BOROUGH OF ORWIGSBURG

SCHUYLKILL COUNTY, PENNSYLVANIA

WATER SYSTEM RULES AND REGULATIONS

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COPIES OF RULES: These Rules and Regulations are available for review at the Borough's office at all times during regular business hours and are available for purchase for \$25.00 per copy. These Rules and Regulations will be revised as conditions dictate. Please contact the Borough for latest revisions.

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SECTION 1 GENERAL PROVISIONS

These Rules and Regulations set forth uniform requirements for users of the Borough of Orwigsburg (Borough) Water System and help enable the Borough to comply with applicable State and Federal Laws, Regulations, and Permits. The Borough will furnish Water Service only in accordance with these Rules and Regulations.

These Rules and Regulations are made part of every application, contract, agreement or license entered into between the Owner of any Improved Property and the Borough. These Rules and Regulations are applicable to all locations receiving water service within the Borough Service Area. No water connection shall be constructed, altered, repaired, or allowed to exist, which does not comply with these Rules and Regulations.

Except as otherwise provided herein, the Borough shall administer, implement, and enforce the provisions of these Rules and Regulations, in accordance with the purposes, policies, and objectives as set forth herein.

The Borough does hereby reserve the right to alter, amend, and/or repeal these Rules and Regulations, which when altered and amended shall become and thereafter be a part of every such application, contract, agreement or license for water service in effect at the time of such alteration, amendment and/or adoption.

These Rules and Regulations are not intended to conflict with any local, state or federal legislation and/or regulation. Any provisions that are found to be in direct conflict with such legislation or regulation shall not be applicable.

In the event any provision, section, sentence, clause or part of the Rules and Regulations shall be held to be invalid, such invalidity shall not affect or impair any remaining provision, section, sentence, clause or part of these Rules and regulations, it being the intent of the Borough that such remainder shall be and shall remain in full force and effect.

SECTION 2 WATER SERVICE REQUIREMENTS

2.1 CONNECTION: The Owners of any Improved Property are required, at the Owner's expense, to connect to the Borough's Water System, in accordance with the provisions of the Connection Ordinance for the municipality in which the Improved Property is located.

No Person shall connect any Improved Property with any part of the Water System without first making application for and securing a connection permit, in writing, from the Borough. Such application shall be made into a form to be provided by the Borough.

- 2.2 **DISCONNECTION OF SERVICE:** No Person shall terminate its Service to the Improved Property or disconnect its facilities from the Water System or permit the disconnection or removal of facilities serving the Property without the written consent of the Borough. Breach of this provision shall subject the Person to liability for damage to Borough property, and shall not terminate or suspend Owners' liability for User Charges or other applicable fees, nor shall it stop the accrual of such User Charges and fees.
- 2.3 DUTY TO NOTIFY BOROUGH OF CHANGES IN "PREMISES": If the use or classification of any Improved Property changes, the Owner of the Improved Property shall be responsible for immediately notifying the Borough, in writing, of any such change.
- 2.4 SYSTEM ACCESS: By having applied for permission to, and/or having connected to, the Water System, the Owner of any Improved Property has given the Borough the right of access at reasonable times to any Improved Property which is served by the Water System as shall be required for purposes of inspection, measurement, sampling and testing and for performance of other functions relating to service rendered by the Borough through the Water System, and to ensure or enforce compliance with these Rules and Regulations.

Authorized employees of the Borough, designated by proper identification, shall have access to the Premises at all reasonable hours, for the purpose of turning the water on or off; inspection, repair, and/or replacement of Service Lines and Service Line extensions; inspection, setting, reading, repairing and removal of meter; and for all such justifiable purposes.

- 2.5 CONDITION OF PLUMBING SYSTEM: The piping and fixtures on the Property of the customer are assumed to be in satisfactory condition at the time service facilities are connected and water furnished. The Borough shall not be liable in any case for any accidents, breaks or leakage that in any way are due to the connection with the supply of water, nor failure to supply the same, nor for the freezing of piping and fixtures of the customer, nor for any damage to the property which may result from the usage or nonusage of water supplied to the Premises.
- 2.6 CROSS CONNECTIONS PROHIBITED: No Water Service connection shall be installed or maintained to any Premises where actual or potential Cross-Connections to the Borough Water System or Customer's water system may exist, unless such actual or potential Cross-Connections are abated or controlled to the satisfaction of the Borough.
- 2.7 BACKFLOW PREVENTION: Backflow Prevention measures shall be installed and maintained per the Borough's Backflow Prevention Manual, located in the Appendix.

2.8 **PUBLIC FIRE HYDRANTS:**

- 1. When a municipality desires the installation of a fire hydrant on the Borough system. the municipality shall make a written request to the Borough for the installation. The Borough reserves the right to request that a deposit, equal to the estimated cost of the hydrant installation, accompany the request. The hydrant installation, including connection, valve, piping, fittings, and hydrant shall be borne by the municipality before the water is turned on.
- 2. The Borough will determine whether proper service can be furnished at the fire hydrant under normal and ordinary conditions, subject to the size of the existing public main, to the sizes of the lines in the surrounding distribution system, to the available pressures and to such other factors. The installation of all fire hydrants shall be in accordance with the Specifications of the Borough.
- 3. Public fire protection service shall be paid by the municipality requesting the public fire hydrant at the rate stipulated in the Borough Schedule of Rates.

2.9 PRIVATE FIRE SERVICE:

- 1. An Owner desiring private fire service shall submit an application to the Borough and shall pay all necessary charges before service is rendered.
- 2. The application shall be accompanied by accurate plans showing the proposed fire protection system and appurtenances and showing any other water supply system and appurtenances which may exist on the premises.
- 3. Borough approved compound meters or detector checks with bypass meters shall be installed on all new or replaced private fire service lines, at the Customer's expense, and they shall become Borough property.
- 4. All fire service meters shall be maintained by the Borough at its expense, except for damage caused by the failure of the Customer to protect the meter.
- 5. The size of each private fire service line shall be approved by the Borough prior to installation.
- 6. All meters and fire hydrants shall be installed in accordance with the specifications of the Borough.
- 7. No Cross-Connection shall be made between a fire service line and a regular water service line.
- 8. No charge will be made for fire hydrants installed on the customer's side of the meter in cases where the meter has been sized to measure the fire flow and the customer is paying that metered rate.
- 9. All water consumption through fire service lines will be billed at duly adopted Borough rates.



2.10 CHANGE OF LOCATION: Whenever a municipality, person, or persons desire a change in the location of any fire hydrant, the Borough, upon written request to do so, will make such a change if determined feasible and advisable, at the expense of the municipality or person or persons.

2.11 **USE OF FIRE HYDRANTS:**

- 1. No Person except regularly appointed and authorized firemen on duty or duly authorized agents, servants or employees of the Borough shall open, close, meddle or tamper with any fire hydrant unless specially authorized by the Borough.
- 2. No public fire hydrant shall be used for sprinkling streets, flushing sewers or gutters, showering streets, contractors 'or builders 'purposes, or for any other than fire purposes, except with the written approval of the Borough. The Borough's approval of the use of water from fire hydrants for such purposes will not be granted except where such use is deemed necessary by the Borough and other means of obtaining water are not available. Any permit so granted shall be revocable at the discretion of the Borough.

2.12 **MAINTENANCE:**

- 1. All fire hydrants will be maintained by the Borough at its own cost and expense. Any expense for repairs caused by carelessness or negligence of the employees of the particular municipality, or the members of the fire department, shall be paid for by the municipality or by the fire department necessitating the repair.
- 2. Upon request of the duly authorized officials of any municipality, the Borough will make inspections at convenient times and at reasonable intervals to determine the condition of the fire hydrants, such inspections to be made by a representative of the Borough and a duly authorized representative of the municipality.
- 2.13 **RESPONSIBILITY FOR SERVICE:** It is agreed by the parties receiving public fire service, private fire service or any other service, that the Borough does not guarantee any special service, pressure, capacity of facility, or other than is permitted by the ordinary and changing operating conditions of the Borough, as the same exists from day to day. It is agreed by the parties receiving service that the Borough shall be free and exempt from any and all claims for personal injury or death to any persons or damage to property by reason of fire, water and failure to supply water pressure or capacity.
- **OWNERSHIP OF FIRE HYDRANT:** All fire hydrants installed in the Borough's system shall 2.14 be deemed owned by the Borough. The Borough shall specify the type of fire hydrant to be installed and shall inspect all fire hydrants upon installation. All fire hydrants shall be installed at approved locations that have been selected by the various municipalities in the Borough's service area due consideration being given to local firefighting Borough and requirements of insurance underwriters.

2.15 **SERVICE OF NOTICES:**

- 1. All notices and bills relating to the Borough or its business shall be deemed to have been properly served if left upon the Premises of the Customer, or if mailed to the Customer, directed to, or left at his address as shown on the records of the Borough.
- 2. The Borough will send all such notices and bills to the address given on the application for water supply until a notice of change, in writing, has been filed with the Borough by the applicant.
- 3. All notices of a general character, affecting or likely to affect a large number of Customers, shall be deemed to have been properly given or served if advertised in the newspaper designated by the Borough.
- 2.16 **COMPLAINTS:** Complaints relative to the character of the service furnished or the reading of meters or of bills rendered must be made in writing and delivered to the main office of the Borough.
- 2.17 **SERVICE NOT GUARANTEED:** Nothing in these Rules and Regulations, nor any contract, nor representation, verbal or written, of the Borough or any of its employees shall be taken or construed in any manner to be or constitute a guarantee to furnish a proper quantity of water through any service connections, whether for domestic, commercial, industrial, manufacturing or other general uses, or for public or private fire protection purposes, or for any other special purposes; but the Borough will at all times and under all conditions endeavor to maintain the efficiency of its service.
- 2.18 WHOLESALE CONSUMERS: Any contract or wholesale purchase of water, shall be acted upon by the Borough, and shall contain such restrictions as the Borough may deem necessary to protect the supply to its regular retail customers. The sale of water shall be pursuant to an appropriate interconnection agreement at rate to be determined by the Borough and in accordance with the Rules and Regulations and Specifications then in effect.
- 2.19 **BUILDING CONSTRUCTION WATER:** The Borough may install meters on fire hydrants for use by contractors; the use of which shall not in any way interfere with the use of the hydrants for fire protection. The hydrants shall be opened and closed only by Borough personnel and the contractor shall pay in advance for water and expenses to be incurred by the Borough and the contractor shall be responsible for all damage arising from said usage.
- 2.20 HOLD HARMLESS/INDEMNIFICATION: The Customer and/or his tenant shall indemnify and/or hold harmless the Borough from any loss or damage that may be directly or indirectly the result of or construction of the Service Line and/or Service Connection to the Water System by the connection effected by the Customer or the Borough.
- 2.21 **LIABILITY OF BOROUGH:** The Borough shall not be liable for any damage resulting from leaks, broken pipes or from any other cause occurring to within any house or building, between curb stop and meter and it is expressly stipulated by and between the Borough and the customer that no claims shall be made against the said Borough on account of the bursting or breaking of any main or service pipe or any attachment to said water works.



2.22 **POOLS AND TANKS:** When an abnormally large quantity of water is desired for filling a swimming pool or for other purposes, arrangements must be made with the Borough prior to taking such water. Permission to take water in unusual quantities will be given only if it can be safely delivered through the Borough's facilities and if other customers are not inconvenienced.

WATER SHORTAGE CONTINGENCY PLANS: 2.23

- 1. If the Borough is experiencing a short-term supply shortage, the Borough may request general condition of inside water uses and may issue mandatory conservation measures to reduce or eliminate nonessential uses of water.
- 2. The Borough shall first request voluntary curtailment of all nonessential uses of water

If voluntary cooperation does not achieve satisfactory results, mandatory conservation will be used. If any customer refuses to comply with such mandatory measures, the Borough may either adjust the outside water valve connection in a manner which will restrict water flow by up to 1/2, or otherwise restrict flow such as by the insertion of a plug device. The Borough may, if necessary, call upon the Pa Emergency Management Agency (EMA) for support in supplying emergency water supplies.

2.24 NONESSENTIAL USES OF WATER INCLUDE:

- 1. The use of hoses, sprinklers, or other means for sprinkling or watering shrubbery, trees, lawns, grass, plants, vines, gardens, vegetables, flowers, or other vegetation.
- 2. The use of water for washing automobiles, trucks, trailers, trailer houses, or any other type of mobile equipment.
- The washing of streets, driveways, parking lots, service station aprons, office 3. buildings, exterior of homes, sidewalks, or other outdoor surfaces.
- 4. The operation of any ornamental fountain or other structures making similar use of water.
- 5. The use of water for filling swimming or wading pools.
- 6. The operation of any water-cooled comfort air conditioning which does not have water-conserving equipment.
- 7. The use of water from fire hydrants for construction purposes or fire drills.
- 8. The use of water to flush a sewer line or sewer manhole.
- 9 The use of water for farms and nurseries other than a bare minimum to preserve plants, crops, and livestock.

If the Borough is experiencing a potential long term supply shortage due to drought such that Pa State Authorities proclaim a DROUGHT WATCH, WARNING or EMERGENCY, the Borough will prepare a Drought Contingency Plan and Local Water Rationing Plan (if necessary) in accordance with Title 4 PA CODE CHAPTER's 119 and 120. These plans will be submitted to the local Governments for concurrence prior to submission to Pennsylvania DEP and EMA organizations for approval prior to implementation.

SECTION 3 WATER METERS

- 3.1 METERED SERVICE: The Borough shall furnish a service meter for all Water Services. All meters shall be accessible to and under control of the Borough and shall be and remain the property of the Borough. The cost for furnishing the service meter is included in the connection fee as set forth in the Schedule of Rates. At no time shall the water be available to the premises without the installation of a meter, which shall be used as the basis for billing purposes.
- 3.2 SIZE OF METER: The Borough shall determine the size and the style of the meter to be installed, but in no case shall the meter be more than one (1) commercial size below the size of the service line.

3.3 **INSTALLATION OF METERS:**

- 1. A meter will be furnished and installed by the Borough to each Customer who has paid the required Connection Fee.
- 2. The location of all meters shall be at an easily accessible place approved by the All meters shall be installed in accordance with the Borough's specifications for meter installations. Copies of the specifications are available from the Borough.
- 3. If the installation of a meter outside a building is approved by the Borough, the meter shall be placed in an approved meter box, complete with approved stops or valves, with drains, all provided at the Customer's expense.
- 3.4 **SEPARATE METERS:** A separate meter shall be provided for each Customer; however, if a building, house, or other structure contains two or more Premises, and the Owner or Owners thereof so shall request, or the Borough shall deem it advisable, the Borough, at its discretion, may install a single service meter for such building, house, or other structure.

3.5 **ACCESS TO METER:**

- 1. The Borough shall have the right of free access at all reasonable times to the Premises in or on which a meter is installed for purposes of setting, reading, testing. inspecting or repairing.
- 2. Service may be discontinued to any Customer who refuses or persistently neglects to arrange for such access.
- 3.6 METER TAMPERING: No Customers shall remove, disconnect, adjust, interfere with or tamper in any way with a meter, remove a Backflow Preventer, or do any act to limit or interfere with operation thereof. Tampering with meter may result in discontinuance of service.
- 3.7 **SEALS:** No seal placed by the Borough for the protection of any meter, valve, and fitting or other water connection shall be tampered with or defaced. It shall not be broken except upon authorization from the Borough, or in the presence of any Borough representative. Where the seal is broken, the Borough reserves the right to remove the meter for test at the expense of the Customer, even if said meter registers accurately.



3.8 PROTECTION OF METER:

- 1. The Customer must, at all times, properly protect the meter from injury by frost or any other cause, and will be held responsible for repairs to meter made necessary due to their negligence. Damage due to freezing, hot water, or external cause shall be paid for by the Customer. Meters will be maintained by the Borough so far as ordinary wear is concerned.
- 2. The charge for the reinstallation or changing of a meter when removed because of damage in any way due to the negligence of Customer shall be the actual cost of reinstallation. The charge shall also include testing of the repaired meter.
- 3. If the payment for damage, reinstallation or testing is not paid within thirty (30) days of the billing date. Water Service will be discontinued until the bill is paid.
- 4. Where steam or hot water is used, the Customer shall install a check valve on the Customer side of the meter.

3.9 **METER TESTS:**

- 1. The Borough may test or replace a service meter at any time after notification.
- 2 After receipt of a written request and deposit, the Borough will test the accuracy of a Customer's meter in his presence. If the meter accuracy is within 4%, the meter is considered accurate and the deposit will be retained. If the meter accuracy is not within 4%, the meter will be repaired or replaced at Borough expense, and the deposit will be returned.
- 3.10 **INACCURATE METERS:** The quantity of water recorded by the meter shall be conclusive on both the Customer and the Borough, except when the meter has been found by the Borough to be registering inaccurately or has ceased to register. In either case excepted above, the meter will be repaired promptly by the Borough and the quantity of water consumed for the billing period when the meter was out of service, or registering inaccurately, shall be estimated by the average registration of the meter on four (4) previous corresponding billing periods. In the event of a discrepancy, the meter register mounted (building interior) on the meter shall take precedence over remote read devices (building exterior).
- 3.11 LEAKS OR WASTE: All water passing through a meter shall be charged for at the regular rate, and no allowance will be made for excessive consumption due to leaks or waste.
- READING AND REGISTRATION OF METERS: Reading of meters shall be completed 3.12 monthly by the Borough and the reading on the meter shall be conclusive on both the Customer and the Borough, except when the meter has been found to be registering inaccurately or has ceased to register.

SECTION 4 APPLICATION FOR WATER SERVICE

4.1 GENERAL: No Person shall uncover, connect with, make any opening into or use, alter or disturb in any manner any part of the Water System without first making application for and obtaining a connection permit, in writing, from the Borough. Application to the Borough for Water Service required hereunder shall be made by the Owner of the Improved Property to be served, in such form as may be prescribed from time to time by the Borough.

4.2 **SERVICE CONNECTION:**

- 1. A written application, prepared on the form furnished by the Borough, must be submitted to the Borough for the purpose of requesting the installation of a Water Service to each Premises or group of Premises where an individual service line connection is permitted in accordance with these Rules and Regulations, at least fifteen (15) days before service is required.
- 2. The application must be signed by the Owner, or their duly authorized agent, which application shall, together with these Rules and Regulations regulate and control Water Service to the Premises. The application shall be binding upon the heirs and assigns of the Owner.
- 3. The application will not be approved until the Borough receives full payment of the applicable Tapping Fee and other charges as duly adopted by the Borough. The application and its acceptance by the Borough shall constitute, from the date of acceptance by the Borough, a contract obligating the Owner to pay rates and charges as established by the Borough from time to time and to comply with the Rules and Regulations which shall be established from time to time.
- 4. Notification of any change in property ownership is required by the Borough. It is the Owner's responsibility to satisfy all outstanding charges before the settlement date.
- 5. A tenant may not make application for Water Service.
- 6. The application shall be subject to the requirements relative to deposits and fees as hereinafter set forth, together with the Rules and Regulations of the Borough shall regulate and control the service of water to the premises.
- 7. Separate water service applications shall be made for:
 - Each Premise: a.
 - b. Each private fire protection service; or
 - Such other cases as the Borough shall deem proper and advisable.
- 8. The application for water service shall be a binding contract on both the Customer and the Borough, upon approval by the Borough. Rates for Water Service shall accrue from the date the water supply service has been completed and water is available to the premises.



- 9. The fact that an application may not exist, or may not be signed by the Owner, shall not relieve the Owner of their responsibility for ultimate payment of all User Charges related to Premises.
- 10. No agreement shall be entered into by the Borough with any applicant for water service until all arrears for water, rents, bills for meter repairs or other charges, due from applicant at any Premises now or theretofore owned or occupied by him, shall have been paid or until satisfactory arrangements for payment of such unpaid bills shall have been made. Such payments shall include the minimum meter charge for each month or quarter that service was suspended, but said additional charge shall not be less than the minimum meter charge.
- 11. All contracts for Water Service shall continue in force from month to month, but either party may cancel the contract by giving fifteen (15) working days' written notice.

4.3 TRANSFERS AND TERMINATION:

- 1. Each water connection permits validly issued shall, upon conveyance of title to the real estate for which the connection was permitted, pass automatically to the record title owner of such property. Bills for water rental shall continue to the title owner of record with the Borough, until such time as the Borough shall receive written notice of the transfer and the name and address of the new record title owner. No water connection permit may be transferred to another person other than a new record title owner of the property for which such permit was issued.
- 2. The holder of any valid water permit for a vacant lot, a structure that is unoccupiable, or a separate use no longer separate, may terminate such permit by written notice to the Borough. Upon receipt of such notice, the water connection represented by such permit shall revert to, and become the sole property of the Borough, free and clear of any claim or interest of the former holder. No termination of a permit servicing an occupied or occupiable structure shall be permitted until proof satisfactory to the Borough is supplied that the premises has been vacated and that steps have been taken, satisfactory to the Borough, to render it unoccupiable, or in the case of multiple uses in the same structure, that the separateness of the use has been permanently eliminated.
- Billing for water rental shall continue, once commenced, until the permit for which 3. the billing is issued shall be terminated as aforesaid.
- 4.4 CONDITION OF WATER USE: In connection with a change in service, any Customer making any material change in the size, character or extent of equipment or operations utilizing Water Service, or whose change in operations results in a substantial increase in the use of water, shall immediately give the Borough written notice of the nature of the change, and, if necessary, amend their application.

SECTION 5 SERVICE LINES AND CONNECTIONS

5.1 GENERAL: No connection shall be made to the Water System unless the manner in which the connection is made and the materials and workmanship employed in effecting such connection shall comply with the requirements of the Borough's Standard Construction Specifications. It shall also be necessary for all connections to comply with any special requirements imposed by these Rules and Regulations.

5.2 **BOROUGH'S SERVICE CONNECTION:**

- 1. Upon approval of the Water Service and Service Connection applications, and payment of the applicable charges, the Borough will install its Service Connection.
- Each Service Connection shall be provided with a curb stop and box, which shall 2 be the property of the Borough.
- 3. Combined Service Connections may be installed for normal domestic water service and fire protection service when approved by the Borough.
- 4. The Borough will be responsible for the maintenance and repair of its Service Connection.
- 5. The location and size of the Service Connection will be determined by the Borough.
- 6. The Borough reserves the right to construct its Service Connection after the customer installs their Service Line to the Borough's satisfaction.

5.3 **CUSTOMER'S SERVICE LINE:**

- 1. The customer's Service Line, beyond the Borough's curb stop shall be installed and maintained by the Customer at their expense. All Service Lines shall be installed in accordance with the Borough's specifications for Service Lines.
- 2. Although Service Line pressure may be undesirable, the Borough shall be under no obligation to increase pressure by plumbing or other means.
- 3. The Customer shall keep their Service Line in good condition to avoid unnecessary waste under penalty of service discontinuance.
- 4. The Customer shall protect the service pipe from freezing and shall pay for the cost of opening a frozen service pipe where the pipe is not installed or protected in accordance with the Rules and Regulations.
- 5. The Customer shall pay all costs for relocating or changing their Service Line.
- 6. Installation of all new or replaced Customer Service Lines shall be subject to Borough inspection and approval.
- 7. If the Borough is required to renew its Service Connection, and the Customer's Service Line does not meet the Borough specifications, the Borough may issue a notice to the Customer to renew their Service Line at the Customer's expense, coincident with the Borough's renewal.



5.4 **SEPARATE CONNECTIONS:**

- 1. A separate Service Connection and curb box shall be installed for each Customer; however, if a building, house, or other structure contains two or more Premises, and the Owner or Owners thereof so shall request, and the Borough shall deem it advisable, the Borough, at its discretion, may install a single service connection and curb box for such building, house or other structure.
- 2. In the event the Borough does not deem a single Service Connection serving two or more premises acceptable, the single Service Connection shall be replaced by separate curb stops and curb boxes for each Customer in accordance with the following paragraph, at the convenience of the Borough.
- 3. Where more than one Customer is now supplied through one Service Connection, a violation of these Rules and Regulations by any Customer on the common Service Connection shall be deemed a violation by all such Customers, but Water Service to the Premises shall not be discontinued until after the expiration of a reasonable time for the installation of a separate customer's Service Connection for each Customer after notice by the Borough to all such Customers of the violation of the Rules and Regulations. The Borough will install a sufficient number of separate curb stops and curb boxes at the termination of the Borough's Service Connection to permit the installation of a separate Customer's Service Connection for each Customer, or the Borough may, at its election, permit the use of one Customer's Service Connection by all such Customers other than the Customer who has violated these Rules and Regulations.

5.5 **CONNECTION NOTICE:**

- 1. No Person shall make or cause to be made a connection of any Improved Property or Premises to the Water System until such Person shall have given the Borough at least forty-eight (48) hours' notice of the time when such connection will be made so that the Borough may inspect the work, connection and perform necessary testing. Inspection fees shall be charged to the Owner of the Improved Property in accordance with the rate schedule of the Borough then in effect.
- 2. No connection shall be made to the Water System, or the pipe trench covered or trench backfilled, unless and until the Service Line installation has been inspected and approved, in writing, by the Borough's representative and all permits, approvals, and inspection forms, if any are required, have been received and provided to the Borough. If any part of the Service Line is covered before being inspected, tested, and approved, it shall be uncovered for inspection at the cost and expense of the Owner of the Improved Property.
- 3. It is the intention of the Rules and Regulations that the entire connection be inspected at one time; however, if the Owner feels that specials conditions warrant more than one inspection, the Owner may request the same, subject to such additional inspection fees as the Borough shall determine.

- 5.6 LOCAL or PADOT RIGHT-OF-WAY: If work contemplated requires excavation within Local or PADOT right-of-way, including but not limited to Borough, Township, PADOT streets and sidewalks, such Person shall have furnished satisfactory evidence to the appropriate representative of the Borough that a permit for the excavation within the Local or PADOT right-of-way has been obtained from the subject right-of-way holder.
- 5.7 MAINTENANCE BY PROPERTY OWNER: Every Service Line shall be maintained at all times in a safe operating condition by the Owner of an Improved Property. Owner shall comply with all maintenance and rules imposed by the Borough, including those which may be set forth, in writing, separately from these Rules and Regulations from time to time. It shall be Owner's responsibility to ensure that occupants of the Premises or tenants, if any, comply with all maintenance and rules imposed by the Borough.
- REPLACEMENT OF SERVICE LINE: In the event it becomes necessary to replace a 5.8 Service Line, the Owner shall notify the Borough and such a replacement shall be subject to the specifications and inspection provisions of these Rules and Regulations. The Owner shall be responsible for all costs of replacement of the Service Line.

5.9 **PAYMENT OF COST:**

- 1. All costs and expenses for the construction, connection, and maintenance of a Service Line shall be borne by the Owner of an Improved Property; and such Owner shall indemnify and save harmless the Borough from all loss or damage which may be occasioned, directly or indirectly, as a result of construction, connection, and maintenance of a Service Line, as well as from an action, cause of action, claim or judgment, including any costs and reasonable attorney fees incurred in defending such action, cause of action, claim or judgment, as a result of construction, connection, and maintenance of a Service Line.
- 2. If required for Service to a Property, the Borough, at the expense of the Owner, may construct the Service Line. The Borough shall have the right to repair a damaged Service Line at the Owner's expense; and such Owner shall indemnify and save harmless the Borough from all loss or damage which may be occasioned, directly or indirectly, as a result of the repair of a Service Line.
- 5.10 LOCATION OF SERVICE CONNECTIONS AND LINES: The location of the Service Connection and Line shall be designated by the Borough and no service shall occupy the same trench with sewer pipe or any facility of another service company, nor be within three feet of any open excavation or vault.
- 5.11 PERIOD OF INSTALLATION: No Service Connection will be installed during the period that street openings are prohibited nor at any time when in the judgment of the Borough, working conditions are unreasonable for such installation.
- 5.12 REPAIR OF LEAKS: All leaks in service pipes and fixtures, in and upon the Premises connected shall be repaired promptly by the Customer at his own expense. Upon failure of the Customer to make such repairs within fourteen days, the Borough, upon seven (7) days written notice, may discontinue Water Service until all necessary repairs have been made and all fees and conditions are met.



- 5.13 PRIVATE WATER SUPPLY: No person obtaining water from a private water supply, under any circumstances, shall construct or maintain, or cause or permit to be constructed or maintained, any connection, directly or indirectly, between such private water supply and the Water System being operated by the Borough.
- 5.14 **CONTROL OF CURB STOP:** Under no circumstances shall any person not authorized by the Borough open or close the stop cocks or valves in any public or private line.
- 5.15 **CURB BOX OBSTRUCTION:** If obstructions are placed by the Customer over, in or around curb boxes in such manner as to prevent normal operation of the curb stop, or to result in damage to the curb box, curb stop or service line, the Borough will discontinue service by shutting off the water at the curb stop and plug the curb box, or disconnect the Service Line, or turn the water off at the corporation stop or ferrule, as it may deem necessary. Before service will be renewed, the Customer shall pay to the Borough the expenses incurred in shutting the water off and in turning it on again, including the cost of necessary trenching and backfilling, of cutting and replacing pavement, sidewalk or curbing, of any municipal permit or permits for opening the pavement, and also shall settle any unpaid bills for water or other service and make a satisfactory deposit to ensure the payment of future water bills in accordance with these Rules and Regulations.
- SERVICE LINE CONNECTION ON PRIVATE PROPERTY: Service Connections will not 5.16 be installed to a Property other than that of the Premises to be furnished water, and all new Service Connections shall be connected to Borough-owned Water System.
- 5.17 **LENGTH OF SERVICE LINE:** The Borough will exercise the right in cases where the length of the Customer's Service Line exceeds 100 feet, and in all cases where deemed advisable to require the Customer to construct, at their expense, a watertight concrete meter pit provided with a suitable iron cover and constructed in accordance with a plan furnished by the Borough. Said meter pit to be constructed at the property or curb line and to be used for the housing of the meter required for the service of the Premises.

OTHER SERVICE LINE REQUIREMENTS: 5.18

- 1. All Service Lines shall have a backflow prevention device installed to the specifications of the Borough.
- 2. The Borough reserves the right to require any Customer to install on or in conjunction with his service pipe, such valves, stop cocks, check valves, relief valves, pressure regulator, air chamber, tank, float valve, insulation, heating tape, or other apparatus of approved design, when and where, in its opinion, the conditions may require it for the safeguarding and protection of the Borough's property or the water supply.
- 3. Should the use of water by any Customer become excessive during periods of peak use and cause a substantial decrease in pressure in the distribution system of the Borough to the extent that normal water service to other Customers is impaired, the Borough exercises the right to require the installation of properly designed and constructed storage facilities on the Property of the Premises involved.

- 4. The above storage facilities shall include all piping, valves, fittings, storage structures, pumps, automatic controls, and such other appurtenances as are required to permit the storage of water and delivery there from during periods of peak water use for the Premises, and thereby avoid a direct use from the system of the Borough during such periods. The basic design of such systems shall be subject to review and approval by the Borough.
- 5. The above storage facilities shall be paid for and installed by the Customer.
- 6. When steam boilers take a supply of water directly from the Service Line, it will be at the risk of the parties making such attachments, as the Borough will not be responsible for any accidents or damages to which such devices are frequently subject.
- 7. House boilers for domestic use must in all cases be provided with vacuum valves to prevent collapsing when water is shut off from the distributing pipes. The Borough will not, in any case, be responsible for accidents or damages resulting from failure to observe this rule, or due to conditions in the distributing pipes, or from the imperfect action of any such valves, or due to such other causes
- 8. There shall be placed in the Service Line, inside the wall of the Premises supplied, at the expense of the Customer, a round-way brass stop and waste cock, easily accessible to the occupants for their protection in enabling them to turn off the water in case of leaks and to drain the pipe to prevent freezing.
- 5.19 SPECIAL REQUIREMENTS: Whenever, in the opinion of the Borough, special conditions require additional safeguards or more stringent specifications to be observed, then the Borough specifically reserves the right to refuse to permit a connection to be made to its Water System until such special requirements or specifications as may be stipulated by the Borough have been satisfied.

SECTION 6 WATER MAIN EXTENSIONS

6.1 **GENERAL:** Where an Owner desires to extend Water Service to an Improved Property or properties, they may do so after having met all of the conditions of these Rules and Regulations. All extensions so constructed shall include, without limitation, all Water Mains, Service Connections. Service Lines, pumping stations, and other necessary appurtenances.

A Water Main Extension shall be required by the Borough in any or all of the following instances:

- 1. For the furnishing of Water Service to an individual Premise whose front property line does not abut the main waterline installed in a public right-of-way and owned by the Borough.
- 2. For the furnishing of Water Service to a group of individual Premises whose front property lines do not abut main waterlines installed in public right-of-way and owned by the Borough.
- 3. For the furnishing of Water Service to a group of Premises located within the limits of a recorded plan of lots where the Developer of the plan is desirous of obtaining such service for the lots.
- 4. For the furnishing of public or private fire service to a municipality or a private individual firm or corporation or others requesting such service where no Borough owned lines are installed in public rights-of-way, or where existing Borough owned lines are not capable of providing the requested fire flows.
- 5. For the furnishing of a requested quantity of water for a Premise or group of Premises which is beyond the capability of the existing Borough system in the area where service is required.
- 6. Such other similar instances.
- 6.2 PAYMENT OF COST: The entire cost of the requested Water Service Extension shall be borne by the Owner requesting or requiring the extension. The Borough shall be subject to no cost.

The Owner shall deposit with the Borough, prior to the execution of any work, a sum of money sufficient to pay all of the Borough's estimated costs associated with the proposed extension, including but not limited to engineering, legal, inspection, testing, observation, and administrative costs, as determined by the Borough in its reasonable discretion, the deposit to be made upon the execution of an agreement between the Borough and the Owner. The amount of deposit shall be determined by the Borough from time to time, and a minimum balance must be maintained in the escrow account. If the balance of the account falls below the minimum established by the Borough, the Borough may demand additional deposits from time to time at its sole discretion.

- 1. The Owner shall provide construction security (form of security to be determined by the Borough) in the full amount to cover the total estimated cost of Water Main Extension construction, including contingences. The Borough reserves the right to use the construction security to complete the installation of the Water Main Extension in the event of default by the Owner, or Owner's Contractor. The construction security shall be delivered to the Borough prior to the execution of the Water Main Extension Agreement.
- 2. If it is the intent for the Borough to undertake the installation of the Water Main Extension, the Owner shall deposit with the Borough, prior to the execution of any work, a sum of money sufficient to pay the estimated costs of the Water Main Extension, as determined in accordance with the procedures set forth herein. The deposit to be made upon the execution of the Water Main Extension Agreement between the Borough and the Owner.
- 3. Normally, for Water Main Extensions, the Owner shall furnish and install, at their expense, the necessary Service Connection(s). Each Service Connection will include the connection to the main, corporation stop, service line, curb stop, curb box, and meter pit, if required, and is subject to Borough approval as to location and construction.
- 6.3 **AGREEMENT:** The Owner shall enter into a written agreement with the Borough, prior to the execution of any work, in a form satisfactory to the Borough. The agreement to contain such pertinent conditions which include, but are not limited to, the following:
 - 1. The Streets in which the extension is to be located must be dedicated to public use. the lines and grades thereof established and the rough grading completed. Where a line is located in a private right-of-way, an Easement shall be dedicated to the Borough for its use and benefit, in a form acceptable to the Borough.
 - 2. The ownership title to all installations shall be conveyed to and vested in the Borough, when approved by the Borough.
 - 3. The Owner and its Contractor, where applicable, shall be required to provide the Borough with performance and payment bonds in the full amount of the work construction cost in accordance with applicable laws and the agreement required to be entered into between Owner and Borough.
 - 4. The Owner's Contractor shall provide the Borough with certificates of insurance in the amounts specified by the Borough, with the Borough and the Borough's Engineer names as additionally insured on liability policies.
 - 5. The Owner shall be responsible for maintenance of any water main facilities for a period of Eighteen (18) months following acceptance and dedication of such improvements by the Borough. The Owner shall be responsible for maintaining cash security, on deposit with the Borough or under a letter of credit acceptable in form and substance to the Borough of an amount equal to Fifteen (15%) percent of the construction costs as security for Owner's maintenance responsibilities for such Eighteen (18) month period.

- 6. The Borough shall have the right to make further Water Main Extensions beyond or laterally from the Water Main Extensions, such extensions not to be considered as connections subject to any refund.
- 7. The payment of refunds to the Owner for additional new Customers connecting by way of a Service Connection to the extension to be subject to such conditions as set forth in the agreement, and to limiting number of years, not to exceed 10 years, for the payment of refunds. No refunds are to be made unless the collection part of the Tapping Fee is received from the new Customers for the privilege of obtaining Water Service from the Water Main Extension, through a Service Line or Service Connection. There is no refund for new Customers connecting to subsequent Water Main Extensions of the initial extension.
- 8. The Water Main Extension agreement, together with all its terms and conditions, shall be binding upon an insure to the benefit of the respective successors or assigns or personal representatives of the parties thereto, as the case may be, but the agreement, other than the right to receive such payments as may be due there under, may not be assigned by the Owner without the prior written consent of the Borough.
- 9. Such other related requirements.
- **DESIGN:** Water Main Extensions shall be designed by the Owner subject to Borough 6.4 approval, and shall comply with the following conditions:
 - 1. The Owner must secure the services of a Registered Professional Engineer and a Registered Professional Surveyor to prepare the necessary plans and specifications, which shall be subject to approval by the Borough. Any revisions in the design considered necessary in the opinion of the Borough's Engineer shall be made at the expense of the Owner. Such plans so prepared shall be signed and sealed by the Registered Professional Engineer and Registered Professional Surveyor.
 - 2. The plans shall include the proposed location of the extensions, the layout of the streets and roads, the layout of existing and proposed plans of lots, existing utilities, and other pertinent data, such plans to be in sufficient detail, including but not limited to plan and profile views, to permit the Borough to review and approve the plans.
 - 3. All extensions shall be located in dedicated streets or within right-of-way dedicated for public use. Where required water line easements have not been recorded, the Borough shall be provided with a written easement suitable for recording. The easement shall be a minimum width of 20 feet and to the extent possible the easement shall be uniform in shape, and parallel to property lines with the water line placed in the middle area of the right-of-way. The entire post-construction easement shall be accessible for maintenance. The easement document shall be accompanied by individual legal descriptions and plots for each lot on which the easement is located, as well as an overall easement location plan for the entire Project. Such descriptions and plots shall be in a form acceptable to the Borough.

- 4. All Water Main Extensions shall be designed in such a manner as will permit future extensions thereof with the dedication of the easement, whenever applicable, providing for future extensions.
- LOCAL or PADOT RIGHT-OF-WAY: If work contemplated requires excavation within 6.5 Local or PADOT right-of-way, including but not limited to Borough, Township, PADOT streets and sidewalks, such Person shall have furnished satisfactory evidence to the appropriate representative of the Borough that a permit for the excavation within the Local or PADOT right-of-way has been obtained from the subject right-of-way holder.
- 6.6 CONSTRUCTION: No construction of any Water Main Extension intended to be connected to the Borough Water System shall be undertaken until such plans and specifications are approved by the Borough and all necessary permits are secured.
 - 1. All construction shall be done in accordance with the Standard Construction Specifications and approved plans and specifications and in accordance with applicable federal, state, and local statues, ordinances, and regulations. All construction is subject to inspection, testing, observation, and approval by the Borough and its designated representatives.
 - 2. The construction shall be observed on a full-time basis by the Borough's representative and the Owner is to be responsible for the payment of all observation costs.
- 6.7 **DEDICATION:** All extensions shall be connected to the Water System owned by the Borough, and shall be dedicated to and becomes property of the Borough after inspection and acceptance by the Borough. The Borough will accept dedication of the Water Main Extension provided that:
 - 1. The Owner has entered into an agreement with the Borough that is suitable to the Borough's solicitor.
 - 2. The Owner has provided a bill of sale for all appurtenances being dedicated to the Borough:
 - 3. The water system has been properly installed and is in good repair.
 - 4 If after completion of any Water Main Extension installed by a Person or Contractor other than the Borough, and if an acceptable offer of dedication is not received immediately upon completion of the work, at the Borough's option, the Borough may withhold Service, or the Borough may discontinue any Service improperly instituted by the Owner, or the Borough may disconnect Owner's line from the Borough Water System with all costs associated therewith to be paid by Owner.
- 6.8 LIABILITY: The Borough accepts no responsibility or liability and shall be under no obligation to maintain, repair or replace any water facilities installed by the Owner, prior to the acceptance and dedication of said facilities.
 - 1. Until conveyed to another person, the Owner and their assigns will be responsible for payment of all charges for Water Service to each Improved Property.

6.9 LIMIT OF WATER MAIN EXTENSION: The extension of a water main shall include the entire quantity of pipe line and appurtenant facilities required to conduct the supply of water from the end of the existing Borough Water System to and across the entire frontage of the last property for which the Owner has requested water service.

6.10 **SIZE OF MAINS:**

- 1. The Borough shall determine whether a Water Main Extension is required in order to extend Water Service. In no case shall the waterline be less than 8-inches. except to dead ends where it may be 6-inches at the sole discretion of the Borough.
- 2. If the Borough increases the size of a Water Main Extension beyond that normally required to provide local service, as determined by the Borough, the Borough may bear the increased cost based on cost data furnished by the Applicant and approved by the Borough.

6.11 **WATER MAIN EXTENSION ALIGNMENT:**

- 1. The layout and alignment of all Water Main Extensions and appurtenances shall be reviewed and approved by the Borough, or its Engineer.
- 2. The number and location of fire hydrants, which shall be purchased and installed at the Owner's expense, per Borough Specifications, shall conform to the requirements of the Borough's Engineer.
- 6.12 **PRECEDENTS:** The granting of a particular application or an exception to these Rules and Regulations shall not operate as a precedent in any other case. The Borough may through special action grant an exception or exceptions to any rule, regulation or charge.

SECTION 7 WATER USE CHARGES AND FEES

- 7.1 **GENERAL:** This Borough hereby does impose fees against Owners who desire to or are required to connect to the Water System. The fees shall be based on the duly adopted rate schedule which is in effect at the time of payment and shall be made payable at the time set by the Borough or at a time to which the Owner and Borough agree.
 - The Owner, in all instances, rather than tenant(s), shall be liable for the payment of all Water charges and fees for services provided by the Borough, and all costs and fees incurred in the collection thereof. Upon Owner request, the Borough will furnish meter data to allow Owner to identify billing such as identifying apartment number with billing number.
- 7.2 CALCULATION OF FEES: All such fees payable by the Owner shall be calculated by multiplying the amounts of the various fees times the number of Equivalent Dwelling Units (EDUs) assigned for the Property's use. The Borough, in its sole discretion, shall determine the appropriate number of EDUs to be assigned to a particular Property, taking into consideration data supplied by the Owner, all Department of Environmental Protection Regulations, industry reference publications and their own experience.
- 7.3 MULTIPLE USE PROPERTY: Each EDU located in a Multiple Use Property shall be billed as a separate entity as though such EDU was in a separate structure and had a direct and separate service to the Water System.
- 7.4 TAPPING FEES: A Tapping Fee is hereby imposed upon the Owner of any Improved Property to be served by the Water System, which actually connects or is required to connect pursuant to the Connection Ordinance then in effect requiring such connection.
 - 1. The fees charged by the Borough include charges for connection to the Water System including Connection Fees, Consumer Facilities Fees and Tapping Fees and such other fees as may be authorized by Act 57 of 2003, as amended, or such other Act of the Commonwealth of Pennsylvania or its agencies and adopted by the Borough.
- 7.5 CALCULATION OF TAPPING FEES: Calculation and itemization of the maximum allowable Tapping Fee is on file and available for review at the Borough Office.
 - 1. The actual Tapping Fee payable by the Owner of an Improved Property shall be the product of the number of EDUs, constituting such Improved Property, times the adopted Tapping Fee, as noted within the Rate Schedule of the Borough then in effect.
 - 2. In the event an Improved Property, or use thereof (including number of occupants), changes in a manner that causes the number of EDUs applicable to such Improved Property calculated hereunder to increase, an additional Tapping Fee based on such additional EDUs shall be immediately due and payable.
 - 3. The Borough reserves the right to update the Tapping Fee Report and adopt a revised Tapping Fee as may be authorized by Act 57 of 2003, as amended, or such other Act of the Commonwealth of Pennsylvania or its agencies and adopted by the Borough.

- 7.6 USER CHARGES: A User Charge is hereby imposed upon the Owner of any Improved Property that is or shall be connected to the Water System, for use of the Water System, whether such use is direct or indirect, and for Water Service rendered by the Borough in connection therewith, and shall be payable as provided herein.
 - 1. At the discretion of the Borough, such User Charges may be imposed upon the Owner of an Improved Property who fails or refuses to improperly connect such Improved Property to the Water System, as compensation for the availability of service by the Borough in connection with the Water System.
- 7.7 CALCULATION OF USER CHARGES: User Charges for service applicable to any Improved Property, Premises, or Connection Unit constituting a Residential Establishment, a Commercial Establishment, an Educational Establishment, an Industrial Establishment, an Institutional Establishment or any combination thereof, shall be calculated, imposed and collected on the basis of the Borough Rules and Regulations.
 - 1. Bills will be determined according to the Schedule of Water Rates.
 - 2. Where a meter fails to register, or is found to be faulty, a bill will be determined based on average consumption for the previous four (4) quarters, or for the total period of service, whichever is shorter.
 - 3. Bills for a partial billing period will be determined according to the Schedule of Water Rates, based on actual consumption or a prorated minimum, whichever is greater. Prorated minimum bills will be based on the number of days' service is rendered in the billing period.
- 7.8 **SPECIAL AGREEMENT:** Nothing contained herein shall be construed as prohibiting any special agreement or arrangement between the Borough and the Owner of an Improved Property with respect to terms and conditions with respect to payments to be made to the Borough in connection therewith. In such event, such service and payments with respect thereto shall be governed by terms and conditions of such special agreement.

SECTION 8 BILLS, PAYMENTS, AND TERMINATION OF SERVICE

8.1 GENERAL: All bills for services furnished by the Borough will be based on the rate schedule of the Borough then in effect.

Each Owner of an Improved Property, which is connected to the Water System, initially shall provide the Borough with and thereafter shall keep the Borough advised of their correct address. Failure of any Person to receive any bill for User Fees shall not be considered an excuse for nonpayment or an abatement of penalties, nor shall such failure result in an extension of the period of time during which the net bill shall be payable.

Every Owner of Improved Property shall remain liable for the payment of all bills, including but not limited to User Charges and surcharges, until the later of:

- 1. The receipt by the Borough of written notice by such Owner that the property has been sold, containing the correct name and mailing address of the new Owner, or
- 2. The date on which title to the Improved Property is transferred to a new Owner. Failure to provide notice renders an Owner continuously liable for any charges that may accrue until such time as the Borough has been properly notified of any change in Ownership.

8.2 **BILLS RENDERED AND DUE:**

- At the option of the Borough, all bills will be rendered monthly for service during the 1. previous month.
- 2. All payments on accounts must be sent to 209 North Warren Street, Orwigsburg, PA 17961 and postmarked on or before the due date printed on the bill.
- 3. For special or estimated charges, bills will be rendered upon application, before service is granted.
- 4. Charges for connections, temporary uses, and special services shall be payable on demand.
- 5. The Borough reserves the right to take any legal action it deems necessary, including imposing a lien on the property, in order to recover amounts due and payable.
- 6. Owners of an Improved Property that are first connected to the Water System during any monthly period shall pay a pro-rata User Charge for service for the balance of the billing period and shall be billed in conjunction with the next regular billing period or by a special billing, as the Borough may determine.
- 8.3 **DELINQUENT ACCOUNT PROCEDURES:** If any User Charge or applicable surcharge is not paid by the applicable billing date, an additional sum of ten percent (10%) penalty shall be added to such bill. If not paid within thirty (30) days from the date of the bill, an additional one and a half percent (1.5%) penalty will be charged for every additional month of fraction thereof.



- 1. Payment made or mailed and postmarked on or before the due date shall constitute payment within such period. If the due date shall fall on a legal holiday or a Sunday, then payment made on or mailed and postmarked on the next succeeding business day, which is not a legal holiday, shall constitute payment within such period.
- 2. If service is discontinued, it will not be restored until all unpaid bills and charges. including the charge for restoring water service, are paid or satisfactory arrangements have been made for payment.
- 3. Any and all payments received on delinquent accounts shall be applied first to any penalty and processing fee and then to the oldest outstanding balance.
- 8.4 NON-PAYMENT: Payment of any User Charge or applicable surcharge not paid within a timely manner, as determined by the Borough, may be referred to an attorney for collection of delinquent accounts. Attorney fees shall be paid in accordance with Title 53 P.S. Section 7106.

The Borough reserves to itself the following remedies in the event of non-payment, which it may exercise separately or in any combination, or in combination with the procedures set forth in title 53 P.S. Section 7106, in its sole discretion:

- 1. First Notice is sent first class mail ten (10) days after the due date and the penalties have been added to all customers who have not paid their current bill.
- 2. Second Notice is sent first class mail and certified mail ten (10) days after the first notice to the customers who have not made a payment in thirty (30) days, have a balance over sixty (60) days past due or a balance due of over \$100.00. A processing fee will also be added to the account.
- 3. Third Notice is a door posting on the main entrance of the property, seven (7) days after the certified letter second notice is sent, stating water service to the property shall be shut off. The water shut off shall be scheduled for noon ten (10) days after the door posting. If payment is still not received, a water shut off notice is posted on the door the day of the shut off.
- 4. If no payment after water shut off, then charges are filed with the magistrate. The Borough also reserves the right to exercise any other legal remedy to collect past due amounts by appropriate action and/or to pursue equitable relief to prohibit further use of water by the Owner. The Borough may also (i) file delinquent accounts in accordance with law with appropriate credit agencies, and (ii) exercise any other legal remedy to collect past due amounts by appropriate action and/or to pursue equitable relief to prohibit further use of water by the Owner. It is also noted that non-payment of sewer charges by contributing municipalities may result in water shut-off.
- 5. Where Owner does not reside at the Improved Property where the past due bill is incurred, notices of the delinquency as provided in this section will be sent to both the Owner and tenant.

- 8.5 **COLLECTION:** All charges and fees shall be collected in the manner of a municipal lien filed against the Property or by any other process authorized by law by the Borough, together with any costs of collection, including reasonable attorney fees.
 - 1. Water meters are read at the end of March, June, September & December.
 - 2. Utility bills are mailed on or about the 15th of January, April, July, October.
 - 3. Utility bills are due thirty (30) days after the billing date.
 - 4. If not paid, seven (7) days after the due date, a letter is mailed requesting payment.
 - 5. If still not paid, ten (10) days after the date of the first letter, a second certified letter is mailed informing the customer their service may be shut-off if not paid within seven (7) days of the date of the second letter.
 - 6. Delinquent accounts that are two (2) quarters behind will be posted with a Shut Off Notice. Customers have ten (10) days after the Shut-Off Notice to pay the delinquent amount before their service will be shut-off. Shut offs will not occur on a Friday, Saturday, or Sunday,
 - 7. Vacant properties will have a lien filed.
- 8.6 **TAPPING FEE:** The Tapping Fee shall be due and payable the earlier of:
 - 1. The time application is made by an Owner of an Improved Property to make connection to the Water System or if applicable the date when the Borough shall connect any such Improved Property to the Water System, at the costs and expense of the Owner, when such Owner shall have failed to make such connection as required by the Connection Ordinance in effect requiring such connection.
 - 2. In the case of Improved Properties required to be connected following initial construction of the Water System, the date which is sixty (60) days after the date of issuance by the Borough of a written notice to connect.
 - 3. Owners of an Improved Property which is attributed an additional number of EDUs as defined by the Borough rate structure herein shall pay a corresponding additional Tapping Fee at the time of being attributed with the new EDU computation.

All Tapping Fees shall be payable to Borough.

No Tapping Fees shall be reimbursed by the Borough for subsequent reductions in the number of EDUs constituting a particular Improved Property.

- 8.7 USER CHARGES AND APPLICABLE SURCHARGES: User Charges shall be due and payable the earlier of:
 - 1. The date of actual, physical connection of an Improved Property to the Water System.

- 2. Sixty (60) days from the date of issuance of the notice to connect described in the Connection Ordinance or such other date established by the Borough for commencement of the payment of the User Charge.
- 3. One (1) year from the date of issuance of a water connection permit.

NOTICE AND CHANGES: 8.8

- 1. The Borough reserves the right to shut off water for nonpayment of delinquent water bills, and for any of the other reasons listed. 2. There will be a \$50.00 charge to the Owner for temporary shut-off and turn-on of Water Service made at the Owner's request, minimum 72-hour notice, and performed during the Borough's normal weekday business hours.
- There will be a \$50.00 charge to the Owner for temporary shut-off and turn-on of 3. Water Service made at the Owner's request, and performed outside of the Borough's normal weekday business hours, including holidays.
- 4. The Borough reserves the right to shut-off Water Service without notice during emergencies, and the Borough shall not be liable for any damages or inconvenience suffered.
- 8.9 BILLS OF DOUBTFUL ACCURACY: Any Customer who doubts the accuracy of a bill shall bring or mail the bill, within ten (10) days of receipt, to the Borough office. The Borough will check the bill and either confirm the original billing or issue a corrected bill. The due date will be adjusted by the time required to check and reissue the bill.
- 8.10 **BAD CHECKS:** When a check is returned to the Borough by the bank for insufficient funds. the Borough will add a service charge of \$25.00 to the bill for each occurrence.

SUPPLY OF WATER: 8.11

- 1. The Borough shall not be liable for any water supply deficiency, or its consequences.
- 2. The Borough reserves the right to restrict water service in case of scarcity, or whenever the public welfare may require restriction.

DISCONTINUANCE OF SERVICE: 8.12

1. BY CUSTOMER: Any Customer may terminate their service contract with the Borough due to vacancy, change of ownership or occupancy, and have their water service discontinued upon giving written notice thereof to the Borough, and upon the lapse of a reasonable time thereafter to permit the Borough to take final meter readings and attend to other details in connection with such discontinuance of service. The Customer shall remain liable for water furnished to the Premises described in their application until the Borough has received written notice and the termination of Water Service has taken effect as stated above.

- A new application shall be submitted each time there is a change in a. ownership or Customer identity at Premises, and the Borough shall have the right to discontinue Water Service until a new application is made and approved.
- b. Discontinuance of Water Service by the Borough for nonpayment of a bill or violation of these Rules shall not cancel the application for service, nor constitute a waiver of this rule.
- 2. BY BOROUGH: Water Service under any application may be discontinued by the Borough, after due notice, for any of the following reasons:
 - For misrepresentation in the application. a.
 - For the use of water for, or in connection with, or for the benefit of, any other b. Premises or purposes than those described in the application.
 - C. For willful waste of water through improper or imperfect pipes, fixtures, or otherwise.
 - d. For failure to maintain in good order the Service Line and fixtures owned by the customer or Borough.
 - e. For molesting, or in any other way interfering with, any service pipe, meter, meter box, curb stop, curb box or with any seal on any meter or other fixtures and appliances of the Borough.
 - In case of continued vacancy of the Premises. f.
 - For refusal of reasonable access to the Premises for purposes of inspecting g. the piping, fixtures and other water system appliances therein, or for reading, caring for, repairing, or removing meters.
 - h. For neglecting or refusing to make or renew advance payments where required, or for nonpayment of Water Service, or for any other charge accrued under the application.
 - i. Where the contract had been in any way terminated by the Customer.
 - j. For making, or refusing to sever, upon notice, any Cross-Connection between a pipe or fixture carrying water furnished by the Borough and a pipe or fixture carrying water from any other source.
 - k. Refusal to conserve water during periods of advertised restricted supply.
 - I. Refusal to permit the installation of a water meter.
 - For resale of water except where subject to a special agreement. m.
 - For Premises where the demand for water is greatly in excess of past n. average or seasonal use, or where such excessive demands for water by the Premises are, or may be detrimental or injurious to, or make inadequate, or in any way impair water service furnished to other Customers.



- For nonpayment of sewer bill. Ο.
- For violation of Sewer System Rules and Regulations or other requirements p. governing the sewer service furnished by the Borough.
- For violation of these Rules and Regulations or other requirements q. governing the supply of water furnished by the Borough.
- 8.13 SUSPENSION OF SERVICE DUE TO EMERGENCY: The Borough shall have the right, as necessity may arise in case of breakdown, emergency or for any other unavoidable cause, to shut off the water supply temporarily in order to make necessary repairs. connections, and to do such other work. The Borough will use all reasonable and practical measures to notify the Customer of such interruption of service. In such cases, the Borough shall not be liable for any damage or inconvenience suffered by the Customer, or any claim against it at any time for interruption in Water Service, lessening of the supply. inadequate pressure, poor quality of water, or for any causes beyond its control. Such temporary shut-off of the water supply shall not entitle the Customer to any abatement or deduction in or from the water service charges, nor the refund of any portion of such service charges paid in advance during or for the tie of such shutoff. When a supply of water is to be temporarily shut off, notice will be given, when practicable, to all Customers affected, stating the probable duration of the interruption of service and also the purpose for which the shut-off is made. Nothing in these Rules and Regulations contained; however, shall be construed as a guarantee, covenant, or agreement of the Borough to give notice of any shut-off due to emergencies or otherwise.
- 8.14 RENEWAL OF SERVICE AFTER DISCONTINUANCE: Water Service may be renewed under a proper application when the conditions under which such service was discontinued are corrected and upon the payment of all proper charges or amounts provided in the schedule of rates or rules of the Borough due from the applicant; and upon the receipt of a deposit, as set forth herein.

SECTION 9 PENALTIES

- 9.1 CIVIL FINES: Any Person who fails to comply with any provisions of the Water System Rules and Regulations shall be fined not less than Three-Hundred Dollars (\$300.00) nor more than Six Hundred Dollars (\$600.00) for each offense. For each offense, each day of which a violation shall occur or continue under this section shall be deemed a separate and distinct offense. In addition to the penalties provided herein, the Borough Rules and Regulations provide for the recovery of reasonable attorney's fees, court costs, court reporter fees and other expenses of litigation by appropriate suit at law against the person found to have violated the orders, rules, regulations, and permits issued hereunder.
- 9.2 **CRIMINAL VIOLATIONS:** Any Person who willfully or negligently violates any provision(s) of the Water System Rules and Regulations or any order or permits issued hereunder or any state, federal or local regulation shall be subject to criminal penalties and/or imprisonment to the extent such punitive measures are allowable by law.
- 9.3 FALSIFYING INFORMATION: Any Person who knowingly makes any false statements, representations or certification in any application, record, report, plan or other document filed or required to be maintained, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or other method required under the Water System Rules and Regulations, shall, upon conviction, be punished by a fine of not more than One Thousand Dollars (\$1,000.00) or by imprisonment to the extend allowed by law, or by both. For each offense, each day of which a violation shall occur or continue shall be deemed a separate and distinct offense. In addition to the penalties provided herein, the Borough Rules and Regulations provide for the recovery of reasonable attorney's fees, court costs. court reporter fees and other expenses of litigation by appropriate suit at law against the person found to have violated the orders, rules, regulations, and permits issued hereunder.
- 9.4 **ABATEMENT OF NUISANCES:** In addition to any other remedies provided in this section, any violation of the Water System Rules and Regulations deemed to be a nuisance by the Borough may be abated by either seeking appropriate equitable or legal relief from a court of competent jurisdiction.

APPENDIX A

DEFINITIONS

Unless the context specifically and clearly indicates otherwise, the meaning of the following terms and phrases shall be as follows:

ACCEPTED PLANS: Shall mean the Owner's construction plans, accepted by the Borough.

APPLICANT: A person who applied for water service at premises.

APPROVAL shall mean the legal letter of approval issued by the Borough of Orwigsburg passed by motion at a legally scheduled meeting and witnessed.

BOROUGH SERVICE AREA shall mean the geographic area served by the water system as determined and designated, from time to time, by the Borough.

BACKFLOW PREVENTER: A device or means to prevent backflow of water and/or potential pollutants into the Borough's water system.

BOROUGH of Orwigsburg – Municipal entity located in Schuylkill County, Pennsylvania, and owner of the public water supply system.

COMMONWEALTH shall mean the Commonwealth of Pennsylvania.

CONNECTION FEE shall mean the fee for connection of the property from the water main to the property line.

CONNECTION ORDINANCE shall mean the ordinance enacted by the Borough of Orwigsburg or North Manheim and West Brunswick Townships requiring Owners of certain Improved Property located in the Borough Service Area to connect to the public water system and use the same in such manner as the Borough of Orwigsburg or North Manheim and West Brunswick Townships may ordain.

CONTRACTOR shall mean any Person, Firm, Partnership, or Corporation who, with approval of the Owner, intends to build, construct, and install a water system project within the Borough Service Area.

CROSS-CONNECTION: An arrangement allowing either a direct or indirect connection through which backflow, including back siphonage, can occur between the Borough's water system and a system, or condition, containing a source or potential source of contamination.

CUSTOMER shall mean the Owner contracting for Water Service for their own use or use by a tenant or other occupant of a single Property or Premises; and the word "Customers" means all so contracting for Water Service.

CUSTOMER FACILITIES FEE shall mean the fee for connection from the property line to the dwelling or building.

DEPARTMENT OF ENVIRONMENTAL PROTECTION or **DEP** or **PADEP** shall mean the Pennsylvania Department of Environmental Protection.

DEVELOPER: A person for whom subdivision or land development plans are made.

DOMESTIC CONSUMER UNIT shall mean any room, group of rooms, building or other enclosure connected directly or indirectly to the Water System and occupied or intended for occupancy as separate living quarters by a family or other group or persons living together or by a person living alone; and each Domestic Consumer Unit in a double house, in a row of connected houses or in an apartment building shall be billed and shall be considered at a minimum a separate EDU.

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

EDUCATIONAL ESTABLISHMENT shall mean any room, group of rooms, building, or other structure, connected, directly or indirectly, to the Water System and used or intended for use, in whole or in part, for educational purposes, including both public and private schools or colleges.

EQUIVALENT DWELLING UNIT (EDU) shall mean the unit of measure on which User Charges and the Tapping Fee shall be assessed against each Residential Establishment, Commercial Establishment, Industrial Establishment, Institutional Establishment, Educational Establishment, or any combination thereof or any other Property or Premises, connected to the Water System, as determined in accordance with these Rules and Regulations or in any existing or subsequent resolution of the Borough, and which shall be deemed to constitute an equivalent unit of service provided to the typical single-family dwelling unit.

IMPROVED PROPERTY shall mean any property located in the Borough Service Area upon which there is erected a structure intended for continuous or periodic habitation, occupancy or use by human beings or animals and for which water service is required. Each side of a double house or row home having a solid vertical partition wall shall be considered a separate Improved Property.

INTERCONNECTION: A physical arrangement whereby the Borough's water supply system is connected with another water system, public or private, in such a manner that a flow of water into the Borough's system from such other water system is possible.

MAIN or **MAINS** shall mean the Borough's water pipelines which are generally located in streets, highways, public ways or rights of way or private rights-of-way and which are used to provide water service.

MAIN EXTENSION shall mean any extension of water main pipelines constructed beyond existing facilities, excluding Service Lines.

MULTI-METERED shall mean a property in which conditions prevent the installation of a separate meter for each customer.

MULTIPLE USE PROPERTY shall mean any Property upon which there shall exist any combination of Residential Establishment, Commercial Establishment, Industrial Establishment, Educational Establishment, Institutional Establishment or similar establishments.

NORTH MANHEIM TOWNSHIP – Municipal entity served by the Borough of Orwigsburg Water System.

OWNER or **OWNERS** shall be the titleholder of the subdivision parcel or any and all person or persons having an interest as Owner in any Property or Premises.

PERSON or **PERSONS** shall mean any individual, partnership, company, association, society, trust, corporation, or other group or entity or any combination thereof.

PREMISES shall mean the property or area, including improvements thereto, to which Water Service is or will be provided.

PROJECT shall mean the total of the work to be performed under approval granted by the Borough.

PRIVATE FIRE PROTECTION SERVICE: The availability and/or furnishing of water through private fire hydrants and/or sprinkler system.

PROPERTY or **IMPROVED PROPERTY** shall mean any property within the Borough Service Area upon which there is a Premises or other erected structure intended for continuous or periodic habitation, occupancy or use by human beings or animals and for which water service is required. This shall also include a vacant property, which is proposed for development of a structure or structures for which water service is required.

PUBLIC FIRE PROTECTION SERVICE: The availability and/or furnishing of water through public fire hydrants.

RULES AND REGULATIONS shall mean the rules and regulations as adopted by the Borough for connection and/or use of the Water System.

SCHEDULE OF RATES: The entire body of effective rates, rentals, charges and regulations as published and made a part hereof.

SERVICE CONNECTION: The pipe, valves and other facilities by means of which the Borough conducts water from its distribution mains to and including the curb stop to be located at the curb line or property line of the premises. The service connection is made, installed, owned, and maintained by the Borough.

SERVICE LINE: The pipe, valves and other facilities by means of which water is conducted from the curb stop to a point on the outlet side of the meter to be located inside the walls of the building or meter pit if approved. The service line is installed, owned and maintained by the customer.

SERVICE METER: A device for measuring the quantity of water used, which is a basis to determine charges for water service to a customer. The service meter includes the remote readout system, if provided, and is furnished, installed, and maintained by the Borough.

STANDARD CONSTRUCTION SPECIFICATIONS shall mean the current standard construction and material specifications for water extensions of the Borough; and the Owner connection and installation requirements of the Borough as duly approved, from time to time, by resolution of the Borough.

STREET or **STREETS** shall mean and shall include any street, road, lane, court, cul-de-sac, alley, public way or public square, including such streets as are dedicated to public use, and such streets as are owned by private Persons.

TAPPING FEE shall mean a fee against the owner of any Improved Property in the area served by the Water System which actually connects or is required to be connected pursuant to the Connection Ordinance in effect requiring such connection or which otherwise connects to the Water System.

TENANT: Any person, partnership, company, association, society, corporation or other group or entity leasing or renting from any Owner of any Improved Property abutting the Water System which is supplied with water by the Borough.

TYPES OF SERVICE:

COMMERCIAL ESTABLISHMENT shall mean any room, group of rooms, building or enclosure, or group thereof, connected, directly or indirectly, to the Water System and used or intended for use in the operation of a business enterprise for the sale or distribution of any product, commodity, article or service, which maintains separate toilet, sink or other plumbing facilities in the room or group of rooms utilized for such business enterprise.

INDUSTRIAL ESTABLISHMENT shall mean any Improved Property used or intended for use, wholly or in part, for the manufacturing, processing, cleaning, laundering or assembling of any product, commodity, or article, or any other Improved Property for which public water is required.

INSTITUTIONAL ESTABLISHMENT shall mean any room, group of rooms, building or other enclosure connected, directly or indirectly, to the Water System, including institutional dormitories and Educational Establishments, which do not constitute a Commercial, Residential or Industrial Establishment.

RESIDENTIAL ESTABLISHMENT shall mean any room, group of rooms, house trailer, building or other enclosure connected, directly or indirectly, to the Water System and occupied or intended for occupancy as living guarters by an individual, or family, excluding institutional facilities.

USER shall mean any Person who receives water from the Water System for use at an Improved Property.

USER CHARGES or **USER FEES** shall mean the monthly rental or charge imposed by the Borough, as amended from time to time, for use or availability of use of the Water System as established by the Borough and set forth on its Rate Schedule attached hereto as Appendix B.

WATER MAIN EXTENSION: Water service requiring the construction of water mains beyond existing facilities.

WATER SERVICE or **SERVICE** shall mean the availability of the Water System or actual providing of water to a Premise.

WATER SYSTEM shall mean all facilities existing, at any particular time, acquired, constructed, operated, and/or owned by the Borough and the Property Owner connection and installation requirements of the Borough as duly approved, from time to time, by resolution of the Borough.

WEST BRUNSWICK TOWNSHIP – Municipal entity served by the Borough of Orwigsburg Water System.

APPENDIX B RATE SCHEDULE

ORWIGSBURG BOROUGH ALL FEES ARE NON-REFUNDABLE

WATER RENT PER UNIT - Effective January 1, 2019

First 5,000 gallons (Minimum -occupied or unoccupied) \$90.00 All other gallons 5.40

SEWER RENT PER UNIT - Effective January 1, 2019

First 5,000 gallons (Minimum -occupied or unoccupied) \$110.00 All other gallons 3.00 Flat Rate 150.00

GARBAGE COLLECTION FEES

Per quarter per unit (occupied or unoccupied) \$60.00

LATE PENALTIES FOR WATER, SEWER AND GARBAGE

1.5% will be charged for every additional month or fraction.

PEDDLER'S PERMIT

 Per Day
 \$25.00

 Per Week
 \$100.00

 Per Month
 \$200.00

 Per Annum
 \$400.00

CERTIFICATION BY BOROUGH SECRETARY

\$15.00

RESEARCH WORK

Per hour per employee

\$20.00

ANNUAL ALARM PERMIT FEE

\$15.00

USE OF FAX MACHINE

Outgoing \$3.50 for first page

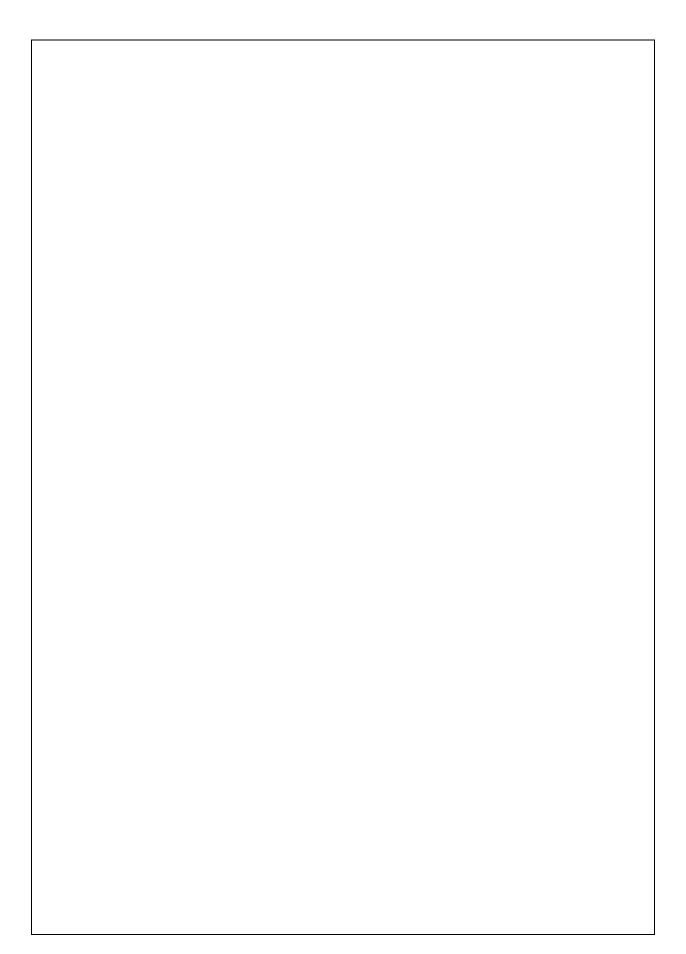
Additional pages 1.00 Incoming .50

APPENDIX C APPLICATION FOR WATER SERVICE / CONNECTION PERMIT

BOROUGH of ORWIGSBURG 209 North Warren Street, Orwigsburg, PA 17961 (570) 366-3103

APPLICATION FOR WATER SERVICE / CONNECTION PERMIT

| GENERAL INFORMATION | |
|---|---|
| Tentative Water Connection Permit No: | Date: |
| Property Owner: | |
| Property Address: | |
| Building Type: Residential Commercial Mu | ultiple Industrial |
| Billing Mailing Address (if different): | |
| | |
| | |
| CONNECTION FEE CALCULATION | |
| Number of EDUs: | - |
| Connection Fee per EDU: | - |
| Total Connection Fee: | _ |
| Connection Fee Received Date: | Received By: |
| <u>AGREEMENT</u> | |
| In consideration of granting this permit, the undersigne | ed agrees: |
| To accept and abide by the provisions of the Regulations, dated, 20, and subsequences Regulations and Requirements of the Borough have reviewed, or had an opportunity to review | sequent amendments thereto, and all other and other governing authorities, and that I |
| To notify the Borough of Orwigsburg at least 4 the water service to the Borough water system so that the service line may be observed by the adequate system sketch to the Borough for rev | before any portion of the work is covered, e Borough. Applicant is also to provide an |
| Applicant Signature: | Date: |
| Applicant Tolophono: | Applicant Email: |



APPENDIX D

STANDARD CONSTRUCTION SPECIFICATIONS

Intent of Specifications: The specifications are for the purpose of illustrating the general character and extent of the work and are subject to such modifications as may be found necessary or advisable either before or during the prosecution of the work, and the Owner shall conform to and abide by whatever supplementary drawings and explanations may be required by the Borough for the purpose of illustrating the work. Should any incidental work or materials necessary for the proper carrying out of the intent of the specifications, either directly or indirectly, the Owner agrees to perform all such work and furnish and install all such materials as if the same were fully specified.

PROJECT MANUAL

BOROUGH OF ORWIGSBURG 209 N. Warren Street Orwigsburg, Pennsylvania 17961

FOR
WATER MAIN INSTALLATION
Borough of Orwigsburg
Schuylkill County, Pennsylvania

prepared by



Entech Engineering, Inc. 685 South Mountain Boulevard, Suite A Mountaintop, Pennsylvania 18707 570-868-0275

Entech No. 4169.11

BOROUGH OF ORWIGSBURG

Schuylkill County, Pennsylvania

STANDARD SPECIFICATIONS FOR WATER MAIN INSTALLATION

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01010 - INTRODUCTION

PART 1 - GENERAL

1.1 SCOPE

- A. These Specifications have been adopted by the Borough of Orwigsburg (Borough) to specify the manner in which water and sewer mains and appurtenances shall be furnished and installed by the Contractor within the Borough service area.
- B. The Contractor shall comply with all regulations and requirements of the Borough as established in the Borough's Rules and Regulations, Borough ordinances, these Specifications, plus applicable regulations of the Pennsylvania Department of Environmental Protection, Pennsylvania Department of Transportation, and all other Federal, State and Regulatory Agencies.
- C. Before any work is started at the construction site, the Contractor shall notify the Borough, local Police Departments, Public Works Departments, Fire Departments, School District, and the various utility companies serving the Borough and shall schedule a preconstruction meeting with the Borough and the Engineer. At the preconstruction meeting, the escrow amount may be modified as necessary to cover construction and inspection costs based on a bona fide construction proposal.
- D. It shall be understood that the Borough, at their discretion, reserves the right to visit the construction site(s) and inspect the installation of the water and sewer mains and require corrective actions to assure compliance with these Standards.
- E. All work is subject to the inspection and final acceptance by the Borough's Engineer or designated representatives.

1.2 DEFINITIONS

A. See the Borough's Rules and Regulations.

1.3 INSTALLATION OF MAINS

- A. All water and sewer mains shall be installed in accordance with the Standard Specifications of the Borough.
- B. The layout and alignment of all water and sewer mains shall be reviewed and approved by the Borough or the Engineer.
- C. All water and sewer mains shall not be less than 8-inches, with the possible exception of deadends, where the pipe may be 6-inches in size. Allowance for 6-inch lines on deadends shall be at the discretion of the Borough or the Engineer.
- D. All water and sewer mains shall be laid with a minimum depth of cover of 4 feet, properly bedded, backfilled, blocked, subjected to a hydrostatic test for leakage in accordance with these Specifications.

E. Water main deadends shall be minimized by looping all mains whenever practical. Where deadends are necessary, the line shall terminate with a gate valve as the same diameter as the main and a flushing device. A fire hydrant is the preferred flushing device, while blowoffs are permissible at the discretion of the Borough or the Engineer.

1.4 INSTALLATION OF WATER SERVICE LINES

- A. General: The service line extending from the curb stop to the premises shall be installed by the customer and subject to the detailed requirements and Standard Specifications of the Borough.
- B. Meter pits may be required on all service line extensions of 100 feet in length or greater at the discretion of the Borough. The meter pit shall be in complete accordance with the Standard Specifications of the Borough with respect to such work. All pipe passing through foundation or bearing walls shall be provided with suitable wrought iron sleeves and the annular space between the sleeve and the pipe made watertight.
- C. Inspection: The Borough shall be notified when the installation of the service line is completed and prior to backfilling, so that the service line can be tested in the presence of a representative of the Borough and an inspection made of both workmanship and materials. The notice shall include such data as the location, the name of the owner and tenant and the time the work will be ready for inspection.
- D. Water will not be supplied through the service line or any related part thereof or through any service or supply line which has not been inspected in the open trench and approved by the Borough. These requirements apply to both original installation and repairs.

1.5 INSTALLATION OF SEWER BUILDING SEWERS AND LATERALS

- A. General: The building sewer extending from the property line to the premises shall be installed by the customer and subject to the detailed requirements and Standard Specifications of the Borough.
- B. Cleanouts may be required on all building sewers extensions of 100 feet in length or greater at the discretion of the Borough. The cleanout shall be in complete accordance with the Standard Specifications of the Borough with respect to such work. All pipe passing through foundation or bearing walls shall be provided with suitable wrought iron sleeves and the annular space between the sleeve and the pipe made watertight.
- C. Inspection: The Borough shall be notified when the installation of the building sewer is completed and prior to backfilling, so that the building sewer can be tested in the presence of a representative of the Borough and an inspection made of both workmanship and materials. The notice shall include such data as the location, the name of the owner and tenant and the time the work will be ready for inspection.
- D. Sewage will not be permitted through the building sewer which has not been inspected in the open trench and approved by the Borough. These requirements apply to both original installation and repairs.

PART 2 - REQUIREMENTS

2.1 DOCUMENTS TO BE SUBMITTED TO OBTAIN INITIAL PLAN APPROVAL

- A. The Contractor shall, in order to obtain initial approval of plans, submit his proposed plans and data to the Borough with sufficient information to enable the Borough's Engineer and Solicitor to review same for compliance with sound engineering practices and legal requirements and all Borough rules and regulations and these Standard Specifications. The Borough's review of the Contractor's plans is for the purpose of determining general conformance with the Borough's Standard Specifications, requirements and details of the Borough. The Contractor remains responsible for implementation of the Borough's Specifications, requirements and details. The Contractor is also responsible for the accuracy of the Accepted Plans and for the designed facility to function as intended. The Contractor is also responsible for determining the size and location of all existing utilities. The Contractor is hereby notified that any purchase of material and/or equipment etc., prior to the Borough's approval thereof, is at the Contractor's risk.
- B. When the Borough, through its Engineer, indicates its general acceptance of the proposed plans, the Contractor shall provide an estimate of the construction of the proposed facilities in sufficient detail for the Borough's Engineer to establish an escrow amount for the proposed work. Standard estimating procedure shall be used. In general, water and sewer main installation shall be classified by linear footage and pipe size for estimating. An estimate for rock excavation shall also be included. It is preferred that the estimate be done by the Contractor competent in the work to be performed. The Borough's Engineer will have the right to adjust the estimate to reflect his understanding of the cost to perform this work.

2.2 SUBMITTALS AFTER PLAN APPROVAL

- A. Upon general acceptance of the proposed plans, but prior to initiating any work, the Contractor shall submit copies of all required permits and other various requirements as itemized herein.
- B. All submittals shall be made in accordance with Section 01300 Submittals of these Specifications.
- C. The Contractor shall, in accordance with the following schedule, transmit to the Borough, two (2) copies or sets of the following data, unless otherwise noted.
 - 1. Two (2) weeks prior to construction:
 - a. Three (3) sets of the Accepted Plans signed and sealed by a Professional Engineer licensed to practice in the Commonwealth of Pennsylvania. The drawings shall be clear and legible. The plans prepared utilizing AutoCAD shall be prepared at a scale of not less than 1 inch equals 50 feet. Each drawing shall contain a North arrow. Each drawing shall name the legal Owner of the land on which the construction is to occur and the legal name of the Contractor.
 - b. Pennsylvania State Highway Occupancy Permit (when required).
 - c. Borough and Township Road Opening Permit (when required).
 - d. Erosion and Sediment Control Plan.

- e. Any and all other permits that may be required to undertake the installation of the water and sewer facilities.
- f. Executed easements or rights-of-way obtained from private landowners (when required) to be conveyed to the Borough upon acceptance of the completed facilities.
- g. Shop Drawings of all the materials and systems to be installed under this Work. See Section 01300, Submittals for copies required.
- h. Blasting Report, if required.

2. During construction:

- a. Letters of certification as to compliance with the Specifications for:
 - (1) Paving material
 - (2) Select backfill Type No. 2A (PennDOT)
 - (3) Concrete
- 3. After construction:
 - a. Blasting Records
 - b. Record Drawings
 - c. Warranties and Guarantees shall be turned over to the Borough
 - d. A Maintenance Bond equal to fifteen percent (15%) of the construction cost of the proposed work is required. The Contractor shall also purchase and maintain such insurance as will protect the Borough from any claims. The said insurance shall be as required under the laws of Pennsylvania.

2.3 ROCK EXCAVATION

A. Contractor shall obtain approval from the Borough prior to any blasting. All blasting shall be performed under the supervision of a Professional Engineer licensed to practice in the Commonwealth of Pennsylvania.

2.4 SOILS TESTING

A. All soils testing as described in these Specifications shall be performed by a reputable testing and control firm when required by the Borough.

2.6 ACCESS TO WORK

A. Representatives of the Borough shall have access to the work. The Contractor shall provide proper and safe facilities for such access and observation of the work and also for any inspection or testing thereof by others.

2.7 BOROUGH MAY STOP THE WORK

A. If the work is defective, or the Contractor fails to supply suitable materials, the Borough may order the Contractor to stop the work, or any portion thereof, until the cause for such order has been eliminated.

2.8 WARRANTY AND GUARANTEE

A. The Contractor warrants and guarantees to the Borough that all work will be of good quality and free from faults or defects. All unsatisfactory work, all faulty or defective work, and all

work not conforming to the Accepted Plans and these Specifications shall be considered defective. The Borough will give timely notice of all defects to Contractor. At the option of the Borough, all defective work, whether or not in place, may be rejected or accepted with or without requiring corrections from Contractor.

2.9 TESTS AND INSPECTIONS

- A. Where so indicated in these Specifications, or if the laws, ordinances, rules, regulations, or orders of any public Borough having jurisdiction, require any work to specifically be inspected, tested, or approved by some public body, the Contractor shall assume full responsibility thereof, pay all cost in connection therewith, and furnish the Borough the required certificates of inspection, testing, or approval.
- B. The Contractor shall give timely notice of readiness of the work for all inspections or approvals.
- C. All analysis will be run by an approved commercial or any Borough approved laboratory and paid by the Owner/Contractor. A copy of all the test results to be submitted to the Borough prior to final inspection.

2.10 FINAL INSPECTION

A. Upon written notice from the Contractor that the project is complete, the Borough will make a final inspection with the Contractor and will notify the Contractor in writing of all particulars in which this inspection reveals that the work is incomplete or defective. The Contractor shall take such measures as are necessary to remedy such deficiencies.

2.11 FINAL APPLICATION FOR ACCEPTANCE

A. After the Contractor has completed all such corrections to the satisfaction of the Borough, and delivered all schedules, guarantees, bonds, certificates of inspection, and other documents, the Borough shall issue a letter of final acceptance.

2.12 EIGHTEEN-MONTH CORRECTION PERIOD

A. If after final inspection and prior to the expiration of the eighteen-month (18) Maintenance Bond or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Borough, any work installed by the Contractor is found to be defective, Contractor shall promptly, in accordance with the Borough's written instructions, either correct such defective work, or, if it has been rejected by the Borough, remove it from the site and replace it with non-defective work. If Contractor does not promptly comply with the terms of such instructions, the Borough may have the defective work corrected or the rejected removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation of additional professional services shall be paid by the Owner.

2.13 RECORD DRAWINGS

A. At completion of the Work, Contractor shall provide the Borough with two (2) sets of reproducible plans, in a neat and clean condition showing the "As-Built Conditions."

- B. Plans shall be marked "Record Drawings" and maintained at the project site. The Contractor shall record on the prints all deviations from his Accepted Plans and these Specifications, at the time that such deviations are made.
 - 1. Record Drawings for water and sewer mains shall show all vertical and horizontal changes to the water main as shown on the Accepted Plans. The location of all service laterals (lengths and depths) shall be dimensional from the main. Record Drawings shall indicate a profile showing the depths where rock was encountered and all other changes made to his Accepted Plans and these Specifications.
- C. A complete file of accepted field sketches, diagrams, and other changes as may become necessary during the progress of the work shall also be maintained and attached to the set of marked-up prints.
- D. At completion of the work, the Contractor shall provide, for the information of the Borough, each sheet of marked prints and all accepted field sketches and diagrams.
- E. When this data has been reviewed and returned by the Borough, the Contractor shall record all field changes and conditions on the Record Drawings clearly noting all field changes and conditions and providing plots on reproducible mylars. Each sheet shall be clearly marked "Record Drawing" and shall be signed by an officer of the company of the Contractor certifying that each sheet/drawing reflect the actual as-built conditions.
- F. Provide one (1) set of printed drawings in addition to the Record Drawings. Deliver printed drawings to the Borough.

END OF SECTION 01010

SECTION 01030 - LOCATIONS OF EXISTING LINES

PART 1 - GENERAL

1.1 SCOPE

A. Construction Requirements:

- In accordance with the Commonwealth of Pennsylvania Act No. 287, PA One Call System, 1-800-242-1776, the Contractor, prior to performing excavation or demolition work on the job site shall obtain all recorded locations of existing lines as outlined herein.
- 2. Attention is directed to the fact that there may be other lines in certain locations in addition to the recorded locations.

B. Related Requirements Specified Elsewhere:

- 1. Act No. 287
- 2. Excavation, Section 02224 Trenching, Bedding, and Backfilling

1.2 SUBMITTALS

A. The Contractor shall furnish the Authority a certification listing the names of the Users whom he has contacted prior to starting his work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. It is the duty of the Contractor, prior to performing excavation or demolition work at his site within a political subdivision, to ascertain the exact location and type of Users' lines which are located within the limits of his work area

3.2 OBTAINING LOCATION OF EXISTING USERS' LINES

- A. Not less than three (3) working days prior to the day the excavation or demolition work shall begin, the Contractor shall request that each of the Users with facilities within the limits of his work area locate these facilities in the field. Generally, this will include determining and locating the number and horizontal position of all lines. (Also see Paragraph 3.3 of this Section, "Locating Lines.")
- B. The following are cooperative steps which the Contractor shall take, either at or off the excavation or demolition site:
 - Before the Contractor starts any demolition work in the area of a particular User's line, the Contractor shall ascertain from the User if the User wants to have a representative present during the work within this area. Additionally, the Contractor shall comply with all standard regulations and necessary precautions as may be required by the User.

- 2. Inform each operator, employed by him at the site of such work, of the information obtained by him as noted above.
- 3. Report immediately to the User any break or leak on its lines, or dent, gouge, groove, or other damage to such lines or to their coating or cathodic protection, made or discovered in the course of the excavation or demolition work.
- 4. Alert immediately the occupants of premises as to any emergency that he may create or discover at or near such premises.
- 5. The requirements of paragraphs A and B above apply to a User or Contractor performing excavation or demolition work in an emergency.

3.3 LOCATING LINES

A. All recorded or unrecorded lines shall be located on the ground with pipe-locating equipment well ahead of the work at all times. All such locations shall be plainly marked by coded paint symbols on pavement or marked stakes in the ground. Such locations shall be established at least 50 feet in advance of all trench excavation. All such location work shall be provided by the Contractor to the satisfaction of the Authority.

END OF SECTION 01030

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.1 SCHEDULES

- A. Before any work is started at the job site, the Contractor shall submit to the Borough's Engineer Shop Drawings in accordance with the following requirements.
- B. The Contractor shall be responsible for preparing a Progress or Work Schedule for the entire project.

1.2 SHOP DRAWINGS AND SAMPLES

- A. The Contractor shall process the Shop Drawings required by his work to the Borough's Engineer and he shall be responsible for their timely submission in accordance with the Shop Drawing Schedule which is included in the overall Progress or Work Schedule as described in Part 2 of this Section.
- B. Revised Shop Drawings submitted for review shall be marked "RESUBMISSION."

PART 2 - SCHEDULE

2.1 PREPARATION

- A. The Contractor shall prepare a Progress or Work Schedule for the entire project for any work anticipated to last longer than four weeks.
- B. Each activity in the Progress or Work Schedule shall be identified and a time for the performance of such activity indicated. Each activity shall be preceded by all work that must be accomplished prior to that activity. All abbreviations, codes, and/or symbols used shall be described on the Schedule.

2.2 CATALOG SHEETS

- A. For standard manufactured items considered by the Borough as not requiring special Shop Drawings, the Contractor shall submit three (3) copies of manufacturer's catalog sheets showing illustrated cuts of the items to be furnished, scale details, sizes, dimensions, performance characteristics, capacities, wiring and control diagrams, and all other pertinent information.
- B. The Borough/Borough's Engineer will retain two (2) copies and return remainder to the Contractor.

2.3 SHOP DRAWINGS

- A. The Contractor will submit for review three (3) white prints of Shop and Working Drawings of fabricated equipment and materials for which such drawings are specifically requested.
- B. Prior to submitting drawings to the Borough's Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter conforms to the

Accepted Plans and Specifications in all respects. Drawings which are correct shall be marked with the date, checker's name, and certification of the Contractor's approval, and then shall be submitted to the Borough. Any Shop Drawings submitted without the Contractor's certification, will be returned without review.

- C. The Borough/Borough's Engineer will retain two (2) copies and return remainder to the Contractor.
- D. Shop Drawings shall show the principal dimensions, weight, structural and operating features, performance characteristics and wiring diagrams, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct.
- E. When so specified or if considered by the Borough to be acceptable, manufacturer's Specifications, catalog data, descriptive matter, illustrations, etc., may be submitted for review in place of Shop and Working Drawings. In such case the requirements shall be as specified for Shop and Working Drawings, insofar as applicable.
- F. The Contractor shall be responsible for the prompt submission of all Shop and Working Drawings in accordance with the Shop Drawing Schedule so that there shall be no delay to the work due to the absence of such drawings.
- G. No material shall be purchased or fabricated until the required Shop and Working Drawings have been submitted and reviewed. All materials and work involved in the construction shall then be as represented by said drawings.
- H. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his Subcontractors and vendors. Prior to submitting drawings to the Borough, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the drawings and Specifications in all respects. Drawings which are correct shall be marked with the date, checker's name and indication of the Contractor's approval, and then shall be submitted to the Borough; other drawings shall be returned for correction.
- I. The Borough's review of Shop and Working Drawings will follow a general check made to ascertain conformance with the design concept and functional result of the project and compliance with the information given in the Accepted Plans and Specifications. The Contractor is responsible for: details and accuracy; conforming and correlating all quantities and dimensions at the job site; information that pertains solely to the fabrication processes or to techniques of construction; and coordination of the work of all trades.

2.3 SAMPLES

- A. When specified, the Contractor shall provide samples in duplicate and identify each sample by an appropriate tag or label listing the names of the project, the Contractor and/or Subcontractor as well as the exact identification of the sample. Tag or label shall be large enough to provide a blank space for review stamps.
- B. Samples of items submitted for destruction tests or for use in testing mixture with other materials, will not be returned. Review of these items will be given by letter.

C. When reviewed, one sample of each item, not submitted for destruction, will be returned to the Contractor and shall be kept and maintained in good condition in the submitting Contractor's office at the project site for later use in comparison with material actually delivered for the work. When samples of large fabricated items or of costly items are required, reviewed samples may be installed in the work if the exact location of such samples is recorded on the Borough's set of Accepted Plans.

2.4 CERTIFICATIONS AND TESTS

A. Two (2) copies of certifications and reports of tests when required under the various Sections of the Specifications, shall be submitted to the Borough.

2.5 CONSTRUCTION PHOTOGRAPHS

- A. The Contractor shall provide clear, sharp, color progress photographs monthly, starting when the work begins and continuing as long as the work is in progress.
- B. The number of views required shall be from three to six, depending on the progress of work. Views shall be provided of the general construction area <u>before</u> any work begins. Photographs shall be 4" x 6" in size and shall be submitted in duplicate.

2.6 VIDEOTAPING

A. A narrated videotape shall be provided by the Contractor prepared describing and showing the condition of adjoining and nearby sidewalks, curbs, roadways, foundations, other utilities, and structures which may be damaged as a result of the blasting. The videotape shall be submitted to the Borough prior to commencing work.

2.7 RECORD DRAWINGS

- A. Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Engineer's reference during normal working hours.
- B. Maintain a clean, undamaged set of blue- or black-line white prints of Accepted Plans and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Accepted Plans. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - 1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the work.
 - 2. Mark new information that is important to the Borough but was not shown on Accepted Plans or Shop Drawings (i.e. location, type and depth of adjacent or crossing utilities such as gas, electric, sewer, storm water, telephone, etc.)
 - 3. Note related change order numbers where applicable.
 - 4. Organize Record Drawings sheets into manageable sets. Bind sets with durable paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

5. Upon completion of the work, submit Record Drawings to the Engineer for review prior to revising the Record Drawing mylars and black-line prints required by the Contractor's Agreement.

PART 3 - EXECUTION

3.1 GENERAL

- A. Shop Drawings are defined as drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data prepared by the Contractor or any subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work shall be fabricated and/or installed.
- B. Shop Drawings are a supplementary means of communications to assist in the understanding of what the Contractor is providing and doing, and that whatever he puts in speaks for itself and either meets or does not meet the Accepted Plans and Specifications.
- C. In the instance of a substituted item, the Contractor shall verify that it will fit into the space allocated to the originally required item giving due to all other trades' requirements. Where modifications to the Accepted Plans and Specifications are proposed, the Contractor must indicate such deviation in writing in his submittal.

3.2 SUBMITTAL PROCEDURES

- A. Submit three (3) copies of Schedule to the Borough for review within ten (10) days prior to starting construction. Update and resubmit Schedule monthly thereafter until completion of the work. Updated Schedule shall have completed activities indicated as such. Whenever modifications are made to the project which add or delete activities and/or revise time of completion, Schedule shall be revised and resubmitted to the Borough within ten (10) days after such modification is authorized. When a Schedule is resubmitted to the Borough, the Contractor shall specifically indicate why the Schedule is being resubmitted.
- B. All Shop Drawings shall be delivered to the Borough or the representative of the Borough on the project site.
- C. The Borough's Engineer will screen Shop Drawing submittals to ensure that the Shop Drawings have been properly certified and identified. If they are submitted properly, he will review the items.

3.3 FIELD DISTRIBUTION

- A. The Contractor shall be responsible for the required number of processed drawings or catalog cuts for field distribution.
- B. The Contractor shall be responsible for the prompt distribution of processed Shop Drawings.
- C. The Contractor shall have the overall responsibility for coordinating the necessary information to properly coordinate the work.

END OF SECTION 01300

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SCOPE

A. The Contractor is referred to conditions and requirements given in various Sections of the Specifications.

1.2 OCCUPYING PRIVATE LAND

A. Written consent from the proper parties shall be obtained by the Contractor to enter or occupy with men, tools, materials or equipment any land other than his property for any purpose related to his performance of the work.

1.3 PROTECTION OF EXISTING UTILITIES

A. The Contractor shall conduct his operations and take all special precautions necessary to protect equipment, utility lines, roadways and subsurface, submerged and overhead facilities which are to remain in place and undisturbed by his operations. The Contractor shall immediately notify the Owner of the facilities or areas which are disturbed, damaged or injured as a result of the Contractor's operations, and determine the proper method of replacing or repairing the affected facilities at least to the conditions which existed prior to the Contractor's operations. The Contractor shall, at his own expense, replace, repair or restore the affected facilities or areas to their original condition or shall reimburse the Owner of said facilities or areas for such expenses as the said Owner may accrue in performing the work.

1.4 STORAGE AND PROTECTION OF MATERIALS

- A. Materials stored in the open at the project site shall be stored on planks or other dunnage as necessary to keep materials from contact with the ground and shall be covered with tarpaulins for protection from weather.
- B. Care shall be exercised in the installation of material to avoid damage or disfiguration of any kind. All equipment shall be protected from dust and moisture prior to and after installation.
- C. Failure of the Contractor to protect material furnished by him, as outlined herein, shall be grounds for rejection of the material.

1.5 INTERFERENCE WITH/AND PROTECTION OF STREETS

- A. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefore from the proper authorities including the Borough, PADOT, the School District and PA State Police, as appropriate. If any street or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Authority.
- B. Streets, roads, private ways and walks not closed shall be maintained passable by the Contractor at his expense and the Contractor shall assume full responsibility for the adequacy and safety of provisions made.

- C. The Contractor shall, no less than 24 and preferably 48 hours in advance of closing any street, notify the appropriate authorities, in writing, with a copy to the Authority. He shall cooperate with the Police Department in the establishment of alternate routes and, at his expense, shall provide adequate, plainly marked detour signs.
- D. For control of moderate traffic or when required by a permitting agency, the Contractor shall provide an adequate number of flagmen or uniformed special officers.
- E. Whenever and wherever traffic is sufficiently congested or public safety is endangered, the Contractor, as required, shall furnish uniformed special officers to direct traffic and to keep traffic off the highway area affected by his construction operations. Such officers shall be in addition to the watchmen required. Traffic control shall be in accordance with PennDOT Publication 203, Work Zone Traffic Control.

1.6 SAFETY PRECAUTIONS

- A. Until final acceptance of the work, the Contractor shall continuously maintain adequate protection of the work and work in progress from damage. He shall adequately protect adjacent private and public property as provided by law and these Specifications.
- B. The Contractor shall take all necessary precautions for the safety of employees doing the work, and shall comply with all applicable provisions of federal, state, and local safety laws and building codes to prevent accidents or injury to person on, about or adjacent to the premises where the work is being performed. He shall erect and properly maintain at all times as required by the conditions and progress of the work, all necessary safeguards and barricades for the protection of the work, all necessary safeguards and barricades for the protection of employees on the work and the safety of others employed near the work and public, and shall post danger signs and warning lights warning against the hazards created by such features of the construction as protruding nails, hoists, excavations, scaffolding, stairways and falling materials.
- C. The Contractor shall designate a responsible member of its organization on the work, whose duty shall be the prevention of accidents. The name and position of the person so designated shall be reported in writing to the Authority.
- D. The Contractor shall immediately report in writing, giving full details, to the Authority all serious accidents which arise out of or in connection with the performance of the work, whether on or adjacent to the site, which cause death, serious personal injury or substantial property damage. In addition, if death or serious injury or substantial property damage is caused, the accident shall be reported immediately by telephone or messenger to the Authority. If a claim is made or suit is filed by anyone against the Contractor, or any Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Authority, giving full details of the claim.
- E. The Contractor shall assume all risks of loss or damage of any kind to any vehicles, machinery, equipment, materials or supplies which it shall provide in doing the work.
- F. The Contractor shall adequately protect property owned by others from damage by the construction operations.

1.7 DUST AND LITTER CONTROL

A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities so as to minimize the creation and dispersion of dust, litter, and other debris. Proper containers for litter shall be provided, and they shall be emptied when full.

1.8 SANITARY

- A. The Contractor shall provide, maintain, and remove when no longer required, an adequate number of temporary, prefabricated, chemical-type toilets with proper enclosures for the use of workmen during construction. When connected to water and sewer, meet all code requirements and take precautions to prevent freezing.
- B. Keep toilets clean and supplied with toilet paper at all times. Comply with all local and state health requirements and sanitary regulations.

1.9 HEAT

A. At all times during the placing, curing and setting of concrete, provide sufficient heat to ensure heating of spaces involved to not less than 40 degrees F.

PART 2 PRODUCTS

PART 3 EXECUTION

END OF SECTION 01500

DIVISION 02 SITEWORK

SECTION 02052 - WATER MAIN REMOVAL/ABANDONMENT

PART 1 - GENERAL

1.1 COORDINATION

- A. Coordinate water main isolation, removal, abandonment in place, and installation activities under the work of this contract with Subcontractors, the Borough's Engineer and the Borough at project meetings prior to the start of construction.
- B. Work of this project shall be coordinated to minimize customer service down time and to minimize disruption to vehicular traffic.
- C. Maximum allowable time for any water service disruption shall be eight (8) hours.
- D. Notify Borough four (4) days in advance of planned service interruptions and verify that the Borough has issued "Service Interruption Notices" to each customer a minimum of two (2) days prior to disrupting water service.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Comply with the requirements of the Commonwealth of Pennsylvania Act 187, One Call System 1-800-242-1776, in order to locate utilities prior to excavation.
- B. Verify distribution valves needed to isolate mains and coordinate activities in order to have existing distribution valves operated by Borough personnel.
- C. Contractor personnel may not operate existing distribution, blow-off valves, or hydrants.

3.2 SUPERVISION

A. Responsible Contractor's personnel shall supervise isolation, removal, abandonment, and installation procedures for compliance with safety precautions, specified requirements, and authorities having jurisdiction.

3.3 WATER MAIN PROCEDURE

- A. Isolate water main at shut-off valves and at each curb stop (to be operated by Borough personnel).
- B. Excavate at one end of the main to be removed, cut the main at the appropriate location, drain the main while venting at fire hydrants, and pump drainage to locations as approved by authorities having jurisdiction.
- C. Abandon mains in place where directed on the Accepted Plans.

- D. For abandoned mains, remove a section of pipe from either end such that adequate space is provided in order to connect the new main to the end of the existing "live" main. Cap off the open ends of the abandoned mains with concrete or provide M.J. cap to ensure that bedding and backfill material will not settle into the pipe.
- E. Remove water main sections as specified and as shown on the Accepted Plans and dispose of in an appropriate manner.

END OF SECTION 02052

SECTION 02221 - TRENCHING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Trench Excavation.
- B. Bedding and backfilling.
- C. Surface Restoration.

1.2 DEFINITIONS

- A. Subgrade: Trench bottom prepared as specified to receive pipe bedding, concrete cradle or concrete encasement or the bottom of excavations prepared to receive pipe line structures.
- B. Bedding: That stone material placed under the pipe.
- C. Haunching: That stone material placed from pipe bottom to the pipe centerline.
- D. Initial Backfill: That stone material from the pipe centerline to twelve (12) inches above top of pipe.
- E. Engineer: Borough's Engineer, or designated representative of the Borough who is responsible for observing and accepting the Work.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T99 Moisture-Density Relations of Soils, Using a 5.5 lb. Rammer and a 12 in. Drop.
 - 2. AASHTO T191 Standard Method of Test for Density of Soil In-Place by the Sand Cone Method.
- B. The "PennDOT Sections" noted herein refer to sections contained in the Commonwealth of Pennsylvania Department of Transportation Specifications Publication 408 latest version. The references pertain only to materials, construction equipment, methods and labor. The payment provisions do not apply to work to be performed under this Contract.
- C. All workmanship, materials and contractor's responsibility for all work in and adjacent to PennDOT right-of-way shall be in compliance with PennDOT regulations, specifications and requirements. Where information in the specification is contradictory to current PennDOT requirements, PA requirements shall govern. No additional compensation will be considered for claims of misleading or contradictory requirements.

- D. Commonwealth of Pennsylvania Department of Transportation Specifications.
 - PennDOT 408, Section 703 Aggregates.
- E. State Code: Commonwealth of Pennsylvania, Pennsylvania Code, Title 67. Transportation, Department of Transportation, Chapter 459, Occupancy of Highways by Utilities, July 1989 (PennDOT Chapter 459).
- F. State Publication: Commonwealth of Pennsylvania, Pennsylvania Code, Title 67, Transportation, Department of Transportation, Chapter 203, Work Zone Traffic Control (PennDOT Chapter 203).

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Select Backfill: Excavated material free of cinders, ashes, refuse, vegetable or organic material, boulders larger than 6", rocks, stone, or other material which, in the opinion of the Professional, is unsuitable. If the excavated material is found to be unsuitable, the Contractor is required to backfill with suitable material at his expense. The Contractor may use suitable material from other project areas at no additional cost to the Borough.
- B. Aggregate Backfill, Bedding and Haunching: Fine aggregates and coarse aggregates conforming to AASHTO and PennDOT requirements, see plan for dimensions.
- C. Classification of Backfill, Bedding and Haunching Materials:
 - 1. Aggregate Backfill of trench bottoms over-excavated at direction of Professional to correct unstable trench bottom conditions: PennDOT 2A or as directed.
 - 2. Pipe Bedding and Haunching:
 - a. AASHTO M43 Gradation No. 7 or 8.
 - Initial Backfill:
 - a. AASHTO M43 Gradation No. 7 or 8.
 - Final Backfill:
 - Select Backfill: Unless otherwise noted on drawings.
- D. Underground Warning Tape:
 - 1. Printed polyethylene tape, three inches minimum width, color coded, one inch minimum lettering, printed with name of utility buried below, and suitable for installation in all soil types.
 - 2. Non-magnetic for ductile iron pipe.
 - 3. Magnetic for PVC and HDPE pipe.

4. Provide for:

- a. Electric Power Lines, Cables, Conduit and Lighting Cables RED
- b. Gas, Oil, Steam, Petroleum, or Gaseous Materials YELLOW
- c. Communications, Alarm or Signal Lines, Cables or Conduit ORANGE
- d. Potable Water BLUE
- e. Reclaimed Water, irrigation, and Slurry Lines PURPLE
- f. Sewers and Drain Lines GREEN
- g. Sludge BROWN

PART 3 - EXECUTION

3.1 TRENCH PREPARATION AND EXCAVATION

- A. The Contractor shall notify PA One Call (1-800-242-1776) in accordance with the regulations of the Act.
- B. General: Excavation of every description and of whatever substances encountered shall be performed to the lines and grades indicated on the drawings and specified herein, or as directed by the Professional.
 - 1. Excavation shall be made by open cut, unless written permission to tunnel or bore is given by the Professional or is specifically outlined in the Specifications or shown on the Drawings.
 - Trenches may be excavated and backfilled either by machinery or by hand as the Contractor may elect, provided, however, the Contractor shall use hand excavation where necessary to protect existing structures, utilities, or private or public properties and provided, further, that backfilling shall be done by hand to the extent hereinafter specified.
 - 3. The Contractor shall have no claim for extra compensation due to the fact that hand excavation, instead of machine excavation, may be made necessary from any cause whatsoever.
- C. Stripping, Storing and Restoring Surface Items: The Contractor shall remove all topsoil, paving, sub-paving, curbing, gutters, brick, paving block, granite curing, flagging or other similar materials, and grub and clear the surface over the area to be excavated. He shall properly store and preserve such materials that may be required for future use in restoring the surface. The Contractor shall be responsible for any loss or damage to said materials because of careless removal or neglectful or wasteful storage, disposal, or use of the materials. Any excavated materials not required for backfill or restoration shall be disposed of by the Contractor at his expense.
 - 1. All materials which may be removed, including rock, earth and sand taken from the excavation, shall be stored, if practical, in the roadway or right-of-way or such other suitable place and in such manner as the Professional will approve.
 - 2. If more materials are removed from any trench than can be backfilled over the completed pipe or stored in the street, leaving space for traffic, the excess materials shall be removed and stored at a suitable site provided by the Contractor.
 - 3. The Contractor shall, at his own expense, bring back as much of the approved materials so removed as may be required to properly refill the trench or excavation.

- 4. When directed by the Professional, the Contractor shall furnish such other suitable materials as may be necessary to properly refill the trench at no additional cost to the Borough.
- 5. The Contractor shall restore all shrubbery, fences, poles or other property and surface structures, removed or disturbed as a part of the Work, to a condition equal to that before the Work began, furnishing all labor and materials incidental thereto, without any additional cost to the Borough.
- 6. The Professional may mark certain trees, shrubs, or other items that are not to be disturbed or damaged. In the event such items are disturbed or damaged, they shall be replaced or compensated for at the Contractor's expense.
- 7. Any tree which is approved by the Professional for removal shall be cut into four foot lengths and become the property of the Contractor and shall be removed from the site.
- D. The Contractor must work around existing utilities at no additional cost to the Borough for this work. If the Contractor must repair or replace any damaged utilities, he must do so at his own expense.
- E. Width of Trench: Pipe trenches shall be sufficiently true in alignment to permit the pipe to be laid in the approximate center of the trench. The trench shall be wide enough to provide a free working space on each side of the pipe.

F. Length of Trench:

- 1. No trench shall be opened more than 100 feet in advance of the pipe lines laid. Contractor shall provide all safety items such as sheeting, shoring and bracing.
- 2. The Contractor shall limit all trench openings to a distance commensurate with all rules of safety and the Erosion and Sedimentation Control Plan.
- 3. If the Work is stopped either totally or partially by his own accord or the direction of others, the Contractor shall refill the trench and temporarily repave or restore over the same at his expense and the trench shall not be opened until he is ready to proceed with the construction of the pipeline.
- G. Pumping and Draining: The Contractor shall remove by pumping, draining, or otherwise, any water which may accumulate in the trenches and other excavations and shall build all dams and do all other work necessary to keep the trenches or other excavations as free from water as possible. All pumping operations are subject to Erosion and Sedimentation Control measures.
 - 1. Where it is impractical to completely drain the trench, special pipe of jointing materials may be authorized at no additional expense to the Borough.
 - 2. While the pipelines are being laid, the Contractor shall have sufficient pumping machinery ready for immediate use.
 - 3. All surface waters shall be prevented from entering the open ditches or excavations by proper grading of the surface in the vicinity of the excavation.
 - 4. Sediment laden water will be pumped to an appropriately located "Dirtbag" as shown on Erosion and Sedimentation Control Drawing.

- H. Accommodations of Drainage: The Contractor shall keep gutters, sewers, drains and ditches open at all times so that the flow of storm or other waters shall not be obstructed. If the material excavated from the trenches must temporarily extend over gutters or other waterways, it shall be the duty of the Contractor to plank or bridge over the gutters, without extra compensation, so that the flow of water is not impeded.
- I. Protection of Utilities, Property and Structures: The existence and location of underground utilities as indicated on the Drawings is presented merely to serve as a notification that such utilities do exist in the general proximity of the work. Any utilities not shown, or not located as shown, shall not be cause of the Contractor to deny responsibility for their protection and/or repair during construction.
 - The Contractor shall notify all utility companies in advance of construction, to include requesting the companies to establish location of their utilities, in accordance with Pennsylvania Act 287/172, as amended. Cooperate with agents of these companies during the progress of the work. Procedures for emergency action and repairs to utilities shall be established with the utility company prior to commencement of the work. During the course of his work, if the Contractor damages any of the aforementioned utilities, he shall immediately follow the procedure of emergency action and repair as established at their own expense. The Contractor shall determine the location of all utility lines on private property, with the assistance of the utility owner when on private property.
 - 2. Whenever the Contractor, during the progress of the excavation, shall uncover service pipes or mains, which because of injury or age are in poor condition, he shall immediately notify the proper Borough in order that steps may be taken for replacement or repair. Locations of repairs, and the procedures of repairs that have been made shall be recorded by the Contractor.
 - 3. The Contractor shall, at his own expense, sustain in their places, and protect from direct or indirect injury, all pipes, conduits, existing sewerage systems, septic tanks, tile fields, and other structures or property in the vicinity of his work, whether above or below the ground, or that may appear in the trench. He shall at all times have a sufficient quantity of repair pipe, timber and plank, chains, ropes, etc., on the ground and shall use them as necessary for sheeting his excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened, whether such structures are or are not shown on the Drawings.
 - 4. Pipes and underground conduits exposed as a result of the Contractor's operations shall be adequately supported along their entire exposed length by timber or planking, installed in such manner that the anchorage of the supporting members will not be disturbed or weakened during the backfilling operation. Backfill of selected material shall be carefully rammed and tamped under and around the supports and all supports shall be left in place as a guard against breakage of the supported structure due to trench settlement. No additional payment will be due to the Contractor for material left in place nor for the labor of installing and maintaining supports.
 - The cost of all work related to utility protection and repair shall be included in the price of pipe installed. No separate payment will be made for utility relocation or repairs.

- J. Where mains are to be constructed on rights-of-way or easements in open areas, the maximum width of trench at the top specified hereinbefore may be exceeded only if the construction is kept entirely within the limits of the right-of-way or easements and can be carried on without damage to adjoining property. The angle of slope shall be the angle at which the trench bank will stand without sliding.
- K. In locations other than rights-of-way or easements, the Professional may, as warranted by working conditions, and where permitted by the Pennsylvania Department of Labor and Industry requirements, waive the requirements that the maximum width of trench at the top shall not exceed the dimensions specified hereinbefore.

3.2 PIPE BEDDING AND TRENCH BACKFILL

A. Bedding and Haunching: The trench shall be excavated to a depth of six inches below the outside diameter of the pipe barrel, or deeper if so specified. The resultant subgrade shall be undisturbed, or compacted as approved by the Professional if disturbed. The bedding and haunching shall then be prepared by placing thoroughly compacted aggregate, shaped to conform to the bottom portion of the pipe or compacted against the bottom portion of the pipe, to a vertical distance of three inches above the lowest outside surface of the pipe. Contractor is required to properly haunch the pipe before any additional backfilling is allowed.

B. Special Bedding:

- 1. Concrete Cradle and Concrete Encasement: If concrete cradle and/or encasement is indicated on the Drawings or required by the Professional, the trench shall be excavated to a depth of twelve inches below the outside of the barrel of pipes. All of this excavation may be done by machine.
- 2. Unstable Subgrade: Where the bottom of the trench at subgrade is found to be unstable or to include ashes, cinders, any type or refuse, vegetable, or other organic material, or large pieces or fragments of inorganic material, which, in the opinion of the Professional, should be removed, the Contractor shall excavate and remove such unsuitable material to the width and depth recommended by the Professional.
 - a. Before pipe is laid, the subgrade shall be made by backfilling with aggregate material, as directed by the Professional, in six inch (compacted thickness) layers thoroughly tamped and the bedding prepared as hereinbefore specified.
 - b. Aggregate Backfill when used at the direction of the Professional to stabilize trench subgrade will be paid for in accordance with the unit price Bid for Miscellaneous Aggregate Backfill per the actual dimensions of the area backfilled in accordance with Section 02221, exclusive of the pipe bedding.
 - c. Additional excavation required to remove unstable material will be paid for in accordance with the applicable unit price Bid for Miscellaneous Unclassified Excavation.
- 3. Special Foundations: Where the bottom of the trench at the subgrade is found to consist of material which is unstable to such a degree that, in the opinion of the Professional, it cannot be removed and replaced with an approved material thoroughly compacted in place to support the pipe properly, the Contractor shall construct a foundation for the pipe, consisting of piling, timbers or other materials, in accordance with plans prepared by the Professional. Compensation for such additional work shall be in accordance with the General Conditions.

C. Backfilling Methods:

- General: Backfilling shall not be done in freezing weather except by permission of the Professional, and it shall not be done with frozen material. Do not backfill when the material already in the trench is frozen.
 - a. Where Aggregate Backfill is not indicated on the Drawings or specified herein, and in the opinion of the Professional should be used in any part of the Work, the Contractor shall furnish and backfill with aggregate as directed.
 - b. Payment will be made in accordance with the unit price Bid for Miscellaneous Aggregate Backfill in lieu of select backfill.
- 2. In or adjacent to state highways, all backfill shall be in accordance with PennDOT requirements.
- D. Initial Backfill: Following placement of bedding and haunching material, initial backfill shall be placed to a depth of twelve (12) inches over the crown of the pipe. Compact the initial backfill in maximum twelve (12) inch (compacted thickness) layers. Use vibratory compactors of such size that will not damage the pipe or manual compaction methods as approved by the Professional. Bring the backfill up both sides of the pipe simultaneously to prevent displacement of the pipe.
- E. Aggregate Backfill to Restoration Depth (within State Highway or as directed by the Professional): From six inches above the top of the pipe to Restoration Depth, the trench shall be backfilled by hand or by approved mechanical methods. Backfill in this section of the trench shall be aggregate backfill material subject to limitations specified and consolidated by compacting in six inch layers. Any consolidation method utilizing water such as jetting or puddling will not be permitted. Consolidation shall proceed from the center of the trench to the sides to prevent arching.
- F. Select Backfill to Restoration Depth: From twelve (12) inches above the top of the pipe to restoration depth, the trench shall be backfilled by hand or by approved mechanical methods. Backfill in this section of the trench shall be excavated material subject to limitations specified and consolidated by tamping in eight inch layers or other approved mechanical methods. Any consolidation method utilizing water, such as jetting or puddling will not be permitted. Consolidation shall proceed from the center of the trench to the sides to prevent arching. If the backfill contains too much moisture for optimum compaction, the Contractor shall dry the common backfill or provide aggregate backfill at no additional cost to the Borough.
 - Compacted layers may exceed eight (8) inches provided the Contractor can demonstrate that the compaction results as described in the follow sub-section (Compacting and Compaction Tests) are being obtained throughout the lifts of backfill.
- G. Underground Warning Tape: For the purpose of early warning and identification of buried pipes during future trenching or other excavation, provide continuous identification tapes in trenches. Install in accordance with printed recommendations of the tape manufacturer, and as modified herein. Bury tape at a depth of 12 inches below grade; in pavements, measure 12 inches down from subgrade of pavement. Tape to be installed along all mains, and laterals.

H. Compacting and Compaction Tests:

- The Contractor will be required to perform a sample backfilling of a pipe segment early on in the construction, adequately justifying to the Professional that his backfill and compaction operations are adequate to obtain the desired compaction results.
- Use mechanical tampers to compact backfill materials in trench refill operations to produce a density of backfill in each layer of not less than those specified below as a percentage of maximum standard density determined in accordance with AASHTO T99 or PennDOT requirements.
 - a. Areas subject to vehicular traffic: 100%.
 - b. Grassed areas: 95%.
- 3. During the course of backfilling and compacting work, the Professional or Borough may, at any location or depth of trench, require the Contractor to make tests to determine whether the Contractor's compaction operations are sufficient to meet specified requirements, at the Contractor's expense. The Contractor will retain the services of an independent agency approved by the Borough for all compaction tests. Contractor will be required to repair all backfill that does not conform to the compaction requirements at no additional cost to the Borough. The Contractor shall provide ample notice to assure all soil testing is done.

3.3 RESTORATION AND CLEAN-UP OF SURFACE

A. Restoration by Contractor:

1. The Contractor shall restore all driveways, parking lots, sidewalks, curbing, gutters, shrubbery, guiderail, fences, mailboxes, coachlight standards, poles, sod or other property and surface structures removed or disturbed as a part of the Work to a condition equal to that before the Work began, furnishing all labor and materials incidental thereto. Cost of such restoration will be considered part of the price bid and no additional compensation will be made for such work.

B. Clean-up and Maintenance of Surfaces:

- General: During construction, the surfaces of all areas including, but not limited to, roads, streets, and driveways shall be maintained on a daily basis to produce a safe, desirable, and convenient condition. Streets shall be swept and flushed after backfilling, and recleaned as dust, mud, stones and debris caused by the Work, or related to the Work again accumulates. Failure of the Contractor to perform this work may be cause for the Borough to order the work by others, and backcharge all costs to the Contractor.
 - a. All surplus materials furnished by the Contractor and temporary structures shall be removed from the site by the Contractor.
 - b. All dirt, rubbish and excess earth from the excavation shall be disposed of by the Contractor in a manner and place acceptable to all governing agencies.
 - c. The construction site shall be left clean at the end of each working day to the satisfaction of the Borough and Professional.
 - d. All surplus materials furnished and delivered by the Contractor will be removed by the Contractor.

- 2. Repair or Correction of Unsatisfactory Conditions: All unsatisfactory conditions resulting from the work shall be corrected.
 - a. Any hazardous condition caused by the Work, on any surface, shall be repaired or corrected within two hours of observance or notification of its existence. If repairs or corrections are not made within this period, the Borough will have the work completed with the resulting cost subtracted from the Contractor's next monthly Application for Payment. Any such costs shall be deemed a reduction in the total amount due to the Contractor under the Contract and no subsequent reimbursement shall be made to the Contractor by the Borough for these costs.
 - b. There will be no additional payment made for maintenance work.

C. Restoration of Meadows and Cultivated Fields:

- 1. General: Final restoration of all areas shall be performed in accordance with the Specifications for the particular land use as herein defined.
 - a. Final restoration shall be performed no later than the start of the next planting season following construction. The planting season shall be as established by the U.S. Agricultural Service for the area of construction for pasture and meadows.
 - b. Topsoil shall be free from subsoil, brush, weeds, or other litter, clay lumps and stones, but may contain decaying vegetable matter as is present in good topsoil.
 - c. Precautions shall be exercised as necessary to conform with laws relating to erosion and sedimentation control.
 - d. Seed shall be labeled for the current growing season. Germination tests of seeds shall be made not more than six months prior to seeding. Seed which has become wet, moldy or otherwise damaged shall not be used.
 - e. All seed mixtures formulas shall be submitted to the Professional for approval prior to seeding.
 - f. The Contractor shall be responsible to produce a stand of grass in all seeded or sodded areas. Erosion, drought, or any other condition encountered shall not relieve the Contractor of this requirement.
- 2. Lawns: Finish grade and sodding in accordance with applicable sections of these specifications.
- 3. Pasture Grass, and Meadow Grass: Prior to construction, the full depth of the existing topsoil, but no less than 12 inches, shall be stripped from all areas anticipated to be disturbed, and shall be stockpiled during construction. Upon completion of the construction, all topsoil removed shall be replaced. As the final class of material is applied, bringing the area to finished grade, the depth of topsoil replaced shall not be less than the depth removed.
 - a. The sod and/or seed mixture shall be as stated in other specification sections.
 - b. If the topsoil thickness is less than twelve (12) inches, the Contractor shall import suitable topsoil so that a good stand of grass can be established at no additional cost to the Borough.

SECTION 02510 - ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provision of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. Asphaltic concrete paving to include Superpave Base and Wearing Course.
- B. Aggregate base course.
- C. Proofrolling of prepared subbase is included in this Section.
- D. Installation of Tack Coats.
- E. Sealing is included in this Section.
- F. The work required by this section includes Borough roadway paving, walkway paving, and installation of line striping and signage.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division I Specification Sections.
- B. Material Certificates signed by material producer and contractor, certifying that each material item complies with or exceeds specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with Pennsylvania Department of Transportation (PennDOT) Publication 408 latest revision.
- B. Obtain materials from same source throughout.

1.5 SITE CONDITIONS

- A. Weather Limitations: Apply tack coats and asphalt when ambient temperature is above 50 deg. F and when temperature has not been below 35 deg. F for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture, nor when base is frozen.
- B. Construct hot-mixed asphalt surface course when atmospheric temperature is above 40 deg. F and when base is dry. Do not construct asphalt courses between October 31 and April 1.

C. Grade Control: Establish and maintain required lines and elevations.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable code for paving work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.
- B. Coarse Aggregate: Sound, angular crushed stone, or crushed gravel, complying with (PennDOT) Section 703.2 Type 2A.
- C. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone, gravel, or combinations thereof, complying with PennDOT Section 703.1
- D. Herbicide Treatment: Commercial chemical for weed control, registered by Environmental Protection Agency. Provide granular, liquid, or wettable powder form.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to the following:
 - a. Ciba-Geigy Corp.
 - b. Dow Chemical U.S.A.
 - c. E.I. DuPont de Nemours & Co., Inc.
 - d. FMC Corp.
 - e. Thompson-Hayward Chemical Co.
 - f. U.S. Borax and Chemical Corp.
- E. Joint sealant shall conform to PG 64-22.
- F. Tack Coat: in accordance with PennDOT Section 460.
- G. Superpave 9.5 mm Wearing Course PennDOT Section 409.
- H. Superpave 19.0 mm Wearing/Binder Course PennDOT Section 409.
- I. Bituminous joint sealing material: CRAFCO Asphalt Rubber Type 2 or CRAFCO Superflex.
- J. Superpave 25 mm Base Course PennDOT Section 309.
- K. Signage and line striping per PennDOT requirements.

PART 3 - EXECUTION

3.1 MISCELLANEOUS ASPHALTIC CONCRETE GUIDELINES

- A. For those paving areas that are to be paved, the following general criteria shall apply:
 - 1. All existing material shall be removed to subgrade elevation. Where the paving is to remain, the edges of the reconstructed areas shall be sawcut.
 - 2. Install paving to indicated thicknesses.
 - 3. Adjust the elevation of all manhole covers, valve tops, catch basin grates and similar structures, so that the top elevation is below the finished paving surface by 1/2-inch.
 - 4. Provide all line striping and symbols on the completed paving.
 - 5. Contractor to seal edges of paving.
 - 6. Reset street signage that was removed for the project. Provide new signage for any signage that was damaged.

3.2 SURFACE PREPARATION

- A. Sawcut existing paving as required. Remove and dispose of existing paving down to the aggregate base course level. Paving shall be taken to an approved disposal facility by the Contractor.
- B. Remove loose material from compacted subbase surface immediately before applying herbicide treatment.
- C. Proof-roll prepared subbase surface to check for unstable areas and areas requiring additional compaction. Remove all soft and yielding subbase and subgrade and replace with new subbase and subgrade.
- D. Maintain proper roadway cross sections and an adequate ditch line where applicable. Pull suitable material from the ditch line toward the center of the roadway. Level all high spots and ruts and remove all unsuitable material during this operation.
- E. Tack Coat: Apply to contact surfaces of previously constructed asphalt and surfaces abutting or projecting into hot-mixed asphalt pavement. Distribute at a rate as recommended in PennDOT documents.
- F. Allow to dry until at proper condition to receive paving.
- G. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.
- H. Beginning of the installation means acceptance of the subgrade.

3.3 PLACING MIX

A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. All material shall be placed in accordance with PennDOT Publication 408. Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.

- B. Bituminous Placement: Place in strips not less than 10 feet wide, unless otherwise acceptable to Engineer. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.
 - Complete the Superpave concrete base course for a section before placing wearing course.
- C. Immediately correct surface irregularities in course behind paver. Remove excess material forming high spots with shovel.
- D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.
- E. Spade bits or saws shall be used to neatly remove existing paving from areas where new paving is to meet existing paving. All such joints shall be butt joints. Feathered joints will not be permitted. Square up existing paving edges to a depth of one and one half inches (1-1/2") and in straight lines where practical, where it abuts new paving.
- F. Materials and debris resulting from milling and cutting shall become the contractor's property and shall be hauled by him from the site.
- G. Place asphalt courses within 24 hours of applying tack coat.
- H. Place Superpave base course to compacted thicknesses as shown on the drawings.
- I. Place Superpave wearing course to compacted thickness as shown on the drawings.
- J. Splashes of bituminous materials shall be removed from all surfaces exposed to general view, including manhole and valve box covers.
- K. Thicknesses of the various paving courses shall be the thickness after compaction. All bituminous paving courses shall be compacted. Heat and roll (iron) seams between adjacent passes of surface course.
- L. Slope all finished paving to drain toward gutters, inlets and other storm water facilities. Fill low spots, pot holes, bird baths, etc. Slope paving away from buildings.
- M. Do not block downspouts with new paving.

3.4 ROLLING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
- B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.

- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent laboratory density.
- F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot, hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.5 JOINT SEALING

- A. Joints shall be sealed between old and new pavement or successive day's pour and between paving and concrete.
- B. Sealant shall be placed 6" each side of joints (12" width).
- C. Cover sealant with a coating of sand.

3.6 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from True Elevation: Within 1/2 inch.

3.7 PROTECTION OF NEWLY COMPLETED SURFACES

A. The contractor shall protect the newly completed bituminous surfaces from vehicular traffic or other damaging loads until adequate stability and adhesion have been attained and the materials have sufficiently cured to prevent distortion, flushing of the bituminous material to the surface or excessive loss of aggregate.

3.8 LINE STRIPING, MARKINGS AND SIGNAGE

A. Install all line striping and traffic markings in accordance with PennDOT Publication 408, Section 962.

SECTION 02700 - COLLISION-TYPE FIRE HYDRANT

PART 1 - GENERAL

1.1 REFERENCES

A. Refer to Standard Details.

1.2 REQUIREMENTS

A. Hydrants shall be designed, manufactured, and tested in compliance with the latest edition of AWWA C502 standard. Mechanical bell joint shall conform to ASA Specification A21.11, and shall be furnished with all accessories to complete the lateral connection. Hydrants shall be designed to handle 150 psi working pressure and 300 psi test pressure.

1.3 SUBMITTALS

A. Submit product data and manufacturer's installation instructions in accordance with Section 01300 - Submittals.

PART 2 - PRODUCTS

2.1 HYDRANTS

- A. Main Valve Closure: Shall be of the compression type, opening against the pressure and closing with the pressure. Traffic feature to be designed so that the nozzle section of the hydrant can be rotated (by degree) to full 360-degree circle during field installations if necessary.
- B. Main Valve Opening: Shall not be less than 5-1/4 inch and be designed so that removal of seat, drain valve mechanism, internal rod, and all working parts can be removed through top of hydrant. These parts shall be removable without disturbing the ground line joint or the nozzle section of the hydrant. The bronze seat shall be threaded into mating threads of bronze for easy field removal.
- C. Draining System of the Hydrant: Shall be bronze and activated by the main stem without use of auxiliary rod, toggles, pins, etc. There shall be multiple drain (minimum of 2) ports to the exterior of the hydrant. Drain shutoff to be by direct-compression closure.
- D. Operating Nut, Main Stem, Coupling, and Main Valve Assembly: Shall be capable of withstanding input torque of 200 ft/lbs. in opening or closing directions.
- E. Hydrant Bonnet Assembly: Shall be provided with a grease or oil reservoir and lubrication system that automatically circulates lubricant to all operating stem threads and bearing surfaces each time the hydrant is operated. Downward stream travel shall be limited by a travel stop located in the upper housing of the hydrant.

- F. Nozzle Section of Hydrant: Shall be designed to permit field replacement of damaged threads, excavation, or disturbing the ground line joint. Bronze nozzles are to be locked into hydrant barrel with locking lugs and be sealed by heavy- duty O-Ring. Threading of nozzles and shape of operating nut to match existing hydrants in Orwigsburg Borough Service Area. Hydrants shall be equipped with two, 2-1/2-inch hose nozzles and one, 4-1/2-inch pumper nozzle.
- G. Inlet Size and Type: Shall be 6-inch mechanical joint with mechanical joint accessories.
- H. All hydrants shall open counterclockwise.
- I. Standpipe Sections: Shall be connected at the ground line by a 2-part safety flange. Depth of bury shall be 4 feet-6 inches or 5 feet-0 inches.
- J. Hydrant Coatings/Finishes: Together with all internal ferrous surfaces, shall be given two (2) coats of black asphaltum varnish. The exposed surfaces above grade, including nozzle caps and bonnet, shall be given two (2) coats of paint as listed below:

Bonnet, hose and pumper caps: Bright/gloss yellow with 3M reflective paint additive

Upper and lower barrel (above grade): OSHA Safety Yellow Lower barrel (below grade): Asphaltic coating as listed above

K. Manufacturer: American Darling.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

3.2 TESTS AND INSPECTIONS

- A. Pressure and leak test as directed by Engineer. Engineer will perform inspections for visual leaks prior to backfilling. In addition, Engineer may request that a leak detection device (eg. Geophones) be made available for Engineer's use in determining integrity of work in place at no additional cost to the Engineer/Authority.
- B. Hydrant and connecting section of new piping shall be cleaned and swabbed out with a 50 mg/l solution of chlorine prior to installation, then flushed when directed by Engineer.
- C. Locate hydrant a minimum of 18" from center line of pumper nozzle above grade to facilitate swing of hydrant cap wrenches.
- D. Submit test results.

SECTION 02950 - BELOW GRADE DUCTILE IRON CEMENT-LINED PIPE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes ductile iron pipe for below grade installations that include the following:
 - 1. Ductile iron pipe.
 - 2. Ductile iron M.J. fittings.
 - 3. Mechanical restraint glands and gaskets.
 - 4. Pipe couplings.
 - 5. Polyethylene encasement.
 - 6. Pressure and leak testing.
 - 7. Disinfection.

1.3 REFERENCES

A. Refer to details on Drawings.

1.4 REQUIREMENTS

- A. Products and materials shall meet all applicable AWWA Standards C104 thru C153 (current editions).
- B. Piping and fittings shall be rated for 350 psi minimum.
- C. Pipe disinfection shall be in accordance with the requirements of AWWA C651, current edition.

1.5 SUBMITTALS

- A. Submit shop drawings, product data, NSF Certification and manufacturer's installation instructions in accordance with Section 01300 Submittals.
- B. Submit pressure/leak test reports in accordance with this Section, certifying that the water system was successfully pressure/leak tested as defined in this Section.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS - BELOW GRADE

A. Pipe:

- 1. Ductile iron, cement lined, special thickness Class 52, asphaltic seal coating on inside and outside with class designation stamped on pipe. Pipe and lining shall meet all the requirements of AWWA C151 and AWWA C104.
- 2. Carrier pipe inside of steel casings shall be Class 54 with mechanical joint ends.
- 3. Pipe shall be furnished in 18-feet or 20-feet lengths except when smaller lengths are required for the location of valves, fittings and/or specialties.
- 4. Acceptable Manufacturers:
 - a) US Pipe and Foundry Company
 - b) American Cast Iron Pipe Company
 - c) Griffin Pipe Products Company
 - d) Atlantic States Cast Iron Pipe Company

B. Joints:

- 1. Push-on Joints
 - a. Bell and Spigot Push-on Joints with rubber gaskets shall meet the requirements of AWWA C111. Acceptable Manufacturers:

US Pipe Tyton Joint American Fastite Joint

b. Restrained Push-on Joint Gaskets shall meet the requirements of AWWA C110 or C153, depending on the diameter. Acceptable Manufacturers:

US Pipe Field Lok Gasket American Fast-Grip Gasket.

- 2. Mechanical Joints shall meet all the requirements of AWWA C111. Provide trackhead corten alloy bolt sets having a minimum yield strength of 45,000 psi.
- C. Fittings: Ductile iron, cement lined, thickness to match Class 52, asphaltic seal coating on inside and outside, full body style as per AWWA C110, or compact body style as per AWWA C153. All fittings shall be provided with mechanical joints.

2.2 MECHANICAL JOINT RESTRAINT SYSTEM

A. Ductile iron epoxy coated gland assembly with torque limiting twist off nuts and heat treated wedges in accordance with ASTM A536 and listed by FM and UL.

B. Manufacturers:

- Basis of Design: EBAA Iron MEGALUG Series 1100
- 2. Optional Manufacturers: None

2.3 PIPE COUPLINGS

A. Couplings: Epoxy-fusion coated steel couplings for plain end ductile iron pipe with middle ring, followers, EPDM gaskets and stainless steel bolt sets. Length: 10 inches.

B. Manufacturers:

- 1. Basis of Design: Smith Blair Model 411.
- 2. Optional Manufacturers: Dresser, Ford.

2.4 TRANSITION COUPLINGS

A. Couplings: Epoxy-fusion coated steel couplings for plain end ductile iron pipe by wrought, cast iron, AC or PVC with selected resilient gaskets, middle ring, followers and stainless steel bolt sets. Length: 10 inches.

B. Manufacturers:

- 1. Basis of Design: Smith Blair Model 413.
- 2. Optional Manufacturers: Dresser, Ford.

2.5 POLYETHYLENE ENCASEMENT

A. Polyethylene film in tube form to be used for encasement of piping as indicated on areas. Polyethylene film shall conform to the requirements of AWWA C105.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide 6-inch pipe bedding in accordance with drawing details. Bedding shall be in accordance with Section 02221 Trenching, Backfilling, and Compaction.
- B. Verify that trench and bedding is true to line and grade and at correct elevation and location.

3.2 PIPE RESTRAINT SYSTEMS

- A. Push-on joints may be provided on straight runs of pipe, except those joints being used to support a Mechanical Joint Restraint System as specified in Item C below.
- B. Provide a Mechanical Joint Pipe Restraint System at each connection to a bend, fitting, valve, cap, and connection to existing main.

C. When utilizing Mechanical Joint Restraint System, provide restrained push-on joint gaskets at each joint up and downstream to secure a mechanical joint elbow, bend, fitting, cap, or valve. The length of pipe up <u>and</u> downstream of each mechanical joint restraint system shall be determined by the following table. Provide restrained push-on joint gaskets such that the restrained length in each diameter is greater than or equal to the length of pipe requirements shown below.

Compliance with the following table is mandatory.

| LENGTH OF PIPE REQUIRED (LF) | | | | | | |
|------------------------------|-----------------|---------------------|-----|-----|-----|---------------|
| | Type of Fitting | | | | | |
| PIPE SIZE | 11-1/4º | 22-1/2 ⁰ | 45° | 90° | TEE | CAP/ VALVE |
| 6-Inch | 1 | 2 | 7 | 24 | 24 | 24 |
| 8-Inch | 1 | 4 | 13 | 42 | 42 | 42 |
| 10-Inch | 2 | 5 | 19 | 62 | 62 | 62 |
| 12 Inch | 2 | 7 | 26 | 87 | 87 | 87 |

3.3 INSTALLATION

- A. Establish elevations of buried piping to ensure not less than 4 feet of cover.
- B. Separation of Water Mains, Sanitary Sewers and Storm Sewers (refer to Standard Details on the drawings):
 - 1. Parallel Installation Whenever possible, water mains shall be laid at least 10 feet horizontally from any existing sewer or storm drain. The distance shall be measured edge to edge. In cases where a 10 foot-separation cannot be maintained, the following instructions apply:
 - a. The water main shall be laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer or drain.
 - b. The bottom of the water main shall be at least 18 inches above the top of the sewer or drain.
 - 2. Cross Overs Whenever water mains must cross over building drains, storm drains, or sanitary sewers, the following installation instructions shall apply:
 - a. A vertical separation of at least 18 inches between the bottom of the water main and the top of the sewer or drain shall be maintained.
 - b. The length of the water main shall be centered at the point of crossing so that the joints shall be equivalent and as far as possible from the sewer or drain.

- 3. Cross Unders Whenever water mains must cross under building drains, storm drains or sanitary sewers, the following installation instructions shall apply:
 - a. A vertical separation of at least 18 inches between the bottom of the sewer or drain and the top of the water main shall be maintained.
 - b. Polyethylene encasement of the new water line shall be utilized and shall be installed per AWWA C105 method A or B.
 - c. Adequate structural support for the sewers or drains shall be provided to prevent excessive deflection of the joints and the settling on and breaking of the sewer or water main.
 - d. The length of the water main shall be centered at the point of the crossing so that the joints shall be equidistant and as far as possible from the sewer or drain.
- 4. Exceptions to Parallel Installation If the 18-inch vertical separation condition in Item 3.3 B.1 cannot be met, the following installation instructions apply:
 - a. Polyethylene encasement of the new water main shall be utilized and shall be installed per AWWA C105 Method A or B.
- 5. Exceptions to Cross Overs and Cross Unders If any conditions in Item 3.3 B.2 or 3 cannot be met, the following installation instructions shall apply:
 - a. Concrete encasement of the sewer or drain shall be provided if approved in writing by the Engineer. If the concrete encasement method is utilized, the concrete shall extend 3 feet in each direction from the crossing. The 3 feet is to be measured as a perpendicular distance from the sewer or drain. Concrete requirements are same as specified in Section 02994 - Thrust Blocks.
- 6. Where the installation instructions of Items 3.3 B, 1, 2, 3, 4, or 5 cannot be met, contact the Engineer for direction.
- C. Separation of water mains in respect to gas, electric and telephone lines.

The following separations are recommendations; however, the final decision will be as directed by the appropriate utility company.

- 1. Parallel Installation whenever possible, water mains shall be laid at least 3-feet horizontally from any existing gas, electric or telephone line. The distance shall be measured edge to edge.
- Cross Unders whenever possible, water mains shall be laid at least 18 inches vertically from any existing gas, electric or telephone line. The distance shall be measured edge to edge.
- 3. Cross Overs not recommended; contact utilities for approval.
- D. Store gaskets at temperature above 40 degrees F. Clean and dry bell joint and gasket before gasket insertion. Ensure that gasket is evenly seated.

- E. Clean plain end of pipe and lubricate gasket before joining sections. Align sections and insert pipe until it makes contact with the bottom of the bell, or to point indicated on pipe as directed by pipe manufacturer's instructions.
- F. Use a timber header between pipe and backhoe when pushing pipe sections together with a backhoe.
- G. File or grind the outside edge of field cut piping to remove sharp edges which could damage a gasket.
- H. Do not exceed the allowable deflection based on pipe size and joint type as specified by the pipe manufacturer.
- I. Clean dirt and debris from each section of pipe and fitting before installation and immediately after installation.
- J. Protect pipe and fitting coatings from damage. Repair any damage to coatings in accordance with manufacturer's recommendations.
- K. Securely block each pipe opening at the end of each workday with watertight bulkheads to prevent entrance of mud, water and/or dirt.
- L. Provide thrust blocking at locations indicated on plans.

3.4 CONNECTION TO EXISTING MAINS

- A. The Contractor shall excavate, measure and determine what type and size of fittings or joints are required for connection to existing mains, then backfill compact and temporarily restore surface.
- B. Provide transition couplings when connecting to existing piping where the outside diameter varies from the new pipe to the existing pipe.
- C. Determine the exact location on existing piping for point of new to existing interconnections.
- D. Review proposed fittings and exact locations of connections to existing mains with Engineer prior to starting work on connections.
- E. Notify the Owner at least three (3) days before permanently connecting new to existing water main at each point.

3.5 DISINFECTION OF POTABLE WATER MAINS

A. Place calcium hypochlorite granules at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-foot intervals. The quantity of granules shall be as shown in the table below.

WARNING: This procedure must not be used on solvent-welded plastic or on screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

| Pipe Diameter (Inches) | Calcium Hypochlorite Granules (Ounces) | | |
|---------------------------|--|--|--|
| 4 | 0.5 | | |
| 6 | 1.0 | | |
| 8 | 2.0 | | |
| 12 | 4.0 | | |
| 16 and larger | 8.0 | | |

B. Place 5g calcium hypochlorite tablets in each section of pipe and also place one such tablet in each hydrant, hydrant branch, and other appurtenance. The number of 5g tablets required for each pipe section shall be 0.0012d²L rounded to the next higher integer, where d is the inside pipe diameter, in inches, and L is the length of the pipe section, in feet. The table below shows the number of tablets required for commonly used sizes of pipe.

Note: Do not use Trichloro-S-Triazinetrione tablets for disinfection of mains. This product is less soluble in water than hypochlorite tablets.

Number of 5g Calcium Hypochlorite Tablets Required for Dose of 25 mg/L*.

| | Length of Pipe Section | | | | |
|----------------------------|--|---------|---------|---------|---------|
| Pipe Diameter Inches | 13 feet or less | 18 feet | 20 feet | 30 feet | 40 feet |
| | Number of 5g Calcium Hypochlorite Tables | | | | |
| 4 | 1 | 1 | 1 | 1 | 1 |
| 6 | 1 | 1 | 1 | 2 | 2 |
| 8 | 1 | 2 | 2 | 3 | 4 |
| 10 | 2 | 3 | 3 | 4 | 5 |
| 12 | 3 | 4 | 4 | 6 | 7 |
| 16 | 4 | 6 | 7 | 10 | 13 |

*Based on 3.25g available chlorine per tablet; any portion of tablet rounded to next higher number.

The tablets shall be attached by a food-grade adhesive. Examples of a food-grade adhesives are Permatex Form-A-Gasket No. 2 and Permatex Clear RTV Silicone Adhesive Sealant, which are manufactured by Loctite Corporation, Kansas City, KS 66115. These products have both been approved by USDA for uses that may contact edible products. Neither product has been approved in accordance with NSF Standard 61. Other company products, such as Permatex Form-A-Gasket No. 1, have not received FDA approval.

There shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all the tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

- C. When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity no greater than 1 ft/s. Precautions shall be taken to assure that air pockets are eliminated. This water shall remain in the pipe for at least 24 hours. If the water temperature is less than 41 degrees F (5 degrees C), the water shall remain in the pipe for at least 48 hours. Valves shall be positioned so that the strong chlorine solution in the treated main will not flow into water mains in active service.
- D. Water for filling the mains shall be furnished by the Owner.
- E. After the applicable retention period, the Owner will obtain a chlorine sample to ensure a 25 mg/l dose was established. After results are obtained, proven acceptable, flush chlorinated water from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system or 2 ppm. Owner's personnel shall determine chlorine concentration.
- F. The environment to which the chlorinated water is to be discharged shall be inspected. If there is any question that the chlorinated discharge will cause damage to the environment, then a reducing agent shall be applied at Contractor's expense to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.
- G. Owner's personnel will take one sample at the end of the line and every 1000 feet of water main 24 hours after flushing. Samples shall be tested for bacteriological quality and shall show the absence of coliform organisms before the main is placed in service.
- H. If the initial disinfection fails to produce satisfactory bacteriological samples, the main must be reflushed and resampled. If check samples show the presence of coliform organisms and the new main shall be re-chlorinated until satisfactory results are obtained.
- I. All samples shall be taken by Owner's personnel. Coordinate this activity with them. Costs for sampling and testing shall be borne by the Contractor.
- J. Provide corporation stops for high point air vents and testing as indicated on drawings and as required.

3.6 TESTING

- A. Pressure test after the line has been laid and partially backfilled between joints. Should the Contractor elect to backfill the entire trench, or any portion thereof, prior to testing, the Contractor shall locate and repair any leaks which occur during the test.
- B. Pressure and leak test at fifty percent (50%) above normal working pressure at the highest point along the test section as determined by the Engineer in the presence of the Engineer or Owner's representative and in accordance with the local plumbing code. In no case shall the test pressure be less then 150 psi. Test pressure shall not vary by more than 5 psi for the duration of the test.
- C. The waterline section to be pressure tested shall not be more than 1,000 feet in length unless approved by Engineer.
- D. Contractor shall provide apparatus necessary for testing. Apply pressure with a pump connected to the main. Measure make-up water with a meter.
- E. Inspect fittings, joints and valves during testing. Any defective components shall be removed and replaced by the Contractor.
- F. Before applying the specified pressure test, all air shall be expelled from the pipe.
- G. While the test pressure is being maintained, all exposed pipes, fittings, valves and joints shall be inspected for leaks. The test pressure shall be maintained for a period of not less than two (2) hours if joints are exposed and four (4) hours when joints are covered or less if deemed appropriate by the Engineer.
- H. The allowable leakage in gallons per hour per 1,000 feet of pipeline, shall be as noted in the following table:

| Nominal Pipe Diameter (Inches) | | | | | | |
|--------------------------------|------|------|------|------|------|------|
| Average Testing Pressure | 4 | 6 | 8 | 10 | 12 | 16 |
| 150 | 0.33 | 0.50 | 0.66 | 0.83 | 0.99 | 1.32 |
| 175 | 0.36 | 0.54 | 0.72 | 0.89 | 1.07 | 1.43 |
| 200 | 0.38 | 0.57 | 0.76 | 0.96 | 1.15 | 1.53 |
| 225 | 0.41 | 0.61 | 0.81 | 1.01 | 1.22 | 1.62 |

If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

- I. Tests shall be repeated until results are in conformance with specified requirements.
- J. Submit test reports.

SECTION 02954 - SERVICE CONNECTION AND LINE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 REFERENCES

A. Refer to Details on the drawings.

1.3 SUMMARY

- A. Pipe material
- B. Flanges, unions and couplings
- C. Corporation stops
- D. Curb stops

1.4 REQUIREMENTS

- A. Products, valves and materials shall meet or exceed AWWA Standard C800 (current edition).
- B. Piping shall be rated for 200 psi minimum and valves shall be rated for 175 psi minimum with no leakage.
- C. Conformance to No Lead Standards Materials must comply with UNS/CDA #C89833 Lead Standards, NSF/ANSI Standard 61 and 372. All brass must be no lead and stamped "NL" or marked No Lead. Certification documents must be submitted as part of the submittal.

1.5 SUBMITTALS

A. Submit product data and manufacturers installation instructions in accordance with Section 01300 - Submittals.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Size: 3/4" to 2" diameter, copper pipe, Type K soft temper annealed with brass compression fittings.

2.2 FLANGES, UNIONS, AND COUPLINGS

- A. Bronze unions with compression grip joint or compression joint.
 - 1. Designed for copper with a solid tubular metal insert.
- B. Manufacturer: Ford Models C44-XX-G and C84-XX-G.
- C. Optional Manufacturer: Mueller, McDonald.

2.3 CORPORATION STOPS

- A. Copper Services 2 Inches and Under: Brass body, grip joint or, compression connections, 175 psi rating with AWWA taper inlet thread.
- B. Manufacturer: Ford Model F-1000-XX-G
- C. Optional Manufacturer: Mueller H-15008

2.4 CURB STOPS

- A. Curb Stops 2 Inches and Under: Ground key type with brass body, with key operator, grip joint or compression connections and 175 psi rating.
- B. Manufacturer: Ford Model B-44-XXX-G
- C. Optional Manufacturer: Mueller Model B-25209

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Contractor shall strictly follow manufacturer's recommended instructions as they relate to the installation of "No Lead" products.
- B. The service connection and service line shall be laid in a straight line as near as possible, and at right angles to the street.
- C. Establish elevations of buried piping to ensure not less than 4 feet of cover for service connection and 3' 6" for service lines.
- D. No metal pipe shall be placed in contact with cinders or other corrosive material unless such installation is unavoidable; in which case, after securing approval of the Owner to make the installation, polyethylene wrap must be provided.
- E. No service pipe shall be laid in the same trench with gas pipe, drain or sewer pipe, or any other facility of another public service company, nor within three feet of any open excavation or vault.
- F. Install specialties in accordance with manufacturer's recommendations.

G. Curb Stop Locations:

- 1. Existing Services new curb stop shall be installed at the same location as existing curb stop.
- 2 New Services curb stops shall be located a minimum of 1 feet 0 inches behind the curb or the proposed curb line.
- H. Install corporation stops with two layers of 3-Mil TFE tape or pipe dope to male threads.
- I. Provide unions downstream of valves and at equipment or apparatus connections.
- J. Provide non-conducting dielectric unions whenever jointing dissimilar metals.
- K. Provide corp stops at high point of water main piping to facilitate testing and air purging at no additional cost to Owner. Prior to placing the water main in service, these corp stops shall be removed and a brass plug installed.

3.2 INSPECTION AND TESTING

- A. A visual test will be performed once service connection and/or line are installed.
- B. Hydrostatic Tests: No service connection and/or line shall be covered until the line is filled with water and subjected to a hydrostatic test. This test to be observed by a representative of the Authority.
 - The line shall be slowly filled with water, all air expelled and the normal pressure in the Authority system allowed to develop in the service line. All pipe, fittings, valves and joints shall be carefully examined during the test. All materials found defective shall be removed and replaced with sound and satisfactory materials and all leaks completely eliminated.
 - 2. The Authority exercises the right to require that the small service connections and lines be subjected to a hydrostatic test of 50 percent in excess of normal operating pressures, and will require such a test on all lines over two inches in size and on all unmetered service lines, including fire protection lines, the test pressure in no case in connection with this increased pressure test to be less than 100 pounds.
 - 3. No loss whatsoever due to leakage will be permitted on service connections or lines.
- C. Defective components shall be removed and replaced by the Contractor. Repeat test until results are in conformance with specified requirements.

3.3 FLUSHING

A. Flush water through each service lateral after the main is disinfected and flushed.

SECTION 02966 - VALVE BOXES

PART 1 - GENERAL

1.1 REFERENCES

A. Refer to Details on the drawings.

1.2 SUBMITTALS

A. Submit product data and manufacturers installation instructions in accordance with Section 01300 - Submittals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Type 1: Roadway Style: 5-1/4" inside diameter, cast iron, asphaltic coated 3-piece adjustable valve box, round head with the word "WATER" printed on top.
 - 1. Manufacturers: Bingham & Taylor, Mueller, Tyler or Ford.
- B. Type 2: Curb Stop Box: 1" inside diameter upper section, asphaltic coated 2-piece cast iron with operating rod and lid with brass head plug.
 - 1. Manufacturer: Ford Model EA2-40-40-24R, Mueller or Tyler.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install Type 1 valve boxes at every distribution valve, blow-off valve, and hydrant isolation valve.
- B. Provide valve box length as required to accommodate valve depth.
- C. Provide Type 2 valve boxes with extended rods for curb stops.
- D. Support valve boxes in accordance with details.
- E. Valve boxes shall be flush or slightly below flush with the finish grade.
- F. Contractor to inspect all valve boxes prior to macadam or concrete restoration to verify proper alignment and access to valve top nut with valve key.
- G. Locate curb stop valve box in concrete sidewalk. If area does not specify for the installation of sidewalk, provide 4" thick concrete pad a minimum of 18" square as noted on the standard details.

END OF SECTION 02966

VALVE BOXES 02966 - 1

SECTION 02968 - BURIED WATER DISTRIBUTION VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 REFERENCES

A. Refer to Section 02970, 2.3 for wet tap, insertion valve, and line stop subcontractors.

1.3 SUMMARY

- A. This section includes ductile iron valves and appurtenances for the project, including:
 - 1. Buried Resilient Seat Gate Valves
 - 2. Buried Rubber Seated Butterfly Valve

1.4 REQUIREMENTS

- A. Valves shall meet all applicable AWWA Standard C515.
- B. Valves shall be line size in accordance with the diameters shown on the drawings.
- C. Valves shall open by turning counter clockwise.

1.5 SUBMITTALS

A. Submit product Data and Shop Drawings in accordance with General Conditions, Section 63.

PART 2 - PRODUCTS

2.1 BURIED RESILIENT SEAT GATE VALVES

A. Class 200, resilient wedge, ductile iron body, bronze trim, resilient seat for zero leakage, mechanical joint ends, non-rising stem, "O" ring packing, 2" operating nut, clockwise to close, epoxy coating inside and outside applied before valve assembly.

B. Manufacturer:

1. Basis of Design: Mueller.

2. Optional Manufacturer: US Metro Seal, Clow.

2.2 BURIED RUBBER SEATED BUTTERFLY VALVE

- A. All butterfly valves shall be manufactured in accordance with AWWA C504.
- B. 4" thru 20" butterfly valve shall consist of cast iron valve body with mechanical joint end connections, pressure class 150B, cast iron valve discs, stainless steel seating edge and shaft, buna-N rubber seat, self lubricating valve bearings, open/close positive stops, internal and external epoxy coating.

C. Manufacturer:

Basis of Design: Pratt.
 Optional Manufacturer: Mueller.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install valves and equipment in accordance with manufacturer's recommendations.
- B. Install each distribution valve vertically with valve support and valve box in accordance with drawing details and Section 02966 Valve Boxes.
- C. Clean dirt and debris from each valve immediately after installation.
- D. Protect valve coatings from damage. Repair any damage to coatings in accordance with manufacturer's recommendations.
- E. Provide flange adapters and pipe couplings to facilitate removal and calibration of water meter.

SECTION 02970 - TAPPING SLEEVE AND VALVE ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 REQUIREMENTS

- A. Valves shall meet AWWA C500 and C509 Standards.
- B. Valves shall be line size in accordance with the diameters shown on the drawings.
- C. Installation by an approved contractor specializing in the installation of tapping sleeve and valve with no less than 5 years' experience.
- D. All valves specified herein shall be tested at the factory in accordance with the AWWA Standard Leakage and Hydrostatic Test as modified herein and a certified test report shall be furnished for each valve.

1.3 SUBMITTALS

A. Submit Product Data and Shop Drawings in accordance with Section 01300 – Submittals.

PART 2 - PRODUCTS

2.1 RESILIENT SEAT GATE VALVES

- A. Buried Service Installation 16 Inches and Under: Resilient Seat Gate Valves 16 Inches and Under for Buried Service Installation: Resilient wedge, ductile iron construction, resilient seat for zero leakage, flanged end, mechanical joint end for tapping sleeve installation, there shall be no exposed metal seams, edges, or screws within the waterway, wrench nut shall be constructed of ductile iron, all internal and external ferrous surfaces of the valve body and bonnet shall have a fusion bonded epoxy coating.
- B. Manufacturer: Clow, Pratt, Mueller.

2.2 MJ-TYPE TAPPING SLEEVE

- A. Ductile iron mechanical joint tapping sleeve for installation on cast and ductile iron pipe; duck-tipped end gaskets; asphaltic coated; 200 psi working pressure with flanged outlet.
 - Manufacturer:
 - a. Basis of Design: Mueller.
 - b. Optional Manufacturer: US Metroseal or Clow.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install tapping valves and sleeves in accordance with manufacturer's recommendations.
- B. Install each distribution valve vertically with valve support, concrete/concrete block base, and valve box in accordance with drawing details and Section 02966 Valve Boxes.
- C. Clean dirt and debris from each valve immediately after installation.
- D. Protect valve coatings from damage. Repair any damage to coatings in accordance with manufacturer's recommendations.
- E. Excavation at tapping sleeve location shall be increased to accommodate tapping machine operation.
- F. The installed tapping sleeve and valve assembly must be pressure and leak tested and distributed as per Section 02950.

SECTION 02994 - THRUST BLOCKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 REFERENCES

A. Refer to Details on the drawings.

1.3 REQUIREMENTS

- A. Install concrete thrust blocks at each elbow, tee, and capped or valved end fittings located in the horizontal plane. Mechanical Joint Restraint System must be utilized in the vertical planes.
- B. Thrust blocks will only be utilized to support new fittings when connecting to existing piping. All new piping shall be restrained with a Mechanical Joint Restraint System.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement to be ANSI/ASTM C150, Type III, High, Early Strength Portland.
- B. Aggregates to be normal weight ANSI/ASTI C33.
- C. Water to be clean and not detrimental to concrete.
- D. Air-entraining admixture to be ANSI/ASTM C260.

2.2 CONCRETE MIX

- A. Mix concrete in accordance with ANSI/ASTM C94.
- B. Concrete to have a 3000 psi, 7-day compressive strength.

2.3 REINFORCING STEEL

- A. Reinforcing bars to be ANSI/ASTM A615, Grade 60 deformed.
- B. Steel wire to be ANSI/ASTM A82, plain, cold-drawn steel.

THRUST BLOCKS 02994 - 1

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that trench cut and excavation base is ready to receive work, and that excavations, dimensions and elevations are as indicated on drawings.

3.2 INSTALLATION

- A. Place, support and secure reinforcement against displacement.
- B. Concrete shall be poured against undisturbed earth or rock.

END OF SECTION 02994

THRUST BLOCKS 02994 - 2

DIVISION 03 CONCRETE

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Concrete materials and mixes for the following:
 - 1. Concrete Cradle and/or Encasement.
 - 2. Reaction Backing (Thrust Blocks).
 - 3. Manhole Base Channel Fill.
 - 4. Manhole Bases.
 - 5. Anti-Flotation Rings.
 - 6. Concrete Footings, Equipment Foundations, Slabs on Grade.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials, AASHTO M182 Burlap cloth made from Jute or Kenaf.
- B. American Concrete Institute:
 - 1. ACI 301 Specifications for Structural Concrete for Buildings.
 - 2. ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
 - 3. ACI 305R Hot Weather Concreting.
 - 4. ACI 306R Cold Weather Concreting.
 - 5. ACI 308 Standard Practice for Curing Concrete.
 - 6. ACI 309 Standard Practice for Consolidation of Concrete.
 - 7. ACI 318 Building Code Requirements for Reinforced Concrete.
- C. American Society for Testing and Materials:
 - 1. ASTM C33 Concrete Aggregates.
 - 2. ASTM C39 Compressive Strength of Cylindrical Concrete Specimens.
 - 3. ASTM C94 Ready Mixed Concrete.
 - 4. ASTM C143 Slump of Portland Cement Concrete.
 - 5. ASTM C150 Portland Cement.
 - 6. ASTM C171 Sheet Materials for Curing Concrete.
 - 7. ASTM C171 Sampling Freshly Mixed Concrete.
 - 8. ASTM C173 Air Content of Freshly Mixed Concrete by the Volumetric Method.
 - 9. ASTM C231 Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 10. ASTM C260 Air Entraining Admixtures for Concrete.
 - 11. ASTM C309 Liquid Membrane Forming Compounds for Curing Concrete.
 - 12. ASTM C494 Chemical Admixtures for Concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portland Cement: ASTM C150 of the following type:
 - 1. For concrete which will be in contact with sewage: Type II, Moderate Sulfate Resistance.
 - 2. For all other uses: Type I, Normal.
- B. Aggregates: Meeting requirements of ASTM C33.
- C. Water: Potable quality, clean and free of injurious amounts of oil, acid, alkali, organic matter, suspended matter, and other deleterious substances.
- D. Concrete Admixtures:
 - 1. Air-Entraining Admixture: Use a product conforming to ASTM C260, certified by manufacturer to be compatible with other required admixtures.
 - 2. Water-Reducing Admixture: ASTM C494, Type A, and containing not more than 0.1 percent chloride ions.
 - 3. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C494, Type F or Type G and containing not more than 0.1 percent chloride ions.
 - 4. Water-Reducing, Non-Chloride Accelerator Admixture: ASTM C494, Type E, and containing not more than 0.1 percent chloride ions.
 - 5. Water-Reducing, Retarding Admixture: ASTM C494, Type D, and containing not more than 0.1 percent chloride ions.
 - 6. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions are not permitted.
- E. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
 - 1. Waterproof paper.
 - 2. Polvethylene film.
 - 3. Polyethylene-coated burlap.
- F. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C309, type I, Class A. Moisture loss not more than 0.055 gr/sq cm when applied at 200 sq ft/gal.
 - 1. Acceptable Manufacturers:
 - a. Masterseal; Master Builders.
 - b. L&M Cure; L&M Construction Chemicals.
 - c. Substitutions: Under provisions of Section 01600.

2.2 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301.

B. Compressive Strength:

- 1. Provide concrete with 28 day compressive strength as specified in other Specification Sections.
- 2. Where no compressive strength is specified, use 3,000 psi concrete.

C. Admixtures:

- 1. Use water-reducing admixture or high range water-reducing admixture (super plasticizer) in concrete as required for placement and workability.
- 2. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50°F.
- 3. Use high-range water-reducing admixture in pumped concrete, concrete required to be watertight, and concrete with water/cement ratios below 0.50.
- 4. Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-orminus 1-1/2 percent within following limits:
 - a. Concrete exposed to freezing and thawing, deicer chemicals, or subjected to hydraulic pressure:

| Maximum | Air Content |
|----------------|-------------|
| Aggregate Size | (% by |
| (inches) | Volume) |
| 1/2 | 5-9 |
| 3/4 | 4-8 |
| 1 | 3.5-6.5 |
| 1-1/2 | 3-6 |
| 2 | 2.5-5.5 |
| 3 | 1.5-4.5 |

- D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W.C.) ratios as follows:
 - 1. Concrete with 28 day compressive strength required to be 3,000 or higher: 0.58 maximum (non air-entrained), 0.40 maximum (air-entrained).
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - 1. Slump: Not less than 1" nor more than 4", except when super plasticizer is used, slump may be as high as eight inches.

2.3 CONCRETE MIXES

- A. Job-Site Mixing: Not Allowed.
- B. Ready-Mix Concrete: Comply with requirements of ASTM C94, and as herein specified.
 - 1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.

2. When air temperature is between 85°F and 90°F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90°F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 CONCRETE PLACEMENT

- A. General: comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.
- B. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306.
- C. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305.

3.2 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
 - 1. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than seven days.
 - 2. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least seven days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.
- B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, in accordance with ACI 308.

3.3 FINISHES

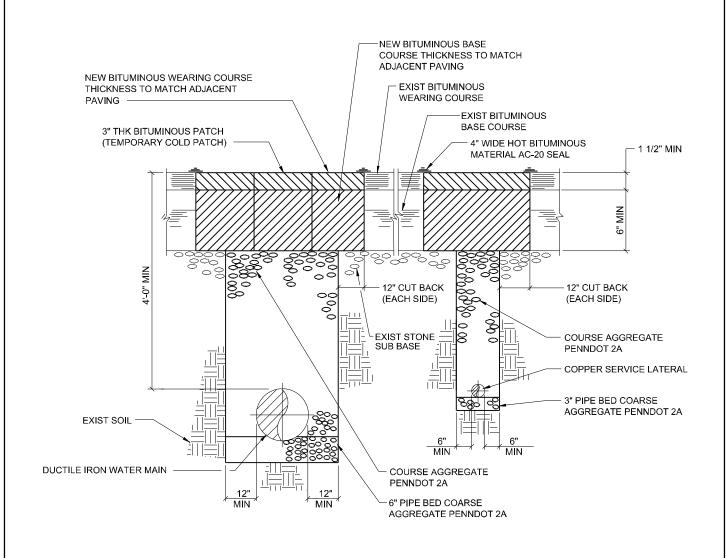
A. Provide a steel troweled floor finish on the floors of the generator stations.

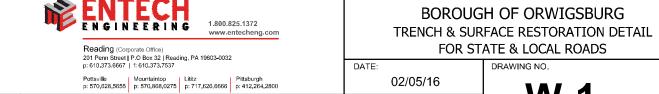
3.4 QUALITY CONTROL

- A. Sampling and testing for quality control during placement of concrete may include the following, as directed by Engineer.
 - 1. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
 - 2. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - 3. Air Content: ASTM C173, volumetric method; ASTM C231 pressure method; one for each day's pour of each type of air-entrained concrete.
 - 4. Concrete Temperature; Test hourly when air temperature is 40° F and below, and when 80°F and above; and each time a set of compression test specimens made.

5. Compressive Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cubic yards plus additional sets for each 50 cubic yards over and above the first 25 cubic yards of each concrete class placed in any one day; one specimen tested at seven days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required. The average compressive strength for the two 28 day specimens will be used to determine compliance with the compressive strength requirements.

APPENDIX E STANDARD CONSTRUCTION DETAILS





PREPARED BY CHECKED BY

MAH BAK

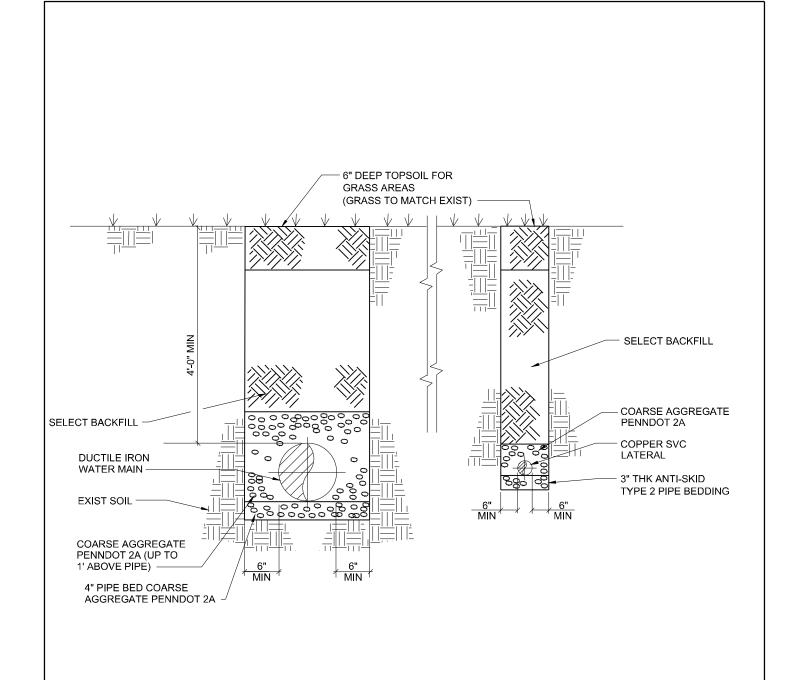
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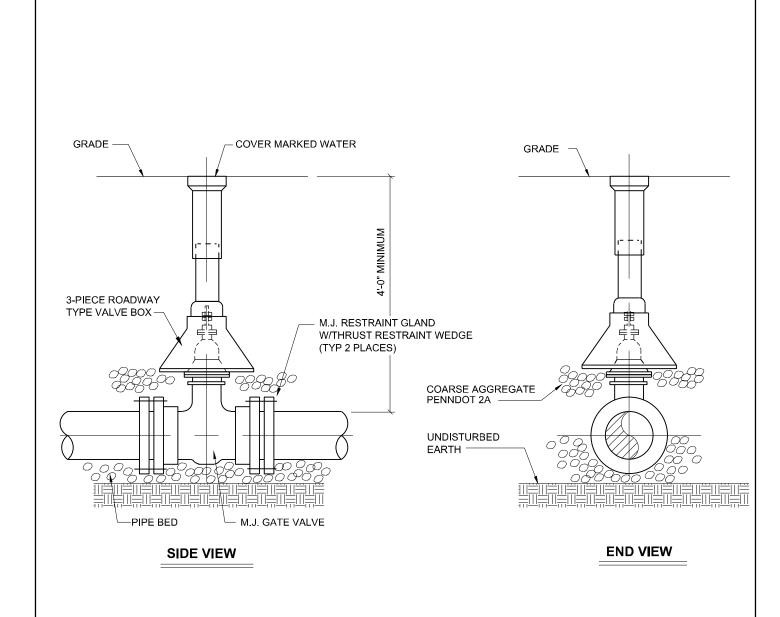
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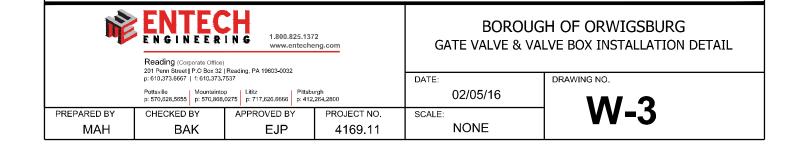
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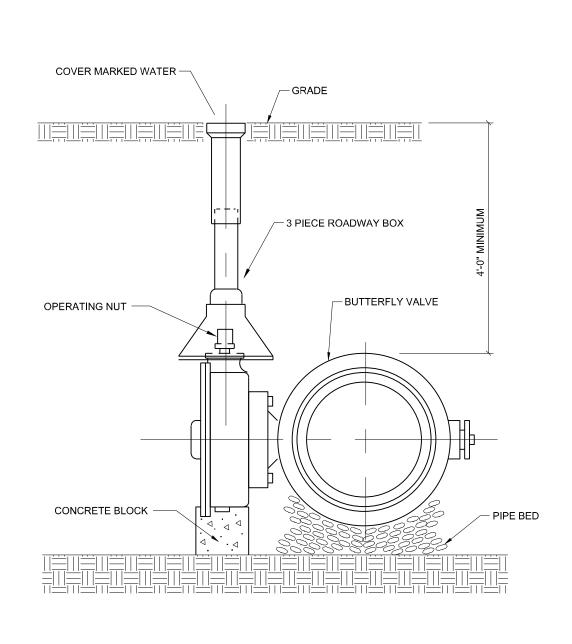
EJP

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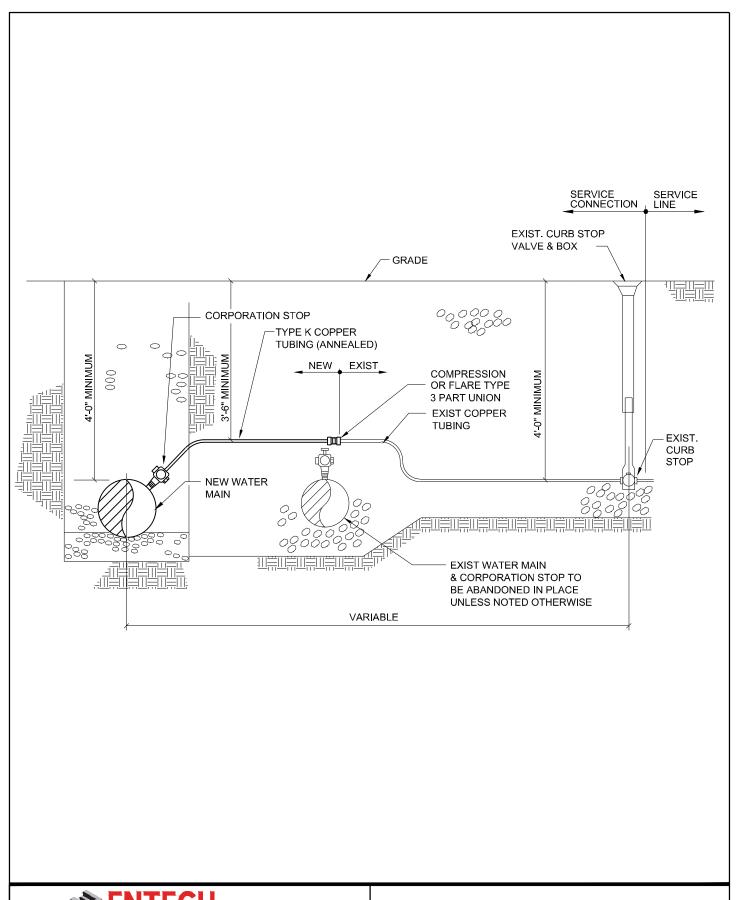
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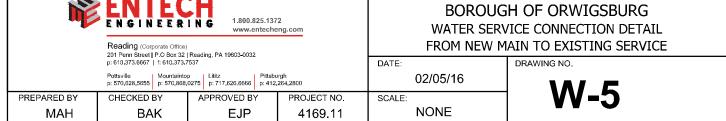
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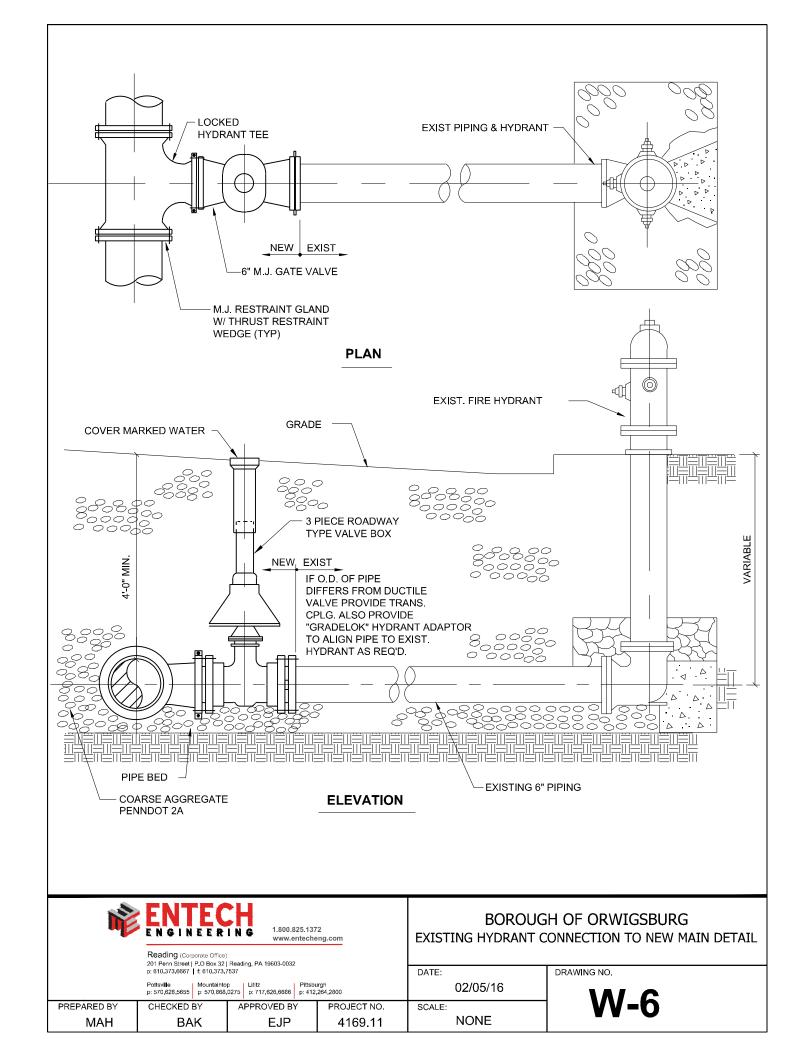
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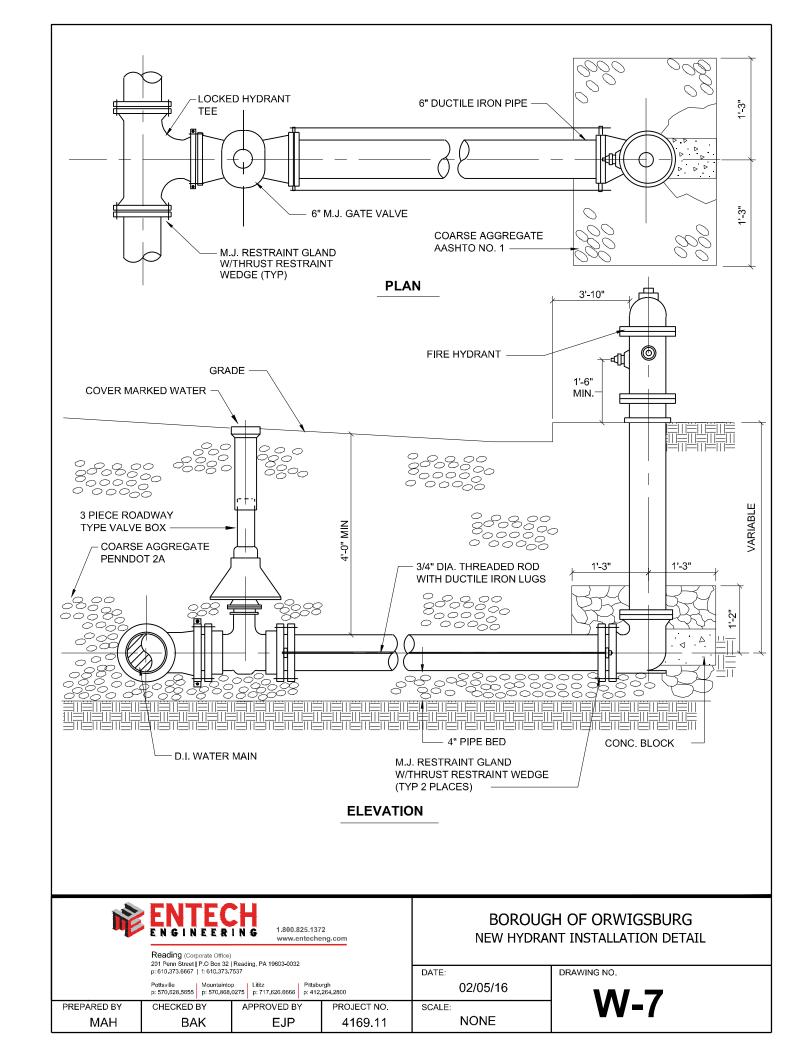
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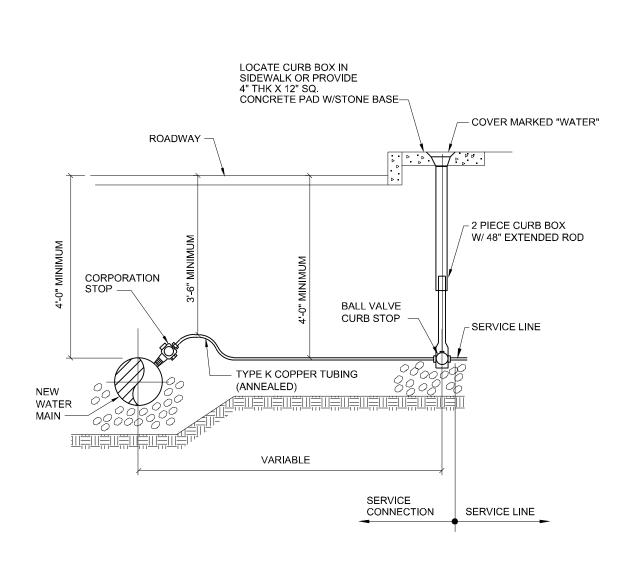
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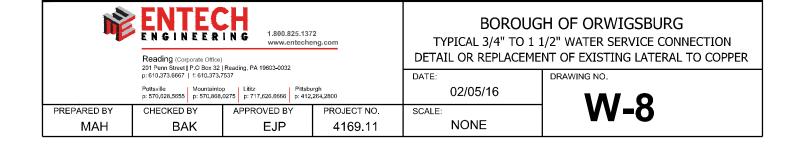


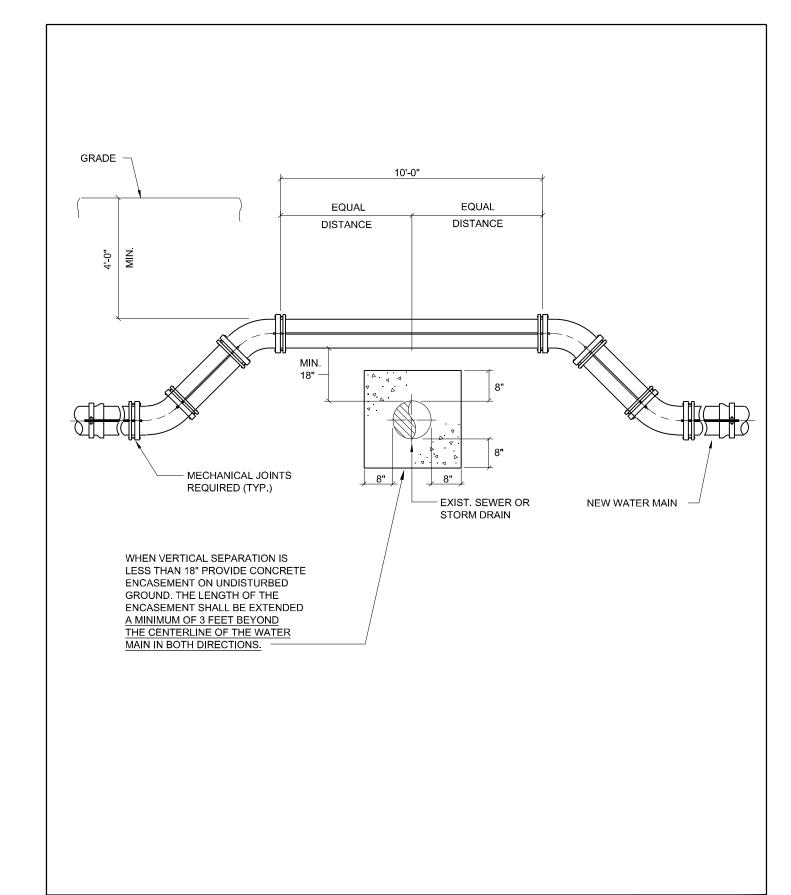


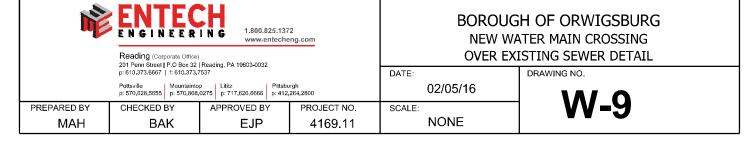


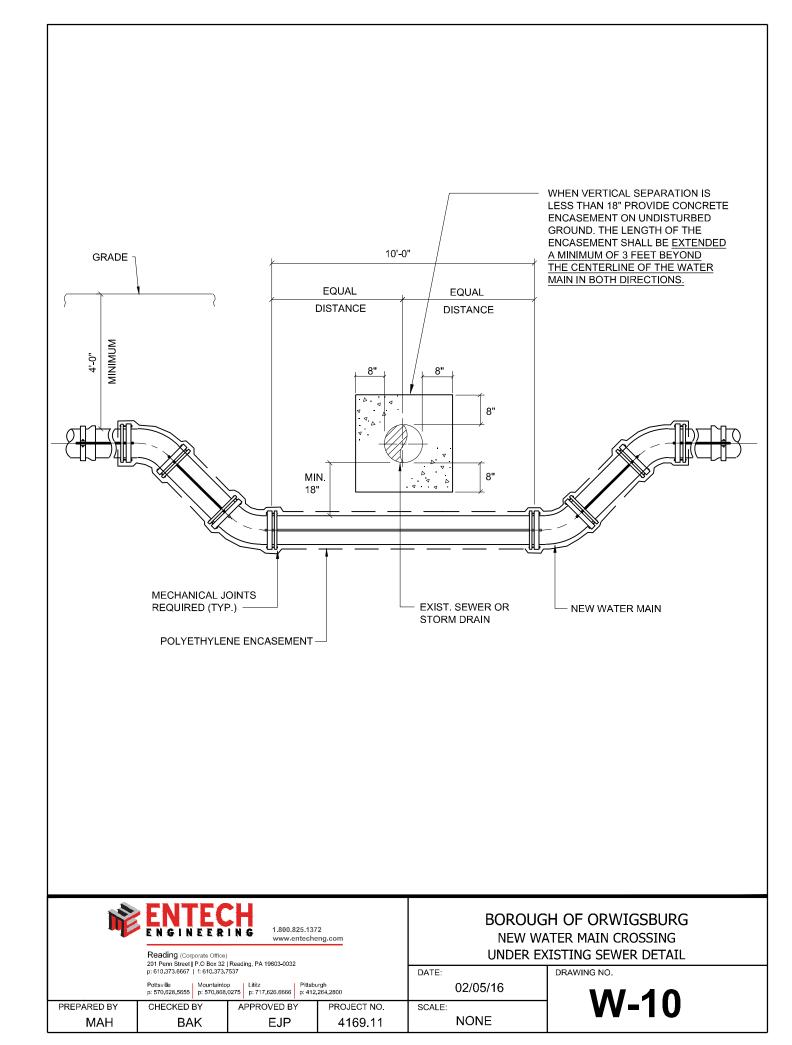


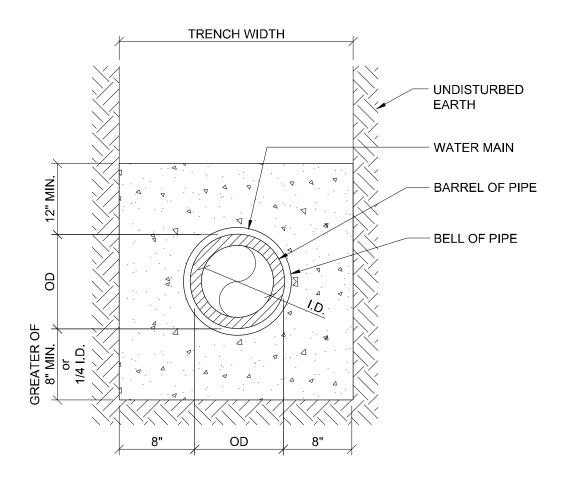




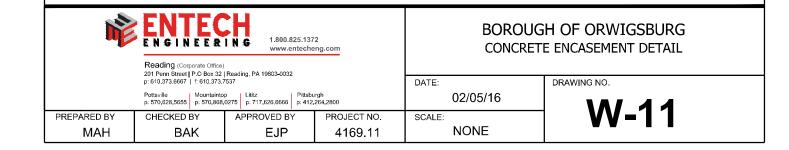


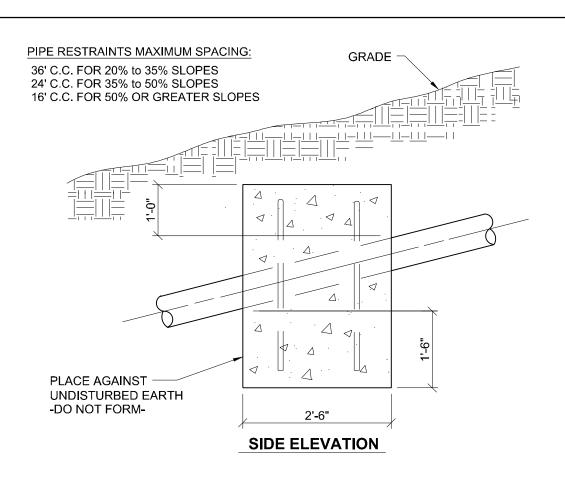


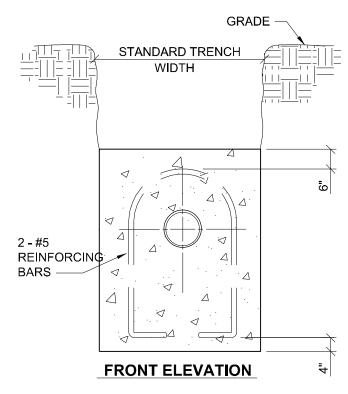


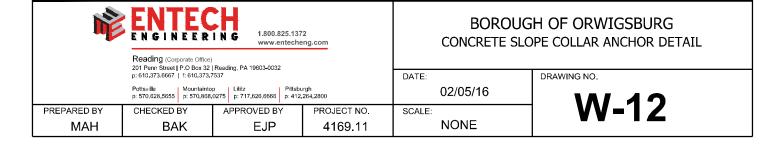


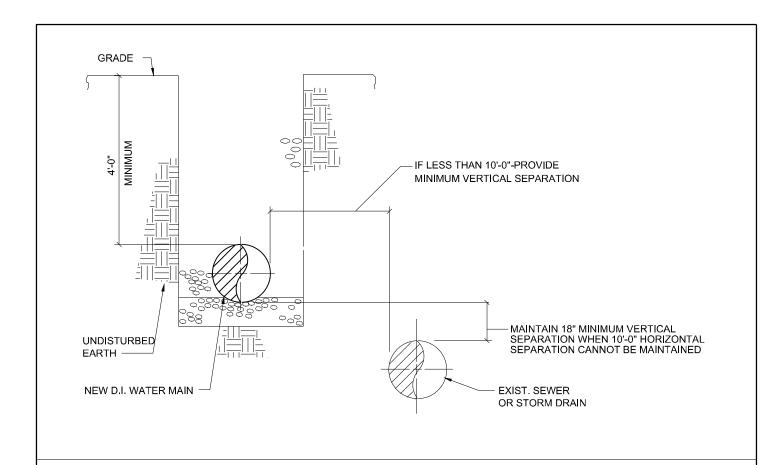
NOTE: ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

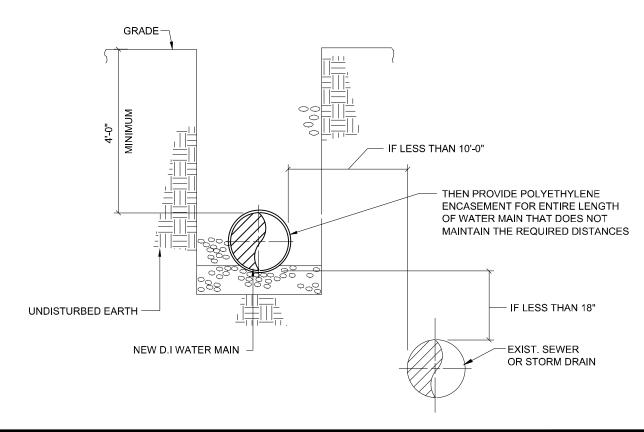


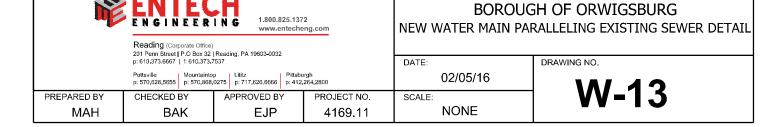


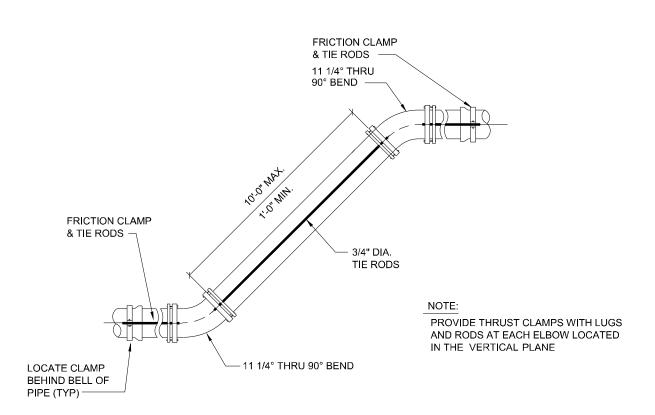














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EJP

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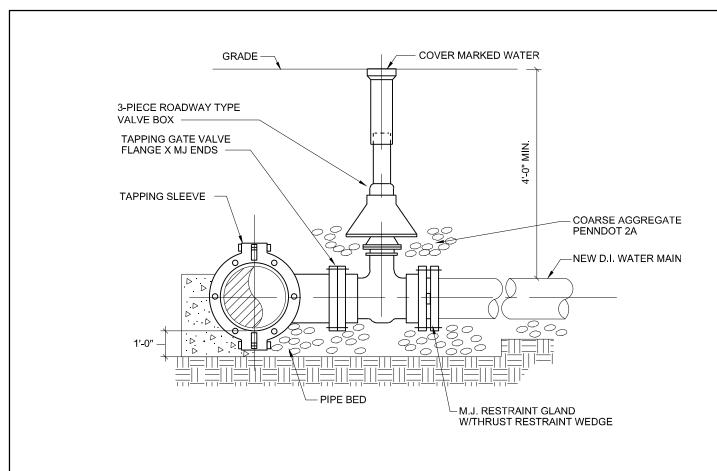
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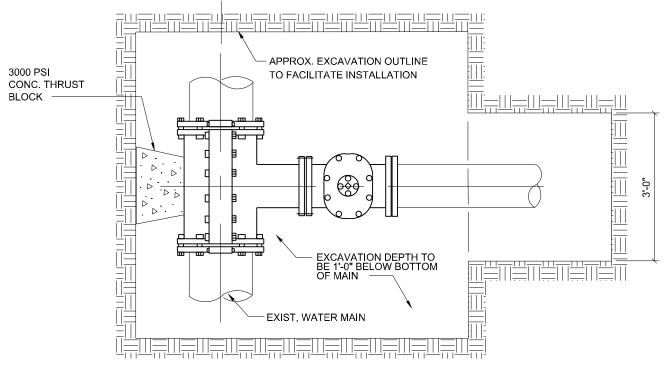
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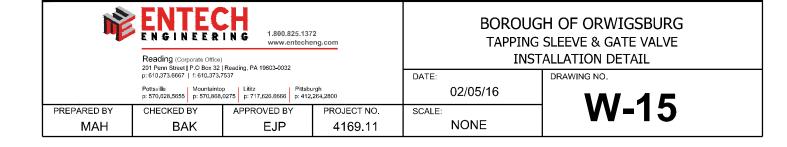
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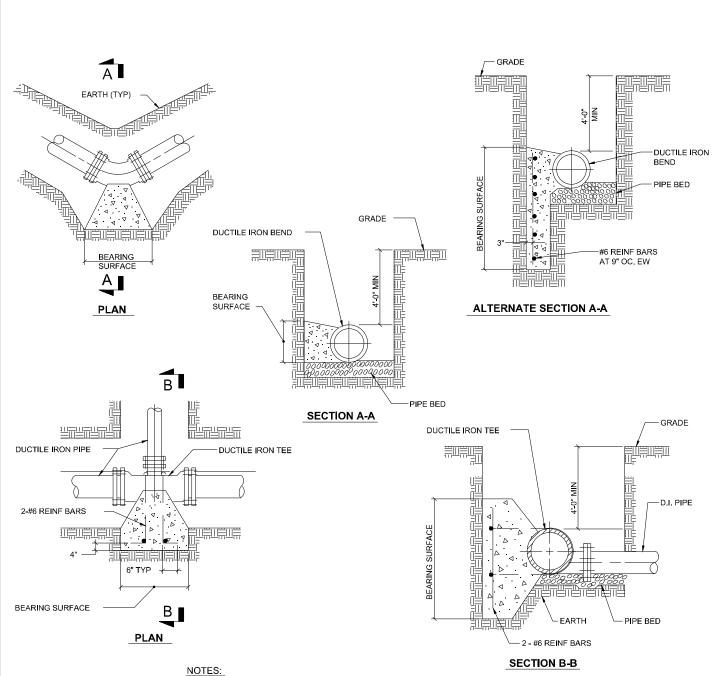
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BOROUGH OF ORWIGSBURG VERTICAL THRUST CLAMPING DETAIL

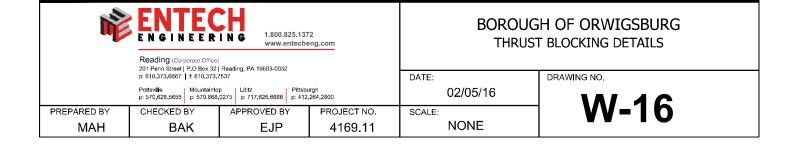








- 1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.
- 2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS.
- 3. PROVIDE CONC THRUST BLOCKS FOR FIRE HYDRANTS. REFER TO EXIST / NEW HYDRANT DETAILS.
- 4. INSTALL CONCRETE THRUST BLOCKS AT EACH ELBOW, TEE AND CAPPED OR VALVED END FITTINGS LOCATED IN THE HORIZONTAL PLANE.
- 5. FOR BEARING SURFACE REQUIREMENTS REFER TO DWG. W-17.



MINIMUM SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST BLOCKING AND VERTICAL THRUSTS DOWNWARD

NOTE: WORK THIS SCHEDULE WITH THRUST BLOCK DETAILS ON DWG. W-14

| PIPE SIZES - | 6" AND 8" 10" AND 12" | | | | 12" | | | |
|---|-----------------------|---------|---------|-------|--------|----------|---------|-------|
| TYPE OF BEARING MATERIAL | DEGREE | BEND OR | DEFLECT | ION | DEGREE | BEND OR | DEFLECT | ION |
| AND ALLOWABLE LOADS | 11 1/4 | 22 1/2 | 45 ° | 90° | 11 1/4 | 22 1/2 0 | 45 ° | 90° |
| SAND 1 TON/SQ FT SOFT CLAY 1 TON/SQ FT | 1.50 | 3.00 | 6.00 | 12.00 | 3.00 | 6.00 | 12.00 | 24.50 |
| SAND & GRAVEL 2 TON/SQ FT | 1.00 | 1.50 | 3.00 | 6.00 | 1.50 | 3.00 | 6.00 | 12.00 |
| CLAY 3 TON/SQ FT | 1.00 | 1.00 | 2.00 | 4.00 | 1.00 | 2.00 | 4.00 | 8.00 |
| SOFT ROCK 5 TON/SQ FT | 1.00 | 1.00 | 1.00 | 2.50 | 1.00 | 1.00 | 2.50 | 5.00 |
| ROCK 20 TON/SQ FT | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

MINIMUM SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST **BLOCKING AND VERTICAL THRUSTS DOWNWARD**

| PIPE SIZES - | 14" AND 16" | | | | | 18" AND 20" | | | |
|--|-------------|---------|---------|-------|---------------------------|-------------|-------|-------|--|
| TYPE OF READING MATERIAL | DEGREE | BEND OR | DEFLECT | TION | DEGREE BEND OR DEFLECTION | | | | |
| TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS | 11 1/4° | 22 1/2 | 45 ° | 90° | 11 1/4 | 22 1/2 | 45 ° | 90° | |
| SAND 1 TON/SQ FT SOFT CLAY 1 TON/SQ FT | 5.50 | 11.00 | 21.50 | 43.00 | 8.50 | 16.50 | 33.00 | 66.00 | |
| SAND & GRAVEL 2 TON/SQ FT | 2.50 | 5.50 | 11.00 | 21.50 | 4.00 | 8.50 | 16.50 | 33.00 | |
| CLAY 3 TON/SQ FT | 2.00 | 3.50 | 7.00 | 14.00 | 3.00 | 5.50 | 11.00 | 22.00 | |
| SOFT ROCK 5 TON/SQ FT | 1.00 | 2.00 | 4.50 | 8.50 | 1.50 | 3.50 | 6.50 | 13.00 | |
| ROCK 20 TON/SQ FT | 1.00 | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | 1.50 | 3.50 | |



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Pottsville | Mountaintop | Lititz | Pittsburgh | p: 570.628.5655 | p: 570.868.0275 | p: 717.626.6666 | p: 412.264.2800

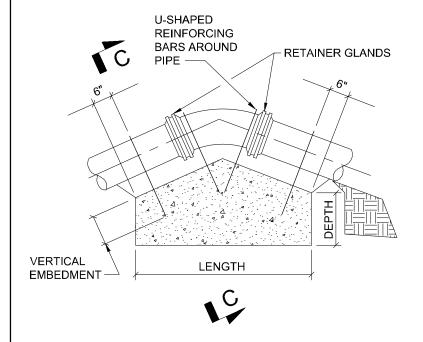
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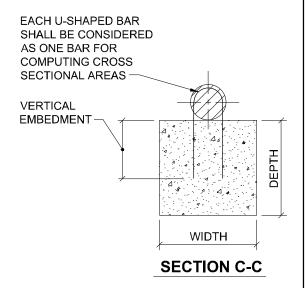
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02/05/16

DATE:





VERTICAL THRUST UPWARD

VERTICAL THRUST BLOCKING UPWARD THRUSTS SCHEDULE OF DIMENSIONS

* BASED UPON 150 PSI PRESSURE *

| PIPE SIZE | 4 | 4", 6" AND 8" | | | 10" AND 12" | | | 16" | | |
|------------------------------|---------|---------------|------|---------|-------------|------|---------|---------|-------|--|
| DEGREE BEND OR DEFLECTION | 11 1/4° | 22 1/2° | 45° | 11 1/4° | 22 1/2° | 45° | 11 1/4° | 22 1/2° | 45° | |
| LENGTH | 3.00 | 4.00 | 6.00 | 4.50 | 6.00 | 8.00 | 6.00 | 8.00 | 11.00 | |
| WIDTH | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 4.00 | 3.50 | 3.50 | 5.00 | |
| DEPTH | 2.00 | 3.00 | 4.00 | 3.00 | 4.50 | 5.00 | 3.50 | 5.00 | 5.00 | |
| SQ. IN. REINFORCING | 0.17 | 0.33 | 0.65 | 0.37 | 0.74 | 1.46 | 0.66 | 1.32 | 2.60 | |

| BAR NO. | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-------------------------------|------|------|------|------|------|------|------|
| CROSS-SECTION IN.2 PER BAR | 0.31 | 0.44 | 0.60 | 0.79 | 1.00 | 1.27 | 1.56 |
| VERTICAL EMBEDMENT | 15" | 19" | 26" | 35" | 44" | 56" | 68" |



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PROJECT NO.

4169.11

DATE:

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SCALE: NONE

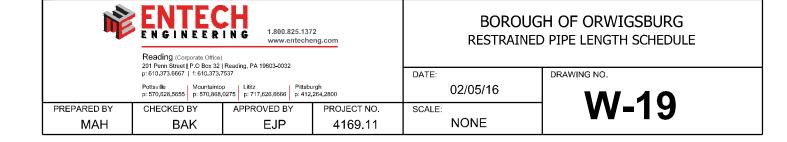
BOROUGH OF ORWIGSBURG VERTICAL THRUST BLOCKING DETAIL

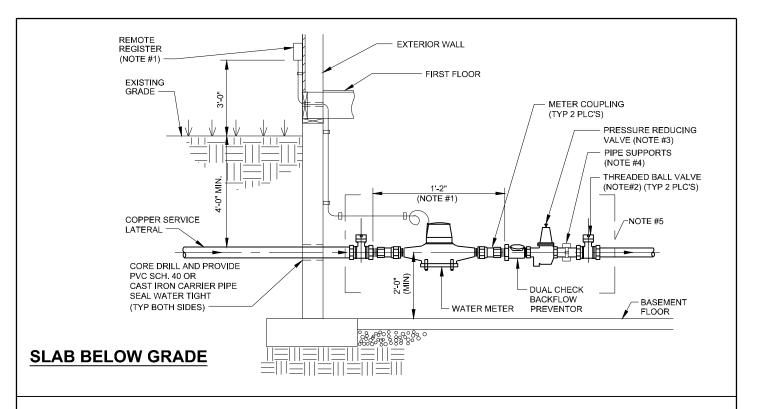
| HORIZONTAL BENDS | | | | | | | | | |
|---|--------|-------|-----|-----|-----|-------|-----------|---------|--|
| NOMINAL LENGTH OF PIPE RESTRAINT REQUIRED PER FITTING IN FEET | | | | | | | | | |
| PIPE DIA. | 11.25° | 22.5° | 45° | 90° | TEE | CROSS | CAP/VALVE | REDUCER | |
| 4 | 1 | 3 | 5 | 13 | 11 | 11 | 14 | | |
| 6 | 2 | 4 | 8 | 18 | 17 | 17 | 19 | 10 | |
| 8 | 2 | 5 | 10 | 24 | 23 | 23 | 25 | 11 | |
| 10 | 3 | 6 | 12 | 29 | 28 | 28 | 31 | 11 | |
| 12 | 3 | 7 | 14 | 35 | 34 | 34 | 37 | 11 | |
| 16 | 4 | 9 | 19 | 45 | 46 | 46 | 49 | 21 | |

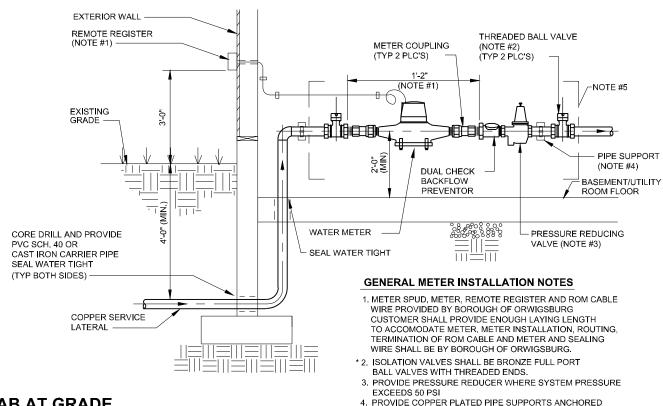
| VERTICAL | BENDS | | | | | | | |
|-----------|---|-----------|-----------|----------|------------|------------|-----|-----|
| | LENGTH C | F PIPE RE | STRAINT F | REQUIRED | PER FITTIN | IG IN FEET | • | |
| NOMINAL | VERTICAL UP BEND ANGLE VERTICAL DOWN BEND ANGLE | | | | | | | |
| PIPE DIA. | 11.25° | 22.5° | 45° | 90° | 11.25° | 22.5° | 45° | 90° |
| 4 | 1 | 3 | 5 | 13 | 3 | 5 | 11 | 27 |
| 6 | 2 | 4 | 8 | 18 | 4 | 8 | 16 | 39 |
| 8 | 2 | 5 | 10 | 24 | 5 | 10 | 21 | 51 |
| 10 | 3 | 6 | 12 | 29 | 6 | 12 | 26 | 62 |
| 12 | 3 | 7 | 14 | 35 | 7 | 15 | 31 | 74 |
| 16 | 4 | 9 | 19 | 45 | 10 | 19 | 41 | 98 |

NOTES:

- 1. LENGTHS ARE BASED ON THE DUCTILE IRON PIPE RESEARCH ASSOCIATION PIPE RESTRAINT CALCULATOR VERSION 3.3 (05/09/2003),
 ASSUMING THE FOLLOWING: TRENCH TYPE 5, SOIL CLAY 1, BURY DEPTH 4', PRESSURE 150 PSI, AND SAFETY FACTOR 1.5
- 2. LENGTHS ARE PROVIDED FOR DUCTILE IRON PIPE WITHOUT POLYETHYLENE WRAP. POLYETHYLENE WRAP WILL REQUIRE ADDITIONAL RESTRAINT LENGTH TO BE DETERMINED ON AN AS NEEDED BASIS BY BOROUGH ENGINEER.
- 3. REDUCER LENGTHS ARE GIVEN FROM THE INDICATED SIZE TO THE NEXT SMALLER SIZE. REDUCER RESTRAINT LENGTHS SHOULD BE ADDED IF GREATER REDUCTION IS REQUIRED (I.E. 16" TO 8" = 21+11+11 = 43 FEET)







SLAB AT GRADE

BOROUGH OF ORWIGSBURG

RESIDENTIAL METER INSTALLATION DETAIL

5. MAINTAIN ADEQUATE CLEARANCE AROUND METER INSTALLATION TO FACILITATE FUTURE MAINTENANCE

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DATE: 02/05/16

SCALE:

FROM STRUCTURE

BY BOROUGH OF ORWIGSBURG.

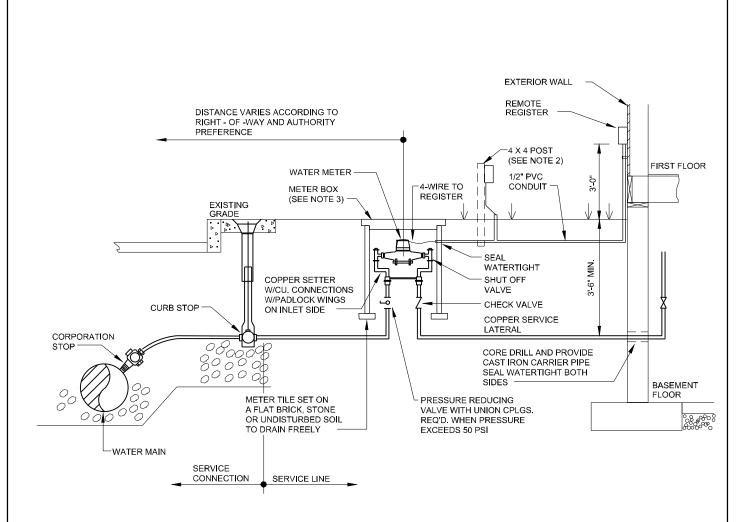
Pottsville Mountaintop Lititz Pittsburgh p: 570.628.5655 p: 570.868.0275 p: 717.626.6666 p: 412.264.2800 CHECKED BY APPROVED BY

PROJECT NO. 4169.11

NONE

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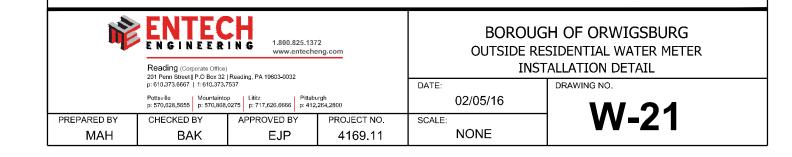
BAK EJP

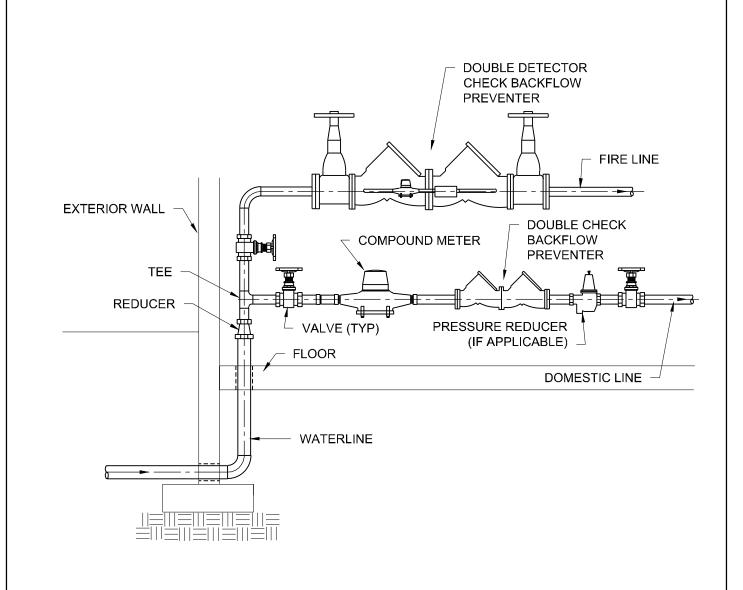


GENERAL METER INSTALLATION NOTES

- 1. METER SPUD, METER, REMOTE REGISTER AND ROM CABLE WIRE PROVIDED BY BOROUGH OF ORWIGSBURG.
 CUSTOMER SHALL PROVIDE ENOUGH LAYING LENGTH TO ACCOMODATE METER. METER INSTALLATION, ROUTING, TERMINATION OF ROM CABLE AND METER AND SEALING WIRE SHALL BE BY BOROUGH OF ORWIGSBURG.
- CAST IRON METER BOX COVER SHALL BE ALLEGHENY FOUNDRY CO. TOP FLANGE CIRCULAR TYPE FRAME NO. 168 COVER NO. 169X OR APPROVED EQUAL
- 3. 18" I.D. TILE OR PVC FOR USE WITH 5/8" METER. 24" I.D. TILE OR PVC FOR USE WITH 1" METER. SQAURE METER PIT MAY BE USED IF LOCAL PREFERENCE EXISTS
- 4. SERVICE LINE FROM CURB STOP TO HOME AND PRESSURE REDUCING VALVE BY CUSTOMER

THIS SETTING REQUIRED WHEN DISTANCE FROM HOUSE TO CURB LINE IS 100' OR GREATER







BOROUGH OF ORWIGSBURG FIRE / DOMESTIC METER INSTALLATION DETAIL

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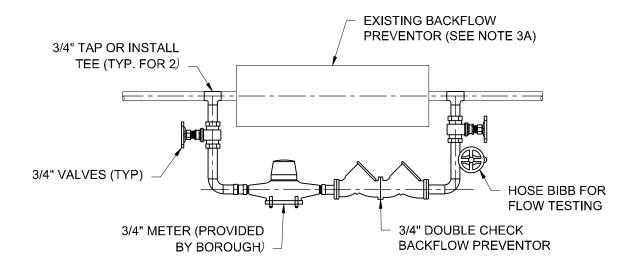
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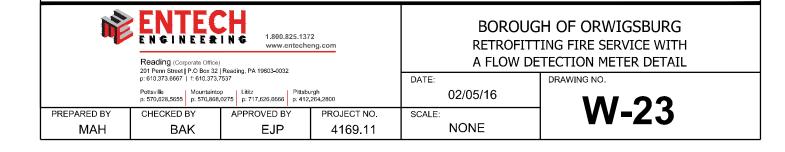
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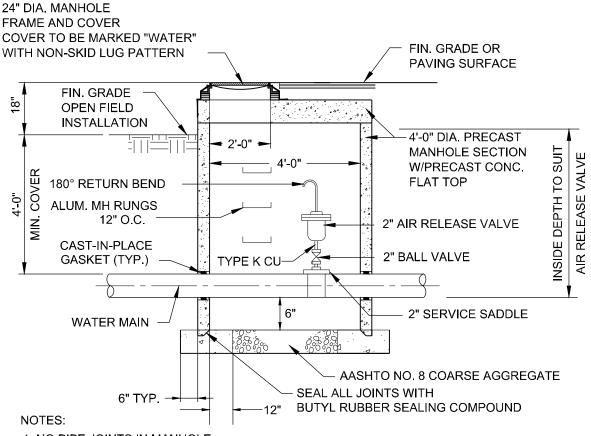
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THESE ARE GUIDELINES FOR RETROFITTING EXISTING FIRES SERVICE LINES WITH A FLOW DETECTOR METER.

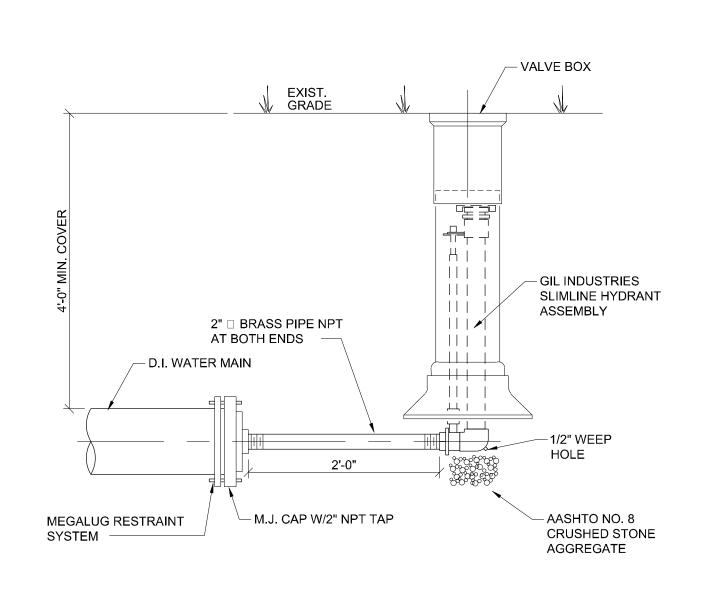
- 1. DETERMINE WHETHER THE FIRE SPRINKLER SYSTEM IS WET OR DRY.
- 2. IF THE SYSTEM IS A WET SYSTEM, THEN A DETECTOR METER MUST BE INSTALLED AROUND THE EXISTING BACKFLOW PREVENTER AS SHOWN ABOVE.
 - A. THE BACKFLOW PREVENTER ON A FIRE SPRINKLER SYSTEM MUST BE A DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY MEETING AWWA C510, UNLESS THE SYSTEM HAS AN EXISTING SINGLE CHECK VALVE. THEN AN ADDITIONAL SINGLE CHECK VALVE IS REQUIRED.
- 3. SINCE THE PLUMBING FOR THE EXISTING FIRE SERVICE LINES ARE UNIQUE, A SITE MEETING SHALL BE SCHEDULED WITH THE CUSTOMER, PLUMBING CONTRACTOR AND BOROUGH OF ORWIGSBURS TO AGREE UPON A PLUMBING DESIGN FOR THE RETROFIT OF A DETECTOR METER.
 - A. A SKETCH OF THE FIRE SERVICE LINE AND PROPOSED RETROFIT SHALL BE CREATED.
 - B. ANY SHUT DOWN OF THE FIRE SERVICE LINE, SHALL BE COORDINATED WITH THE CUSTOMER.
- 4. THE BASIC GUIDELINES FOR THE DETECTOR METER RETROFIT ARE:
 - A. WET TAP OR INSTALL A TEE UPSTREAM AND DOWNSTREAM OF THE EXISTING BACKFLOW PREVENTER.
 - B. INSTALL AN ISOLATION VALVE ON THE BRANCH OF EACH OF THE TEES
 - C. PIPE MATERIAL SHALL BE IN ACCORDANCE WITH THE BOROUGH'S SPECIFICATIONS
 - D. INSTALL A WATER METER, PROVIDED BY THE BOROUGH.
 - E. INSTALL A DOUBLE CHECK BACKFLOW PREVENTER AFTER THE WATER METER.
 - F. INSTALL A HOSE BIBB TO CHECK FOR PROPER OPERATION OF THE WATER METER.



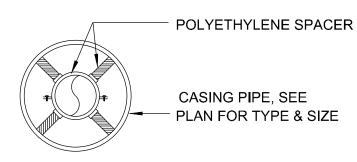


- 1. NO PIPE JOINTS IN MANHOLE
- 2. MANHOLE COVER SHALL BE 24 INCH DIAMETER BY 1 1/2 INCH THICK AT SEATING SURFACE OF FRAME.

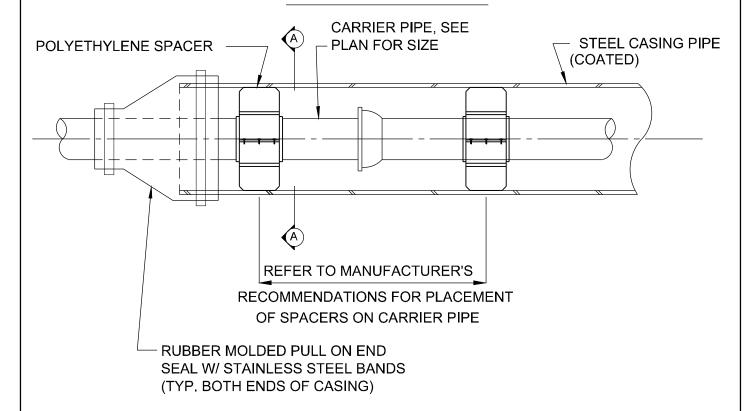








SECTION A-A



CASING NOTES:

 DESIGN ENGINEER IS RESPONSIBLE FOR PROPER SIZING OF THE CASING PIPE TO HOUSE CARRIER PIPE AND TO WITHSTAND LOADING DEMANDS.

| | ENTEC | 1.800.825.137 www.enteche | | BOROUGH OF ORWIGSBURG WATER MAIN PIPE CASING DETAIL | | | | |
|-----------------|--|------------------------------|---------------------|--|---------------|--|--|--|
| | Reading (Corporate Office 201 Penn Street P.O Box 32 p: 610.373.6667 f: 610.373. | Reading, PA 19603-0032 | | DATE: | DRAWING NO. | | | |
| | Pottsville Mountaintop Lititz Pittsburgh p: 570,828,5655 p: 570,868,0275 p: 717,626,6666 p: 412,264,2800 | | | | \A/ OC | | | |
| PREPARED BY MAH | CHECKED BY BAK | APPROVED BY EJP | PROJECT NO. 4169.11 | SCALE: NONE | ─ W-26 | | | |

APPENDIX F BACKFLOW PREVENTION MANUAL

BOROUGH of ORWIGSBURG

209 North Warren Street Orwigsburg. PA 17961

BACKFLOW PREVENTION MANUAL

Prepared by:



Entech Engineering, Inc. 201 Penn Street, PO Box 32 Reading, PA 19603

January 2016

Project No. - 4169.11

BOROUGH of ORWIGSBURG

BACKFLOW PREVENTION MANUAL

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BOROUGH of ORWIGSBURG BACKFLOW PREVENTION MANUAL

INTRODUCTION

The Borough of Orwigsburg (Borough) provides municipal water service to over customers in Schuylkill County, Pennsylvania. The Borough's system is comprised of well water supplies, storage facilities and a water distribution network that delivers potable water to its customers.

The Department of Environmental Protection (DEP) is authorized under the Pennsylvania Safe Drinking Water Act to establish standards for the construction of a water supply to assure compliance with the provisions of the act. Accordingly, Section 109.608 of DEP's rules and regulations, requires that "a public water system may not be designed or constructed in a manner which creates a cross-connection." In addition, Section 109.709(b) further requires that "At the direction of DEP, the public water supplier shall develop and implement a comprehensive control program for the elimination of existing cross-connections or the effective containment of sources of contaminations, and prevention of future cross-connections."

Precautions must be taken to be certain that the water in the Borough distribution system is not contaminated by other sources. Such a contamination can occur through "cross-connections" which can cause a backflow of contaminated water to enter the public distribution system. This Backflow Prevention Manual is designed to work with customers and prevent possible contamination originating on the customer's premises from entering and degrading the public distribution system. The responsibility for cross-connection control does not rest solely or mainly with the Borough. The customer has a significant and primary legal duty to prevent contamination originating on their property from jeopardizing the public health of other customers dependent upon the distribution system for drinking water supply.

Backflow prevention devices shall be installed in conformance with this Manual, the Borough's Rules and Regulations and Standard Specifications as applicable. The Policy and Procedures, as outlined herein, along with other applicable codes, rules, and regulations, are designed to provide reasonable protection of the Borough's potable water supply system against contamination and/or pollution resulting from backflow through uncontrolled pluming connections and/or cross-connections.

BOROUGH of ORWIGSBURG BACKFLOW PREVENTION MANUAL

Section 1.0 General Policy

1.1 To recognize that customer plumbing systems may contain non-potable liquids, may have connections to apparatus, vessels, etc., that could have impurities in varying degrees and, if not properly controlled and contained, could contaminate or pollute both the customer's internal water system and the public potable water supply system. It is also the intent to apply the principle that the type of protection required shall be determined by whether the impurities are hazardous or nonhazardous.

1.2 The purpose of this Manual is:

- a. To protect the Borough's public water supply from contamination or pollution by isolating, within the consumer's water system, contaminants or pollutants which could backflow through the service connection into the public water supply system.
- b. To promote the elimination or control of existing cross-connections, actual or potential, between the Borough's or consumer's water supply and non-potable water systems, plumbing fixtures and sources or systems containing process fluids.
- c. To provide for the maintenance and continuation of a cross-connection control program which prevents the contamination or pollution of the Borough's and consumer's water supply.
- 1.3 The Borough and the consumer have the joint responsibility for protection of the public water supply from contamination or pollution due to backflow. If the Borough requires an approved backflow prevention device, the Borough shall give notice to the consumer to install such an approved backflow prevention device at each service connection to their premises. The consumer should immediately install such an approved device or devices at their own expense. Failure, refusal, or inability on the part of the consumer to install such a device or devices shall constitute grounds for discontinuing water service to the premises until such a device or devices have been installed.

Section 2.0 Definitions

- 2.1 **Air Gap Separation** The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying potable water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. The differential distance shall be at least double the diameter (2 x D) of the supply pipe measured vertically above the top of the rim of the vessel. In no case, shall the air gap be less than one inch.
- 2.2 **Approved** A backflow prevention device or method that has been accepted by the Borough as suitable for the proposed use.
- 2.3 Atmospheric Vacuum Breaker (AVB) A fixture outlet device containing an optional shutoff valve followed by a valve body containing a soft-seated float-check, a check seat and an air inlet port. If the shutoff valve is open, the flow of water causes the float to close the air inlet port. If the shutoff valve is closed, the float falls and forms a check valve against backsiphonage and at the same time opens the air inlet port. If no shutoff valve is provided, the flow of water will determine the opening and closing of the air inlet port.
- 2.4 **Auxiliary Water System -** Any water source or system on the premises of, or available to, the customer except connections to other approved community water supply systems.
- 2.5 Backflow A flow condition, induced by a differential in pressure, that causes the flow of water or mixtures of water and other substances into the distribution pipes of a potable water supply system from a source other than its intended source. Backflow can result from either backsiphonage or backpressure.
- 2.6 **Backflow Preventer** A device or other means which will prevent the backflow of water or any other substance into the public water supply system.
- 2.7 Backpressure The backflow of water or a mixture of water and other substances from a plumbing fixture or other customer source, into a public water supply system due to an increase of pressure in the fixture or customer source to a value that exceeds the system pressure.
- 2.8 **Backsiphonage** The backflow of water or a mixture of water and other substances from a plumbing fixture or other customer source, into a public water supply system due to a temporary negative or sub-atmospheric pressure within the public water supply system.
- 2.9 **Consumer -** The owner or person in control of any premises supplied by or in any manner connected to a public water supply system.

- 2.10 Consumer's Water System Any water system, located on the consumer's premises, supplied by or in any manner connected to a public water supply system. A household plumbing system is considered to be a consumer's water system.
- 2.11 Containment Cross-connection control which isolates the customer's entire facility from the public water supply system so as to provide the protection necessary to prevent contamination of the public water supply in the event of backflow from the customer's facility. Though containment control prevents contamination of the public water supply, it offers no protection to the water distribution system within the facility. Reduced pressure zone devices are used for containment control.
- 2.12 Contamination The degradation of the quality of the drinking water by wastewaters, processed fluids, or any water of a quality less than accepted drinking water quality to a degree which would create an actual hazard to the public health through poisoning or through the spread of disease.
- 2.13 Cross-connection An arrangement allowing either a direct or indirect connection through which backflow, including backsiphonage, can occur between the drinking water in a public water system and a system containing a source or potential source of contamination, or allowing treated water to be removed from any public water system, used for any purpose or routed through any device or pipes outside the public water system, and returned to the public water system. The term does not include connections to devices totally within the control of one or more public water systems and connections between water mains.
- 2.14 **Degree of Hazard** An evaluation of the potential risk to health and the adverse effect upon the public water supply system.
- 2.15 **Double Check Valve Assembly (DCVA)** An assembly composed of two single, independently acting, soft-seated, spring-loaded check valves including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve.
- 2.16 Double Detector Check Valve Assembly (DDCVA) This is the same DCVA described in 2.15 but it incorporates a bypass meter to detect leaks or unauthorized water use.

- 2.16 Fixture Outlet Protection Cross-connection control which isolates all free-flowing fixture outlets (i.e., faucets) from the water distribution system within a facility. Fixture outlet protection prevents backflow contamination of both the facility water system and the public water supply. Examples of fixture outlet protection devices include atmospheric vacuum breakers, hose-bibb vacuum breakers, and pressure vacuum breakers.
- 2.17 Health Hazard Any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well-being of its users. The word "severe", as used to qualify "health hazard", means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death.
- 2.18 **Hose-Bibb Vacuum Breaker (HBVB)** A fixture outlet device which contains a soft-seated, spring-loaded, air inlet valve and is designed to be attached to an outlet having a hose connection thread.
- 2.19 **Interchangeable Connection** An arrangement or device that will allow alternate, but not simultaneous, use of two sources of water.
- 2.20 Internal Protection Cross-connection control which isolates all non-outlet, water-use appliances within a facility (e.g., kitchen appliances, air conditioners, boilers, process tanks, photo developing equipment) from the water distribution system within the facility. Internal protection prevents backflow contamination of both the facility water system and the public water supply. Reduced pressure zone devices and double check valve assemblies are used for internal protection.
- 2.21 Non-Health Hazard Any condition, device or practice in a water system or its operation that creates, or may create, an impairment of the quality of the water to a degree which does not create a hazard to the public health, but which does adversely and unreasonably affect the aesthetic qualities of such water for domestic use.
- 2.22 **Non-Potable Water** Water not safe for drinking, personal, culinary, or any other type of domestic use.
- 2.23 Person Any individual, partnership, association, company, corporation, municipality, municipal authority, political subdivision or any agency of federal or state government. The term includes the officers, employees and agents of any partnership, association, company, corporation, municipality, municipal authority, political subdivision or any agency of federal or state government.
- 2.24 Pollution The presence in water of any foreign substance that tends to degrade its quality so as to constitute a hazard, or to impair the usefulness or quality of the water to a degree which does not create an actual hazard to the

- public health, but which does adversely and unreasonably affect such waters for domestic use.
- 2.25 **Potable Water -** Water which is satisfactory for drinking, personal, culinary, and domestic purposes and meets the requirements of DEP.
- 2.26 Pressure Vacuum Breaker (PVB) A fixture outlet device containing an independently operating, soft-seated, spring-loaded check valve and an independently operating, soft-seated, spring-loaded, air inlet valve on the discharge side of the check valve.
- 2.27 Public Water Supply System A system which provides water to the public for human consumption which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. The term includes any collection, treatment, storage, and distribution facilities under control of the operator of the system and used in connection with the system. The term includes collection or pretreatment storage facilities not under such control, which are used in connection with the system. The term also includes a system which provides water for human consumption via bottling, vending machines, retail sale, or bulk hauling methods.
- 2.28 Reduced Pressure Zone Device (RPZD) A device which contains two independently acting, soft-seated, spring-loaded check valves, together with a soft-seated, spring-loaded, diaphragm-activated, pressure differential relief valve located between the two check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, shall maintain the pressure between the checks at less than the supply pressure by opening to the atmosphere. The device must include tightly closing shutoff valves located at each end, and each device shall be fitted with properly located test cocks.
- 2.29 Residential Dual Check Valve (RDCV) A non-testable backflow prevention device that is used for containment control of residential homes and consists of two independently operating, soft-seated, spring-loaded, consecutive check valves.
- 2.30 **Service Connection -** The terminal-end of a service line from the public water supply system. If a meter is installed at the end of the service line, then the service connection means the downstream end of the meter.
- 2.31 **System Hazard** A condition posing an actual or potential threat of damage to the physical properties of the public water system or to the consumer's potable water system.

Section 3.0 Borough of Orwigsbburg Water System

- 3.1 The water system shall be considered as made up of two parts: the Borough's water supply system and the consumer's water system.
- 3.2 The Borough's water supply system shall consist of the source facilities and the distribution system, and shall include all those facilities of the public water supply system under the control of the Borough up to the point where the consumer's water system begins.
- 3.3 The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the Borough's distribution system.
- 3.4 The Borough's distribution system shall include the network of conduits used for delivery of water from the source to the consumer's water system.
- 3.5 The consumer's water system shall include all facilities beyond the service connection, which are utilized in conveying water from the Borough's distribution system to points of use.

Section 4.0 <u>Cross-Connections Prohibited</u>

- 4.1 No water service connection shall be installed or maintained to any premises where actual or potential cross-connections to the Borough's system or consumer's water system may exist, unless such cross-connections are abated or controlled to the satisfaction of the Borough.
- 4.2 No connection shall be installed or maintained whereby water from an auxiliary water supply may enter the Borough's or consumer's water system unless such auxiliary water supply, as well as the method of connection and use of such supply, has been approved by the Borough.

Section 5.0 Surveys and Investigations

5.1 The consumer's premises shall be open at all times to the Borough, or its authorized representative, for the purposes of surveying for, or investigating, actual or potential cross-connections.

- 5.2 On request by the Borough, the consumer shall furnish information on water use practices within their premises.
- 5.3 It shall be the responsibility of the water consumer to conduct periodic surveys of water use practices on his/her premises to determine whether there are actual or potential cross-connections to his/her water system.

Section 6.0 Where Protection is Required

- 6.1 An approved backflow prevention device shall be installed prior to the first branch line leading off each service line to a consumer's water system where, in the judgement of the Borough, an actual or potential hazard to the public water supply system exists.
- 6.2 An approved backflow prevention device shall be installed on each service line to a consumer's water system in the Borough service area.
- 6.3 An approved reduced pressure zone device shall be installed on each service line to a consumer's water system serving, but not necessarily limited to, the following types of facilities unless the Borough determines that no actual or potential hazards to the public water supply system exist:
 - a. hospitals, mortuaries, clinics, nursing homes;
 - b. laboratories:
 - sewage treatment plants, sewage pumping station or storm water pumping station;
 - d. food or beverage processing plants;
 - e. chemical plants;
 - f. metal plating industries;
 - g. petroleum processing or storage plants;
 - h. laundries:
 - i. customers with an auxiliary water system;
 - j. car wash or truck wash; or
 - k. others specified by the Borough.

Section 7.0 Type of Protection Required

- 7.1 The type of protection required under Section 6.1, 6.2, and 6.3 of this Manual shall depend on the degree of hazard which exists as follows:
 - a. A Residential Dual Check valve (RDCV) shall be for containment protection at residential homes. The RDCV prevents backflow caused by

- both backsiphonage and backpressure, but is recommended only for residential homes which are considered to be a nonhealth hazard.
- b. An approved double check valve assembly shall be installed where the Borough's water supply system may be polluted with substances that would be objectionable but not dangerous to health. An approved double check valve assembly shall be the minimum backflow prevention device installed on a service line to a customer's water system in the Borough's Service Area.
- b. An approved reduced pressure zone device shall be installed where the Borough's water supply system may be contaminated with a substance that could cause a system or health hazard.
- c. An approved gap separation shall be installed where the Borough's water supply system may be contaminated with substances that are dangerous to public health and could cause a severe health hazard, and where such a device would be technically feasible and/or practical. The need for the installation of an air gap separation between the Borough's water supply system and the customer's water system shall be determined by the Borough on a case by case basis.
- 7.2 The table in Appendix A outlines the applicability of the air gap, RDCV, RPZD, and DCVA for the protection of the Borough's water supply.

Section 8.0 Backflow Prevention Devices

- 8.1 Any backflow prevention device required by this Manual shall be of a model or construction approved by the Borough and shall comply with the following:
 - A residential dual check valve uses two compact check modules. The dual check backflow preventer shall meet the domestic requirements of ANSI/ASSE Standard 1024.
 - b. A double check valve assembly or a reduced pressure zone device shall be approved by the Borough and shall mean a device that has been manufactured in full conformance with standards established by the American Water Works Association (AWWA) entitled:

ANSI/AWWA C510 Standard for Double Check Valve Backflow-Prevention Assembly; and

ANSI/AWWA C511 Standard for Reduced-Pressure Principle Backflow-Prevention Assembly.

Said AWWA standards are herein adopted by the Borough. Final approval, however, of the reduced pressure zone device and the double check valve assembly shall be evidenced by a certificate of full approval, issued by an approved testing laboratory, certifying full compliance with the AWWA standards.

- b. Air gap separation to be approved shall be at least twice the diameter of the supply pipe, measured vertically above the top rim of the receiving vessel, but in no case less than one inch.
- 8.2 Existing backflow prevention devices approved by the Borough at the time of installation and properly maintained shall, except for inspection and maintenance requirements, be excluded from the requirement of Section 8.1 of this Manual provided the Borough is assured that they will satisfactorily protect the public water supply system. Whenever the existing device is moved from the present location, or requires more than minimum maintenance, or when the Borough finds that the maintenance of the device constitutes a hazard to health, the device shall be replaced by a backflow prevention device meeting the requirements of this Manual.

Section 9.0 Installation

- 9.1 Backflow prevention devices required by this Manual shall be installed at a location, and in a manner, approved by the Borough. The device(s) shall be installed by a person properly qualified. Installation of the devices shall be at the expense of the water consumer.
- 9.2 Installation shall be consistent with the BOCA Code (latest edition) as applicable.
- 9.3 Backflow prevention devices installed on the service line to a consumer's water system shall be located on the consumer's side of the water meter, as close to the meter as is reasonably practical, and prior to any other connection. Refer for Rules and Regulations and Appendix B of this Manual for more detail.
- 9.4 Pits or vaults shall be water-tight, flood-free, and maintained free from standing water by means of either a sump and pump or a suitable drain. Such a pump or drain shall not connect to a sanitary sewer, nor permit flooding of the pit to day light or vault by reverse flow from its point of discharge. An access ladder and adequate lighting, natural or artificial, shall be provided to permit maintenance, inspection, and testing of the backflow prevention device.

Section 10.0 Inspection and Maintenance

- 10.1 It shall be the duty of the consumer at any premises on which backflow prevention devices are required by this Manual to have inspections, tests, and overhaul made in accordance with the following schedule, or more often where inspections indicate a need.
 - a. Double check valve assemblies shall be inspected and tested for tightness at the time of installation. These devices shall be dismantled, inspected internally, cleaned, and repaired whenever needed.
 - b. Reduced pressure zone devices shall be inspected and tested for tightness at the time of installation, and at least every 12 months thereafter. These devices shall be dismantled, inspected internally, cleaned, and repaired whenever needed and at least every five years.
 - c. Air separation shall be inspected at the time of installation, and at least every 12 months thereafter.
 - d. Interchangeable connections shall be inspected at the time of installation, and at lease every 12 months thereafter.
- 10.2 Inspections, tests, and overhaul of backflow prevention devices shall be made at the expense of the water consumer, and shall be performed by the Borough or a person certified to inspect, test, and overhaul backflow prevention devices.
- 10.3 Whenever backflow prevention devices required by this Manual are found to be defective, they shall be repaired or replaced at the expense of the consumer without delay.
- 10.4 The water consumer must maintain a complete record of each backflow prevention device from purchase to retirement. This shall include a comprehensive listing that includes a record of all tests, inspections, and repairs. Records of inspections, tests, repairs, and overhaul shall be submitted to the Borough upon request.
- 10.5 Backflow prevention devices shall not be bypassed, made inoperative, removed, or otherwise made ineffective without specific authorization by the Borough.

Section 11.0 Booster Pumps

- 11.1 Where a booster pump has been installed on the service line to, or within, any premises, such a pump shall be equipped with a low pressure cut-off device designed to shutoff the booster pump when the pressure in the service line on the suction side of the pump drops to 10 pounds per square inch gauge or less for a period of 30 seconds or longer.
- 11.2 It shall be the duty of the water consumer to maintain the low pressure cut-off device in proper working order and to certify to the Borough, at least once a year that the device is operating properly.

Section 12.0 Violations

- 12.1 The Borough may deny or discontinue, after issuing reasonable notice, the water service to any premises wherein any backflow prevention device required by this Manual is not installed, tested, and maintained in a manner acceptable to the Borough, or if it is found that the backflow prevention device has been removed or by-passed, or if an unprotected cross-connection exists on the premises, or if a low pressure cut-off device required by this Manual is not installed and maintained in working order.
- 12.2 Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with this Manual and to the satisfaction of the Borough.

Appendix A Recommended Backflow Prevention Devices

| | | Type of device to | | be used |
|-----|--|-------------------------------|--|--------------------------------|
| | <u>Application</u> | <u>Dual</u> Check Valve | <u>Double</u> <u>Check</u> <u>Valve</u> Assembly | Reduced Pressure Zone Assembly |
| 1. | Standard Single Family | Χ | | |
| 2. | w/ closed loop geo-thermal system | Χ | | |
| 3. | w/ open loop geo-thermal system | | X | |
| 4. | w/ on-site well | | X | |
| 5. | w/ alternate well source | | X | |
| 6. | w/ underground sprinkler system | | X | |
| 7. | w/ water powered sump pump | | X | |
| 8. | Apartments (four or less units) | Х | | |
| 9. | Apartments (five or more units) | | Х | |
| 10. | Automatic Car Wash | | | Χ |
| 11. | Automated Manufacturing Plants | | | Χ |
| 12. | Auxiliary Water Systems | | | Χ |
| 13. | Beverage Bottling Plants | | Х | |
| 14. | Breweries/Distillers | | | Χ |
| 15. | Chemical Plants Manufacturing, Processing, | | | V |
| | Compounding, or Treatment | | | Х |
| 16. | Dairies and Cold Storage Plants | | | Х |
| 17. | Dye Works | | | X |
| 18. | Film Processing | | | Χ |
| 19. | Irrigation Systems Green House, Park, Golf | | | Χ |
| | Course, Playgrounds, Estates, Cemeteries, etc.) | | | ^ |
| 20. | Laboratories | | | X |
| 21. | Laundries | | | Χ |
| 22. | Meat Packing and Rendering Plants | | | X |
| 23. | Metal Plating Plants | | | Χ |
| 24. | Paper and Paper Products (Wet Process) | | | Χ |
| 25. | Petroleum or Gas Processing or Storage Plants | | | X |
| 26. | Plating Plants | | | Χ |
| 27. | Power Plants (Heating, Ventilation, Refrigeration, or Commercial Power) | | | X |
| 28. | Rubber Plants Natural or Synthetic, Mfg. Rubber Goods or Tires) | | | Х |
| 29. | Sand and Gravel Plant | | | Х |
| 30. | Sewage or Stormwater Treatment/Processing Facility; Ejector or Pumping Station | | | Х |
| 31. | Swimming Pools | | Х | |
| 32. | Water Front Facilities and Industries | | | Х |

| | | | Type of device to be used | | |
|-----|---|---|-----------------------------|--------------------------------|--|
| | <u>Application</u> | <u>Dual</u> <u>Check</u> <u>Valve</u> | Double Check Valve Assembly | Reduced Pressure Zone Assembly | |
| 34. | Radioactive Materials or Substances, Processing Plants or Facilities Handling | | | Х | |
| 35. | Manufacturing, Processing, and Fabrication Plants Using Toxic Materials | | X | | |
| 36. | Residential Housing Units | | X | | |
| 37. | Convalescent Home | | X | | |
| 38. | Medical Clinic | | | Χ | |
| 39. | Medical/Dental Building | | | Χ | |
| 40. | Multipurpose Commercial Buildings | | X | | |
| 41. | Office Building | | Χ | | |
| 42. | Hospitals | | | Χ | |
| 43. | Home for the Aged | | X | | |
| 44. | Mortuary | | | X | |
| 45. | Morgue | | | X | |
| 46. | Nursing Home | | X | | |
| 47. | Elementary, High Schools, Trade Schools, and Colleges | | X | | |
| 48. | Schools with Laboratories | | | Х | |
| 49. | Hotel | | Х | | |
| 50. | Hotel with House Pump and/or Water Storage Tank | | | Х | |
| 51. | Public Building (Federal/State/City) | | | | |
| | a. Potential Health Threat | | | X | |
| | b. Potential Pollution | | X | | |
| | c. Restricted/Classified or Closed Facilities | | | X | |
| 52. | Restaurant (Any Food Handling Establishment) | | Х | | |
| 53. | Supermarket | | X | | |
| 54. | *Building with House Pump and/or Water Storage Tank | | X | | |
| 55. | *Building with Sewage Ejectors | | | Х | |

| ACCEPTED MANUFACTURERS | MODEL NUMBERS | | | |
|-----------------------------|---------------|---------|---------|--|
| Watts | #7U2-2 | #007 | #009 | |
| Wilkins | #700 | #950XL | #975XL | |
| Conbraco | #4P-300 | #40-100 | #40-200 | |
| Febco | #810 | #805Y | #825Y | |
| OR ASSE APPROVED EQUIVALENT | | | | |

*Apply to any building regardless of building purpose
Note: Contact your plumber for options to relieve possible high water pressure due to thermal expansion.

Recommended Backflow Prevention Devices (continued)

Fire Protection Systems

A. No Protection (No Device Required)

- Wet system, no pumper connection on buildings three stories or less.
- 2. Dry system, no pumper connection.

B. Double Check Valve Assembly

- 1. Any system (wet or dry) with a pumper connection.
- 2. Wet system only within line booster pump on building over three stories high.
- 3. Any system with private hydrants.

C. Reduced Pressure Zone Device

- 1. Any system where anti-freeze or inhibitors are used.
- 2. Any system where an auxiliary water source is available and connected to the fire system.

Appendix B Backflow Prevention Devices

In selecting for use of the devices outlined in this section, it is vital that the degree of protection provided be commensurate with the degree of hazard present. It also is important that the limitations of each device be understood since the degree of protection provided will depend on the type of backflow prevention device and the maintenance program employed.

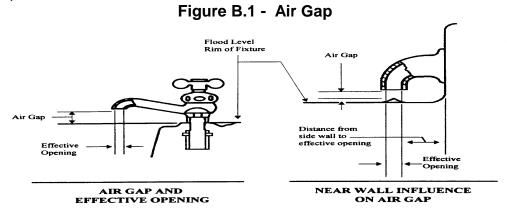
Acceptable backflow prevention devices used for cross-connection control are as follows:

- A. Air Gap
- B. Double Check Valve Assembly (DCVA)*
- C. Reduced Pressure Zone Devices (RPZD)*
- D. Residential Dual Check Valve (RDCV)
- E. Atmospheric Vacuum Breaker (AVB)
- F. Hose-Bibb Vacuum Breaker (HBVB)
- G. Pressure Vacuum Breaker (PVB)

*DCVAs and RPZDs should conform to ANSI/AWWA Standards C510 and C511, respectively.

Air Gap

An air gap separation provides a complete physical separation between the free flowing discharge end of a potable water supply line, faucet, plumbing fixture, or other device and the flood level rim of an open or nonpressure receiving vessel. An acceptable airgap separation shall be at least double the diameter of the supply line. In no case shall the air gap be less than one inch.



Minimum Air Gaps for Plumbing Fixtures Fixture

| Fixture | When Not Affected By Near Wall (*) (Inches) | When Affected By Near Wall (**) (Inches) |
|---|--|--|
| Laboratories and other fixtures with effective opening not greater than 1/2 inch diameter | 1 | 1-1/2 |
| Sink, laundry trays, goose-neck bath faucets and other fixtures with effective openings not greater than 3/4inch diameter | 1-1/2 | 2-1/4 |
| Over rim bath fillers and other fixtures with effective openings not greater than one inch diameter | 2 | 3 |
| Effective openings greater than one inches | 2X Diameter of Effective Opening | 3X Diameter of Effective Opening |

- * Side walls, ribs or similar obstructions do not effect air gaps when spaced from inside edge of spout opening a distance greater than three times the diameter of the effective opening for a single wall, or a distance greater than four times the diameter of the effective opening for two intersecting walls.
- ** Vertical walls, ribs, or similar obstructions extending from the water surface to or above the horizontal plane of the spout opening require a greater air gap when spaced closer to the nearest inside edge of spout opening than specified in (*) above. The effect of three or more such vertical walls or ribs has not been determined. In such cases, the air gap shall be measured from the top of the wall.

Double Check Valve Assembly (DCVA)

The DCVA consists of two independently acting, soft-seated, spring-loaded, check valves mounted in series with two tightly closing shutoff valves and four test cocks (see Figure B.2).

Double check valve assemblies prevent backflow caused by both backsiphonage and backpressure.

.

Figure B.2 Double Check Valve Assembly

Note: Check valves are in the backflow position

Reduced Pressure Zone Device (RPZD)

This device consists of two soft-seated, spring-loaded check valves operating in series, and a soft-seated, spring-loaded, diaphragm-activated, pressure differential relief valve, located in the zone between the check valves (see Figure B.3). Two tightly closing shutoff valves and four test cocks complete the assembly. These devices will indicate leakage through one or both check valves or the relief valve by the discharge of water from the relief valve port. This factor is an important advantage over the double check valve assembly

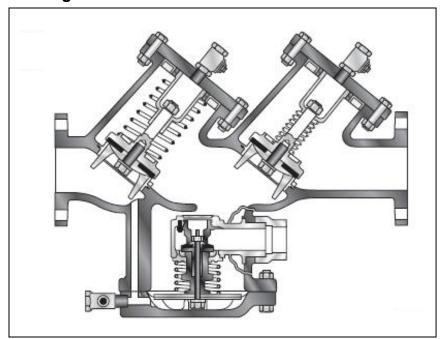


Figure B.3 Reduced Pressure Zone Device

Note: Check valves are in the backflow position. The relief valve is in the normal flow position

Residential Dual Check Valve (RDCV) and the Vacuum Breakers

Only the air gap, DCVA and RPZD are testable devices that prevent backflow caused by both backsiphonage and backpressure.* The RDCV prevents backflow caused by both backsiphonage and backpressure, but is non-testable.

* The air gap can be considered "testable" in the sense that it can be visually inspected.

Residential Dual Check Valve:

The RDCV is a practical, non-testable device that can be installed for containment protection at residential homes. The RDCV is installed in-line and downstream of the service meter, and contains no shutoff valves. The RDCV prevents backflow caused by both backsiphonage and backpressure, but is recommended only for residential homes which are considered to be a nonhealth hazard (see Figure B.4).

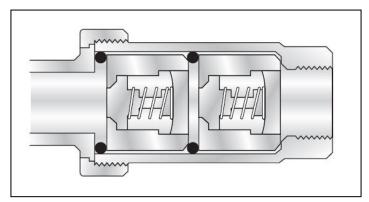
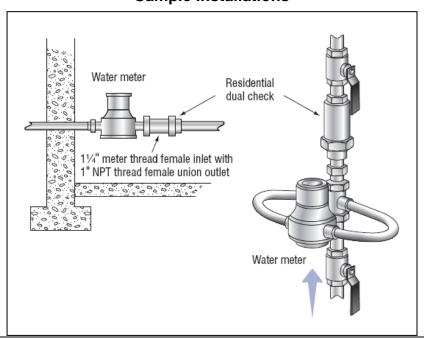


Figure B.4 Residential Dual Check Valve

Sample Installations



Atmospheric Vacuum Breaker:

The AVB is a non-testable device that is installed at fixture outlets. The AVB prevents backflow caused by backsiphonage, but not backpressure. The AVB must not be kept under continuous pressure for more than 12 hours in any 24-hour period. Because of this requirement, no shut-off valve should ever be installed downstream of the AVB. A shutoff valve upstream of the AVB is recommended. The AVB should be installed at least six inches above the fixture outlet (see Figure B.5).

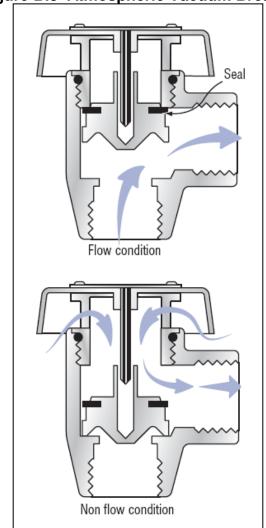


Figure B.5 Atmospheric Vacuum Breaker

Hose-Bibb Vacuum Breaker:

The HBVB is a non-testable device that is installed at fixture outlets. The HBVB prevents backflow caused by backsiphonage, but not backpressure (see Figure B.6).

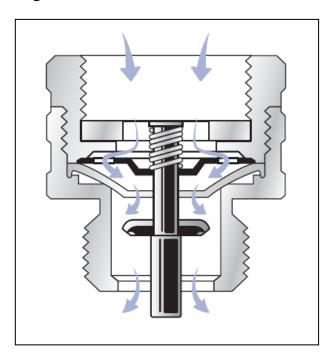


Figure B.6 Hose-Bibb Vacuum Breaker

Pressure Vacuum Breaker:

The PVB is a testable device that is equipped with test cocks and shutoff valves, and is installed at fixture outlets. The PVB prevents backflow caused by backsiphonage, but not backpressure (see Figure B.7).

Test cock
First check valve

Test cock

Gate Valve

3/4 inch thru 2 inches

Figure B.7 Pressure Vacuum Breaker