

June 27, 2019

Jonathan P. Nase

Direct Phone 717-773-4191

Direct Fax 215-372-2340

jnase@cozen.com

VIA E-FILE

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North (Filing
Room)
Harrisburg, PA 17120

**Re: Application of Pennsylvania-American Water Company under Sections 507,
1102 and 1329 of the Public Utility Code for approval of its acquisition of
wastewater system assets of Exeter Township; Docket No. A-2018-3004933**

**FILING APPENDIX B-3 (REV-1) TO THE APPLICATION OF PENNSYLVANIA-
AMERICAN WATER COMPANY**

Dear Secretary Chiavetta:

On September 25, 2018, Pennsylvania-American Water Company ("PAWC") filed an Application at the above-referenced docket number. The Application requested that the Commission approve a Sewage Treatment and Conveyance Agreement ("Agreement") between PAWC and the Borough of St. Lawrence ("St. Lawrence"), which would be effective at closing on the transaction. The Application further stated that the Agreement was being negotiated, but a *pro forma* Agreement was being submitted as Appendix B-5 (CONFIDENTIAL) and the final, executed version of the Agreement would be provided as a supplement to the Application.

On December 5, 2018 PAWC filed an Amended Application at the above-referenced docket number. The Amended Application again requested that the Commission approve the Agreement to be executed by PAWC and St. Lawrence, which was not yet final. The *pro forma* Agreement was now attached to the Application at Appendix B-3 (REV) (CONFIDENTIAL). PAWC again indicated that the executed version of the Agreement would be filed as a supplement to the Application.

Attached is the execution version of the Agreement between PAWC and St. Lawrence (without Exhibit C). This document is a public document. It will be executed by the parties in the near future.

Rosemary Chiavetta, Secretary

June 27, 2019

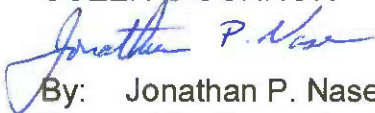
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Please replace the previously filed Appendix B-3 (REV) (CONFIDENTIAL) with the enclosed Appendix B-3 (REV-2). The fully-executed version of the Agreement will be submitted as soon as possible (with Exhibit C).

Thank you for your attention to this matter. I apologize for the inconvenience. Please contact me should you have any questions concerning the enclosed.

Sincerely,

COZEN O'CONNOR



By: Jonathan P. Nase
Counsel for *Pennsylvania-American Water
Company*

JPN:kmg
Enclosure

cc: Honorable Andrew M. Calvelli
Per Certificate of Service
Susan Simms Marsh, Esq.

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application of Pennsylvania-American Water :
Company under Section 507, 1102 and 1329 of the : Docket No. A-2018-3004933 *et al.*
Public Utility Code for Approval of its Acquisition of :
wastewater system assets of Exeter Township :

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing **Correspondence filing Appendix B-3 (REV-1)**, upon the parties, listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a party).

VIA E-MAIL AND FIRST CLASS MAIL

Samuel Cortes, Esq.
Fox Rothschild LLP
747 Constitution Drive
Suite 100
Exton, PA 19341
E-mail: scortes@foxrothschild.com
Counsel for *Exeter Township*

Barnett Satinsky, Esq.
Fox Rothschild LLP
2000 Market Street, 20th Floor
Philadelphia, PA 19103-3222
E-mail: bsatinsky@foxrothschild.com
Counsel for *Exeter Township*

Erika McLain, Esq.
Pennsylvania Public Utility Commission
Bureau of Investigation & Enforcement
Commonwealth Keystone Building
400 North Street, 2nd Floor West
Harrisburg, PA 17120
E-mail: ermclain@pa.gov
Counsel for *Bureau of Investigation & Enforcement*

Christine Maloni Hoover, Esq.
Harrison W. Breitman, Esq.
Ashley E. Everette, Consultant
Office of Consumer Advocate
555 Walnut Street
Forum Place, 5th Floor
Harrisburg, PA 17101-1923
E-mail: choover@paoca.org
E-mail: HBreitman@paoca.org
E-mail: AEverette@paoca.org
Counsel for *Office of Consumer Advocate*

Joan E. London, Esq.
Kozloff Stoudt
2640 Westview Drive
Wyomissing, PA 19610
E-mail: jlondon@kozloffstoudt.com
Counsel for *Borough of St. Lawrence, Berks
County, PA*



Jonathan P. Nase, Esquire
Counsel for *Pennsylvania-American Water Company*

Date: June 27, 2019

APPENDIX B-3 (REV-1)

SEWAGE TREATMENT & CONVEYANCE AGREEMENT

THIS AGREEMENT is made on _____ day of _____, 2019 between the Pennsylvania-American Water Company, 852 Wesley Drive, Mechanicsburg, PA 17055 and the Borough of Saint Lawrence, Berks County, Pennsylvania.

WHEREAS, Pennsylvania-American Water Company (hereinafter referred to as Pennsylvania-American”), is a regulated public utility, organized and existing under the laws of the Commonwealth of Pennsylvania; and

WHEREAS, Pennsylvania-American anticipates acquiring and then operating a sewage treatment plant and a collection and conveyance system, providing public sewer services to various municipalities in and near Berks County, Pennsylvania, which sewage treatment facilities currently are owned and operated by Exeter Township (the “Exeter System”); and

WHEREAS, the Borough of Saint Lawrence, (hereinafter referred to as Saint Lawrence Borough), owns and operates a sewage collection and conveyance system in the Borough of Saint Lawrence, Berks County, Pennsylvania; and

WHEREAS, the Borough of Saint Lawrence is a municipal corporation, organized and existing under the laws of the Commonwealth of Pennsylvania, and provides sewage collection service to residential, commercial, industrial and institutional users within the municipal limits of the Borough of Saint Lawrence.

WHEREAS, the Saint Lawrence Borough collection system is connected to the Exeter System to be acquired by Pennsylvania-American at points of connection identified on Exhibit A which is attached hereto and thereby made a part, hereof; and

WHEREAS, upon the closing of the transaction to acquire the Exeter System, Pennsylvania-American will provide sewage transportation, treatment and disposal service for users in Saint Lawrence Borough who discharge their sanitary sewage wastes at these points of connection into the Pennsylvania-American sewage system; and

WHEREAS, it is in the public interest of both Pennsylvania-American and Saint Lawrence Borough that an agreement to provide for the treatment of sewage from Saint Lawrence Borough at the Pennsylvania-American treatment facilities be reached; and

WHEREAS, it is the intention of the parties hereto that this Agreement shall supersede any prior agreements relating to the subject matter hereof in their entirety.

NOW, THEREFORE, in consideration of the covenants and obligations set forth herein and intending to be legally bound hereby, Pennsylvania-American and Saint Lawrence Borough agree as follows;

ARTICLE I – DEFINITIONS

The terms defined in this Article, wherever used or referred to in this Agreement, shall have the following respective meanings unless a different meaning clearly appears from the context.

Average Daily Flow or “ADF” – Average number of gallons per day (gpd) of sanitary sewage determined by taking the total quantity of flow delivered to all points of connection during a “rolling” twelve (12) month period divided by the total number of days in that period.

B.O.D. (Biochemical Oxygen Demand) - The quantity of oxygen expressed in terms of concentration as milligrams per liter, utilized in the biochemical oxidation of organic matter under standard laboratory procedure for 5 days at 20° 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, the American Water Works Association, and/or the Water Pollution Control Federation.

Capacity Reservation Fee – A fee charged by the Company as set forth in its current tariff for the allocation of treatment plant capacity and conveyance capacity on a per EDU basis. (The approved tariff rate as of the date of this Agreement is \$4,000 per EDU).

Domestic Wastewater – The liquid waste or liquid borne waste: (1) resulting from the non-commercial preparation, cooking and handling of food; (2) consisting of human excrement; or (3) consisting of wastewater, non-commercial laundering water, domestic housekeeping wastewater, and similar types of wastes from sanitary uses, whether generated in residences or sanitary facilities in commercial or industrial facilities, but does not include any storm water or ground water introduced from facilities such as roof leaders, sump pumps, floor drains or industrial wastewater.

Dwelling Unit – A structure or dwelling intended to be occupied as a whole by one family.

Effective Date – The date that is the first day following the occurrence of both of the following: (i) the approval of this Agreement by the Pennsylvania Public Utility Commission and (ii) the consummation of the transaction between Pennsylvania-American and Exeter Township regarding the acquisition of the Exeter System by Pennsylvania-American shall have been consummated.

Equivalent Dwelling Units (EDU) - The EDU is a measure based upon the estimated average daily wastewater flow for the type of business, as calculated by the PaDEP Regulation at 25 Pa Code § 73.17 divided by the typical estimated average daily wastewater flow from a current single-family unit.

Hauled Waste – Any and all wastewater, wastewater residuals, or materials of whatever nature that is introduced into the collection, conveyance, or treatment system or facilities via discharge from a tank truck.

Industrial/Commercial Waste Pretreatment Program – A program established by the Company that requires industrial and commercial discharges to monitor, test, treat and control as necessary pollutants in their wastewater prior to discharge into the Sanitary or Combined Sewer. The program is mandated by either

the Pennsylvania Department of Environmental Protection (PaDEP) or the United States Environmental Protection Agency (US EPA) to control or regulate the discharge of certain industrial wastewaters into the collection, conveyance, and treatment system.

Industrial/Commercial Wastes – Any liquid, gaseous or water borne wastes from industrial processes or commercial establishments, as distinct from domestic wastewater. These wastes may interfere with or inhibit the wastewater treatment process, pass through the process which could result in an NPDES permit violation, inhibit the disposal of wastewater residuals, or cause or contribute to a threat to human health or safety.

Industrial/Commercial Waste Permit – A wastewater permit issued as required by the Company to an industrial/commercial user which discharges Industrial/Commercial Waste.

Infiltration - The seepage of groundwater into a sewer system, including service connections, which occurs through defective or cracked pipes, pipe joints, connections and manholes.

Inflow - Stormwater that enters the sewer system directly, through sources including but not limited to: storm drains, area drains, roof drains, sump pumps, manhole covers, etc.

Interceptor - The interceptor sewer, a portion of which, is part of the Pennsylvania-American sewer system, known as the Antietam Interceptor, extending from a point in Exeter Township to the Schuylkill River trunk sewer constituting part of the Pennsylvania-American sewage system, as shown on Exhibit A.

Maximum Daily Flow or “MDF” – The total number of gallons per day (gpd) of sanitary sewage determined by multiplying the average daily flow rate (ADF) by a peaking factor of 2.5.

Maximum Monthly Flow – The total number of gallons per day (gpd) of sanitary sewage determined by multiplying the average daily flow rate (ADF) by a peaking factor of 1.2.

NH₃N - The quantity of elemental nitrogen present in the form of ammonia as analyzed by a method approved by the US EPA, expressed in terms of milligrams per liter.

Peak Hourly Flow or “PHF” – The total number of gallons per day (gpd) of sanitary sewage determined by multiplying the average daily flow rate (ADF) by a peaking factor of 3.5.

Permanent Flow Meters – Permanent flow metering equipment consisting of properly calibrated primary flow element devices owned and operated by Pennsylvania-American for the purpose of measuring the wastewater entering and exiting Saint Lawrence Borough.

Point of Connection – Point or points at which Pennsylvania-American receives and conveys wastewater from the Saint Lawrence Borough sewer system to a point for treatment and disposal.

Pretreatment – The application of physical, chemical and/or biological processes to reduce the amount of pollutants in, or alter the nature of the polluting properties of, an industrial/commercial process wastewater prior to discharging such wastewater into the sanitary or combined sewer.

Reserve Capacity – The net positive difference between the capacity allocated and the annual average flow volume in million gallons measured by the permanent flow meters. Reserve capacity shall be determined on an annual basis.

Rules and Regulations - The then-current rules and regulations established by Pennsylvania --American from time to time as set forth in Pennsylvania-American's tariff with the Pennsylvania Public Utility Commission.

Saint Lawrence Borough collection system – The sewage collection system, including all related and necessary facilities, owned by Saint Lawrence Borough, including all future additions, extensions and improvements hereto.

Sanitary Sewage – All water-carried domestic waste from residences, offices, hotels, stores, restaurants, commercial, industrial and institutional establishments, and similar users within Saint Lawrence Borough.

Sewage System – The existing sanitary sewage collection, conveyance, treatment and disposal facilities, together with other related facilities and appurtenances and any future additions, modifications and/or improvements thereto, (herein after referred to as the Wastewater Treatment Facilities) in and adjacent to Exeter Township which are expected to be owned and operated by Pennsylvania-American and which are utilized in part for the collection and conveyance of sanitary sewage originating from the Saint Lawrence Borough's points of connection through the Pennsylvania-American sanitary sewage system to the Pennsylvania-American treatment plant.

Sewer Use Charge – The costs for owning, operating and maintaining the Pennsylvania-American sewage system, including conveyance, treatment and disposal. The sewer use charge for this Agreement shall be \$2.38/1,000 gallons. Future rate adjustments shall be subject to Pa-PUC approval.

Slug – Any discharge of wastewater (sewage) having a concentration of pollutants or flow greater than five (5) times that of the average 24-hour discharge from a user, over the immediately preceding calendar quarter, which is discharged continuously for a period longer than five (5) minutes.

Total Suspended Solids (TSS) – The total matter in water, wastewater or other liquids which is retained by laboratory filtering, expressed in terms of concentration as milligrams per liter.

Treatment Plant – Existing sewage treatment plant facility which will be owned and operated by Pennsylvania-American, utilized in part for the treatment of wastewater originating from Saint Lawrence Borough, together with any additions, modifications and/or improvements thereto.

Wastewater – Any used water and water-carried solids collected or conveyed by a sewer, including:

(1) Sewage, as defined in section 2 of the act of January 24, 1966 (1965 P.L.1535, No.537), known as the Pennsylvania Sewage Facilities Act.

(2) Industrial waste originating from an establishment. For the purposes of this paragraph, the terms "industrial waste" and "establishment" shall be as defined in section 1 of the act of June 22, 1937 (P.L.1987, No.394), known as The Clean Streams Law.

(3) Infiltration or inflow into sewers.

(4) Other water containing solids or pollutants.

(5) Storm water which is or will become mixed with waters described under paragraph (1), (2), (3) or (4) within a combined sewer system.

The term does not include storm water collected in a municipal separate storm sewer, as that term is defined by 40 CFR 122.26(b)(8) (relating to storm water discharges (applicable to State NPDES programs, see § 123.25)), that does not flow into a combined sewer system.

ARTICLE II – STATEMENT OF INTENT

The parties hereto agree that it is the intent of this Agreement to provide for the conveyance and treatment of sanitary sewage from within Saint Lawrence Borough to a treatment plant that is expected to be owned by Pennsylvania-American for treatment and disposal of those wastes in common with other wastes flowing from and through the Pennsylvania-American system. In addition, the parties also agree it is the intent of this Agreement to provide for the conveyance of sanitary sewage from within the Pennsylvania-American collection system through a portion of the Saint Lawrence Borough collection system.

ARTICLE III – TERMS OF AGREEMENT

Section 1 – This Agreement shall be effective as of the Effective Date and shall continue for a period of thirty (30) years from said date. Thereafter the Agreement shall continue until either party provides the other party five years written notice of intention to terminate this Agreement. During the thirty (30) year period provided for herein, either party shall have a right to terminate the agreement upon five (5) years written notice of termination.

Section 2 - The parties hereto agree that the Pennsylvania-American Wastewater Treatment Plant has permitted capacities as shown in the NPDES Part I Permit PA 0026972 and in the Water Quality Management Part II PA 0692402 issued by the Pennsylvania Department of Environmental Protection which are in the total and which are hereby allocated to the parties hereto as follows:

	<u>Gallons Per Day</u>		
	<u>Saint Lawrence</u> <u>Borough</u>	<u>Pennsylvania-American</u>	<u>Total</u>
<u>Average Daily Flow</u>	462,000	6,638,000	7,100,000

	<u>Saint Lawrence Borough</u>	<u>Pounds Per Day Pennsylvania-American</u>	<u>Total</u>
BOD	871	8,979	9,850
Total Suspended Solids	924	9,926	10,850
NH ₃ N	74	1,056	1,130

Section 3 – Saint Lawrence Borough may discharge sanitary sewage up to 462,000 annual gallons average daily flow of treatment and conveyance capacity (based on 2,017 equivalent dwelling units (EDU's) at 229gpd per EDU). Saint Lawrence Borough sanitary sewage may not exceed a maximum monthly average of 554,400 gpd and a maximum daily flow of 1,155,000 gpd and a at a peak hourly flow rate not to exceed 1,123 gallons per minute (gpm), subject to the limitations and payment of charges set forth in this Agreement. Pennsylvania-American agrees to receive, treat and dispose of such sewage originating from the Saint Lawrence Borough service area in a manner approved by the PaDEP and in accordance with the terms and provisions set forth herein. The Saint Lawrence Borough service area, for purposes of this Agreement, shall be deemed to be the corporate limits of the Borough of Saint Lawrence.

It is recognized by the Parties that Saint Lawrence Borough may, provided it is in compliance with respect to its obligations under this Agreement, make additional connections which may result in a combined average daily flow up to 462,000 gallons per day, but in no event shall such additional connections produce a combined average daily flow in excess of 462,000 gallons per day be allowed, or cause the total amount of sewage treated at the treatment plant to exceed its design capacity.

Section 4 - Saint Lawrence Borough hereby grants to Pennsylvania-American the right to discharge sanitary sewage originating from the Pennsylvania-American service area in a manner approved by the PaDEP and in accordance with the terms and provisions set forth herein. The existing sewage meter pits shall measure the sewage flow generated from the Pennsylvania-American service area discharging into the Saint Lawrence Borough collection system and the total of which will be deducted from the existing sewage meter pits measuring the sewage flow entering back into the Pennsylvania-American collection system from Saint Lawrence Borough.

Section 5 -- If any of the aforementioned allocation is exceeded by Saint Lawrence Borough, Pennsylvania-American shall give written notice to Saint Lawrence Borough. Saint Lawrence Borough, in turn, will have thirty (30) days from the date of such notice to commence investigations and ninety (90) days thereafter to correct the causes of such excess flow (provided that the cause and ability to remediate such excess flows are within the control of the Borough of St. Lawrence). Saint Lawrence Borough may request and Pennsylvania-American may grant approval of the use of additional treatment capacity, subject to Section 6 of Article VII, or an extension of time for compliance with the Agreement. If Saint Lawrence Borough does not comply within the time limitations above, or any extension thereof, Pennsylvania-American shall have the right to bill for and collect a Capacity Reservation Fee in accordance with Section 6 of Article VII, the amount of such fee to be determined by Pennsylvania-American's Rules and Regulations and rate

structure then in effect. In the event of request for additional capacity, Pennsylvania-American shall have the right to deny such additional capacity if such requested additional capacity is not available or has already been contractually allocated to other customers or pending development projects.

Section 6 – It is agreed that no sanitary sewage originating from the Saint Lawrence Borough points of connection shall thereafter be disconnected from and diverted by Saint Lawrence Borough from these points of connection unless mutually agreed upon in writing, subject however to the terms of Section 1 hereof and the commercial customers listed on attached Exhibit C.

Section 7 – Saint Lawrence Borough agrees that it will not offer sewage service to customers or other municipalities beyond its borders. Any request for sewage service originating outside Saint Lawrence Borough borders shall be directed to Pennsylvania-American.

Section 8 – If Saint Lawrence Borough, at any future time, seeks to transfer title of its sewage system to any municipality, authority, private or non-municipal party by deed or otherwise, it shall provide written notice of such proposed transfer to Pennsylvania-American at least six (6) months prior to the date of any such transfer. Saint Lawrence Borough agrees to provide such information as may be reasonably requested by Pennsylvania-American regarding the proposed transfer. Pennsylvania-American shall have a right of first refusal to acquire the sewage system on substantially the same terms and conditions as the proposed transfer. Pennsylvania-American shall exercise its right to acquire the sewage system by providing written notice thereof to Saint Lawrence by the date that is four (4) months following the receipt by Pennsylvania-American of notice of the proposed transfer. If Pennsylvania-American does not exercise its right to acquire the sewage system, Saint Lawrence Borough agrees that as part of any transfer of the sewage system it shall assign all its rights and interests in and under this Agreement to the assignee and, upon such assignment, the assignee shall be subject to all obligations and entitled to receive all the rights and benefits of this Agreement. Further, all capacity reservation fees and conveyance costs owed by Saint Lawrence Borough to Pennsylvania-American, if any, shall be paid to Pennsylvania-American by Saint Lawrence Borough or Saint Lawrence Borough's transferee upon transfer.

Section 9 – Saint Lawrence Borough agrees that it will adopt and enforce ordinance or ordinances and keep such ordinances in full force and effect at all times establishing Rules and Regulations consistent with Pennsylvania-American's current Rules and Regulations and water quality standards for the making of connections and use of the sewage system in conformance with this Agreement, attached hereto as Exhibit E. In the event that Pennsylvania American changes or updates its Rules and Regulations, it shall provide Saint Lawrence Borough reasonable notice and reasonable time to review, discuss and make any necessary changes to its ordinances. Saint Lawrence Borough agrees to enforce the provisions of such ordinance or ordinances at all times, and agrees that Pennsylvania-American or its duly authorized representatives shall have the right, at all reasonable times, to inspect said sewage system connections and discontinue any connection which Pennsylvania-American finds to be in violation of the provisions of this Agreement.

Section 10 – It is acknowledged that Pennsylvania-American has adopted Rules and Regulations for making connections and use of the sewage system in conformance with this Agreement. Pennsylvania-American agrees to enforce the provisions of such Rules and Regulations at all times which apply to the use of the sanitary sewer system by both parties. The parties agree that the provisions of said Rules and Regulations

shall be the same for both parties. Whenever Pennsylvania-American adopts a change in its Rules and Regulations, Saint Lawrence Borough shall likewise adopt an identical change by resolution or ordinance within a reasonable time after notification of the Pennsylvania-American change, except in the event that St Lawrence Borough has a reasonable good faith belief that such change is in violation of state or federal rules or regulation. Such Rules and Regulations include provisions prohibiting or regulating the discharge into the wastewater treatment facilities of wastewaters and wastewater residuals and other substances which may be harmful to the structures or which may interfere with the sewage treatment processes at the wastewater treatment facilities.

Section 11 - Pennsylvania-American has adopted or will adopt uniform wastewater quality standards, from time to time, applicable to the Wastewater Treatment Facilities, which will comply with the requirements of PaDEP and other regulatory authorities having jurisdiction over these matters. Saint Lawrence Borough will not permit the discharge of wastewater from customers of their collection system into the Wastewater Treatment Facilities that would violate any of such standards. Pennsylvania-American will make no changes in said standards except upon reasonable prior written notice to Saint Lawrence Borough. Complete copies of all such standards shall be provided to Saint Lawrence Borough at least sixty (60) days prior to their implementation. This section shall only regulate changes in quality of effluent. The changes herein contemplated shall not impair the integrity of this Agreement nor shall they impair its implementation.

Section 12 - From time to time hereafter during the term of this Agreement, Pennsylvania-American may make changes in and additions, or replacements to the Wastewater Treatment Facilities as may be necessary or desirable for efficient and economical treatment and disposal of domestic wastewater and acceptable non-domestic wastewater to the requirements established by the NPDES permit, by the Clean Stream Law or any other applicable State or Federal law, and enable the parties hereto to comply with any lawful directives from PaDEP with respect to the treatment and disposal of domestic wastewater and acceptable waste entering the Wastewater Treatment Facilities, or to comply with any other lawful requirement of government agencies having jurisdiction. In the event that any such changes to the Wastewater Treatment Facilities (solely due to customers in the Saint Lawrence Borough system as provided in Article V, Section 1 Treatment Plant, of this Agreement) may trigger additional expenditures by Saint Lawrence Borough, Pennsylvania-American will give Saint Lawrence Borough prior notice and will discuss with Saint Lawrence Borough reasonable compensation for any such additional expenditures and any steps needed for continuing compliance by Saint Lawrence Borough with all state or federal rules and regulations.

Section 13 - Saint Lawrence Borough agrees to submit all proposed land development planning modules for all land developments within its jurisdiction to Pennsylvania-American for review and approval of its respective capacity portions of the proposed Planning Module, prior to approval by Saint Lawrence Borough and prior to submittal to PaDEP for regulatory approval. Likewise, Pennsylvania-American will provide Saint Lawrence Borough any planning modules that may affect the waste water flows from Pennsylvania-American that are conveyed through the Saint Lawrence collection system to the Pennsylvania-American waste water treatment facilities.

Section 14 - Saint Lawrence Borough agrees that they shall submit specifications and construction plans for any expansion of its collection system and interceptor sewers to Pennsylvania-American for its

information. Upon receipt of such notice, Pennsylvania-American shall provide Saint Lawrence Borough any connection prototype drawings and any other then applicable standards that are reasonably necessary for such construction. Saint Lawrence Borough shall cause all such expansions to meet their respective building standards, and will inspect all extensions, replacements and connections made to said sewage collection systems and to any said interceptor sewer(s) so as to ensure all such extensions, replacements and connections are properly constructed and further to ensure that excessive inflow and infiltration will not result from such extension, replacements and connections. Saint Lawrence Borough agrees that no extension or connections from outside their respective service area will be permitted unless consented to, in writing, by Pennsylvania-American, which such consent shall be at the sole discretion of Pennsylvania-American.

Section 15 – The parties hereto agree to comply with all applicable present and future Pennsylvania or United States laws, rules, regulation, permits, orders and requirements lawfully made by any governmental body having jurisdiction, unless the same are being contested in good faith by appropriate proceedings.

ARTICLE IV –COLLECTION FACILITIES AND INTERCONNECTIONS

Section 1 – Pennsylvania-American and Saint Lawrence Borough understand and agree that sewers within Saint Lawrence Borough provide service to parties in Saint Lawrence Borough’s area of service as defined in Article III. Said sewers are owned by Saint Lawrence Borough and will be the sole responsibility of Saint Lawrence Borough.

Section 2 – Sanitary sewage from the Saint Lawrence Borough sewage collection system shall be conveyed to the Pennsylvania-American sewage system at one or more points of connection approved by Pennsylvania-American. Portions of sanitary sewage from the Pennsylvania-American sewage collection system shall be conveyed to the Saint Lawrence Borough system at one or more points of connection approved by Saint Lawrence Borough. Other future connections which are contemplated by the parties shall be governed by this Agreement. The parties agree that, to the extent that circumstances or issues exist with respect to such other connections which are not addressed herein, said circumstances or issues shall be addressed by a separate agreement.

Section 3 - Saint Lawrence Borough agrees that the rules and regulations to be adopted governing the installation of laterals and main sewers connecting properties in Saint Lawrence Borough to the Saint Lawrence collection system shall be at least as stringent as requirements for like installations adopted by Pennsylvania-American, attached as Exhibit F.

Section 4 – No future increase in flow, beyond the capacity herein allocated, or significant change in the nature of waste will be approved within Saint Lawrence Borough if, in the determination of Pennsylvania-American, based on Pennsylvania-American’s determination and pursuant to Pennsylvania-American Rules and Regulations, the proposed discharge will overload the conveyance or treatment facilities, unless arrangements are made through a revised agreement or amendment to this agreement concerning the compensation due to Pennsylvania-American for the corrective measures necessary to make the conveyance or treatment facilities adequate for the proposed discharge. Saint Lawrence Borough shall bear the

responsibility for all costs to Pennsylvania-American for necessary corrective measures related to its discharge overload.

Section 5 - In the event that the interceptor or outfall sewer lines cannot transport the volume of sewage being discharged therein, or in the event that the Pennsylvania-American treatment plant is not treating sewage in accordance with the requirements of the United States of America, the Commonwealth of Pennsylvania, or any agency or department thereof, for a period of thirty (30) consecutive days, Pennsylvania-American shall immediately give written notice thereof to Saint Lawrence Borough. Immediately thereafter, the Parties shall proceed with a joint investigation to determine the cause thereof. In the event it is determined that one of the Parties hereto is causing such deficiency by reason of use in excess of the capacity allocated to the Parties, the responsible Party shall, within thirty (30) days thereafter make satisfactory arrangements to reduce its usage of the applicable facility to comply with said allocated capacity or to make satisfactory arrangements to provide for and to pay the cost as required to correct such deficiency.

Section 6 - Saint Lawrence Borough shall secure all necessary easements, rights of way, and permits as may be required to deliver sewage to future points of connection to the Pennsylvania-American sewage collection and conveyance system. Pennsylvania-American shall have the right to approve the plans and to inspect the manner of the making of such connections between Pennsylvania-American and the Saint Lawrence Borough system; the connection shall not be used until such time as Pennsylvania-American receives written notice that the construction of such connection has been accomplished in accordance with the approved plans and specifications relating thereto. Pennsylvania-American will not unnecessarily delay approval. The costs of all future connections shall be borne by Saint Lawrence Borough.

Section 7 - Saint Lawrence Borough shall provide authorized representatives of Pennsylvania-American with access, at reasonable times, to the Saint Lawrence Borough collection system in order to assure compliance of the terms of this Agreement. Pennsylvania-American shall provide authorized representatives of Saint Lawrence Borough with access, at reasonable times, to the Pennsylvania-American sewage system in order to ensure compliance with the terms of this Agreement.

Section 8 - Saint Lawrence Borough grants to Pennsylvania-American, and their respective successors and assigns, all easements, rights-of-way, and other rights necessary and desirable in, along, over, and under streets, roads, lanes, courts, public squares, alleys, and highways of Saint Lawrence Borough in, along, over, or under which the Pennsylvania-American sewage system has been constructed, together with free ingress, egress, and regress therein and thereto, along with other persons having interests or rights therein, for use in connection with constructing, replacing, repairing, altering, maintaining, and operating the Pennsylvania-American sewer system. Pennsylvania-American shall repair or restore such streets, roads, lanes, courts, public squares, alleys, and highways of Saint Lawrence Borough in accordance with the standards of the Pennsylvania Department of Transportation with respect to similar repair of comparably constructed state highways.

Section 9 - For at least a period of two (2) years after the acquisition of the Exeter Township sewer system by Pennsylvania-American, Pennsylvania-American will utilize water meter usage times a multiplier of 1.20 for billing purposes to estimate the quantity of sewage generated from within Saint Lawrence Borough

entering the Pennsylvania-American collection system. Over this period of two (2) years, Pennsylvania-American will continue to maintain the permanent flow meters and monitor occurrences of surcharges that may interfere with accurate measurement of the Saint Lawrence Borough sewage flow. Pennsylvania-American will compare the permanent flow metering described below with the water meter records and after the two (2) year period may (at its sole and absolute discretion) change the billing to actual sewage flow as described below. For as long as the water meter usage is used for billing purposes, the permanent flow meters will continue to be utilized for determining if overall capacity is exceeded as provided in Article 3, or a peaking factor is exceeded as provided in Article 4. During the two (2) year period, no data shall be utilized from the flowmeters for billing purposes if any surcharging was detected immediately downstream of a meter pit.

Saint Lawrence Borough and Pennsylvania-American will cooperate to obtain and have provided complete and accurate water meter readings and records to Pennsylvania-American for the purpose of quarterly billing prior to the 20th calendar day following each calendar quarter. If such water meter data as provided immediately above is not obtained or provided, Pennsylvania-American may use whatever reasonable means (in its sole and absolute discretion) to estimate the quantity of sewage generated from within Saint Lawrence Borough entering the Pennsylvania-American collection system, including but not limited to review and analysis of prior billing periods and/or usage of data from the permanent flow meter, to generate a timely invoice for current payment by Saint Lawrence Borough. Such billing will be adjusted during the following billing cycle, provided that such complete and accurate water meter data is delivered to Pennsylvania-American.

Section 10 – The three (3) sewage meter pits at the existing points of connection, where Saint Lawrence Borough sewage is discharged into the Pennsylvania-American sewage system and one (1) sewage meter pit where Pennsylvania-American sewage is discharged into the St. Lawrence Borough sewage system (the “permanent flow meters”) shall be owned and maintained by Pennsylvania-American. Pennsylvania-American shall read the meter monthly. Said meters shall have continuous data recording capability. The meters shall record data electronically with sufficient data storage capacity to store at least twelve (12) months of flow data with similar backup storage capacity. The meters shall be designed to operate without operator intervention. Portable area/velocity monitors shall not be considered adequate for the permanent meter sites unless agreed upon by all parties. Meter data shall be shared with Saint Lawrence Borough. Meters shall be located at the points indicated on Exhibit A attached hereto.

- a) All meters shall be installed in accordance with accepted industry hydraulic standards.
- b) Pennsylvania-American shall maintain the meters in good repair and shall be calibrated semi-annually. Saint Lawrence Borough shall grant all necessary access to Pennsylvania-American, its personnel and its agents to accomplish the maintenance and calibration of said meters.
- c) Future meter pits shall be installed at the points of connection or at a mutually acceptable location and to the standards approved by Pennsylvania-American. The capital cost to install future meter pits will be borne by the entity requiring the installation.

Pennsylvania-American shall have the meters calibrated by a certified technician on a semi-annual basis. The cost of such meter calibration inspections and the cost of any repairs or replacement shall be borne by Pennsylvania-American. Saint Lawrence Borough shall be notified at least one (1) week in advance of such semi-annual calibration, shall have the right to observe the semi-annual calibration, and shall receive a copy of the calibration report. If the Saint Lawrence Borough representative fails to appear in response to such notice, the meter test will be binding. Saint Lawrence Borough shall have the right at any time upon written request to perform a calibration check of the meter to determine its accuracy. The entity performing said calibration check must be acceptable to both parties. If results of such requested calibrations show that the meter was malfunctioning by variations from actual flow of less than five (5) percent, then all costs of the requested calibration will be paid by Saint Lawrence Borough. If results of such requested calibrations show that the meter was malfunctioning by variations from actual flow of five (5) percent or more, then all costs of the requested calibration will be paid by Pennsylvania-American.

If the percentage of inaccuracy is found to be in excess of five (5%) percent when tested, then such data that the meter has recorded shall be adjusted for a period extending back to the time when such inaccuracy began if such time is ascertainable; however, if such time is not ascertainable, the adjustment shall be made for a period extending back one-half (1/2) of the time elapsed since the date of the last calibration test, or the date of the adjustment to correct the registration, whichever is later, not to exceed ninety (90) days.

Pennsylvania-American shall at its own expense install and maintain a level monitoring system on the three (3) sewage meter pits at the existing points of connection, where Saint Lawrence Borough sewage is discharged into the Pennsylvania-American sewerage system. If the level monitoring system indicates a surcharge in the Pennsylvania-American interceptor that can cause the sewage meter pits to have false readings, the data collected from that meter pit shall be considered void and the average flow from remaining data shall be substituted in its place for billing purposes.

The formula for measuring the total sewage flow from Saint Lawrence Borough is as follows:

(Meter Pit #4 minus Meter Pit #1) plus Meter Pit #2 plus Parkview Road water meter readings plus Exeter School District Administration Building, plus Exeter Community Park (only if location is metered separately) water meter readings minus Liberty Tap Room water meter readings.

Section 11 – If for any reason, the meter is out of service or out of repair or missing flow records due to faulty meter registration or otherwise, or the amount of flow through the meter cannot be ascertained or computed from the reading thereof, the flow delivered shall be estimated for the purposes of determining volume of sewage discharged and agreed upon by the parties hereto on the basis of an average of the best available historic similar season flow records as applied to present conditions.

Section 12 – The maximum combined flow rate from all points of connection shall not exceed the peak flow rate identified in Article III, Section 3. No slug flows shall be discharged.

Section 13 – In the event the peaking factors for the Maximum Monthly Flow or the Maximum Daily Flow or the Peak Hourly Flow is exceeded in any billing period, Saint Lawrence Borough shall begin an investigation to determine why such flows are exceeded with respect to the then current ADF. Saint

Lawrence Borough shall perform an Infiltration and Inflow evaluation and take necessary corrective actions to reduce the peaking factor. (For example, the current ADF equals 400,000 gpd, and a given day during that period is greater than 1,000,000 gpd, the MDF peaking factor of 2.5 has been exceeded). If peaking factors are exceeded for three consecutive months, Pennsylvania-American may cease signing any future planning modules. Saint Lawrence Borough shall provide a written report to Pennsylvania-American within ten (10) days of the third exceedance explaining the probable reason for the exceedance and how Saint Lawrence Borough proposes to decrease the flow back within limits.

Section 14 – In the event quantity of flow from Saint Lawrence Borough exceeds the allowable Maximum Monthly Flow during any billing period, Saint Lawrence Borough shall pay two times the current tariff rate effective at the time, for discharges in excess of the Average Daily flow times a peaking factor of 1.2 during the billing period. Should a second billing period exceed the Maximum Monthly Flow within any rolling twelve (12) month period, Pennsylvania-American, at its discretion, may refuse to approve any additional sewage planning modules until Saint Lawrence Borough determines and removes any extraneous flows and/or it purchases additional capacity in the sewage treatment plant if such capacity is available. It is the intent that Pennsylvania-American will not treat any extraneous, non-sewage flows where it can be prevented.

Section 15 – Pennsylvania-American will have the right to refuse to accept flows in excess of 462,000 gpd (ADF) until Saint Lawrence Borough pays to Pennsylvania-American the per EDU capacity reservation fee for excess flows as provided in Article III and as set forth in Article I of this Agreement.

Section 16 - The parties understand and agree that the capacity reservation fees and other terms and conditions shall be governed by Pennsylvania-American's PaPUC approved tariff. Capacity reservation fees paid to Pennsylvania-American shall be due and payable within thirty (30) days after the time the planning module is fully executed by Pennsylvania-American, the relevant municipality, and PaDEP.

Section 17 – Before Saint Lawrence Borough permits connection to Saint Lawrence Borough's collection system of any single sewer user who has an average anticipated daily sanitary sewage flow greater than ten (10) percent of Saint Lawrence Borough's allocation, Saint Lawrence Borough shall notify Pennsylvania-American ninety days (90) in advance of such potential connection.

ARTICLE V – TREATMENT PLANT

Section 1 – Pennsylvania-American covenants and agrees to acquire and construct or cause to be acquired and constructed, from time to time, such additions, improvements, and/or modifications to the sewage treatment plant provided the capacity reserved unto Saint Lawrence Borough shall not be impaired.

The determination of the need for such additions, improvements, and/or modifications shall be made solely by Pennsylvania-American. In the event the construction of additional facilities is necessitated by a change in the degree of treatment as required by US EPA, PaDEP or other regulatory body, the rates provided for in Article VII hereof and charged by Pennsylvania-American for receipt and treatment of sewage may be increased, including those charged to Saint Lawrence Borough, as approved by the Pennsylvania Public

Utility Commission (PaPUC). In the event the construction of additional facilities is required to treat wastes needing specialized treatment emanating:

- A. Exclusively from Saint Lawrence Borough, Saint Lawrence Borough shall pay the full cost thereof under conditions of an amendment to this Agreement. Saint Lawrence Borough shall have the right of engineering review and audit of construction costs at Saint Lawrence Borough's sole expense.
- B. Partially from Saint Lawrence Borough, then Saint Lawrence Borough shall pay its proportionate share thereof under conditions of an amendment to this Agreement or construction of a pre-treatment facility in accordance with the applicable Rules and Regulations. Pennsylvania-American shall have the right of engineering review and audit of construction costs at Pennsylvania-American's sole expense.
- C. For the benefit of Pennsylvania-American's customers other than Saint Lawrence Borough, Saint Lawrence Borough shall not be required to participate in the cost of expansion.

Section 2 - The parties hereto agree that at such time or times as the sewage treatment plant is rerated for increased treatment capacity by the State or Federal agency having jurisdiction and authority to rerate the capacities in the sewage treatment plant, Saint Lawrence Borough shall automatically be entitled to an increase in their applicable allocated capacities in the sewage treatment plant, said increase or increases to be determined by their percentile interests in the allocated capacity or capacities in the sewage treatment plant and will be without payment of any Capacity Reservation Fees.

ARTICLE VI – MAINTENANCE, HOLD HARMLESS AGREEMENT, INSURANCE

Section 1 – Pennsylvania-American and Saint Lawrence Borough agree, in regard to their respective systems, to operate continuously and keep and maintain the same at all times in first-class repair and order, and in good and efficient operating condition, and to meet the standards prescribed by the PaDEP or any other governmental authority having jurisdiction thereof.

Section 2 – Saint Lawrence Borough agrees to indemnify to the fullest extent permitted by law and save harmless Pennsylvania-American against all losses, costs or damages on account of any injury to persons or property occurring in the performance of this Agreement or the operation of the St. Lawrence system or resulting from the failure of the treatment plant and lines leading thereto to function properly. Nothing herein contained shall be construed to waive governmental immunity or limitation of liability otherwise provided by law with respect to any person not a party to this Agreement.

Section 3 – Pennsylvania-American agrees to indemnify to the fullest extent permitted by law and save harmless Saint Lawrence Borough against all losses, costs, or damages on account of any injury to persons or property occurring in the performance of this Agreement or the operation of the Pennsylvania-American system or resulting from the failure of the treatment plant and lines leading thereto to function properly. Nothing herein contained shall be construed to waive governmental immunity or limitation of liability otherwise provided by law with respect to any person not a party to this Agreement.

Section 4 – In the event of damage to the Pennsylvania-American sewage treatment or conveyance facilities resulting from the discharge of sewage from the collection system of Saint Lawrence Borough, which is determined to be in violation with the Rules and Regulations of Pennsylvania-American, Saint Lawrence Borough or the requirements of this Agreement, Saint Lawrence Borough agrees to act in concert with Pennsylvania-American in enforcing their respective rules and regulations to cause the abatement of the violation and to require reimbursement to Pennsylvania-American for the full cost of damage done to Pennsylvania-American's sewage treatment or conveyance facilities by the offending user.

In the event of damage to the Saint Lawrence Borough collection system, resulting from the conveyance of sewage from the Pennsylvania-American collection system, which is, determined to be in violation with the Rules and Regulations of Pennsylvania-American, Saint Lawrence Borough, or the requirements of this Agreement, Pennsylvania-American agrees to act in concert with, Saint Lawrence Borough in enforcing their respective rules and regulation to cause abatement of the violation and require reimbursement to Saint Lawrence Borough for the full cost of damage done to Saint Lawrence collection system by the offending user.

Section 5 – Pennsylvania-American and Saint Lawrence Borough will provide a Certificate of Insurance indicating the insurance limits and coverages applicable to each entity noted on Exhibit B.

ARTICLE VII -- CHARGES AND PAYMENTS

Section 1 – In all instances where fees are required or use rates are applicable (including the capacity reservation fees established pursuant to this Agreement in Sections 8 and 9 of this Article VII), these rates and fees shall be as provided in the PaPUC approved tariff rates in effect at that time.

Section 2 – Sewer Use Charges to be paid by Saint Lawrence Borough shall be based upon readings taken at the meters provided for under Article IV of this Agreement, plus other flows emanating from other points of connection (the metering and/or the method of computing flow totals for the other points of connection shall be agreed to by Pennsylvania-American and Saint Lawrence Borough), irrespective of the source of such flows, excluding pass through flows. An example of the calculation of the Sewer Use Charges is attached as Exhibit D.

The parties hereto agree that the volume of sewage entering the Pennsylvania-American sewage system from the Saint Lawrence Borough collection system, as indicated by the meters, shall be adjusted by deducting an estimate or measurement where possible of the volume of sewage discharged into the Saint Lawrence collection system by Pennsylvania-American and by adding an estimate or measurement where possible of the volume of sewage from any of the Borough's customers that does not flow through one of the meters. Any estimate of the flow of sewage from any customer of Saint Lawrence Borough shall be made jointly by Pennsylvania-American and Saint Lawrence Borough. The parties hereto further agree that the resultant volume of sewage, including Infiltration and Inflow after such adjustment is made shall represent the total volume of sewage, including Infiltration and Inflow discharged by Saint Lawrence Borough into the Pennsylvania-American sewage system and that the infiltration and inflow produced within the Saint Lawrence collection system shall be considered as part of the total sewage discharged by Saint Lawrence Borough into the Pennsylvania-American sewage system.

Section 3 – Saint Lawrence Borough shall be billed on a quarterly basis if water meter readings are utilized and on a monthly basis if permanent flow meters are being utilized under this Agreement. Bills shall reflect the appropriate charges for the preceding quarter or month, said charges being in accordance with Pennsylvania-American’s Rules and Regulations and the PaPUC approved tariff rate structure currently in effect.

Section 4 – The due date for payment of a bill shall be no less than twenty (20) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the Company are not open to the general public, the due date shall be extended to the next business day. There shall be assessed the penalty and interest specified in Pennsylvania-American’s Rules and Regulations and rate structure on bills remaining unpaid in accordance with the PaPUC approved tariff provisions.

Section 5 – Saint Lawrence Borough shall pay to Pennsylvania-American the capacity reservation fees associated with construction of facilities by Pennsylvania-American related to Saint Lawrence Borough’s connection with the Pennsylvania-American system.

Section 6 – Pennsylvania-American hereby covenants that rates and terms of services for sewage treatment, fees and charges, and the capacity fees imposed hereunder will be in conformity with its schedule of rates, Rules and Regulations, fees and charges, and capacity fees charged in accordance with PaPUC approved tariff rates.

ARTICLE VIII – INFLOW AND INFILTRATION

Section 1 – Saint Lawrence Borough and Pennsylvania-American agree that the sewage and wastes discharged, either directly or indirectly by any user into either of their collection systems shall not contain stormwater, roof or surface drainage, subsurface drainage, or building foundation drainage. Both Pennsylvania-American’s and Saint Lawrence Borough’s sewer construction specifications shall require infiltration, exfiltration, and/or air pressure tests made at the time of construction. The infiltration or exfiltration of the sewer system at the time of the test shall not exceed 100 gallons per one-inch diameter of pipe per mile in 24 hours. Air test results for acceptance shall be in accordance with techniques for new pipe systems current at the time of construction.

Section 2 - The parties hereto agree that the measurements made by the meters, adjusted in accordance with Article IV – Section 9 hereof, shall be used to determine if the allowable sewage (including Infiltration and Inflow) discharge volume limit of the Borough is being exceeded. The parties hereto agree that the volume limit shall be exceeded when the average daily rate of the sewage flow for any consecutive ninety (90) day period exceeds the limit provided for in Article IV hereof. For the purposes of this Section, the average daily rate shall be determined by obtaining the sum of the daily total sewage flow for any ninety (90) consecutive days and dividing that sum by ninety (90). In the event the Borough discharge limit is exceeded, Pennsylvania-American shall notify Saint Lawrence Borough thereof in writing within thirty (30) days from the date that Pennsylvania-American obtains the meter reading. The parties hereto agree that Saint Lawrence Borough shall, within six (6) months of receiving such written notification from Pennsylvania-American, either begin or have completed repairs to the St. Lawrence collection system to

reduce the volume of discharge to within the discharge limit as defined herein, or shall apply to Pennsylvania-American in writing to purchase from Pennsylvania-American additional capacity in the Wastewater Treatment Facilities. If, in the judgement of Pennsylvania-American, such additional capacity is available, which judgement will not be unreasonably withheld, Pennsylvania-American shall sell same to Saint Lawrence Borough.

Section 3 – Saint Lawrence Borough shall enact rules and regulations and/or ordinances consistent with Pennsylvania-American Rules and Regulations currently in effect, prior to the Pennsylvania-American's acceptance of effluent. Such rules and regulations and/or ordinances shall, *inter alia*, prohibit the construction, installation, or use of any facility which causes surface and/or subsurface stormwater or groundwater to be discharged to the sanitary sewer system. Facilities prohibited shall include, but not be limited to, sump pumps, area drains, yard drains, perimeter drains, foundation drain, roof leaders, downspouts, street inlets, storm sewers, cross connections, etc.

In the event that Saint Lawrence Borough receives a request to accept and dispose in the Saint Lawrence Borough collection system any ground water from construction de-watering or impacted ground water from a PaDEP Corrective Action, Saint Lawrence Borough shall notify Pennsylvania-American as promptly and practicable and parties shall discuss if and when such ground water can be conveyed by Saint Lawrence Borough to the Pennsylvania-American wastewater treatment plant, consistent with all of the terms and provisions of this Agreement. Acceptance and disposal of any such groundwater by Saint Lawrence Borough requires the prior written consent of Pennsylvania-American, such written consent to not be unreasonably withheld.

Restrictions contained within the ordinances enacted through Saint Lawrence Borough shall be equal to or stricter than those enacted by Pennsylvania-American.

ARTICLE IX – INDUSTRIAL WASTES

Section 1 – No establishment or discrete portion thereof from which untreated industrial waste is or may be discharged into Saint Lawrence Borough's collection system shall be permitted to connect to Saint Lawrence Borough's system except as hereinafter provided. Saint Lawrence Borough shall strictly enforce this provision. Industrial waste shall be pretreated to meet standards required by Pennsylvania-American's Rules and Regulations and Industrial Pretreatment Program.

Section 2 – Whenever an existing or new user of Saint Lawrence Borough sewer system proposes to introduce industrial waste into the sewer system, Pennsylvania-American shall be so notified in writing by Saint Lawrence Borough and the user shall comply with all Pennsylvania-American and Saint Lawrence Borough Rules and Regulations pertaining to the discharge of industrial waste. Such discharge shall not occur prior to the issuance of applicable permits with limitations provided by Pennsylvania-American but issued to the user by Saint Lawrence Borough. No discharge shall be made unless permitted by Pennsylvania-American. All other potential users of the Saint Lawrence Borough sewer system, with the exception of individual residential users, shall be referred by Saint Lawrence Borough to Pennsylvania-American for review of application and issuance of permits limits.

Section 3 – In accordance with the Pennsylvania-American’s Industrial Pretreatment Program (IPP), Pennsylvania-American shall install temporary sampling equipment at or near the discharge points into the Pennsylvania-American wastewater system. Pennsylvania-American will sample for the same analytical parameters at the entry points of the Pennsylvania-American waste water system into Saint Lawrence Borough near Meter Pit #1 and Liberty Tap Room. Concentrations and loadings from Pennsylvania-American direct customers that contribute to the Saint Lawrence Borough sewer system will be deducted to determine the compliance by Saint Lawrence Borough with the Industrial Pretreatment Program. Pennsylvania-American will in turn invoice Saint Lawrence Borough for the actual costs incurred for the sample collection and analysis, as allowed by the Pennsylvania-American tariff. As per Pennsylvania-American’s Industrial Pretreatment Program, sampling may be reduced in Pennsylvania-American’s sole and absolute discretion.

Section 4 – Pennsylvania-American shall test the sewage discharged from Saint Lawrence Borough on a quarterly basis. Such tests shall include, but not be limited to pH; Carbonaceous Biochemical Oxygen Demand (CBOD); Total Suspended Solids (TSS); Ammonia, Phosphorus, Copper, Mercury, Silver, etc.; and other tests of discharge substances as provided in Pennsylvania-American’s Sewage Rules and Regulations as set forth in the PaPUC present or future approved tariff or the Industrial Pretreatment Program (IPP). A copy of the test results shall be provided to Saint Lawrence Borough upon completion. In the event the test results indicate that the various discharge parameters have been exceeded, Saint Lawrence Borough shall be charged an additional surcharge fee in accordance Pennsylvania-American’s applicable Industrial Pretreatment Program and its PaPUC approved tariff. If the sampling results show no exceedances for four (4) consecutive quarterly samples, Pennsylvania-American may reduce the sampling frequency to annually. Pennsylvania-American will provided Saint Lawrence Borough with a split sampling, if they so choose, to have additional analytical testing. All costs associated with split sampling and additional analytical testing will be the sole expense of Saint Lawrence Borough.

Section 5 – For customers within Saint Lawrence Borough sewer system that are identified currently or in the future that require an industrial/commercial waste water permit in accordance with the Pennsylvania-American IPP program, Pennsylvania-American, on behalf of and as agent for Saint Lawrence Borough, will perform technical and administrative duties necessary to implement and enforce the Saint Lawrence Borough sewer use ordinance. Pennsylvania-American will: (a) update the industrial waste survey; and (b) issue permits for all users required to obtain a permit. Pennsylvania-American may: (x) conduct inspections, sampling and analysis if deemed necessary by Pennsylvania-American; (y) take all appropriated enforcement action as outlined in the Pennsylvania-American IPP program and current PUC approved tariff; or (z) perform any other technical or administrative duties the parties to this Agreement deem appropriate.

In addition, Pennsylvania-American may, as an agent of Saint Lawrence Borough, take emergency action to stop or prevent any discharge which presents or may present an imminent danger to the health or welfare of humans; which reasonably appears to threaten the environment, or which threatens to cause interference, pass through, or sludge contamination at the Pennsylvania-American Wastewater Treatment Facility.

Costs that Pennsylvania-American may incur associated with the implementation and enforcement of the Saint Lawrence Borough sewer use ordinance on behalf of Saint Lawrence Borough, will be recovered by

Pennsylvania-American from Saint Lawrence Borough pursuant to the fee structure in the current PUC approved tariff. It remains in the discretion of Saint Lawrence Borough whether Saint Lawrence Borough will seek reimbursement from the direct customers of Saint Lawrence Borough.

Section 6 - Samples of sewage discharged into the Pennsylvania-American sewage system from the Saint Lawrence Borough collection system may be obtained and analyzed by the Parties hereto at any place, at any reasonable time, in order to ensure compliance with the terms and provisions of this Agreement.

Section 7 - Pennsylvania-American agrees to furnish or to cause to be furnished to Saint Lawrence Borough, all information deemed essential by Saint Lawrence Borough, as appropriate, for determination of the character and strength of sewage discharged into the Pennsylvania-American sewage system.

Section 8 - Saint Lawrence Borough agrees to furnish or to cause to be furnished to Pennsylvania-American all information deemed essential by Pennsylvania-American for determination of the character and strength of sewage discharged from the Saint Lawrence collection system into the Pennsylvania-American sewage system.

Section 9 - The parties hereto agree that the meter locations and other sampling points selected by Pennsylvania-American shall be used to determine if the allowable sewage discharge limits are being exceeded. The parties hereto agree that the limits shall be exceeded when the average daily rate of the BOD and Total Suspended Solids strength for any consecutive thirty (30) day period exceeds the limits. For the purposes of this Section, the average daily rates shall be determined by obtaining the sum of the daily total mass loadings of BOD and Total Suspended Solids for any thirty (30) day period. In the event that Saint Lawrence Borough's discharge limits are exceeded, Pennsylvania-American shall notify Saint Lawrence Borough thereof in writing within thirty (30) days. The parties hereto agree that Saint Lawrence Borough shall within six (6) months of receiving such written notification from Pennsylvania-American, begin or complete enforcement steps to reduce mass loadings to within the discharge limits as defined herein, or shall apply to Pennsylvania-American in writing to purchase from Pennsylvania-American additional capacity in the Wastewater Treatment Facilities.

Section 10 - If any wastewater discharged by Saint Lawrence Borough does not comply with the specifications and requirements set forth in this Agreement and requires special treatment or would be harmful to the Wastewater Treatment Facilities, then Saint Lawrence Borough will pay or cause to be paid the entire costs of providing any special treatment as a separate charge by paying the costs of any damage to the Wastewater Treatment Facilities resulting from the discharge of such non-compliant wastewater from the Saint Lawrence Borough's collection system, and shall indemnify and hold harmless Pennsylvania-American with respect thereto. Upon such payment, Pennsylvania-American will provide Saint Lawrence Borough any subrogation rights as reasonably needed by Saint Lawrence Borough to seek recoupment of such costs from any customers in the Saint Lawrence Borough system.

ARTICLE X – PARTICULAR COVENANTS OF SAINT LAWRENCE BOROUGH

Upon the execution of this Agreement, Saint Lawrence Borough covenants as follows:

- A. On an annual basis, Saint Lawrence Borough shall provide to Pennsylvania-American a map showing Saint Lawrence Borough's sewer collection system.
- B. To maintain its collection system in good repair and operating condition and to operate it continuously as provided for in this Agreement.
- C. From time to time, make all necessary repairs, renewals and replacements to Saint Lawrence Borough's sewer collection system and all improvements thereto in order to maintain adequate service;
- D. Comply with all present and future laws, rules, regulations, permits, orders and requirements lawfully made by US EPA and PaDEP, or any other governmental body having jurisdiction.
- E. To take any and all action by ordinance, or in any otherwise necessary and appropriate manner, to fulfill the provisions of this Agreement.

ARTICLE XI – PARTICULAR COVENANTS OF PENNSYLVANIA-AMERICAN

Upon the execution of this Agreement, Pennsylvania-American covenants as follows:

- A. To maintain the interceptor, sewers, and treatment facilities in good repair and operating condition and to operate them continuously in accordance with applicable Rules and Regulations and in a manner sufficient to fulfill the Pennsylvania-American's obligations under this Agreement.
- B. From time to time, make all necessary repairs, renewals and replacements thereof and all necessary improvements thereto in order to maintain adequate service;
- C. Comply with all present and future laws, rules, regulations, permits, orders and requirements lawfully made by the Pennsylvania Department of Environmental Protection, or any other governmental body having jurisdiction.
- D. To accept and treat up to 462,000 gallons average daily flow of treatment and conveyance capacity, at a peak flow rate of 1,123 gallons per minute of sewage entering Pennsylvania-American's sewage system from Saint Lawrence Borough subject to the provisions of this Agreement.

ARTICLE XII – DISPUTE RESOLUTION

Section 1 – If a dispute develops between the parties to this Agreement, they will submit to non-binding mediation to address any controversy or claim arising out of, or relating to this Agreement. Prior to beginning of the mediation process, the parties may agree that if there is one or more disputed items that remain unresolved at the end of mediation, the parties may proceed with binding mediation where the mediator will render a final and binding decision on any such unresolved items, or the parties may elect to submit any remaining unresolved items to a court of competent jurisdiction. Both parties shall share the cost of the dispute resolution process equally although attorney's fees and any fees for witnesses or specialists are the direct responsibility of each party, respectively.

ARTICLE XIII – MISCELLANEOUS

Section 1 – The failure of any party hereto to insist upon strict performance of this Agreement or any of the terms or conditions thereof shall not be construed as a waiver of any of its rights hereunder.

Section 2 – This writing constitutes the entire Agreement between the parties, and there are no other representations or agreements, verbal or written, other than those contained herein.

Section 3 – Whenever a notice is required to be given by mail, the following addresses shall be used unless a different address is specifically called for:

Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055

Borough of Saint Lawrence
3540 St. Lawrence Avenue
Reading, PA 19606-2372

Section 4 – This Agreement requires the approval of the Pennsylvania Public Utility Commission (PaPUC) pursuant to Pennsylvania-American's Tariff Section 23.5. Pennsylvania-American will file a copy with the PaPUC. The Parties acknowledge and agree that the Parties shall have no obligations hereunder until the occurrence of the Effective Date.

Section 5 – This Agreement may be executed in any number of counterparts and by the different parties on separate counterparts. Each such counterpart shall be deemed to be an original, but all such counterparts shall together constitute one and the same Agreement. This Agreement shall be deemed to have been executed when counterparts have been executed by all parties listed on the signature page(s) hereto.

Section 6 - The invalidity or unenforceability of any portion or provision of this Agreement shall in no way affect the validity or enforceability of any other portion or provision hereof. Any invalid or unenforceable portion or provision shall be deemed severed from this Agreement and the balance of the Agreement shall be construed and enforced as if the Agreement did not contain such invalid or unenforceable portion or provision. If any such provision of this Agreement is so declared invalid, the Parties shall promptly negotiate in good faith new provisions to eliminate such invalidity and to restore this Agreement as near as possible to its original intent and effect.

Section 7 - No provision of this Agreement may be amended, modified or waived except by an instrument in writing signed by the Parties; provided that no amendment, modification or waiver may affect the rights, duties and obligations of the Parties hereunder without their prior written consent.

Section 8 - This Agreement shall be binding on the Parties hereto and on their respective successors, heirs and assigns.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their appropriate officers and their respective Boards to be hereunto affixed on the day and year first above written.

Pennsylvania-American Water Company

ATTEST:

By: _____
Jeffrey L. McIntyre, President

Andrew L. Swope, Vice President
Divisional General Council

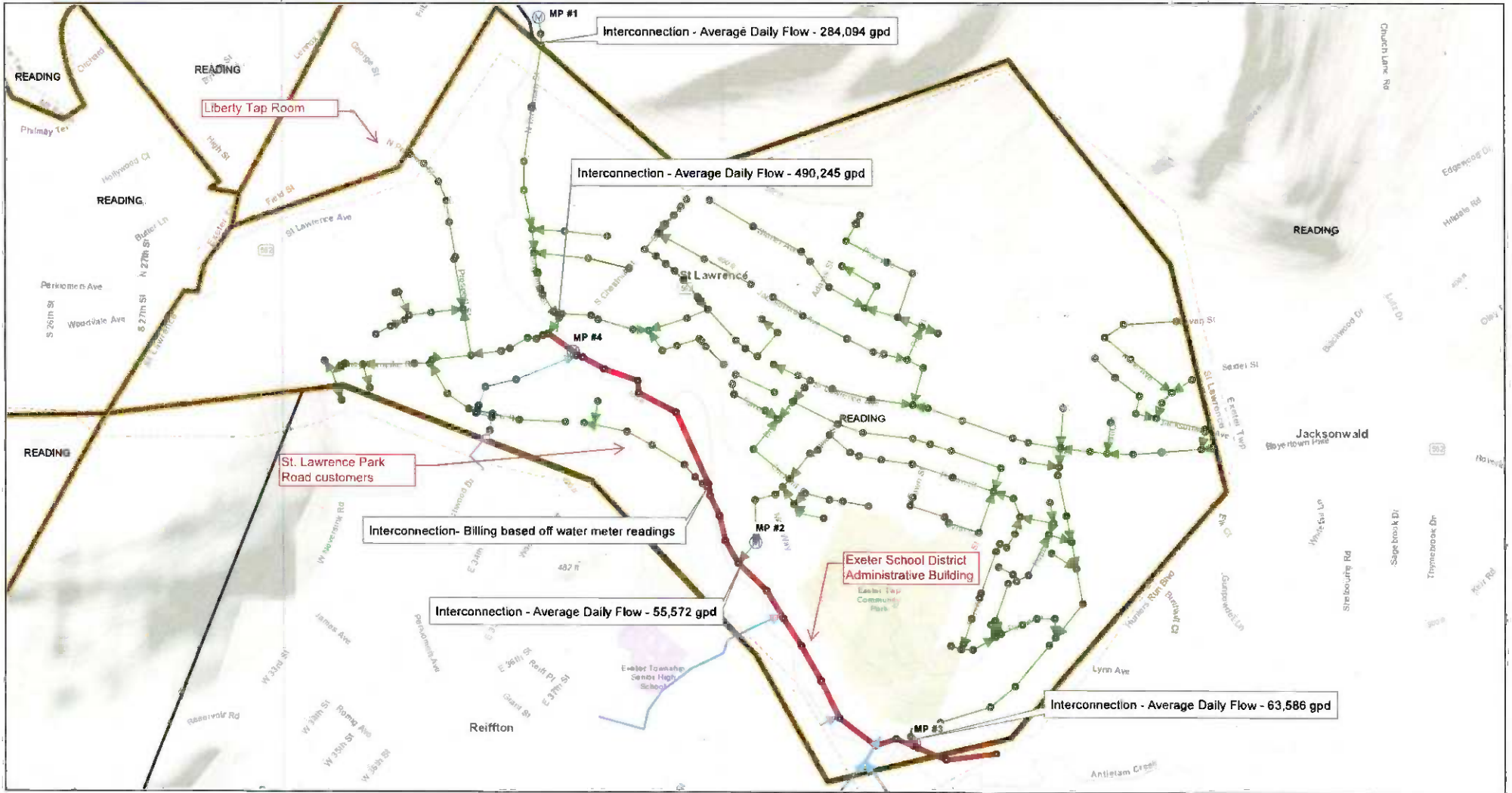
Borough of Saint Lawrence

ATTEST:

By: _____
Robert J. May, Council President

Susan Eggert, Borough of Saint Lawrence Secretary

Exhibit A – System Map and Meter Connections



Date: 8/20/2018

- ⊗ St. Law Sanitary Manholes
- Exeter Sanitary Manholes
- St. Law Sanitary Pipe
- Exeter Sanitary Pipe
- Exeter Interceptor
- ☐ Approximate Exeter ww
- ☐ Municipal
- Ⓜ Meter Pits

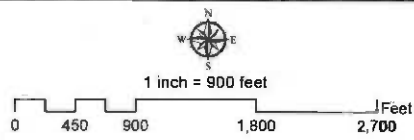


Exhibit A
St. Lawrence
Sanitary System

TO BE USED FOR REFERENCE ONLY
 Although every effort has been made to ensure the accuracy of the information, users will be advised regarding the physical aspects to develop the interceptor map as reflected in the data supplied.

Exhibit B – Certificate of Insurance



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
01/15/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Marsh USA Inc. 1166 Avenue of the Americas New York, NY 10036 Attn: NewYork.Certs@marsh.com Fax: 212-948-0500 GAEW	CONTACT NAME: PHONE (A/C, No, Ext): E-MAIL: ADDRESS:	FAX (A/C, No):													
	<table border="1"> <thead> <tr> <th>INSURER(S) AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> </thead> <tbody> <tr> <td>INSURER A : Travelers Prop. Casualty Co. Of America</td> <td>25674</td> </tr> <tr> <td>INSURER B : Berkshire Hathaway Specialty Insurance Company</td> <td>22276</td> </tr> <tr> <td>INSURER C : The Phoenix Insurance Company</td> <td>25623</td> </tr> <tr> <td>INSURER D :</td> <td></td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </tbody> </table>		INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A : Travelers Prop. Casualty Co. Of America	25674	INSURER B : Berkshire Hathaway Specialty Insurance Company	22276	INSURER C : The Phoenix Insurance Company	25623	INSURER D :		INSURER E :		INSURER F :
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INSURER F :															

COVERAGES **CERTIFICATE NUMBER:** NYC-008955503-40 **REVISION NUMBER:** 3

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			TC2JGLSA-260T3317-19	01/01/2019	01/01/2020	EACH OCCURRENCE	\$ 2,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 2,000,000
							MED EXP (Any one person)	\$ 5,000
							PERSONAL & ADV INJURY	\$ 2,000,000
							GENERAL AGGREGATE	\$ 12,000,000
							PRODUCTS - COM/PROP AGG	\$ Included Above
								\$
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			TC2JCAP-260T3298-19	01/01/2019	01/01/2020	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
								\$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			47-UMO-100402-04	01/01/2019	01/01/2020	EACH OCCURRENCE	\$ 5,000,000
							AGGREGATE	\$ 5,000,000
								\$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N <input checked="" type="checkbox"/> N	N/A	TC2NUB-121D3206-19	01/01/2019	01/01/2020	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER	
							E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
EVIDENCE OF COVERAGE ONLY

CERTIFICATE HOLDER PENNSYLVANIA-AMERICAN WATER 800 W. HERSHEY PARK DRIVE HERSHEY, PA 17078	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE of Marsh USA Inc. Kimberly Parks <i>Kimberly Parks</i>
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EVIDENCE OF PROPERTY INSURANCE

DATE (MM/DD/YYYY)
01/15/2019

THIS EVIDENCE OF PROPERTY INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE ADDITIONAL INTEREST NAMED BELOW. THIS EVIDENCE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS EVIDENCE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE ADDITIONAL INTEREST.

AGENCY Marsh USA, Inc. 1166 Avenue of the Americas New York, NY 10036 Attn: New York.Ceris@marsh.com Fax: 212-948-0500		PHONE (A/C, No, Ext):		COMPANY American Home Assurance Company	
CN103112619-400M-prop-15-19		FAX (A/C, No):		E-MAIL ADDRESS:	
CODE:		SUB CODE:			
AGENCY CUSTOMER ID #:		LOAN NUMBER		POLICY NUMBER 015909393	
INSURED Pennsylvania-American Water Company 800 W Hersheypark Drive Hershey, PA 17033		EFFECTIVE DATE 12/31/2015		EXPIRATION DATE 12/31/2019	
				<input type="checkbox"/> CONTINUED UNTIL TERMINATED IF CHECKED	
THIS REPLACES PRIOR EVIDENCE DATED:					

PROPERTY INFORMATION

LOCATION/DESCRIPTION Evidence of Insurance
--

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS EVIDENCE OF PROPERTY INSURANCE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

COVERAGE INFORMATION

PERILS INSURED	BASIC	BROAD	SPECIAL	AMOUNT OF INSURANCE	DEDUCTIBLE
COVERAGE / PERILS / FORMS Direct physical loss or damage to real property on a replacement cost basis, subject to policy terms, conditions and exclusions. Coverage includes, but is not limited to fire, extended perils such as vandalism, malicious mischief, and boiler & machinery. Flood and Earthquake coverage is included but further sublimited. (see additional page) Other deductibles may apply per policy terms and conditions.				400,000,000	100,000

REMARKS (Including Special Conditions)

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CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

ADDITIONAL INTEREST

NYC-008663621-43

NAME AND ADDRESS Pennsylvania-American Water Company 800 W Hersheypark Drive Hershey, PA 17078	<input type="checkbox"/> ADDITIONAL INSURED	<input type="checkbox"/> LENDER'S LOSS PAYABLE	<input type="checkbox"/> LOSS PAYEE	
	<input type="checkbox"/> MORTGAGEE			
	LOAN #			
AUTHORIZED REPRESENTATIVE of Marsh USA Inc. Nicholas M. Trent <i>Nicholas M. Trent</i>				

ACORD 27 (2016/03)

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Exhibit C – Commercial Customers

Exhibit D – Sample Sewer Usage Charges

EXHIBIT D
St. Lawrence Sewer Billing

Sample 1.) Sewer Billing based upon water usage:

- St. Lawrence Borough provides Pennsylvania-American quarterly water meter usage prior to the 15th day following each calendar quarter.
 - Water meter usage data must be in a format acceptable to Pennsylvania-American
- Water meter usage in one calendar quarter for all St. Lawrence Borough residents connected to the sanitary sewer system equals 20,636,988 gallons.
- Sample billing calculation from Pennsylvania-American to St. Lawrence:

$$20,636,988 \text{ gallons} \times 1.20 \text{ I/I multiplier} = 24,764,386 \text{ gallons}$$

$$24,764,386 \text{ gallons} \times \$2.38 / 1,000 \text{ gallons} = \$58,939.24 \text{ Quarterly Amount Due}$$

Note – \$2.38 / 1,000 gallons is current sewer use charge and is subject to future rate adjustments approved by Pa-PUC

Sample 2.) Sewer Billing based upon permanent flow meters:

- Pennsylvania-American collects data from the permanent flow meters and provides monthly invoice to St. Lawrence Borough.
- St. Lawrence Borough provides Pennsylvania-American with water usage for connections within St. Lawrence Borough and the sewage flow that does not flow through one of the flow meters.
- Sample Data for Monthly calculation:
 - Meter Pit #1 – 6,026,159 gallons
 - Meter Pit #2 – 1,785,512 gallons
 - Meter Pit #3 – 1,972,070 gallons
 - Meter Pit #4 – 10,401,200 gallons
 - Parkview Avenue water meter usage – 119,504 gallons
 - Exeter School District administration building water meter usage – 27,000 gallons
 - Liberty Tap Room water meter usage – 33,750 gallons
- Sample billing calculation from Pennsylvania-American to St. Lawrence:
 - Formula - (Meter Pit #4 – Meter Pit#1) + Meter Pit #2 + Meter Pit #3 + Park Rd water meter readings + Exeter School District Administration Building water meter reading – Liberty Tap Room water meter readings

$$(10,401,200 \text{ gal} - 6,026,159 \text{ gal}) + 1,785,512 \text{ gal} + 1,972,070 \text{ gal} + 119,504 \text{ gal} + 27,000 \text{ gal} - 33,750 \text{ gal} = 8,245,377 \text{ gallons}$$

$$8,245,377 \text{ gallons} \times \$2.38 / 1,000 \text{ gallons} = \$19,624.00 \text{ Monthly Amount Due}$$

Exhibit E – Pennsylvania American Water’s Rules and Regulation Definitions

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS

The following words and phrases, when used in this tariff, shall have the meanings assigned below unless the context clearly indicates otherwise:

1. **Applicant:** A person, association, partnership, corporation, municipality, authority, state or federal governmental agency or other entity who applies to become a customer of the Company in accordance with Section C, of this tariff.
2. **B.O.D. (Biochemical Oxygen Demand):** The quantity of oxygen, expressed in milligrams per liter, utilized in the biochemical oxidation of organic matter under the standard laboratory procedure for five (5) days at twenty (20) degrees Centigrade. The standard laboratory procedure shall be that found in the latest approved edition of "Standard Methods for the Examination of Water and Sewage" published by the American Public Health Association, the American Water Works Association, and/or the Water Pollution Control Federation.
3. **Capacity Reservation fee:** A fee charged by the Company for the allocation of capacity on a per EDU basis.
4. **Combined Sewer:** A sewage collection system which conveys both sanitary sewage and storm water flow.
5. **Commission:** The Pennsylvania Public Utility Commission.
6. **Company:** Pennsylvania-American Water Company and its duly authorized officers, agents and employees, each acting within the scope of his authority and employment.
7. **Company Service Line:** Company owned wastewater service line from the sewer main of the Company which connects to the Customer Service Line at the edge of the right-of-way or actual property line.
8. **Customer:** A person or entity who is an owner, occupant or who contracts with the Company for or who takes or receives wastewater collection, treatment and/or disposal service.
9. **Customer Service Line:** Customer owned wastewater service line extending from the end of the Company Service Line or connection to and within the customer's premise.
10. **Domestic Wastewater:** The liquid waste or liquid borne waste: (1) resulting from the non-commercial preparation, cooking and handling of food; (2) consisting of human excrement; or (3) consisting of wastewater, non-commercial laundering water, domestic housekeeping wastewater, and similar types of wastes from sanitary uses, whether generated in residences or sanitary facilities in commercial or industrial facilities, but does not include any storm water or ground water introduced from facilities such as roof leaders, sump pumps, floor drains or industrial wastewater.
11. **Dwelling Unit:** A structure or dwelling intended to be occupied as a whole by one family.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS (cont'd)

12. **Equivalent Dwelling Units (EDU):** The EDU is a measure based upon the estimated average daily wastewater flow for the type of business, as calculated by the PaDEP Regulation at 25 Pa Code: 73.17 divided by the typical estimated average daily wastewater flow from a current single-family unit.
13. **Garbage:** The solid wastes from domestic cooking and dispensing of food, and from the handling and storage of produce.
14. **Garbage Properly Shredded:** The term "Properly Shredded Garbage", as used herein, shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half inch in dimension.
15. **Grinder pump:** Any mechanical or powered device, owned by the Customer, used to grind, macerate or fluidize garbage so that it can be discharged into the Sanitary Sewer.
16. **Industrial/Commercial Wastes:** Any liquid, gaseous or water borne wastes from industrial processes or commercial establishments, as distinct from domestic wastewater.
17. **Industrial/Commercial Waste Permit:** A wastewater permit issued as required by the Company to an Industrial/Commercial user which discharges Industrial/Commercial Waste.
18. **Industrial/Commercial Waste Pretreatment Program:** A program established by the Company that requires industrial and commercial dischargers to monitor, test, treat and control as necessary pollutants in their wastewater prior to discharge into the Sanitary or Combined Sewer.
19. **Line extension (for line extension purposes):** An addition to the Company's main line which is necessary to serve the premises of a Customer. Refer to Section H.
20. **Main:** The Company's pipe, excluding service connections, located in a public highway, street, alley or private right-of-way which pipe is used in transporting wastewater.
21. **Meter:** Any device supplied by the Company or other for the purpose of measuring water consumption or wastewater discharge.
22. **Nonresidential Service:** Wastewater service supplied to a commercial or industrial building, including a hotel or motel, or to a master-metered trailer park or multi-tenant apartment building, or to any customer who purchases wastewater service from the Company for the purpose of resale.
23. **Pretreatment:** The application of physical, chemical and/or biological processes to reduce the amount pollutants in, or alter the nature of the polluting properties of, an industrial/commercial process wastewater prior to discharging such wastewater into the Sanitary or Combined Sewer.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS (cont'd)

24. **Public Utility:** Persons or corporations owning or operating equipment or facilities in this Commonwealth for water, electric or wastewater collection, treatment, or disposal for the public for compensation.
25. **Residential Applicant:** A natural person at least 18 years of age not currently receiving service who applies for residential service provided by the Company or any adult occupant whose name appears on the mortgage, deed or lease of the property for which the residential utility service is requested. A Residential Applicant does not include a person who, within 30 days after service termination or discontinuance of service, seeks to have another service reconnected at the same location or transferred to another location within the Company's service territory.
26. **Residential Customer:** A natural person at least 18 years of age in whose name a residential service account is listed and who is primarily responsible for payment of bills rendered for the service or any adult occupant whose name appears on the mortgage, deed or lease of the property for which the residential utility service is requested. A Residential Customer includes a person who, within 30 days after service termination or discontinuance of service, seeks to have service reconnected at the same location or transferred to another location within the Company's service territory.
27. **Residential Service:** Wastewater service supplied to an individual single-family residential dwelling unit.
28. **Regulatory Agency:** Agencies, including but not limited to the Commission, the Pennsylvania Department of Environmental Protection (DEP), U.S. Environmental Protection Agency (EPA), which have authority over the operations of and/or discharges into and/or from the Company's treatment facilities
29. **Sanitary Sewer:** A sewer which primarily carries sanitary wastewater, together with such storm, surface and ground water as may be present.
30. **Storm Sewer:** A sewer which carries surface, ground water, or storm water from the buildings, ground, streets, or other areas.
31. **Storm Water Flow:** Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.
32. **Suspended Solids:** Solids that either float on the surface of, or are in suspension in water, wastewater, or other liquids, and which are largely removable by filtration.
33. **Tariff:** All of the service rates, rules and regulations issued by the Company, together with any supplements or revisions thereto, officially approved by the Commission and contained in this document.
34. **Toxic Substances:** Any substances where gaseous, liquid or solid waste which, when discharged to a public sewer in sufficient quantities, will be detrimental to any biological wastewater treatment process, constitute a hazard to human beings or animals, inhibit aquatic life, or create a hazard to recreation in receiving waters of the effluent from a wastewater treatment plant, or as defined pursuant to PL 92500 (Federal Water Pollution Control Act Amendments of 1972) or its amendments.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS (cont'd)

35. **Unauthorized Use of Service:** Unreasonable interference or diversion of service, including meter tampering (any act which affects the proper registration of service through a meter), by-passing unmetered service that flows through a device connected between a main or service line and customer-owned facilities, unauthorized service restoration, unauthorized stormwater/groundwater connection to Sanitary or Combined Sewer, or the otherwise taking or receiving of wastewater service without the knowledge or approval of the Company.

36. **Wastes:** Any liquid, gaseous, or solid substances or combination thereof which are discarded, leached, or spilled substances or combination thereof including sanitary wastewater but excluding storm-water.

37. **Wastewater:** The liquid and water-carried wastes from dwellings, commercial facilities, industrial facilities and institutions, together with any groundwater, surface water, and storm water that may be present, whether treated or untreated, in the Company's sewer system.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section R- Wastewater Control Regulations

1. **Applicability:** These provisions shall apply throughout the Company's service territory. For those systems where an Industrial Pretreatment Program (IPP) is required by the United States Environmental Protection Agency (EPA), Pennsylvania Department of Environmental Protection (DEP) or by the Company, all applicable customers shall comply with such IPP regulations. For a Commercial or Industrial Customer that is also subject to the provisions of an IPP of this tariff, to the extent a conflict exists between the provisions of this Section and the provisions of the applicable IPP, the terms of the IPP shall control.
2. **General Prohibitions:**
 - (a) No storm water from pavements, area ways, runoff basins, roof runoff water, foundation drains, subsurface drains, water from springs, cooling water, basement sump pumps, unpolluted industrial or commercial process water or other sources shall be admitted to the Company Sanitary Sewer.
 - (b) The discharge of garbage to the Sanitary or Combined Sewer is expressly prohibited. Properly shredded biodegradable garbage may be discharged into the Sanitary or Combined Sewer with no particle greater than one-half inch in dimension.
3. **Prohibited Discharges:** The Company reserves the right to refuse connection to its Sanitary or Combined Sewer and/or to compel the discontinuance of the use of any system, or to require pre-treatment of Wastes by any Customer, in order to prevent the discharge of any Wastes to the Sanitary or Combined Sewer system which may be deemed harmful to the Sanitary or Combined Sewer system, or to have an adverse effect on the sewage treatment processes. Except from the written consent of the Company, there shall be excluded from the sewage system but not limited to, any wastes having suspended solids and Wastes having any or all of the following characteristics:
 - (a) Wastes containing any gasoline, naphtha, fuel, oil or other liquids, solids or gases which by reason of their nature or quality may cause fire or explosion or be in any other way injurious to persons, the structures of the wastewater system or its operation.
 - (b) Wastes having a temperature in excess of 120 degrees F. or less than 32 degrees F that enters the Sanitary or Combined Sewer or Wastes entering the plant that increase the temperature of the Wastewater at the headworks of the plant to exceed 104 degrees F.
 - (c) Wastes having a pH lower than 6.0 or higher than 9.0, or having any corrosive property capable of causing damage or hazards to structures, equipment or personnel of the wastewater system.
 - (d) Wastes containing any noxious or malodorous gas or substance that either singly or by interaction with sewage or other wastes is likely in the opinion of the Company to create a public nuisance or hazard to life or prevent entry to sewers for their maintenance and repair.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section R- Wastewater Control Regulations (cont'd)

- (e) Wastes containing ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, hair, chemical or paint residues, greases, paunch, manure, dairy products, cotton, wool, plastic or other fibers, lime, slurry or any other solid or viscous material of such character or in such quantity as in the opinion of the Company may cause an obstruction to the flow in sewers or otherwise interfere with the proper operation of the sewer system.
- (f) Wastes containing insoluble, non-flocculent substances having a specific gravity in excess of 2.65.
- (g) Wastes containing soluble substances in such concentrations as to cause the specific gravity to be greater than 1.1.
- (h) Wastes containing any substances which may affect the effluent and may cause violation of the National Pollutant Discharge Elimination System Permit.
 - (i) Wastes containing other matter detrimental to the operation of a sewage treatment plant or Sanitary or Combined Sewers causing erosion, corrosion or deterioration in sewers, equipment and structures of a sanitary or sewage treatment plant.
 - (j) Wastes containing fats, wax, tar, grease or oil of petroleum origin, whether emulsified or not, in excess of one hundred mg/L, or petroleum oil, non biodegradable cutting oil or petroleum products of mineral oil origin in amounts that will cause interference or pass through at the wastewater treatment facilities.
 - (k) Wastes containing an average concentration of oils and greases, of the Hydrocarbon variety or any Freon extractables which are not biodegradable in excess of 10 mg/L.
 - (l) Wastes containing more than 10 mg/L of any of the following gases: hydrogen sulfide; sulfur dioxide; nitrous oxide; or any of the halogens.
 - (m) Wastes containing a toxic or poisonous substance, in a sufficient quantity to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals or create any hazard in the sewer system operation or exceed the limitation set forth in a National Categorical Pretreatment Standard. Toxic pollutants or substances shall include but not limited to Wastewater containing cyanide, chromium, cadmium, mercury, copper, nickel, or materials listed as hazardous materials.
 - (n) Any waste containing toxic substances in quantities sufficient to interfere with the biochemical/biological processes of the sewage treatment works or that will pass through the sewage treatment works and exceed the state and/or federal requirements in respect thereof.
 - (o) Any waste containing radioactive isotopes or other radioactive materials.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section R- Wastewater Control Regulations (cont'd)

- (p) Sludges resulting from the treatment of concentrated solutions that are not acceptable for discharge to the Sanitary or Combined Sewer.
- q) Waste introduced into the Sanitary or Combined Sewer with any pollutants which cause pass through or interference; whether or not the customer is subject any other national, state, or local pretreatment standards or requirements.
- r) Waste containing any color which may not be removed in the wastewater treatment process.

Effluent limitations promulgated as categorical standards, 40 C.F.R. Chapter 1, Subchapter N and 40 C.F.R. 403.6 shall apply in any instance where they are more stringent than those in this section.

The local limits in this section may be supplemented with more stringent limitations if the Company determines that the limitations in subsection (a) through (p) above may not be sufficient to protect the operation of the sewerage system or to enable the water pollution control plant to comply with water quality standards or effluent limitations specified in the Company's NPDES permit.

4. **Disposal of Wastes From Septic Tanks and Cesspools:** No person shall dispose of wastes from septic tanks, cesspools, or other such sources of sanitary sewage to the Company's Sanitary or Combined Sewer, except as designated by the Company.
5. **Penalties:** The Company reserves the right to terminate water and/or wastewater service for violation of any provision of these regulations, subject to PUC rules and regulations.
6. **Damages:** In the event of any damage to the Company's wastewater system caused by a Customer, or a Customer's representative, such damage shall be immediately reported to the Company and said Customer shall reimburse the Company for the costs of such repairs, testing, consulting and all other costs associated with the damage. Any user violating any of the provisions of these Rules and Regulations shall become liable to the Company for all expenses, losses, or damages occasioned by the Company by reason of such violation, whether incidental or consequential.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section S – Stormwater Connections to Sanitary or Combined Sewer System:

(a) No person shall install any new connection to discharge stormwater or groundwater drainage to a Sanitary or Combined Sewer, or undertake any modification that increases the flow of stormwater or groundwater being discharged via an existing connection to the Sanitary or Combined Sewer, without applying for and obtaining a Connection Permit from the Company. Consideration and issuance of any Connection Permit is subject to the following:

(1) No new or increased discharge of stormwater or groundwater to the Sanitary or Combined Sewer will be permitted if separate stormwater system facilities or receiving streams exist in reasonable proximity to the proposed connection to the Sanitary or Combined Sewer. The person seeking a Connection Permit must demonstrate to the satisfaction of the Company that the discharge stormwater or groundwater flows to anywhere but to the Sanitary or Combined Sewer is not (i) technically or economically feasible, or (ii) permissible under applicable environmental regulations.

(2) No new or increased discharge of stormwater or groundwater will be allowed unless there is adequate capacity in the Sanitary or Combined Sewer system, and such flows can be managed in compliance with all laws and requirements applicable to the Sanitary or Combined Sewer system. When known or potential hydraulic capacity overloads may exist or may be created as the result of the proposed new or modified connection to the Sanitary or Combined Sewer, the Company reserves the right to require a detailed hydraulic study of the affected portion of the Sanitary or Combined Sewer system. The work and costs associated with such study shall be paid for by the party seeking the Connection Permit.

(3) Any new or modified connection involving the discharge of stormwater or groundwater to the Sanitary or Combined Sewer shall comply with all applicable state regulations and municipal ordinances.

(4) In the case of new or modified connections from a property that is presently contributing stormwater or groundwater drainage to a Sanitary or Combined Sewer, the peak rate of discharge must be controlled. The peak rate of discharge to the Sanitary or Combined Sewer after development or improvement shall be no greater than 75% of the peak rate of discharge to the Sanitary or Combined Sewer prior to development or improvement under storm conditions up to a 100-year rainfall event. Stormwater peak discharge and runoff shall be determined through the use of: (A) the USDA NRCS Soil Cover Complex Method as set forth in Urban Hydrology for Small Watersheds, Technical Release No. 55 (USDA, 1986), with specific attention given to antecedent moisture conditions, flood routing, time of concentration, and peak discharge specifications included therein and in Hydrology National Handbook, Section 4 (USDA, 1985); (B) the USDA NRCS Technical Release No. 20; or (C) other procedures as approved by the Company. Refer to Pennsylvania Stormwater Best Management Practices Manual (363-0300-002) dated December 30, 2006.

(5) Except where specifically approved by the Company, all new sanitary sewer laterals and mains shall be separate from stormwater laterals and mains.

(b) If a connection to the Sanitary or Combined Sewer is permitted as provided in 5(a), (1) any facilities using the connection to the Sanitary or Combined Sewer shall utilize inlet structures equipped with devices to prevent solids and floatable debris from entering the Sanitary or Combined Sewer of a design approved by the Company; and (2) the connection shall be made to an existing or new manhole or other Company approved structure that complies with design standards prescribed by the Company.

(c) No downspout gutter shall be connected to the Sanitary or Combined Sewer.

Exhibit F – Pennsylvania American Water Company’s Rules and Regulations

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section R- Wastewater Control Regulations

1. **Applicability:** These provisions shall apply throughout the Company's service territory. For those systems where an Industrial Pretreatment Program (IPP) is required by the United States Environmental Protection Agency (EPA), Pennsylvania Department of Environmental Protection (DEP) or by the Company, all applicable customers shall comply with such IPP regulations. For a Commercial or Industrial Customer that is also subject to the provisions of an IPP of this tariff, to the extent a conflict exists between the provisions of this Section and the provisions of the applicable IPP, the terms of the IPP shall control.
2. **General Prohibitions:**
 - (a) No storm water from pavements, area ways, runoff basins, roof runoff water, foundation drains, subsurface drains, water from springs, cooling water, basement sump pumps, unpolluted industrial or commercial process water or other sources shall be admitted to the Company Sanitary Sewer.
 - (b) The discharge of garbage to the Sanitary or Combined Sewer is expressly prohibited. Properly shredded biodegradable garbage may be discharged into the Sanitary or Combined Sewer with no particle greater than one-half inch in dimension.
3. **Prohibited Discharges:** The Company reserves the right to refuse connection to its Sanitary or Combined Sewer and/or to compel the discontinuance of the use of any system, or to require pre-treatment of Wastes by any Customer, in order to prevent the discharge of any Wastes to the Sanitary or Combined Sewer system which may be deemed harmful to the Sanitary or Combined Sewer system, or to have an adverse effect on the sewage treatment processes. Except from the written consent of the Company, there shall be excluded from the sewage system but not limited to, any wastes having suspended solids and Wastes having any or all of the following characteristics:
 - (a) Wastes containing any gasoline, naphtha, fuel, oil or other liquids, solids or gases which by reason of their nature or quality may cause fire or explosion or be in any other way injurious to persons, the structures of the wastewater system or its operation.
 - (b) Wastes having a temperature in excess of 120 degrees F. or less than 32 degrees F that enters the Sanitary or Combined Sewer or Wastes entering the plant that increase the temperature of the Wastewater at the headworks of the plant to exceed 104 degrees F.
 - (c) Wastes having a pH lower than 6.0 or higher than 9.0, or having any corrosive property capable of causing damage or hazards to structures, equipment or personnel of the wastewater system.
 - (d) Wastes containing any noxious or malodorous gas or substance that either singly or by interaction with sewage or other wastes is likely in the opinion of the Company to create a public nuisance or hazard to life or prevent entry to sewers for their maintenance and repair.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section R- Wastewater Control Regulations (cont'd)

- (e) Wastes containing ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, hair, chemical or paint residues, greases, paunch, manure, dairy products, cotton, wool, plastic or other fibers, lime, slurry or any other solid or viscous material of such character or in such quantity as in the opinion of the Company may cause an obstruction to the flow in sewers or otherwise interfere with the proper operation of the sewer system.
- (f) Wastes containing insoluble, non-flocculent substances having a specific gravity in excess of 2.65.
- (g) Wastes containing soluble substances in such concentrations as to cause the specific gravity to be greater than 1.1.
- (h) Wastes containing any substances which may affect the effluent and may cause violation of the National Pollutant Discharge Elimination System Permit.
 - (i) Wastes containing other matter detrimental to the operation of a sewage treatment plant or Sanitary or Combined Sewers causing erosion, corrosion or deterioration in sewers, equipment and structures of a sanitary or sewage treatment plant.
 - (j) Wastes containing fats, wax, tar, grease or oil of petroleum origin, whether emulsified or not, in excess of one hundred mg/L, or petroleum oil, non biodegradable cutting oil or petroleum products of mineral oil origin in amounts that will cause interference or pass through at the wastewater treatment facilities.
 - (k) Wastes containing an average concentration of oils and greases, of the Hydrocarbon variety or any Freon extractables which are not biodegradable in excess of 10 mg/L.
 - (l) Wastes containing more than 10 mg/L of any of the following gases: hydrogen sulfide; sulfur dioxide; nitrous oxide; or any of the halogens.
 - (m) Wastes containing a toxic or poisonous substance, in a sufficient quantity to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals or create any hazard in the sewer system operation or exceed the limitation set forth in a National Categorical Pretreatment Standard. Toxic pollutants or substances shall include but not limited to Wastewater containing cyanide, chromium, cadmium, mercury, copper, nickel, or materials listed as hazardous materials.
- (n) Any waste containing toxic substances in quantities sufficient to interfere with the biochemical/biological processes of the sewage treatment works or that will pass through the sewage treatment works and exceed the state and/or federal requirements in respect thereof.
- (o) Any waste containing radioactive isotopes or other radioactive materials.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section R- Wastewater Control Regulations (cont'd)

- (p) Sludges resulting from the treatment of concentrated solutions that are not acceptable for discharge to the Sanitary or Combined Sewer.
- q) Waste introduced into the Sanitary or Combined Sewer with any pollutants which cause pass through or interference; whether or not the customer is subject any other national, state, or local pretreatment standards or requirements.
- r) Waste containing any color which may not be removed in the wastewater treatment process.

Effluent limitations promulgated as categorical standards, 40 C.F.R. Chapter 1, Subchapter N and 40 C.F.R. 403.6 shall apply in any instance where they are more stringent than those in this section.

The local limits in this section may be supplemented with more stringent limitations if the Company determines that the limitations in subsection (a) through (p) above may not be sufficient to protect the operation of the sewerage system or to enable the water pollution control plant to comply with water quality standards or effluent limitations specified in the Company's NPDES permit.

- 4. **Disposal of Wastes From Septic Tanks and Cesspools:** No person shall dispose of wastes from septic tanks, cesspools, or other such sources of sanitary sewage to the Company's Sanitary or Combined Sewer, except as designated by the Company.
- 5. **Penalties:** The Company reserves the right to terminate water and/or wastewater service for violation of any provision of these regulations, subject to PUC rules and regulations.
- 6. **Damages:** In the event of any damage to the Company's wastewater system caused by a Customer, or a Customer's representative, such damage shall be immediately reported to the Company and said Customer shall reimburse the Company for the costs of such repairs, testing, consulting and all other costs associated with the damage. Any user violating any of the provisions of these Rules and Regulations shall become liable to the Company for all expenses, losses, or damages occasioned by the Company by reason of such violation, whether incidental or consequential.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section S – Stormwater Connections to Sanitary or Combined Sewer System:

(a) No person shall install any new connection to discharge stormwater or groundwater drainage to a Sanitary or Combined Sewer, or undertake any modification that increases the flow of stormwater or groundwater being discharged via an existing connection to the Sanitary or Combined Sewer, without applying for and obtaining a Connection Permit from the Company. Consideration and issuance of any Connection Permit is subject to the following:

(1) No new or increased discharge of stormwater or groundwater to the Sanitary or Combined Sewer will be permitted if separate stormwater system facilities or receiving streams exist in reasonable proximity to the proposed connection to the Sanitary or Combined Sewer. The person seeking a Connection Permit must demonstrate to the satisfaction of the Company that the discharge stormwater or groundwater flows to anywhere but to the Sanitary or Combined Sewer is not (i) technically or economically feasible, or (ii) permissible under applicable environmental regulations.

(2) No new or increased discharge of stormwater or groundwater will be allowed unless there is adequate capacity in the Sanitary or Combined Sewer system, and such flows can be managed in compliance with all laws and requirements applicable to the Sanitary or Combined Sewer system. When known or potential hydraulic capacity overloads may exist or may be created as the result of the proposed new or modified connection to the Sanitary or Combined Sewer, the Company reserves the right to require a detailed hydraulic study of the affected portion of the Sanitary or Combined Sewer system. The work and costs associated with such study shall be paid for by the party seeking the Connection Permit.

(3) Any new or modified connection involving the discharge of stormwater or groundwater to the Sanitary or Combined Sewer shall comply with all applicable state regulations and municipal ordinances.

(4) In the case of new or modified connections from a property that is presently contributing stormwater or groundwater drainage to a Sanitary or Combined Sewer, the peak rate of discharge must be controlled. The peak rate of discharge to the Sanitary or Combined Sewer after development or improvement shall be no greater than 75% of the peak rate of discharge to the Sanitary or Combined Sewer prior to development or improvement under storm conditions up to a 100-year rainfall event. Stormwater peak discharge and runoff shall be determined through the use of: (A) the USDA NRCS Soil Cover Complex Method as set forth in Urban Hydrology for Small Watersheds, Technical Release No. 55 (USDA, 1986), with specific attention given to antecedent moisture conditions, flood routing, time of concentration, and peak discharge specifications included therein and in Hydrology National Handbook, Section 4 (USDA, 1985); (B) the USDA NRCS Technical Release No. 20; or (C) other procedures as approved by the Company. Refer to Pennsylvania Stormwater Best Management Practices Manual (363-0300-002) dated December 30, 2006.

(5) Except where specifically approved by the Company, all new sanitary sewer laterals and mains shall be separate from stormwater laterals and mains.

(b) If a connection to the Sanitary or Combined Sewer is permitted as provided in 5(a), (1) any facilities using the connection to the Sanitary or Combined Sewer shall utilize inlet structures equipped with devices to prevent solids and floatable debris from entering the Sanitary or Combined Sewer of a design approved by the Company; and (2) the connection shall be made to an existing or new manhole or other Company approved structure that complies with design standards prescribed by the Company.

(c) No downspout gutter shall be connected to the Sanitary or Combined Sewer.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS

The following words and phrases, when used in this tariff, shall have the meanings assigned below unless the context clearly indicates otherwise:

1. **Applicant:** A person, association, partnership, corporation, municipality, authority, state or federal governmental agency or other entity who applies to become a customer of the Company in accordance with Section C, of this tariff.
2. **B.O.D. (Biochemical Oxygen Demand):** The quantity of oxygen, expressed in milligrams per liter, utilized in the biochemical oxidation of organic matter under the standard laboratory procedure for five (5) days at twenty (20) degrees Centigrade. The standard laboratory procedure shall be that found in the latest approved edition of "Standard Methods for the Examination of Water and Sewage" published by the American Public Health Association, the American Water Works Association, and/or the Water Pollution Control Federation.
3. **Capacity Reservation fee:** A fee charged by the Company for the allocation of capacity on a per EDU basis.
4. **Combined Sewer:** A sewage collection system which conveys both sanitary sewage and storm water flow.
5. **Commission:** The Pennsylvania Public Utility Commission.
6. **Company:** Pennsylvania-American Water Company and its duly authorized officers, agents and employees, each acting within the scope of his authority and employment.
7. **Company Service Line:** Company owned wastewater service line from the sewer main of the Company which connects to the Customer Service Line at the edge of the right-of-way or actual property line.
8. **Customer:** A person or entity who is an owner, occupant or who contracts with the Company for or who takes or receives wastewater collection, treatment and/or disposal service.
9. **Customer Service Line:** Customer owned wastewater service line extending from the end of the Company Service Line or connection to and within the customer's premise.
10. **Domestic Wastewater:** The liquid waste or liquid borne waste: (1) resulting from the non-commercial preparation, cooking and handling of food; (2) consisting of human excrement; or (3) consisting of wastewater, non-commercial laundering water, domestic housekeeping wastewater, and similar types of wastes from sanitary uses, whether generated in residences or sanitary facilities in commercial or industrial facilities, but does not include any storm water or ground water introduced from facilities such as roof leaders, sump pumps, floor drains or industrial wastewater.
11. **Dwelling Unit:** A structure or dwelling intended to be occupied as a whole by one family.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS (cont'd)

12. **Equivalent Dwelling Units (EDU):** The EDU is a measure based upon the estimated average daily wastewater flow for the type of business, as calculated by the PaDEP Regulation at 25 Pa Code: 73.17 divided by the typical estimated average daily wastewater flow from a current single-family unit.

13. **Garbage:** The solid wastes from domestic cooking and dispensing of food, and from the handling and storage of produce.

14. **Garbage Properly Shredded:** The term "Properly Shredded Garbage", as used herein, shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half inch in dimension.

15. **Grinder pump:** Any mechanical or powered device, owned by the Customer, used to grind, macerate or fluidize garbage so that it can be discharged into the Sanitary Sewer.

16. **Industrial/Commercial Wastes:** Any liquid, gaseous or water borne wastes from industrial processes or commercial establishments, as distinct from domestic wastewater.

17. **Industrial/Commercial Waste Permit:** A wastewater permit issued as required by the Company to an Industrial/Commercial user which discharges Industrial/Commercial Waste.

18. **Industrial/Commercial Waste Pretreatment Program:** A program established by the Company that requires industrial and commercial dischargers to monitor, test, treat and control as necessary pollutants in their wastewater prior to discharge into the Sanitary or Combined Sewer.

19. **Line extension (for line extension purposes):** An addition to the Company's main line which is necessary to serve the premises of a Customer. Refer to Section H.

20. **Main:** The Company's pipe, excluding service connections, located in a public highway, street, alley or private right-of-way which pipe is used in transporting wastewater.

21. **Meter:** Any device supplied by the Company or other for the purpose of measuring water consumption or wastewater discharge.

22. **Nonresidential Service:** Wastewater service supplied to a commercial or industrial building, including a hotel or motel, or to a master-metered trailer park or multi-tenant apartment building, or to any customer who purchases wastewater service from the Company for the purpose of resale.

23. **Pretreatment:** The application of physical, chemical and/or biological processes to reduce the amount pollutants in, or alter the nature of the polluting properties of, an industrial/commercial process wastewater prior to discharging such wastewater into the Sanitary or Combined Sewer.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS (cont'd)

24. **Public Utility:** Persons or corporations owning or operating equipment or facilities in this Commonwealth for water, electric or wastewater collection, treatment, or disposal for the public for compensation.
25. **Residential Applicant:** A natural person at least 18 years of age not currently receiving service who applies for residential service provided by the Company or any adult occupant whose name appears on the mortgage, deed or lease of the property for which the residential utility service is requested. A Residential Applicant does not include a person who, within 30 days after service termination or discontinuance of service, seeks to have another service reconnected at the same location or transferred to another location within the Company's service territory.
26. **Residential Customer:** A natural person at least 18 years of age in whose name a residential service account is listed and who is primarily responsible for payment of bills rendered for the service or any adult occupant whose name appears on the mortgage, deed or lease of the property for which the residential utility service is requested. A Residential Customer includes a person who, within 30 days after service termination or discontinuance of service, seeks to have service reconnected at the same location or transferred to another location within the Company's service territory.
27. **Residential Service:** Wastewater service supplied to an individual single-family residential dwelling unit.
28. **Regulatory Agency:** Agencies, including but not limited to the Commission, the Pennsylvania Department of Environmental Protection (DEP), U.S. Environmental Protection Agency (EPA), which have authority over the operations of and/or discharges into and/or from the Company's treatment facilities
29. **Sanitary Sewer:** A sewer which primarily carries sanitary wastewater, together with such storm, surface and ground water as may be present.
30. **Storm Sewer:** A sewer which carries surface, ground water, or storm water from the buildings, ground, streets, or other areas.
31. **Storm Water Flow:** Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.
32. **Suspended Solids:** Solids that either float on the surface of, or are in suspension in water, wastewater, or other liquids, and which are largely removable by filtration.
33. **Tariff:** All of the service rates, rules and regulations issued by the Company, together with any supplements or revisions thereto, officially approved by the Commission and contained in this document.
34. **Toxic Substances:** Any substances where gaseous, liquid or solid waste which, when discharged to a public sewer in sufficient quantities, will be detrimental to any biological wastewater treatment process, constitute a hazard to human beings or animals, inhibit aquatic life, or create a hazard to recreation in receiving waters of the effluent from a wastewater treatment plant, or as defined pursuant to PL 92500 (Federal Water Pollution Control Act Amendments of 1972) or its amendments.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section A – DEFINITIONS (cont'd)

35. Unauthorized Use of Service: Unreasonable interference or diversion of service, including meter tampering (any act which affects the proper registration of service through a meter), by-passing unmetered service that flows through a device connected between a main or service line and customer-owned facilities, unauthorized service restoration, unauthorized stormwater/groundwater connection to Sanitary or Combined Sewer, or the otherwise taking or receiving of wastewater service without the knowledge or approval of the Company.

36. Wastes: Any liquid, gaseous, or solid substances or combination thereof which are discarded, leached, or spilled substances or combination thereof including sanitary wastewater but excluding storm-water.

37. Wastewater: The liquid and water-carried wastes from dwellings, commercial facilities, industrial facilities and institutions, together with any groundwater, surface water, and storm water that may be present, whether treated or untreated, in the Company's sewer system.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section D - Construction and Maintenance of Facilities

1. **Customer Service Line:** The Customer service line shall be furnished, installed, maintained and/or replaced, when necessary, by and at the sole expense of the Customer. The Company reserves the right to determine the size, type, quality, depth, and connection location of the customer service lines. Prior to connection to the Company service line, the Customer, at their sole cost, shall have the Customer service line air pressure tested and checked for alignment by a Company approved qualified person under the supervision of a Company representative.

2. **Separate Trench:** The customer wastewater service line shall not be laid in the same trench with drain or water pipe, the facilities of any other public utility or of any municipality or municipal authority that provides a public utility service.

3. **Customer's Responsibilities:** All service lines, connections and fixtures furnished by the customer shall be maintained by the Customer in good working order. All valves, meters and appliances furnished by the Company and on property owned or leased by the Customer shall be protected properly by the customer. All leaks in the Customer service line or any pipe or fixtures in or upon the customer's premises must be repaired immediately by the Customer as determined solely by the Company. The failure of a Customer to properly install and maintain a service line, including replacement, shall constitute grounds for the Company to initiate action to terminate service to the customer and seek recovery for any damage to the Company's facilities caused by an improperly functioning service line. For Customers who also receive water service from the Company, where an undetected, non-surfacing, underground leak is found in a Customer's Water Service Pipe, the Company shall credit the Customer with a one-time bill adjustment for wastewater service equal to forty percent (40%) of that portion of one month's consumption that exceeds the average monthly usage, based on the prior twelve month period, upon proper verification that the Water Service Pipe leak has been repaired. The Company shall require documentation to establish, to the Company's satisfaction, the existence of such repaired leak at the Customer's premises. Such bill adjustment will be provided only to the extent the Customer has not received a bill adjustment for an undetected, non-surfacing, underground leak at the same premises in the past five (5) years.

4. **Customer Grinder Pump:** In areas of the collection system where the Company has installed a pressure sewage collection system or where required as determined by the Company, the Customer, in conjunction with the construction of their service line, shall install, own, operate, and maintain and replace a grinder pump and holding tank at the Customer's expense as specified by the Company prior to connection and shall maintain such facilities in good order and repair. The pump shall meet specifications as provided by the Company. The failure of a customer to properly install and maintain a grinder pump, including replacement, shall constitute grounds for the Company to initiate action to terminate service to the customer and seek recovery for any damage to the Company's facilities caused by an improperly functioning grinder pump.

5. **Right to Reject:** The Company may refuse to connect with any customer service line or furnish wastewater collection, treatment and/or disposal through a service already connected if such system or service is not properly installed or maintained.

PENNSYLVANIA-AMERICAN WATER COMPANY

RULES AND REGULATIONS

Section D – Construction and Maintenance of Facilities (cont'd)

6. Water Use Standards for Certain Plumbing Fixtures: This rule establishes maximum water use criteria for certain plumbing fixtures installed in all new construction or renovation. Such standards have been implemented to achieve maximum efficiency of water use which the Commission has determined is technologically feasible and economically justified.

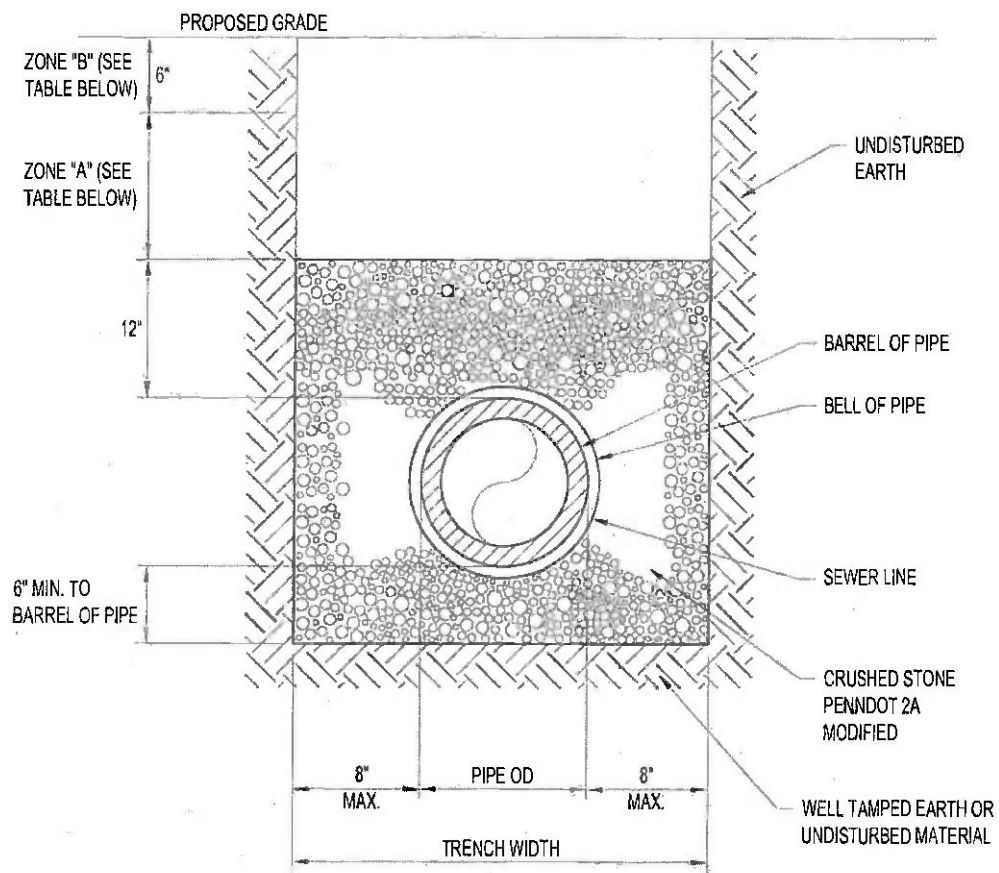
(a) Maximum permitted water usage levels shall be as follows:

<u>Plumbing Fixture</u>	<u>Maximum Water Use</u>
water closets	1.6 gallons/flush
urinals	1.5 gallons/flush

(b) The Company may exempt particular customers, or classes of customers, when it is determined that the water use standards for plumbing fixtures listed above are unreasonable, cannot be accommodated by existing technology or are otherwise inappropriate.

7. Individual Service Lines: Except as otherwise expressly authorized by the Company, each individual customer shall be served only through a separate service line connected directly to the Company Service Line, and that Customer Service Line shall not cross over the property of or serve any other customer or premise. The maximum service line length shall be two hundred and fifty (250) feet from the point of connections with clean-outs every 50 feet. The Company shall have the right to waive this maximum length requirement at its sole discretion. No additional attachment may be made to any Customer Service Line for any purpose without the express written approval of the Company.

8. Connection to Company Mains: No connection shall be made to the Company's main, nor detachment from it, except under the direction and control of the Company. All such connections shall be property of the Company and shall be accessible to it and under its control. The Company will furnish, install and maintain all service lines from the main to the property line or right-of-way.



SCHEDULE OF BACKFILLING REQUIREMENTS FOR ZONES 'A' AND 'B'

DESCRIPTION OF AREA	ZONE 'A'	ZONE 'B'
AREAS OUTSIDE ROADWAYS	ON-SITE BACKFILL COMPACTED IN 6" LAYERS TO BOTTOM OF TOPSOIL. REPLACE TOPSOIL TO APPROXIMATE DEPTH OF EXISTING AND CROWN TO SUCH HEIGHT AS REQUIRED BY THE ENGINEER.	
AREAS WITHIN RAW LIMITS OF STATE HIGHWAYS	CONFORMING TO THE REQUIREMENTS OF PaDOT	
SHOULDERS OF PROPOSED AND EXISTING STREETS OTHER THAN STATE HIGHWAYS	MEETING THE REQUIREMENTS OF THE LOCAL MUNICIPALITY HAVING JURISDICTION	
STONE DRIVEWAYS AND PARKING AREAS	ON-SITE BACKFILL COMPACTED ON 6 INCH LAYERS	STONE SURFACE BACKFILL
UNIMPROVED STREETS	AGGREGATE BACKFILL COMPACTED IN 6 INCH LAYERS	

ENTECH

Entech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.8667
 fr: 610.373.7537
 www.entsolutions.com

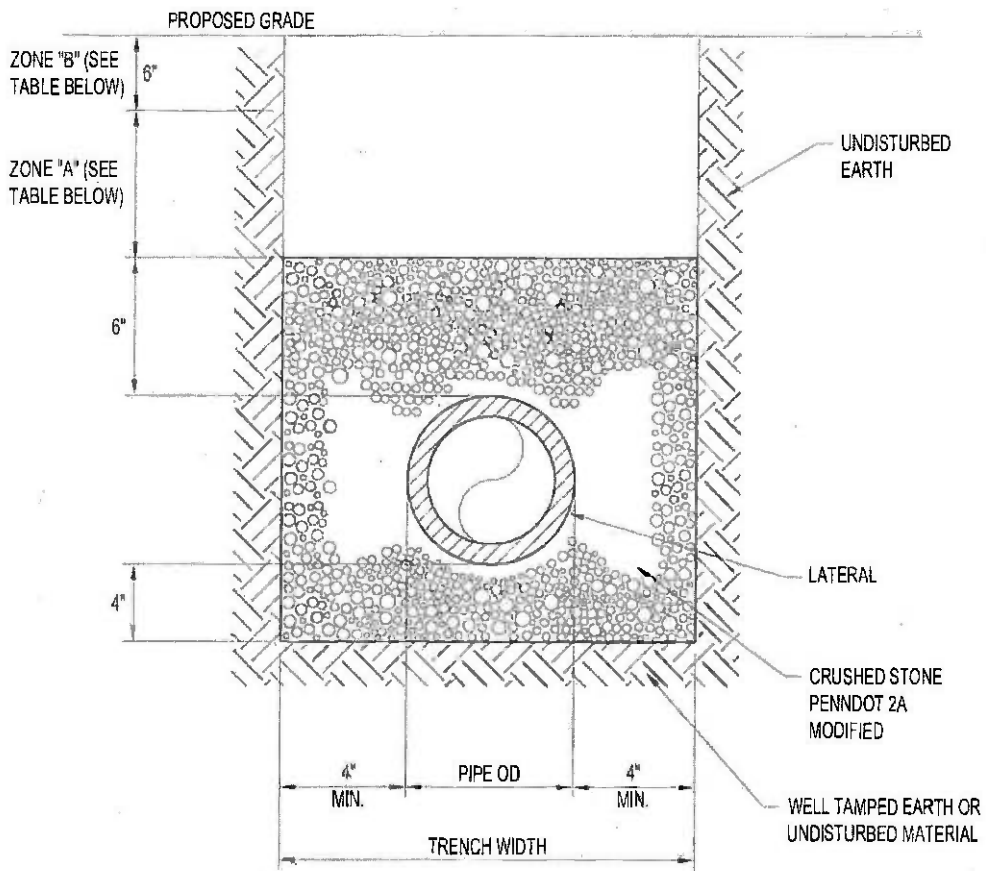


PA AMERICAN WATER COMPANY

SEWER LINE BEDDING AND BACKFILL DETAIL

DATE:
10/2/06
 PREPARED BY:
JUG
 CHECKED BY:
PKK
 APPROVED BY:
SMC
 SCALE:
AS NOTED
 PROJECT NO.
5213.00
 DRAWING NO.

S-1



SCHEDULE OF BACKFILLING REQUIREMENTS FOR ZONES 'A' AND 'B'

DESCRIPTION OF AREA	ZONE 'A'	ZONE 'B'
AREAS OUTSIDE ROADWAYS	ON-SITE BACKFILL COMPACTED IN 6" LAYERS TO BOTTOM OF TOPSOIL. REPLACE TOPSOIL TO APPROXIMATE DEPTH OF EXISTING AND CROWN TO SUCH HEIGHT AS REQUIRED BY THE ENGINEER.	
AREAS WITHIN R/W LIMITS OF STATE HIGHWAYS	CONFORMING TO THE REQUIREMENTS OF PaDOT	
SHOULDERS OF PROPOSED AND EXISTING STREETS OTHER THAN STATE HIGHWAYS	MEETING THE REQUIREMENTS OF THE LOCAL MUNICIPALITY HAVING JURISDICTION	
STONE DRIVEWAYS AND PARKING AREAS	ON-SITE BACKFILL COMPACTED ON 6 INCH LAYERS	STONE SURFACE BACKFILL
UNIMPROVED STREETS	AGGREGATE BACKFILL COMPACTED IN 6 INCH LAYERS	

ENTECH

Entech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.8687
 fx: 610.373.7537
 Mountain Top, PA
 ph: 570.868.0275
 www.entechnet.com

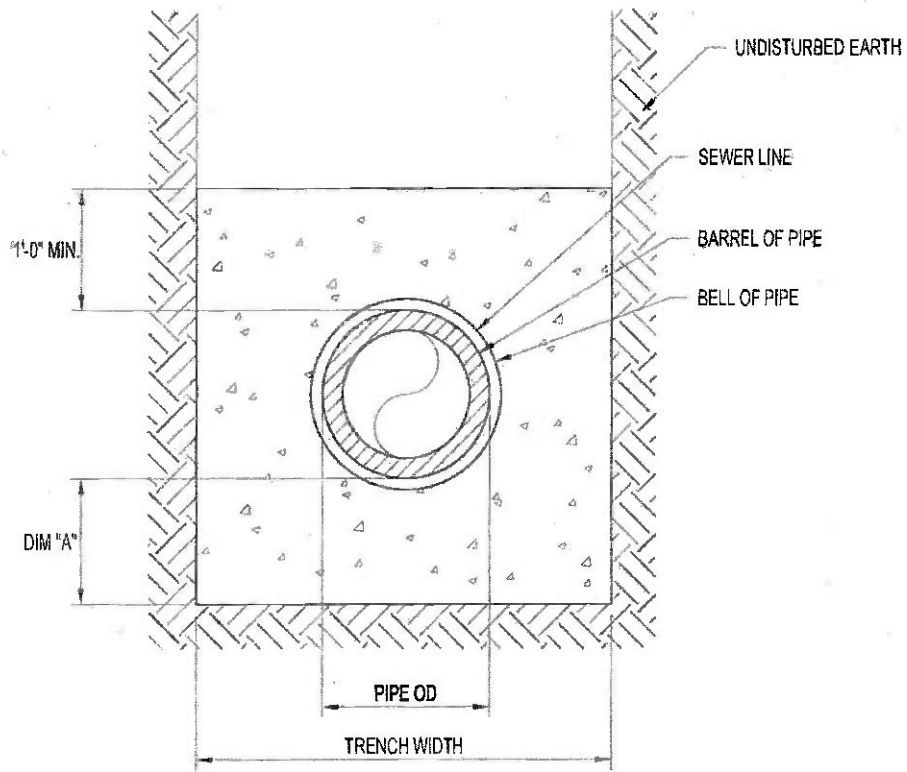


PA AMERICAN WATER COMPANY

LATERAL LINE BEDDING AND BACKFILL DETAIL

DATE:
10/2/00
 PREPARED BY:
JJC
 CHECKED BY:
PDK
 APPROVED BY:
SMC
 SCALE:
AS NOTED
 PROJECT NO.
5213.00
 DRAWING NO.

S-2



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

NOTE:
ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

ENTECH
Entech Engineering Inc
4 S. Fourth Street
Reading, PA 19602
PH: 610.373.6667
FX: 610.373.7837
www.entechnet.com

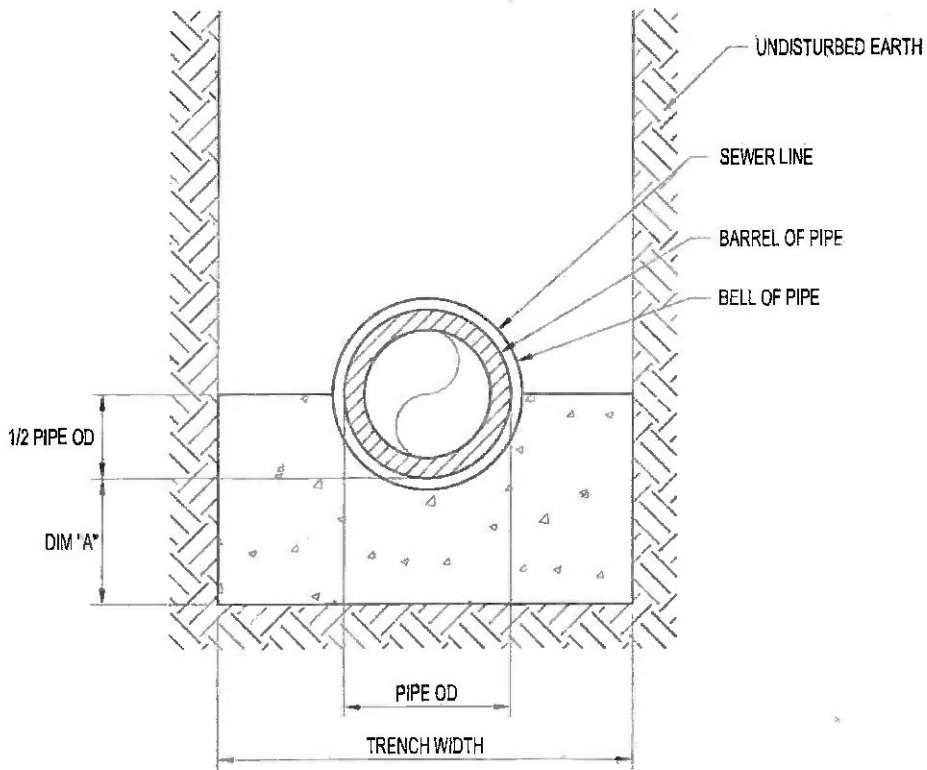


PA AMERICAN WATER COMPANY

CONCRETE ENCASUREMENT DETAIL

DATE:
10/2/06
PREPARED BY:
JJC
CHECKED BY:
PDK
APPROVED BY:
SMC
SCALE:
AS NOTED
PROJECT NO.
5213.00
DRAWING NO.

S-3



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

NOTE:
ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

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4 S. Fourth Street
Reading, PA 19602
ph: 610.373.6667
fx: 610.373.7537
www.entsolutions.com



PA AMERICAN WATER COMPANY

CONCRETE CRADLE DETAIL

DATE:
10/22/05

PREPARED BY:
JJG

CHECKED BY:
POK

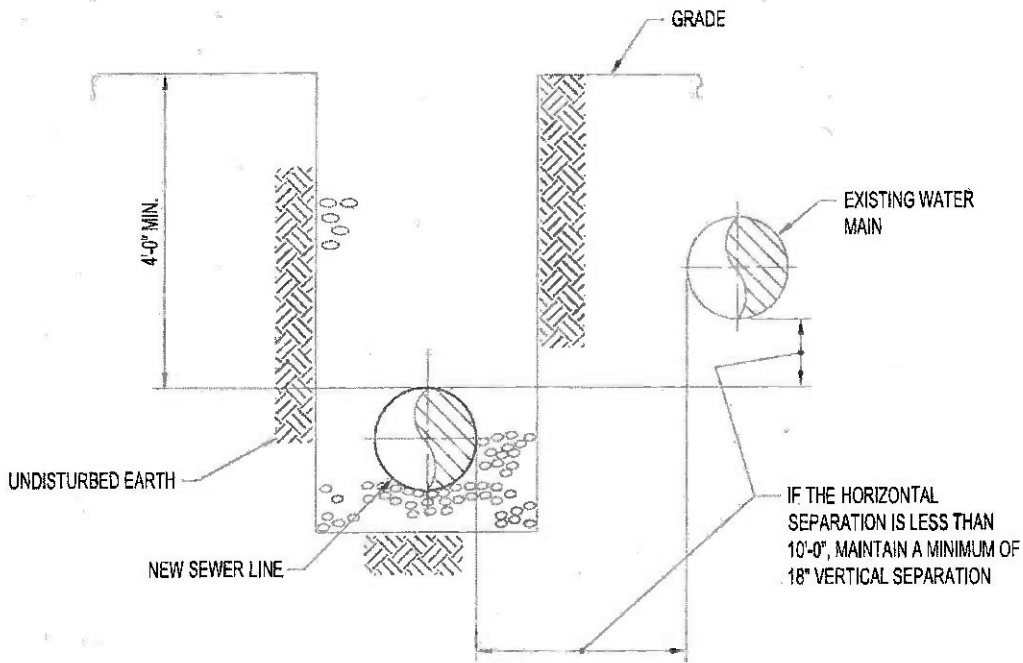
APPROVED BY:
SMC

SCALE:
AS NOTED

PROJECT NO.
8713.00

DRAWING NO.

S-4



ENTECH

Entech Engineering Inc.

Prohville, PA
4 S. Fourth Street
Reading, PA 19602
ph: 610.373.6555

Mechanic Twp, PA
ph: 610.373.6537
fx: 610.373.7537
www.entecheng.com



PA AMERICAN WATER COMPANY
NEW SEWER LINE PARALLEL TO EXISTING WATER MAIN

DATE:
10/2/05

PREPARED BY:
JJG

CHECKED BY:
PEK

APPROVED BY:
SMC

SCALE:
AS NOTED

PROJECT NO.
5213.00

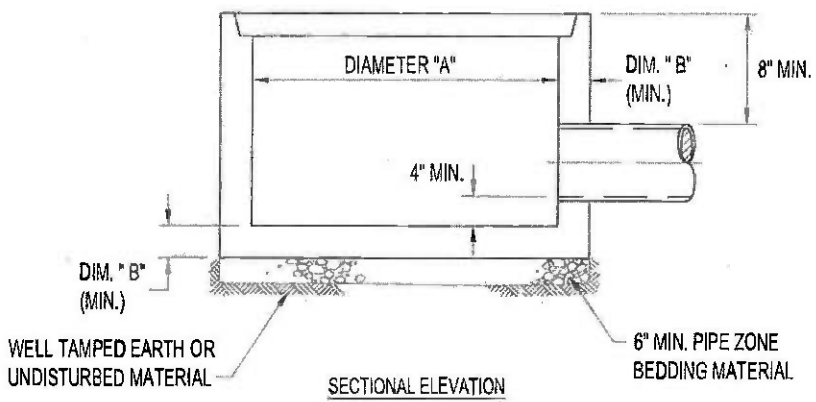
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S-5



**PRECAST REINFORCED CONCRETE
 MANHOLE BASE SCHEDULE OF
 DIMENSIONS**

DIA. "A"	DIM. "B"
4'-0"	5"
5'-0"	6"
6'-0"	7"
7'-0"	8"
8'-0"	9"
10'-0"	10"

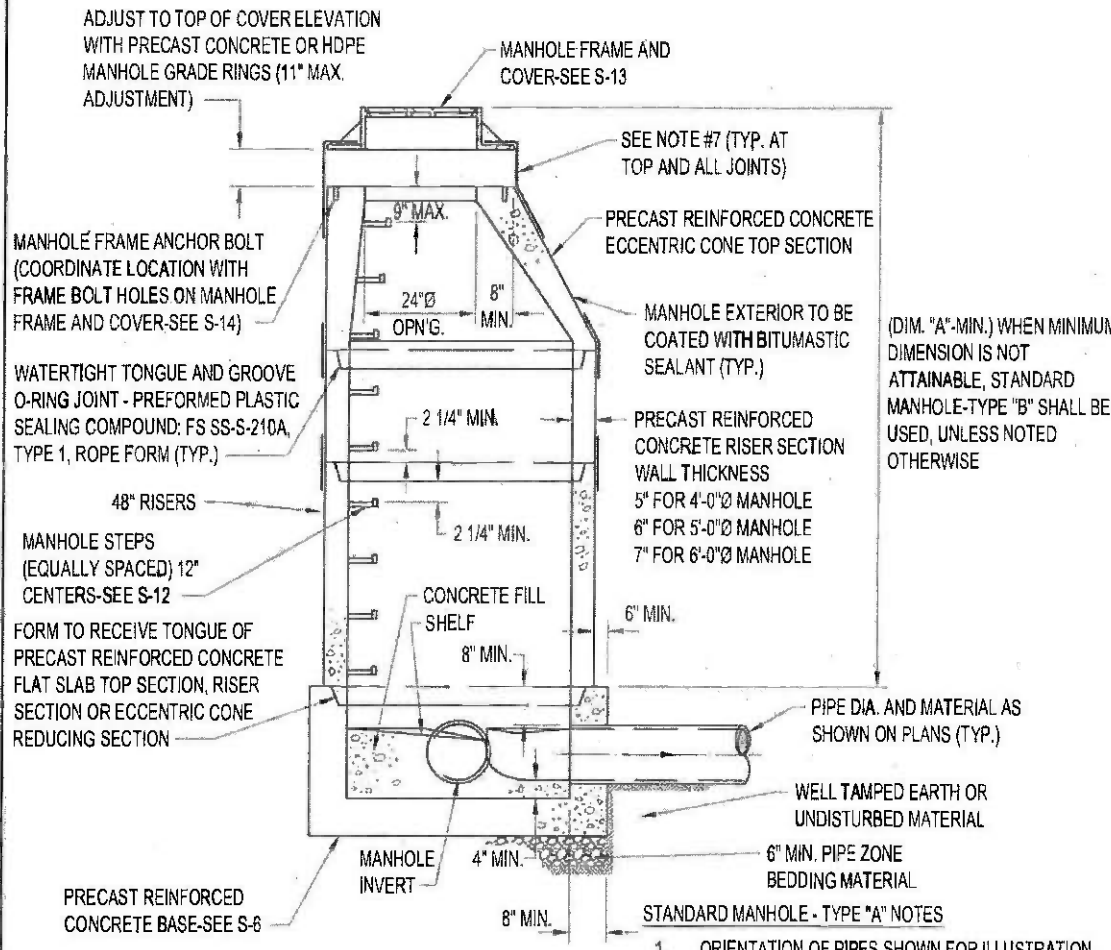


**PRECAST REINFORCED CONCRETE
 MANHOLE BASE NOTES**

1. ORIENTATION AND DIAMETER OF PIPE OPENINGS SHOWN FOR ILLUSTRATION PURPOSES ONLY. SEE PLANS FOR LOCATION AND DIAMETER.
2. PRECAST REINFORCED CONCRETE MANHOLE BASE TO CONFORM TO ASTM SPECIFICATION C-478.
3. REINFORCING STEEL TO CONFORM TO ASTM SPECIFICATION A-185.

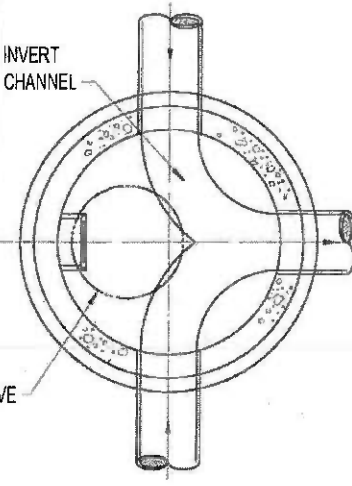
PA AMERICAN WATER COMPANY
PRECAST REINFORCED CONCRETE MANHOLE BASE DETAIL

DATE: 10/2/06
PREPARED BY: JUG
CHECKED BY: POK
APPROVED BY: SMC
SCALE: AS NOTED
PROJECT NO. 5213.00
DRAWING NO.



STANDARD MANHOLE-TYPE "A"
SCHEDULE OF DIMENSIONS

MANHOLE BASE DIAMETER	DIM. "A"
4'-0"	3'-9"
5'-0"	5'-9"
6'-0"	4'-5"
7'-0"	4'-5"
8'-0"	4'-5"
10'-0"	4'-7"



- SECTIONAL ELEVATION
- SECTIONAL PLAN THRU BASE
- STANDARD MANHOLE - TYPE "A" NOTES
1. ORIENTATION OF PIPES SHOWN FOR ILLUSTRATION PURPOSES ONLY. FOR ACTUAL LOCATIONS SEE PLANS.
 2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT THE RATE OF 1" PER FOOT MIN.
 3. THE DEPTH OF THE INVERT CHANNEL SHALL BE NOT LESS THAN 3/4 OF THE DIA. OF THE PIPE.
 4. 4'-0"Ø BASE SHOWN. FOR 5'-0"Ø BASE, PROVIDE A 5'-0" TO 4'-0" ECCENTRIC CONE REDUCING SECTION AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL.
 5. FOR MANHOLES HAVING A 6'-0"Ø BASE OR LARGER, PROVIDE A FLAT SLAB TOP WITH A 4'-0"Ø OPENING, ON THE BASE AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL, FOR INSTALLATION OF THE 4'-0"Ø PRECAST REINFORCED CONCRETE RISER SECTION OR ECCENTRIC CONE TOP SECTION.
 6. FINISH GRADE SHALL BE FLUSH WITH TOP OF COVER ON MANHOLE FRAME AND COVER, UNLESS NOTED OTHERWISE.
 7. HEAT SHRINKABLE MANHOLE ENCAPSULATING WRAP AROUND SLEEVE - SEE S-15.

ENITECH
 Enitech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.6667
 fax: 610.373.7537
 Mountain Top, PA
 ph: 570.868.0275
 www.enitech.com

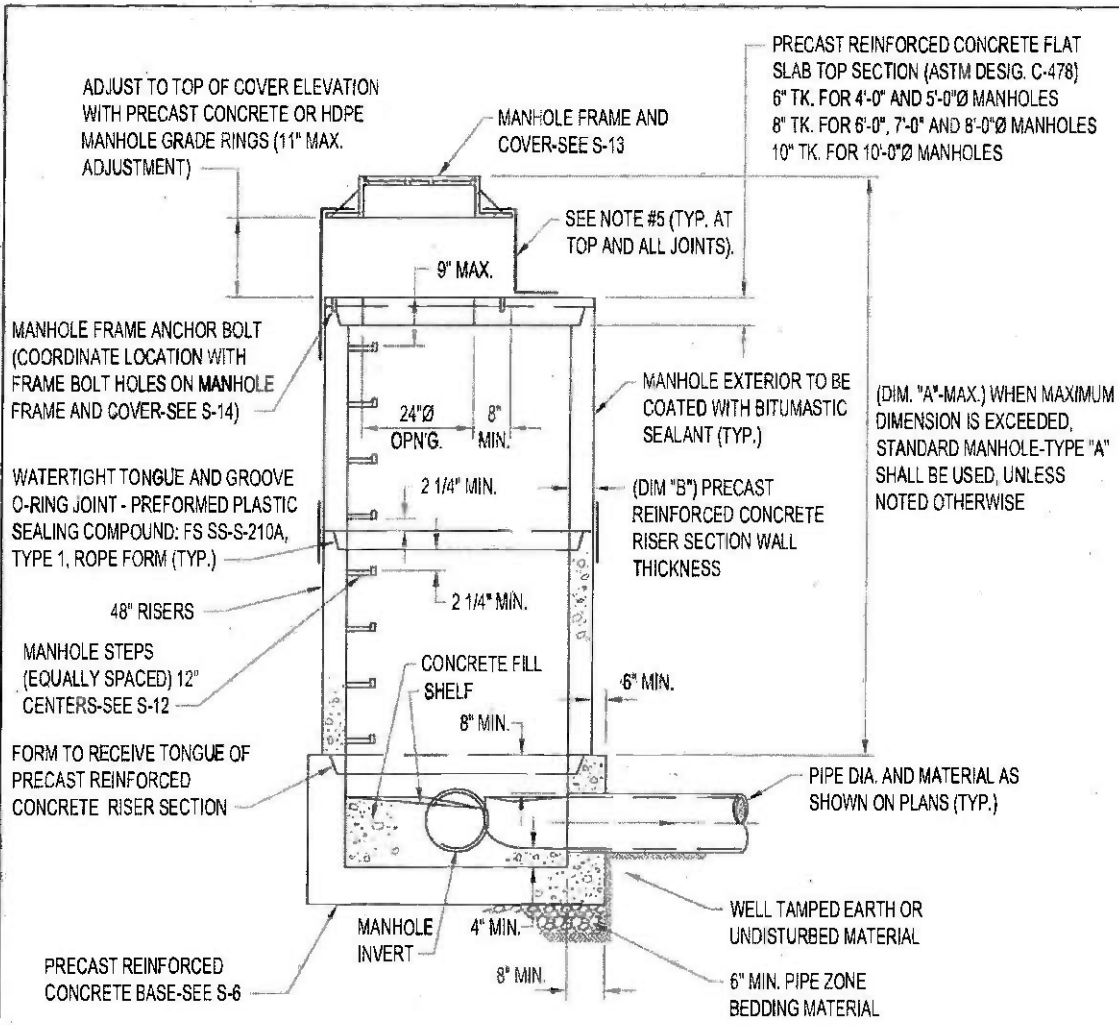


PA AMERICAN WATER COMPANY

STANDARD MANHOLE - TYPE "A"

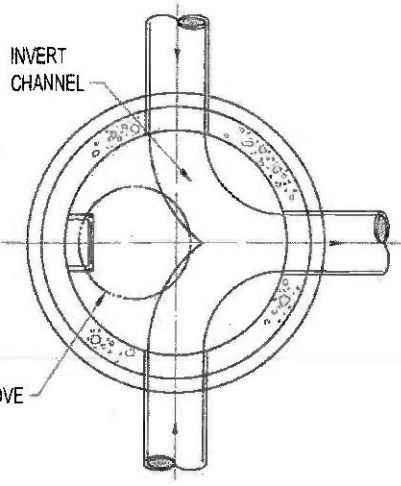
REVISED: 11/2008
 DATE: 10/2008
 PREPARED BY: JUG
 CHECKED BY: PDK
 APPROVED BY: SMC
 SCALE: AS NOTED
 PROJECT NO. 5213.00
 DRAWING NO.

S-7



STANDARD MANHOLE-TYPE "B" SCHEDULE OF DIMENSIONS

MANHOLE DIAMETER	DIM. "A"	DIM. "B"
4'-0"	3'-9"	5"
5'-0"	5'-9"	6"
6'-0"	4'-5"	7"
7'-0"	4'-5"	8"
8'-0"	4'-5"	9"
10'-0"	4'-7"	10"



- STANDARD MANHOLE - TYPE "B" NOTES**
1. ORIENTATION OF PIPES SHOWN FOR ILLUSTRATION PURPOSES ONLY. FOR ACTUAL LOCATIONS SEE PLANS.
 2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT THE RATE OF 1" PER FOOT MIN.
 3. THE DEPTH OF THE INVERT CHANNEL SHALL BE NOT LESS THAN 3/4 OF THE DIA. OF THE PIPE.
 4. FINISH GRADE SHALL BE FLUSH WITH TOP OF COVER ON MANHOLE FRAME AND COVER, UNLESS NOTED OTHERWISE.
 5. HEAT SHRINKABLE MANHOLE ENCAPSULATING WRAP AROUND SLEEVE - SEE S-15.

ENTECH
 Entech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.6667
 f: 610.373.7537
 www.entechnet.com

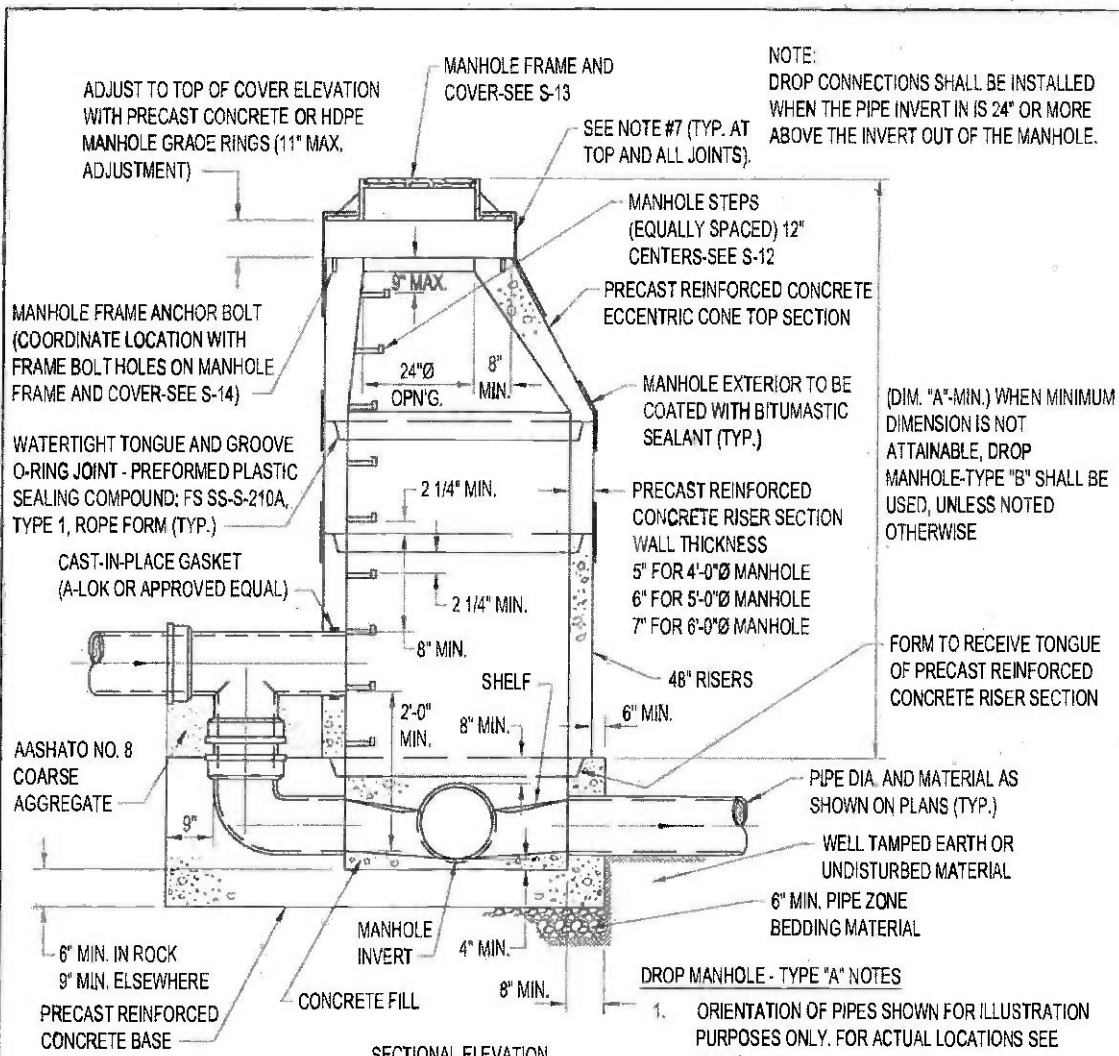


PA AMERICAN WATER COMPANY

STANDARD MANHOLE - TYPE "B"

REVISED:	11/03/06
DATE:	10/2/06
PREPARED BY:	ASJ
CHECKED BY:	PEK
APPROVED BY:	BMC
SCALE:	AS NOTED
PROJECT NO.:	SE13.00
DRAWING NO.:	

S-8

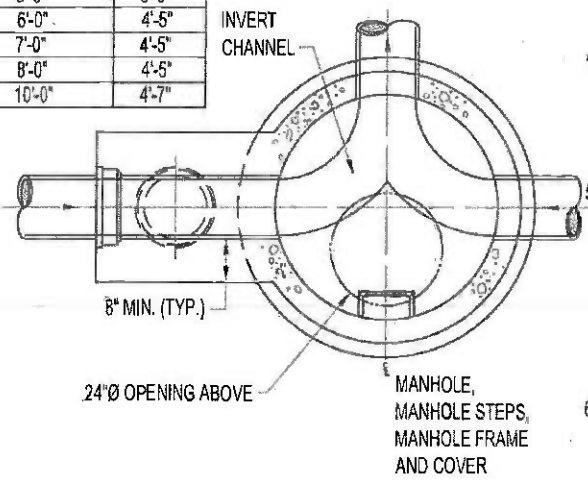


NOTE:
 DROP CONNECTIONS SHALL BE INSTALLED
 WHEN THE PIPE INVERT IS 24" OR MORE
 ABOVE THE INVERT OUT OF THE MANHOLE.

(DIM. "A"-MIN.) WHEN MINIMUM
 DIMENSION IS NOT
 ATTAINABLE, DROP
 MANHOLE-TYPE "B" SHALL BE
 USED, UNLESS NOTED
 OTHERWISE

**DROP MANHOLE-TYPE "A"
 SCHEDULE OF DIMENSIONS**

MANHOLE BASE DIAMETER	DIM. "A"
4'-0"	3'-9"
5'-0"	5'-9"
6'-0"	4'-5"
7'-0"	4'-5"
8'-0"	4'-5"
10'-0"	4'-7"



- DROP MANHOLE - TYPE "A" NOTES**
1. ORIENTATION OF PIPES SHOWN FOR ILLUSTRATION PURPOSES ONLY. FOR ACTUAL LOCATIONS SEE PLANS.
 2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT THE RATE OF 1" PER FOOT MIN.
 3. THE DEPTH OF THE INVERT CHANNEL SHALL BE NOT LESS THAN 3/4 OF THE DIA. OF THE PIPE.
 4. 4'-0" Ø BASE SHOWN. FOR 5'-0" Ø BASE, PROVIDE A 5'-0" TO 4'-0" ECCENTRIC CONE REDUCING SECTION AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL.
 5. FOR MANHOLES HAVING A 6'-0" Ø BASE OR LARGER, PROVIDE A FLAT SLAB TOP WITH A 4'-0" Ø OPENING, ON THE BASE AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL, FOR INSTALLATION OF THE 4'-0" Ø PRECAST REINFORCED CONCRETE RISER SECTION OR ECCENTRIC CONE TOP SECTION.
 6. FINISH GRADE SHALL BE FLUSH WITH TOP OF COVER ON MANHOLE FRAME AND COVER, UNLESS NOTED OTHERWISE.
 7. HEAT SHRINKABLE MANHOLE ENCAPSULATING WRAP AROUND SLEEVE -SEE S-15.

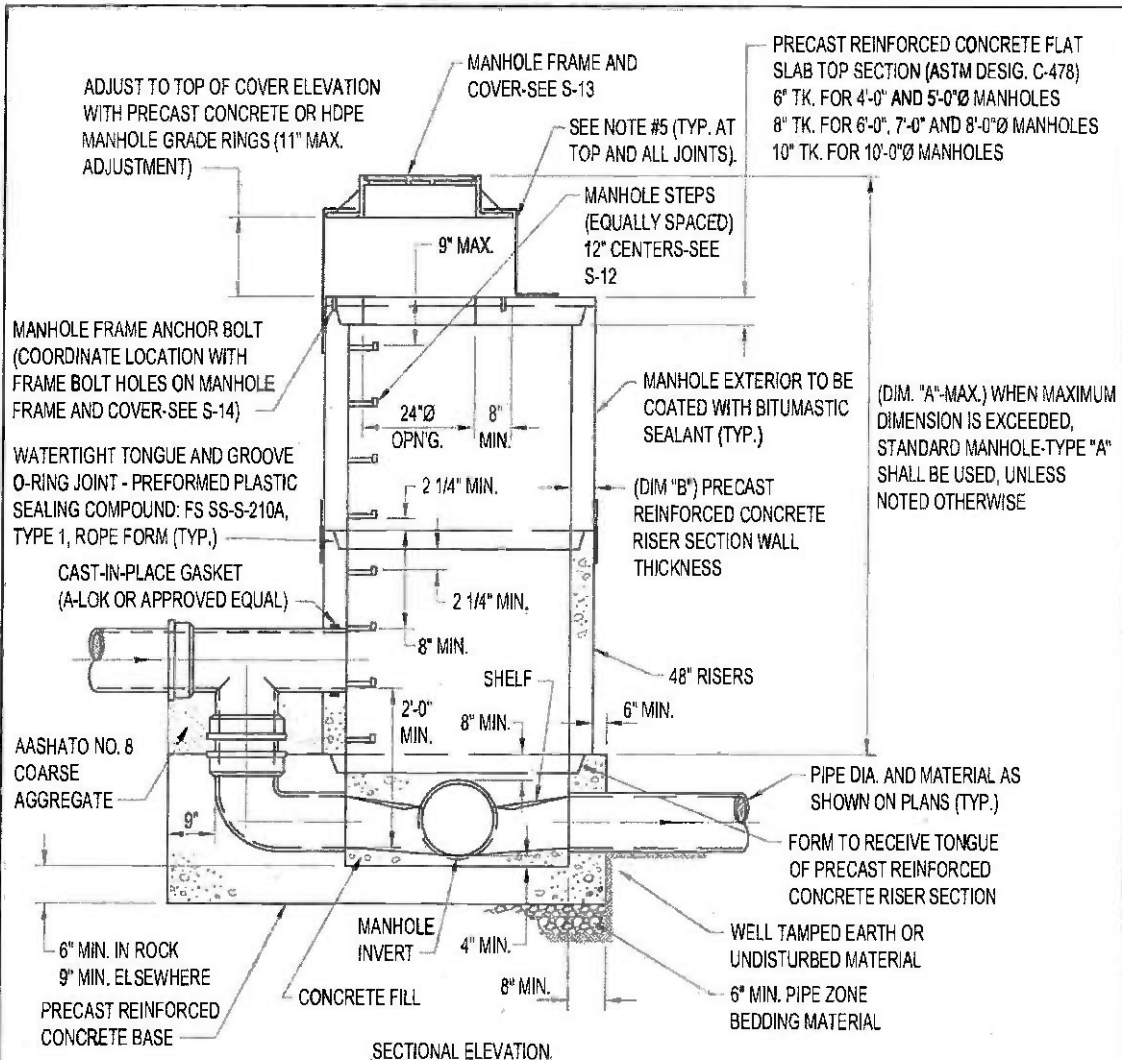
ENTECH
 Entech Engineering Inc.
 4 S Fourth Street
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 FR: 610.373.7637
 Pottsville, PA
 PH: 570.828.6666
 Mountain Top, PA
 PH: 570.865.0275
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PA AMERICAN WATER COMPANY

DROP MANHOLE - TYPE "A"

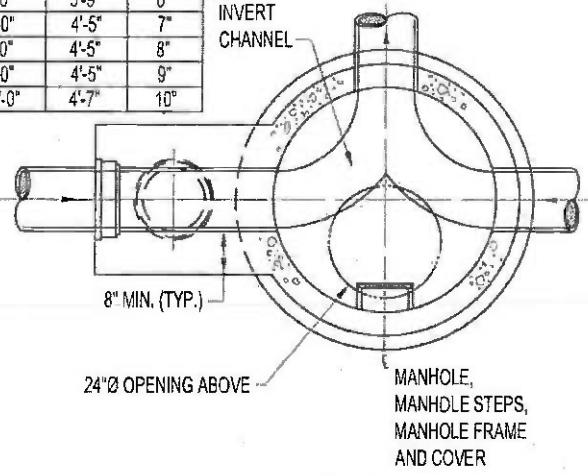
REVISED: 11/2006
 DATE: 10/2006
 PREPARED BY: JGG
 CHECKED BY: PDK
 APPROVED BY: SMC
 SCALE: AS NOTED
 PROJECT NO. 5213.00
 DRAWING NO.



SECTIONAL ELEVATION

DROP MANHOLE-TYPE "B" SCHEDULE OF DIMENSIONS

MANHOLE DIAMETER	DIM. "A"	DIM. "B"
4'-0"	3'-9"	5"
5'-0"	5'-9"	6"
6'-0"	4'-5"	7"
7'-0"	4'-5"	8"
8'-0"	4'-5"	9"
10'-0"	4'-7"	10"



SECTIONAL PLAN THRU BASE

NOTE:
DROP CONNECTIONS SHALL BE INSTALLED WHEN THE PIPE INVERT IS 24" OR MORE ABOVE THE INVERT OUT OF THE MANHOLE.

DROP MANHOLE - TYPE 'B' NOTES

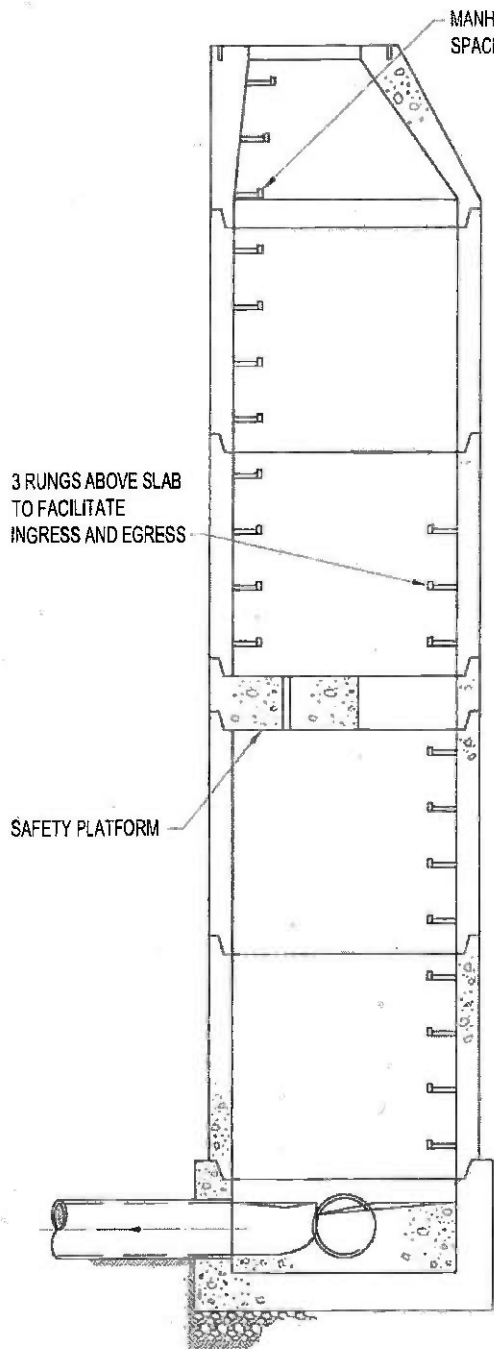
1. ORIENTATION OF PIPES SHOWN FOR ILLUSTRATION PURPOSES ONLY. FOR ACTUAL LOCATIONS SEE PLANS.
2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT THE RATE OF 1" PER FOOT MIN.
3. THE DEPTH OF THE INVERT CHANNEL SHALL BE NOT LESS THAN 3/4 OF THE DIA. OF THE PIPE.
4. FINISH GRADE SHALL BE FLUSH WITH TOP OF COVER ON MANHOLE FRAME AND COVER, UNLESS NOTED OTHERWISE.
5. HEAT SHRINKABLE MANHOLE ENCAPSULATING WRAP AROUND SLEEVE - SEE S-15.

PA AMERICAN WATER COMPANY
DROP MANHOLE - TYPE "B"

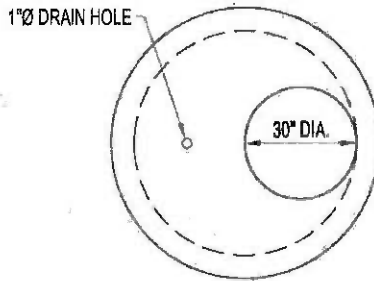
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 Reading, PA 19602
 ph: 610.373.6667
 Mountain Top, PA
 ph: 610.373.7537
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REVISED: 11/3/06
 DATE: 10/2/06
 PREPARED BY: JJG
 CHECKED BY: PDK
 APPROVED BY: SMC
 SCALE: AS NOTED
 PROJECT NO. S213.00
 DRAWING NO.

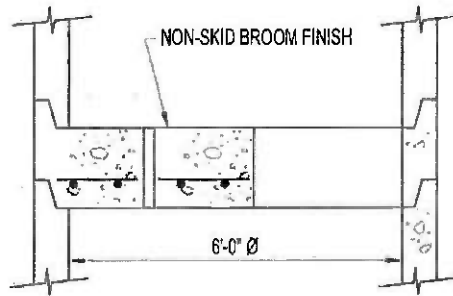
S-10



MANHOLE CROSS SECTION



PLAN VIEW - SLAB



CROSS SECTION - SLAB

MANHOLE SAFETY PLATFORM SPECIFICATIONS

1. CONCRETE IS DESIGNED TO OBTAIN A STRENGTH OF 4,000 PSI IN 28 DAYS.
2. REINFORCING STEEL HAS A MINIMUM YIELD STRENGTH OF 60,000 PSI.
3. SLAB IS DESIGNED FOR A CONCENTRATED LOAD (P) OF 8,000 LBS. ~

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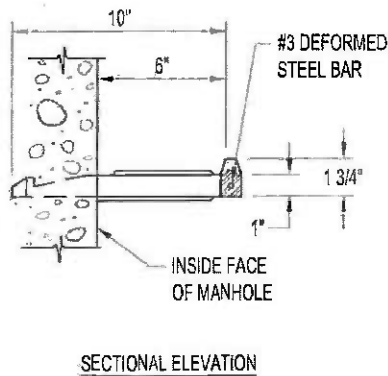
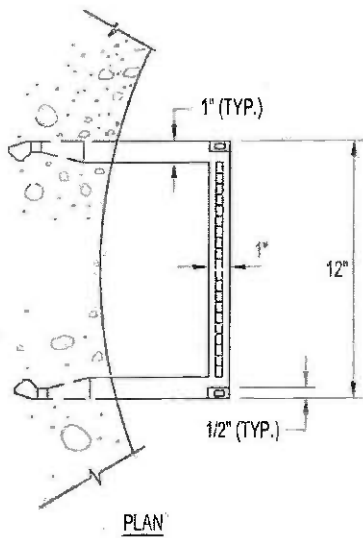


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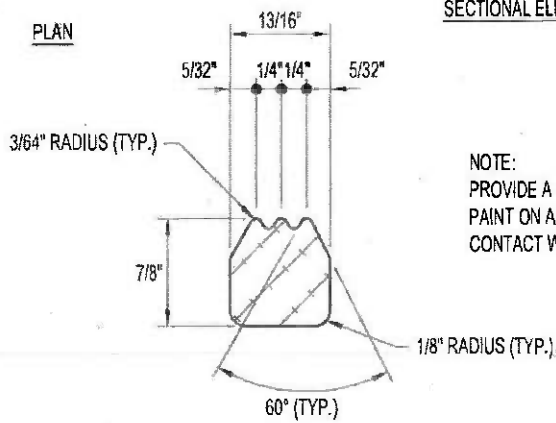
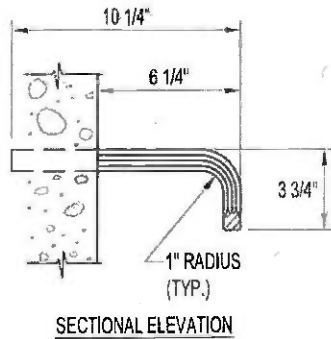
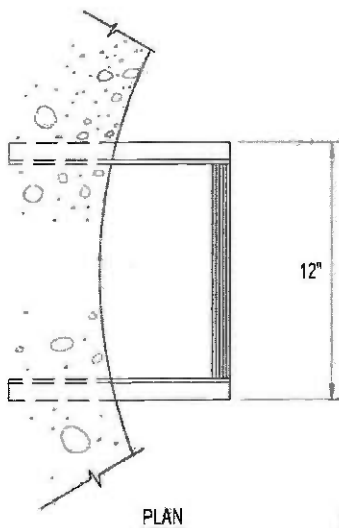
SAFETY PLATFORM FOR DEEP MANHOLES

DATE: 10/2/08
 PREPARED BY: JJS
 CHECKED BY: PDK
 APPROVED BY: SMC
 SCALE: AS NOTED
 PROJECT NO. S213.00
 DRAWING NO.

S-11



REINFORCED PLASTIC



NOTE:
 PROVIDE A HEAVY COAT OF BITUMINOUS
 PAINT ON ALUMINUM SURFACES IN
 CONTACT WITH CONCRETE.

TYPICAL SECTION THRU
 ALUMINUM MANHOLE STEP

6061-T6 ALUMINUM ALLOY

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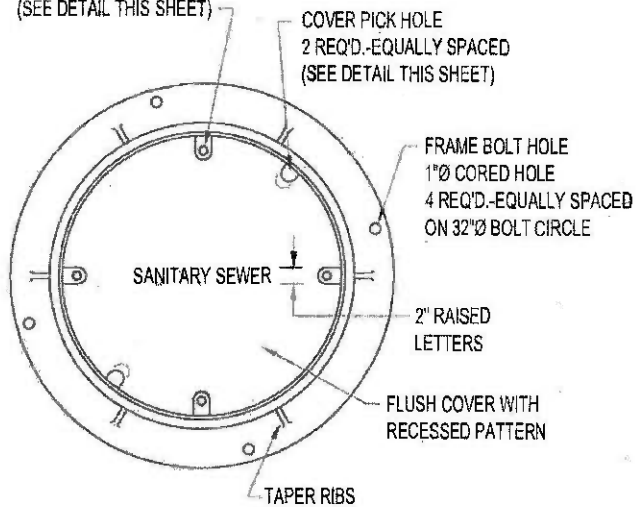
PA AMERICAN WATER COMPANY

MANHOLE STEPS

DATE:	10/2/06
PREPARED BY:	JJO
CHECKED BY:	PKK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.	S213.00
DRAWING NO.	

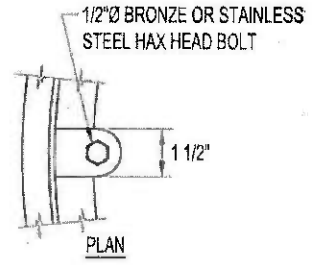
S-12

COVER BOLT HOLE-WATERTIGHT ONLY
4 REQ'D. EQUALLY SPACED
(SEE DETAIL THIS SHEET)

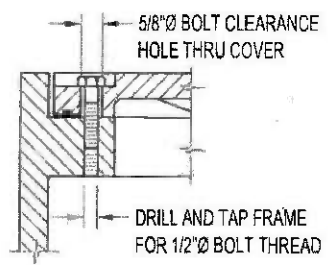


PLAN

NOTE:
ALL MANHOLE FRAMES AND COVERS SHALL BE
FOR HEAVY DUTY TRAFFIC, AASHTO HIGHWAY
LOADING CLASS HS-20.



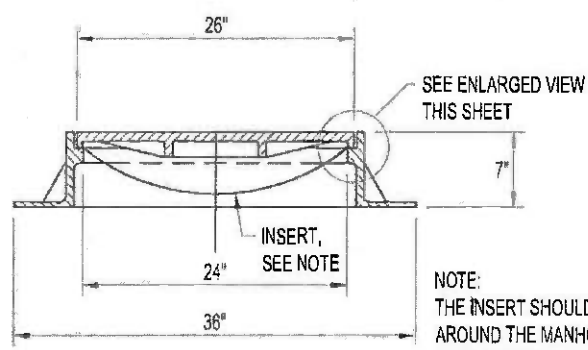
PLAN



SECTIONAL ELEVATION

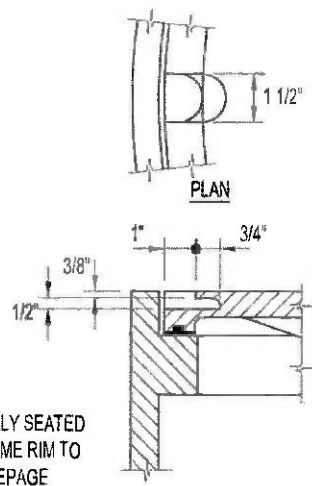
COVER BOLT HOLE

REQUIRED ONLY ON MANHOLES DESIGNATED
TO HAVE "WATERTIGHT" COVERS



SECTIONAL ELEVATION

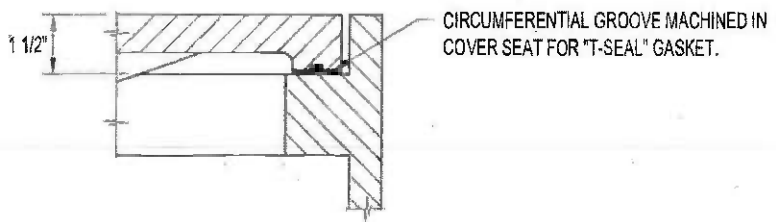
NOTE:
THE INSERT SHOULD BE FULLY SEATED
AROUND THE MANHOLE FRAME RIM TO
INSURE AGAINST WATER SEEPAGE
BETWEEN THE INSERT AND THE
MANHOLE FRAME RIM.



PLAN

SECTIONAL ELEVATION

COVER PICK HOLE



ENLARGED VIEW

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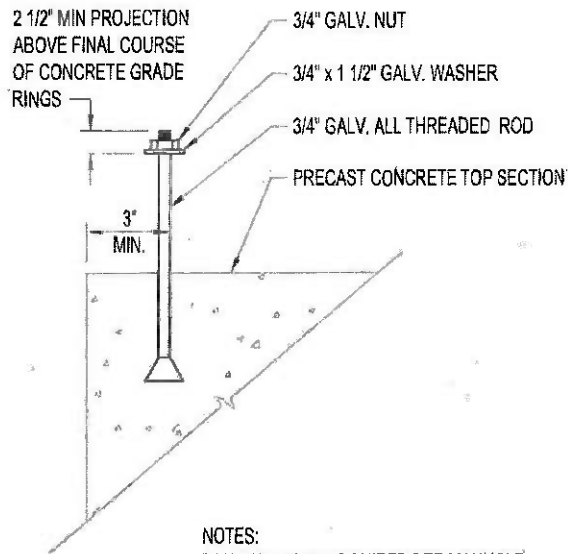


PA AMERICAN WATER COMPANY
STANDARD AND WATERTIGHT
CAST IRON MANHOLE FRAME AND COVER

DATE: 10/27/06
PREPARED BY: JMG
CHECKED BY: FDK
APPROVED BY: SMC
SCALE: AS NOTED
PROJECT NO. S213.00
DRAWING NO.

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fr: 610.373.7337
www.entschorez.com



NOTES:
FOUR (4) BOLTS REQUIRED PER MANHOLE.

PA AMERICAN WATER COMPANY

MANHOLE FRAME ANCHOR BOLT DETAIL

DATE:
10/2/08

PREPARED BY:
LJF

CHECKED BY:
PCV

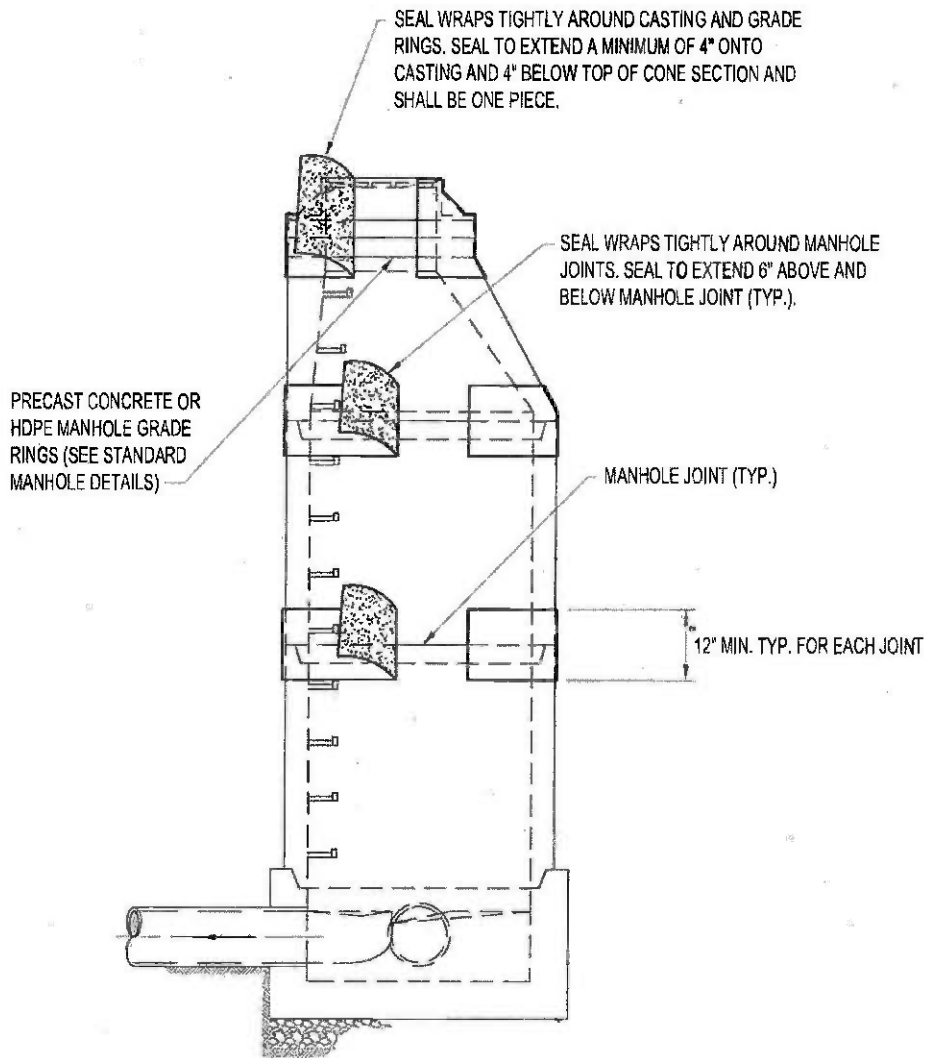
APPROVED BY:
SWS

SCALE:
AS NOTED

PROJECT NO.
5213.00

DRAWING NO.

S-14



MANHOLE ELEVATION

NOTES:

1. MANHOLE SEAL TO BE "WRAPIDSEAL" MANUFACTURED BY CANUSA-CPS OR APPROVED EQUAL.
2. MANHOLE JOINT SEAL INSTALLED AS DIRECTED BY THE AUTHORITY ENGINEER AND ON ALL JOINTS.

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 Mountain Top, PA
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 www.entecheing.com



PA AMERICAN WATER COMPANY

HEAT SHRINKABLE MANHOLE SEAL DETAIL

DATE:
11/3/06

PREPARED BY:
JUG

CHECKED BY:
POK

APPROVED BY:
SMC

SCALE:
AS NOTED

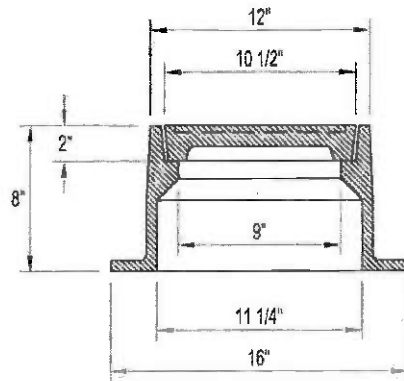
PROJECT NO.
5213.00

DRAWING NO.

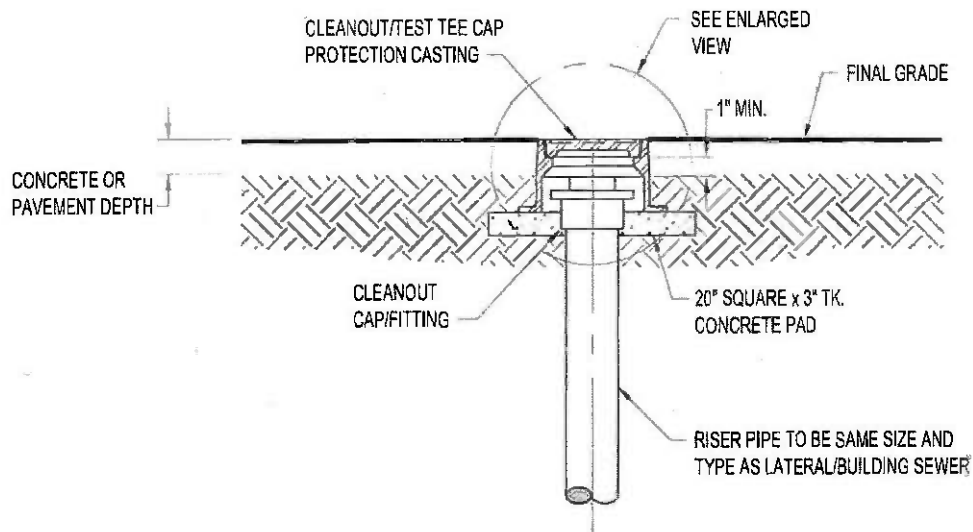
S-15

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ph: 610.373.7537
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ENLARGED VIEW



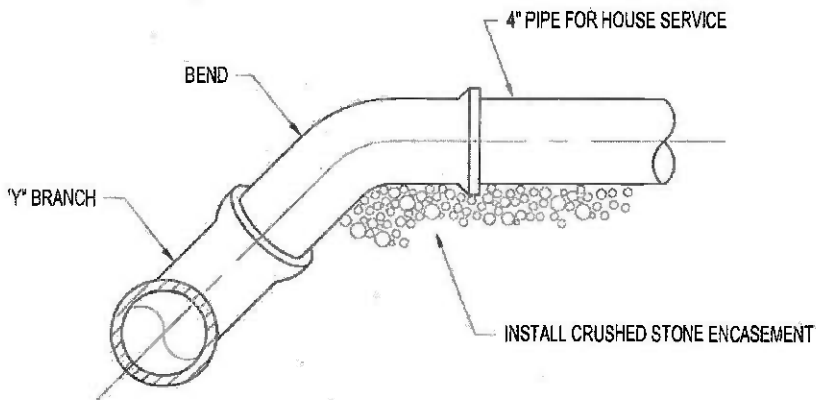
NOTE:
FOR AREAS EXPOSED TO VEHICULAR TRAFFIC, SNOWPLOWING AND IN SIDEWALKS

PA AMERICAN WATER COMPANY

CAP PROTECTION CASTING DETAIL

DATE: 10/2/06
PREPARED BY: JWG
CHECKED BY: PGK
APPROVED BY: SMC
SCALE: AS NOTED
PROJECT NO. S213.06
DRAWING NO.

S-16



NOTE:
THE SIZE OF THE HOUSE SERVICE BEND & "Y" BRANCH SHALL BE 4".

ENTECH

Entech Engineering Inc.
4 S. Fourth Street
Reading, PA 19602
ph: 610.373.6657
fx: 610.373.7537
www.entechinc.com

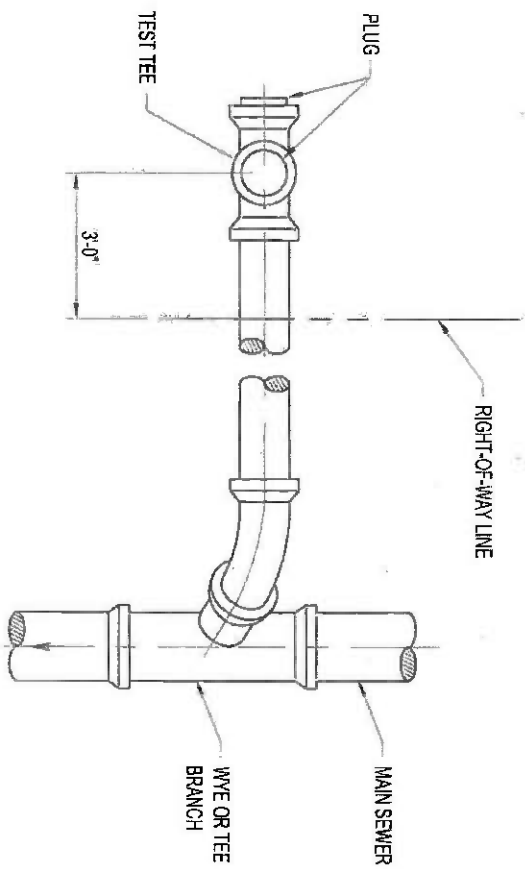


PA AMERICAN WATER COMPANY

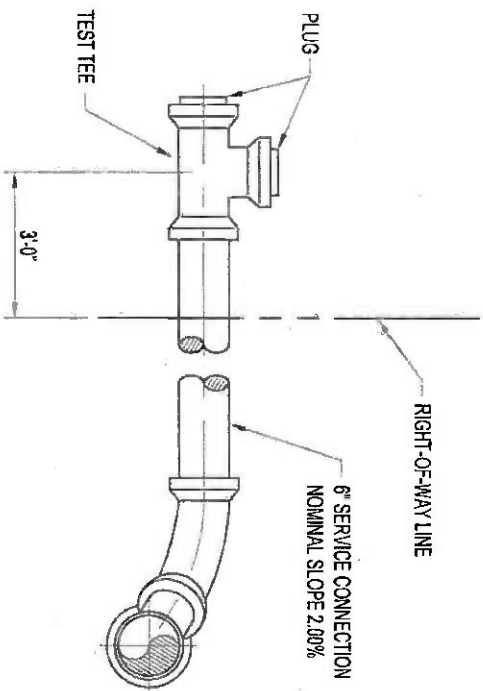
"Y" BRANCH FOR LATERALS

DATE:	10/2/08
PREPARED BY:	JJG
CHECKED BY:	PEK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.	S213.00
DRAWING NO.	

S-17



PLAN



ELEVATION

PA AMERICAN WATER COMPANY

SERVICE CONNECTION - SHALLOW SEWER



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Entech Engineering Inc.

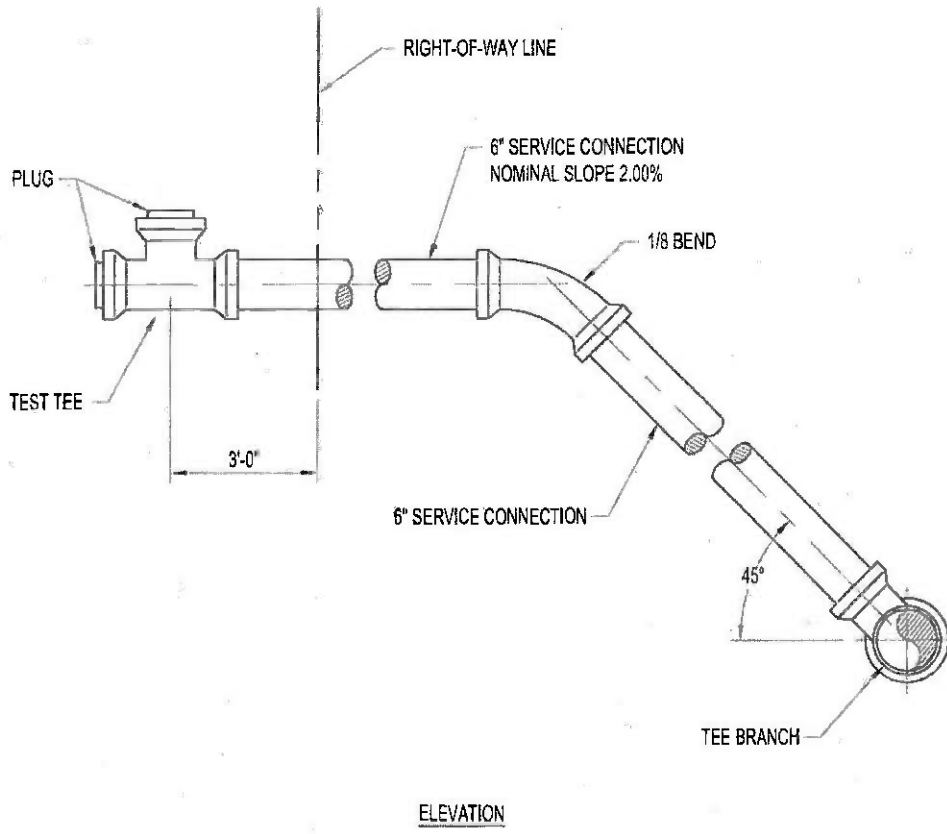
4 S. Fourth Street Pottsville, PA
Reading, PA 19602 ph: 570.628.5655

ph: 610.373.6687 Mounthin Top, PA
fx: 610.373.7537 ph: 570.868.0275

www.entecheng.com

DATE:	10/20/08
PREPARED BY:	JUG
CHECKED BY:	PKK
APPROVED BY:	SNC
SCALE:	AS NOTED
PROJECT NO.:	24310
DRAWING NO.:	

S-18



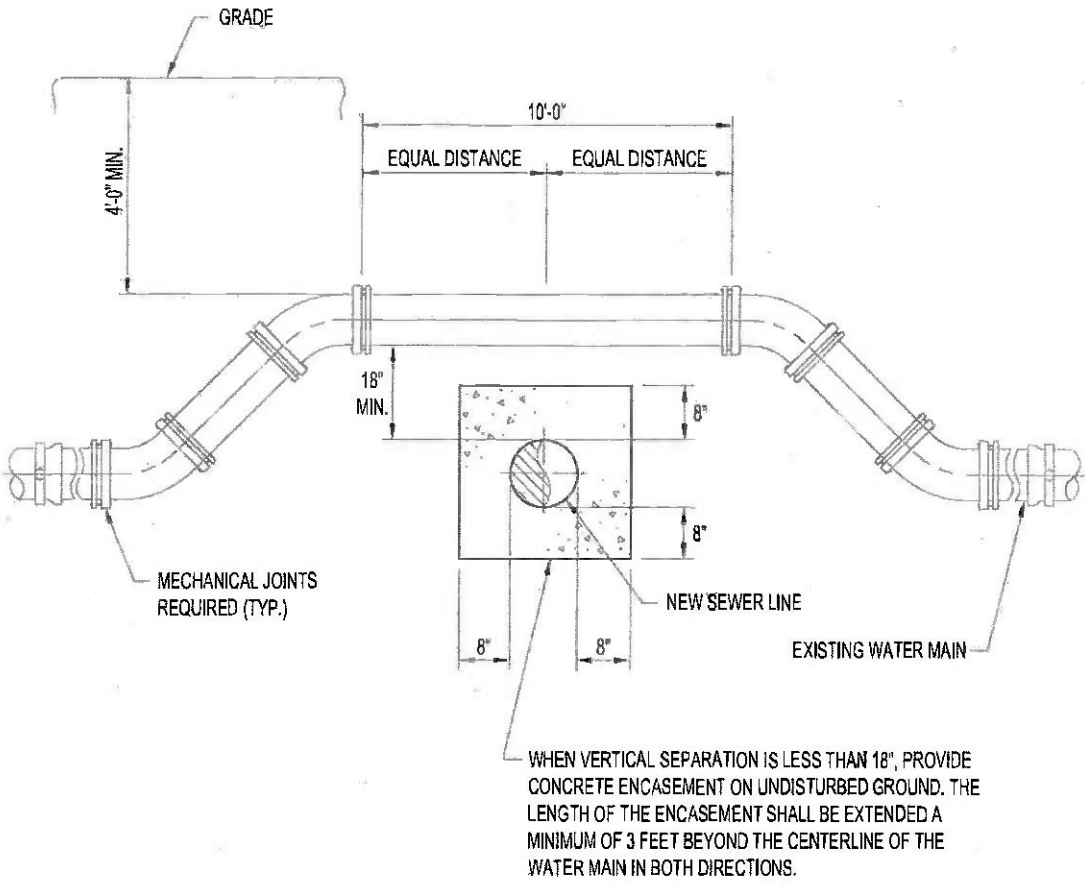
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 Entech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.8667
 fx: 610.373.7537
 www.entsheng.com



PA AMERICAN WATER COMPANY
SERVICE CONNECTION - DEEP SEWER

DATE:	10/2/08
PREPARED BY:	JG
CHECKED BY:	PKK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.:	5213.00
DRAWING NO.:	

S-19



NOTE:
 ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

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 Entech Engineering Inc.
 4 S. Fourth Street
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 Phone: 610.373.6857
 Fax: 610.373.7537
 www.entechneg.com

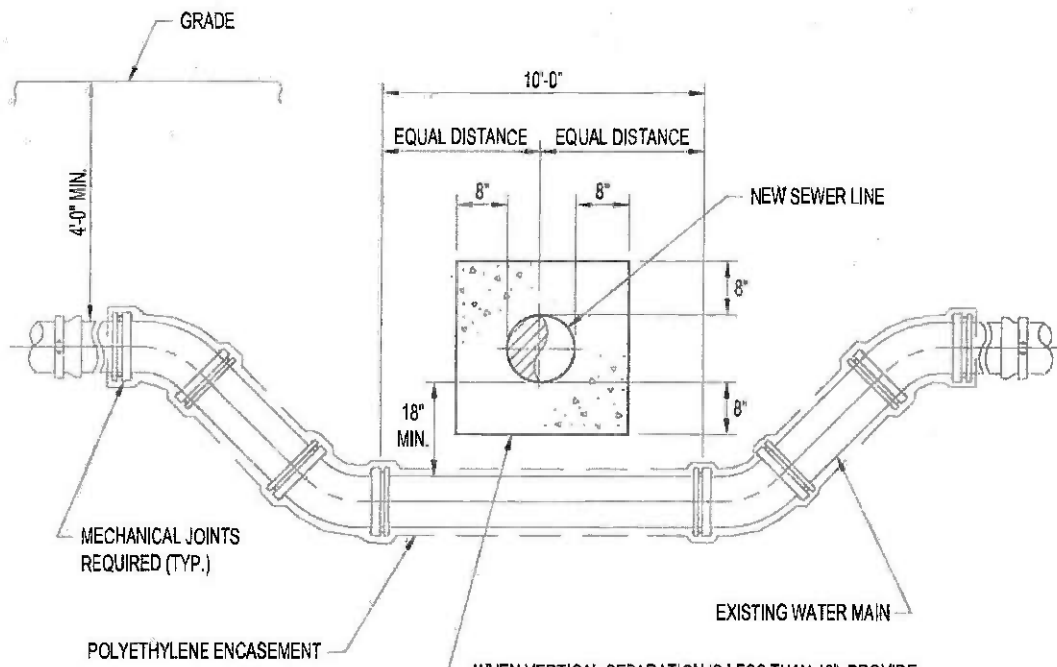
Pottsville, PA
 Phone: 610.624.5655
 Mechanicsville, PA
 Phone: 610.869.0275



PA AMERICAN WATER COMPANY
NEW SEWER LINE CROSSING UNDER EXISTING WATER MAIN

DATE:	10/2/06
PREPARED BY:	JJG
CHECKED BY:	PDK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.:	5F13.00
DRAWING NO.:	

S-20



WHEN VERTICAL SEPARATION IS LESS THAN 18", PROVIDE CONCRETE ENCASEMENT ON UNDISTURBED GROUND. THE LENGTH OF THE ENCASEMENT SHALL BE EXTENDED A MINIMUM OF 3 FEET BEYOND THE CENTERLINE OF THE WATER MAIN IN BOTH DIRECTIONS.

NOTE:
ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

ENTECH

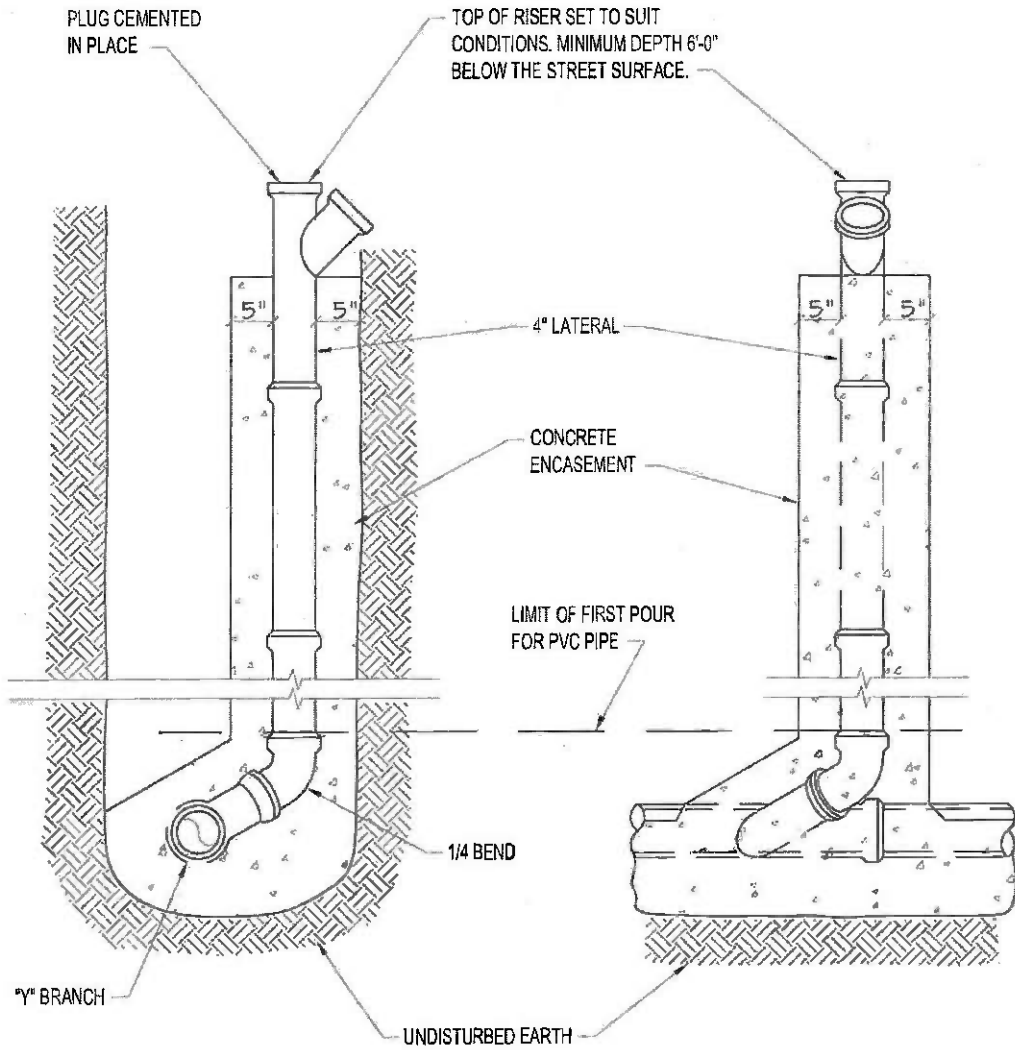
Entech Engineering Inc
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 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.6667
 fx: 610.373.7337
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PA AMERICAN WATER COMPANY
NEW SEWER LINE CROSSING OVER EXISTING WATER MAIN

DATE:	10/2/06
PREPARED BY:	JUG
CHECKED BY:	FDK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.	5213.00
DRAWING NO.	

S-21



NOTE:
 ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

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 4 S. Fourth Street
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 fr: 610.373.7637
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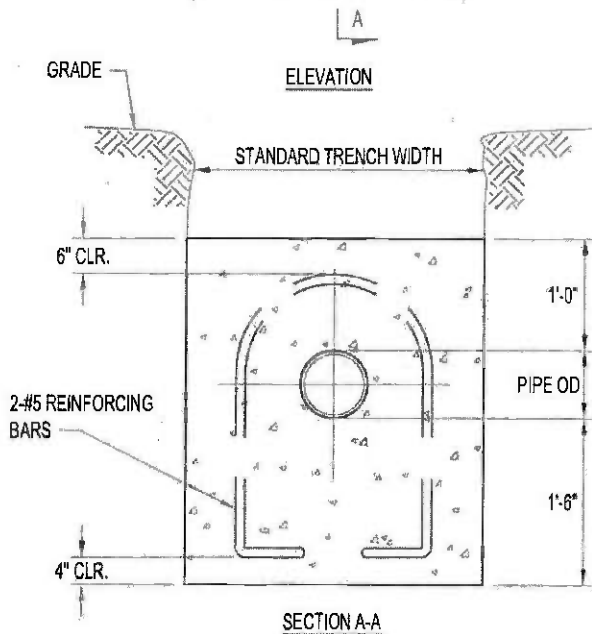
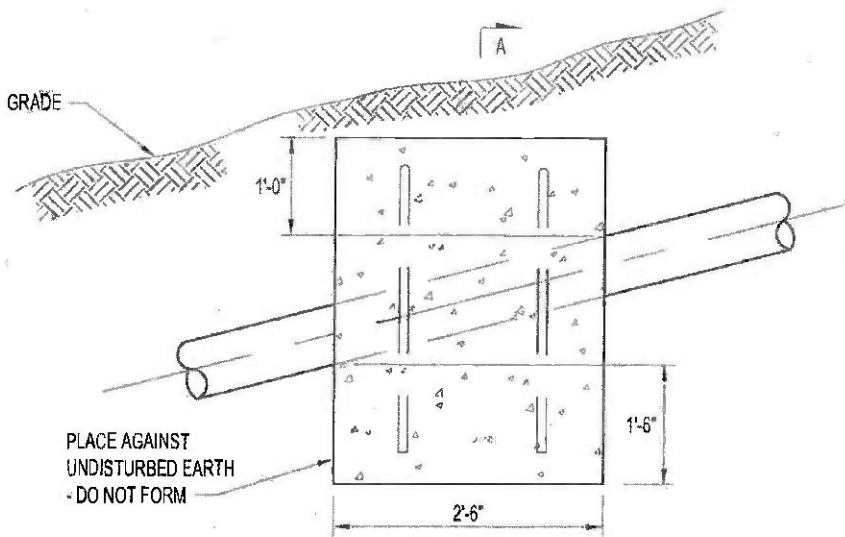


PA AMERICAN WATER COMPANY

DEEP CUT LATERAL

DATE:	10/2/06
PREPARED BY:	JJB
CHECKED BY:	RDK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.	5213.00
DRAWING NO.	

S-22



NOTES:

1. ANCHORS ARE NOT REQUIRED ON SLOPES LESS THAN 20% UNLESS NOTED ON DRAWINGS.
2. PROVIDE ANCHORS ON 3'-0" CENTERS FOR SLOPES BETWEEN 20% AND 34%.
3. PROVIDE ANCHORS ON 2'-0" CENTERS FOR SLOPES BETWEEN 35% AND 50%.
4. PROVIDE ANCHORS ON 1'-4" CENTERS FOR SLOPES BETWEEN 51% AND 70%.
5. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

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 Phone: 610.373.8867
 Fax: 610.373.7637
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PA AMERICAN WATER COMPANY

CONCRETE ANCHOR DETAIL

DATE: 10/2/06

PREPARED BY: JIG

CHECKED BY: PDR

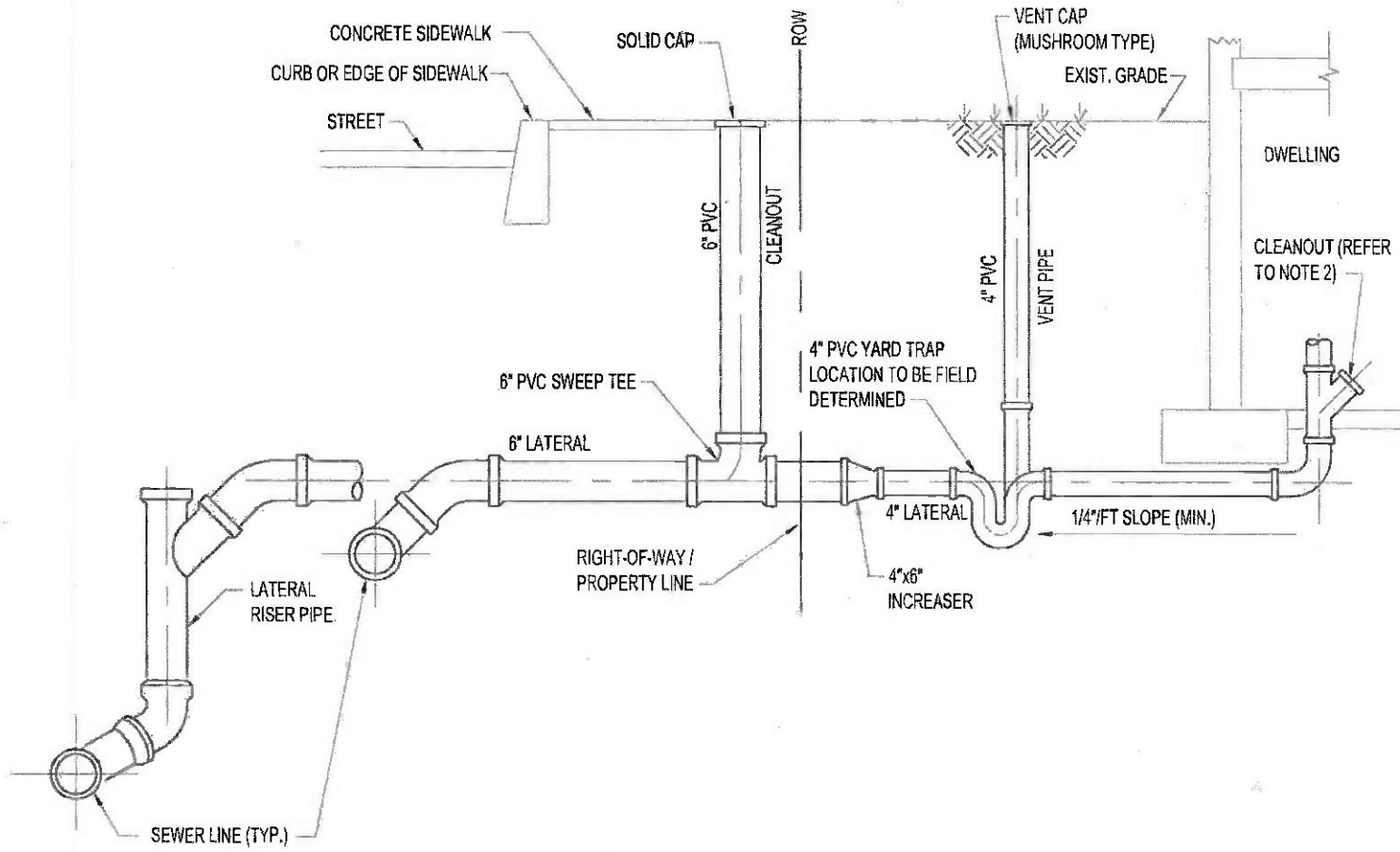
APPROVED BY: SMC

SCALE: AS NOTED

PROJECT NO. S213.00

DRAWING NO.

S-23



NOTES:

1. MINIMUM DEPTH OF 4" LATERAL WILL BE 30" BELOW FINISHED GRADE AND THE CONTRACTOR WILL MARK THE END OF ALL LATERALS WITH A 2"x4" WOODEN STAKE WHERE THE TOP WILL REMAIN 2"± ABOVE FINISHED GRADE.
2. IF THERE IS NOT A CLEANOUT LOCATED INSIDE OF DWELLING A NEW CLEANOUT SHALL BE INSTALLED WITHIN 5'-0" OF POINT WHERE THE NEW LINE IS TO BE CONNECTED TO THE EXISTING LINE.
3. AN ADDITIONAL 4" CLEANOUT WILL BE REQUIRED BETWEEN THE DWELLING AND THE TRAP / VENT IF THE DISTANCE BETWEEN THEM IS GREATER THAN 50'.
4. LOCATE VENT CAP AND CLEANOUT IN LAWN AREA. MUSHROOM CAP SHALL BE USED ON VENT.
5. REFER TO DRAWING S-2 FOR TYPICAL LATERAL TRENCH DETAILS AND S-25 FOR LATERAL NOTES.

S-24	DATE	_____
	DESIGNED BY	_____
	CHECKED BY	_____
	APPROVED BY	_____
	SCALE	AS NOTED
PROJECT NO.	_____	
DRAWING NO.	_____	

PA AMERICAN WATER COMPANY

TYPICAL HOUSE CONNECTION



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 Pottsville, PA
 ph: 570.628.5655
 ph: 610.373.6667 Mountain Top, PA
 fx: 610.373.7537 ph: 570.868.0275
www.entecheng.com

LATERAL NOTES:

1. ALL MATERIAL USED FOR HOUSE SANITARYSEWER INSTALLATIONS SHALL BE NEW AND FREE FROM DEFECTS.
2. ALL BUILDING DRAINS MUST BE INSPECTED BEFORE BACKFILLING. COMPLETED DRAWINGS SHOWING THE EXACT LOCATION AND DEPTH OF LINE SHALL BE SUBMITTED TO THE INSPECTOR DURING FINAL INSPECTION OR THE LINE WILL NOT BE AUTHORIZED TO USE.
3. ADJACENT HOMES MAY EACH BE SERVED BY LATERALS IN A COMMON TRENCH. IN THIS EVENT, THE LATERALS SHALL BE SEPARATED BY 8" MINIMUM CLEARANCE. OTHER BEDDING AND TRENCHING DIMENSIONS WILL BE AS SHOWN ON DRAWING S-2.

MATERIAL ALLOWED FOR HOUSE SANITARY SEWERS:

1. PVC BELL AND SPIGOT SEWER PIPE / SDR 35.
 2. CAST IRON SOIL PIPE AND FITTINGS ASTM #A74-66 SERVICE OR EXTRA HEAVY ONLY.
 3. PVC SEWER PIPE SCHEDULE 40 AND FITTINGS / **ASTM #D2265-68.
 4. SLIP-SEAL GASKETS FOR CAST IRON BELL AND SPIGOT PIPE / ASTM #D1869 OR LEAD AND OAKUM.
 5. MINIMUM DIAMETER 4 INCH.
- *** ALL SCHEDULE 40 PIPE AND FITTINGS OF PVC FORMULATION REQUIRE APPROPRIATE HIGH ETCHING COLOR SOLVENT PRIMER PLUS THE SOLVENT CEMENT FOR MAKING JOINTS. IF THE PRIMER IS OMITTED, THE WORK WILL BE REJECTED.

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Pottsville, PA
4 S. Fourth Street
Reading, PA 19602
ph: 610.373.6667
fax: 610.373.7537
www.entscheg.com



PA AMERICAN WATER COMPANY

LATERAL NOTES

DATE:
10/2/06

PREPARED BY:
JJB

CHECKED BY:
POK

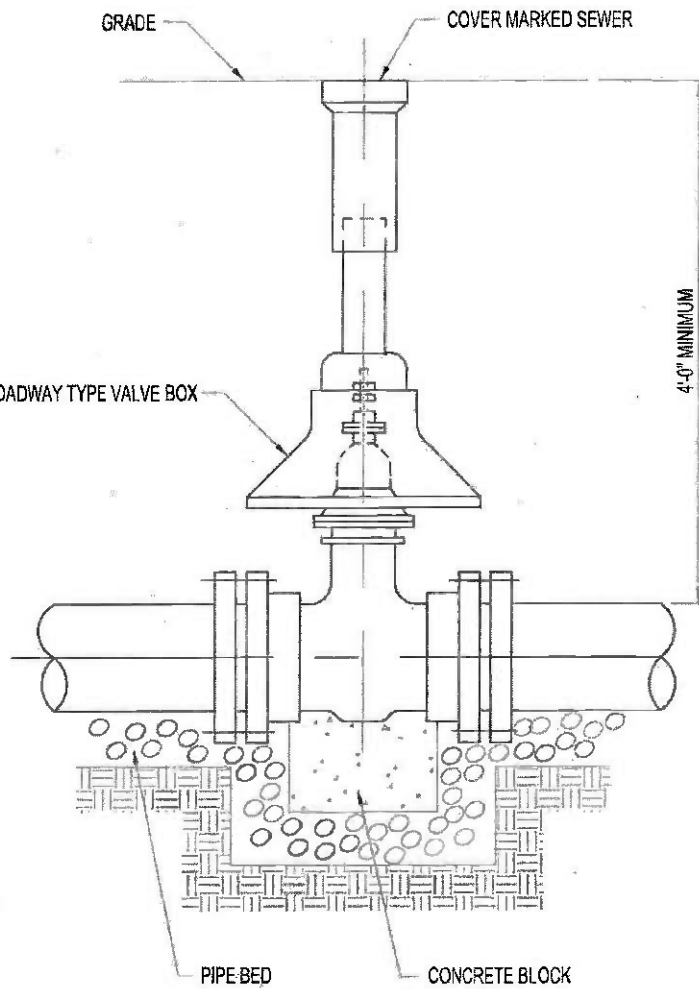
APPROVED BY:
SMC

SCALE:
AS NOTED

PROJECT NO.
5213.00

DRAWING NO.

S-25



ENTECH

Entech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.6655
 k: 610.373.7537
 www.entechnet.com



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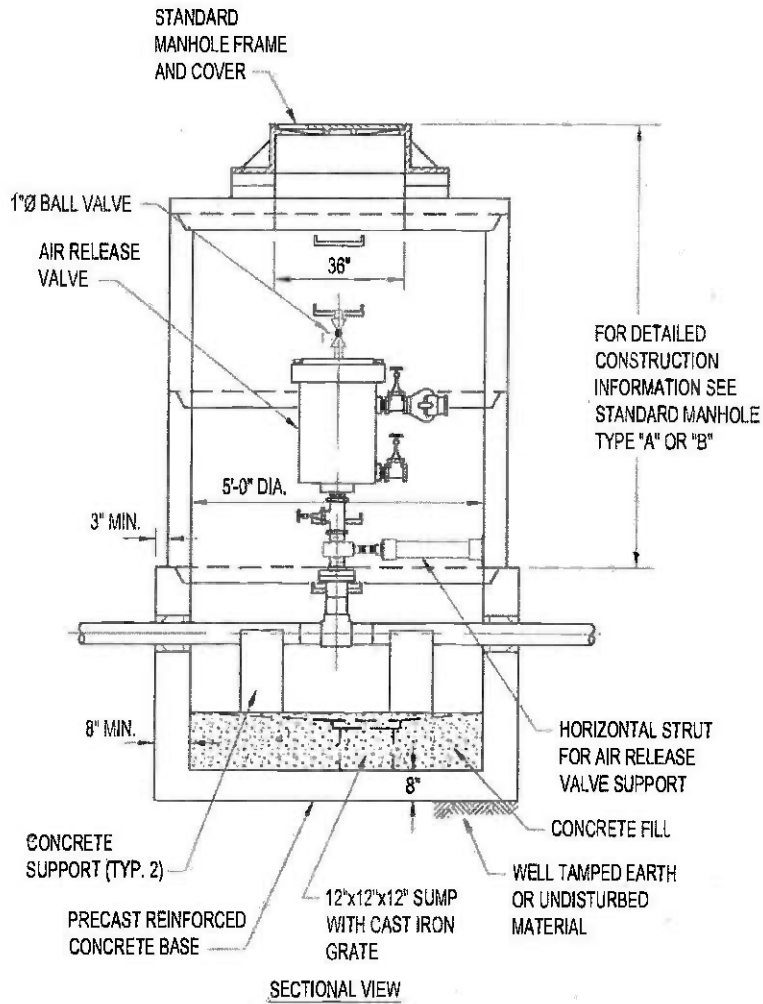
VALVE AND VALVE BOX INSTALLATION

DATE:	10/2/05
PREPARED BY:	J/G
CHECKED BY:	PBK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.	5213.00
DRAWING NO.	

S-26

ENTECH

Entech Engineering Inc.
Pottsville, PA
4 S. Fourth Street
Reading, PA 19602
PH: 610.373.6667
Mounthin Top, PA
IN: 610.373.7537
PC: 610.868.6275
www.entechnet.com

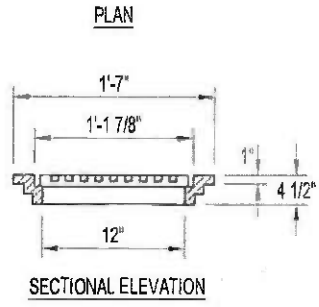
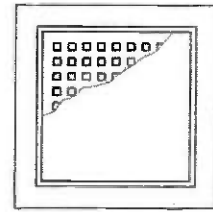
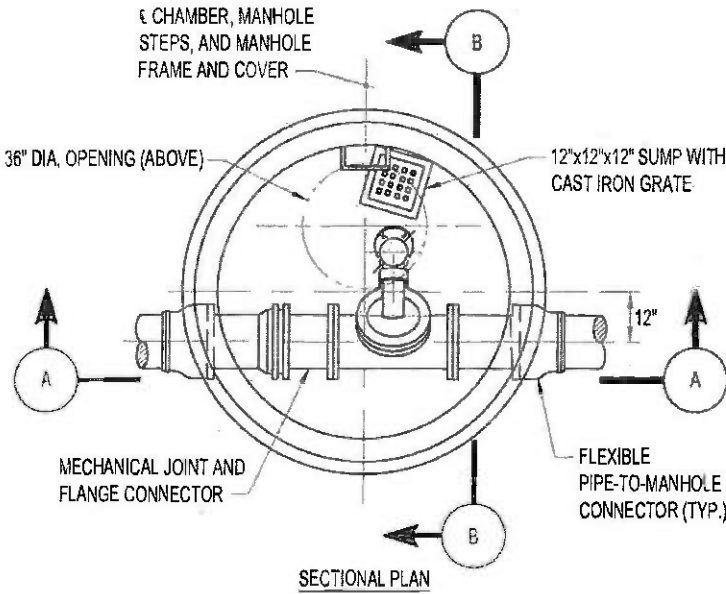


PA AMERICAN WATER COMPANY

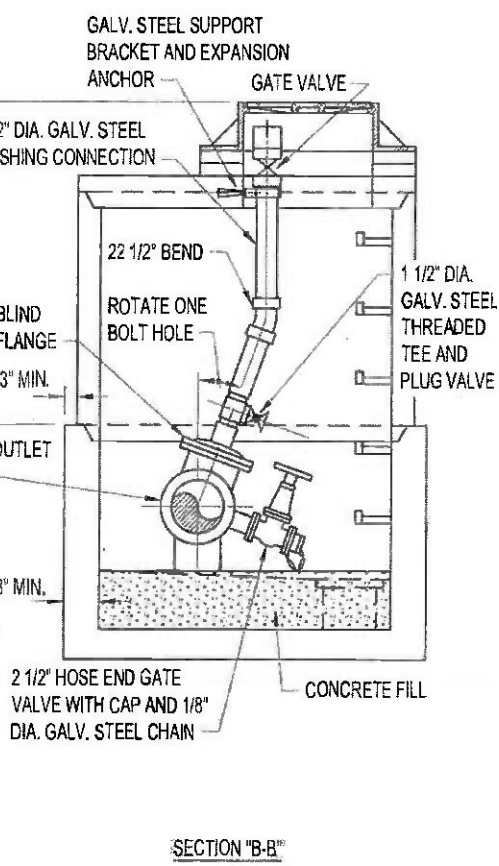
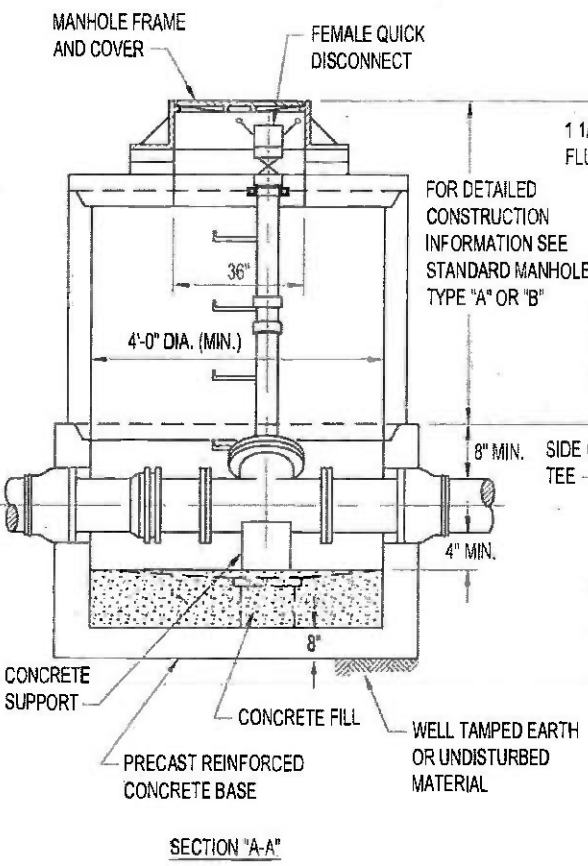
AIR RELEASE CHAMBER

DATE:	10/2/06
PREPARED BY:	JUG
CHECKED BY:	FDK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.	6213.00
DRAWING NO.	

ENTECH
 Entech Engineering Inc.
 Pottsville, PA
 4 S. Fourth Street
 Reading, PA 19602
 ph: 610.373.6667
 fax: 610.373.7537
 www.entechnet.com



SUMP FRAME AND GRATE

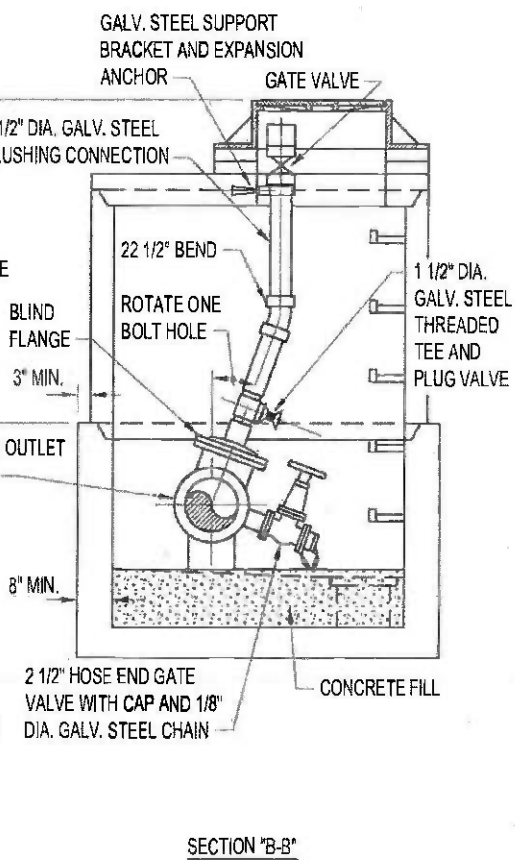
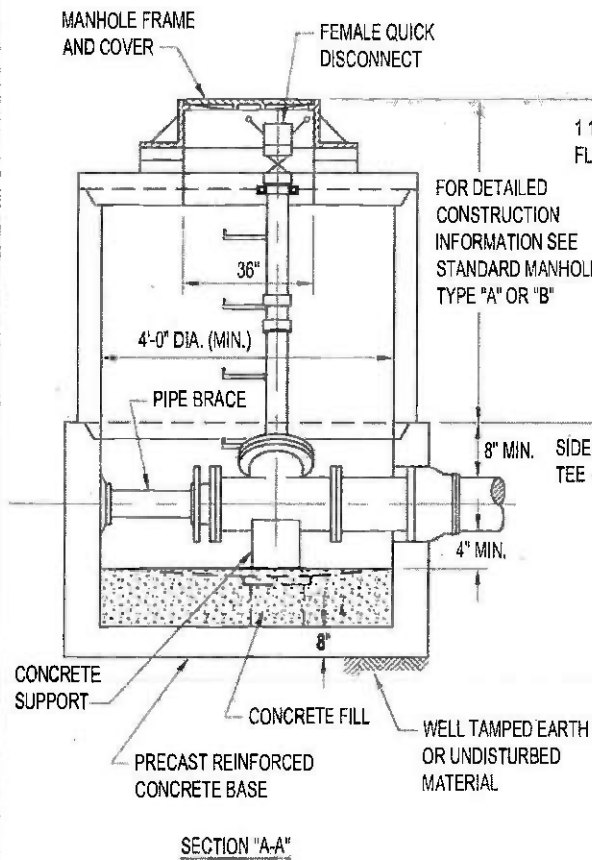
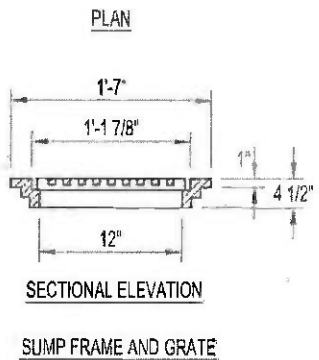
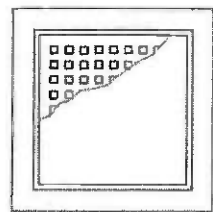
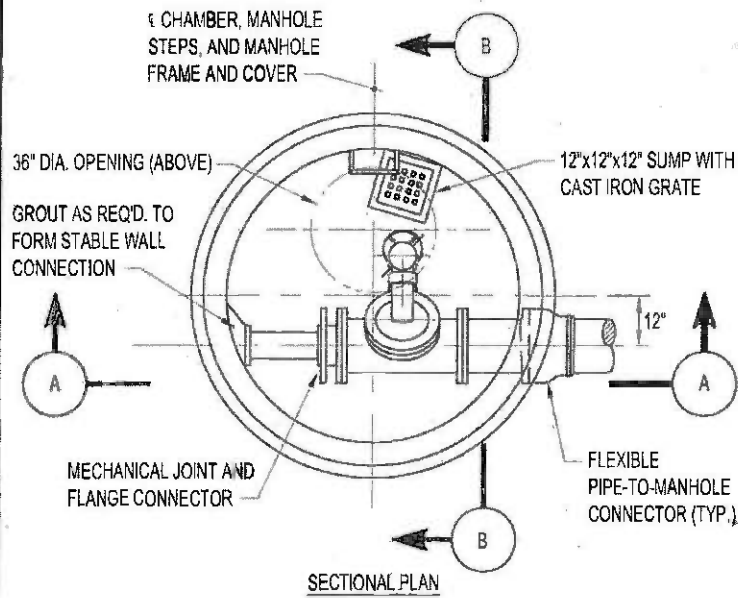


PA AMERICAN WATER COMPANY
IN-LINE FLUSHING/CLEANOUT CHAMBER

DATE:	10/2/06
PREPARED BY:	JJB
CHECKED BY:	PDK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.:	5213.00
DRAWING NO.:	

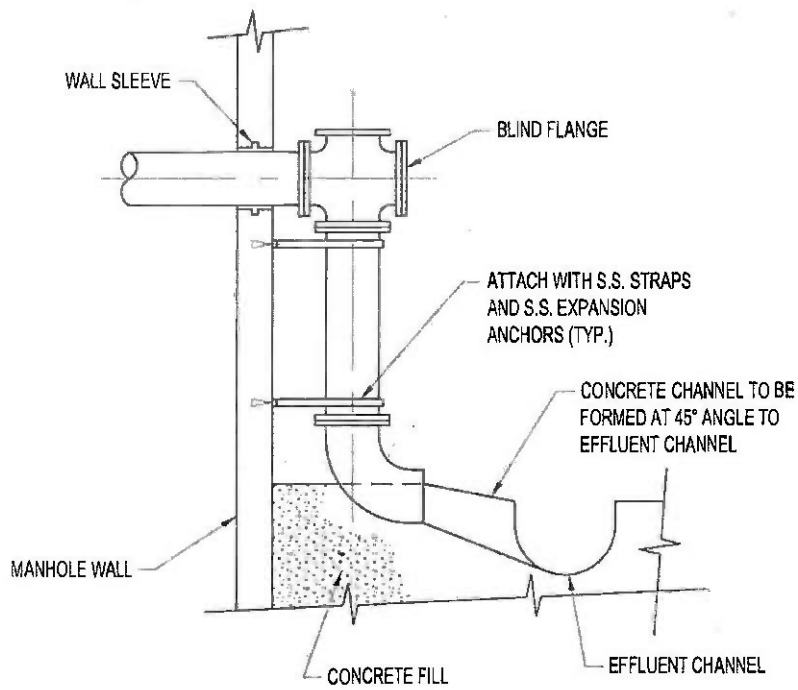
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Entech Engineering Inc.
 405 Fourth Street
 Reading, PA 19602
 ph: 610.373.6667
 fax: 610.373.7537
 www.entechnet.com



PA AMERICAN WATER COMPANY
TERMINAL FLUSHING/CLEANOUT CHAMBER

DATE:	10/2/03
PREPARED BY:	JUS
CHECKED BY:	SMC
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO.:	5213.00
DRAWING NO.:	



SECTIONAL VIEW

ENTECH

Entech Engineering Inc.
 4 S. Fourth Street, Pottsville, PA
 Reading, PA 19602 ph: 570.626.5655
 ph: 610.373.8667 Mountaintop, PA
 fr: 610.373.7537 ph: 570.868.0275
 www.entechnet.com



PA AMERICAN WATER COMPANY

LOW PRESSURE DROP CONNECTION

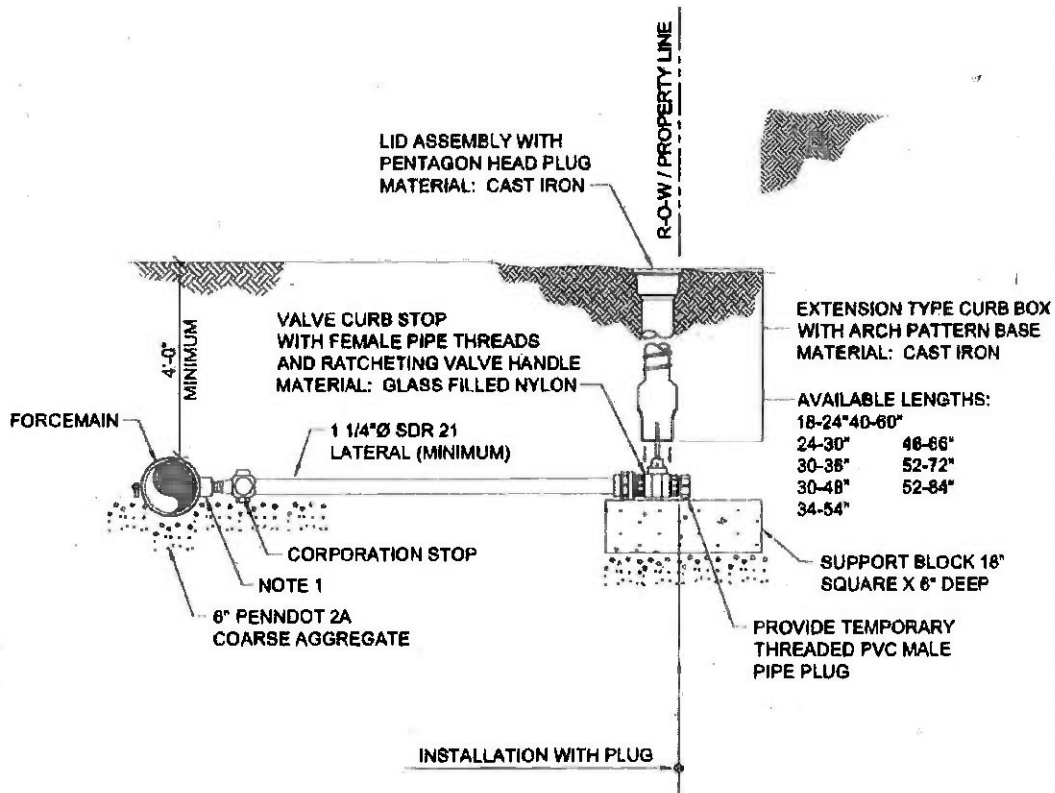
DATE:	10/2/06
PREPARED BY:	JIG
CHECKED BY:	PDK
APPROVED BY:	SMC
SCALE:	AS NOTED
PROJECT NO	S213.08
DRAWING NO	

S-30

DRAWING NOTES:

- FOR CONNECTION TO EXISTING FORCEMAIN PROVIDE WET SADDLE TAP.

FOR CONNECTION TO NEW FORCEMAIN PROVIDE SANITARY PRESSURE WYE FITTING AND 45° BEND ON LATERAL.



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Entech Engineering Inc.
4 S. Fourth Street
Reading, PA 19602
Pc: 610.373.8867
Ec: 610.373.7537
www.entechnet.com



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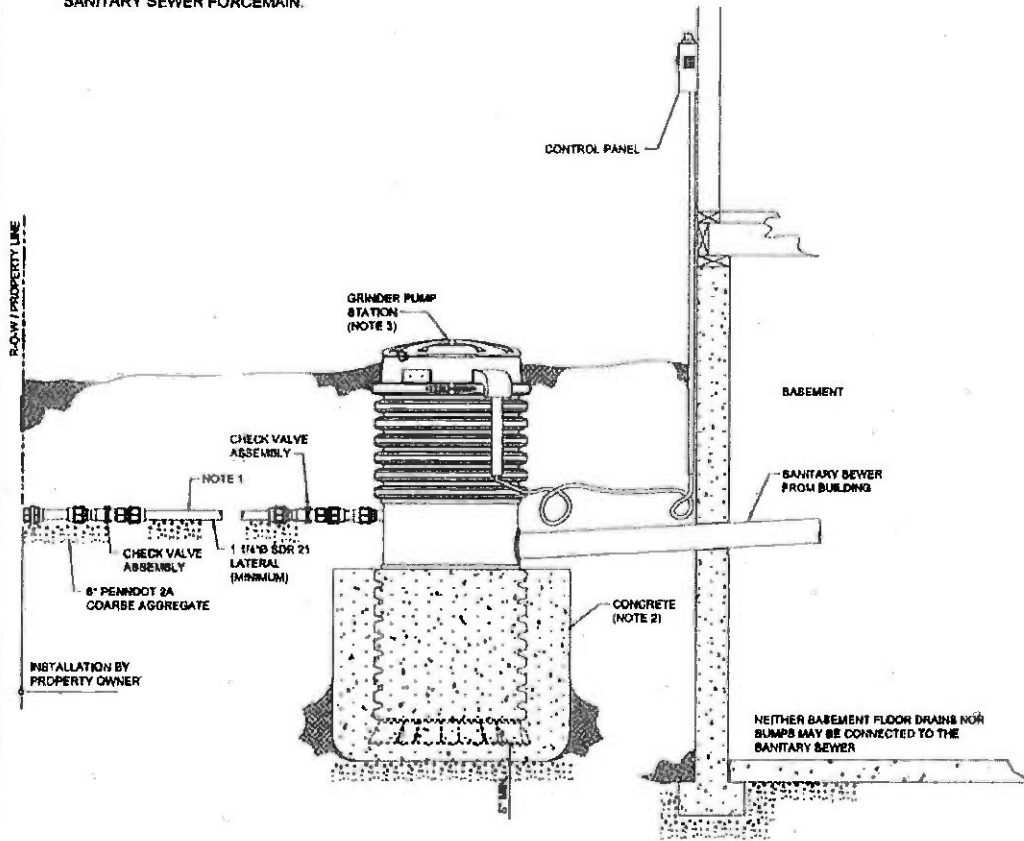
FORCEMAIN LATERAL

DATE:	01/08/09
PREPARED BY:	BAM
CHECKED BY:	BB
APPROVED BY:	BMC
SCALE:	NONE
PROJECT NO.	B21320
DRAWING NO.	

S-31

DRAWING NOTES:

1. PROVIDE CONTINUOUS UPWARD SLOPE TO THE LATERAL ASSEMBLY CONNECTION.
 2. INSTALL CONCRETE AS REQUIRED TO PROPERLY ANCHOR THE UNIT. MINIMUM DIMENSIONS: 50 INCHES DIAMETER, AS HIGH AS THE FLUTED SECTIONS OF THE STATION. INSTALL TWO EMBEDDED LIFT HOOKS INTO THE TOP OF THE CONCRETE AT 180°.
- TO PROVIDE THE MINIMUM 8-INCH CONCRETE FOUNDATION, PRECAST CONCRETE BASES MAY ALSO BE USED. THEY MUST BE AT LEAST 8 INCHES THICK BY 50 INCHES IN DIAMETER, AND CAST WITH AT LEAST 8 NUMBER 4 REBARS EXTENDING AT LEAST 4 INCHES (AND HOOKED) INTO THE BASE AND AT LEAST 8 INCHES (AND HOOKED) INTO THE COLLAR.
3. GRINDER PUMP SHALL BE SIZED TO EXCEED THE PRESSURE IN THE SANITARY SEWER FORCEMAIN.



ENTECH
 Entech Engineering Inc.
 4 S. Fourth Street
 Reading, PA 19602
 POC: 610.373.5665
 MOUNTAIN TOP, PA
 POC: 610.373.5667
 BC: 610.373.7537
 www.entechnet.com



PA AMERICAN WATER COMPANY
RECOMMENDED GRINDER PUMP INSTALLATION

DATE:	01/08/09
PREPARED BY:	BAH
CHECKED BY:	BB
APPROVED BY:	BAC
SCALE:	NONE
PROJECT NO.	4313.00
DRAWING NO.	

S-32

ENTECH

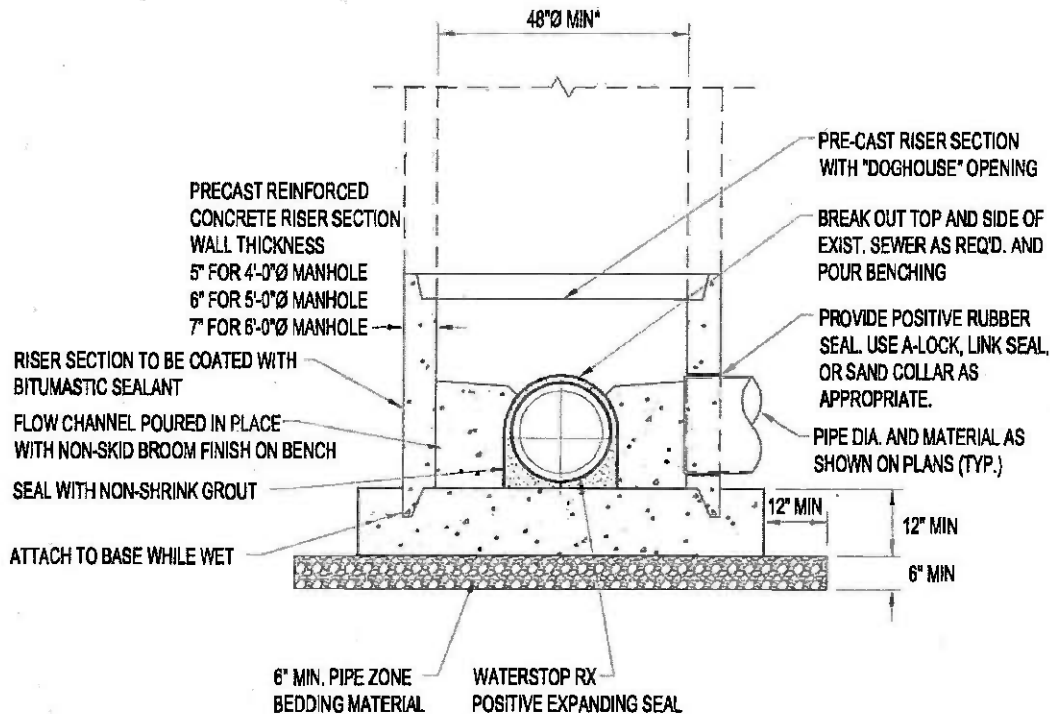
Entech Engineering Inc.
Pottsville, PA
4 S. Fourth Street
Reading, PA 19802
ph: 570.626.5665
ph: 610.373.6667
te: 610.373.7537
Maumans Top, PA
ph: 570.668.0275
www.entecheq.com



PA AMERICAN WATER COMPANY

DOGHOUSE MANHOLE

* LARGER DIAMETER MAY BE REQUIRED AS PER FIELD CONDITIONS



STANDARD DOGHOUSE MANHOLE NOTES

1. ORIENTATION OF PIPES SHOWN FOR ILLUSTRATION PURPOSES ONLY. FOR ACTUAL LOCATIONS SEE PLANS.
2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT THE RATE OF 1" PER FOOT MIN.
3. THE DEPTH OF THE INVERT CHANNEL SHALL BE NOT LESS THAN 3/4 OF THE DIA. OF THE PIPE.

REVISED:

DATE:

10/1/10

PREPARED BY:

ANK

CHECKED BY:

JDB

APPROVED BY:

SMC

SCALE:

AS NOTED

PROJECT NO.

5215.00

DRAWING NO.

S-33

3.4 TESTING MANHOLES

A. General

1. Conduct tests in presence of and to complete satisfaction of the Engineer.
2. Should a manhole not satisfactorily pass testing, 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.
 - a. Vacuum Testing Equipment:
 - 1) Use vacuum apparatus equipped with necessary piping, control valves and gauges to control air removal rate from manhole and to monitor vacuum.
 - 2) Provide an extra vacuum gauge of known accuracy to frequently checktest equipment and apparatus.
 - 3) Vacuum testing equipment and associated testing apparatus subject to Engineer's approval.
 - 4) Provide seal plate with vacuum piping connections for
4. Prior to testing clean manholes thoroughly and seal openings, both to the complete satisfaction of the Engineer. Seal openings using properly sized plugs.
5. Perform testing with frames installed. Include the joint between the manhole and manhole frame in the test.
6. The Contractor may elect to make a test for his own purposes prior to backfilling. However, conduct tests of the manholes for acceptance, only after the backfilling has been completed.

B. Vacuum Test Procedure:

1. Perform vacuum testing in accordance with the testing equipment manufacturer's written instructions.
2. Draw a vacuum of ten inches of mercury and close the valves.
3. Consider manhole acceptable when vacuum does not drop below nine inches of mercury for the following manhole sizes and times:
 - a. Four foot diameter - 60 seconds
 - b. Five foot diameter - 75 seconds
 - c. Six foot diameter - 90 seconds

C. Exfiltration Test Procedure:

1. Complete fill manhole to top of frame with water.

2. Allow water filled manhole to stand four hours prior to testing to allow absorbing in materials.
 3. At commencement of test, fill manhole to top lip of manhole frame.
 4. During a consecutive four hour period, keep an accurate record of the amount of water to be added because of exfiltration.
 5. Consider manhole acceptable when exfiltration rate does not exceed a rate of 0.038 gallons a day per inch of manhole diameter per vertical foot of manhole.
- D. Repair and Retest: Determine source or sources of leaks in manholes failing acceptable limits.
1. Repair or replace defective materials and workmanship, as is the case, before conducting such additional Manhole Acceptance Tests and such subsequent repairs and retesting as required until manholes meet test requirements.
 2. Materials and methods used to make manhole repairs must meet with Engineer's approval prior to use.
 3. Make repairs, replacements and retests at no additional expense to Owner.

END OF SECTION 02605

- C. The Contractor shall submit to the Engineer, on a monthly basis, all as-built information which shall include: manhole run, station, length from centerline of sewer, invert elevation at the termination point of lateral and the address or property owner's name for whom the lateral and the address or property owner's name for whom the lateral is provided.
- D. If rock is encountered during the installation of the lateral, the Contractor shall extend the lateral to the required distance as specified elsewhere in these specifications, and he shall provide a minimum "rock-free" distance of one foot beyond the end of the lateral. No lateral shall be "butted" against rock.
- E. Plugs: Close free ends of branches and service connections with a carefully fitted plug. Type of plug used and method of installation shall meet Engineer's approval. Installed plugs shall successfully pass line acceptance tests.
- F. Install warning tape as described in Section 02221.

3.4 PIPELINE TESTING PREPARATION *

- A. Backfill trenches in accordance with detail on Drawings.
- B. Provide pressure pipeline with concrete reaction support blocking.
- C. Flush pipeline to remove debris. Collect and dispose of flushing water and debris.
- D. Clean pipelines by propelling a snug fitting rubber ball through the pipeline with water from the upstream manhole to the downstream manhole. Investigate and correct any stoppage of the cleaning ball. Collect and dispose of cleaning water and debris.
- E. Lamping:
 - 1. After flushing and cleaning, lamp gravity pipeline in the presence of the Engineer.
 - 2. Assist the Engineer in the lamping operation by shining a light at one end of each pipeline section between manholes. The Engineer will observe the light at the other end. Pipeline that has not been installed with uniform line and grade will be rejected. Remove and re-lay rejected pipeline sections. Reclean and lamp until pipeline section achieves a uniform line and grade to the satisfaction of the Engineer.
- F. Plug outlets, wye-branches and laterals. Brace plugs to offset thrust.
- G. All testing for pipes and manholes shall be conducted with an Owner representative on site.

3.5 TESTING GRAVITY SEWER PIPELINES

- A. Low Pressure Air Test:
 - 1. Test each newly installed section of gravity sewer line between manholes.

2. Slowly introduce air pressure to approximately 5.0 psig.
3. Allow pressure to stabilize for at least five minutes. Adjust pressure to 3.5 psig or the increased test pressure as determined below if groundwater is present. Start the test.
4. Test:
 - a. Determine the test duration for a sewer section with a single pipe size from the table below:

Nominal Pipe Size	T (Time) Min/100 Ft.	
4	.3	3 minutes minimum
6	.7	3 minutes minimum
8	1.2	4 minutes minimum
10	1.5	4 minutes minimum
12	1.8	4 minutes minimum

- b. Record the drop in pressure during the test period. If the air pressure has dropped more than 1.0 psig during the test period, the line is presumed to have failed. If the 1.0 psig air pressure drop has not occurred during the test period, the test shall be discontinued and the line will be accepted.
- c. If the line fails, determine the source of the air leakage, make corrections and retest. The Contractor has the option to test the section in incremental stages until the leaks are isolated. After the leaks are repaired, retest the entire section between manholes.

B. Infiltration Test:

1. Use only when gravity pipeline is submerged in groundwater. Obtain prior approval of the Engineer.
2. Maximum Allowable Infiltration: 100-gallons per inch of pipe diameter per mile per day for any one section under test, including the allowances for leakage from manholes.

C. Infiltration:

1. After the air testing described in the preceding paragraph has been completed by the Contractor, regardless of any indications of the test results made by the Engineer or the Owner, the Engineer and the Owner reserve the right to perform field investigations, prior to final written acceptance of each sewer run by the Owner and/or during the one-year correction period specified elsewhere in the Contract Documents, to establish the leakage of groundwater into the sewer and laterals constructed under this contract. The cost of these investigations shall be borne by the Owner.
2. Should the leakage exceed 100 gallons per day per inch diameter per mile of pipe for any section, the Contractor shall, at the direction of the Engineer or Owner, and at no cost to the Owner, perform any additional testing or corrective work required to reduce the infiltration in each manhole run from those lines installed by the Contractor to less than 100 gallons per day per inch diameter per mile of pipe. This leakage applies to each manhole run 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 the Contractor, to include testing and grouting of joints, excavation and replacement of faulty or damaged portions of the work, and all final restoration.

3.6 DEFLECTION TESTING OF PLASTIC SEWER PIPE

- A. At the direction of the Engineer, perform vertical ring deflection testing on suspect portions of PVC sewer piping, in the presence of the Engineer, after backfilling has been in place for at least 30 days but not longer than 12 months.
- B. The maximum allowable deflection for installed plastic sewer pipe shall be limited to 5% of the original vertical internal diameter.
- C. Perform deflection testing with a deflectometer, calibrated television, or a properly sized "Go, No-Go" mandrel. The mandrel(s) shall be constructed at the Contractor's expense and subject to the approval of the Engineer.
- D. Pipe exceeding the allowable deflection shall be located, excavated, replaced, and retested at the sole expense of the Contractor.

3.7 TEST REPORTS

- A. The Contractor shall submit a written, certified report which includes the detailed testing log with times and results for all pipe segments and manholes.

3.8 ACCEPTANCE

A. Observation of successful testing of manholes, sewers or force mains by the Engineer 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 Engineer may recommend final acceptance to the Owner. Only upon final inspection by the Owner or Engineer, and upon written acceptance for same will the system or portion thereof be considered substantially completed. Upon such acceptance, the one-year correction period as specified for the manholes, sewers or force main will commence.

1. If, during this final inspection, any irregularities are observed, the condition shall be corrected at the Contractor's expense prior to acceptance.

END OF SECTION 02731