RULES AND REGULATIONS
OF THE
ADAMS FIRE DISTRICT
ADAMS, MASSACHUSETTS

GOVERNING THE
DESIGN AND CONSTRUCTION
OF
WATER SYSTEMS

APPROVED AND ADOPTED
BY THE
ADAMS FIRE DISTRICT

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1 GENERAL

1.1 Purpose

These Rules and Regulations apply to the planning, design and construction of all water mains and systems that will obtain water supply from the water supply and distribution facilities of the Adams Fire District (AFD, the District).

1.2 Definitions

Throughout these Regulations, the word *shall* is mandatory, and the word *may* is permissive. Unless the content specifically indicates otherwise, the meaning of the terms used in these Regulations shall be as follows:

Applicant shall mean the person, corporation, etc. filing Application with the Adams Fire District requesting approval to connect their Project to the District's water system.

Application shall mean the form provided by the Committee and completed by the property owner or by an agent authorized by the owner and submitted to the Committee prior to construction, reconstruction, repair or modification of a water service pipe or a fire pipe from a public water main.

Backflow shall mean the flow of water or other fluids, mixtures, or substances into the distribution pipes of a potable supply of water from any source or sources other than its intended source.

Backflow Prevention Device shall mean an approved mechanical device designed to prevent the reverse flow of water from a service to the distribution system. Backflow prevention devices shall be approved in accordance with the MassDEP Cross Connection Control Program Regulations as defined in 310 CMR 22.22, and/or by the Massachusetts Plumbing Board, dependent on location of use.

Cross Connection shall mean any actual or potential connection between a distribution pipe of potable water supplied by the public water system and any waste pipe, soil pipe, sewer, drain or any other unapproved source. Without limiting the generality of the foregoing, the term "cross connection" shall also include any bypass arrangement, jumper connection, removal section, swivel, or changeover connection and any other temporary or permanent connection through which backflow can or may occur.

Design Flow shall mean the quantity of sanitary sewage, expressed in gallons per day (gpd), for which a system must be designed in accordance with 310 CMR 15.203 (Title 5).

District or **AFD** shall mean the Adams Fire District, Adams, Massachusetts.

Drawings shall mean all drawings, maps, plans, sketches etc. submitted to and approved by the Prudential Committee.

Engineer shall mean the person or persons, partnership, or corporation holding the position or acting in the capacity of Engineer for the District.

Owner shall mean a person who alone or jointly or severally with others, has the legal title to

any premises or has care, charge, custody, or control of any premises as agent, executor, administrator, trustee, lessee or guardian of the estate of the holder of legal title.

Pre-action system as defined in 780 CMR: The Massachusetts State Building Code is a fire sprinkler system employing automatic sprinklers attached to a piping system containing air with a supplemental fire detection system installed in the same areas as the actuation of the fire detection system automatically opens a valve that permits water to flow into the sprinkler piping system and to be discharged from any open sprinklers.

Prudential Committee or **Committee** shall mean the governing body of the Adams Fire District.

Public Water Main shall mean the piping and associated valves, hydrants and appurtenances owned by the Committee, or another city or town installed in a public way, publicly owned easements whether recorded or by prescription, or private way open to public travel, for the purpose of supplying water to one or more customers or for public fire protection.

Public Water System shall mean a system for the provision to the public of piped water for human consumption.

Service Area shall mean the current areas serviced by the District; namely, the East Road Pump Station High Service Area, the Glenn St Pump Station High Service Area, the Hoxie Brook Booster Pump Station High Service Area, the Notch Road Booster Pump Service High Service Area, the Leonard St PRV Low Service Area, the Orchard St PRV Low Service Area, and the Maple Street Tank Low Service Area, all as described in Appendix 5.1.

State or **Commonwealth** shall mean the Commonwealth of Massachusetts.

Substantially modified means any change or modification to an existing fire protection system for which the cost of the backflow prevention device including installation is equal to or more than five percent of the cost of the fire protection system modification; or when the total cost of the fire protection system modification excluding the cost associated with the installation of a backflow prevention device equals or exceeds $100,000.00 as specified on the building permit application in accordance with 780 CMR 1.00.

Town shall mean the Town of Adams, Massachusetts.

Water Service Pipe shall mean the connection, piping and associated valves and appurtenances that extend from a public water main to a building or property for the purpose of supplying water, other than for fire protection/suppression systems.

1.3 Standards

The following standards may be referenced in these Rules and Regulations.

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ANSI	American National Standards Institute

ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CMR	Code of Massachusetts Regulations
CRSI	Concrete Reinforcing Steel Institute
EPA	United States Environmental Protection Agency
IBC	International Building Code
IMC	International Mechanical Code
ISO	Insurance Services Office
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation – Highway Division Standard Specifications for Highways and Bridges
MassDPS	Massachusetts Department of Public Safety
MSPB	Massachusetts State Plumbing Board
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation International
OSHA	Occupational Safety and Health Association
USPC	Uniform State Plumbing Code (Massachusetts)

1.4 Application to Connect to AFD Water System

All applications for the use of water shall be made to the District by the owner of the property for which the same is desired. At the time of filing the Application, for connections above 1.5 inches, the Applicant must pay a Filing Fee as in Section 4.2.3. Any applicant who has an outstanding balance over sixty (60) days may have their application denied or the service terminated until the balance is paid in full.

A Site Plan is required by the District, to accompany the applications above 1.5 inches for review and approval by the District's Superintendent (or designee) of a proposed connection to, or extension of the District's Water System. The Site Plan shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

1.5 Datum of Levels

All levels or elevations shown on the drawings shall be referred to the National Geodetic Vertical Datum (NGVD) as established by the U.S. Coast and Geodetic Survey.

1.6 Shutdown of Water Main or Water Service

Notice shall be given to the District at telephone number (413) 743-0179 at least 72 hours in advance before any necessary water main shut down for repair or maintenance. District personnel shall perform all operations required to operate gate valves.

It shall be the responsibility of the Applicant to coordinate his schedule of operations and the shutdown of existing water mains with the District. Water system shutdowns shall be only to the extent and duration required to complete the construction and in no instance shall extend beyond the hours from 8:00 AM to 3:00 PM prevailing time.

1.7 Water Use Restrictions

The District reserves the right to enforce the following restrictions pertaining to water use and conservation in accordance with State mandates, and the Adams Fire District Conservation Plan:

a) Outdoor water use may be restricted by day, by time of day, by type of use and may be voluntary or mandatory in the event of drought. These restrictions apply to all areas of the Town if it is deemed necessary for the purpose of maintaining adequate pressures for fire protection or for conservation of water supply.

b) All lawn sprinklers shall have an automatic rain shut-off switch and an approved backflow prevention device.

c) The District reserves the right to refuse or limit service wherever excessive demands for water results in inadequate service to others.

d) No private well shall be connected to a District water service.

e) Shrubs, trees and other obstructions shall not be placed within 5 feet of fire hydrants.

f) The District, when in a Stage 2, 3 or 4 drought, in accordance with the Adams Police Department shall enforce the restrictions and reserves the right to fine customers not adhering to the restrictions.

1.8 Use of Fire Hydrants for Unauthorized Non-Firefighting Activities

The Adams Fire Department has control of all hydrants in case of fire and for approved training. In any other case, no person shall be allowed to operate hydrants or other water system apparatus without permission of the District, payment for metered water used, and District approved meter and backflow device in place. District approval shall be granted prior to any use of an approved hydrant or other water system apparatus.

1.9 Salvage of Materials

The Applicant shall deliver any property of the District that is removed in the course of his work such as pipe, valves, meters, and castings to a place designated by the District after the District has reviewed the items in the field. The District may direct the Applicant to demolish the item.

1.10 Cleaning Up

During construction of water system improvements, the work area shall be kept continuously cleaned up, with final clean up completed within 30 days following the completion of construction.

1.11 Guarantee

The Applicant shall request a Certificate of Substantial Completion upon completing the work within his contract. Once the Substantial Completion Certificate is issued, the applicant's one (1) year guarantee begins.

The Applicant shall, at his own expense, promptly remedy any defects in any water system improvements and pay for any damage to persons or property resulting therefrom within one (1) year of the date the District stipulates that the work was completed, and the Certificate of Substantial Completion was issued, in accordance with these Rules and Regulations.

1.12 Approvals

The Applicant shall obtain all local, state and federal agency approvals required for the various components of the project and shall pay for all costs and miscellaneous expense associated with obtaining said approvals.

Final decisions on all aspects of these Rules and Regulations shall be made by the Water Superintendent of the AFD.

2 SYSTEM DESIGN AND LAYOUT

2.1 Water Distribution System

The water distribution system shall be an extension of the existing District water system when practicable. This system shall be capable of delivering an ample supply of pure, potable water to all lots within the subdivision and/or development and to hydrants for use in the control of fires.

When, in the opinion of the District, adjacent areas can be served by connection to water mains within a development, the capacity of the water mains within the development shall be made adequate to serve these adjacent areas.

All facilities shall be planned, designed by a Professional Engineer registered in the Commonwealth of Massachusetts, and constructed in accordance with these Rules and Regulations and the Commonwealth of Massachusetts, Department of Environmental Protection Guidelines for Public Water Supply, most current edition, as amended, except as otherwise permitted by the Prudential Committee.

2.2 Location

All water mains shall be installed in the location and with the minimum/maximum pipe cover indicated below. Details1 and 2 which are the typical street cross section requirements set forth by the Adams Fire District and in conjunction with the Proposed Rules and Regulations Governing the Subdivision of Land, Town of Adams Massachusetts dated October 5, 1977, (Amended December 1, 2005). Ground cover on water mains shall be no less than 5'-0" and no more than 7'-0", unless otherwise directed by the AFD Superintendent or their representative.

2.3 Pipe Size

The minimum size of new water mains shall be 8-inch diameter. Larger size mains shall be required, to allow the withdrawal of the required fire flow while maintaining the minimum residual pressure specified in Section 2.5. Any departure from minimum requirements shall be justified by hydraulic analysis and future water use and can be considered only in special circumstances.

2.4 Looping

Water mains shall be interconnected at all street intersections. No water main shall extend for more than 1,000 feet without an interconnection to another water main. Dead ends shall be equipped with a means to provide adequate flushing which will give a velocity of at least 2.5 feet per second in the water main being flushed. Mains shall be dead ended with a hydrant, valve, one length of pipe and a plug or cap. Dead end pipes shall only be added to the system with the District's approval.

2.5 Design Flows

The water distribution system shall be capable of delivering an adequate supply of water to all lots within the development and adjacent areas as set forth in Appendix 5.2 during the maximum demand hour of the year, assuming maximum permissible development density on all lots. In all cases, design values shall be equal to or exceed the following minimum values:

a) Residential Development: shall be based on 310 CMR 15.000: Title 5 of the State Environmental Code set forth at 310 CMR 15.203(2).

b) Commercial Development: shall be based on 310 CMR 15.000: Title 5 of the State Environmental Code set forth at 310 CMR 15.203(3)

c) Industrial Development: shall apply to the District for a determination of design flows.

d) 2.5 peaking factor times ADD to determine the maximum day demand

e) 4.0 peaking factor times ADD to determine the maximum hour demand

f) 8.0 peaking factor times ADD to determine the instantaneous demand

In addition to the above consumption demands, the system shall be capable of delivering fire flow rates and for the appropriate durations in accordance with the latest requirements of the National Fire Protection Association (NFPA) and/or the Insurance Services Office (ISO) as applicable; however, in no instance shall the fire flow be less than 500 gallons per minute.

Residual pressure in the water main at ground level must be at least 35 pounds per square inch (psi) for normal service and 20 psi for fire protection.

2.6 Trenches

Trenches shall be excavated and backfilled in conformance with the requirements of Section 3.5 and as shown on Detail 3. Backfill and Fill Materials shall:

a) be suitable excavated materials, natural or processed mineral soils obtained from off-site sources or on-site excavation provided that they meet the requirements of this section.

b) be free of all organic material, trash, snow, ice, frozen soil, and unsuitable materials as defined herein.

c) not be soft, wet, plastic soils which may be expansive, clay soils having a natural, in-place water content in excess of 30 percent, soils containing more than 5 percent (by weight) fibrous organic materials, and soils having a plasticity index greater than 30.

d) have a maximum of 1 percent expansion when testing is performed on a sample remolded to 95 percent of maximum dry density (per ASTM D698) at 2 percent below optimum moisture content under a 100 lbs/sq ft surcharge.

Gravel borrow shall be hard, durable, rounded, or sub-angular particles of specified size and gradation, free from sand, loam, clay, granite blocks, broken concrete, masonry rubble, asphalt pavement, or any material larger than 3-inches in any dimension and shall be graded and shall conform to MassDOT Standard Specifications for Highways and Bridges, Section M1.03.0: Gravel Borrow, Type B.

Crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam, or organic material. The crushed stone shall be uniformly blended and shall conform to MassDOT Standard Specifications for Highways and Bridges, Section M2.01.4: Crushed Stone.

Processed gravel used for roadway subbase shall comply with the MassDOT Standard Specifications for Highways and Bridges, Section M1.03.1: Processed Gravel for Subbase.

Temporary and Permanent Pavement shall comply with the Town of Adams Standards or, if in a State Highway, with MassDOT Standard Specifications for Highways and Bridges, Section 400: Sub-Base, Base Courses, Shoulders, Pavements and Berms.

2.7 Hydrants

Hydrants shall be provided at each street intersection and at intermediate points between intersections as recommended by the National Fire Protection Association (NFPA), Insurance Services Office, Inc. (ISO) or the District. Generally, hydrant spacing shall not exceed 500 feet depending on the area being served. Hydrants shall be provided per the requirements of Section 3.13.

2.8 Valves

At water main intersections, valves shall be installed in all directions. The valve size shall equal that of the water main to which it is connected. The maximum spacing between valves on any one line shall not exceed 1,000 feet. Valve type (butterfly or gate) shall be determined by the AFD Superintendent based upon site specific data. In most cases, 12" and less shall be gate valves and 14" in size and greater shall be butterfly valves. All gates must be installed utilizing restrained joint follower glands.

2.9 Fittings

Fittings such as tees, bends, plugs, etc., shall be installed as required. All fittings shall be restrained style fittings.

2.10 Thrust Restraint

Restraint shall be used at all changes in horizontal and vertical pipe alignment to resist hydraulic thrust. Minimum 3/4" threaded rod shall be used for thrust restraint and restrained joint follower glands must be used at a minimum.

Concrete thrust blocks shall be made of concrete having a compressive strength of not less than 3,000 psi after 28 days. The blocks shall be placed between solid ground and the fitting(s) to be anchored. The mass of the block or the area of bearing on the pipe and on the ground in each instance shall be that as indicated or as specified, refer to Detail 6. The blocking shall, unless otherwise shown or specified, be located so as to contain the resultant thrust force in such a way that the pipe and fitting joints will be accessible for repair. No concrete shall be allowed on nuts, bolts, etc.

Joint restraint and/or thrust blocks shall be in accordance with Detail 5 and/or Detail 6. Thrust restraint for pipe installation larger than 12-inch diameter requires special design.

2.11 Water Service Pipe

Water service shall be provided to all lots within the development and shall be installed in accordance with Detail 7. For services 2" inches in diameter or larger, provide plans that are prepared and stamped by a Massachusetts Registered Professional Engineer. The location of curb stops, and corporation stops, shall be clearly marked so as to be easily located in future. The District owns the water main, corporation, and the meters for residential services (up to 1-inch in size); the service lines, and curb stops are owned by the property owner. In commercial, industrial and municipal services, the AFD owns the water main and corporation; while the potable service lines, fire protection lines, backflow prevention devices and meters in excess of 1-inch in size are owned by the property owner. The District's responsibilities for the maintenance of a sprinkler system ends at the connection to the District water main. Potable water service lines and fire protection lines shall be separately connected to the District's water main, with a separate valve for each type of line. The District requires a single water service pipe and a master meter for each building regardless of ownership. All real estate located within the Fire District assessed as a separate entity for local taxation under the laws of the Commonwealth of Massachusetts shall require a separate metered service from the Fire District in addition to all internal plumbing, unless approved by Superintendent. The District will provide the make and model of meter the property owner shall provide so it is compatible with the District's remote read system.

Water service pipes within a public way, or a private way open to public travel, shall be constructed in accordance with these regulations. Water service pipes within private property shall be constructed in accordance with the latest version of the Massachusetts State Plumbing Code.

No water service pipe shall be laid in the same trench with any other public or private facilities, except a fire pipe, nor within ten feet of a sewer unless approved by the District. Any connection of a water service pipe to a public main shall be made in a public way, a District-owned easement or in a private way open to public travel.

The portion of a water service pipe on private property, or the portion not owned by the District, shall at all times be kept by the owner in good repair, free of leaks and protected from frost and corrosion. If the District determines that any private piping does not conform to applicable state and federal law, codes and regulations, the District may require the owner, at their expense, to expose the piping for inspection by the District. The District shall require the owner, at their expense, to replace or repair the piping in accordance with applicable regulations. In the case where the portion of the water service pipe owned by the District is damaged by neglect or carelessness of the owner of the premises served, or any plumber, contractor, occupant or other person acting on behalf of the owner of the premises, all necessary repairs shall be made by the District at the owner's expense.

If the District determines that there is a leak in the owner's portion of the water service pipe, the District shall so notify the owner with a written notice, and the owner shall be responsible for having the leak repaired and the work inspected by the District to ensure compliance with these Regulations.

The owner is responsible for thawing, at their own expense, a frozen water service pipe on the owner's portion of the water service pipe.

2.12 Fire Pipes

The property owner shall own that portion of the fire pipe extending from the property to and including the isolation valve at the public water main. Fire pipes shall be constructed in accordance with these regulations and the latest versions of the State Plumbing Code, and National Fire Code.

No fire pipe shall be laid in the same trench with any other public or private facilities, except a water service pipe, nor within ten feet of a sewer unless approved by the District. Any connection of a fire pipe to a public main shall be made in a public way, a District-owned easement or in a private way open to public travel. Fire protection connections and isolation valves must be made to the main separately from water service pipe connections.

The owner shall be responsible, at its expense, for installing the fire pipe and appurtenances, tapping and making connection to the public water main designated by the District, and the cutting and capping of existing services and appurtenances to be discontinued. No tapping of the District's existing service pipe shall occur without approval of the District and a minimum of 72-hours notice. The owner or owner's contractor shall arrange at least twenty-four (24) hours in advance for an inspection by the District before backfilling the installed fire pipe and appurtenances. The owner or owner's contractor shall not backfill the installation until after receipt of a written inspection certificate from the District. Only the District shall turn-on water service after inspection and approval of the fire pipe installation. The owner shall provide access to the property for the inspection by the District and shall not conceal the purpose for which the fire pipe is used or to be used.

All fire pipe supply lines shall be equipped with an approved backflow prevention device.

The fire pipe shall at all times be kept by the owner of the premises and at its expense in good repair, free of leaks and protected from frost and corrosion. The owner shall be responsible for having a leak in a fire pipe repaired at the owner's expense. The owner is responsible, at its expense, for thawing a frozen fire pipe.

2.13 Air Release Valves

Facilities for releasing accumulated air shall be provided at all high points on water mains to be owned by the District. Air release facilities shall be in accordance with Detail 8. For non-District owned mains, air release shall be via a corporation stop to be closed and buried after the main has been tested and disinfected. Locating hydrants at high points also may accommodate air release for non-District owned mains.

2.14 Blow Off

It may be necessary to provide system blow off facilities in the work, for the purpose of draining water mains, depending upon the location of the Project. Blow-off facilities shall be included if the District or District's Engineer deems them necessary. Blow off facilities, if required, shall be designed in accordance with site-specific requirements.

2.15 Pumping Facilities (Privately Owned)

Pumping equipment with approved meters and backflow prevention devices, shall be furnished if necessary, to ensure adequate service flow and pressure for domestic and fire protection requirements, as set forth in these regulations.

Pumping equipment shall be furnished to deliver the peak demand within the project at reasonable efficiency.

In the event of a pump malfunction, there shall be sufficient remaining pump capacity to meet the project's maximum hourly demand.

In the event of an electric power outage, there shall be provided electrical generation equipment of sufficient capacity to meet normal pumping station electrical requirements plus sufficient capacity to operate pumping equipment necessary to meet the project's maximum hourly demand.

In addition, pumping equipment shall be provided, if necessary, to deliver required fire flows within the project. The fire demand may be met by parallel operation of domestic pumps or if necessary, by separate pumps dedicated to meeting fire protection requirements. Standby engine drives and/or generator equipment may be required to operate fire pumps during electrical outage.

If storage facilities are proposed to meet project peak demand and fire protection requirements, then pumping facilities shall be modified accordingly to meet only maximum day demand. Storage facilities shall be provided with an in-tank active mixing system. Operation of the pumping station shall maximize the water turnover in the storage facility.

All pumping facilities are subject to review and approval by the District and/or the District's Engineer.

2.16 Storage Facilities (Privately Owned)

Storage facilities may be required to meet project requirements for peak demand and fire protection. Storage facilities require special design in accordance with site-specific requirements. Storage facilities shall be designed by a licensed Professional Engineer in the Commonwealth of Massachusetts.

All storage facilities are subject to review and approval by the District and/or the District's Engineer. Provide plans and calculations prepared and stamped by a licensed Professional Engineer in the Commonwealth of Massachusetts with the application.

2.17 Lead Content

New products and components, including pipes, devices, media, and materials, shall demonstrate compliance with National Sanitation Foundation International (NSF) most recent standards NSF/ANSI 61 and NSF/ANSI 372. For more information refer to the NSF website at: http://www.nsf.org/Certified/PwsComponents/ and Massachusetts Uniform State Plumbing Code 248 CMR 10.00.

2.18 Temporary Bypass Piping

If construction of the new service or main will cause the disruption of service to customers on the main, the Applicant shall provide temporary bypass piping to maintain a continuous supply to the affected customers that meets the following minimum requirements:

a) Temporary pipe materials shall be of sufficient pressure class to accommodate the normal pressures of the service area.

b) Provisions for temporary bypass piping must be made in a reliable and sanitary manner such that impurities are not imparted to the water.

c) The pipe and/or hose must be designated or certified for potable/residential water use and must meet NSF Standard 61 certification and or AWWA standards.

d) Disinfection of temporary pipes and hoses must be performed in accordance with AWWA standards.

e) The recommended pipe materials are as follows:

(1) High Density Polyethylene (HDPE) pressure pipe

(2) Steel water pipe

(3) Plastic pipe:

(a) Polyvinylchloride (PVC) pressure pipe, Class C900.

(b) Standard polyethylene (PE) pressure pipe and tubing, 1/2 inch through 3 inches

(c) Molecularly oriented polyvinyl chloride (PVCO) pressure pipe, 4 inches through12 inches

(d) Others as approved in writing by AFD

2.19 Meters and Meter Testing

For residential and non-residential buildings, the Adams Fire District shall furnish and install, meters and backflow prevention devices, up to and including 1"-inch in size, along with the necessary bushings and couplings to attach to the plumbing. The owner shall furnish and install, at its expense, meters 1.5" inches in size or larger. The size of the meter required shall be subject to the approval of the District. Meters 1.5" inches and larger shall be of the type, make and model as defined by the District such that all meters are compatible with the District's system for reading.

The District shall, as part of the application fee, install all meters up to and including 1-inch in size. Prior to installation of the meter, the owner shall, at its expense, complete the plumbing so that the premises are ready for meter installation. The plumbing shall be completed in a manner that permits installation of the meter closest to the point of entry of the water service pipe. All meters 1.5" inches in size and larger and automatic reading devices shall be installed by the owner at its expense and inspected by the District. All meters and meter installations shall be

installed in accordance with the Massachusetts USPC 248 CMR 10.00 and shall comply with these Regulations.

All meters shall be installed within an owner's building as close to the public water supply main as possible before any valves or fixtures, in an ample and suitable space free from exposure to freezing unless otherwise directed by the District. This space shall be unobstructed and accessible to the District for reading, testing, inspection and maintenance purposes at all times.

In accordance with the provisions of Massachusetts General Laws Chapter 165 Section 11 D, the District may enter premises to install, examine, calibrate, repair, test or remove meters and automatic reading devices.

The District requires that all meters greater than 1-inch in size be tested semi annually and testing reports be filed with the District. The District may at any time test, repair or replace any meter 1" in size or less at its option and expense. Any meter greater than 1" in size shall be tested, repaired or replaced at the owner's expense. An owner may request that the District test his or her meter. Such tests shall be performed at the expense of the owner.

No person shall bypass, tamper with, or prevent a meter from registering water consumption. Such acts shall be subject to the penalties stated in Massachusetts General Laws Chapter 165 Section 11 and to such other penalties as the District may adopt under these Regulations.

2.20 Cross Connections and Backflow Prevention

The backflow of non-potable water, other fluids, gases or foreign materials into the District's water distribution system or plumbing systems of properties served by the public water system is prohibited, all connections will be protected by a device approved prior to connection.

The District shall have the right to shut off water service without prior notice to eliminate a cross connection or backflow condition where contaminants or pollutants are in the process of or are suspected of entering the District's potable water distribution system, or where there is, in the District's judgment, reasonable possibility that such contamination or pollution will occur if the water service is not shut off. Under such conditions, the water service shall remain shut off until the cross connection or backflow connection is eliminated, or the condition is remedied, at the owner's expense, and the remedial work has been approved by the District.

2.21 Fire Protection – Substantially Modified System

Substantially modified means any change or modification to an existing fire protection system for which the cost of the backflow prevention device including installation is equal to or more than five percent of the cost of the fire protection system modification; or when the total cost of the fire protection system modification excluding the cost associated with the installation of a backflow prevention device equals or exceeds $100,000.00 as specified on the building permit application in accordance with 780 CMR 1.00.

Where existing fire protection systems must be substantially modified to meet new occupancies, storage changes, increase in building size, or differing building uses such as:

a) Changing system types (e.g., wet to pre-action)

b) Adding a new system (e.g., pre-action, offices to a warehouse)

c) Increase in occupancy hazard classification (e.g., light hazard to ordinary hazard, ordinary hazard 1 to ordinary hazard 2, etc.)

MassDEP Drinking Water Regulations 310 CMR 22.22 (9)(d)1 requires that any new, existing, or substantially modified fire protection system, including residential fire protection systems, be evaluated to determine if a cross connection exists. Additionally, 310 CMR 22.22 (9)(d)2 requires that all existing cross connections between public water systems and fire protection systems, as described in Table 22-1, 310 CMR 22.22(9)(a)19.a. and b. and installed prior to March 21, 1997, be equipped with a UL listed alarm check valve with the standard alarm pressure switch trim package.

3 MATERIALS AND INSTALLATION

3.1 Extent of Work

The Applicant shall furnish all pipe, fittings, valves, and other materials, labor, tools and equipment and shall perform all work necessary for the installation of the water system and appurtenances as indicated by the Drawings and plans submitted to and approved by the District.

3.2 Ductile Iron Pipe and Fittings

All pipe shall be designed in accordance with the latest revisions of ANSI/AWWA C150/A21.50, Thickness Design of Ductile Iron Pipe, and ANSI/AWWA C151/A21.51, Ductile Iron Pipe, Centrifugally Cast. Mains shall be Class 52 cement lined ductile iron pipe and the lining shall be given a seal coat in accordance with the latest revision of ANSI/AWWA C104/A21.4, Cement-Mortar Lining for Ductile Iron Pipe and Fittings. Cement mortar lining shall be double thickness and the thickness of the cement lining shall not be less than specified in Table 3-1.

Table 3-1: Ductile Iron Pipe Table

Size (in)	Outside Diameter (in)	Nominal Thickness (in)*	Nominal Thickness (in)**	Cement Lining Thickness (in)
6	6.90	0.25	0.31	0.125 (1/8)
8	9.05	0.25	0.33	0.125 (1/8)
12	13.2	0.28	0.37	0.125 (1/8)
14	15.3	0.31	0.39	0.1875 (3/16)
16	17.4	0.34	0.40	0.1875 (3/16)
20	21.6	0.38	0.42	0.1875 (3/16)

* Standard Pressure Class 350 Ductile Iron Pipe
**Special Thickness Class 52 Ductile Iron Pipe

Fittings shall be furnished and installed in accordance with the latest revision of ANSI/AWWA C153/A21.53, Ductile Iron Compact Fittings. All pipe fittings shall be lined and coated as specified. The inside of pipe and fittings shall be given a cement lining and bituminous seal coat to accordance with ANSI A21.4. Particular care shall be used to insure proper bonding of the seal coat. Cement lining shall be double thickness. The outside of pipe and fittings shall be coated with the standard bituminous coating specified under the appropriate ANSI Standard Specification for the pipe fittings.

Joints shall be provided in accordance with the latest revision of ANSI/AWWA C111/A21.11, Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.

Pipe and Fittings shall conform to the following specific requirements insofar as they apply:

a) Pipe shall have normal laying lengths of at least 18 feet.

b) Pipe shall have push-on joints.

c) Fittings shall have a pressure rating of at least 250 psi.

d) Fittings shall have push-on or mechanical joints.

Where it is necessary to joint pipe of different types, the Contractor shall furnish and install the necessary adapters. Adapters shall have ends, conforming to the above specifications for the appropriate type of joint, to receive the adjoining pipe. Adapters joining two classes of pipe may be of the lighter class provided that the annular space in bell-and-spigot type joints will be sufficient for proper joints.

3.3 Ductile Iron Pipe Joints

Push-on joints and mechanical joints shall be made in accordance with the latest directions or specifications of the manufacturer. Serrated silicon bronze wedges shall be inserted at the horizontal diameter of each push-on joint as recommended by the manufacturer. Mechanical joints shall be furnished with suitable appliances for insuring electrical conductivity, in accordance with the recommendations of the manufacturer. Three (3) bronze wedges shall be included at each joint.

3.4 Couplings

Couplings for buried pipe shall be of ductile iron and shall be Dresser Style 253, Smith Blair Style 441, Ford FC1, or approved equal products. The couplings shall be provided with A606 Type 4 or A588 "Cor-Ten" bolts and nuts or approved equal. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

3.5 Laying Pipe and Appurtenances

3.5.1 Trench Excavation

Generally, pipes will be laid in trenches dug in roadways and/or adjacent sidewalk areas. The approximate location of the pipeline is shown on the Drawings, Detail 1 or Detail 2. Where the pipeline is to be installed close to the edge of property lines, the Applicant shall make his own arrangements with the abutting property owners for the temporary use of the abutter's property for construction purposes if required.

The trenches and other excavations shall be of sufficient width and depth at all points to allow all pipes to be laid, joints to be formed, and appurtenances or other constructions to be placed or built in the most thorough and workmanlike manner, and to allow for sheeting and shoring, pumping and draining, and for removing and replacing any unsuitable material. The minimum depth of cover on water mains shall be 5'-0"; the maximum depth of cover on water mains shall be 7'-0", unless otherwise approved by the AFD or the AFD's Engineer.

Earth trenches and excavations shall be at least 12 inches greater on each side than the outside dimensions of the structures they are to contain and shall not be so wide as to cause an unsafe loading of the pipes. The bottom of the trenches shall be excavated to lines and shapes satisfactory to the District and to conform to the outside of the pipes insofar as the material will permit, so that the pipes shall have a continuous and even bearing. No tunneling will be permitted in place of open trench construction for the water mains unless specifically authorized by the Engineer. Wherever the bottom of the trench is rock or boulders, it shall be excavated 6 inches below grade and refilled to grade with specified material well rammed in place; the sides

of the trench in rock shall be excavated to such width that no rock shall be closer to the pipe barrel or other structures than six inches when the pipe is laid in the trench with normal alignment. Trenches shall be as shown on Detail 3. Pavement replacement shall be in accordance with the requirements of the Town of Adams for Town owned roads and MassDOT for state owned roads.

3.5.2 Pipe Installation

The pipe and appurtenances shall be carefully examined for cracks or other defects and shall be cleared of all dirt and debris before laying. They shall be laid to lines and depths required in these Regulations. The laying shall be done with tools and appliances suitable for the work. An even alignment of the pipes shall be maintained.

In laying a full length of Ductile Iron pipe along a curve, the maximum change in alignment of each straight pipe shall not exceed the following amounts (AWWA C600).

Table 3-2: Maximum Joint Deflection* Full-Length Pipe—Push-On–Type Joint Pipe

Nominal Pipe Size inch	Deflection Angle degree	Maximum Offset inches
3 - 12	5	19
14 - 20	3	11

*as measured from the end of the pipe

Each pipe shall be firmly held in position by carefully and thoroughly tamping backfill material around the barrel of the pipe.

When pipe installation is not in progress, the open ends of all pipelines shall be capped to keep out all foreign material. The work shall be conducted in such a manner that no loose excavation or other foreign material can enter the pipe.

Whenever it is necessary to cut pipe to fit into the pipeline, or to provide additional couplings or sleeves, this work shall be done, and the materials shall be provided by the Applicant at his own expense. So far as practicable, cut pieces of pipe may be used up in the pipeline construction.

Except as otherwise required or permitted by the District, fittings and plugs shall be restrained against hydraulic thrust with Joint Restraint or Thrust Blocks as shown on Detail 5 and Detail 6 respectively.

3.5.3 Trench Backfilling

After the joints and the pipe have been inspected and found to be satisfactory, the trench shall be backfilled by hand to a height of 12-inches over the top of the pipe with suitable material.

All materials for backfilling and fill shall be free of roots, stumps and frost. Materials used for backfilling trenches shall be free of stones greater than 4-inches in size.

The backfill around the pipe shall be deposited in layers not over 6-inches deep and shall be filled evenly on both sides of the pipe and rammed with suitable tools. The 12-inch layer over the pipe shall be thoroughly compacted and the remaining portion of the trench shall be

backfilled in layers not over 12-inches deep by machine or by hand, as required or allowed by the District.

Each layer shall be thoroughly compacted by mechanical compactors to 95 percent of its maximum dry density, as determined by ASTM D1157.

3.6 Hydrostatic Testing

All new water mains and appurtenances shall be tested for strength and leakage in accordance with the latest revision of ANSI/AWWA C600, Installation of Ductile-Iron Mains and Their Appurtenances. The test pressure shall not be less than 1.25 times the stated working pressure of the pipeline measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section. Pneumatic testing is not allowed.

The pressure for the tests shall be maintained by pumping additional water as required into the pipeline and shall not vary by more than ±5 psi for the duration of the two-hour test. The test pressure shall be maintained for at least two hours. Temporary plugs and fittings may be required by the District.

The leakage test shall be conducted concurrently with the pressure test. The additional water needed to maintain the required pressure shall be accurately measured in accordance with the hydrostatic testing allowance tables within AWWA C-600.

Tests for strength and leakage shall be made with all hydrants in place, with branch gate valves open and all required corporation stops installed and in the closed position.

The rate of leakage shall not exceed values established by AWWA C600 based upon the size water main under test. The Applicant shall repair all leaks discovered under any of the above-required tests. The Applicant shall furnish all apparatus, materials, temporary corporation stops, plugs and fittings, and labor necessary for making the tests. Before testing pipelines having flexible joints, the Applicant must make certain that the pipelines are securely held to prevent their movement.

The Applicant shall make all necessary arrangements for securing the water for test purposes and shall stand the expense of these arrangements. The water required for testing may be obtained from water mains belonging to the District via application with the District, and a hydrant meter with an approved backflow prevention device shall be required.

3.7 Disinfection of Water Mains

Disinfection of water mains and temporary bypass piping shall be performed in accordance with the latest revision of ANSI/AWWA C651, Disinfecting Water Mains, except that the tablet method will not be allowed. Upon completion of the water main and all the testing thereof, the interior of the main shall be flushed and then thoroughly disinfected in all parts. This disinfection must result in eliminating from the various parts of the new main all evidence of the existence therein of bacteria indicative of human or animal contamination, as shown by tests of the bacterial content of samples of water taken from the new water main. The disinfection may be accomplished by introducing into all the various parts of the new water mains a liquid solution containing one percent available chlorine in such volume that the rate of dosage of the

water content of the water mains shall be determined by the method of chlorination as determined in AWWA C-651.

The contact period for this disinfection shall be in accordance with the selected method of chlorination, and a longer period will be required if tests of residual chlorine show it to be necessary for proper disinfection. The water system shall be flushed out after its disinfection and the water disposed of in an approved manner. Applicant shall dechlorinate water prior to disposal. The Applicant will assume the cost of all necessary tests to show that no bacteria indicative of human or animal contamination are present in the water mains.

Samples shall be taken by AFD personnel certified by the Massachusetts DEP. Bacteriological tests shall be performed by laboratories and technicians certified for such testing by the Massachusetts DEP. Two rounds of negative bacteria samples are required prior to placing a new main into service. All disinfection procedures must be reviewed, approved, and witnessed by District personnel or District's Engineer.

3.8 Gate Valves

Gate valves shall be furnished in accordance with the requirements of the latest revision of ANSI/AWWA C509, Resilient Seated Gate Valves for Water Supply Service, or ANSI/AWWA C515, Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service, and meet the following requirements:

a) Gate valves shall have mechanical joints.

b) Gate valves shall open right (clockwise). They shall be of the resilient seat, wedge type with iron body and shall have a non-rising high strength bronze stem, mounted with thermoplastic cartridge stem seal incorporating "O"-ring seals, packed and ready for use.

c) Valves shall be designed for vertical setting and shall be equipped with operating nuts.

d) Operating nuts shall be red, 2 inches square at the base and shall be loosely fitted on the stem.

e) All ferrous surfaces of the valve body waterway and vane shall be given a fusion-bonded epoxy coating in compliance with AWWA C550. This coating shall be applied prior to assembly to insure that all exposed interior and exterior surfaces receive the epoxy coating.

f) All surfaces of the iron gate, including stem hole shall be encapsulated in rubber tightly bonded to the gate.

g) Design and machining of valves shall permit packing of valves without undue leakage while they are wide open and in service.

h) The guide slots of the gate shall have thermoplastic inserts.

i) All gate valves shall be suitable for working water pressure of 200 pounds per square inch and shall be tested under a hydrostatic pressure of 400 pounds per square inch and show no leak.

j) Manufactured by Mueller, American, Clow Valve, or equal

3.9 Butterfly Valves

Butterfly valves shall be short body, manufacturer's standard pattern conforming to the latest revision of ANSI/AWWA C504, Rubber-Seated Butterfly Valves, Class 150B, and meet the following requirements:

a) Butterfly valves shall have ductile iron body and be designed for buried and submerged service.

b) Butterfly valves shall have standard mechanical joint ends.

c) Butterfly valves shall be provided with nickel-resistant shafts, and neoprene or rubber seats.

d) The valves shall be designed for installation with the valve shaft in the horizontal position and shall be furnished with an enclosed gearing with 2-inch square nut operator. The gearing shall be designed to open the valve when the nut is turned clockwise. (right).

e) The gearing shall be self-locking, designed to hold the valve disc in any intermediate position without use of additional locking devices.

f) All valves shall be rated at 200 psi minimum working pressure and hydrostatically tested at 400 psi.

g) Valves shall have thermosetting epoxy coating on the interior, and the vane. Coatings shall meet the requirements of the latest revision of ANSI/AWWA C-550, Protective Interior Coatings for Valves and Hydrants. All bodies and vanes shall be factory coated prior to assembly and tested. All ferrous surfaces of the valve body waterway and vane shall receive an epoxy coating with a minimum dry thickness of 8 mils. All exterior surfaces shall be coated with asphalt varnish.

h) Manufactured by Dezurik, Clow Valve, Kennedy Valve or equal.

3.10 Tapping Sleeve and Gate Valve

Tapping Sleeves and Gate Valves shall conform to the following:

a) Tapping sleeves shall be constructed of stainless steel.

b) Tapping valves shall conform to Clause No. 3.8. Valves shall have a mechanical joint on the outlet.

c) The Contractor shall be responsible for verifying the outside diameter of the pipe to be tapped.

d) Tapping sleeves shall be capable of containing pressure within the full volume of the sleeve.

3.11 Valve Boxes and Covers

Valve boxes shall be furnished and installed for all valves shown by the Drawings. Boxes for gate valves shall be 5 1/2-inch shaft, sliding type. Valves in general which require valve boxes shall be set to conform to the depth indicated on Detail 3, 4, 6, and 8. Each complete box, including cover, for gate or butterfly valves set at normal depth shall weigh about 125 pounds. The castings shall be made of light gray cast iron true to pattern and free from flaws. The valve boxes shall be thoroughly coated with two coats of asphaltum varnish. The covers shall have the word "WATER" cast in the top. Boxes for curb stops with rods shall conform to the preceding except they shall be 2 3/4-inch shaft and weigh approximately 20 pounds.

3.12 Setting Valves and Appurtenances

Valves and appurtenances, including valve boxes, shall be set, in general, as indicated on Detail 4, 6 and 8. The exact location, however, will be determined in the field by the District.

All valves shall be set with operating nuts in a vertical position and shall be provided with valve boxes.

Valve boxes shall be set so that the bases rest on cushions of well-compacted earth placed around the valve and shall not rest upon any part of the valve or pipe.

3.13 Fire Hydrants

Hydrants shall be dry barrel, post type with compression main valve closing with the inlet pressure and shall be furnished with two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection with National Standard Hose Thread detail. Hydrants shall conform to the requirements of AWWA C502 and UL Water Quality certified to ANSI/NSF 61/372.

Hydrants shall have 6-inch mechanical joint inlet and shall be suitable for trench depths as shown by Standard Detail 4.

Hydrants shall be designed for minimum 250 pounds per square inch working pressure and shall open to the LEFT, counterclockwise, and must be marked with arrow and word "OPEN" to indicate the direction to turn stem to open hydrant.

The valve opening shall have a diameter of 5-1/4".

Hydrants shall be of such design that if the hydrant barrel is broken off, the hydrant will remain closed; there shall be a breakable type joint just above the normal ground line.

Interior and exterior above and below ground line coated with high performance 2-part epoxy.

Exterior above ground line – one coat UV resistant high gloss 2-part polyurethane enamel, color RED.

Hydrants shall be as manufactured by Mueller, Super Centurion Series Model A423.

3.14 Setting Fire Hydrants

Hydrants shall be set plumb, shall have the steamer nozzle facing the roadway and, in general, shall be set as shown on Detail 4. The District will determine the exact location of the hydrant.

For hydrants installed in self-draining soils, the space around the hydrant barrel 18 inches in diameter shall be filled with 24 inches of crushed pea stone. The backfill around the hydrant shall be thoroughly rammed. A thrust block or formed concrete shall be placed between the back of the hydrant and the undisturbed trench bank. The concrete shall be opposite the hydrant inlet and shall bear against at least 9 square feet of undisturbed soil. The concrete must not obstruct the hydrant drip.

Hydrants furnished unsatisfactorily painted by the manufacturer shall be painted after setting with two coats of paint of quality and color specified hereinbefore. All hydrants shall be thoroughly flushed out before final acceptance of the work.

3.15 Anchor Harness Rods and Clamps

Anchor harness rods and clamps shall be furnished and installed in accordance with Detail 5 or as directed by the District. Minimum ¾" threaded rod is acceptable.

Anchor harness rod and clamp assemblies incorporated in the work shall be thoroughly coated with two coats of a heavy-duty protective coating conforming to "Coal Tar Protective Coating P-101," Subsection M7.04.01 of Division III, Materials, of the Massachusetts Department of Public Works Standard Specifications.

3.16 Service Connections

All service connections shall be a minimum 1-inch diameter Type K, soft, annealed, seamless tubing conforming to ASTM B88 Standard Specification for Seamless Copper Water Tube.

A service connection shall consist of a corporation stop, curb stop, curb box, copper tubing and service couplings as indicated on Standard Details 7A thru 7D.

Corporation stops shall be minimum 1-inch, made from castings and shall be of lead-free brass. Each corporation stop shall have a solid plug which operates freely as adjusted for testing and shall be individually tested under a hydrostatic pressure of 300 pounds per square inch and found to be tight before leaving the factory. Corporation stops shall be 360-degree ball valve with tee head that has a removable corporation head, modified by A.Y. McDonald in accordance with AWWA C800. All corporation stops larger than 1 inch shall be installed with a saddle.

Corporation stops shall be manufactured by A.Y. MacDonald. No substitutions are allowed as corporation stops are custom to the District. Curb boxes for use on corporation stops shall be Buffalo Style (slide type, arch pattern) in accordance with Section 3.11.

Corporation stops shall open by turning to the left, counterclockwise and shall be screwed firmly into the main with key upward.

Curb stops shall be minimum 1-inch, and made of lead-free brass and hydrostatic test pressure not less than 300 psi. Curb boxes shall be Erie Style in accordance with Section 3.11 or plug if

set within concrete or black top; stainless steel extension rod; NO DRAIN VALVES PERMITTED.

Curb stops shall be manufactured by A.Y. MacDonald . No substitutions are allowed as curb stops are custom to the District.

3.17 Separation of Water Mains and Sewers

The following factors should be considered in providing adequate separation:

a) Materials and type of joints for water and sewer pipes

b) Soil conditions

c) Service and branch connections into the water main and sewer line

d) Compensating variations in the horizontal and vertical separations

e) Space for repair and alterations of water and sewer pipes

f) Off-setting of pipes around manholes

Water mains shall be laid at least 10 feet horizontally from any existing or proposed sanitary or storm sewer, septic tank, or subsoil treatment system. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10-foot separation, it is permissible to install a water main closer to a sewer. However, the water main must be laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.

Water mains crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. It is preferred that the water main cross above the sewer. At crossing, one full length of water pipe shall be located so both joints will be as far from the sewer as possible, and the sewer materials shall be water works grade 150 psi pressure rated pipe meeting latest AWWA standards and shall be pressure tested to ensure water tightness. Special structural support for the water and sewer pipes may be required by the District, as well as special materials for construction and connecting devices.

No water pipe shall pass through or come in contact with any part of a sewer manhole.

4 WATER INSTALLATIONS IN NEW DEVELOPMENTS

4.1 General

No water mains, services or extension shall be laid in any subdivision within the District except after final subdivision approval has been granted by the Planning Board of the Town of Adams pursuant to "Chapter 201 - Subdivision Regulations" adopted by the Planning Board of the Town of Adams effective 10-5-1977 and amended thereto.

A Site Plan shall be submitted to the District in accordance with the provisions of Section 1.4.

The Applicant shall establish all lines and grades necessary for the construction of improvements in strict accordance with the District approved plan and shall take accurate measurements of all completed work and neatly record this information and turn it over to the District in accordance with the provision of Section 4.5 below. Any and all proposed field changes must be reviewed and approved by the District and/or the District's Engineer prior to the change being made.

No work shall begin until all street opening permits have been obtained from the Department of Public Works by the Applicant.

The District must be notified at least thirty (30) days in advance of the commencement of construction so that arrangements can be made to have a District's Inspector available to provide project inspection, as in Section 4.2.7 below. No work shall be performed unless the District's Inspector or his representative is present.

The District may only service users within their District Boundaries. For those wholesale customers outside District Boundaries, these Rules and Regulations shall govern insomuch as they apply. Wholesale customers shall coordinate with the District directly.

4.2 Obligations of Applicant

4.2.1 Water Impact Report

The District monitors future proposed developments to confirm that the District's water system can supply water to the projects at an adequate volume and pressure. The following information is required for any proposed projects having a design demand greater than 2,500 gallons per day (gpd) or that requires an extension to or addition to the water system:

a) Estimated impact of the project on the District's water demand. Impact shall be based on the entire project. If project is phased, impact of each phase must be shown and the cumulative project impact must be shown.

b) Impact of the project on the District's existing supply system including the effect on water flow, speed and direction through the water mains proximate to the new service line and on maintenance of adequate fire flow.

c) Water conservation measures to mitigate the effect of the project's impact on the existing water system.

The report shall be prepared by the District's Engineer and shall be reviewed and approved by the District. Costs associated with generating the report will be the responsibility of the applicant. The estimated amount for this report shall be paid by the applicant prior to the report be generated. The fee will be held in escrow and any unused monies will be refunded to the applicant. Guidelines for the Water Impact Report are included in Appendix 5.3.

4.2.2 Project Costs

The Applicant shall furnish all plant, labor, materials, supplies, tools, equipment and all other facilities necessary or proper for, or incidental to, the complete construction of the project, as shown on the Drawings and as herein specified and shall bear the total cost of the project including all planning, administration, construction and miscellaneous expense relative thereto.

4.2.3 Filing Fees

The Applicant shall pay all costs for District administration, engineering review, inspection by District personnel or District's Engineer, legal review and other miscellaneous expenses associated with processing the Application. The Applicant, at the time of filing, shall submit a deposit to cover the above costs in amount(s) to be established by the Prudential Committee. The minimum Filing Fee for Application Review is $5,000. Fee shall be based upon type of project and Engineer's estimate for review, but in no case less than $5,000.The Committee shall have the authority to periodically revise said deposit amounts.

If, at the time of District action in respect to the Application, the total cost for administration, engineering, legal and miscellaneous expenses is less than the deposit then the difference shall be refunded to the Applicant. If during the processing of the application the above expenses, in the Committee's opinion, will exceed the deposit, the Committee shall request the Applicant to make additional deposits in amounts established by the Committee.

4.2.4 Conformity

The water distribution system within a development shall conform to the requirements of the "Adams Fire District - Water System Master Plan, March 2020" prepared by Stantec Consulting Services Inc., including any amendments thereto and to all other master or study plans which may subsequently be adopted by the Prudential Committee.

4.2.5 Material Specifications

All material, unless otherwise specified, shall meet the requirements of the latest AWWA standards, shall be manufacturers' products which are currently used by the District and shall be subject to the approval of the District, and in accordance with Section 3 of these Rules and Regulations.

The Applicant shall submit to the District, shop, detail or working drawings and certificates of all materials required for the work. The District shall review and approve all materials prior to installation. No field changes to approved materials will be allowed unless approved by the water superintendent.

4.2.6 Material Testing

The Applicant shall allow the District ample time and opportunity for testing materials to be used in the work. Applicant shall advise the District promptly upon placing orders for materials, stating that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The Applicant shall at all times furnish the District and its representatives' facilities, including labor, and allow proper time for inspection and testing the work, its materials and workmanship.

The District may decide to have some, or all materials tested or inspected as required. The Applicant shall anticipate that possible delays may occur in the execution of his work due to the necessity of materials and equipment being inspected and accepted before use. The Applicant shall furnish at his own expense all samples of material required by the District for testing and shall pay for such testing of materials and equipment as required of him herein. The Applicant shall be responsible for the payment of all laboratory tests.

The Applicant shall furnish all labor, materials and equipment required for conducting tests of all structures and equipment to be installed in the work.

4.2.7 Project Inspection

The District and any person employed by it in connection with the work shall at all times have the right to enter the premises upon which any work is being done to inspect said work and the materials for the same. The Applicant shall furnish all reasonable facilities and give ample time for such inspection(s). The Applicant also shall furnish all reasonable facilities for viewing the work to the District and its representatives and to accredited representatives of authorities having jurisdiction with respect to the work.

The District will provide an inspector to perform full-time project inspection. The Applicant will be invoiced by the District on a monthly basis for these services. No water will be turned on to any mains or house services until these invoices have been paid. No work shall be performed unless the AFD inspector or his representative is present.

4.3 Sprinklers (Fire Suppression)

4.3.1 Approval for Installation

All applications for sprinkler line connections shall be made at the District Office at 3 Columbia Street, and shall be approved prior to construction. Along with the completed application, the applicant shall provide an engineering drawing of the proposed installation from the main in the street up to and including the OS&Y valve. A post indicator valve of the locking type shall be installed outside the collapse area of the structure to be designated by the District. All material to be laid underground must conform to AWWA standards and must be approved by the Superintendent prior to installation. As required by law, an approved backflow prevention devise must be incorporated into the design. Fire protection connections and isolation valves must be made to the main separately from water service pipe connections.

4.3.2 Responsibilities

The District's responsibilities for the maintenance of a sprinkler system ends at the connection to the District water main. Any operations of the valve(s) at the connection shall be the responsibility of the AFD.

All materials and labor costs for the installation shall be the responsibility of the applicant. The District inspector or his representative must be present for the installation of the work.

4.3.3 Connection Fees

As noted in the By-Laws and Rules & Regulations of the District, Applicants for all new water services including fire sprinkler services shall pay with every application for such service a one-time Capital Outlay fee in accordance with the following schedule.

Table 4-1: Connection Fee Schedule

Pipe up to and including one inch	$500.00
Pipe in excess of 1" up to and including 2"	$2,000.00
Pipe in excess of 2" up to and including 4"	$4,000.00
Pipe in excess of 4" up to and including 6"	$6,000.00
Pipe in excess of 6" up to and including 8"	$8,000.00
Pipe in excess of 8". The fee to be established, by the Prudential Committee, after review of plans and anticipated usage	

The Capital Outlay fee shall be in addition to all other fees and charges associated with the installation of the new service.

4.3.4 Engineer's Review

The District makes no guarantee as to the pressure or volume of water to be supplied. For connections over 2,500 gpd, the District will hire an engineer, at the expense of the applicant, with knowledge of the water system to determine whether or not the District's existing distribution system is adequate to supply the water necessary to service the design of the proposed connection. The fee for this will be determined on a case-by-case basis once the application as been filed and the application is sent to the District's Engineer. The minimum cost will be $5,000.

4.4 Completion of Subdivision

Upon completion of the subdivision, all valve boxes and curb boxes must be flush with the surface of the ground, and must not be obscured by grass, gravel, or pavement.

Any work areas affected by the work at the subdivision site, whether public or private property, shall be returned to the same or better condition as before the work started.

Upon completion of the subdivision, and issuance of a Certificate of Substantial Completion, the water system, including the water mains, hydrants, valves, fitting, and services (not including that which is within the properties of the customers) shall become the responsibility of the District. The District will be responsible for the operation and maintenance of the system from that point forward; the Applicant will guarantee his work for a period of one (1) year, as in Section 1.10.

The Applicant shall provide Record Plans as indicated in Section 4.5 below.

4.5 Record Plans

Record plans shall accurately show the location, grades, inverts, elevation and other significant information for all water facilities including but not limited to the following: valves, hydrants, fittings, bends, curb stops, and corporation stops. A minimum of three swing ties shall be used to locate each item.

The applicant shall submit to the District a set of mylar and PDF record plans, prior to the issuance of the Certificate of Substantial Completion, of the improvements as hereinafter provided. Record plans shall be submitted in Autodesk AutoCAD version within 2 years of the date of substantial completion and the data shall be georeferenced to vertical (NAVD 88) and horizontal (NAD83) datums. The record plans shall be individually signed, sealed, dated and certified as to accuracy and completeness.

5 APPENDIX

5.1 Operating Data

Table 5-1: Adams Fire District System Operating Data

Service Area	Hydraulic Grade Line Elev. MSL*	Max. Ground Elevation to Which 35 psi Static Pressure Can be Furnished **/***
High Service		
Glenn Street	1290	1200
Hoxie Brook	1290	1200
East Road	1180	1090
Notch Road	n/a	Special Consideration
Low Service		
Maple Street	1049	959
Leonard Street	n/a	Special Consideration
Orchard Street	n/a	Special Consideration

* MSL means Mean Sea Level.

** Development proposed in these respective service areas above the maximum ground elevation indicated shall be prohibited from connecting to the District's water system unless booster pumping and/or storage facilities are incorporated in the development to ensure domestic service pressure of no less than 35 pounds per square inch (psi) and Insurance Services Office (ISO) required hydrant fire flow at no less than 20 psi. Facilities utilizing sprinkler and/or standpipe fire service shall be furnished in accordance with National Fire Protection Association (NFPA) standards.

*** The maximum ground elevation stated includes adjustments for storage tank water level below overflow elevation and allowance for friction loss in the distribution piping system.

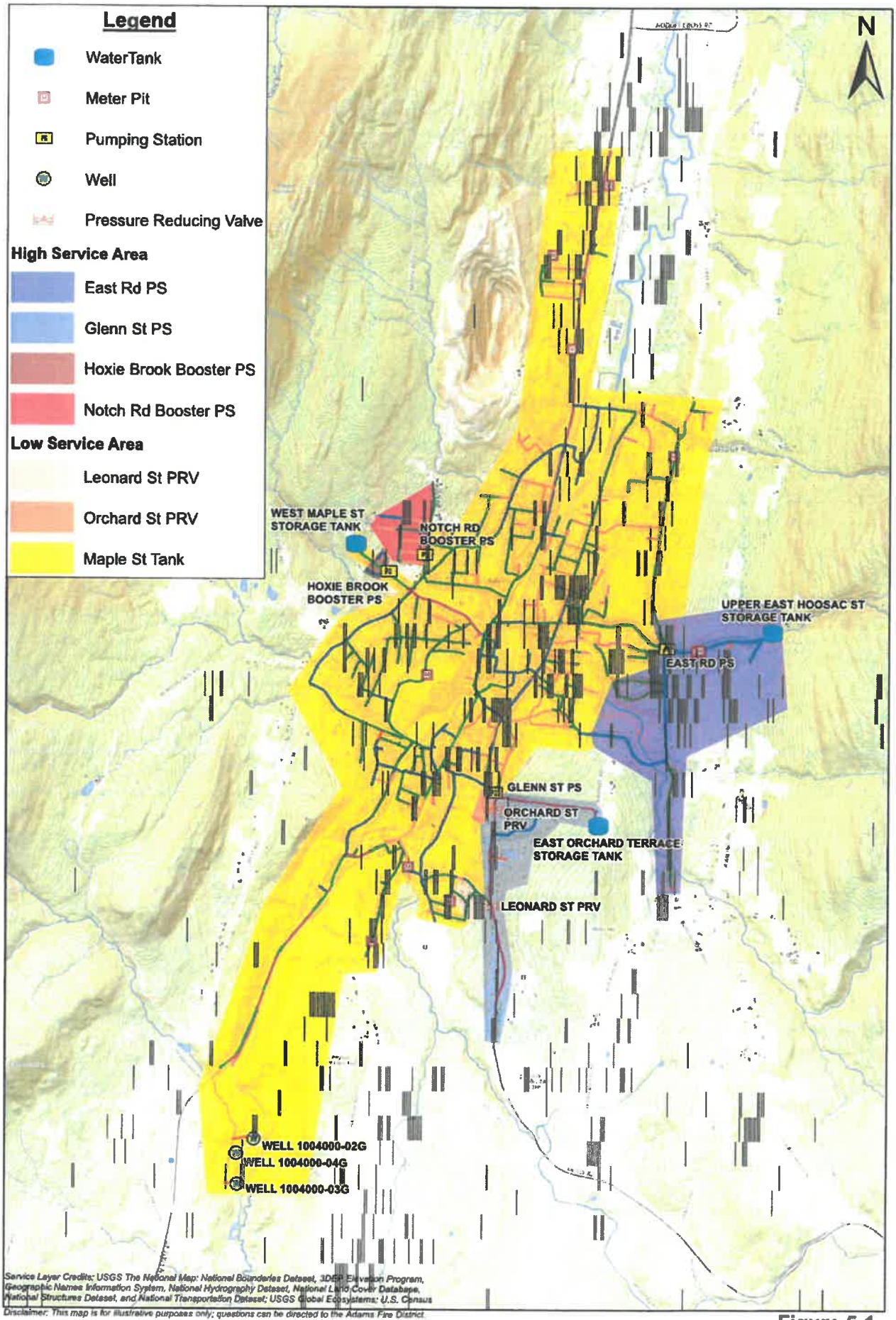


Figure 5-1

Adams Fire District

Overall Service Area

5.3 Water Impact Report Guidelines

Per Adams District Rules and Regulations, any person applying for water use having a design demand greater than 2,500 gallons per day (gpd), or that requires an extension to or addition to the water system must provide a Water Impact Report to the Adams Fire District, for approval by the Prudential Committee.

The Report must include the following:

(a) Project name, applicant, and contact information.

(b) Describe the Project. Include if project is phased project, addition to existing facilities, extension of existing system, privately owned water mains, type of project including potential uses, location. Project description shall supply detail about future building uses (e.g. (76) 3-bedroom single family homes, warehouse with 44 employees, 50-seat fast food restaurant with 2-drive thru windows, etc.).

(c) Estimated project start/end dates including dates for any project phases, if applicable.

(d) Project demand using Mass DEP 310 CMR 15.000: Title 5 of the State Environmental Code (current version at time of application). Provide average day demand, maximum day demand, and instantaneous demand for domestic service. Provide fire flow requirements and operating pressures. All demands shall be in gallons per day. Calculations should be shown on how these numbers were derived.

(e) Expected impact of the project of the District's existing supply system, including effect on water flow speed and direction through water mains proximate to the new service or services and maintenance of adequate fire flows.

(f) Provide engineered plans including improvements and proposed connections to the existing infrastructure.

(g) Water conservation measures to mitigate the effect of the project's impact on the existing water system.

5.4 Construction Details

Figure 5-2: Detail 1 – Mountain District Typical Street Cross Connection

Figure 5-3: Detail 2 - Plain District Typical Street Cross Connection

Figure 5-4: Detail 3A – Typical Trench Detail of Water Main in Firm Ground Standard Detail

Figure 5-5: Detail 3B – Typical Trench Detail of Water Main in Ledge Standard Detail

Figure 5-6: Detail 4 - Typical Fire Hydrant Connection for High or Low Service Line Standard Detail

Figure 5-7: Detail 5 - Joint Restraint Standard Detail

Figure 5-8: Detail 6 - Thrust Block Standard Detail

Figure 5-9: Detail 7A – Typical Water Connection for 3/4- and 1-inch Service Pipes to 12" thru 16" Water Mains Standard Detail

Figure 5-10: Detail 7B – Typical Water Connection for 3/4- and 1-inch Service Pipes to 4" thru 10" Water Mains Standard Detail

Figure 5-11: Detail 7C – Typical Water Connection for 1-1/2- and 2-inch Service Pipes to 12-inch through 16-inch Water Mains Standard Detail

Figure 5-12: Detail 7D – Typical Water Connection for 1-1/2- and 2-inch Service Pipes to 4-inch through 10-inch Water Mains Standard Detail

Figure 5-13: Detail 8 – Typical Pitometer Tap and Air Release Valve Standard

Detail 9A-9F: Sedimentation Control

Detail 9G: Water Mains Standard Detail

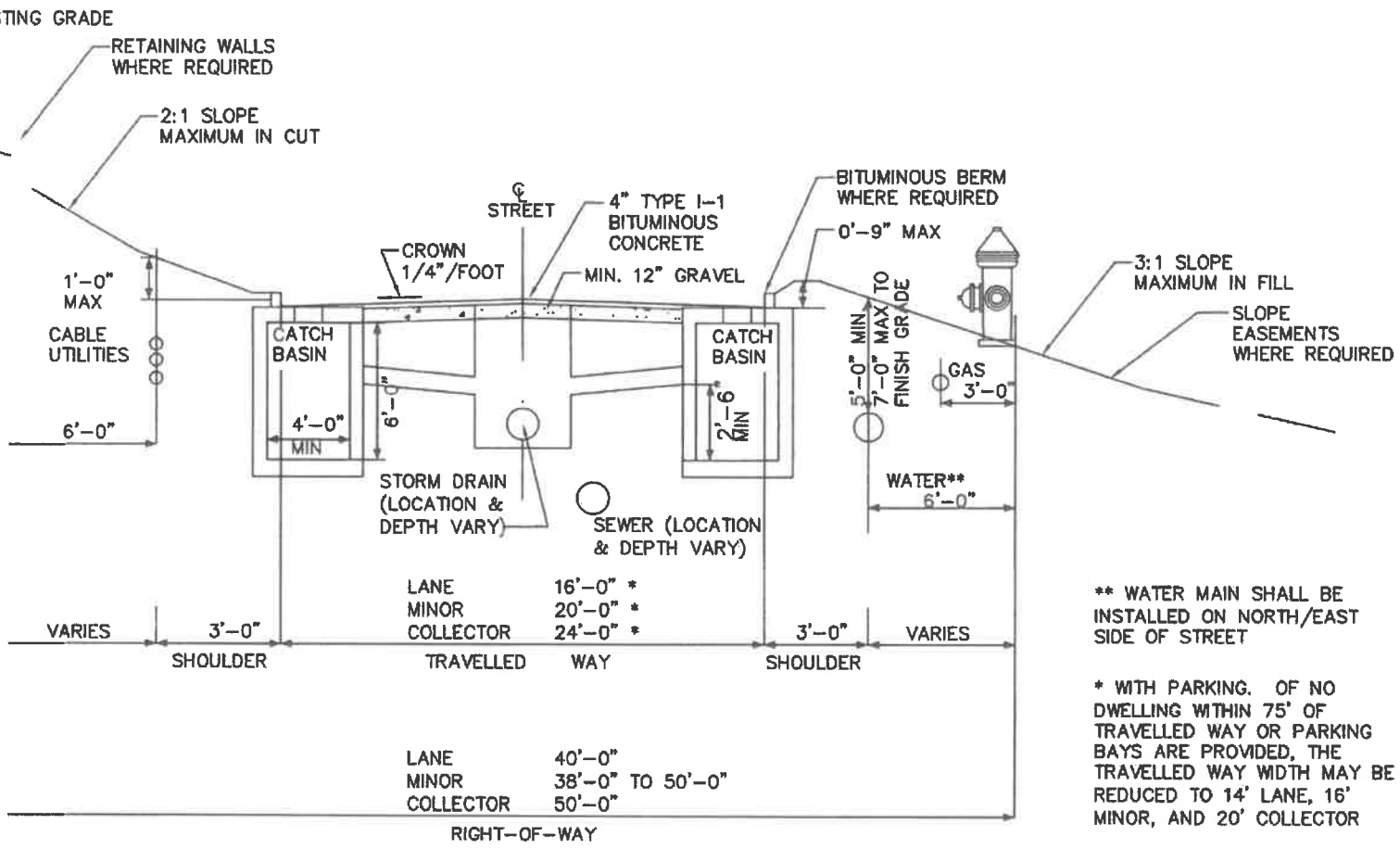
Location\Filename: V:\1951\active\195150744\4_planning\drawings\AFD Details\AFD_Standard Details.dwg
Plotted on: Wednesday, June 16, 2021 - 10:08 AM by Turner, Lucy Rose

ADAMS FIRE DISTRICT
RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT

MOUNTAIN DISTRICT TYPICAL STREET CROSS SECTION STANDARD DETAIL
Scale: Not To Scale

DATE: JUNE 2021

DETAIL NO. 1



** WATER MAIN SHALL BE INSTALLED ON NORTH/EAST SIDE OF STREET

* WITH PARKING. OF NO DWELLING WITHIN 75' OF TRAVELLED WAY OR PARKING BAYS ARE PROVIDED, THE TRAVELLED WAY WIDTH MAY BE REDUCED TO 14' LANE, 16' MINOR, AND 20' COLLECTOR

MOUNTAIN DISTRICT
TYPICAL STREET CROSS SECTION
ADAMS, MASSACHUSETTS

DETAIL I

From Proposed Rules and Regulations Governing the Subdivision of Land
Town of Adams, Massachusetts
Dated October 5, 1977; Amended December 1, 2005

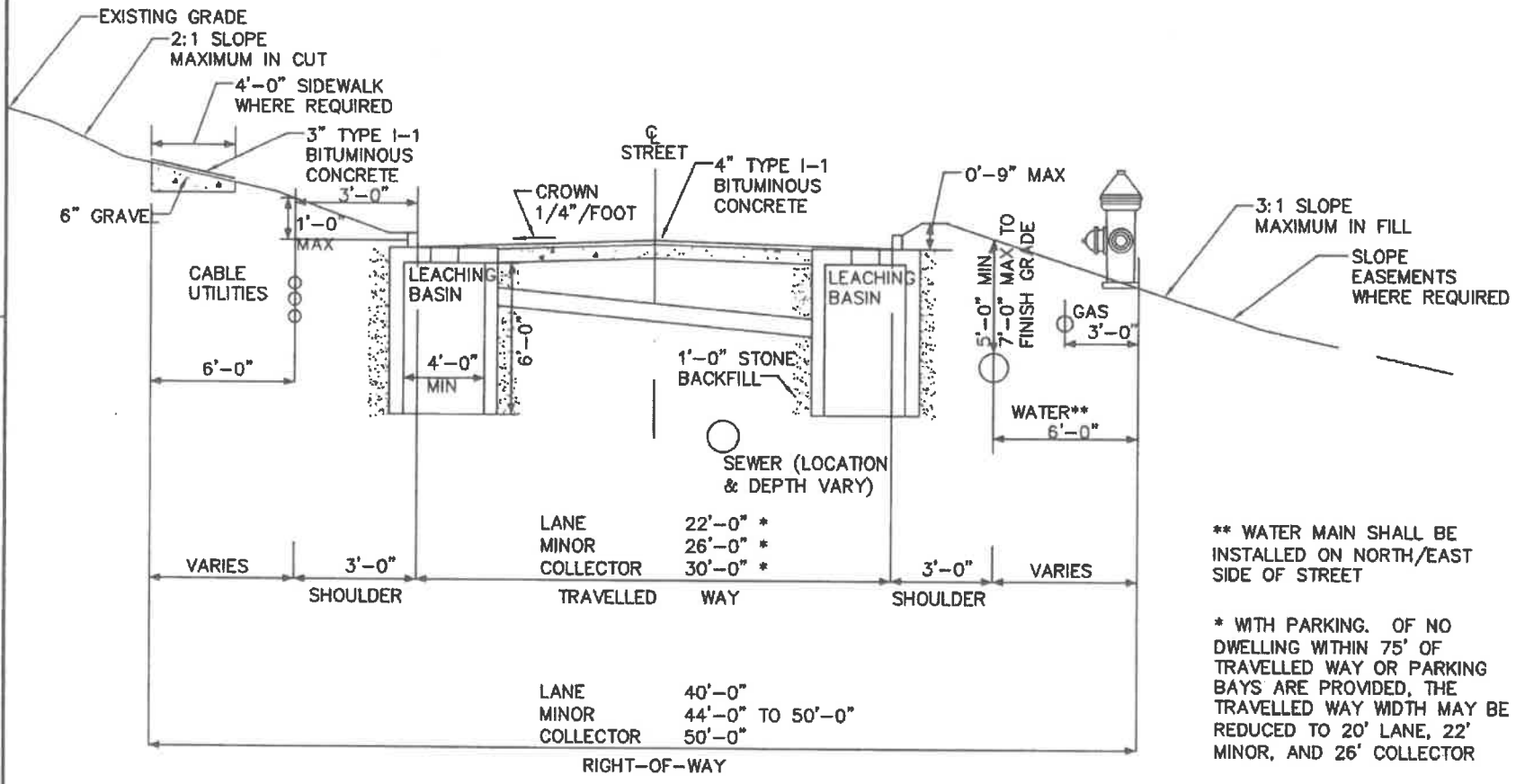
Location\Filename: V:\1951\active\195150744\4_planning\drawings\AFD Details\AFD_Standard Details.dwg
Plotted on: Wednesday, June 16, 2021 - 10:08 AM by Turner, Lucy Rose

ADAMS FIRE DISTRICT
RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT

PLAIN DISTRICT TYPICAL STREET CROSS SECTION STANDARD DETAIL
Scale: Not To Scale

DATE: JUNE 2021

DETAIL NO. 2



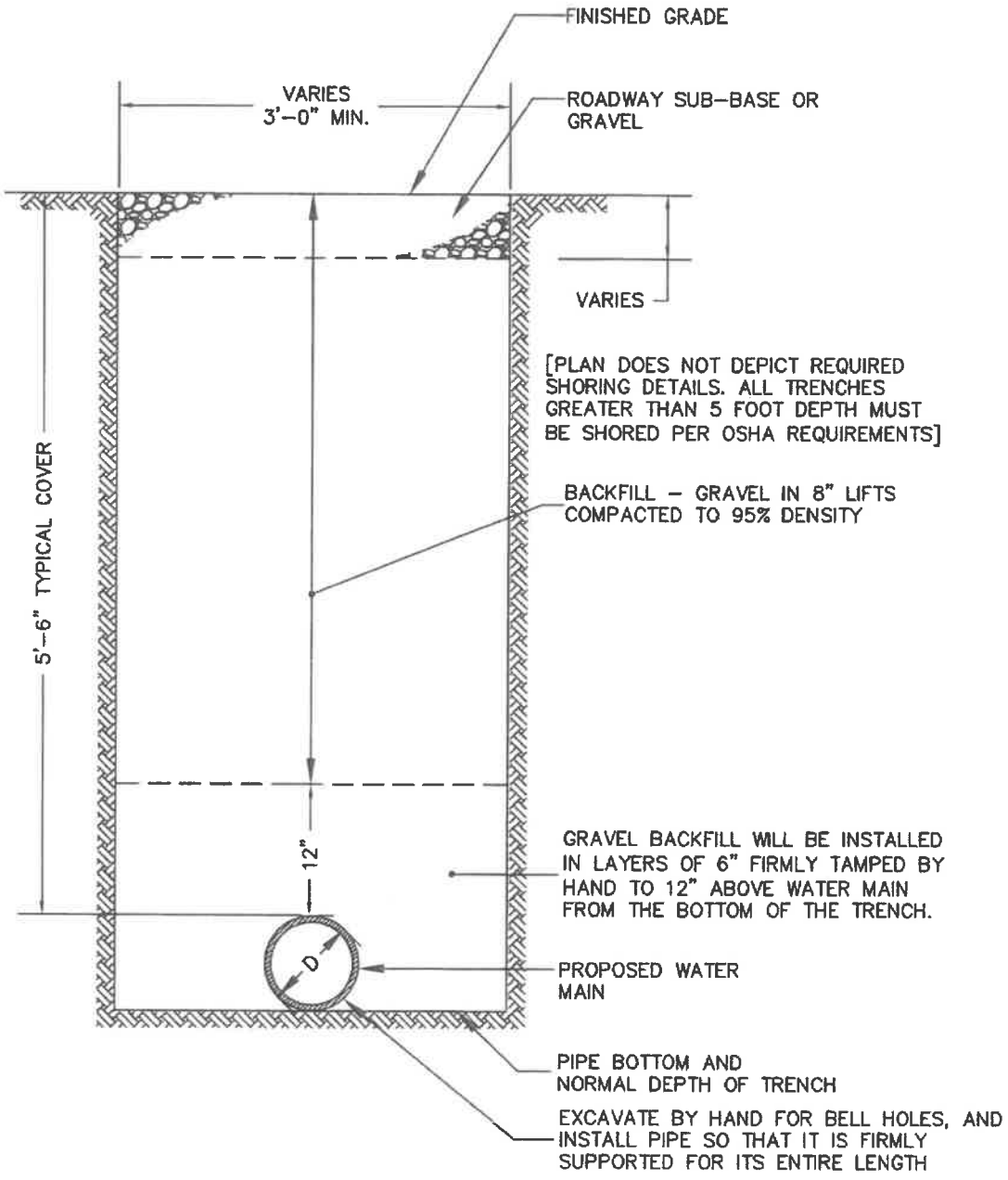
** WATER MAIN SHALL BE INSTALLED ON NORTH/EAST SIDE OF STREET

* WITH PARKING. OF NO DWELLING WITHIN 75' OF TRAVELLED WAY OR PARKING BAYS ARE PROVIDED, THE TRAVELLED WAY WIDTH MAY BE REDUCED TO 20' LANE, 22' MINOR, AND 26' COLLECTOR

PLAIN DISTRICT
TYPICAL STREET CROSS SECTION
ADAMS, MASSACHUSETTS

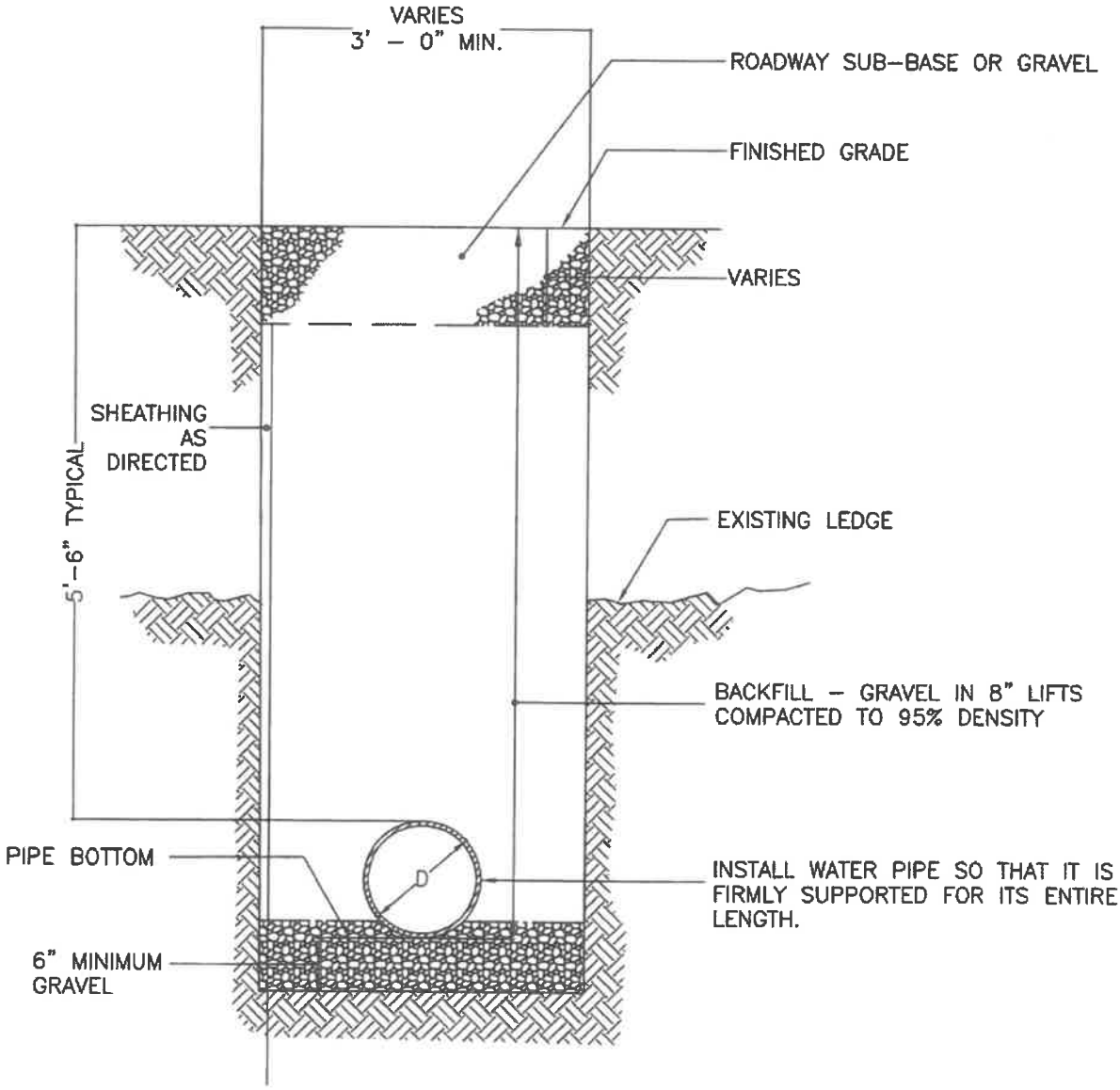
DETAIL II

From Proposed Rules and Regulations Governing the Subdivision of Land
Town of Adams, Massachusetts
Dated October 5, 1977; Amended December 1, 2005



D=DIAMETER

ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL TRENCH DETAIL OF WATER MAIN IN FIRM GROUND STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 3A



D=DIAMETER

ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL TRENCH DETAIL OF WATER MAIN IN LEDGE STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 3B

Location\Filename: V:\1951\active\195150744\4_planning\drawings\AFD Details\AFD_Standard Details.dwg
Plotted on: Thursday, June 17, 2021 - 10:49 AM by Turner, Lucy Rose

ADAMS FIRE DISTRICT
RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT

TYPICAL FIRE HYDRANT CONNECTION FOR HIGH OR LOW SERVICE LINE STANDARD DETAIL

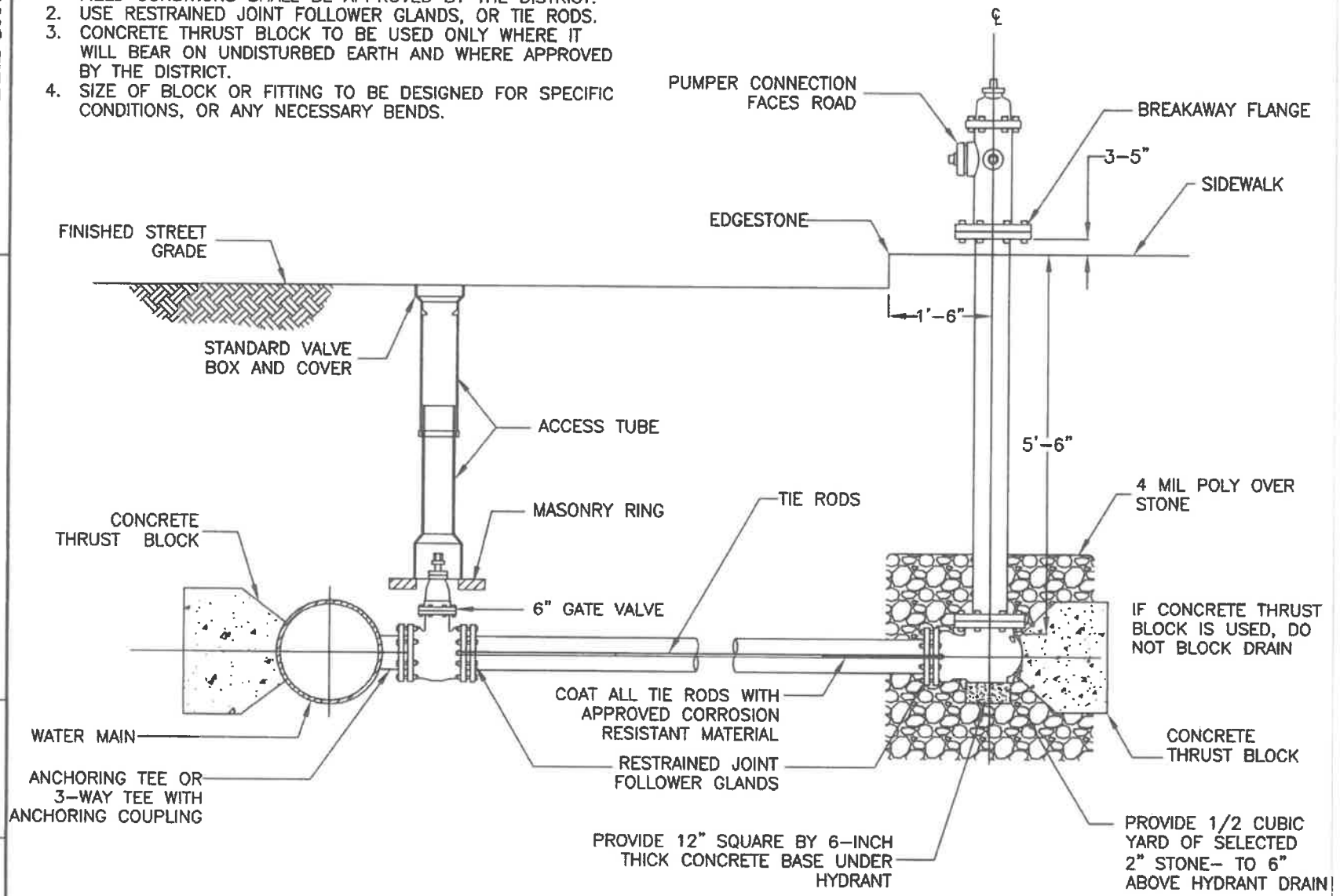
Scale: Not To Scale

DATE: JUNE 2021

DETAIL NO. 4

NOTES:

1. ANY DEVIATIONS OF THIS TYPICAL CONNECTION TO MEET FIELD CONDITIONS SHALL BE APPROVED BY THE DISTRICT.
2. USE RESTRAINED JOINT FOLLOWER GLANDS, OR TIE RODS.
3. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH AND WHERE APPROVED BY THE DISTRICT.
4. SIZE OF BLOCK OR FITTING TO BE DESIGNED FOR SPECIFIC CONDITIONS, OR ANY NECESSARY BENDS.

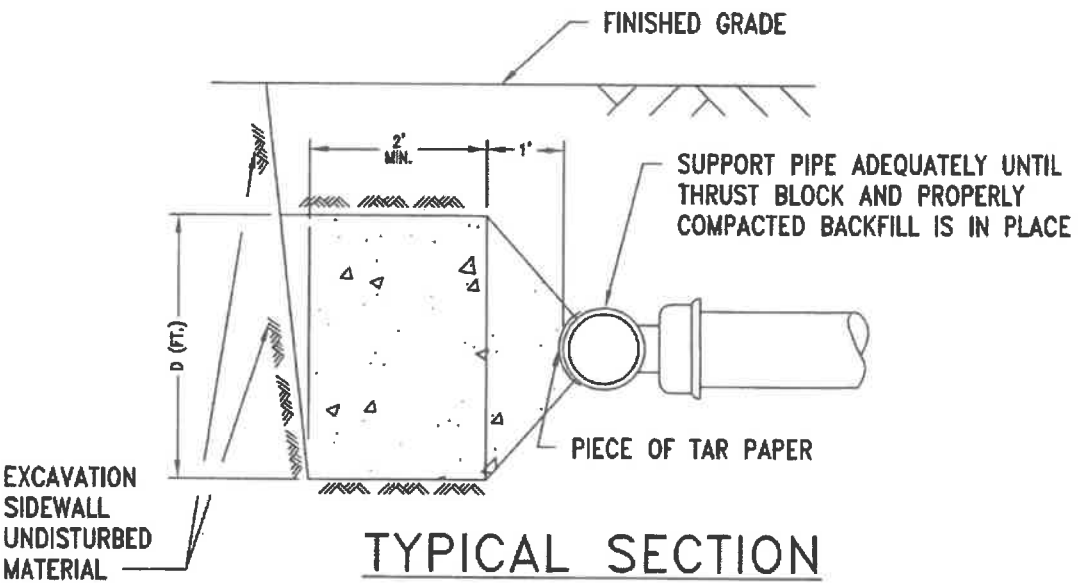


RESTRAINED JOINT LIMITS (EACH SIDE OF FITTING)				
HORIZONTAL BENDS VERTICAL UP	PIPE DIAMETER 6"	8"	10"	12"
11 1/4°	3'	4'	5'	5'
22 1/2°	6'	7'	9'	10'
45°	12'	15'	18'	21'
90°	28'	36'	43'	41'
DEAD END CAP/PLUG	24'	38'	51'	64'

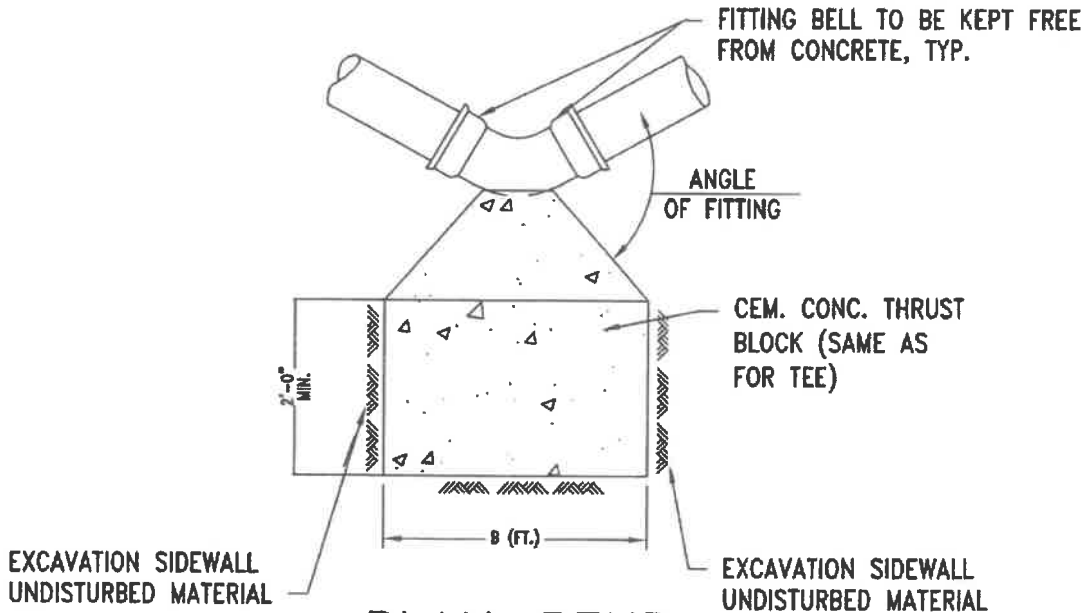
VERTICAL DOWN	PIPE DIAMETER 6"	8"	10"	12"
11 1/4°	5'	7'	8'	9'
22 1/2°	10'	13'	15'	18'
45°	20'	26'	32'	37'
90°	48'	63'	76'	89'

EXAMPLE: FOR 12-INCH, VERTICAL DOWN 22.5° BEND - A MINIMUM OF 18 FT. OF PIPE (9 ON EACH SIDE OF BEND) MUST BE RESTRAINED.

ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	JOINT RESTRAINT STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 5



TYPICAL SECTION

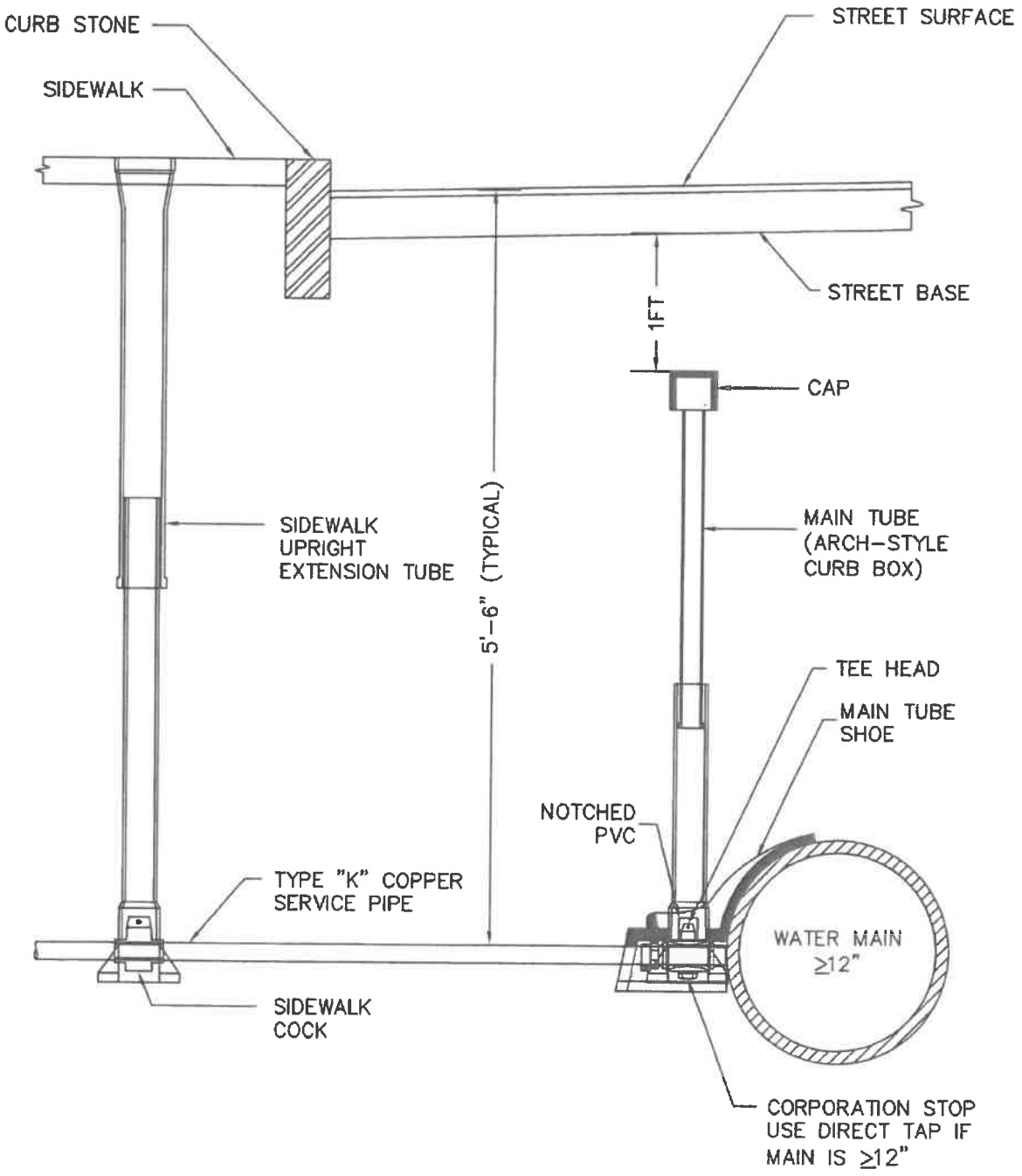


PLAN–BEND

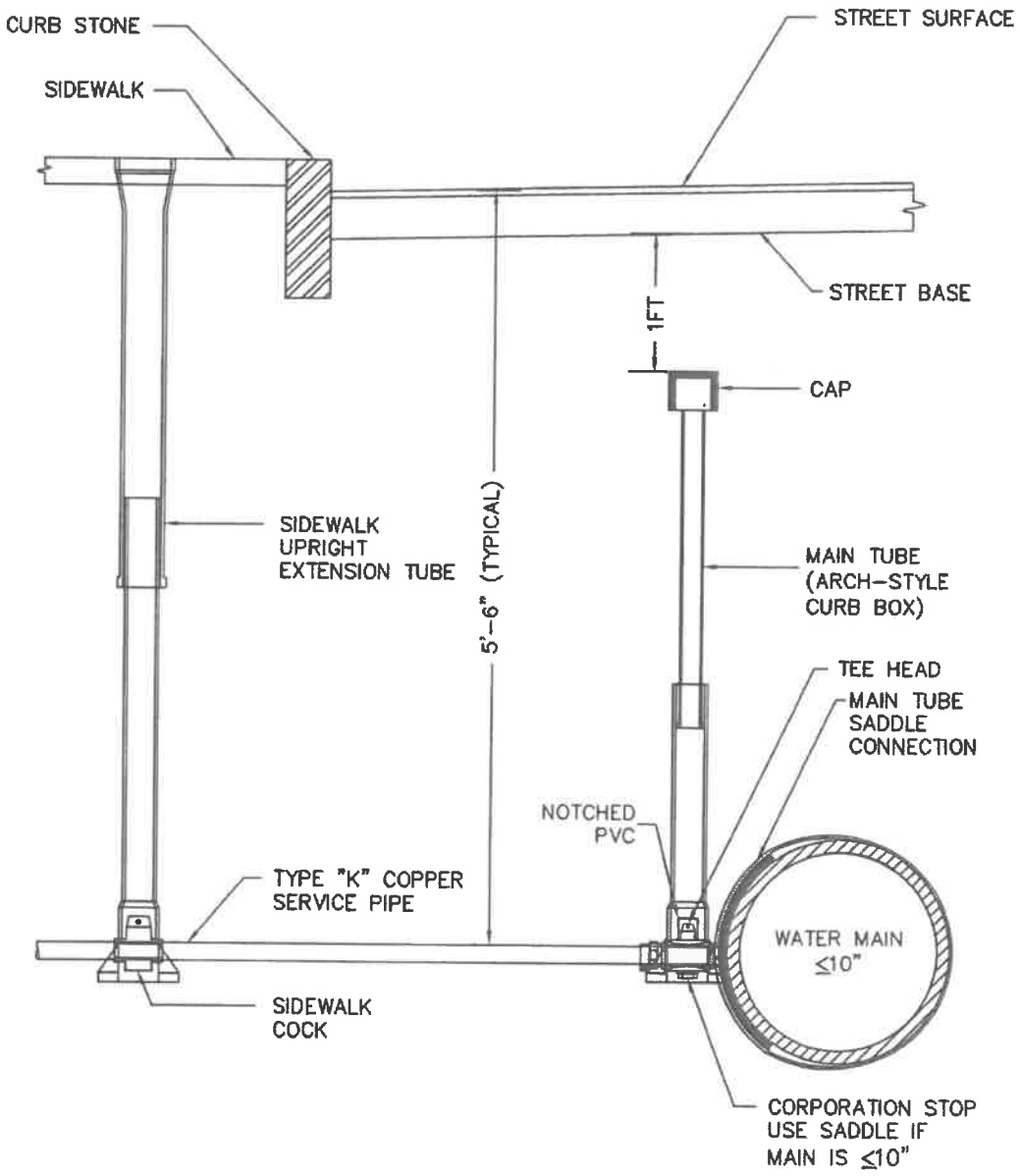
PIPE SIZE	6"		8"		10"		12"	
DIMENSION	B	D	B	D	B	D	B	D
TEE/CAP	22	22	28	28	34	34	42	42
90°	26	26	34	34	42	42	50	50
45°	18	18	24	24	30	30	36	36
22 1/2° *	14	14	18	18	22	22	26	26

*USE SIMILAR DIMENSIONS FOR BENDS SMALLER THAN 22 ½°.

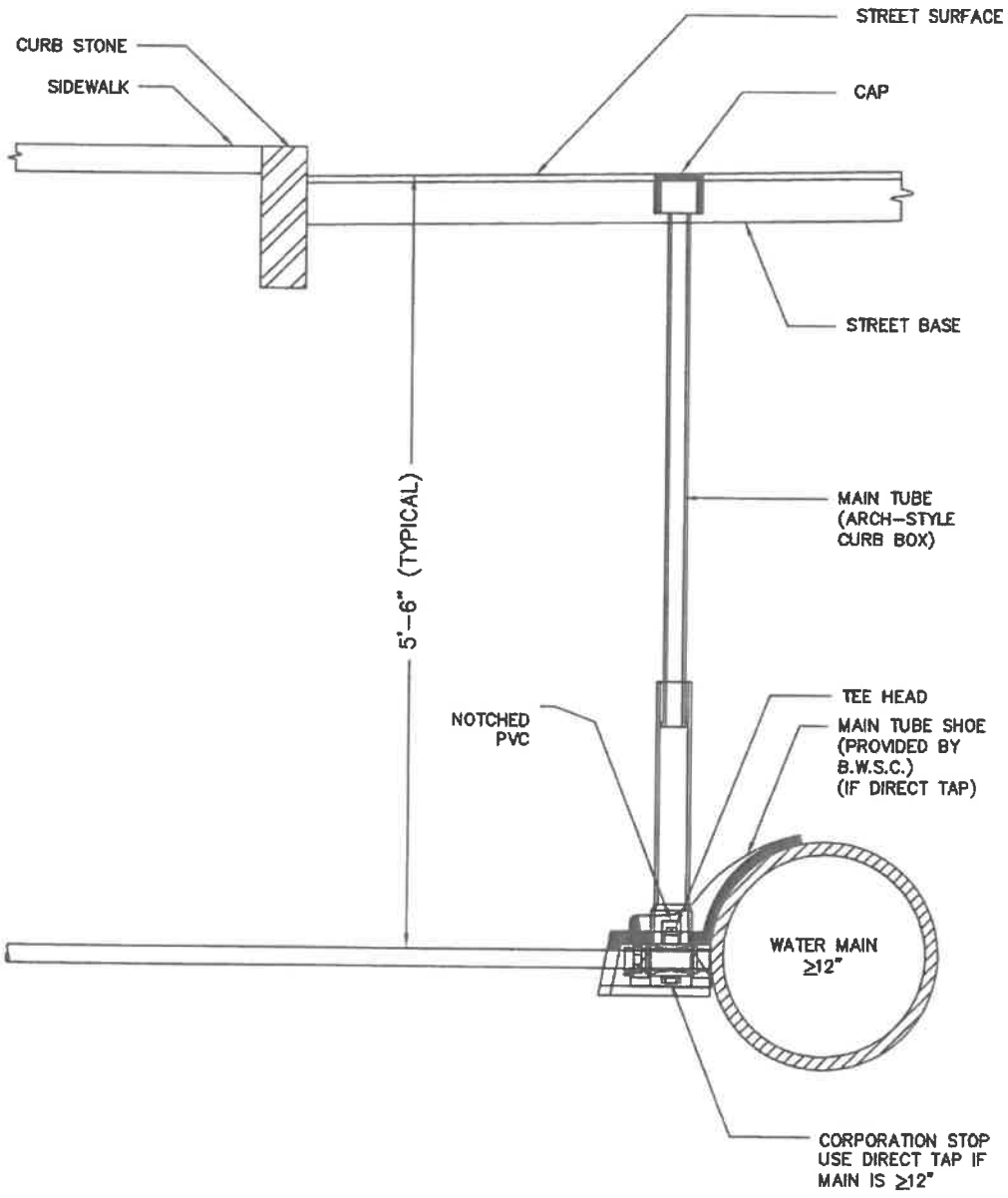
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	THRUST BLOCK STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 6



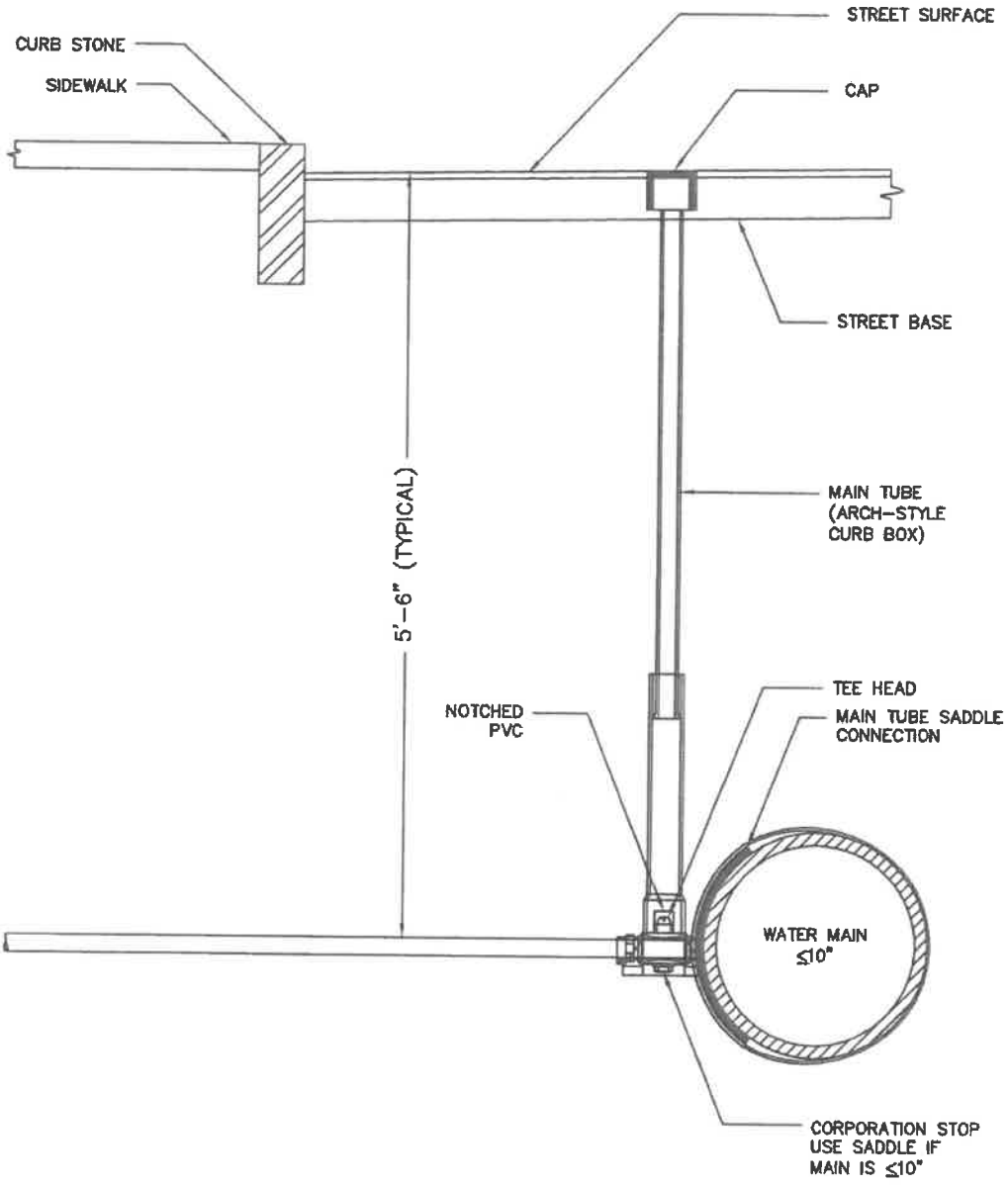
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL WATER CONNECTION FOR 3/4- AND 1-INCH SERVICE PIPES TO 12" THROUGH 16" WATER MAINS STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 7A



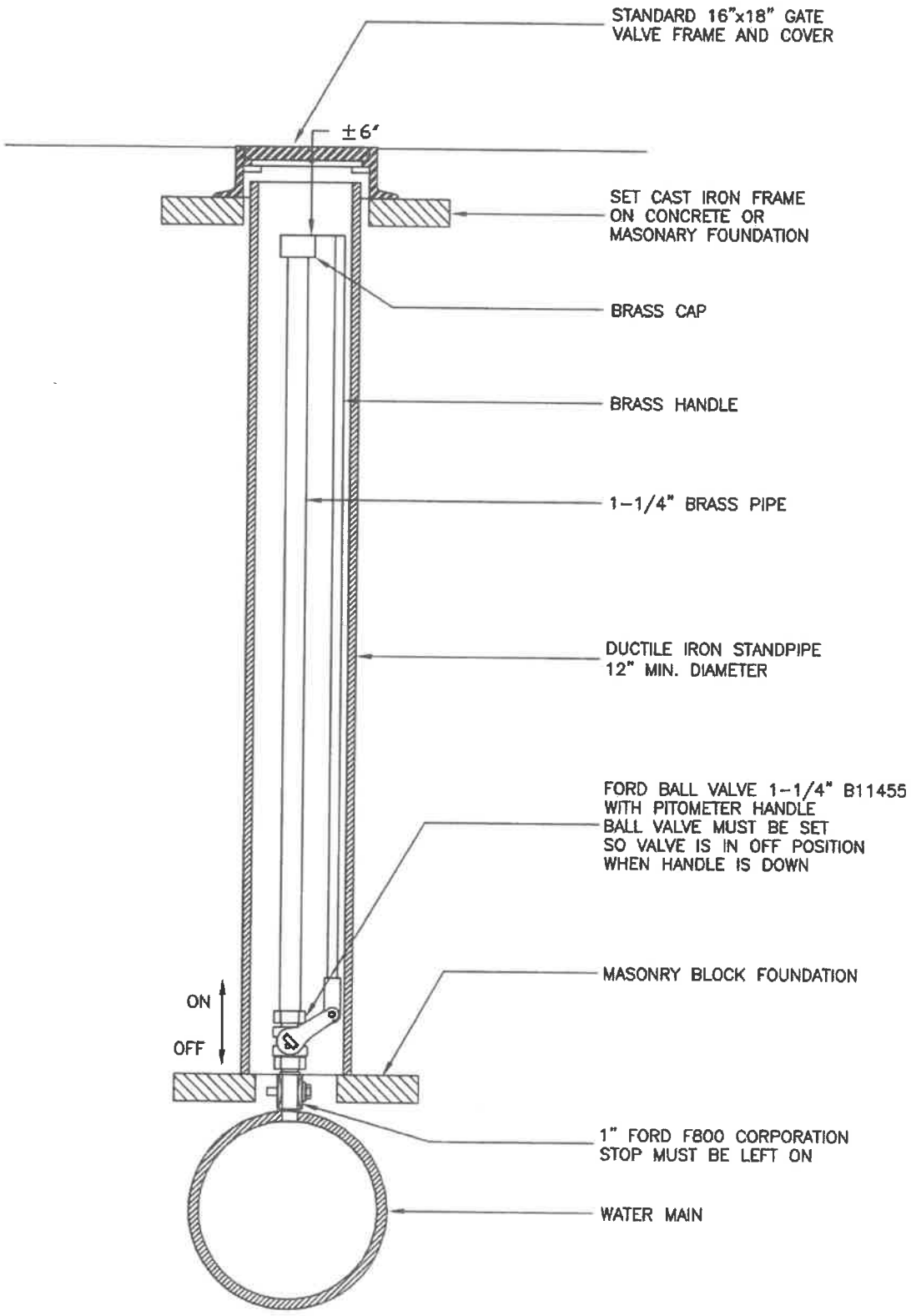
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL WATER CONNECTION FOR 3/4- AND 1-INCH SERVICE PIPES TO 4" THROUGH 10" WATER MAINS STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 7B



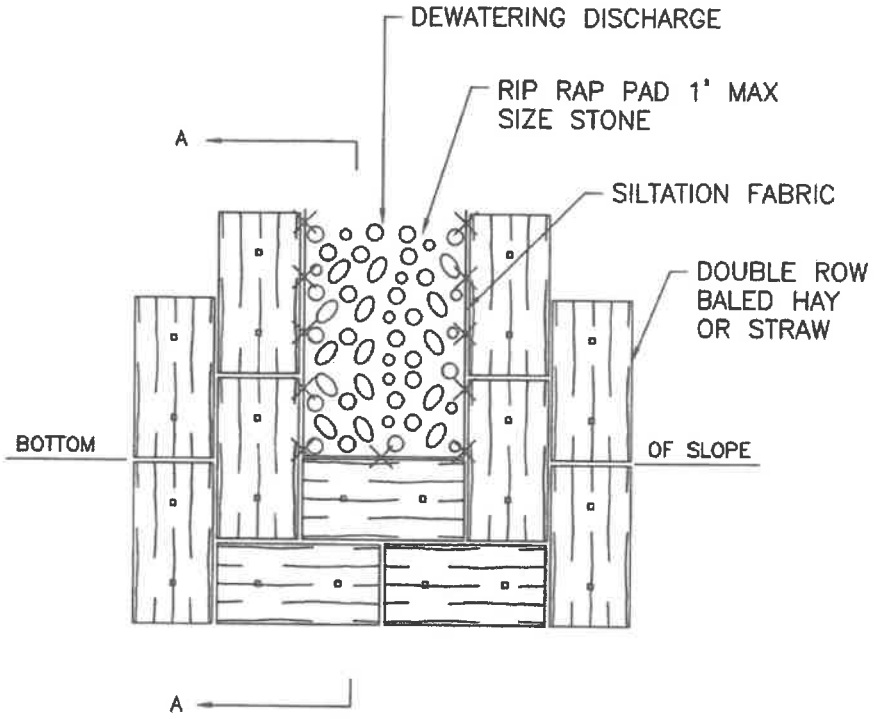
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL WATER CONNECTION FOR 1-1/2- AND 2-INCH SERVICE PIPES TO 12" THROUGH 16" WATER MAINS STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 7C

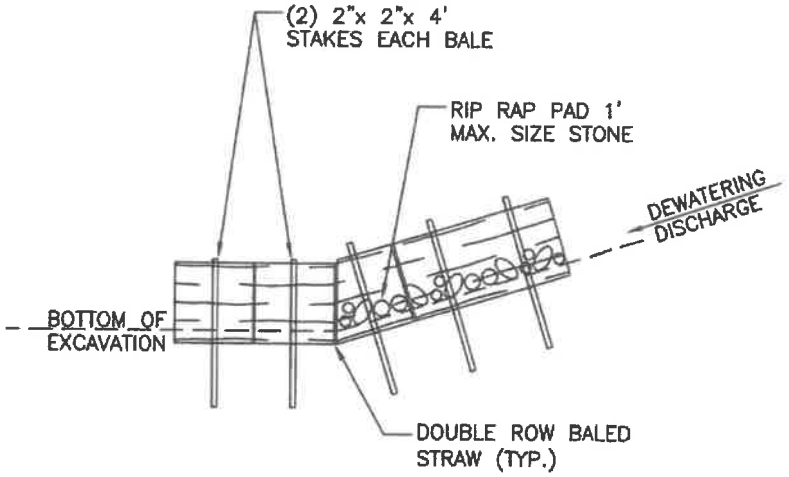


ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL WATER CONNECTION FOR 1-1/2- AND 2-INCH SERVICE PIPES TO 4" THROUGH 10" WATER MAINS STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 7D



ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TYPICAL PITOMETER TAP AND AIR RELEASE VALVE STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 8



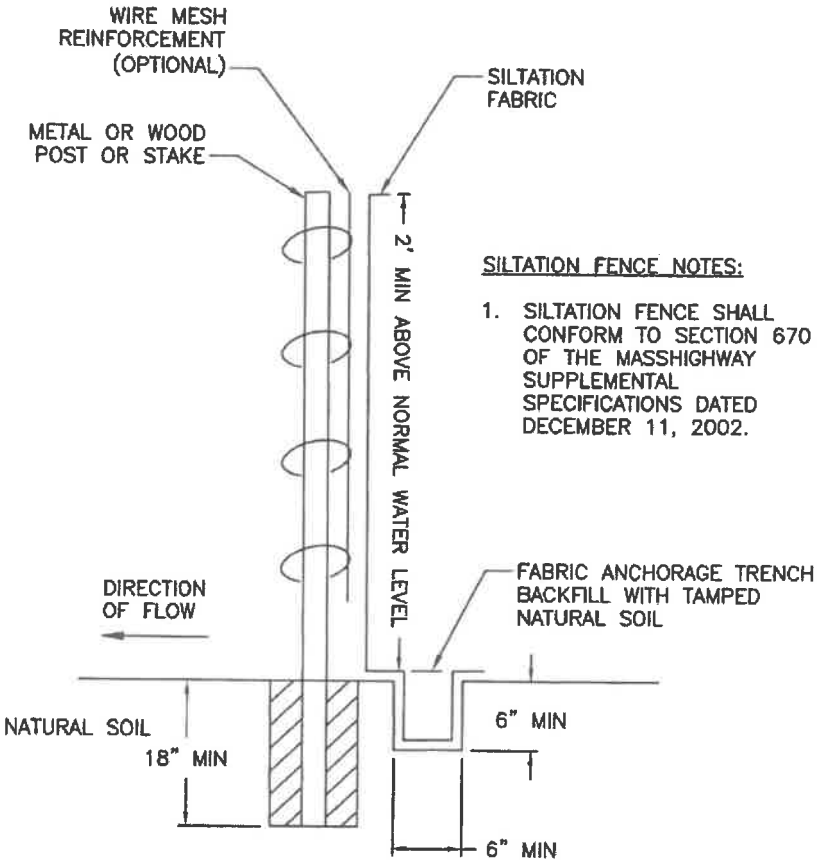


SECTION A-A

TEMPORARY SEDIMENT TRAP PLAN

SCALE: NOT TO SCALE

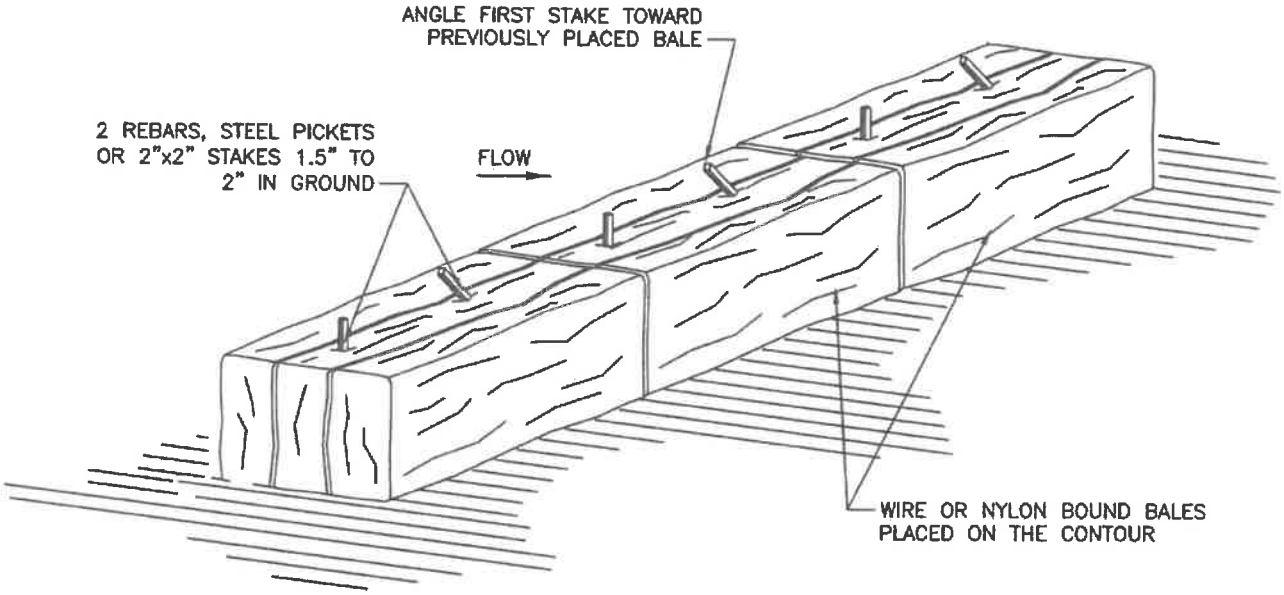
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	TEMPORARY SEDIMENT TRAP PLAN STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9A



SILTATION FENCE DETAIL

SCALE: NOT TO SCALE

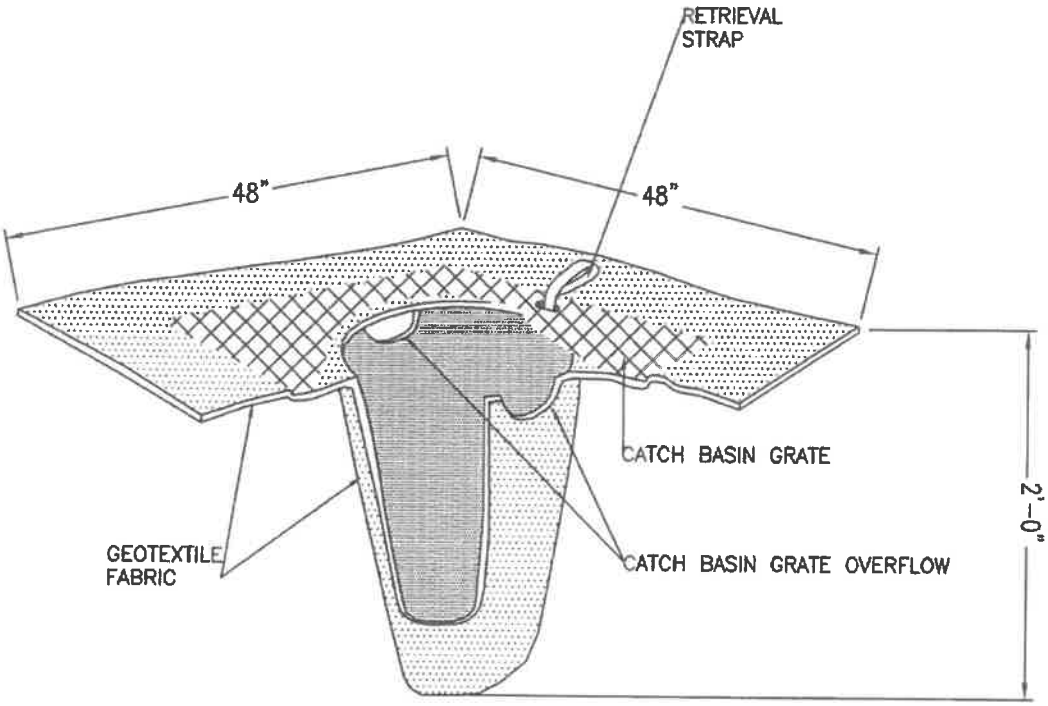
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	SILTATION FENCE STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9B



STAKED STRAW BALES – ANCHORING DETAIL

SCALE: NOT TO SCALE

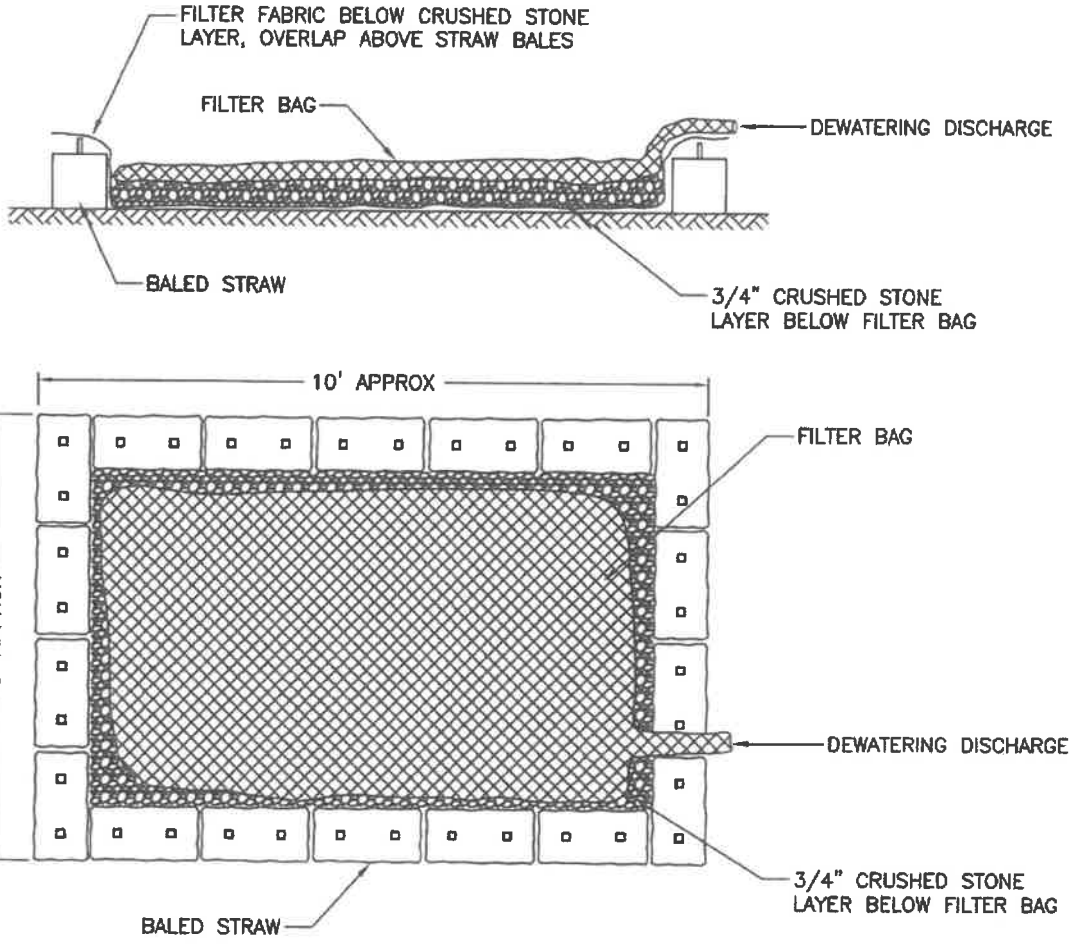
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	STAKED STRAW BALES - ANCHORING STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9C



SILT STACK

SCALE: NOT TO SCALE

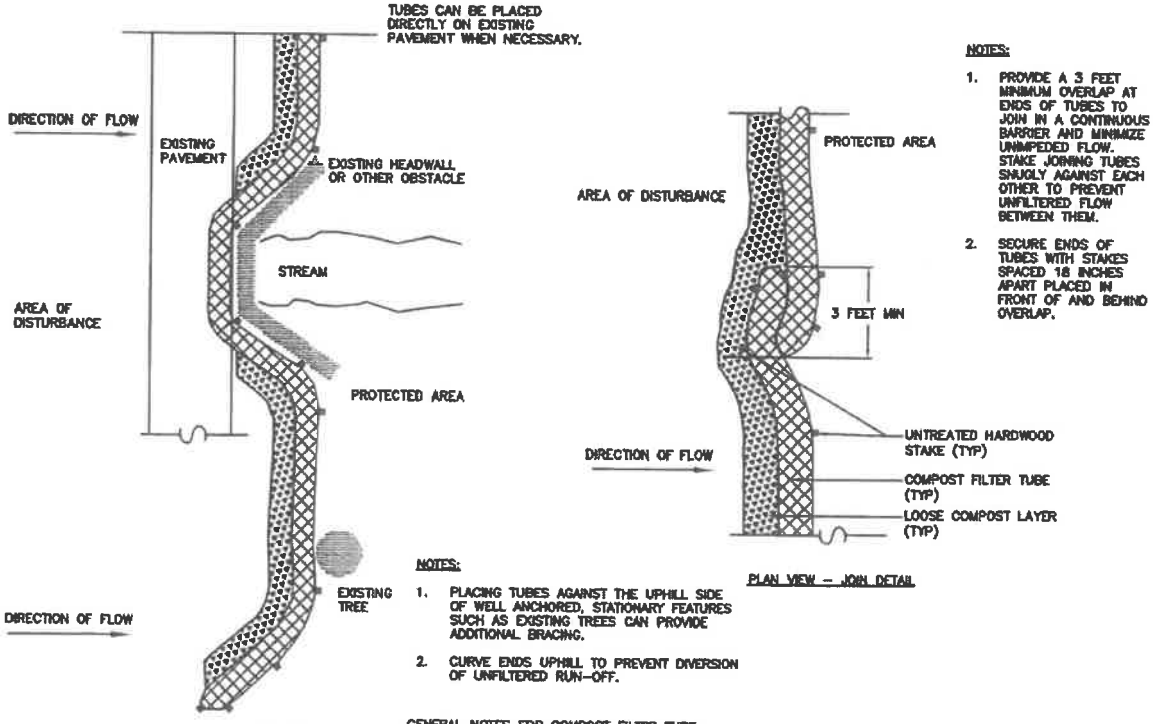
ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	SILT STACK STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9D



SEDIMENTATION CONTROL BASIN PLAN

SCALE: NOT TO SCALE

ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	SEDIMENTATION CONTROL BASIN PLAN STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9E



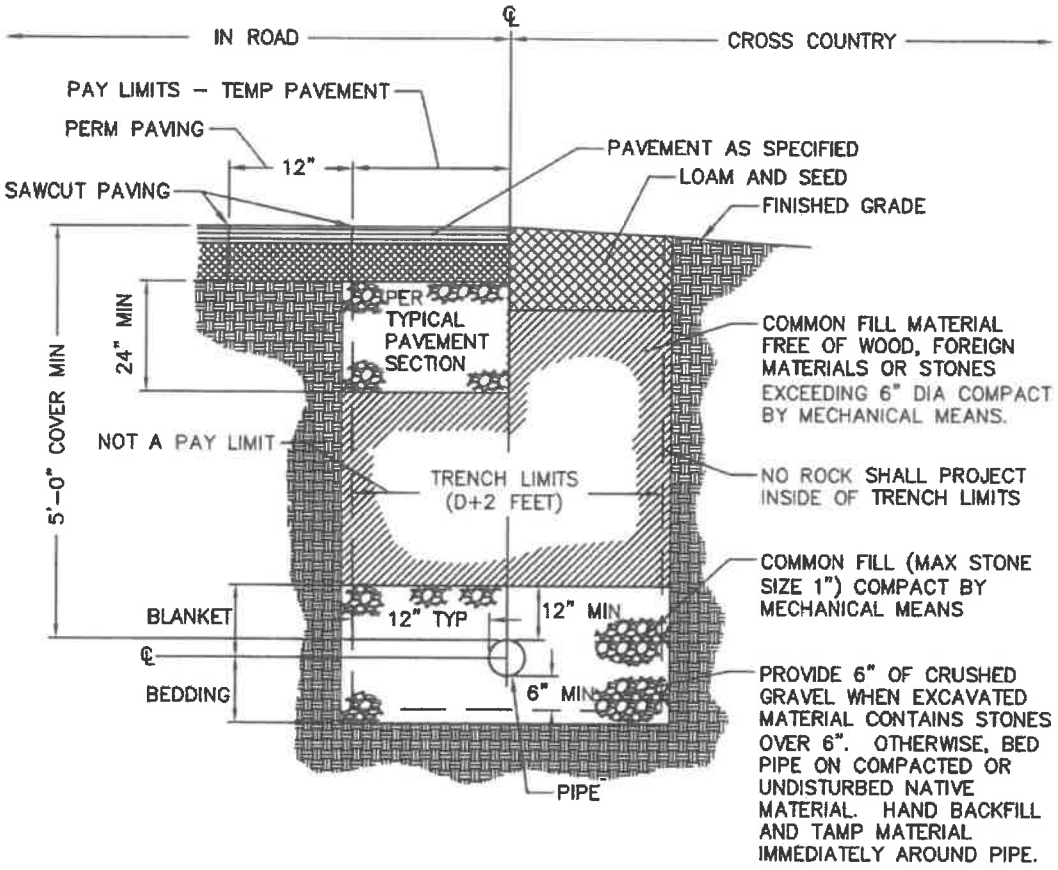
GENERAL NOTES FOR COMPOST FILTER TUBE:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.

COMPOST FILTER TUBE DETAILS

SCALE: NOT TO SCALE

ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	COMPOST FILTER TUBE STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9F



DUCTILE IRON TRENCH DETAIL

SCALE: NOT TO SCALE

ADAMS FIRE DISTRICT RULES AND REGULATIONS OF THE ADAMS FIRE DISTRICT	DUCTILE IRON TRENCH STANDARD DETAIL Scale: Not To Scale	DATE: JUNE 2021	DETAIL NO. 9G