the existing ground surface in the section of sewer to be tested. (For example, if the maximum height is determined to be 9.2 feet, the added pressure would be 4.0 psig. The initial test pressure in the sewer would then be 7.5 psig. The allowable drop would be to 6.5 psig within the time indicated elsewhere in this Section.)

   c. In no case shall the test pressure in the sewers or laterals be greater than the maximum internal differential joint pressure recommended by the manufacturer of the pipe.

4. The pipe shall be considered acceptable if the air loss rate does not exceed 0.0030 cubic feet per minute per square foot of internal pipe surface when tested at the initial pressure previously defined in this subsection. The time for the air pressure to decrease 1.0 psig shall not be <u>less</u> than the time indicated in the following table:

Pipe Diameter	Minutes	Seconds
6”	2	55
8”	3	57
10”	4	43
12”	5	5
15”	7	5

5. If the leakage rates are exceeded, Developer shall determine source of leakage and make all necessary corrections and retest.

6. Developer shall submit to the Township for approval the detailed test procedure and list of test equipment they propose to use prior to testing.

C. Infiltration Test:

1. Use only when gravity pipeline is submerged in groundwater. Obtain prior approval of the Township.

2. Maximum Allowable Infiltration: Ten (10) gallons per inch of pipe diameter per mile per day for any one (1) section under test, including the allowances for leakage from manholes.

D. Infiltration:

1. After the air testing has been completed by Developer, regardless of any indications of the test results made by the Township, the Township reserves the right to perform field investigations, prior to final written acceptance of each sewer run by the Township and/or during the maintenance period required to establish the leakage of groundwater into the sewer and laterals constructed.

2. Should the leakage exceed 10 gallons per day per inch diameter per mile of pipe for any section, Developer shall, at the direction of the Township, perform any additional testing or corrective work required to reduce the infiltration in each manhole run from those lines installed by Developer to less than 10 gallons per day per inch

diameter per mile of pipe. This leakage applies to each manhole separately and should not be construed to mean total leakage in the total system. The scope of this corrective work shall include, but not be limited to, cleaning, televising, and testing the sewer and laterals to the limits installed by Developer, to include testing and grouting of joints, excavation, and replacement of faulty or damaged portions of the work, and all final restoration.

3.08 PRESSURE LINE TESTING

A. Alignment Test for Pressure Lines:

1. Prior to backfilling of pressure lines, the joint alignment shall be inspected to assure the maximum deflection present in each joint does not exceed the manufacturer's recommendations.

2. Pressure lines which are a portion of a pump discharge system shall be inspected to assure the line is installed at a constant or increasing grade so as to eliminate the possibility for air accumulation at an intermediate high point.

3. Any and all defects shall be corrected by Developer to the satisfaction of the Township prior to backfilling. This shall be completed before the work shall proceed and before acceptance.

B. Leakage Test Requirements:

1. After the pipe has been installed as specified, all newly laid pipe, or any valved section thereof, shall be subjected to a pressure of 150 pounds per square inch, or 50% in excess of the normal working pressure, whichever is greater.

2. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

3. The allowable leakage in gallons per hour per 1,000 feet of pipeline, shall be as noted in the following table:

	Nominal Pipe Diameter (Inches)					
Average Testing Pressure	**4**	**6**	**8**	**10**	**12**	**18**
150	0.33	0.50	0.66	0.83	0.99	1.32
175	0.36	0.54	0.72	0.89	1.07	1.43
200	0.38	0.57	0.76	0.96	1.15	1.53
225	0.41	0.61	0.81	1.01	1.22	1.62

C. Duration of Test: The duration of the test under pressure shall be two (2) hours.

D. Procedure: Each valved section shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Township. The pump, pipe connections, and all necessary apparatus, including gauges, shall be furnished by Developer. Developer will make all taps into the pipe and furnish all necessary assistance for conducting the tests.

E. Expelling Air Before Test: Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high places, Developer shall make the necessary taps at points of highest elevation before the test is made and insert the plugs after the test has been completed.

F. Variation from Permissible Leakage: Should any test of pipe laid disclose leakage greater than that specified above, Developer shall, locate, repair, and replace the defective joints, pipe or fittings until the leakage is within the specified allowance.

G. Time for Making Test:

1. Where any section of a main is provided with concrete reaction backing, the hydrostatic pressure test shall not be made until at least five (5) days have elapsed after the concrete reaction backing was installed. If high early strength cement is used in the concrete reaction backing, the hydrostatic pressure test shall not be made until at least two (2) days have elapsed.

2. The Township shall be present during the operating of valves required to fill mains for pressure and leakage test.

3. Developer shall advise the Township of any pressure test and leakage test at least 48 hours in advance. No testing will be authorized unless air temperatures is 35°F or higher.

4. The pressure and leakage tests shall be witnessed by the Township.

5. Developer shall furnish laboratory calibrated test gauges and measuring devices for the leakage test.

6. The section under test shall be brought back to test pressure at one-half hour intervals during the testing. The Township will record both the makeup water amount and pressure at each one-half hour depressurization.

H. Upon completion of pressure testing and prior to release of construction financial security by the Township, Developer shall employ the services of a firm specializing in ultrasonic leak detection. All recently installed pressure mains shall be tested, and results submitted to the Township in report format. Developer is also required to have this same service performed 1 month prior to the end of the warrant period.

3.09 ACCEPTANCE: Observation of successful testing of manholes, sewers, or force mains by the Township does not constitute acceptance of the system or any portion thereof. Upon completion of any determined portion of a total system, and successful testing thereof, the Township, at its sole discretion, may consider acceptance or beneficial use of the facilities.

END OF SECTION

SECTION 5 - MANHOLES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Sanitary sewer manholes and related appurtenances.

1.02 RELATED SECTIONS

A. Section 7 – Cast-in-Place Concrete.

B. Section 8 – Grout.

1.03 REFERENCES

A. American Society for Testing and Materials:

1. ASTM A48, Gray Iron Castings.

2. ASTM A276, Stainless and Heat-Resisting Steel Bars and Shapes.

3. ASTM A615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

4. ASTM C139, Concrete Masonry Units for Construction of Catch Basins and Manholes.

5. ASTM C270, Mortar for Unit Masonry.

6. ASTM C361, Reinforced Concrete Low-Head Pressure Pipe.

7. ASTM C443, Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

8. ASTM C478, Precast Reinforced Concrete Manhole Sections.

9. ASTM C923, Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.

10. ASTM D2146, Propylene Plastic Molding and Extrusion Materials.

11. ASTM D2240, Test Method for Rubber Property-Durometer Hardness.

B. American Association of State Highway and Transportation Officials (AASHTO) Standards as referenced throughout these Requirements.

C. American Water Works Association:

1. AWWA C 302, AWWA Standard for Reinforced Concrete Water Pipe-Noncylinder Type, Not Prestressed.

D. Federal Specifications:

1. Fed. Spec. SS-S-210A, Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints (Type 1 Rope Form).

E. Commonwealth of Pennsylvania Department of Transportation (PADOT), Specifications Publication 408.

1.04 QUALITY ASSURANCE

A. Shop Inspection:

1. All materials furnished by the Developer shall be certified by the supplier for compliance with the pertinent Specifications. Shop inspections and testing may be required.

B. Field Inspection:

1. All materials shall be furnished and installed and tested for defects in material and/or workmanship in the manner specified and in the presence of and as approved by the Township.

C. Source Quality Control:

1. Maintain uniform quality of products and component compatibility by using the products of one manufacturer in the case of precast, reinforced concrete manholes.

2. Obtain Certificate of Construction compliance with ASTM C478 from the precast reinforced concrete manhole manufacturer. Submit same Certificate as part of required submittals.

D. Initial Manholes: Construct first manhole to demonstrate the following and serve as the minimum acceptable conditions of construction through the project.

1. Demonstrate manhole base construction methods and channel formation.

2. Demonstrate manhole component sealing in the case of precast, reinforced concrete manholes.

3. Demonstrate manhole step alignment.

4. Demonstrate pipe opening sealing.

5. When pavement is installed, demonstrate method of adjustment of manhole frame and cover to grade, and manhole frame and cover attachment.

6. Upon completion, demonstrate successful manhole acceptance test.

1.05 DELIVERY, STORAGE AND HANDLING

A. Transport and handle precast reinforced concrete manhole components and other Products specified herein in a manner recommended by the respective manufacturers of such to prevent damage and defects. Through-wall lifting holes are not permitted in manhole component construction.

B. Store precast reinforced concrete manhole components in accordance with manufacturer's recommendations to prevent joint damage and contamination. Exercise such care in storage of other specified products as recommended by the respective manufacturers.

1.06 PRODUCT CONDITIONS

A. Environmental Requirements:

1. In no instance set or construct manhole bases on subgrade containing frost.

2. To improve workability of preformed plastic sealing compound during cold weather, store such at temperature above 70 degrees F or artificially warm compound in a manner satisfactory to the Township.

PART 2 – PRODUCTS

2.01 BASIC MATERIALS

A. Cast-In-Place Concrete Products: Form work, Reinforcement, and Cast-In-Place Concrete conforming to requirements of Section 7 – Cast-In-Place Concrete.

B. Epoxy Bonding Compound:

1. Manufacturers:

a. Sika Chemical; SIKADUR-HI-MOD.

2. Multi-purpose, high-modulus, high-strength, 2-component, solvent free, moisture insensitive, epoxy bonding/grouting adhesive.

C. Non-Shrink Non-Metallic Grout:

1. Manufacturers:

a. Master Builders, Inc.; MASTERFLOW 928.

b. Five Star Products, FIVE STAR GROUT.

2. Ready mix, ASTM C1107 high precision, natural aggregate grout.

D. Manhole Steps:

1. Reinforced Plastic Step: Composed of a 1/2-inch Grade 60, ASTM A615 deformed steel reinforcing bar completely encapsulated in Grade 49108, ASTM D2146 polypropylene copolymer compound, Type II; M. A. Industries, Inc., Type PS2-PF, PS2-PFS, or PS2-B.

2. Manhole step dimensions shall meet requirements of OSHA Standard 1910.27 for fixed ladders.

E. Manole Frame and Cover:

1. Manufacturers:

a. Neenah Foundry Company

b. East Jordan Iron Works; 1045ZPT

2. General: Gray iron castings conforming to ASTM A48, Class No. 35B, designed for AASHTO Highway Loading Class HS-20 (“Heavy Duty”). Providing castings of uniform quality, free from blowholes, porosity, hard spots, shrinkage distortion or other defects.

a. Finish: Bearing surfaces machined to prevent rocking and rattling under traffic.

b. Identification: Cast the letters “Sewer” integrally in center of cover in 2-inch raised letters.

c. Frame Hold-down Bolts: Type 316 Stainless Steel, ASTM A276 bolts and washers.

d. Anchor Bolts: J or L shape with standard coarse thread ends, Type 316 stainless steel, ASTM A276.

e. Cover Gasket: One-Piece O-ring gasket factory installed in a machined rectangular or dovetail groove in the cover bearing surface.

1) Gasket material of neoprene composition having good abrasion resistance, low compression set, Type D 40 durometer hardness determined in accordance with ASTM D 2240 and suited for use in sanitary sewer manholes.

2) Gluing of gasket is not permitted.

F. Watertight Manhole Frame and Cover: Gray iron castings conforming to previously specified requirements for Manhole Frame and Cover except that cover shall contain four (4) hold-down bolts.

1. Manufacturers:

a. Neenah Foundry Company.

b. East Jordan Iron Works.

2. Cover Hold-Down Bolts: 2-inch diameter minimum type 316 stainless steel, ASTM A276 bolts and washers. Alternatively, supply CAMPRESSION cam bolting as manufactured by East Jordan Iron Works.

3. Threaded Sleeves: Manhole frame factory fitted with stainless steel or bronze threaded sleeve to accept cover bolts.

G. Polymer Watertight Manhole Frame and Cover:

1. Manufacturers:

   a. Trumbull

   b. East Jordan Iron Works

2. Conforming to previously specified requirements for Manhole Frame and Cover, except that frame and cover to be manufactured from corrosion resistant polymer and as follows. Assembly to pass a 50,000 lb load test per AASHTO M-306, H-25. Assembly to have studs on underside to attach flow monitoring and leak detection devices, high quality O-ring recessed in frame to prevent infiltration under cover and through bolt holes. Frame and cover to have matching alignment indicators. Cover to have stainless steel pick bar.

3. Cover Hold-down Bolts: Four (4) 2-inch diameter minimum type 316 stainless steel, ASTM A276 bolts and washers, with high quality compression O-rings to prevent infiltration.

4. Threaded Sleeves: Manhole frame factory fitted with stainless steel or bronze threaded sleeve to accept cover bolts.

5. Frame slots to secure frame to manhole with J or L shape anchor bolts with standard coarse thread ends, Type 316 stainless steel, ASTM A276.

H. Preformed Plastic Sealing Compound:

1. Manufacturers:

   a. Henry Company, Inc.; RAM-NEK.

   b. Henry Company, Inc.; RUB'R-NEK.

   c. Hamilton Kent Manufacturing Company; KENT-SEAL NO. 2.

d. Conseal Concrete Sealants, Inc., CS-102.

2. Fed. Spec. SS-S-210A, Type 1, Rope Form, of either bitumastic base compound or butyl rubber base compound and shipped protected in a removable two-piece wrapper. Size cross-section of rope form to provide squeeze-out of material around entire interior and exterior circumference when joint is completed.

I. Expandable Sleeve Type Pipe Opening Seal: ASTM C923, consisting of a power sleeve, gasket and two (2) take-up clamps. Sleeve is mechanically expanded to compress gasket against receptacle hole in manhole wall. Provide seal equivalent to Press Seal Gasket Corp. PSX Positive Seal Gasketing System.

1. Power Sleeve: Type 304 stainless steel, 85,000 psi yield strength.

2. Gasket: Compound Polyisoprene suitable for use with raw sewage.

3. Take-Up Clamps: Type 304 stainless steel with stainless steel screw.

J. External Coatings:

1. Manufacturers:

a. Carboline; 300 M COE Coal Tar Epoxy.

b. Sherwin Williams; COROTHANE I Coal Tar Epoxy.

c. Sherwin Williams; TARGUARD Coal Tar Epoxy.

2. Apply two (2) coats to outer surface of entire manhole to waterproof manhole.

K. Heat Shrinkable Wrap: Wrap to cover all joints in their entirety as equal to WrapidSeal as manufactured by CANUSA.

L. Manhole Inserts: ASTM D-1248, Class 5, Category 5 HDPE construction as manufactured by Parson. Corrosion resistant polypropylene strap. Double

valve venting. For low-pressure sewer discharge and force main discharge manholes, provide parson Odor-eater Manhole Insert.

2.02 PRECAST REINFORCED CONCRETE MANHOLE COMPONENTS

A. Materials and Construction: Conforming to requirements specified in ASTM C478 except as follows:

1. Concrete: Composition and compressive strength conforming to ASTM C478 except use Type II sulfate resistant Portland cement in manhole components and increase compressive strength to 4500 psi (at 28 days) in precast bases.

2. Casting and Curing: West cast and steam curing process in accordance with Section 3.6.11 and 3.7.2 of AWWA C302.

3. Manhole Steps: Factory installed in manhole components, prealigned vertically, spaced on equal centers, and located the minimum distance from ends of risers and top sections as indicated on Standard Detail drawings.

4. Manhole Component Seals: Manhole component joints factory formed for self-centering concrete to concrete bearing employing Preformed Plastic Sealing Compound, as specified previously.

5. Manhole Component Design: Base, tapered and straight riser section, and top section dimensions and diameters, not consistent with ASTM C478, are as indicated on Standard Detail drawings.

6. Lifting Holes and Lugs: Through-wall holes shall not be permitted in manhole component construction.

7. PennDOT Compliance: In Addition to above specifications, manholes for installation within PennDOT rights-of-way shall also conform to PennDOT Publication 408 specifications.

B. Precast Bases and Riser Sections: Design, materials and construction as specified previously.

C. Pipe Openings: Custom pre-formed during manufacturing in each base and riser section requiring such, to accommodate type of pipe and pipe opening seal provided.

D. Pipe Opening Seals: Option to install one of the following:

1. Resilient Gasket Type Pipe Opening Seal:

a. Manufacturers:

1) A Lok Products Corporation; A LOK Manhole Pipe Seal.

2) Press-Seal Corporation; ECONOSEAL. (only allowed for pipe diameters less than 12”).

b. Cast integrally with manhole component conforming to requirements specified in ASTM C 923.

2. Expandable Sleeve Type: ASTM C923, consisting of a power sleeve, gasket and two (2) take up clamps. Poer sleeve is mechanically expanded to compress gasket against receptable hole in manhole wall. Install at precast plant. Provide seal equivalent to Press-Seal Corp. PSX Positive Seal Gasketing System.

a. Power Sleeve: Type 304 stainless steel, 85,000 psi yield strength.

b. Gasket: Compound Polyisoprene suitable for use with raw sewage.

c. Take Up Clamps: Type 304 stainless steel with stainless steel screw.

E. Precast Top Sections: Of materials as specified previously herein this Section except additional and differing requirements as follows:

1. Hold Down Bolt Inserts: Factory cast in top section no less than two 3/4-inch diameter threaded inserts or slotted inserts to accommodate manhole frame hold down bolts. Threaded inserts of 30inches depth. Both insert types shall be designed for an ultimate load in tension of 12,500 pounds. Inserts factory plugged for shipping. Coordinate insert location with manhole component manufacturer to assure proper location in top sections.

2. Flat Slab Tops: Tops factory formed to properly accept, and support required manhole frame and cover and formed to join rise section in a matching joint.

F. Grade Rings:

1. Precast Grade Rings: Leveling and adjusting units of 3-inches or 4-inches thickness of materials and constructions as specified previously. Factory cast grade rings with hold down bolt holes matching location of same in manhole frame. Design must provide for full bearing of manhole frame.

G. Chimney Liner:

1. Manufacturers:

a. A-LOK Products, Inc.: WATER-LOK.

b. Parson Environmental; FLEX RIB SEALS.

2. Telescopic or adjustable liner system constructed of plastic or EPDM rubber materials resistant to traffic vibration and hydrogen sulfide attack. System protects grade rings from water infiltration and chemical attack. Self-adjustable to compensate for grade movement

after initial installation, while maintaining a watertight seal. Stainless steel expansion bands, high quality O-rings, and butyl rubber rope sealant are to be used as per the manufacturer's instructions.

H. Internal Liner:

1. Manholes with a two (2) foot drop or greater, air release manholes, and manholes to which force mains or low-pressure lines discharge to and the next two (2) manholes downstream shall be lined with a manhole liner system described herein.

2. HDPE Liner system:

   a. Furnish and install all labor, materials, equipment, and incidentals required to supply and install High density Polyethylene or concrete protective liner (CPL) in the manholes as required.

   b. HDPE concrete protective liner (CPL) shall be designed and installed to create an impermeable lining on the concrete structure's interior surface. To protect concrete surfaces from deterioration and to make the structure watertight.

   c. HDPE Coated Manholes shall be as manufactured by Monarch Products Co. Inc., or pre-approved equal. The liner shall be GSE Studliner High Density Polyethylene (HDPE) with a minimum thickness of 2mm.

Property	Testing Method	Units	HDPE
Thickness Density	ASTM D 5199 ASTM D1505	Mm g/cm^3	2.00 0.94
Tensile Properties (each Direction) Strength at Yield Elongation at Break	ASTM D 6693, Type IV Dumbbell G.L. 50 mm	 MPa %	 15.2 500
Stud Pull-Out Strength		kN/m^2	>670
Carbon Black Content/Pigment Content Black (carbon) Gray (pigment)	ASTMD 1603*/4218 ASTM D 5630 Modified	%	 2-3 1.5-2.5
Carbon Black Dispersion[2]	ASTM D 5596		Note 2
Notched Constant Tensile Load	ASTM D 5397	hours	400
Coefficient of Linear Thermal Expansion	ASTM D 696	per °C	1.20E-04
Low Temperature Brittleness	ASTM D 746	°C	-77
Dimensional Stability	ASTM D 1204	% (each direction)	+-1.0
Water Absorption	ASTM D 570	%	0.1
Water Vapor Transmission	ASTM D 96	$(g/m^2/day)$	<0.01
Notes: 1) Concrete must have compressive strength of at least 34,400 kPa. 2) Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from category 3.			

3. PVC Liner system:

   a. PVC Coated Manholes shall be as manufactured by A-Lok Products, Inc., or pre-approved equal. The interior plastic liner for the precise manholes shall be Dura Plate 100. The Dura Plate 100 liner, when installed, shall provide a continuous, impermeable lining which will shield the precast concrete manhole against deterioration caused by corrosive material. The PVC Coated Manholes shall also meet all of the requirements specified for standard precast concrete manholes.

   b. The design of the liner shall insure that it will conform to the contour of the manhole and form a permanent mechanical

bond to the concrete through use of performed horizontal ribs. The liner will be formed in such a manner that the joints between the manhole sections will be afforded protection through the use of a continuous PVC return into the joint for a minimum of ¾ of an inch. Provisions will be made to allow the pipe openings to be sealed.

c. The liner shall be manufactured from Polyvinyl Chloride resin and shall be white in color. The compound will result in a semi-rigid material suitable for thermoforming to the contour of the manhole. The liner may be fabricated in panels with the panels joined together by a slotted strip of EDPM rubber according to the manufacturer's pinholes, or other defects adversely affecting the protective characteristics of the material and shall have a minimum thickness of 65mils.

d. The Dura Plate 100 liner will be installed during the precasting process in accordance with the specific instructions of the manufacturer.

e. The manhole manufacturer shall provide installation instructions to contractor prior to initial use of the Dura Plate 100 liner. The manhole will be installed using a joint sealing material as later specified.

f. The joint sealing material shall be placed on the joint surfaces as recommended by the manufacturer, to provide a watertight seal by filling the annular cavity, while providing sufficient squeeze-out between the PVC returns to protect against corrosion.

g. Flexible, corrosion-resistant, watertight connections between manhole castings and precise concrete flattops shall be installed for all PVC coated manholes. This connection shall be accomplished by Water-Lok Connectors, as manufactured by A-Lok Products, Inc., or approved equal. The connector shall allow flexibility in reaching finished grade and permit up and down movement to accommodate freeze/thaw conditions

close to the ground surface without compromising watertightness. This shall be accomplished by utilizing two independent sleeves by a system of neoprene o-rings. The top and bottom flanges of the Water-Lok Connector are sealed to their appropriate mating surfaces by a performed butyl gasket material furnished with the assembly. The Bolt Fastening Assembly shall be an anti-floating assembly.

h. All interior concrete surfaces not covered by the PVC liner, including the flow channel and grade rings, shall be coated with two coats of epoxy-amine equal to MAB Paints PONAMID 65. Coating of the base shall overlap the liner by a minimum of 2-inches.

4. Spray-Applied, Resin Based Liner

a. The resin-based material, as manufactured by Sprayroq, Inc. – Spray Wall, shall be spray applied at minimum application thickness of 250 mils to form a monolithic liner covering all interior manhole surfaces and shall meet the following minimum requirements:

Compressive Strength	ASTM D 695	>19,000 psi
Tensile Strength	ASTM D 638	>7,450 psi
Flexural Strength Bond	ASTM D 790 Shall exceed tensile strength of substrate	>14,000 psi
Flexural Modulus (initial)	ASTM D790	>735,000 psi
Long Term Flexural Modulus	ASTM D2290	>529,000 psi
Density		87± pcf
Tensile Modulus	ASTM 638	>425,000 psi

b. The finished structure shall be corrosion resistant to: Hydrogen Sulfide; 20% Sulfuric Acid; 17% Nitric Acid; 5% Sodium Hydroxide as well as other common ingredients of the sanitary sewage environment.

PART 3 – EXECUTION

3.01 EXAMINATION

A. All manholes will be field located by the Contractor and the Township. No manholes shall be ordered until the actual location of such is determined in the field and shop drawings are submitted and approved by the Township.

B. Inspect precast reinforced concrete manhole components in accordance with requirements of ASTM C478 regarding repairable defects and defects subject to rejection by the Township.

C. All material found during the progress of the Work, either before or after installation, to have cracks, flaws or other defects will be rejected by the Township. All defective materials furnished by Developer shall be promptly removed from the site.

3.02 PREPARATION

A. Keep pipe and manhole interiors cleared of debris as construction progresses.

B. Earthwork: Perform earthwork as previously specified in Section 2 – Trenching, Backfilling and Compacting.

3.03 MANHOLE INSTALLATION

A. Cast-In-Place Concrete Manhole Base: Construct in accordance with design and dimensions indicated on Drawings and approved shop drawings. When necessary to construct wider or deeper manhole bases than indicated or specified, build such bases as required by the Township.

1. Form and pour concrete in accordance with requirements of Section 7 – Cast-In-Place Concrete. Additional requirements as follows:

a. Vibrate poured concrete using mechanical vibrator of a type and design approved by the Township. Use vibrators of type capable of transmitting vibration to concrete in frequencies of not less than five thousand impulses per minute.

b. Form and pour joint monolithically in manhole base top to match joint of adjoining precast riser section. Use template as obtained from precast concrete manhole component manufacturer.

2. Install sewer piping in cast-in-place manhole bases prior to pouring the concrete.

   a. Apply Sika Lockstop in accordance with manufacturer's instructions to pipe at base connection prior to pouring the concrete.

3. Coat bases in accordance with the requirements for precast manhole components.

B. Precast Concrete Bases:

1. Install precast bases on aggregate subbase. Materials and thicknesses as shown on the Standard Detail drawings.

2. When pipe opening seal materials create an annular apace on interior and exterior of manhole wall pipe openings after pipe connection is made, fill such annular spaces with preformed plastic sealing compound.

   a. Tightly caulk sealing compound into annular spaces in a manner to completely fill the spaces and render the installation watertight.

   b. Following sealing compound installation, trowel compound surface smooth and flush with interior face of manhole.

C. Length of Pipe Connections into Manhole:

1. Use full pipe section when connecting into manholes through resilient gasket type pipe opening seals.

D. Concrete Channel Fill: Field pour concrete channel fill for each manholes base.

1. Form inverts directly in concrete channel fill.

2. Accurately shape invert to a semi-circular bottom conforming to inside of connecting pipes, and steel trowel finish to a smooth dense surface.

3. Make changes in size and grade gradually.

4. Make changes indirection of entering sewer and branches to a true curve of as large a radius as manhole size will permit.

5. Make slopes gradual outside the invert channels.

6. Use concrete as specified in Section 7 – Cast-In-Place Concrete, unless indicated otherwise on Drawings.

E. Manhole Wall Erection: Provide precast reinforced concrete straight riser and top sections necessary to construct complete manholes. Fit the different manhole components together to permit watertight jointing and true vertical alignment of manhole steps.

1. Install sealing compound in accordance with manufacturer's recommendations and join sections also in accordance with written instructions of manhole component manufacturer.

a. Prime joint surfaces if required by preformed sealing compound manufacturer.

b. If sealing compound is installed in advance of section joining, leave exposed half of two-piece protective wrapper in place until just prior to section joining.

c. Use preformed sealing compound as the sole element utilized in sealing section joints from internal and external hydrostatic pressure.

d. To improve workability of Preformed Plastic Sealing Compound during cold weather, store such at temperature above 70°F or artificially warm compound in a manner satisfactory to the Township.

e. During warm weather, stiffen Preformed Plastic Sealing Compound by placing under cold water or by other means as recommended by the compound manufacturer.

f. Following manhole section installation, trowel sealing compound surface smooth and flush with interior face of manhole.

g. Make pipe connections into manhole walls as specified previously for pipes connecting into manhole bases.

h. Remove all excessive plastic sealing compound after all manhole sections have been set.

F. Lifting Recess Sealing: Seal with properly designed tapered rubber plugs. Drive plugs into recesses in such manner to render them completely water and airtight. Sealing of lifting recesses with grout is not permitted.

G. Frame and Cover Installation: Where required, make finale adjustment of frame to elevation using Precast Grade Rings or Cast-in-Place Grade Rings.

1. Install Precast Grade Rings on ½-inch Preformed Plastic Sealing Compound on manhole lid and between each grade ring. Remove excess sealing compound as it is squeezed out after manhole frame is bolted in place.

2. Install manhole frames on ½-inch thick Preformed Plastic Sealing Compound on bearing surface of manhole frame. Remove excess

sealing compound as it is squeezed out after manhole frame is bolted in place.

3. Use bolts of sufficient length to properly pass through leveling units, if any, engage full depth of manhole top section inserts and allowing enough threaded end to pass through manhole frame to properly tighten nut and washer. Tighten manhole frame bolts.

H. Waterproofing: Coat entire out surface of all manhole components including parged grade rings with two (2) coats of coal tar epoxy. Install heat shrinkable wrap at each joint.

I. Drop Manholes: Construct in accordance with Standard Detail Drawing. Use same type pipe and fittings in drop connection as used in sewer line from which drop connection is made.

J. Plugging Pipe Openings: Plug pipe openings in manholes where such openings are required for future pipe connections. Use manufactured units specifically designed for the purpose. Plugs shall be designed to allow for future removal without damage to manhole.

3.04 POLYURETHANE RESIN BASED LINING

A. Liner Application: The resin-based liner shall be manually sprayed onto all surfaces by a trained crew who are experienced in the application of a spray applied resin rehabilitation systems and has been certified by the manufacturer. Appropriate personal protection equipment shall be utilized, but in every case when applying the rehabilitation system, the personnel in direct contact with the spray atmosphere will always be protected as recommended by the Manufacturer.

B. Before performing a holiday test on the structure, a minimum curing time is needed to allow all surfaces within the interior of the structure to return to ambient temperature. In extremely cool weather, the structure shall be protected while curing is in process to maintain temperatures within the structures at 50° F or higher.

3.05 PIPE CONNECTIONS TO EXISTING MANHOLES

A. Make connection to existing manhole by core drilling pipe opening in wall at invert elevation to match existing unless directed otherwise by the Township.

B. Remove existing bench as needed to make new connection. Reconstruct bench and form new flow channel after new pipe has been inserted.

C. Seal pipe to wall opening using either the Expandable Sleeve Type or Modular Mechanical Type Pipe Opening Seal.

3.06 CONSTRUCTION OF NEW MANHOLES OVER EXISTING SEWER MAINS

A. Where new manholes are constructed on top of existing sewer mains, Developer shall have the option to use cast-in-place concrete manhole bases or precast concrete bases. Construct according to Standard Detail drawing and as follows:

1. Replace broken or damaged pipe resulting from Work with new pipe. New pipe shall be of materials as previously specified. Use couplings compatible with new and existing pipe for making final connections.

2. Connect new pipe to new manhole bases using materials and methods previously specified. Form smooth channel to conduct flow into main channel.

3. Maintain flow of existing sewer during construction and until concrete is properly cured in the case of cast-in-place work and formed inverts.

4. Saw cut existing pipe to be removed. Chipping or breaking pipe with a hammer shall not be permitted.

3.07 FIELD QUALITY CONTROL

A. General: Test each manhole constructed by one of the methods specified herein. If the manhole is constructed on an existing sewer where flow must be maintained, the test may be waived, at the sole discretion of the Township.

1. Conduct tests in presence of and to complete satisfaction of the Township and Sewer Engineer.

2. Should a manhole not satisfactorily pass testing, the Township may direct Developer to discontinue manhole construction in the Project until such manhole does test satisfactorily.

3. Provide tools, materials (including water), equipment and instruments necessary to conduct manhole testing specified herein.

4. Prior to testing manholes, thoroughly clean such and seal openings, both to complete satisfaction of the Township and Sewer Engineer. Seal openings using properly sized plugs.

5. Perform testing with frames installed. The joint between the manhole and the manhole frame shall be included in the test. Bituminous paving base should be installed prior to testing.

6. Developer may elect to make a test prior to backfilling for his own purposes; however, the tests of the manholes for acceptance, shall be conducted after the backfilling has been completed.

B. Vacuum Testing:

1. Vacuum Testing Equipment:

a. Use vacuum apparatus equipped with necessary piping, control valves and gauges to control air removal rate from manhole and to monitor vacuum.

b. Provide an extra vacuum gauge of known accuracy to frequently check test equipment and apparatus.

c. Vacuum testing equipment and associated testing apparatus subject to the Township and Sewer Engineer approval.

d. Provide seal plate with vacuum piping connections for inserting in manhole frame.

2. Vacuum Test Procedure:

a. Perform vacuum testing in accordance with the testing equipment manufacturer's written instructions.

b. Draw a vacuum of (-) ten-inches of mercury and close the valves.

c. Consider manhole acceptable when vacuum does not drop below (-) nine-inches of mercury for the following manhole sizes and times.

1) Four-foot diameter – 60 seconds.

2) Five-foot diameter – 75 seconds.

3) Six-food diameter – 90 seconds.

C. Exfiltration Test Procedure:

1. Water Test Procedure will not be permitted when the air temperature is expected to fall below 35° F, or as directed by the Township or Sewer Engineer.

2. Completely fill manhole with water.

3. Allow water filled manhole to stand twelve hours prior to testing to allow absorbing in materials.

4. At commencement of test, fill manhole to top of manhole frame.

5. During a consecutive four-hour period keep an accurate record of the amount of water to be added because of exfiltration.

6. Consider manhole acceptable when exfiltration rate does not exceed a rate of 0.0189 gallons a day per inch of manhole diameter per vertical foot of manhole.

D. Repair and Retest:

1. Determine source or sources of leaks in manholes failing acceptable limits.

2. Repair or replace defective materials and workmanship, as in the case, and conduct such additional Manhole Acceptance Tests and such subsequent repairs and retesting as required until manholes meet test requirements.

3. Materials and methods used to make manhole repairs must meet with the Township and Sewer Engineers approval prior to use.

END OF SECTION

SECTION 6 - CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete work for:

1. Pipe thrust restraint.

2. Restoration of disturbed/damaged concrete curbs and sidewalks.

3. Miscellaneous concrete specified in other Sections.

1.02 REFERENCES

A. American Concrete Institute (ACI).

1. 301 – Specifications for Structural Concrete.

2. 305 – Guide to Hot Weather Concreting.

3. 306 – Guide to Cold Weather Concreting.

4. 318 – Building Code Requirements for Structural concrete and Commentary.

5. 3.47 – Guide to Formwork for concrete.

B. American Society for Testing and Materials (ASTM).

1. A615 - Deformed and Plain Carbon – Steel Bars for Concrete Reinforcement.

2. C31 – Making and Curing Concrete Test Specimens in the Field.

3. C39 – Compressive Strength of Cylindrical Concrete Specimens.

4. C42 – Obtaining and Testing Drilled Cores.

5. C94 – Ready-Mixed Concrete.

6. C143 – Slump of Hydraulic Cement Concrete.

7. C172 – Sampling Freshly Mixed Concrete.

8. C173 – Air Content of Freshly Mixed Concrete by the Volumetric Method.

9. C1064 – Temperature of Freshly Mixed Hydraulic Cement Concrete.

C. Pennsylvania Department of Transportation (PennDOT) Publication 408, latest edition.

1. Section 704 – Cement Concrete.

2. Section 711 – Concrete Curing Material and Admixture.

3. Section 1001 – Cement Concrete Structures.

1.03 SUBMITTALS

A. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, and others if requested by the Township.

B. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 “Manual of Standard Practice for Detailing Reinforced Concrete Structures” showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.

C. Laboratory test reports for concrete materials and mix design test.

D. Material certificates in lieu of material laboratory test reports when permitted by the Township. Material certificates shall be signed by manufacturer, certifying that each material item complies with or exceeds specified requirements. Provide certification form admixture manufacturers that chloride content complies with specification requirements.

1.04 PROJECT REQUIREMENTS

A. Developer shall be responsible for replacing or restoring all concrete damaged or disturbed in forming work of the Project to match original conditions in addition to those requirements specified herein this Section.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete: Class A cement concrete as specified in PennDOT Publication 408, Section 704.1(b), 3300 psi minimum compressive strength at 28 days.

B. Concrete Admixtures: Curing Materials and Admixtures: As specified in PennDOT Publication 408, Section 711.

C. Liquid Membrane-Forming Curing Compound: As specified in PennDOT Publication 408, Section 711.

D. Reinforcing Bars: 60 ksi yield grade, ASTM A615, deformed billet steel bars.

E. Curb and sidewalk Restoration Materials: Materials shall comply with Conoy Township Specifications.

F. Epoxy Bonding Compound: Use produce equivalent to Sika Chemical Sikadur 32 Hi-Mod.

G. Form coatings: Provide commercial formulation form-coating compounds that will not bond with, nor affect concrete surfaces, and will not impair

subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Verify that excavation is completed to required depth, and that subgrade has been properly compacted.

3.02 PREPARATION

A. Accurately place and adequately support embedded items and joint materials in pour.

B. Prepare existing hardened concrete to bond to new concrete.

1. Roughen and clean existing concrete surface of foreign matter.

2. Apply Epoxy Bonding Compound over existing prepared concrete according to manufacturer's instructions.

C. Sprinkle sufficient water over subgrade to prevent water loss from concrete.

3.03 FORMING

A. Construct forms according to ACI 347 to required dimensions, plumb and straight.

1. Securely brace and shore forms to prevent displacement, bowing and pillowing, and to safely support imposed concrete load.

2. Fabricate forms for each removal without harming or prying against concrete surfaces.

B. Provide openings in concrete formwork of the correct size and in the proper location to accommodate piping and other construction work items. Accurately place and securely support items to be built into forms.

C. Where soil conditions will permit excavation to accurate sizes without bracing, and where cave-ins can be prevented during the concrete pour, earth forms may be used. Earth forms shall be wetted, but not muddy before concrete is placed.

3.04 REINFORCING

A. Place reinforcing steel accurately and securely brace against displacement using reinforcing accessories according to ACI 318.

B. Splice bars according to ACI 318.

3.05 PLACING CONCRETE

A. Place concrete in accordance with ACI 301.

B. Notify the Township and Sewer Engineer minimum 24 hours prior to commencing concrete pour.

C. Ensure that reinforcement, formed expansion and construction joints and embedded items are not disturbed during concrete placement.

D. Place concrete continuously between predetermined expansion, control, and construction joints.

E. Do not interrupt successive placement; do not permit cold joints to occur.

F. Consolidate concrete by vibration, spading, rodding, or other manual methods.

G. Perform concrete work in cold and hot weather according to ACI 306 and ACI 305, respectively.

3.06 FINISHING

A. Finish concrete to match original conditions or as directed by the Township and Sewer Engineer.

3.07 CURING

A. Cure concrete with Liquid Membrane-Forming Curing Compound. Apply curing compound in accordance with PennDOT Publication 408, Section 1001.3.

3.08 CURB AND SIDEWALK RESTORATION

A. Restore curbs and sidewalks damaged by construction to conform to Conoy Township Specifications.

3.09 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: The Developer shall employ an independent testing agency to perform tests and to submit test reports.

B. Sampling and testing for quality control during concrete placement shall include the following, as directed by the Township and Sewer Engineer.

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C94.

a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional test when concrete consistency seems to have changed.

b. Air Content: ASTM C173, volumetric method of lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day, for each type of air-entrained concrete.

c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.

d. Compression Test Specimen: ASTM C31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when filed-cured test specimens are required.

e. Compressive-Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cu. Yd. (4 cu. m) plus additional sets for each 50 cu. Yd. (38 cu. M) more than the first 25 cu. Yd. (19 cu. M) of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

2. When frequency of testing provides fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.

3. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

4. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).

C. Test results will be reported in writing to the Township and Sewer Engineer, ready-mix producer, and Developer within 24 hours after tests. Reports of

compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

D. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics that have not been attained in the structure, as direct the Township and Sewer Engineer. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION

SECTION 7 - GROUT

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Cement grout for:

1. Manholes.

2. Miscellaneous grout requirements.

1.02 RELATED WORK

A. Section 5 – Manholes.

B. Section 7 – Cast-In-Place Concrete

C. Individual grouting requirements as specified in various other Sections of these Specifications.

1.03 REFERENCES

A. American Society for Testing and Materials:

1. ASTM C191, Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.

2. ASTM C596, Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement.

3. ASTM C827, Test Method for Change in Heigh at Early Ages of Cylindrical Specimens of Cementitious Mixtures.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Prevent moisture damage and contamination of materials.

B. Store materials in undamaged condition with seals and labels intact as packaged by the manufacturer.

1.05 SITE CONDITIONS

A. Protect against high and low temperatures and bad weather in accordance with American Concrete Institute standards for placement of concrete.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Non-Shrink Non-Metallic Grout: Factory Premixed material containing no corrosive irons, aluminums, chemicals, or gypsums.

1. Grouts containing water reducers, accelerators, or fluidifiers shall have no drying shrinkage greater than the equivalent cement and water mix as tested per ASTM C596.

2. Grout shall be nonshrink before initial set and show no expansion after set as tested per ASTM C827.

3. Initial set of grout not less than 60 minutes per ASTM C 191 Test.
4. Use Type I (Normal) cement for grout applications not in contact with sewage.

5. Use Type II (Sulfate Resistant) cement for grout applications in contact with sewage.

6. Acceptable Manufacturer: Five Star Products, Inc.

7. Portland Cement: ASTM C150, Type II.

8. Fine Aggregate: ASTM C33 gradation.

9. Waterproof Cement Grout: A Mixture of Portland cement, finely graded mineral fillers, and a chemical additive equal to Drycon, a product of IPA Systems, Inc., or Thoroseal by BASF.

10. Joint Sealant Compound: Federal Specification SS-S-00210. Preformed, flexible, self-adhering, cold applied.

2.03 GROUT QUALITY

A. Non-Shrink Grout: Use ready-mix type requiring only the addition of water. Do not add other materials. Water requirement proportions shall conform to manufacturer's specifications for the desired mix consistency.

PART 3 – EXECUTION

3.01 PREPARATION

A. Forming:

1. Use forming procedures that allow proper and complete placement of grout.

2. Anchor support elements so no movement is possible.

3. Remove supports only after grout has hardened.

4. Pre-treat with forming oils wood forms that may absorb moisture.

B. Preparation of Surface:

1. Non-Shrink Grout: Prepare in accordance with manufacturer's printed instructions.

3.02 MIXING

A. Time:

1. Non-Shrink Grout: In Accordance with manufacturer's printed instructions.

3.02 PLACING

A. Non-shrink Non-Metallic Grout: Perform grout placement in accordance with the recommendations of ACI and the manufacturer's published specifications for mixing and placing. Place Non-Shrink Non-Metallic grout only where indicated on Drawings.

END OF SECTION

SECTION 8 - GREASE TRAPS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Grease Traps.

1.02 RELATED SECTIONS

A. Section 2 – Trenching, Backfilling and Compaction.

B. Section 5 – Manholes.

1.03 REFERENCES

A. ASTM A48, Gray Iron Castings.

B. ASTM A615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

C. ASTM C478, Precast Reinforced Concrete Manhole Sections.

1.04 SUBMITTALS

A. Make submissions required by Section 1 Construction Submittals.

PART 2 – PRODUCTS

2.01 REQUIREMENTS

A. Commercial businesses discharging wastewater containing oils and/or grease, and other establishments as deemed necessary by the Township and Sewer Engineer, shall install a grease trap. Establishments requiring a grease trap include, but are not limited to, food processing establishments, establishments serving food, and establishments from which oils or grease could enter the Township's sewer collection system.

B. Volume of grease trap shall be determined by Developer with minimum volume being 500 gallons. A 20-minute retention time is required within the

vessel. The Township reserves the right to require a greater volume or multiple units.

C. Grease traps shall be baffled and provided with direct access for cleanout of each compartment. Grease traps larger than 500 gallons will require a middle baffle. Unit shall be installed outside in an area with easy and continuous access for tanker unit to remove waste from the unit.

D. A maintenance agreement is to be executed between the property owner and the Township. A minimum cleaning/hauling frequency will be required in the maintenance agreement. The cleaning/hauling frequency shall be no less than once per year. The Township will request greater frequency if grease is found entering the Township's sewer collection system. Property owners are required to submit cleaning/hauling reports to the Township concerning cleaning/hauling on a regular basis.

E. Internal grease traps are prohibited by the Township.

2.02 GREASE TRAP

A. Unit shall be precast concrete meeting all requirements of Section 5 – Manholes and the Standard Details and shall be suitable to withstand traffic loads.

B. Access covers shall be located for ease of cleaning and shall be gasketed to prevent the inflow of groundwater, surface water or rain from entering the unit. Where required, covers shall be suitable to withstand traffic loads. Should usage in the area of installation be modified to a traffic area from a non-traffic area, the covers shall be changed to withstand traffic loads.

2.03 PIPE MATERIALS

A. Connection of the grease trap to the Township's system shall comply with Section 4 Piping and Appurtenances.

PART 3 – EXECUTION

3.01 INSTALLATION

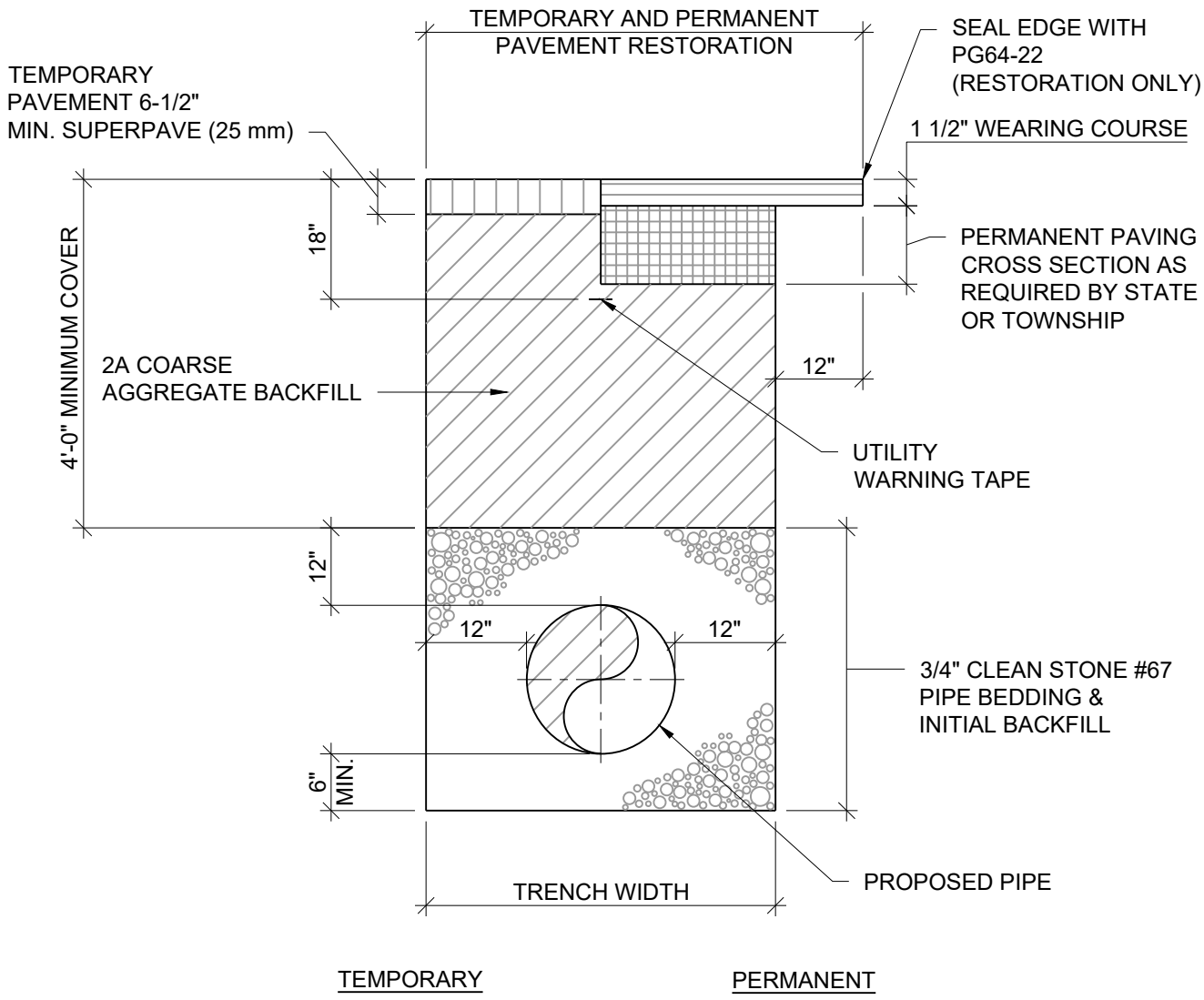
A. Grease trap and all connecting piping and appurtenances shall conform to the requirements of Section 2 – Excavating, Backfilling and Compaction and Section 4 – Pipe and Fittings.

B. Installation shall be in accordance with the manufacturer's recommendations.

END OF SECTION

APPENDIX B

STANDARD DETAILS



TOWNSHIP PAVEMENT RESTORATION NOTES:

1. RESTORE WITH SUPERPAVE (25mm) TO SURFACE AND ALLOW TO SETTLE FOR 90 DAYS. SUPERPAVE DEPTH OF 6-1/2" OR TO MATCH EXISTING PAVING, WHICHEVER IS GREATER.
2. MILL RESTORED AREA PLUS 1 FOOT TO EACH SIDE OF TRENCH TO 1-1/2" DEPTH.
3. PAVE MILLED AREA WITH 1-1/2" OF SUPERPAVE (9.5mm).
4. SEAL EDGES WITH PG64-22.
5. PAVEMENT SAWCUTTING SHALL PROVIDE A CLEAN AND NEAT EDGE AT RIGHT ANGLES OF SURFACE OF PAVEMENT TO REMAIN.

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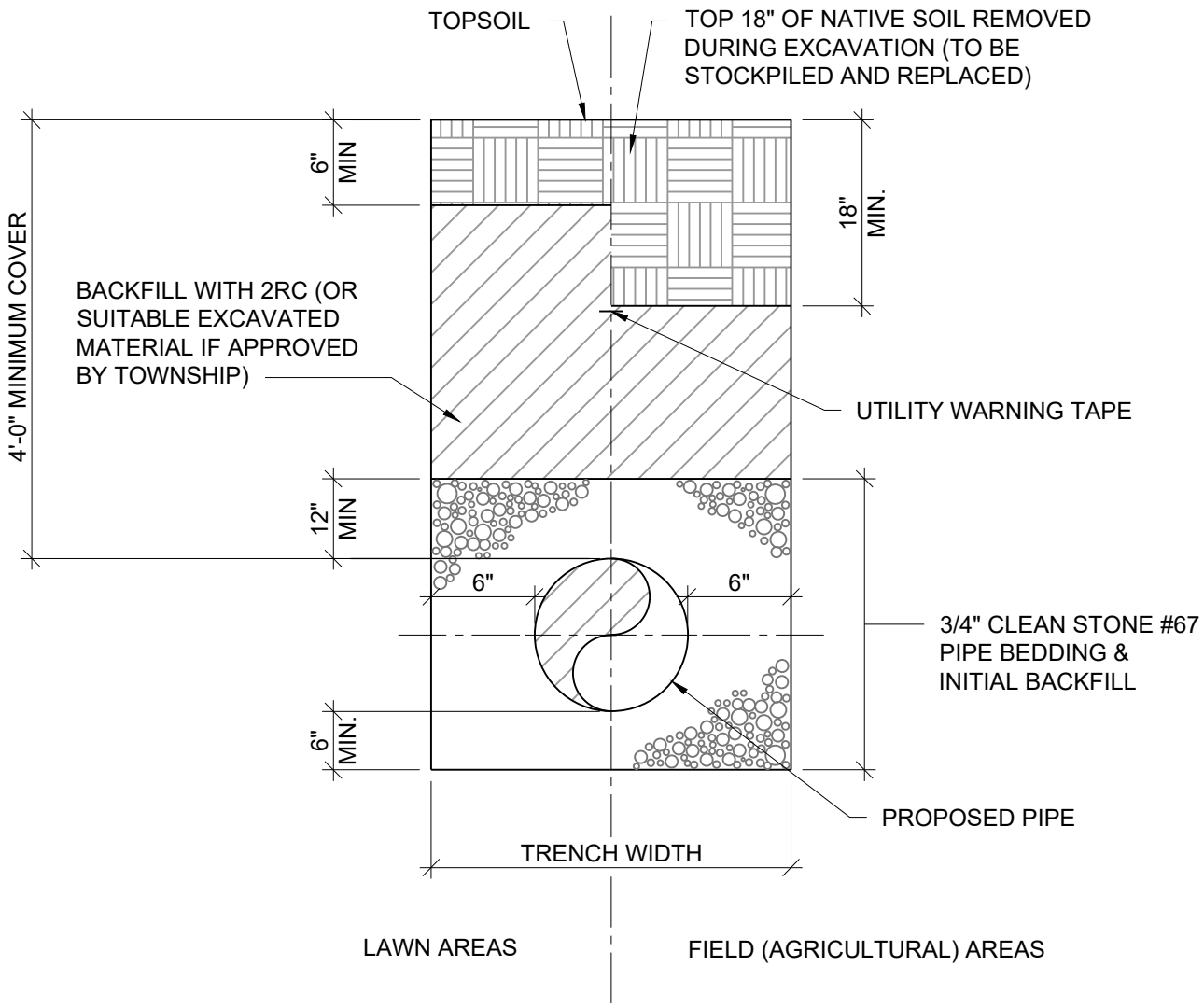
CONOY TOWNSHIP

TRENCH RESTORATION FOR EXISTING PAVED AREAS

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S1
APPROVED BY: TAL	



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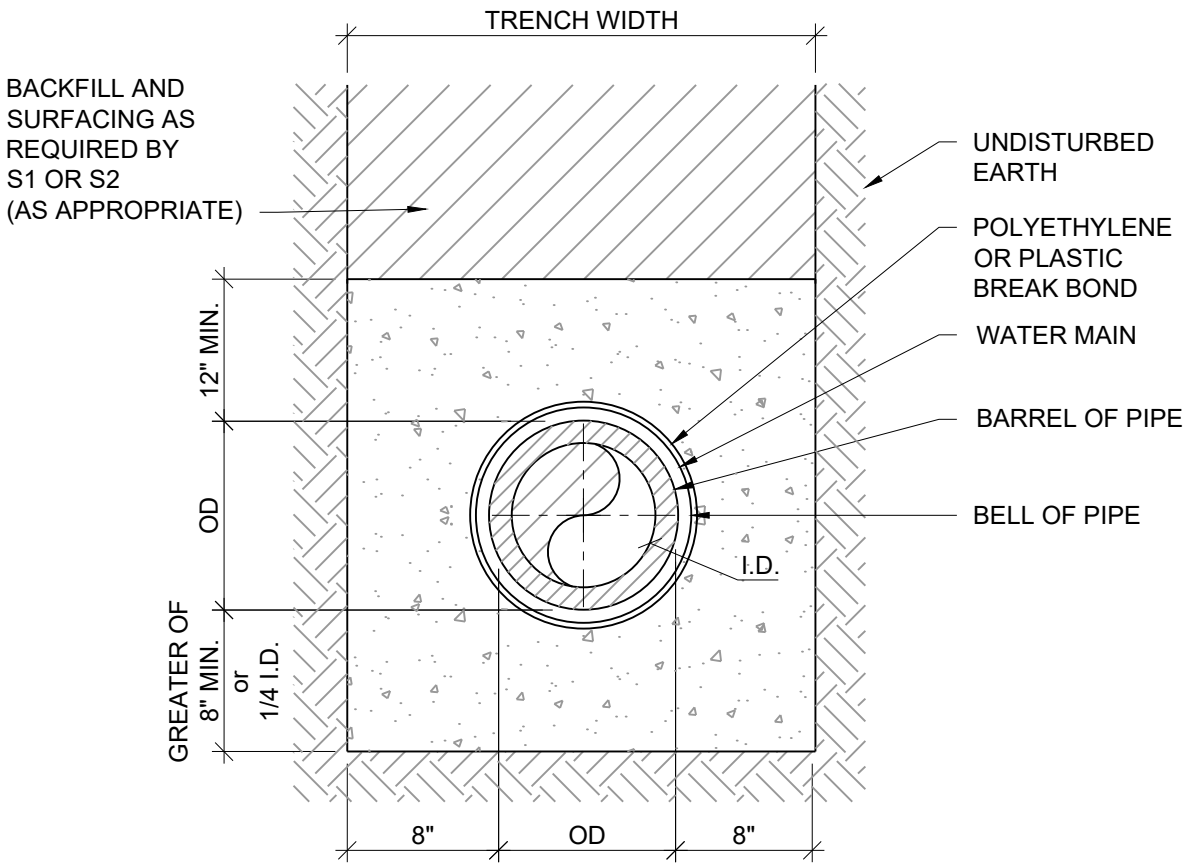
CONOY TOWNSHIP

TRENCH RESTORATION LAWN / FIELD AREAS

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S2
APPROVED BY: TAL	



NOTE: ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

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CONOY TOWNSHIP

CONCRETE ENCASEMENT

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S3
APPROVED BY: TAL	

HORIZONTAL BENDS							
NOMINAL	LENGTH OF PIPE RESTRAINT REQUIRED PER FITTING IN FEET						
PIPE DIA.	11.25°	22.5°	45°	90°	TEE	CAP/VALVE	REDUCER
4	2	3	6	13	11	14	--
6	2	4	8	19	16	20	10
8	3	5	10	25	23	26	11
10	3	6	13	30	28	32	11
12	4	7	15	35	34	38	11
16	5	10	19	46	46	49	21

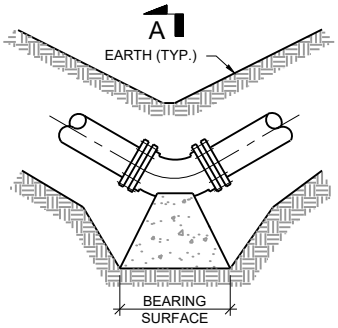
VERTICAL BENDS								
	LENGTH OF PIPE RESTRAINT REQUIRED PER FITTING IN FEET							
NOMINAL	VERTICAL UP BEND ANGLE				VERTICAL DOWN BEND ANGLE			
PIPE DIA.	11.25°	22.5°	45°	90°	11.25°	22.5°	45°	90°
4	2	3	6	13	3	6	12	28
6	2	4	8	19	4	8	16	39
8	3	5	10	25	6	11	22	52
10	3	6	13	30	7	13	26	63
12	4	7	15	35	8	15	31	75
16	5	10	19	46	10	20	41	98

NOTES:

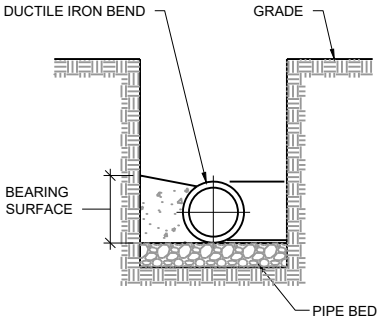
1. LENGTHS ARE BASED ON THE DUCTILE IRON PIPE RESEARCH ASSOCIATION THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE ONLINE CALCULATOR, ACCESSED 01/03/2020. ASSUMING THE FOLLOWING: TRENCH - TYPE 5, SOIL - CLAY 1, BURY DEPTH 4', PRESSURE 150 PSI, SAFETY FACTOR 1.5, AND TEE RUN LENGTH TO FIRST JOINT 6'.

2. LENGTHS ARE PROVIDED FOR DUCTILE IRON PIPE WITHOUT POLYETHYLENE WRAP. POLYETHYLENE WRAP WILL REQUIRE ADDITIONAL RESTRAINT LENGTH TO BE DETERMINED ON AN AS NEEDED BASIS BY WTMA ENGINEER.

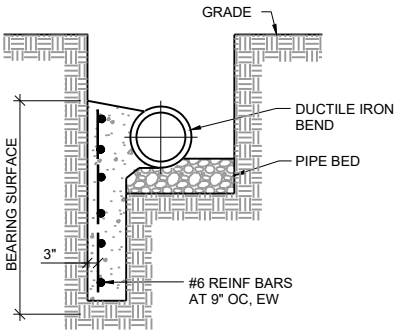
3. REDUCER LENGTHS ARE GIVEN FROM THE INDICATED SIZE TO THE NEXT SMALLER SIZE. REDUCER RESTRAINT LENGTHS SHOULD BE ADDED IF GREATER REDUCTION IS REQUIRED (I.E. 16" TO 8" = 21+11+11 = 43 FEET)



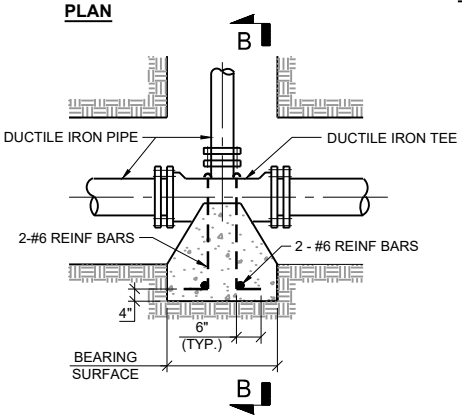
PLAN



SECTION A-A



ALTERNATE SECTION A-A



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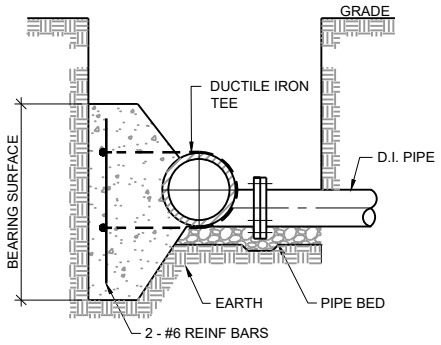

SECTION B-B

THRUST BLOCKING SCHEDULE OF DIMENSIONS

MINIMUM SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST BLOCKING AND VERTICAL THRUSTS DOWNWARD
* BASED UPON 150 PSI PRESSURE *

PIPE SIZES →	4", 6" AND 8"				10" AND 12"			
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	DEGREE BEND OR DEFLECTION				DEGREE BEND OR DEFLECTION			
	11 1/4°	22 1/2°	45°	90°	11 1/4°	22 1/2°	45°	90°
SAND 1 TON/SQ FT SOFT CLAY 1 TON/SQ FT	1.50	3.00	6.00	12.00	3.00	6.00	12.00	24.50
SAND & GRAVEL 2 TON/SQ FT	1.00	1.50	3.00	6.00	1.50	3.00	6.00	12.00
CLAY 3 TON/SQ FT	1.00	1.00	2.00	4.00	1.00	2.00	4.00	8.00
SOFT ROCK 5 TON/SQ FT	1.00	1.00	1.00	2.50	1.00	1.00	2.50	5.00
ROCK 20 TON/SQ FT	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

MINIMUM SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST BLOCKING AND VERTICAL THRUSTS DOWNWARD
* BASED UPON 150 PSI PRESSURE *

PIPE SIZES →	16"			
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	DEGREE BEND OR DEFLECTION			
	11 1/4°	22 1/2°	45°	90°
SAND 1 TON/SQ FT SOFT CLAY 1 TON/SQ FT	5.50	11.00	21.50	43.00
SAND & GRAVEL 2 TON/SQ FT	2.50	5.50	11.00	21.50
CLAY 3 TON/SQ FT	2.00	3.50	7.00	14.00
SOFT ROCK 5 TON/SQ FT	1.00	2.00	4.50	8.50
ROCK 20 TON/SQ FT	1.00	1.00	1.00	2.00

NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS. POURED CONCRETE OR SAKRETE ONLY.
2. ALL REINFORCING STEEL SHALL BE GRADE 60 DEFORMED BARS.
3. INSTALL CONCRETE THRUST BLOCKS AT EACH ELBOW, TEE AND CAPPED OR VALVED END FITTINGS LOCATED IN THE HORIZONTAL PLANE.
4. PAINT ALL EXPOSED STEEL WITH TWO COATS OF ASPHALT PAINT.
5. NO COUPLING OR JOINTS SHALL BE COVERED WITH CONCRETE.
6. STAINLESS STEEL ALL-THREADS WITH PIPE STRAPS MAY BE USED IN PLACE OF REINFORCING BARS.
7. ALL THRUST BLOCKS SHOWN ARE INTENDED AS A GUIDE AND SHALL WITHSTAND THE REQUIRED PRESSURE.
8. MEGALUGS REQUIRED ON ALL MECHANICAL JOINT FITTINGS.
9. CERTAIN SITUATIONS MAY WARRANT THE USE OF TIE RODS AS INDICATED ON THIS DETAIL OR AS REQUIRED BY THE AUTHORITY.
10. PIPING SHALL BE WRAPPED WITH POLYETHYLENE PRIOR TO PLACEMENT OF CONCRETE.
11. FOR SOIL BEARING VALUES LESS THAN 1 TON / SQ. FT., CONSULT WITH AUTHORITY ENGINEER FOR RECOMMENDATION.
12. CONCRETE QUANTITY TO BE IN ACCORDANCE WITH THIS DETAIL. MINIMUM AMOUNT OF CONCRETE MUST BE INSTALLED.

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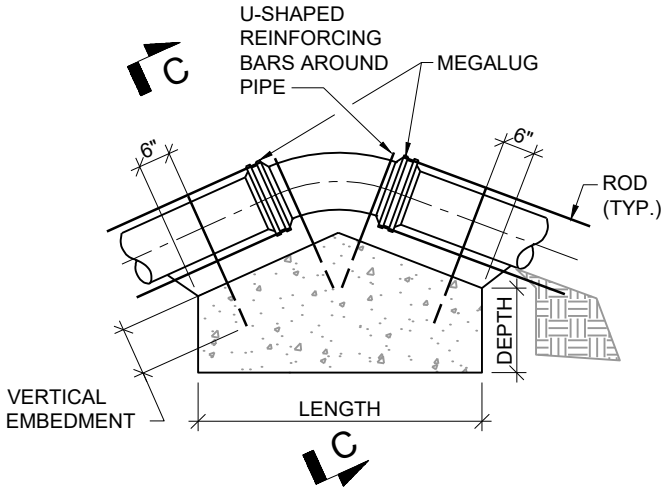
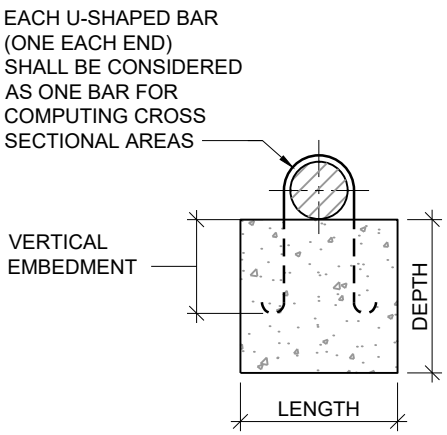
CONOY TOWNSHIP

HORIZONTAL THRUST BLOCKING

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S5
APPROVED BY: TAL	



VERTICAL THRUST UPWARD



SECTION C-C

VERTICAL THRUST BLOCKING UPWARD THRUSTS SCHEDULE OF DIMENSIONS

* BASED UPON 150 PSI PRESSURE *

PIPE SIZE	4", 6" AND 8"			10" AND 12"			16"		
DEGREE BEND OR DEFLECTION	11 1/4°	22 1/2°	45°	11 1/4°	22 1/2°	45°	11 1/4°	22 1/2°	45°
LENGTH	3.00	4.00	6.00	4.50	6.00	8.00	6.00	8.00	11.00
WIDTH	3.00	3.00	3.00	3.00	3.00	4.00	3.50	3.50	5.00
DEPTH	2.00	3.00	4.00	3.00	4.50	5.00	3.50	5.00	5.00
SQ. IN. REINFORCING	0.17	0.33	0.65	0.37	0.74	1.46	0.66	1.32	2.60

BAR NO.	5	6	7	8	9	10	11
CROSS-SECTION $IN.^2$ PER BAR	0.31	0.44	0.60	0.79	1.00	1.27	1.56
VERTICAL EMBEDMENT	15"	19"	26"	35"	44"	56"	68"

NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS. POURED CONCRETE OR SAKCRETE ONLY.
2. ALL REINFORCING STEEL SHALL BE GRADE 60 DEFORMED BARS.
3. INSTALL CONCRETE THRUST BLOCKS AT EACH ELBOW, TEE AND CAPPED OR VALVED END FITTINGS LOCATED IN THE VERTICAL PLANE.
4. PAINT ALL EXPOSED STEEL WITH TWO COATS OF ASPHALT PAINT.
5. NO COUPLING OR JOINTS SHALL BE COVERED WITH CONCRETE.
6. STAINLESS STEEL ALL-THREADS WITH PIPE STRAPS MAY BE USED IN PLACE OF REINFORCING BARS.
7. ALL THRUST BLOCKS SHOWN ARE INTENDED AS A GUIDE AND SHALL WITHSTAND THE REQUIRED PRESSURE.
8. MEGALUGS REQUIRED ON ALL MECHANICAL JOINT FITTINGS.
9. CERTAIN SITUATIONS MAY WARRANT THE USE OF TIE RODS AS INDICATED ON THIS DETAIL OR AS REQUESTED BY THE AUTHORITY.
10. PIPING SHALL BE WRAPPED WITH POLYETHYLENE PRIOR TO PLACEMENT OF CONCRETE.
11. FOR SOIL BEARING VALUES LESS THAN 1 TON / SQ. FT., CONSULT WITH AUTHORITY ENGINEER FOR RECOMMENDATION.
12. CONCRETE QUANTITY TO BE IN ACCORDANCE WITH THIS DETAIL. MINIMUM AMOUNT OF CONCRETE MUST BE INSTALLED.

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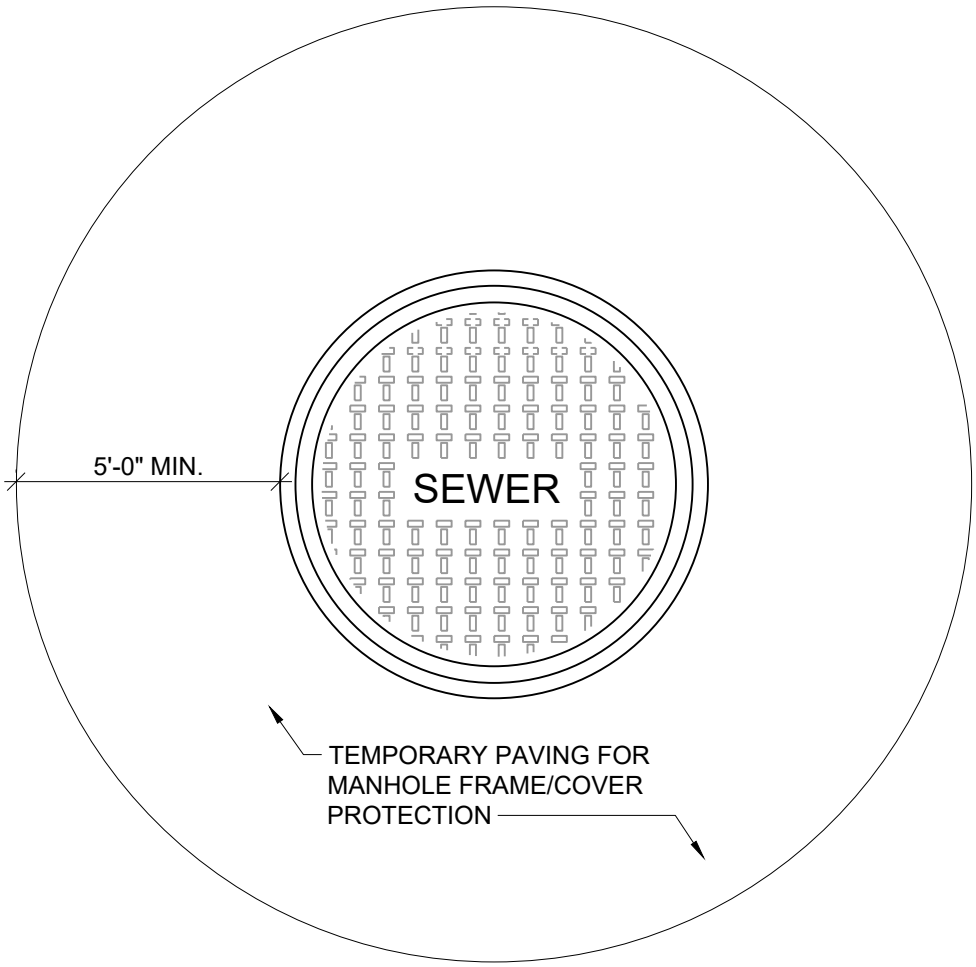
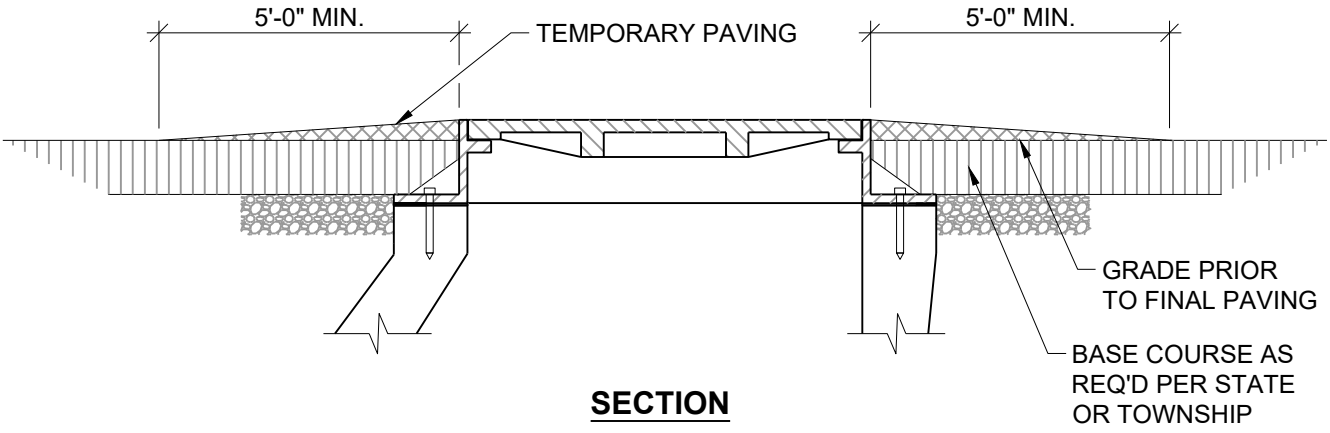
CONOY TOWNSHIP

VERTICAL THRUST BLOCKING

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S6
APPROVED BY: TAL	



PLAN



SECTION

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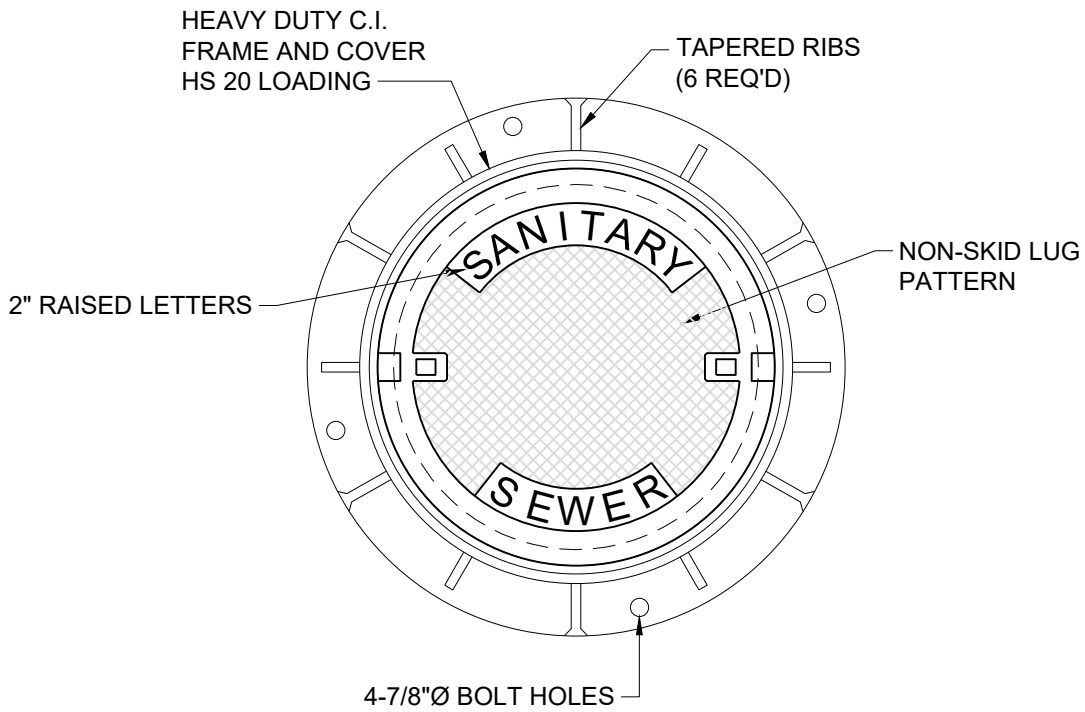
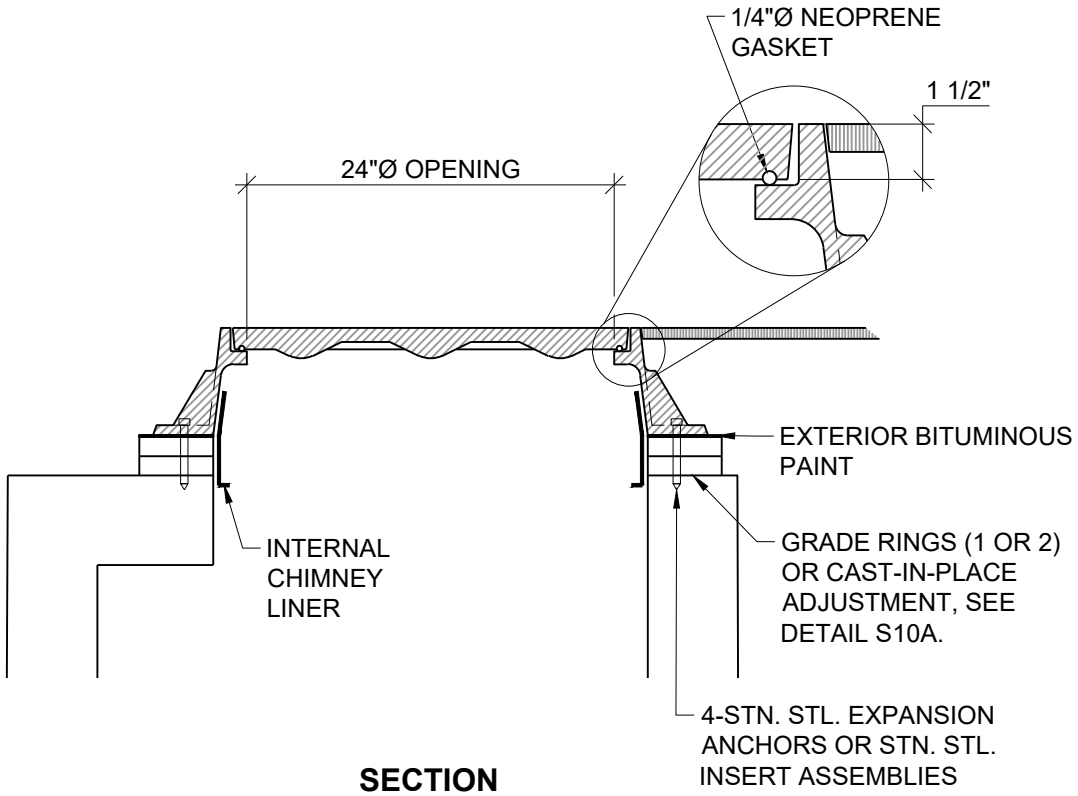
CONOY TOWNSHIP

MANHOLE FRAME / COVER PROTECTION - (TEMPORARY PAVING)

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S7
APPROVED BY: TAL	



PLAN



SECTION

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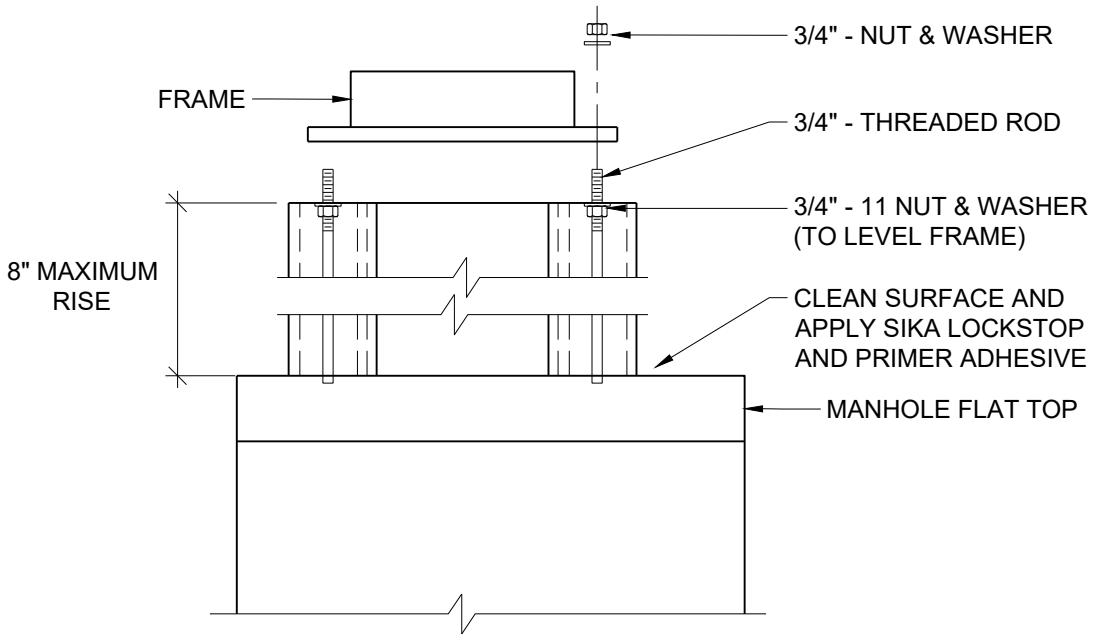
		PREPARED BY: PDM	PROJECT NO. 4682.000
		CHECKED BY: MAP	DRAWING NO. S8
		APPROVED BY: TAL	



ELEVATION

NOTES:

1. CUT SONOTUBE TO FINISH GRADE HEIGHT INSIDE AND OUTSIDE DIAMETERS TO MATCH FRAME.
2. SET THREADED ROD TO MANHOLE FRAME HEIGHT (SCREW INTO MANHOLE CONE)
3. INSTALL NUTS TO LEVEL FRAME.
4. REMOVE FRAME.
5. INSTALL PVC TUBING OR BREAK BOND AROUND THREADED RODS.
6. POUR CONCRETE TO THE TOP OF THE LEVELING NUTS (3,000 PSI CONCRETE MINIMUM)
7. SET THE FRAME ONTO THE RODS AFTER CONCRETE HAS CURED, REMOVE FRAME AND APPLY TWO (2) RINGS OF BUTYL RUBBER JOINT SEALANT.
8. INSTALL WASHER & NUT TO SECURE THE FRAME AFTER THE FRAME IS SET.
9. INSTALL CHIMNEY SEAL TO INTERIOR AND APPLY BITUMINOUS EPOXY PAINT TO EXTERIOR.

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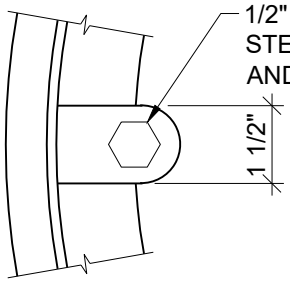
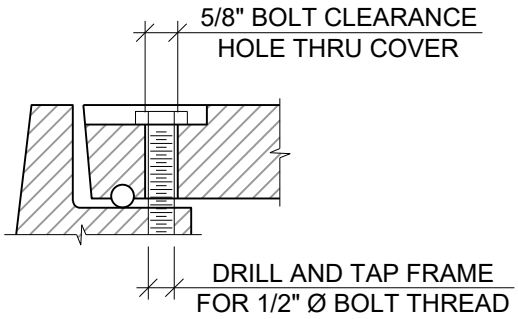
CONOY TOWNSHIP

CAST-IN-PLACE MANHOLE GRADE ADJUSTMENT

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S9
APPROVED BY: TAL	

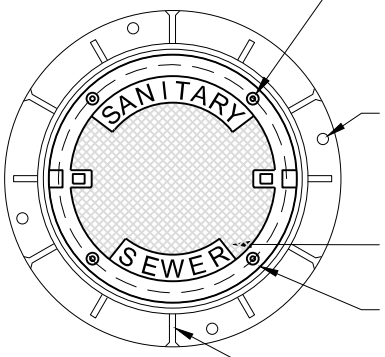


PLAN



SECTION

COVER BOLT HOLE



COVER BOLT HOLE-FOR WATERTIGHT FRAME. 4 REQ'D. EQUALLY SPACED (SEE DETAIL THIS SHEET)

FRAME BOLT HOLE
4 EACH 4-7/8" BOLT HOLES
4 REQ'D EQUALLY SPACED

2" RAISED LETTERS

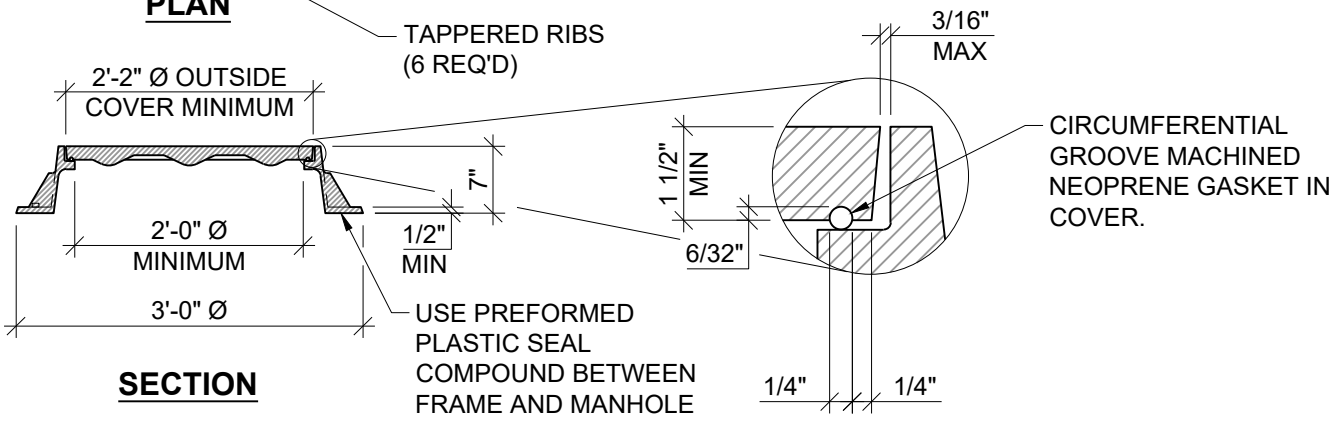
HEAVY DUTY C.I.
FRAME AND COVER
HS20 LOADING

TAPPERED RIBS
(6 REQ'D)

PLAN

MANHOLE FRAME AND COVER NUTS:

1. ALL MANHOLE FRAMES AND COVERS SHALL BE FOR HEAVY DUTY TRAFFIC, AASHTO HIGHWAY LOADING CLASS HS-20.
2. APPLY LUBRICANT TO COVER BOLTS. USE 20-30 FT/LBS. MAXIMUM TORQUE.



CIRCUMFERENTIAL GROOVE MACHINED NEOPRENE GASKET IN COVER.

USE PREFORMED PLASTIC SEAL COMPOUND BETWEEN FRAME AND MANHOLE

SECTION

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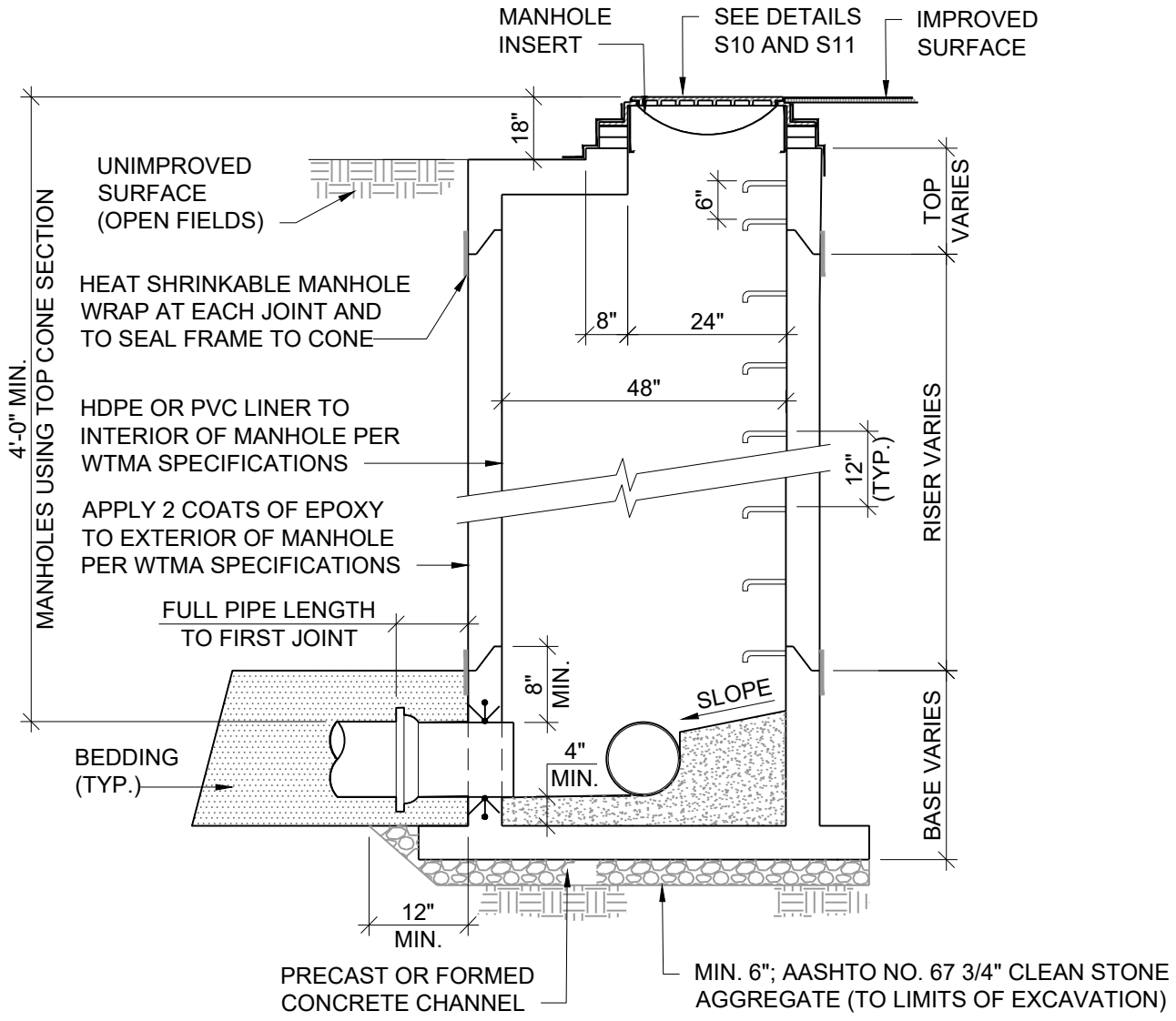
CONOY TOWNSHIP

BOLT DOWN TYPE WATERTIGHT FRAME AND COVER

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S10
APPROVED BY: TAL	



NOTES:

1. ADJUST TO GRADE WITH CAST-IN-PLACE GRADE RINGS.
2. PRECAST CONCRETE TO CONFORM TO ASTM C-478.
3. SEAL ALL MANHOLE JOINTS WITH 2 RINGS OF BUTYL RUBBER SEALING COMPOUND.
4. SEAL ALL PIPE OPENINGS WITH CAST-IN-PLACE RUBBER GASKETS (8" ONLY), A-LOK CAST-IN-PLACE RUBBER GASKETS (12" AND UP), OR PBX BOOT (12" AND UP).
5. MANHOLE STEPS SHALL BE COPOLYMER POLYPROPYLENE, PLASTIC COATED 1/2" DIA. GRADE 60 STEEL REINFORCEMENT BY MA INDUSTRIES OR APPROVED EQUAL.
6. PROVIDE 5' DIAMETER MANHOLE DEPTH GREATER THAN 12'.
7. PROVIDE 5' DIAMETER MANHOLE FOR SEWER MAINS GREATER THAN 18" DIAMETER.

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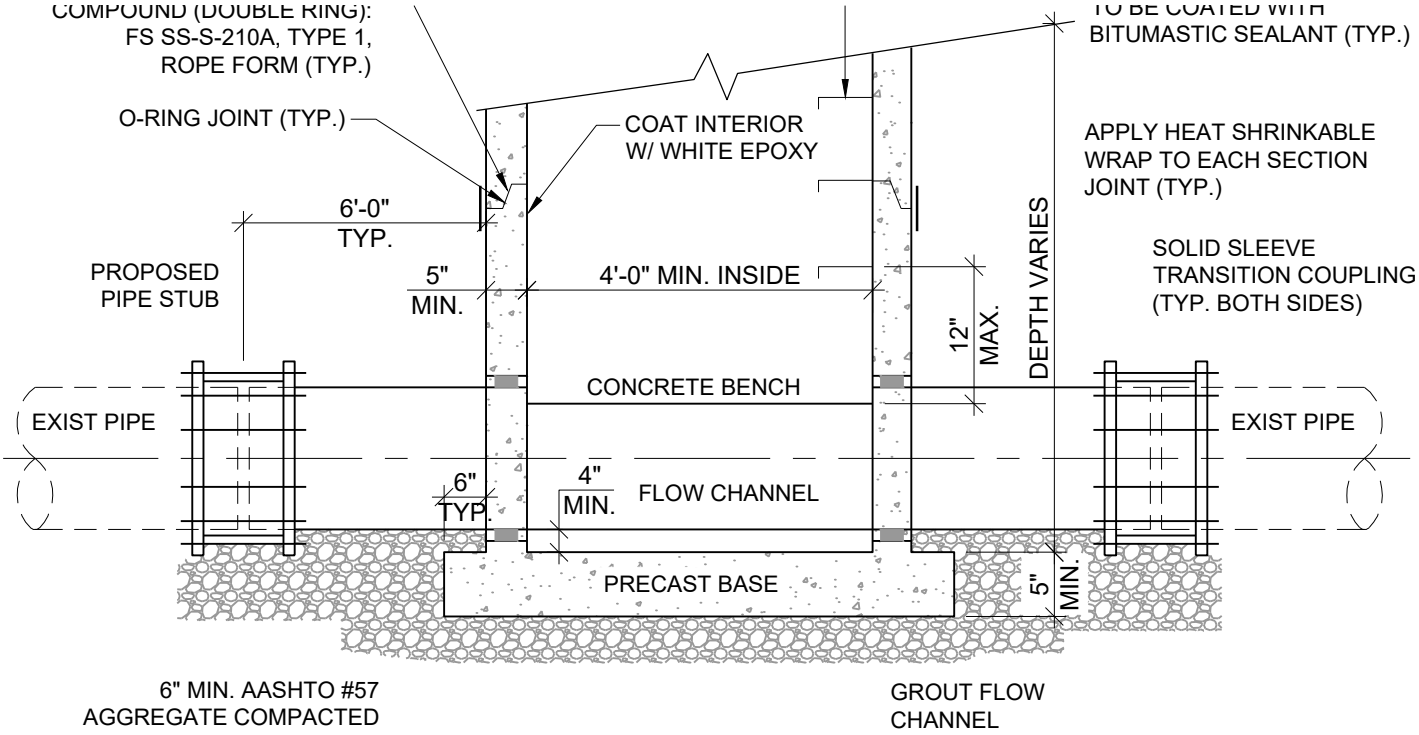
CONOY TOWNSHIP

PRECAST SEWER MANHOLE (LESS THAN 16' DEPTH)

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S11
APPROVED BY: TAL	



ELEVATION

NOTES:

1. THE BENCH SHALL SLOPE TO INVERT CHANNEL AT THE RATE OF 1" PER FOOT (MIN.)
2. THE DEPTH OF THE INVERT CHANNEL SHALL BE NOT LESS THAN 3/4 OF THE DIAMETER OF THE PIPE.
3. 48"Ø MANHOLE SHALL BE USED ON PIPE SIZES 8" TO 18"
4. FINISH GRADE SHALL BE FLUSH WITH TOP OF COVER, UNLESS OTHERWISE NOTED. MANHOLES INSTALLED OUTSIDE OF PAVED AREAS SHOULD BE RAISED A MINIMUM OF 18" ABOVE GROUND ELEVATION.
5. ALL PIPE TO MANHOLE CONNECTIONS SHALL BE MADE WITH A CAST-IN-PLACE GASKET. (TYP.) (A-LOK OR APPROVED EQUAL)
6. REFER TO APPROPRIATE MANHOLE DETAILS FOR UPPER SECTION REQUIREMENTS.
7. SOLID SLEEVE TRANSITION COUPLINGS SHALL INCLUDE A DUCTILE IRON MECHANICAL JOINT SOLID SLEEVE WITH MEGA-LUG GLANDS AND TRANSITION GASKETS (IF REQUIRED).

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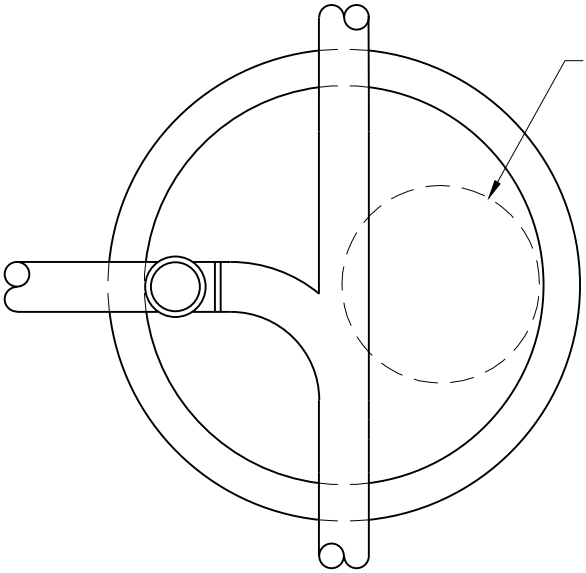
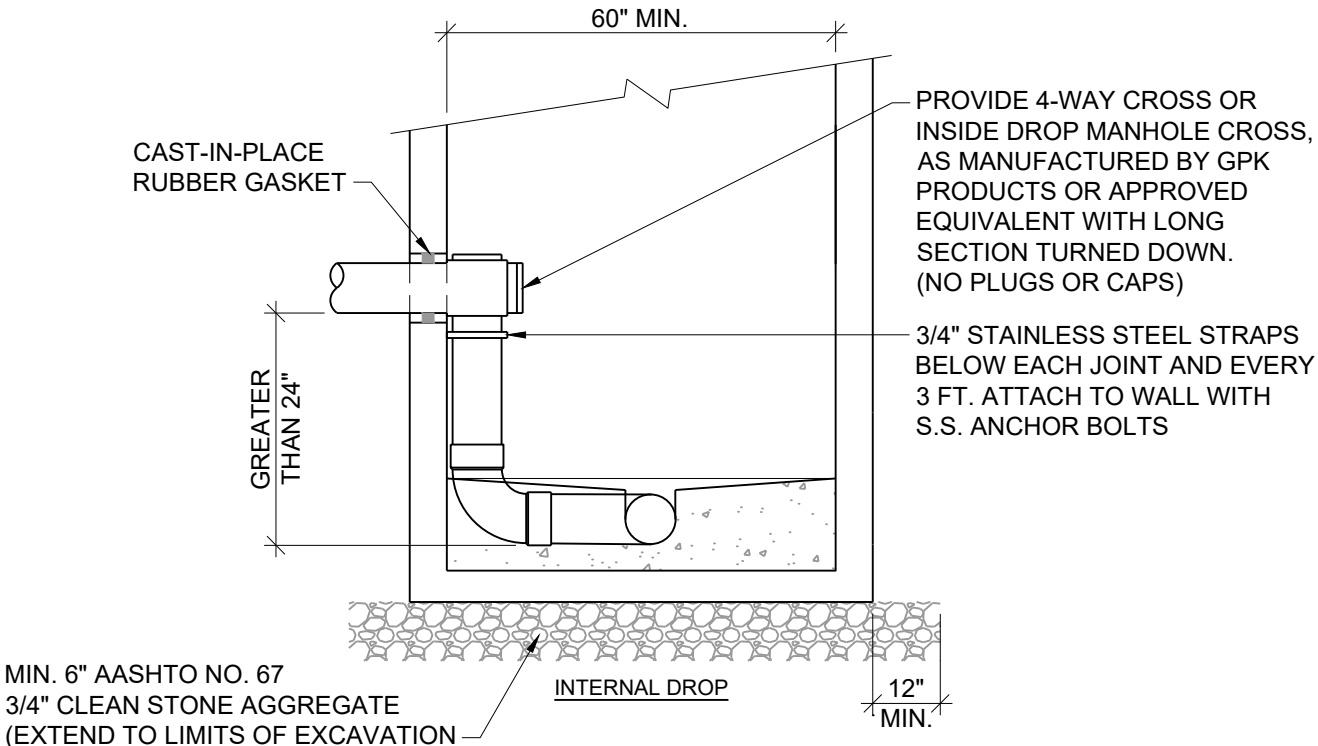
CONOY TOWNSHIP

INSERTION MANHOLE DETAIL

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S12
APPROVED BY: TAL	



SECTIONAL PLAN



SECTION

NOTES:

1. SEAL ALL PIPE OPENINGS WITH CAST-IN RUBBER GASKETS
2. SEE PRECAST MANHOLE AND FRAME & COVER DETAILS FOR ADDITIONAL REQUIREMENTS
3. PROVIDE FULL PIPE LENGTH FROM MANHOLE TO FIRST JOINT

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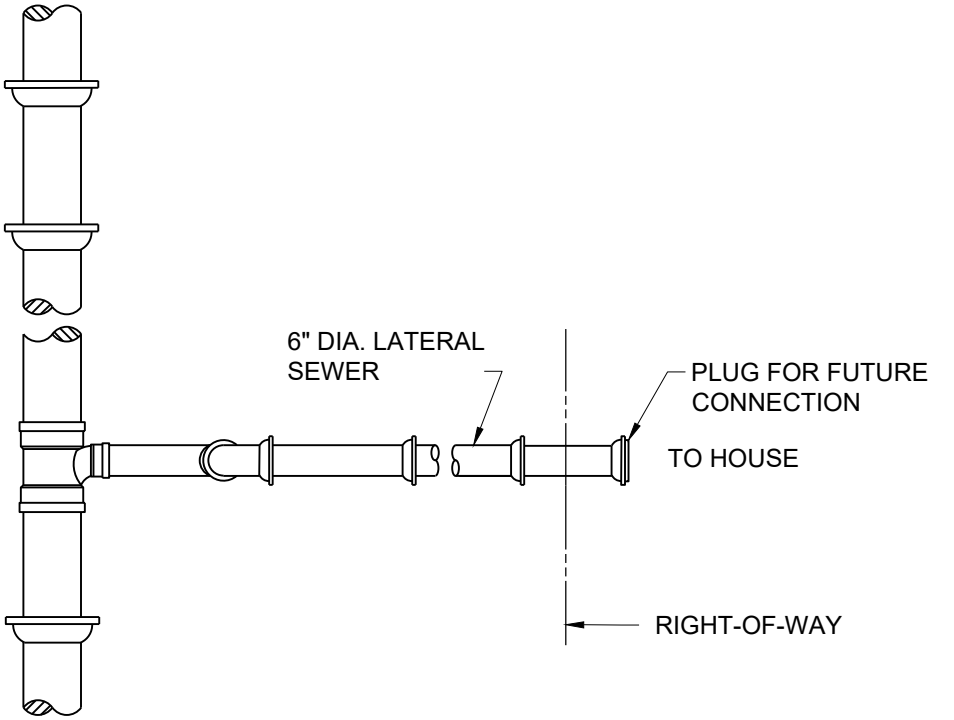
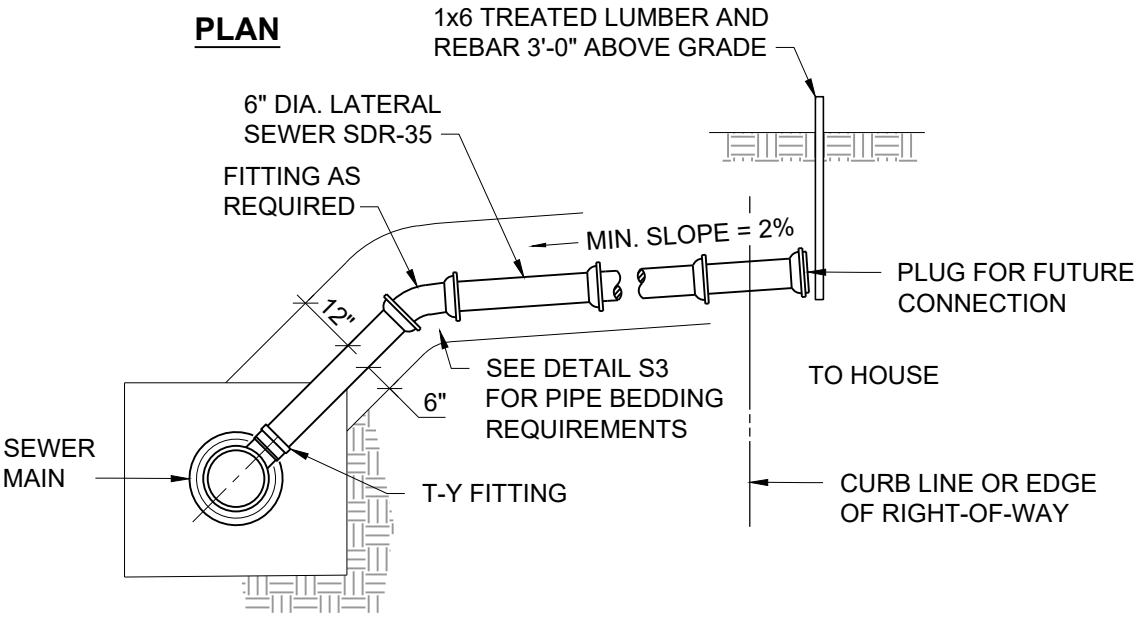
CONOY TOWNSHIP

PRECAST INTERNAL DROP MANHOLE

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S13
APPROVED BY: TAL	



PLAN



ELEVATION

NOTES:

1. EXTEND LATERAL TO 5 FEET BEYOND RIGHT-OF-WAY UNLESS A LESSER DISTANCE IS DIRECTED BY THE AUTHORITY.
2. STAMP CURB "S" ABOVE LATERAL.
3. WYE TO BE USED IF LATERAL IS CONNECTED TO GRINDER PUMP.

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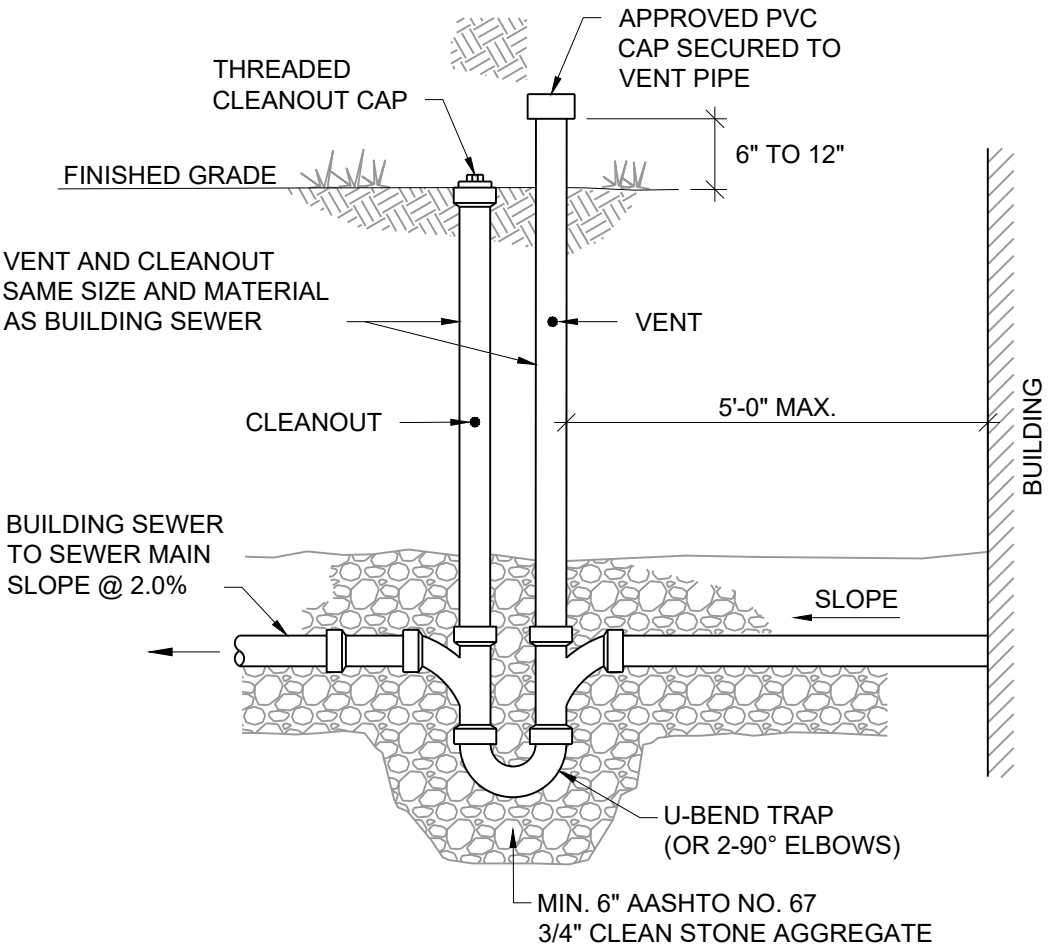
CONOY TOWNSHIP

SANITARY SEWER LATERAL

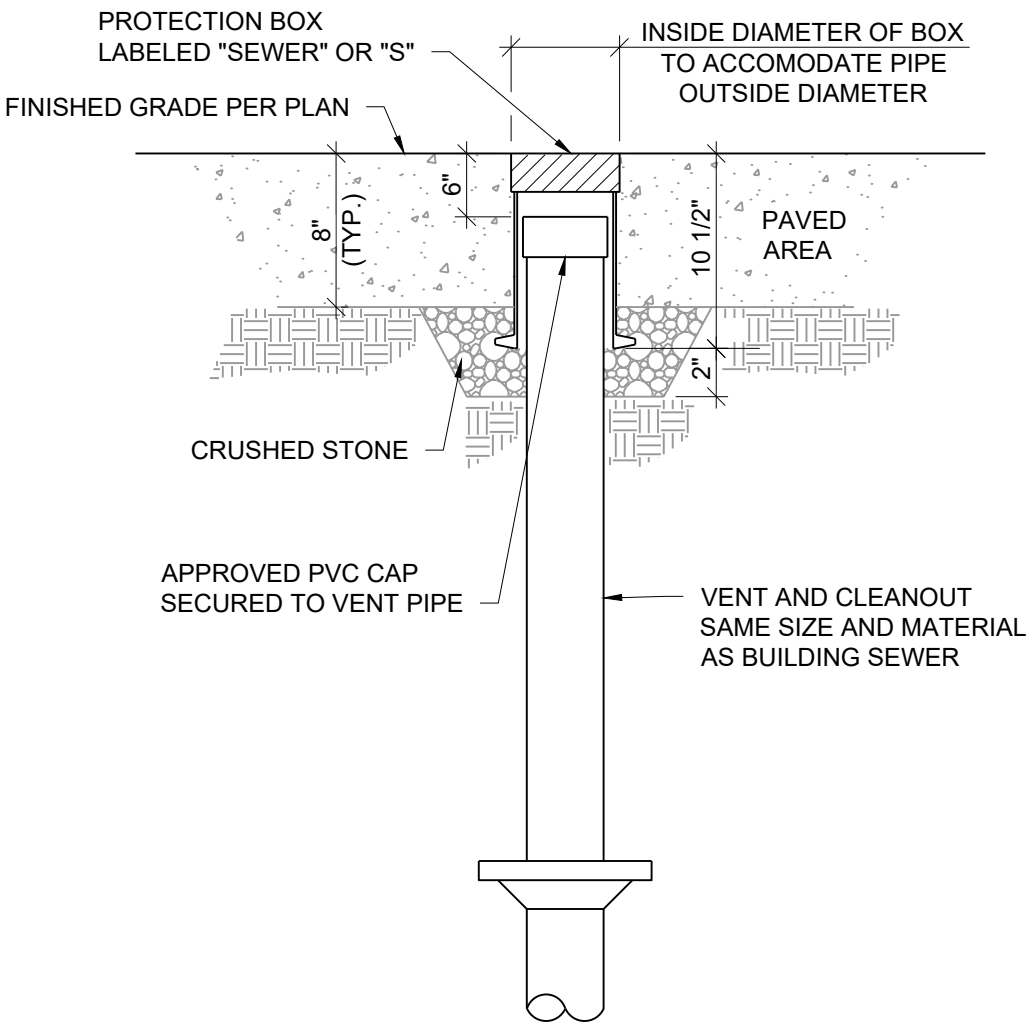
DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S14
APPROVED BY: TAL	



NOTES:

1. ALL FITTINGS USED FOR CLEANOUT, TRAP AND VENT SHALL BE SOLVENT WELD.

2. INSTALL PROTECTIVE BOX OVER VENT AND CLEANOUT IN ACCORDANCE WITH DETAIL S16 WHEN IN PAVED OR TRAFFIC AREAS.



NOTES:

1. PROTECTION BOX TO BE SET FLUSH WITH PAVING SURFACE.
2. PROTECTION BOX AND COVER TO BE SUITABLE FOR TRAFFIC LOADING.

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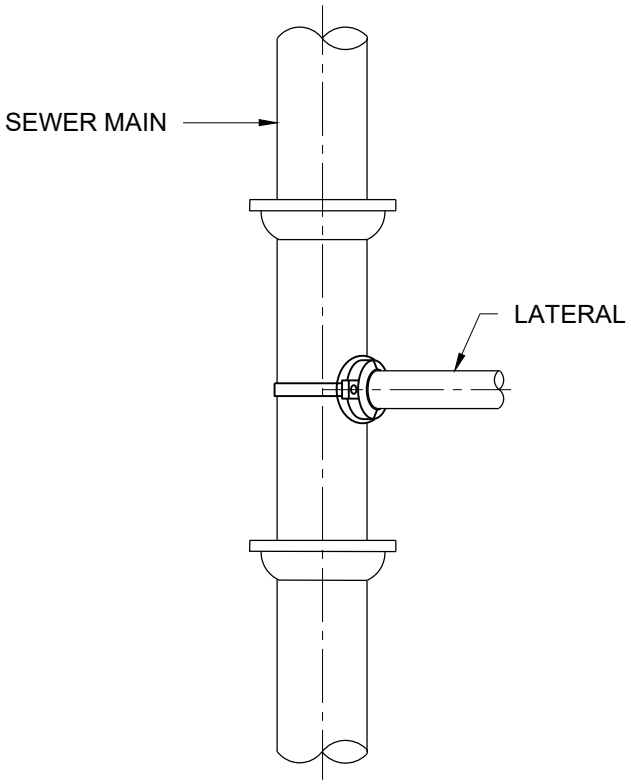
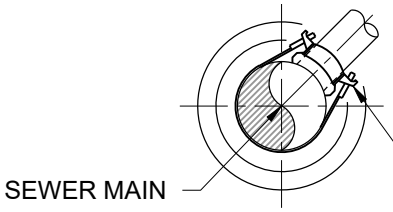
		PREPARED BY: PDM	PROJECT NO. 4682.000
		CHECKED BY: MAP	DRAWING NO. S16
		APPROVED BY: TAL	



PLAN



ELEVATION

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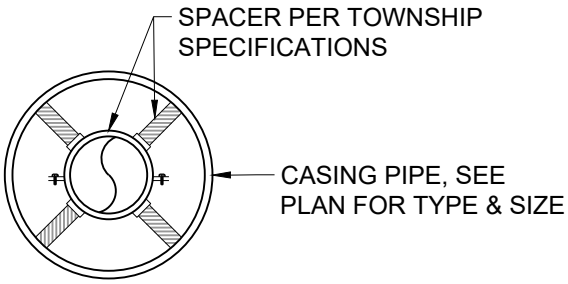
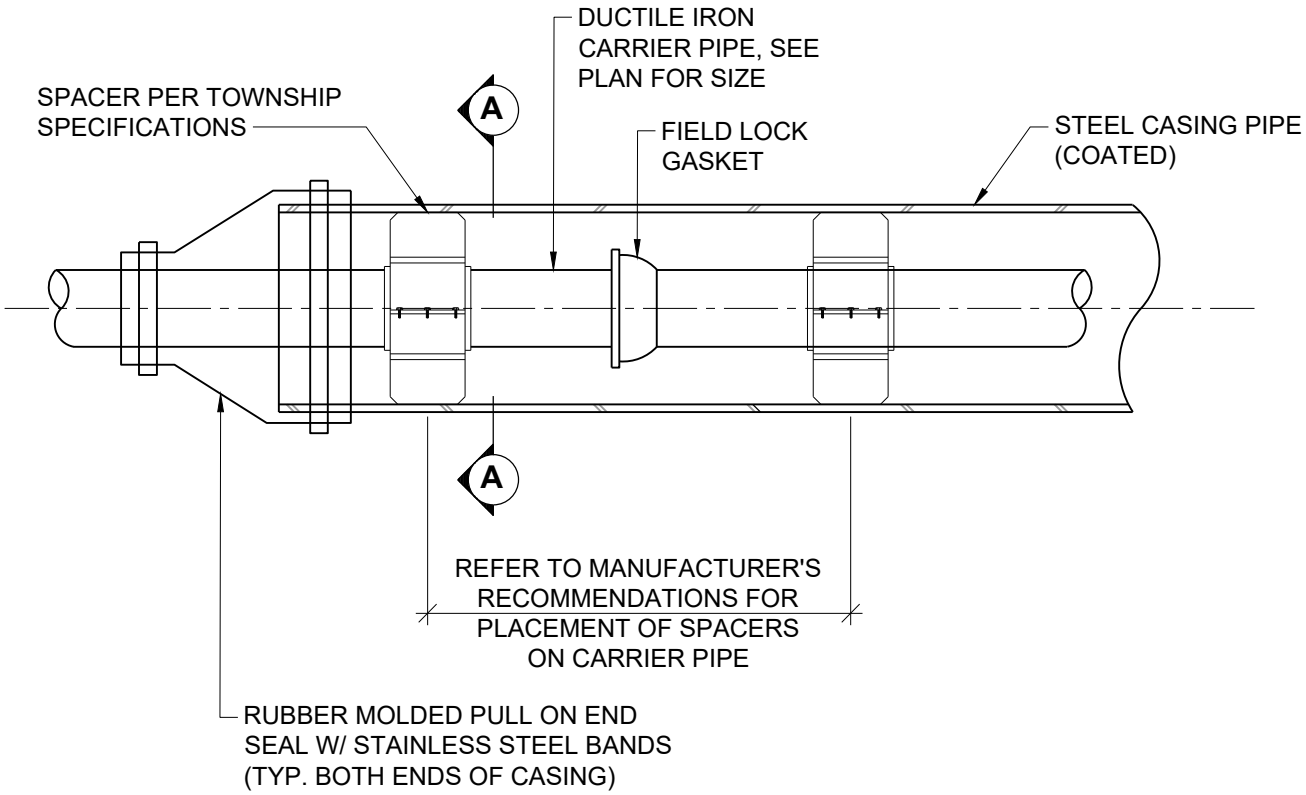
CONOY TOWNSHIP

BREAK-IN LATERAL CONNECTION

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S17
APPROVED BY: TAL	

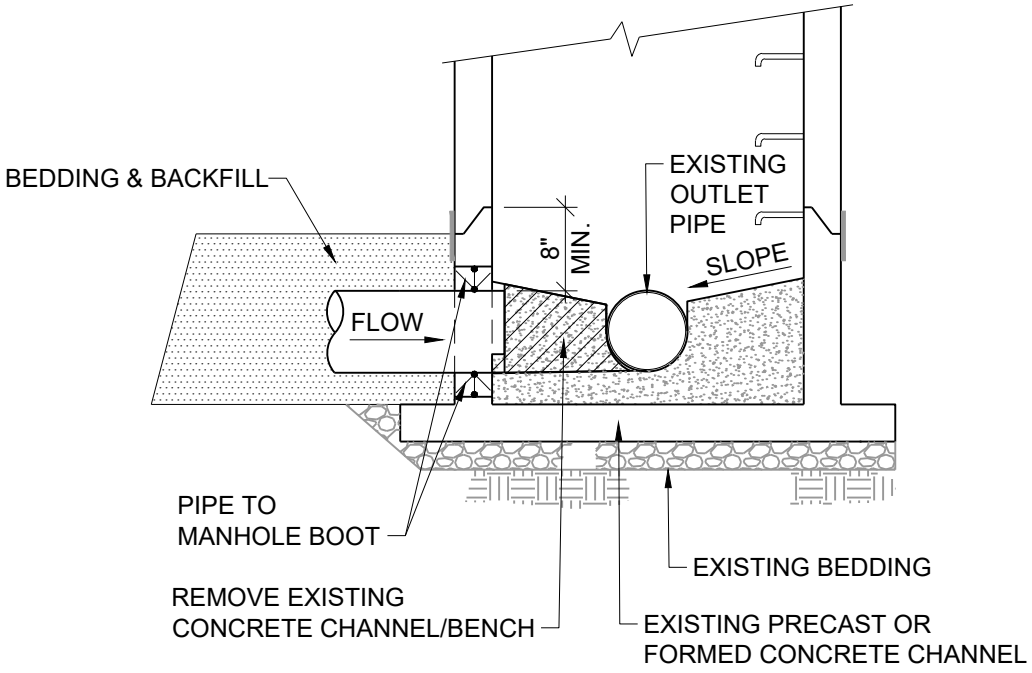


SECTION A-A



CASING NOTES:

1. CASING PIPE TO BE 2 TIMES DIAMETER OF CARRIER PIPE.



NOTES:

1. REMOVE EXISTING CONCRETE CHANNEL & BENCH TO ACCOMMODATE THE NEW PIPE PENETRATION.
2. CORE DRILL MANHOLE TO DIAMETER FOR NEW PIPE PENETRATION.
3. INLET PIPE INVERTS SHALL BE A MINIMUM OF 0.10 FEET HIGHER THAN OUTLET PIPE INVERT.
4. INSTALL GASKET & SEWER MAIN PER MANUFACTURER INSTRUCTIONS.
5. REFORM CONCRETE CHANNEL TO PROVIDE SMOOTH FLOW TO MANHOLE OUTLET.
6. SEAL INTERIOR PIPE PENETRATION WITH NON SHRINK GROUT.
7. A FULL PIPE LENGTH SHALL BE INSTALLED FROM THE MANHOLE CONNECTION TO THE FIRST PIPE JOINT.

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CONOY TOWNSHIP

EXISTING MANHOLE PENETRATION

DATE: JANUARY 2025	SCALE: AS NOTED
PREPARED BY: PDM	PROJECT NO. 4682.000
CHECKED BY: MAP	DRAWING NO. S19
APPROVED BY: TAL	

APPENDIX C

GRINDER PUMP AGREEMENT

CONOY TOWNSHIP

Grinder Pump Easement & Maintenance Agreement

This Agreement made as of the _____ day of _____, 2024 by and between the Township of Conoy, a second class municipality with its offices located at 211 Falmouth Road, Bainbridge, PA 17502 (hereinafter called the "Township"), and _____ at _____ Pennsylvania (hereinafter whether one or more called the "Owner").

WHEREAS, Owner is the legal or equitable owner of a certain tract of land in Conoy Township, Lancaster, Pennsylvania, by virtue of a Deed recorded at Instrument No. _____, in the office of the Recorder of Deeds in and for Lancaster County, Pennsylvania and identified as Lancaster County Tax Map Parcel No. _____, known as _____ (hereinafter called the "Property"), and

WHEREAS, Owner desires to install a grinder pump and low-pressure sewer force main lateral (hereinafter called the "System") to serve the residence on the Property to connect the Property of the Owner to the Township's public sewer system,and that requires routine and scheduled operation and maintenance, and

WHEREAS, the System shall include items such as a Grinder Pump, Piping, Wiring, Conduit and all necessary and appurtenant air, telephone, and electrical power supplies, that require routine and scheduled maintenance to ensure proper operation, and

WHEREAS the Township is willing to allow the installation of the System upon the Property provided that the Owner agrees to operate and maintain the System upon certain terms and conditions as set forth by the rules and regulations of the Township and more particularly set forth herein, and

WHEREAS Township and Owner desire to memorialize the agreements reached between them with respect to the operation and maintenance of the aforesaid System to ensure the proper operation and maintenance of the System.

NOW, THEREFORE, Owner, intending to be legally bound, hereby declares that the Property described above is and shall be held, transferred, sold, conveyed, and occupied subject to the following covenants, restrictions, easements, and conditions as follows:

1. The Owner shall apply for and receive a Sewer Connection Permit from the Township.

2. The grinder pump system shall be in conformance with all rules and regulations, standards, and specifications applicable to all grinder pump systems, force mains, and low-pressure sewer laterals within the Township's jurisdiction.

3. Owner shall retain an installation contractor trained and authorized by the System

Manufacturer to install the System.

4. If required or recommended by the System Manufacturer, the Owner shall enter into and annually renew, for the life of the System, a System maintenance contract with an authorized Maintenance Contractor (hereinafter called "Maintenance Contractor") and shall annually provide a copy of the same to the Township. The Maintenance Contractor shall be a private independent contractor who has been given specialized training by the original equipment manufacturer(s) of the System components, is authorized by the manufacturer to service the equipment, and is approved by the Township to provide such services.

5. After the first and third month of the operation of the System, and annually thereafter, or more frequently if the manufacturer of any component parts recommends more frequent servicing, the Owner shall have the Maintenance Contractor inspect the System and provide the Owner and Township with copies of a report signed by the Maintenance Contractor signed by the Maintenance Contractor certifying that the System is operating in accordance with the permit. If a revision or modification is made to the System, an amended and revised drawing, detailing the revision or modification, shall be provided to the Owner and the Township. The Owner is responsible for obtaining revised permit approval from the Township Secretary and/or the Township Engineer and is responsible for all costs associated with the review by the Township.

6. If an inspection indicates the need for repair, replacement and/or additional maintenance that is not covered under the maintenance contract, the Owner agrees to have the Maintenance Contractor or another individual authorized by the equipment manufacturer and approved by the Township perform the required repair, replacement and/or additional maintenance. The Owner further agrees to pay all costs of such repair, replacement and/or additional maintenance.

7. The Township shall not bear any responsibility for the purchase, installation, use, operation, maintenance, service, repair, or replacement of the System or any of its component parts or appurtenances, except as otherwise set forth herein., including grinder pump and/or its low-pressure force main or lateral, except as otherwise set forth herein.

8. The owner shall provide an adequate supply of electrical power with the proper phase, frequency, and voltage as recommended by the equipment manufacturers of the various components of the System.

9. The Owner shall bear full responsibility for providing, installing, using, operating, maintaining, servicing, repairing, and replacing the System, its component parts and appurtenances.

10. The Owner agrees to use water conservation devices (such as low flow toilets, showerheads, dishwashers, and front-loading clothes washers) and to promptly repair any leaking plumbing fixtures.

11. The Owner shall have full responsibility for using the pump in a manner consistent with the

manufacturer's instructions and shall avoid introducing into the sewage system materials that might damage the impellers on the pump, including but not limited to items designated as biodegradable in septic tanks.

12. The Owner agrees not to introduce into the System harmful chemicals (oils and grease, gasoline, antifreeze, pesticides, paints and thinners, industrial soaps and detergents, harsh drain, and toilet bowl cleaners) and bulky items (sanitary napkins, diapers, paper towels, cigarette filters, cat litter, plastics, eggshells, bones, coffee grounds). The Owner also agrees to minimize garbage disposal use and to limit garbage disposal use to ordinary kitchen waste.

13. Prior to the initial construction and installation, Owner shall notify the Township at least twenty-four (24) hours in advance. Owner shall furthermore arrange in advance with the Township Engineer for a schedule of inspections. Any construction proceeding without the required notice to the Township shall be stopped, uncovered and made available for inspection by the Township at Owner's expense and if found defective in any material manner, Owner will, at its own cost, remove all materials and redo all such work if required by Township Engineer for good cause, and not proceed further until Owner gives proper notice to Township.

14. The Owner also agrees that the System may be inspected by the Township from time to time within the Township's own discretion in order to ensure it is being properly maintained and all components are in good working order, and Owner hereby grants an access easement for the foregoing inspection purposes upon and over the Property. The Township shall provide twenty-four (24) hours' notice of any such inspection unless the inspection is of emergency nature.

15. During any period of time when the System is inoperable, Owner shall arrange for the disposition of all effluent by a certified and licensed sewage disposal facility. Owner shall provide the Township with a signed agreement with the hauler providing for such removal. Owner shall continue hauling such effluent until such time as the System has been properly repaired.

16. It is expressly understood that this Agreement shall be recorded in the Recorder of Deeds Office in and for the County of Lancaster, Pennsylvania and that this Agreement shall be binding upon Owner, its heirs, administrators, executors, successors and assigns, including Owner's successor in title to the aforesaid Property which is the subject of this Agreement, it being the express understanding of the parties that any and all duties and obligations of Owner with respect to the operation of the System set forth in this Agreement would also "run with the land" and remain the obligation of the Owner's successors in title for the life of the System.

17. The Owner agrees to pay the Township an escrow fee of Two Thousand Five Hundred Dollars ($2,500.00) to cover all costs and expenses that the Township will incur, including without limitation engineering fees, permitting costs, legal fees, staff time and overheads in connection with the construction of the System. In the event that the foregoing funds are insufficient to cover Township costs, or in the event that Owner fails to pay such costs within

thirty (30) days of written notice to do so, the Township may file a lien against the Property in accordance with the Municipal Lien Law, for all such costs incurred by the Township, including reasonable attorney's fees. If escrow funds being held exceed actual Township costs, such funds shall be returned to Owner.

18. It is expressly understood and agreed that the Township has no obligation to repair, replace or maintain the System, and Owner shall hold Township harmless and indemnify Township from and against any and all claims, actions, causes of action, judgments, costs, expenses and liabilities of any kind whatsoever incurred in connection with, arising from or as a result of death, accident, injury, loss or damage to any person or any property in or about the subject System arising out of the performance by Owner, its successors and assigns, in constructing, repairing and/or maintaining the System.

IN WITNESS WHEREOF, the parties hereto have hereunto executed this Agreement as of the ____ day of _____, 2024.

OWNER(S):

_____ _____
[PRINT NAME]

_____ _____
[PRINT NAME]

TOWNSHIP:

Attest/Witness: **CONOY TOWNSHIP BOARD OF SUPERVISORS**

_____ By: _____
Secretary Chair/Vice-Chair

SEAL

COMMONWEALTH OF PENNSYLVANIA :
: SS:
COUNTY OF LANCASTER :

On this, the _____ day of _____, 20____, before me, the undersigned officer, personally appeared _____, who acknowledge himself/herself to be the _____ of the Township of Conoy, a municipal corporation, and that he/she as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself/herself as such officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

_____
Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA :
: SS:
COUNTY OF LANCASTER :

On this _____ day of _____, 20___, before me, a Notary Public, personally appeared _____ known to me or satisfactorily proven to be the persons whose names are subscribed to the within instrument, and acknowledged that they executed the same for the purpose therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

_____
Notary Public

My Commission Expires:

Facility Name and Permit Number:

Industrial Waste Contribution to Municipal System

A treatment works that accepts process wastewater from any significant industrial user (SIU) or receives hazardous wastes must fill out this form. The following are considered SIUs:

1. All industrial users subject to categorical Pretreatment and Standards (40 CFR 122.21(J)(6) and (7)); and
2. Any other industrial user that:
    a. Discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (with certain exclusions); or
    b. Contributes a process waste stream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
    c. Is designated as an SUI by the Township.

Industrial Discharges and hazardous Waste

A. Does the treatment works have, or is it subject to, an approved pretreatment program?

_____ Yes _____No

B. Provide the number of each of the following types of industrial users that discharge to the treatment works.

i. Number of non-categorical SIUs.

_____

ii. Number of non-significant categorical industrial users. (NSCUI)

_____

Facility Name and Permit Number:

C. Does the POTW receive, or has been notified that it will receive, any wastes that are regulated by the RCRA hazardous wastes pursuant 40 CFR 261?

Hazardous Waste Number	Waste Transport Method	Annual Amount of Waste Received

D. Does the POTW receive, or has been notified that it will receive, wastewaters that originate from remedial activities, including those undertaken pursuant to CERCLA and Sections 3004(7) or 3008(h) of RCRA?

_____

E. Does the POTW receive (or expect to receive) less than 15 kilograms per month of non-acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e)?

_____

Facility Name and Permit Number:

CERCLA, Wastewater, RCRA Remediation/Corrective Action Wastewater, and Other Remedial Activity Wastewater

	Waste Origin 1	Waste Origin 2	Waste Origin 3
Describe the site and type of facility at which the CERCLA/RCRA or other remedial waste originates.			
List the hazardous constituents that re received (or are expected to receive). Include volume and concentration, if known.			
Is this waste treated prior to entering the POTW?			
If yes, describe the treatment including the removal efficiency.			
Is the discharge continuous or intermittent?			
If intermittent, describe discharge schedule.			

Facility Name and Permit Number:

Significant Industrial User Information

	Waste Origin 1	Waste Origin 2	Waste Origin 3
Name of SIU			
Describe all of the industrial processes involved that affect or contribute to the SIU's discharge.			
Describe all of the principal processes and raw material that affect or contribute to the SIU's discharge.			
List the principal products and raw materials that affect or contribute to the SIU's discharge.			
Indicate the average daily volume of wastewater discharged into the collection system. (gpd)			

Facility Name and Permit Number:

	Waste Origin 1	Waste Origin 2	Waste Origin 3
Indicate the average daily volume of process wastewater discharged into the collection system. (gpd)			
Indicate the average daily volume of non-process wastewater discharged into the collection system. (gpd)			
Is the SIU subject to local limits?			
Is the SIU subject to categorical standards?			
Under what categories and subcategories is the SIU subject?			
Has the POTW experienced problems in the past 4.5 years that are attributable to the SIU?			
If yes, describe.			