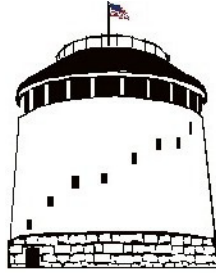


BANGOR WATER DISTRICT

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Construction
Specifications and Procedures

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Table of Contents

SECTION I: GENERAL INFORMATION	5
1.1 PLANS AND SPECIFICATIONS.....	5
1.1.1 Submittals	5
1.1.2 Project Review	5
1.1.3 Approval.....	5
1.1.4 Final Plans for Construction.....	5
1.1.6 Agreements.....	6
1.2 PROJECT ACCEPTANCE	7
1.2.1 Water Main Extension for Public Use.....	7
1.2.2 Private Line	7
1.2.3 Service Line	8
1.2.4 Sprinkler Systems.....	9
1.2.5 Metering Service Lines.....	10
1.3 EASEMENTS.....	11
1.4 SEPARATION DISTANCES.....	11
1.4.1 Minimum Separation from Water Mains	12
1.4.3 Minimum Separation from Hydrants.....	13
SECTION II: WATER MAIN CONSTRUCTION	14
2.1 GENERAL.....	14
2.1.1 Agreements and Fees	14
2.1.2 Location Permits	14
2.1.3 Inspection.....	14
2.1.5 Work Adjacent to Private Property.....	15
2.2 DESIGN CRITERIA	15
2.2.1 Pipe Size/Type.....	15
2.2.2 Depth of Cover	16
2.2.3 Valves	16
2.2.4 Pressure and Flow Requirements.....	17
2.3 CONSTRUCTION.....	17
2.3.2 Excavation	17
2.3.4 Excavated Material	18
2.3.5 Backfilling Materials and Procedures	19

2.3.6	Test Pit Excavation	19
2.3.7	Extra-Earth Excavation	19
2.3.8	Blasting.....	19
2.3.9	Preparation of Water Line Trench Bottom	20
2.3.10	Pipe Installation	20
2.3.11	Cutting Pipe.....	20
2.3.12	Connection to Existing Water Main.....	20
2.3.13	Services	21
2.3.14	Thrust Blocking, Anchorage, and Joint Restraint Water Line Fittings	22
2.3.15	Traffic Control	24
2.3.16	Abandoning Existing Facilities.....	24
2.4	CHLORINATION, TESTING, AND DECHLORINATION	24
2.4.1	Chlorination and Pressure Testing.....	24
2.4.2	Dechloramination and Dechlorination	26
2.5	COMMON BORROW, ROADWAY GRAVEL, AND PIPE BEDDING	26
2.5.1	Common Borrow.....	26
2.5.2	Roadway Gravel	27
2.5.3	Pipe Bedding	27
2.5.4	Trench Backfill.....	27
2.6	HOT BITUMINOUS AND CONCRETE PAVING	27
2.6.1	Paving Time Limits	27
2.6.2	Paving Other	28
2.7	PERMITS.....	28
2.8	EROSION CONTROL	28
2.9	DEMOLITIONS.....	28
2.10	TEMPORARY WATER	29
2.10.1	General.....	29
2.10.2	Customer Notifications	30
2.10.3	Disinfection and Disposal.....	31
2.10.4	Placement and Operation.....	31
SECTION III. WATER MAIN MATERIALS SPECIFICATIONS.....		32
3.1	GENERAL.....	32
3.1.1	<u>Brass Fittings.....</u>	<u>31</u>
3.2	MATERIALS	32

3.2.1	Blank Flanges	32
3.2.2	Brass fittings for type “K” copper tubing and HDPE (CTS).....	32
3.2.3	Copper Tubing.....	33
3.2.4	Copper Tube Size (CTS) High-Density Polyethylene (HDPE)	33
3.2.5	Copper Meter Setters	33
3.2.6	Duc Lugs and Tie Bolts	34
3.2.7	Flanged adapters.....	34
3.2.8	Hydrants.....	34
3.2.9	Pipe	35
3.2.10	Marking Tape and Tracer Wire	36
3.2.11	Pipe Couplings.....	36
3.2.12	Pipe Fittings.....	36
3.2.13	Repair Sleeves	37
3.2.14	Restraining Glands	37
3.2.15	Service Boxes, Covers, and Rods.....	37
3.2.16	Service Box Foot Adapter.....	37
3.2.17	Service Saddles.....	37
3.2.18	Tapping Sleeves.....	37
3.2.19	Tapping Valves	38
3.2.20	Valves	38
3.2.21	Valve Boxes	39
3.2.22	Valve Box Top-Extension and Cover	39
SECTION IV. STANDARD DETAILS		40
SECTION V. DOCUMENTS.....		42
5.1	APPLICATION FOR SERVICE - INSTRUCTIONS	43
5.1.1	Application Required	43
5.1.2	Re-Connection of Service.....	43
5.1.3	Transfer of Accounts With Active Water	43
5.1.4	Transfer of Accounts With Inactive Water	44
Application for Service		45
Main Extension Agreement		49
Private Line Agreement		52
Bangor Water District Easement (Sample)		54
SECTION VI. QUICK REFERENCE GUIDE TO ESTABLISHING SERVICE.....		56

Service Renewal or Replacement (any size)..... 56
New Service Line (2-inch or smaller)..... 56
New Service Line (4-inch or larger) 56
New Private Water Main..... 57
New Public Water Main 57

SECTION I: GENERAL INFORMATION

1.1 PLANS AND SPECIFICATIONS

1.1.1 Submittals

An Applicant proposing to construct a public or private water main or service shall submit a New Construction Information Sheet (see Section V: Documents) and one set of plans and specifications, as applicable, to the Bangor Water District (BWD) Construction Management Department at 614 State Street, Bangor ME 04401. The plans shall show a plan and profile of the proposed water main or private line, right-of-way boundaries, other utilities, limits of paving, ledge profile or test borings (where available), and any other physical or topographical features relevant to the installation and maintenance of the water system. Where available, control shall be based on the Maine State Plane Coordinate System NAD 1983 East. Refer to Section VI for a Quick Reference Guide to Establishing Service.

All drawings, specifications and Engineer's reports submitted for approval shall be prepared and stamped by a registered Professional Engineer legally qualified to practice in the State of Maine. A written description shall be submitted with each set of plans and specifications giving a description of proposed work. Submittals will not be returned to the Applicant. Local and Maine Department of Transportation (MaineDOT) provisions may also apply.

1.1.2 Project Review

The District's goal is to review plans within 30 days after receipt. Comments will be returned to the Applicant. If the Applicant does not respond to the District's comments within 60 days, the plans shall be considered inactive. In such cases, a new submission shall be required. All plans will be date stamped upon receipt and reviewed in order of receipt.

1.1.3 Approval

BWD Construction Management Dept. shall issue written approval following project review. Approvals are valid for a period of two years from the date of issue. If construction is not in progress at the end of that period, District approval is void. Plans and specifications may have to be submitted as a new project, if deemed necessary by the District, and must conform to the District's most current standards and specifications. This may include, but not be limited to, infrastructure that was previously approved but has not yet been built.

1.1.4 Final Plans for Construction

Prior to construction, the Applicant shall submit plans and specifications depicting approved water system configuration and an electronic version of the final Planning Board signed plans. No water construction shall begin or inspector assigned until these plans are received by the District.

1.1.5 Service Line

Service lines 2-inches in diameter or less, which will serve an existing structure, do not require the engineering review necessary for main extensions and private lines. All sprinkler system designs must be reviewed and approved by the Office of Maine State Fire Marshal. However, for large diameter services, existing building changes of use, multi-unit dwellings, or service extensions, the District reserves the right to request the information outlined below. **The District MUST size all domestic service lines and meters.** Service lines must be designed, installed, inspected, and approved in accordance with District standards and specifications before water service is provided. At a minimum, the following information for new or replacement service lines must be submitted with the New Construction Information Sheet:

- Plan showing building and distance to street
- Location of curb stops, valves, and water lines
- Fixture count
- Sprinkler requirements for fire protection
- Map & Lot Number
- Name, address and phone number of contractor installing the service

1.1.6 Agreements

An agreement between the owner and the District may be required depending on the type of proposed water construction. Refer to [Section 1.3: Easements](#) for information regarding easements. Types of agreements include:

- Main Extension Agreement
- Private Line Agreement
- Fire Service Agreement

Appropriate agreement forms will be furnished by the District to the Applicant. The agreements above must be in place and fees paid before water construction begins.

Additionally, the party who will be responsible for paying the water bill is required to complete an Application for Service and pay the service establishment fee before an appointment will be scheduled to install individual meters and turn on individual service lines.

1.2 PROJECT ACCEPTANCE

1.2.1 Water Main Extension for Public Use

A public water main is defined by Chapter 650 of the Maine Public Utility Commission rule as:

“...a water line in a public way owned by the utility to serve one or more customers, multi-unit dwelling complex, or commercial or industrial development; or a water line owned by the utility on private property to serve more than one customer, multi-unit dwelling complex, or commercial or industrial development or to serve a single customer, multi-unit dwelling complex or commercial or industrial development if another person or entity has an easement or other right of access for water line purposes.”

All new water main extensions for public use require the completion of a New Construction Information Sheet prior to project review.

Water service will not be activated for the new public water main until all of the following conditions have been met:

1. Final inspection is complete and the new water main and its appurtenances meet the District’s standards and specifications.
2. The District has issued a project acceptance letter.
3. The District has received one set of 24-inch by 36-inch as-built drawings as an electronic version. Shapefiles and PDFs are acceptable. As-builts must include swing-ties to all valves and service boxes, sketches including detailed measurements for any adapter type fitting for all lateral connections, sketches of all utility crossings, location and degree of bends, depths every 100 feet or at significant changes in depth along run.
4. The New Construction Information Sheet and all appropriate agreements have been signed and submitted to the District: Main Extension Agreement, Fire Service Agreement, and all Easements. Refer to Section V: Documents for samples of these agreements.

The Applicant will be responsible for any repairs as a result of construction or defects for a period of one year from date of activation. Any charges incurred during that year shall be paid by the Applicant. A District inspector shall be present for all repair work.

1.2.2 Private Line

Private lines are defined by Chapter 650 of the Maine Public Utility Commission (PUC) rule as:

“A water line constructed after May 7, 1986 across private property to serve a single customer, a single multi-unit dwelling complex or a single commercial or industrial development upon which no other person has an easement or other right of access for water line purposes.”

Generally, the District considers a water line servicing a property to be a private line if:

- a) The water line is under a single ownership that will not be divided in the future; and where
- b) The water line will not be extended through the subject property to serve additional customers in the future.

This definition may apply to a residential, commercial, or industrial development that has more than one tenant. Examples include mini-malls, office complexes, or multi-unit residential complexes that are sufficiently far from a water main that is located in a public right-of-way, such that individual services are not practical.

All new private lines require the completion of a New Construction Information Sheet prior to project review.

Water service will not be activated for the private line until all of the following conditions have been met:

1. Final inspection is complete and the new private line and its appurtenances meet the District's standards and specifications.
2. The District has issued a project acceptance letter.
3. The New Construction Information Sheet and all appropriate agreements have been signed and submitted to the District: Private Line Agreement, Fire Service Agreement (if applicable), and all Easements. Refer to Section V: Documents for samples of these agreements.

The District will not accept ownership of private lines. Individual curb stops shall be installed within the right-of-way. Where this is not possible, an easement must be furnished to the District. The Applicant will be responsible for the continued maintenance of the private line.

1.2.3 Service Line

A service line is defined by Chapter 650 of the Maine Public Utility Commission (PUC) rule as:

"A water line installed at the customer's expense extending from a main to serve a single customer, a single multi-unit dwelling building or complex of a single commercial or industrial development. The service drop portion of the service line shall be owned by the utility and shall extend from the main to the curb stop (shut-off valve). The curb stop shall ordinarily be at the edge of the right of way."

All new service lines and service line renewals require a New Construction Information Sheet prior to construction.

Service renewals include replacing the service box and rod as instructed by the District. The District will supply the service box and rod as necessary on service renewals. Service boxes and curb stops shall not be placed in driveways. Any service box located in a paved area including sidewalks shall be installed inside a full-sized gate box top section. All services, new and renewed, will be a minimum of 1-inch diameter and buried with a minimum of 5 feet of cover. Water service will not be activated for the service line until all of the following conditions have been met:

1. Final inspection is complete and the new service line meets the District's standards and specifications.
2. The District has issued a project acceptance letter.
3. The District has received one set of 24-inch by 36-inch as-built drawings as an electronic version. Shapefiles and PDFs are acceptable. As-builts must include swing-ties to all valves and service boxes, sketches including detailed measurements for any adapter type fitting for all lateral connections, sketches of all utility crossings, depths every 100 feet or at significant changes in depth along run.
4. The New Construction Information Sheet has been signed and submitted to the District with all easements (if applicable). Refer to [Section V: Documents](#) for samples of these agreements.

All services, domestic and fire protection, must have separate shut-off valves within the right-of-way. The owner must submit written authorization from the State Fire Marshall to BWD Construction Management Dept. before the water line is installed.

1.2.4 Sprinkler Systems

13(D) Systems

- The size of the incoming service line will be based on fire demand and full domestic demand (refer to BWD Standard Details). Additional fire protection charges will apply to the customer's bill. A dual check valve shall be required on domestic lines and a double check valve shall be required on fire lines.

All other Sprinkler Systems

- All other sprinkler or fire protection systems shall have separate dedicated service lines and separate shutoffs in the right of way.

1.2.5 Metering Service Lines

Services shall be designed with respect to the BWD Metering Policy. Some particular design considerations from the Metering Policy are:

- Each individual unit, whether the location is single-unit or multi-unit, will be equipped with its own meter. This applies to all new construction, but specific exceptions to this requirement are hotels, motels, and campgrounds designed for transient occupancy. Generally, the only exception to this policy is a master meter in multi-unit buildings which have central hot water (heating or domestic use) for multiple units.
- **Accounts in a multi-unit building must remain the responsibility of one entity unless there is a separate outside shut-off for each unit.**
- **Meters may not be placed in crawl spaces, in overhead locations, underneath mobile homes, or in other inaccessible areas such that the service workers are not provided adequate workspace. Please refer to the BWD Standard Details for specific meter spacing requirement**

- **1.3 EASEMENTS**

Easements shall be required for all water mains and appurtenances intended for public use except where installed within the public way of the State or the Municipality. Easements for water mains shall not be less than 20-feet wide. The District reserves the right to require additional easement width as construction and maintenance activities may require. All easements shall include the right of ingress and egress as well as the right to install and maintain water lines and appurtenances. If necessary, easements shall extend to adjacent properties for orderly extensions of service.

All appurtenances (blow-offs, shut-offs, hydrants, etc.) located on private property that is not within existing water main easement limits or part of a private line, shall be provided with an easement to the District 10-feet long by 10-feet wide, and centered around the appurtenance. The extent of all easements shall be at least 5-feet from any structure, where possible.

No buildings or permanent structures shall be constructed within the easement, except if the easement includes a roadway. In a roadway easement, pavement and other utilities will be allowed. Any utility crossings shall be generally perpendicular and shall maintain a 1-foot vertical separation except as noted in Section 1.4: Separation Distances.

No trees, shrubs, structures, fences or obstacles shall be placed within an easement that would render the easement inaccessible by equipment. Any person who places an obstruction within the utility easement shall be liable for the cost of removal and replacement and any damage to the utility.

1.4 SEPARATION DISTANCES

There shall be no physical connection between a water supply line and a sewer or appurtenance. Water mains shall be installed at least 10 feet horizontally from a sewer main or sewer manhole, and in accordance with the Maine State Plumbing Code. When local conditions prevent a horizontal separation of 10 feet, the water line may be laid closer to a sewer or sewer manhole provided that:

- a) The bottom (invert) of the water main shall be 18 inches above the top of the sewer and the edge-to-edge distance shall be no less than 5 feet.
- b) Where this vertical/horizontal separation cannot be obtained, the sewer shall be constructed of District-approved ductile iron water pipe, and be pressure tested without leakage prior to backfilling. If joints exist in sewer, the pipe must be pressure tested to 150 psi of water pressure.

Water lines crossing sewers shall be installed to provide a vertical separation of at least 18 inches between the bottom of the water line and the top of the sewer. Water main joints shall be placed as far from sewer crossing as practicable. When local conditions prevent this vertical separation, the following construction shall be used:

- a) Sewers passing over or under water lines shall be constructed of District approved ductile iron water pipe.
- b) Water lines passing under sewers shall, in addition, be protected by the following:
 - i. A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line.
 - ii. Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the water line.
 - iii. One full length of waterline be centered at the point of the crossing so that the joints shall be equidistant and as far as possible from the sewer.

1.4.1 Minimum Separation from Water Mains

The following minimum separations from water mains shall be observed at all times unless otherwise directed by BWD Construction Management Dept.:

Horizontal Separation

- a) Sanitary Sewers – refer to requirements in this section noted above
- b) Storm drains – 4 feet, face to face for mains, catch basins and drain manholes.
Insulation shall be provided between all drain lines or drain structures with less than 5’ clearance face to face with water lines.
- c) Gas mains – 6 feet, face to face
- d) Underground electric and telephone – 4 feet, face to face of duct bank or conduit.
- e) Utility Poles and all Appurtenances – 6 feet, face to face
- f) Water lines – 3 feet, face to face

Vertical Separation

- a) 18 inches minimum, all crossings

1.4.2 Minimum Separation from Water Services

The following minimum separations from water services shall be observed at all times unless otherwise directed by BWD Construction Management Dept.:

Horizontal Separation

- a) Storm drains – 4 feet, face to face for mains, catch basins and drain manholes
(Insulation)
- b) Gas mains – 6 feet, face to face
- c) Underground electric and telephone – 6 feet, face to face
- d) Property lines – 5 feet minimum and in accordance with local codes

- e) Sanitary or combined sewer – 5 feet; for services, if sanitary sewer service is laid 18 inches below water service, then an 18-inch horizontal separation is allowable
- f) Curb stops for multiple services – 18 inches
- g) Utility Poles and all Appurtenances– 6 feet
- h) Water Lines – 3 feet, face to face
- i) Thrust blocks (Backside) – 6 feet
- j) Gas Services- 3 feet, face to face

1.4.3 Minimum Separation from Hydrants

The following minimum separations from hydrants shall be observed at all times unless otherwise directed by BWD Construction Management Department.:

Horizontal Separation

- a) Gas mains – 3 feet behind hydrant
- b) Underground electric and telephone – 3 feet behind hydrant
- c) No utilities shall be installed between a hydrant and its corresponding valve unless expressly allowed by BWD.

SECTION II: WATER MAIN CONSTRUCTION

2.1 GENERAL

2.1.1 Agreements and Fees

After final plans depicting the approved water main configuration, and right of way and/or easements have been received, the District and the Applicant shall enter into a main extension agreement, private line agreement, and fire service agreements as necessary. At this time, the Applicant will deposit the following estimated fees:

- a) Fire Protection Charges associated with main extensions.
- b) Inspection Fees: Current hourly fee established by District (hours estimated at the beginning of the project and reconciled at the end of the project based on actual time that BWD spent inspecting the project).
- c) Municipal or MaineDOT Opening Permit Fees (if applicable). MaineDOT Opening Permit must be obtained by BWD.

After the project is completed, the District will reconcile all costs associated with the project and will either provide a refund if total costs are less than the deposited amount or request payment for costs in excess of the deposited amount.

2.1.2 Location Permits

The Applicant shall submit a copy of any local Location Permits to the District. BWD will obtain all MaineDOT Location and Opening Permits. Municipal Street Opening Permits and associated fees may also apply. Refer to Section 2.7: Permits for additional information.

2.1.3 Inspection

The Applicant/Contractor shall schedule with the District for inspection services a minimum of two business days prior to beginning construction. In the event the Contractor performs work without notification to the District, the District reserves the right to have the contractor removed material to allow for proper inspection of the mains, services, or backfill materials.

An inspector from the District, or a consultant representing the District, will be assigned to each project to ensure that all work is completed, and materials are installed in compliance with these specifications, conformed to building codes, and flow general construction standards. **All work must be inspected prior to backfilling.** During the course of the work the inspector will report to their assigned representative on the progress of the work. Any deviation from the approved plans or specifications must be approved by the District before incorporation into the work.

2.1.4 Notifications

The Contractor must notify the District at least:

- 1 week prior to shutting off customers for any work related to water mains or services,
- 1 week prior to any night work taking place,
- 48-hours prior to any work related to water mains or services.

Property owners whose driveways will be blocked for a short period of time shall be notified by the Contractor at least 24-hours in advance of the excavation so that vehicles can be removed when necessary. Driveways shall not be blocked overnight without the expressed written consent of the property owner.

The Contractor must notify the following entities prior to changing any traffic patterns, setting up lane closures, or blocking of parking spaces:

- Notify Police and Fire Dispatch daily of any changes in traffic patterns: **(207) 947-7382 Ext. 5**
- Notify Capital Ambulance daily of any changes in traffic patterns: **(207) 262-3115**
- All other applicable local public safety offices and public works.

For work within the City of Bangor, the Contractor must:

- Notify Bangor Public Works prior to noon every Friday of traffic impacts for the following week: **(207) 992-4501/4502**
- Notify Republic Parking one week prior to impacting any permitted parking: **(207) 941-1654**

2.1.5 Work Adjacent to Private Property

The Contractor shall not allow personnel, materials, or equipment to be present on private property without obtaining in advance the express written consent from the property owner. The contractor is responsible for all damage to private proper

2.2 DESIGN CRITERIA

2.2.1 Pipe Size/Type

All distribution pipes and their fittings 4-inches and larger shall be ductile iron or HDPE per material specifications. Under special site conditions where the District may specify a different pipe type.

Tracer wire shall be utilized on all non-metallic pipes.

Pipes that are 3-inches in diameter are not allowed for use in services or water mains.

All main distribution pipe lines shall be of a size to adequately serve the needs of the proposed development, and any potential extensions thereof. The minimum size of the water main where public fire protection is to be provided or required shall be 8-inches in diameter. Dead-ends shall be minimized by looping all mains where practical.

Where dead-ends are necessary they shall be terminated with a fire hydrant. Hydrant shall be located within 5 feet of the dead end.

The District will determine the size of all water mains and services. The District may request that the size of the main be increased beyond the required size for the demand of the project. This is sometimes necessary to facilitate the future expansion of the system beyond the scope of the Applicant's project. In this case the District will pay to the developer the difference in cost of the material between the two pipe sizes, fittings and valves.

2.2.2 Depth of Cover

Water mains and services shall be laid with a minimum cover of 5-feet and a maximum cover of 7-feet, measured from final finished grade to the top of the pipe. The Contractor shall establish adequate elevation control to ensure upon final grading the appropriate cover over water lines has been maintained. It shall be the Contractor's responsibility and expense to verify the cover at any location questioned by the District. Any potential changes in alignment or grade of roadways shall be considered in the original utility design.

2.2.3 Valves

Gate valves shall be installed at all pipe junctions and street intersections in such a manner as to control flows in all areas of the system. A minimum of three valves are required at all tees, except at hydrant arms and services, or as otherwise approved by the District. A valve may be required beyond the last service if the main can be extended in the future. In all other areas, valves will be required every 1000 feet, except as otherwise approved by the District. Additional valves may be required under certain situations, such as looped systems, where it is necessary to isolate certain sections of the system. All valves shall be installed plumb and shall be anchored to the tee or bend. Any valves to be installed on mains that are 16" or larger in diameter shall be butterfly valves.

Insert valves may be allowed with prior approval from the District. Refer to Section III: Water Main Materials Specifications for additional details. The insert valve must be installed in the presence of a BWD inspector. All materials and equipment coming in contact with potable water must be certified to NSF/ANSI Standard 61, and shall be disinfected with disinfectant certified to NSF/ANSI Standard 60 in the presence of the Inspector.

2.2.4 Pressure and Flow Requirements

All distribution systems shall be capable of providing a minimum working pressure of 20 psi under maximum demand conditions, plus the required fire flow as determined by the Insurance Services Office (ISO) or the local fire department. The Applicant will provide the estimated peak demand for the project and the District will determine whether the project meets pressure and flow requirements.

In the event that a normal operating pressure of 20 psi minimum cannot be met, the developer or owner can request, in writing, limited service for each service connection in question. The District will determine whether adequate conditions exist to grant limited service.

2.3 CONSTRUCTION

This section addresses excavation and backfill of the trench; furnishing and installing cement-lined ductile iron pipe, HDPE pipe, valves, fittings, hydrants, and accessories of the types and classes described herein and shown on the plans; making connections to the existing public water supply system; pressure testing and disinfecting the completed installation; and incidental work as described herein.

Please refer to Section IV: Bangor Water District Standard Details for detailed drawings of the following items:

- Residential Meters and Backflows
- Commercial Meters and Backflows
- Common Booster System Configuration
- Wall Penetration
- Floor Penetration
- 13D Sprinkler Systems
- Domestic Service Connection
- Typical Water Main Connection
- 2-inch Blow-Off Assembly
- Typical Service Connection Layouts
- Hydrant Assembly
- Meter Pit
- Air Relief Valve
- Trench Detail
- Trench Detail in Ledge
- Thrust Block Specifications
- Common Thrust Block Arrangements
- Vertical Thrust Restraint
- Offsets

2.3.2 Excavation

All work performed and materials used for excavation will be considered as incidental to other items of these specifications.

Excavation shall be kept free of water and special precautions shall be taken to prevent entry of water, mud, or other foreign substances into the line. Temporary water-tight caps or plugs

shall be installed over all openings when the work is suspended for periods of 30 minutes or more (including lunch hours), between each length of pipe that is being installed, at the end of each day, or whenever necessary to protect the work in progress.

All damage resulting from inadequate bracing or shoring will be the responsibility of the Contractor. The Contractor shall make all necessary repairs and do reconstructions at its own expense. The Contractor will bear all other expenses resulting from any such damage due to lack of adequate shoring.

The Contractor will take special precautions on projects that are near road curbs. Every effort shall be made to avoid disturbing any roadside curbing. Should it become necessary to disturb or remove curbing during water main installation, the Contractor shall, at own expense, replace such curbing in accordance with construction practices in the latest edition of the MaineDOT Highway Specifications or local municipal specifications.

2.3.3 Excavation Near Underground Utilities

The Contractor shall note that underground sewer mains and services, storm drains, telephone or communications cables, gas lines, and other below-ground utilities may exist in close proximity to the work. Excavation around other utilities, pipes, culverts, and similar installations shall be done with extreme care. It shall be the Contractor's responsibility to contact each utility to be encountered and obtain information relative to location and depth before excavating in the area. It shall be the Contractor's responsibility to comply with the State of Maine DigSafe law and to contact all non-member utilities that may exist within the project area. The Contractor shall promptly notify the Utility concerned in the event of damage occurring during construction, whether caused by his action or others.

In the event that underground utilities conflict with the location of the work, the Contractor shall promptly notify the District and shall not disturb the conflicting utility until given specific instruction specifying the action to be taken.

The Contractor shall use extra caution to avoid disturbing any water service connections along the proposed water main routes. Any disruption of water service or any damage to such service lines shall be immediately reported to the District and the property owner. It shall be the Contractor's responsibility to immediately repair any damage done to water services during installation of new water mains. Any damage due to the crimping of water services will be repaired at the Contractor's expense. No water service shall be crimped without the advanced written approval of the BWD. Crimping shall only be used as a last resort.

2.3.4 Excavated Material

All excavated material shall be placed in a manner that will not endanger the work and will avoid obstructing sidewalks or public ways. Catch basins and other means for providing surface drainage shall be kept clear where possible.

2.3.5 Backfilling Materials and Procedures

Suitable excavated material or borrow (i.e. free of stones larger than 6-inches and capable of being properly compacted) shall be placed and tamped under and around the pipe, taking care to maintain equal depth on both sides and to prevent movement of the pipe from its proper alignment. Unsuitable material including wet clay, frozen soil, boulders, rubble, wood, debris, etc. shall not be replaced in the trench. Where directed by the District, due to soft or otherwise unsuitable trench bottom conditions, crushed stone or 6-inch minus granular pipe bedding shall be placed in accordance with the requirements of BWD Standard Details.

Suitable material from excavation shall be used to the maximum extent possible in grading over, and adjacent to, the pipe and in filling adjacent low land as directed by the District. Materials that cannot be so placed shall be removed as directed by the District.

2.3.6 Test Pit Excavation

At such locations as may be determined by the District, the Contractor shall perform test pit excavation to locate various utilities. The limits and depth of such excavations shall be determined by the District. The Contractor shall perform all work as directed by the District. In addition, the Contractor shall carefully backfill the test pit, using 12-inch compacted layers, and restore the surface to a condition equal to or better than it was before.

2.3.7 Extra-Earth Excavation

The Contractor shall perform additional excavation, where the District so directs, when necessary during construction. Site conditions may result in the Contractor performing additional excavation, including but not limited to:

- a) Necessity of installing water mains below other subsurface utilities
- b) Discovery of unsuitable material in the trench bottom
- c) Necessity of widening the trench beyond specified limits in order to remove or relocate structures encountered during construction

2.3.8 Blasting

The District has adopted the blasting requirements used by the City of Bangor for all work. The Contractor must obtain a blasting permit from the City or appropriate municipal entity, which includes a pre-blast survey. The Contractor shall be fully responsible for any and all damage caused by blasting.

2.3.9 Preparation of Water Line Trench Bottom

Pipe shall be laid directly on the undisturbed trench bottom. Where the trench has been over-excavated, backfill material shall be compacted underneath the pipe before the pipe is completely covered and backfilled. Where the water main extension crosses a sewer line or house lateral, the water line shall be centered at the point of the crossing so that the joints are equidistant and as far as possible from the sewer centerline. The water line shall be installed such that it passes 12 inches over the sewer.

Where the trench has been over excavated, backfill material shall be compacted underneath the pipe before the pipe is completely covered and backfilled. The Contractor shall place crushed stone under any pipe that has been over excavated, as directed by the District.

2.3.10 Pipe Installation

Pipes shall be carefully lowered into the excavation, guided into proper position, and joined to the preceding length or fitting. Pipes shall be installed using a temporary watertight cap or plug to keep out water, animals, and debris.

All pipes shall be installed with a minimum 5-foot depth of cover over the top of the pipe not to exceed 7 feet without prior approval from the BWD. Where the minimum depth of 5 feet is prohibitive, insulation may be used in lieu of bury depth at the instruction of the District. No water lines shall be installed with less than 5 feet of cover without prior approval of the BWD. Where existing or proposed pipes, conduits, culverts, cables, wires, etc. interfere with laying at this depth, the water pipe shall be laid to provide a minimum vertical separation distance of 18 inches under or 12 inches over.

Marking tape shall be placed in backfill 2 feet below final grade over all mains and service pipe 4" or larger.

2.3.11 Cutting Pipe

Field cut pipes shall not be used for insertion into a push on or bell type connection. Field beveling is not allowed.

2.3.12 Connection to Existing Water Main

The Contractor shall locate and confirm sizes and materials of existing mains, excavate, furnish and install tapping sleeves and valves, and backfill the excavation. All materials, including mechanical joint accessories, valve boxes, and other items necessary to make all joints watertight and provide complete and effective connections to existing water mains shall be

provided by the Contractor. All tapping sleeves shall be pressure tested prior to tapping the main. Tapping valves shall be installed plumb.

All size-on-size taps shall be done with full body ductile iron mechanical joint tapping sleeves meeting BWD material specifications as specified in Section III: Water Main Materials Specifications. Mechanical joint tees shall be used at all lateral connections for water mains. A minimum of 3 valves shall be installed at each intersection.

All live taps performed by parties other than the BWD shall be made in the presence of a BWD Inspector and shall be performed by a contractor that has been approved by the BWD. References may be required.

All new connections for private and public water lines shall be made with an appropriately sized mechanical joint tee, and two valves. One valve shall be on the new lateral water line, and one line shall be placed on the existing water main as directed by the District. No existing water main shall be cut or removed, such as for dewatering an existing section of water main, without authorization by the BWD inspector.

All valves are required to be rodded to the tee with stainless steel rods. Foster adapters will only be allowed on a maximum of one valve at each intersection or with BWD approval. Foster adapters may be used on other fittings only with BWD approval.

All materials and equipment coming in contact with the potable water supply shall be disinfected in the presence of a BWD inspector. The Contractor shall be responsible for any and all costs that come as a result of poor disinfection or best management practices, such as the need for a boil water order, extended shut downs, or temporary water.

Contractors are not authorized to operate any valve connected to an existing water main including, but not limited to, all domestic and fire services.

2.3.13 Services

Services shall be tapped on the side of the main in accordance with the District's Standard Details (see Section IV: Bangor Water District Standard Details). Service piping shall be copper with a minimum size of 1-inch. Enough slack shall be placed in the material (gooseneck) to prevent stretching or pulling from main. A service shut off (curb stop) with rod shall be placed in a service box within the right of way line in the public way. Any service box located in a paved area including sidewalks shall be installed inside a full-sized gate box top section. At least two permanent location measurements (swing ties) to the service shut off must be obtained. Swing ties shall be submitted to the District.

For new main extensions, the service shall be installed at the center of the lot to be served. The only exception will be when a foundation is already on the lot. In that case, the service can be

installed anywhere along the foundation frontage to the road. For new services installed on existing mains, the service shall be installed a minimum of 5 feet from the property line.

Standard small service sizes include 1-inch, 1-1/2-inch and 2-inch diameters. 1-1/2-inch and 2-inch services shall consist of a corporation threaded into an approved tapping saddle. One-inch corporations shall be threaded into the main for ductile iron and cast, and must be saddled for other pipe materials.

Domestic and fire services to the same building shall consist of completely separate lines beginning at the main. Combined services are not allowed.

2.3.14 Thrust Blocking, Anchorage, and Joint Restraint Water Line Fittings

Thrust blocking and anchorage or joint restraint is required wherever the pipe:

- a) changes direction as at tees, bends, crosses, and tapping sleeves;
- b) changes sizes, as at reducers;
- c) stops, as at dead ends and hydrants; or
- d) requires additional thrust restraint per manufacturer recommendations.

Concrete shall be used for thrust blocks, and they shall pre-cast in accordance with BWD Standard Details. Cast in place thrust blocks will be allowed on a case by case basis with BWD approval. Cast-in-place thrust blocks shall be constructed by pouring concrete between the fitting and the undisturbed wall of the trench. Concrete shall have a strength of 2,500 psi and shall be furnished by an acceptable ready-mix concrete supplier. A low slump mixture shall be used so that the concrete may be easily shaped into the desired form, a wedge with the wide end against the solid wall. Cast-in-place thrust blocks shall be poured using forms. Care shall be exercised to ensure that the concrete is clear of joint accessories, bolts, nuts, and flanges. A layer of 8-mil poly sheeting shall be placed between the main, fittings, bolts and the concrete thrust block.

The Contractor shall furnish and install all materials and equipment, and perform all labor for the manufacture, transporting, placing, curing, and testing concrete for thrust blocks. Concrete shall be composed of Portland cement, water, fine and coarse aggregate, and an air-entraining mixture. Cement shall be Type II conforming to ASTM C150 or ASTM C175.

Aggregates shall conform to ASTM C33. For thrust blocks, all aggregates shall be able to pass through a screen with 3/4-inch square openings.

Preferably, water used in mixing and curing concrete shall be potable. Non-potable water shall be fresh, clean and free from injurious amounts of sewage, oil, acid, alkali, salt, and organic matter.

Air entraining admixtures shall conform to the Specifications for Air Entraining Admixtures for Concrete (ASTM C260).

Unless otherwise shown on drawings, concrete used for thrust blocks shall have a 28-day compressive strength of 2,500 psi. When no preliminary strength tests of the concrete to be used are made, the water-cement ratio shall not exceed the following values.

Specified Compressive Strength at 28 days (psi)	Maximum permissible water-cement ratio, lb. of water per lb. of cement
2,000	0.70
2,500	0.55
3,000	0.46
3,500	0.40
4,000	0.35

Water-to-cement ratios other than the above may be used when the strengths of the concrete are to be established by tests. The District shall determine if concrete testing is necessary and shall also determine the method of any concrete testing which is performed. The slump of concrete for thrust blocks shall be a maximum of 4 inches, with the long wedge end against the solid undisturbed wall. Segregation of materials in the mixture shall not be permitted. Forming and placing of concrete for thrust blocks shall be done under the direction of the District.

Curing and form removal for concrete thrust blocks, and requirements due to air temperature and weather conditions shall follow proper construction practices and shall be subject to approval by the District.

Minimum thrust block area against the undisturbed trench wall shall be as shown in Section IV: Bangor Water District Standard Details.

Water mains shall be protected from movement by thrust forces in the following manner:

1. All fittings, valves, hydrants, and caps shall have ductile iron restraint glands, unless otherwise directed by the District.
2. All valves used on C900 plastic pipe shall be restrained.
3. Anchor all valves to tees or bends with stainless steel threaded rod.

All valves are required to be rodded to the tee with stainless steel rods. Foster adapters will only be allowed on a maximum of one valve at each intersection or with BWD approval. Foster adapters may be used on other fittings only with BWD approval.

Bolts on all ductile restraining glands shall be systematically tightened with a torque wrench according to the manufacturer's requirements. When all bolts have been tightened in this manner, each bolt shall be retightened according to manufacturer's requirements in the event that some may have loosened during the initial tightening process.

When a fitting is used to make a vertical bend, anchor the fitting to a thrust block braced against undisturbed soil. The thrust block should have enough resistance to withstand upward and outward thrusts at the fitting.

No water line or utility shall be laid within 6-feet along the backside of a thrust block.

2.3.15 Traffic Control

On portions of the project which are within the confines of an existing roadway, the Contractor shall contact BWD and local officials in advance to discuss traffic impacts and, if necessary, develop a traffic control plan. Traffic control shall be accomplished in accordance with MUTCD and local specifications and shall be coordinated with the local Town Public Safety office. A traffic control plan shall be prepared, submitted and approved by the governing authority prior to commencing work.

2.3.16 Abandoning Existing Facilities

Existing facilities noted to be abandoned in place on plans or as directed by BWD shall be discontinued as follows:

1. Pipes: MJ Plug or Cap and thrust block where noted on plans or as directed by Construction Management.
2. Valves: Pull valve box top and cover and fill box with stone. Restore surface with gravel, flowable fill, and pavement as noted on the plans or as directed.

For disconnecting service lines for a building demolition, see [Section 2.9: Demolition](#).

2.4 CHLORINATION, TESTING, AND DECHLORINATION

2.4.1 Chlorination and Pressure Testing

All sections of water mains and fire services 4" and larger and all hydrants must be fully pressure tested and chlorinated following the procedures listed in this section. All materials and equipment coming in contact with potable water shall be disinfected in the presence of the District inspector. All testing shall be done in accordance with AWWA specifications.

1. All pressure testing and chlorination shall be done by a BWD approved contractor.
2. When pressure testing and chlorination is conducted the District requires a representative on site to witness the test and operate any valves connecting to the existing main. Any installations that cannot be pressure tested shall be visually

inspected. The line testing must conform to the District's procedure in accordance with ANSI/AWWA C651 and ANSI/AWWA C600.

3. Chlorination shall be done in accordance with ANSI/AWWA C651.
 - a. The main must be flushed thoroughly prior to pressure testing and chlorination.
 - b. The tablet method shall not be allowed by BWD.
 - c. Sample sets are defined as all samples taken along the length of the project in distinct sections. Any samples with a chlorine residual greater than 4.0 mg/L will be rejected.
 - d. Passing samples must be consecutive.
 - e. Contractors may wish to install additional chlorination taps and blowoffs to allow for release of distinct sections of water main.
 - f. If hydrants are used as mainline sampling ports, any failed tests will be interpreted as indicative of mainline conditions.
 - g. A failed sample on any section of pipe shall cause all connected water mains and appurtenances to fail that round of sampling as well, unless they were isolated, and have remained isolated, by a closed valve prior to collecting the first round of samples.
 - h. Hydrants that are not used as mainline sampling ports, but are isolated and chlorinated separately, will require only one passing sample.
4. Integrity of the installed pipeline shall be confirmed using ANSI/AWWA C600, the AWWA standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.
5. All bacteriological sampling will be collected by or in the presence of and tested by the BWD.
6. When one and a half (1 ½) times the working pressure is less than 150 psi, the main will be pressure tested to a minimum of 150 psi.
7. All fire services may also be subject to separate NFPA pressure testing requirements. (200 psi)

If a water line is not activated within 6 months of successful chlorination, it shall undergo the full chlorination process again before activation. If the water line is not activated within 12 months of a successful pressure test, it shall receive a full pressure test before activation.

Swabbing will not be considered sufficient chlorination for any section of water main over 18 feet in length.

Sample taps must have provisions to be accessed above grade for flushing and sampling. Adequate valving must be in place to allow high flows for flushing to achieve scouring velocity and turn the flow down to a steady stream so that samples may be taken. The ends of the taps shall be a minimum of 24" above grade and closed with rubber caps. Failure of pressure tests or bacteria tests will be the responsibility of the Contractor and must be corrected at no additional cost to BWD.

2.4.2 Dechloramination and Dechlorination

All water discharged from BWD's system is expected to contain chloramines or chlorine, including normal system water used for flushing, water drained from standpipes, and super-chlorinated water used for disinfecting materials. In some cases, with permission of local wastewater facilities or sewer departments, water discharged for these purposes may be able to be directed to a combined or sanitary sewer manhole. In the event this is not permissible, all water that exits the distribution system shall be dechlorinated by a method appropriate for the amount of concentration known or suspected to be present and the volume of flow anticipated as soon as practicable upon being released. In no case shall water from the distribution system be discharged directly to a receiving water.

Acceptable methods of dechloramination or dechlorination include the following:

1. For very low concentrations, direct flow over long stretches of paved or grassy surfaces to allow dissipation prior to reaching a catch basin or receiving water. Sprinkle ascorbic acid in the discharge stream area as necessary to neutralize the disinfectant. Do not allow flow to cause erosion.
2. Direct flow through a diffuser containing chemical dechlorination tablets such as Vita-D-Chlor or approved equal.
3. Direct flow to a portable holding tank and dechlorinate prior to releasing or remove from site and dispose of the water in accordance with state and local regulations.

2.5 COMMON BORROW, ROADWAY GRAVEL, AND PIPE BEDDING

The Contractor must furnish and place the following materials, as directed by the local or state ordinances at locations where the existing soil conditions are unsuitable: gravel for drives and parking areas, granular pipe bedding, and common borrow.

2.5.1 Common Borrow

Borrow material shall contain no rocks or fragments with dimensions in excess of the layer thickness being placed, and shall be free of frozen earth, ice, snow, rubbish, peat and other unsuitable material. Common borrow shall meet MaineDOT specification 703.18. Borrow shall not be used in the work when suitable materials from the excavation are available.

Common borrow shall be placed in 12-inch layers and be thoroughly compacted before the next layer is placed.

2.5.2 Roadway Gravel

Furnish and place gravel to a depth in accordance with state and local ordinances.

Gravel shall be placed in 12-inch layers and be thoroughly compacted before the next layer is placed.

2.5.3 Pipe Bedding

Special pipe bedding is normally not required for ductile iron pipe. Pipe bedding is required for excavations in ledge and may be required if unsuitable materials are encountered in the trench. If bedding is required, it shall be as per BWD Standard Details. **Pipe shall not be laid directly on ledge, under any circumstances. There must be at least 12 inches clearance on all sides.**

2.5.4 Trench Backfill

Trench backfill shall be as per BWD Standard Details. Where the trench has been over excavated, backfill material shall be compacted underneath the pipe before the pipe is completely covered and backfilled. The Contractor shall place crushed stone under any pipe that has been over excavated, as directed by the District.

Where flowable fill is required per the MaineDOT or local town standards, placement of sand or stone around pipe to a depth of 1-foot above top of pipe must occur prior to placement of flowable fill.

2.6 Hot Bituminous Concrete Paving

All paving shall be done in accordance with local and MaineDOT paving specifications.

2.6.1 Paving Time Limits

The Contractor shall be responsible for all conditions set forth under the local Street Opening Permit or MaineDOT Highway Opening Permit. Under conditions of this permit, no paving shall be allowed after winter shutdown, and all roads must be satisfactorily paved before winter shutdown. The Contractor shall be responsible for maintaining any paving done through project duration, especially during winter shutdown. All paving outside the urban compact line will fall under MaineDOT jurisdiction.

2.6.2 Paving Other

BWD reserves the right to require an escrow account to be established, such as for MaineDOT Highway Opening Permits. All deposits and fees needed for the permit and escrow will be the responsibility of the developer.

2.7 Permits

A Street Opening Permit must be obtained from the City of Bangor or other municipality having jurisdiction and/or MaineDOT before any excavation is made within the right-of-way of state, state-aid and City/town roads. The Contractor must obtain local permits, and the permit fees must be paid at the time of application, which will occur prior to the actual start of the work. There are times when the District will be required to obtain permits for a new main installation. The District is required to obtain MaineDOT permits. In some cases, there will be a deposit required as part of the permit. The District will require the owner to pay this deposit into an escrow for one year.

BWD will hold escrow for one year following successful surface restoration.

The owner is responsible for paying all applicable fees and deposits prior to commencing work, including fire service agreements and main extension agreements.

2.8 Erosion Control

Proper erosion control procedures shall be a high priority for all District projects. The Contractor shall explicitly follow any direction from the District as well as state, local and federal regulations as to the placement, operation, and maintenance of erosion control structures.

The Contractor shall be solely liable for any violations of state, local or federal erosion control laws caused by the Contractor or any Subcontractors during construction.

2.9 Demolitions

Whenever existing facilities or buildings are demolished, and the existing water services are not planned to be reused in the foreseeable future, those services must be disconnected from the main as follows:

- Fire services that are 3 inches in diameter, or greater, shall be cut and capped as close to the shut-off as possible under direction from BWD, or be removed completely from the shut-off, and have a plug or cap put in its place with a thrust block. Fire services shall be cut and capped as close to the main as possible.

- Fire services that are 2 inches in diameter, or smaller, shall be turned off at the corporation on the main. If the service is copper, it shall be cut within 18 inches of the corporation and crimped in a manner that will prevent leakage.
- Domestic services that are 3 inches in diameter, or greater, shall be cut and capped as close to the shut-off as possible under direction from BWD, or be removed completely from the shut-off, and have a plug or cap put in its place with a thrust block. Domestic services shall be cut and capped as close to the main as possible.
- Domestic services that are 2 inches in diameter, or smaller, shall be turned off at the corporation on the main. If the service is copper, it shall be cut within 18 inches of the corporation and crimped in a manner that will prevent leakage.

Any variation in the method of disconnection from these requirements must be approved by the BWD in advance.

The BWD will not sign any notices of intent to demolish prior to the water services being disconnected as described above. Any variance to this requirement shall be requested to the BWD in writing. The BWD reserves the right to require a deposit in the amount of the cost to disconnect the water service prior to signing the notice of intent. The deposit will be fully refunded once the water service has been satisfactorily disconnected by the Contractor.

2.10 TEMPORARY WATER

2.10.1 General

This section refers to the supply of temporary water service to all customers affected by the Water Main installation. The Contractor is responsible for the proper installation of temporary water as described in this standard.

Provide and maintain a pressurized, temporary water supply to all services connected to water mains that must be depressurized for any reason. The only exception to this requirement is the performance of emergency repair and only if the repair interruption is expected to last less than four consecutive hours.

Maintain and operate temporary water supply until completion of required disinfection and flushing procedures, and receipt of acceptable bacteriological test results for the section of water main that was depressurized.

The use of a fire hydrant or hydrants as the source of temporary supply is permissible; it must have passing bacteriological test results. Bangor Water District will supply and connect a

portable water meter and backflow prevention assembly to the designated supply hydrant(s). Fees for meter sets may apply.

Provision of a suitable temporary water supply connection point is the responsibility of each property owner affected. The normal residential connection point will be the outside hose bib on the residence.

For normal residential areas, provide minimum 2-inch diameter main service line with minimum ¾" pipe into each individual property. Each 2" temporary main service line may supply a maximum number of residential connections and have a maximum length that is determined by Bangor Water District. Backflow devices shall be used at each location utilizing temporary water.

For temporary supply of services larger than standard residential, provide temporary branch service pipe no more than one nominal pipe size smaller than the permanent service to a maximum 6" in size. The required size and maximum length characteristics of the temporary main supply line will be subject to the pre-approval of Bangor Water District.

In the event that it is not possible or feasible to provide temporary supply from a hydrant, obtain the Engineer's approval to use alternate means, such as a temporary tap into a pressurized water main.

Acceptable materials consist of the following: HDPE, must be copper tubing size (CTS) and conform to AWWA standard C901 (PE 3608 Pressure Class 200) and be clearly marked. Stainless steel inserts and compression fittings must be used at all joints if the pipe is not fused.

Brass fittings shall be "no-lead" (Lead content less than 0.25%). The Contractor shall supply the District with the lead content of the fittings. Fittings shall conform to ANSI/AWWA C800 standards for Type "K" soft copper and shall be compression type on the copper end. CTS (Copper Tubing Size) HDPE shall have stainless steel insert stiffeners.

No lead brass, ¼ turn ball valves shall be used where needed. Valves shall be placed at the ends of all lines near the connection to the building and provisions for flushing at the ends of each branch must be included in the installation.

2.10.2 Customer Notifications

Hand deliver written notification to all customers that will be affected by interruption of service a minimum of 48 hours prior to the date of interruption. Include the following information in the written notice:

1. Start date and time and anticipated duration of the interruption to service.
2. Instructions to close the isolation valve at the water meter and standard water service schematic.
3. Names and onsite phone number/s of Contractor performing the work for Bangor Water District. In the event that 48-hour advance notice is not possible due to a short

interruption developing into a longer one, or where conditions dictate prompt action, attempt to provide all customers with a minimum of one hour's advance notice before discontinuing service. In these cases, provide verbal notice to each customer.

4. If water will not be available for customers for greater than 12 hours, the Contractor at the contractors expenses will provided bottle water to the customers being effected by outage. Quantities of bottled water will be sufficient to address the customers needs as directed by the District.

2.10.3 Disinfection and Disposal

Prior to connection to temporary connection points, ensure that all temporary main and branch piping is disinfected and tested using the continuous-feed method per the latest version of AWWA C651.

Dispose of high strength chlorine solution in a manner that will not pose a threat to health or damage public or private property and in accordance with applicable regulations. See Section 2.4.2: Dechloramination and Dechlorination.

2.10.4 Placement and Operation

Place supply lines parallel to each side of the street and as close as possible to the premises being serviced. When a street must be crossed with temporary water supply piping either excavate a shallow trench in pavement and lay pipe in the trench or lay pipe on the surface of the pavement. Pipe installed on the road surface is to be protected from vehicular and pedestrian traffic with suitable ramps and provided with suitable traffic warning. Provide additional manual shutoff valves as may be required to control or isolate any temporary supply system.

SECTION III. WATER MAIN MATERIALS SPECIFICATIONS

3.1 GENERAL

The BWD reserves the right to accept or reject materials when in the best interest of the District. Any reference to a particular standard shall mean the latest revision.

3.1.1 Brass fittings

These notes apply to all brass fittings purchased for use within the BWD's Distribution System. All brass fittings will conform to the following standards:

All fittings will be made of No Lead Brass. (0.25% lead or less brass).

3.2 MATERIALS

3.2.1 Blank Flanges

Conforming to AWWA/ANSI C115/A21.15

3.2.2 Brass fittings for type "K" copper tubing and HDPE (CTS)

3/4-inch through 2-inch brass fittings shall have a lead content meeting standards noted in 3.1.1 for the fitting in question. The vendor shall supply the District with the lead content of the fittings. Fittings shall conform to ANSI/AWWA C800 standards for Type "K" soft copper and shall be compression type on the copper end. CTS (Copper Tubing Size) HDPE shall have stainless steel insert stiffeners.

Brass Goods (Miscellaneous)

Brass shall have a lead content meeting standards noted in 3.1.1 for the fitting in question. The vendor shall supply the District with the lead content of the fittings, with iron pipe size (IPS) threads shall be used for connecting water services. Items included are bushings, couplings, elbows, nipples, plugs, and tees. Manufactured by Lee, Wheeler, Nibco, Hayes, Ford, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

Corporation Stops

1-inch corporations shall have a lead content meeting standards noted in 3.1.1. The vendor shall supply the District with the lead content of the fittings. Corporations shall have a ball valve type construction with AWWA (CC) Standard inlet thread and compression fitting outlet, and shall conform to AWWA/ANSI C800.

1 1/4-inch to 2-inch corporations shall, have a lead content meeting standards noted in 3.1.1. The vendor shall supply the District with the lead content of the fittings, with inlet iron pipe (IP) thread and compression fitting outlet, and shall conform to AWWA/ANSI C800. Manufactured by Ford, Hayes, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

Curb Stops

Curb stops shall have a lead content meeting standards noted in 3.1.1.

The vendor shall supply the District with the lead content of the fittings. Curb stops shall have a ball valve type construction or approved equal with compression fittings on each end. Curb stops must not have a drain, and shall conform to AWWA/ANSI C800. Curb stops shall be manufactured by Ford, Hayes, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

3.2.3 Copper Tubing

Copper tubing shall be type “K” soft copper and conform to ASTM B88. Bar copper is also allowed.

3.2.4 Copper Tube Size (CTS) High-Density Polyethylene (HDPE)

High Density Polyethylene (HDPE) pipe may be used on the owner’s side of the service line after the curb stop. The HDPE must be copper tubing size (CTS) and conform to AWWA standard C901 (PE 4710 Pressure Class 250) and be clearly marked. Stainless steel inserts and compression fittings must be used at all joints. HDPE pipe shall comply with AWWA C-901, ASTM-D-3350 and D-2737, PE 4710.

Tubing shall be approved for potable water service by the National Sanitation Foundation and bear the NSF seal (NSF/ANSI 61 Standard). The product shall be rated for a minimum 200 working psi and standard dimension ratio (DR) shall not exceed 9 for tubing size. Fittings shall be equipped with compression-type connections with insert stiffeners.

The minimum allowable service diameter for HDPE water lines is 1-inch.

Tracer wire shall be 12-gauge UF wire with joint seal, tested for continuity, and placed over all plastic pipe.

3.2.5 Copper Meter Setters

Meter setters for 5/8 x 3/4-inch, 3/4-inch, and 1-inch meters shall have compression fittings on the inlet and outlet ends suitable for 3/4- or 1-inch copper tubing. Meter setters for meters shall have female iron pipe (IP) thread connections on the inlet and outlet ends. Two meter gaskets shall be supplied with each horn. Manufactured by McDonald EB2, Cambridge Brass, or approved equal.

3.2.6 Duc Lugs and Tie Bolts

Duc lug bolts shall be Star Supply Corp. or approved equal.

Tie bolts with hexagonal nuts shall be Star Supply Corp. or approved equal.

3.2.7 Flanged adapters

Flanged adapters are not permitted.

3.2.8 Hydrants

Hydrants shall be compression type conforming to AWWA/ANSI C502, style Eddy F2641 meeting the following requirements:

1. Break flange construction
2. 5 1/4-inch main valve
3. Two 2 1/2 inch hose nozzles (National Standard Thread)
4. One 4 1/2 inch pumper nozzle (National Standard Thread)
5. Inlet connection - mechanical joint
6. Inlet connection size - six inch
7. Direction of opening - right
8. Operating nut - 1 1/2 inch pentagon pattern (National Standard)
9. Trench depth - as specified in BWD's Construction Specifications
10. Hydrant color – yellow with silver bonnet and nozzles
11. Packing - "O" ring
12. Nozzle cap chains
13. Stainless steel nuts and bolts
14. Supplied with mechanical joint accessories, high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111/A 21.11.
15. Non-draining.

Prior to ordering new hydrants, Contractor shall verify depth of existing and/or proposed facilities and final surface grade, and order a hydrant with sufficient barrel length as to allow for installation of the hydrant to be accomplished without the use of extensions. Installation of hydrant extensions shall only be allowed if given permission by the District.

Hydrants shall be delivered to site with factory coating as follows: a primer coat of paint and an enamel finish coat, both of a type specified for metal finishes. Hydrants shall be yellow with silver nozzle caps and cover. On-site hydrant painting will not be allowed.

- Silver Paint: number 211-10 or approved equal.

- Yellow Paint: number 211-63 or approved equal.

Sign posts and hydrants flags shall be installed as part of all new or replacement hydrants. The number for the flag shall be provided by BWD. Sign posts shall be 8 feet in length to provide a 6 foot reveal, U-channel, 2 lb/foot galvanized with breakaway. Sign post shall be placed 2 feet before the hydrant as traffic flows.

3.2.9 Pipe

Pipe shall be either ductile iron or HDPE.. Pipes shall be standard sizes only. 3-inch pipe is not allowed for public or private water lines. All pipe shall be approved for potable water service by the National Sanitation Foundation and bear the NSF seal (NSF/ANSI 61 Standard). Marking tape should be placed two feet above all new lines.

Ductile iron Pipe:

(4-inch diameter and larger).

Water main - shall be ductile iron centrifugally cast with push-on joints conforming to AWWA/ANSI C151/A21.51. Pipe shall be Class 52, double cement lined and coated with metallic zinc, except as otherwise specified by the District. The coating materials for Ductile-iron pipe and fittings shall be metallic zinc wire with a zinc content of at least 99.99% by mass with asphalt paint or synthetic resin topcoat compatible with zinc. Fabricated pipe shall have zinc rich paint having a minimum of 85% zinc by mass in the dry film with asphalt paint or synthetic resin topcoat compatible with zinc. Ten percent of the pipe shall be suitable for field cutting and marked as such.

Plastic Pipe:

1. PVC

New installation will not be allowed in BWD distribution system.

2. HDPE

High Density Polyethylene (HDPE) pipe may be used on the owner's side of the service line after the curb stop. The HDPE must be copper tubing size (CTS) and conform to AWWA standard C901 (PE 4710 Pressure Class 250) and be clearly marked. Stainless steel inserts and compression fittings must be used at all joints. HDPE pipe shall comply with AWWA C-901, ASTM-D-3350 and D-2737, PE 4710.

Tubing shall be approved for potable water service by the National Sanitation Foundation and bear the NSF seal (NSF/ANSI 61 Standard). The product shall be rated for a minimum 200 working psi and standard dimension ratio (DR) shall not exceed 9 for tubing size. Fittings shall be equipped with compression-type connections with insert stiffeners.

The minimum allowable service diameter for HDPE water lines is 1-inch.

Tracer wire shall be 10-gauge UF wire with joint seal, tested for continuity, and placed over all plastic pipe and brought up inside valve boxes or around service boxes. See 3.2.10 for additional details.

3.2.10 Marking Tape and Tracer Wire

Marking tape:

Marking Tap shall be 3" wide, non-ferrous metal or plastic, and marked "WATER".

Tracer Wire:

- A. Install electrically continuous tracing wire with HPDE water mains for the purpose of future pipe locating.
- B. Wire shall be 10 gauge continuous strand solid copper or copper clad steel with blue polyethylene thermoplastic insulated rated for direct burial.
- C. Connections shall protect against moisture and be equal to Copperhead Snakebite, 3M DBR or approved equal.
- D. Secured to piping at ten-foot intervals
- E. At water service saddles, wire is not permitted to be placed between the saddle and the main.
- F. Provide a tracing wire access point with a blue cast iron cover at intervals that do not exceed 500 feet. Loop two feet of extra wire in each tracer wire box.
- G. Must pass continuity test. If a section of tracer wire does not pass continuity testing, it must be replaced.

3.2.11 Pipe Couplings

Sleeves shall be epoxy-coated ductile iron ASTM A536, and shall have smooth inside taper for uniform gasket seating. Bolts shall be 304 stainless steel with heavy 304 stainless steel hexagon nuts to ANSI/AWWA C111/A21.11 standards. OD range shall be approved by the BWD. Ford coupling or approved equal. Contractor shall use solid sleeve coupling approved by BWD unless site connections do not allow or as otherwise approved by BWD. No repair couplings shall be used for new construction unless approved by BWD.

3.2.12 Pipe Fittings

Pipe fittings shall have mechanical joint ends conforming to ANSI/AWWA C1/A21.11, double cement lining and bituminous coating conforming to ANSI/AWWA C104/A21.4. and coated with zinc, except as otherwise specified by the District. Fittings shall be supplied with mechanical joint accessories unless specified others, with bolts conforming to 304 stainless steel with heavy 304 stainless steel hexagon nuts to ANSI/AWWA C111/A21.11.

Long body fittings shall be ductile iron conforming to ANSI/AWWA C110/A21.10.
Compact body fittings shall be ductile iron conforming to ANSI/AWWA C153/A21.53.

3.2.13 Repair Sleeves

Shall have single band of 304 stainless steel with 304 stainless steel bolts and nuts as manufactured by Rockwell or approved equal.

3.2.14 Restraining Glands

Mechanical joint restraining glands shall be heavy duty ductile iron body, conforming to ANSI/AWWA C111/A21.10. Mega lugs or approved equal. Standard glands shall not be allowed.

Mega lugs are not a replacement for thrust blocks. Grip rings shall not be allowed.

3.2.15 Service Boxes, Covers, and Rods

Service boxes shall be Erie style with arch pattern, one-inch in diameter, constructed from SC #40 Black Steel, adjustable in length from five feet to six feet, and have 1/2-inch diameter stainless steel rod 36-inches in length with brass or stainless steel cotter pins. One-inch caps shall be extra heavy with brass pentagon plug and coarse "rope" thread to fit a one-inch Erie style box. All caps shall have the word "WATER" clearly cast in top and be constructed of a magnetic material.

Any service box placed where vehicles may travel, including paved sidewalks, shall be placed inside of a gate valve box top in accordance with these specifications.

3.2.16 Service Box Foot Adapter

Service box foot pieces shall be cast iron and fit all standard one-inch Erie style service boxes and fit over curb stops larger than one inch.

3.2.17 Service Saddles

Service saddles shall be constructed of ductile iron with epoxy coating and with two stainless steel bands, nuts, washers, and I.P. threads. Body casting shall be wrap-around design of high tensile ductile iron conforming to ASTM A536. Gasket shall be of 3 1/2-inch diameter and constructed of Buna-N, and grooved to conform to the pipe surface, bonded in place for easy installation. Finish shall be epoxy coated. Ford FC202 or approved equal.

3.2.18 Tapping Sleeves

Mechanical joint tapping sleeve:

Shall be ductile iron and have ductile iron mechanical joint end seals conforming to AWWA C111, with outlet flange conforming to AWWA C207, class D with ANSI 150 lb. drilling recessed for tapping valve. Tapping sleeve shall fit AWWA standard of 1908, Class AB-CD cast iron pipe. Manufactured by Clow, Mueller, or approved equal. Acceptable for cast iron and ductile iron pipe, and shall be used on size by size applications.

Stainless steel tapping sleeve:

Shall be entirely 304 stainless steel or 304 stainless steel body with ductile iron outlet flange conforming to AWWA C207 Class D, ANSI 150 lb. drilling recessed for tapping valve. Bolts shall be high strength 18-8 stainless steel with heavy hexagon nuts conforming to ANSI/AWWA C111/A21.11.

Gasket material shall be grade 30 or approved equal, and shall have a smooth inside taper for uniform seating. Acceptable for ductile iron pipe.

All size on size taps require full body Ductile Iron MJ tapping sleeves.

3.2.19 Tapping Valves

Tapping valves shall be epoxy coated with 200 psi working pressure, non-rising stem, "O" ring, open left, flanged end conforming to AWWA C207, Class D, ANSI 150 lb. drilling, mechanical joint end conforming to AWWA C111, two-inch ductile iron operating nut with 304 stainless steel bolt, resilient seated gate valve conforming to ANSI/AWWA C509, manufactured by Waterous Series 500, American Darling CRS 80, Mueller A2360, AVK series 25, or approved equal.

Tapping valves shall be supplied with standard mechanical joint accessories, 304 stainless steel bolts, and heavy hexagon nuts conforming to ANSI/AWWA C111/A21.11.

Tapping valve seal plates and bonnets shall have either all silicone bronze or 304 stainless steel bolts and nuts.

3.2.20 Valves

Valves shall be epoxy coated inside and out and supplied with standard mechanical joint accessories, high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111.A21.11.

Valve seal plate and bonnet shall have either all-silicone bronze or 304 stainless steel bolts and nuts.

Butterfly Valves (16-inch diameter and larger).

Shall be a non-directional ductile iron valve with a steady state working pressure of 150 psig, and a maximum steady-state differential pressure of 150 psi, bubble-tight in both directions at rated psi, open left, mechanical joint ends, non-rising stem, two-inch ductile iron operating nut with stainless steel bolt, conforming to AWWA C504. Manufactured by Clow, Dresser, Mueller, or Pratt.

Gate Valves (12-inch diameter or less):

Shall be 200 psi working pressure, non-rising stem, "O" ring, stem seal, open left, mechanical joint, two-inch ductile iron operating nut with stainless steel bolt, resilient seated gate valve conforming to AWWA C509, manufactured by Waterous Series 500, American-Darling CRS 80, Mueller A 2360, AVK series 25, or approved equal.

Insert Valves

Insert valves may be allowed with prior approval from the District. The insert valve must be installed in the presence of a BWD inspector. Insertion valve shall be Mueller PermaSeal or approved equal.

3.2.21 Valve Boxes

Top section shall be cast iron, or ductile iron free from defects, manufactured in the USA or Canada, two piece, sliding type with a **non-flange top and non-flange bottom section**, no inside stops, a minimum inside shaft diameter of 6 and 1/16 inches, and a minimum clear opening at the top of 7 and ½ inches. Bottom section shall be slip bell style with a minimum clear opening at the bottom of 10 and ¾ inches. Length of top section shall be a minimum of 24 inches. Middle and bottom section length as needed, with a minimum of 6 inches of overlap. Valve box covers shall be sized as recommended by the manufacturer to fit the valve box top, and have the word "WATER" clearly cast into the cover.

3.2.22 Valve Box Top-Extension and Cover

Valve box extensions may be used in areas that will not be subject to vehicular traffic. Shall be cast iron, manufactured in the USA or Canada. Boxes will have "WATER" cast in cover.

Pioneer-style box shall be 4.5-inch or 5.25-inch straight body.

SECTION IV. STANDARD DETAILS

Refer to separate full-sized drawings, 3 total.

Found at bangorwater.org

SECTION V. DOCUMENTS

Contents

1. Application for Service Instructions
2. Application for Service Form
3. New Construction Information Sheet
4. Main Extension Agreement
5. Private Line Agreement
6. Sample Easement
7. Quick Reference Guide for Renewing or Establishing Service

5.1 APPLICATION FOR SERVICE - INSTRUCTIONS

5.1.1 Application Required

In accordance with Maine Public Utilities Commission regulations, and in keeping with the District's terms and conditions for service, applicants wishing to receive water service from the District must:

1. Make written application for service, fire service, main extension or private line either in person, by mail, by fax, or by e-mail. The application shall be on a form provided by the District.
2. Pay the established fees.
3. For new services (domestic & fire), service replacement, main extensions or new private lines, submit additional information as detailed in the BWD "Water Construction Specifications and Procedures" manual.
4. Pay or sign a payment agreement for any outstanding balances (if applicable).

All steps must be accomplished for the application to be considered complete, and must be completed each time a different party becomes responsible for payment. Completed applications will be processed as directed by MPUC regulations.

The party responsible for payment of the bill must sign the application; multiple names on an account require signatures from all parties listed.

The District's "Rights and Responsibilities" handout will be made available for the customer; currently it is available for pick-up, e-mail, and mailing, as well as on the website (bangorwater.org).

5.1.2 Re-Connection of Service

A new application for service; is not required for customers whose service is temporarily terminated at their request (such as a winter break) and who seek to re-connect service, provided a current application is on file. This is considered a re-connection of service, and the established reconnection fee will be charged. All outstanding balances must be paid to re-connect service.

5.1.3 Transfer of Accounts With Active Water

Approximately five to seven days after an old account is final billed, the District will attempt to contact the new customer to complete the application process. In most cases, this will involve a three-day notice delivered to the service premises. In cases where the applicant's name is known, the District may attempt to contact them by mail or phone.

For applications remaining incomplete, service will be terminated in accordance with approved MPUC disconnection regulations.

5.1.4 Transfer of Accounts With Inactive Water

After receipt of a completed application, water may be turned on for a customer. An appointment is required and the applicant or their agent must be on the premises for water to be turned on.

Application for Service

Bangor Water District
PO Box 1129
Bangor ME 04402-1129

tel (207) 947-4516
fax (207) 947-5707
billing@bangorwater.org

Existing
 New

Complete all information. Incomplete or unreadable applications will result in denial of service.

Names (s) _____

Mailing Address: _____

TRANSFER Water on Turn-on required
Service begins: _____

NEW Requires New Project Application Form and fees
 Engineering Construction

Office use: testable BF no yes notice goes to _____

Residential Non-residential
 single family Mix of residential and non-residential
 multi-unit # of units _____
 home occupation on site

_____ % of building used for non-residential purposes
[information required by Maine Revenue Services (207) 624-9693]

If your business is sales tax exempt, check here and attach copy of exemption certificate.

Account number: _____
Service Location: _____

Owner Tenant Landlord _____

Employer/source _____ of _____

Daytime phone(s) _____

Previous service with Bangor Water: No Yes If yes, give address: _____

Do you have unpaid bills at this utility or for any other kind of utility service Yes No

Have you declared bankruptcy within the past six years Yes No

Does anyone at this location have a medical condition that requires life support equipment or restoration of water if service is interrupted No Yes doctor certification required

I hereby contract with BWD for water service (domestic and/or fire protection), and agree to abide by BWD's terms of service and related requirements until I give proper notice to terminate service. I understand that my account information may be used for debt collection by BWD. I understand that the information I provide is subject to verification, and provision of incomplete or false information is grounds for termination of service and possible law enforcement.

me
cy
e

Signature _____

Print: _____

Date: _____

Signature required for each person on account

Establishment Fee Paid: Date: _____

by cash check # _____

Official Payments transaction confirmation number _____

PROJECT APPLICATION

Block A: Information

Owner

Date _____

Owner _____

Owner's Mailing

Address _____

Owner's Phone _____ Contact

Name _____

Project

Project

Description _____

Project Location (Street Address)

Map _____ Lot _____

Engineer _____ Contact Name

Engineer Phone _____ Address

Contractor _____ Contact Name

Contractor Phone _____ Address

Block B1: Residential

Single Family _____ Rental _____ Apartment _____ Condo _____ Duplex _____ Other _____

Will there be a Pressure Tank/Booster Pump installed? _____ Single source of heat & hot water? _____

Will there be a Sprinkler System? _____ Irrigation? _____ Life Safety? _____

Block B2: Commercial/Industrial

Business Name

—

Development Type _____ Number of Buildings _____

Peak Domestic Demand (gpm) _____ Average Daily Demand (gpd) _____

Peak Fire Flow/Sprinkler Demand (gpm) _____ Minimum Pressure Required _____

Will there be a Pressure Tank/Booster Pump installed? _____ Fire Hydrant? _____

Single source of heat & hot water for multi-units? _____ Plans for Future Additions to Water Line _____

Block C: BWD Use Only

Project Number _____

Basic Data

Closest Hydrant _____ Static Pressure (psi) _____ Size Of Existing Main _____ Type: _____

Main Extension _____ Private/Public _____ Hydrant Ownership _____

Estimated Fees

Inspection _____ Jobbing _____ Fire Protection _____

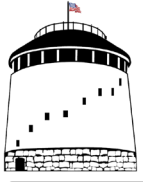
Inspection

Complete

NOTE: A fee will be assessed upon completion of each Application for Service.

I have received a copy of the Terms and Conditions of Service. I authorize the Bangor Water District to enter the premises and access the property to inspect the main/service installation, normal maintenance and reading of the water meter, evaluate, require and test backflow prevention devices, and evaluate potential usage. I further understand the estimated cost is to be paid in advance and any adjustments will be made upon completion of the work.

Owner/Applicant _____ Date _____



BANGOR WATER DISTRICT
P.O. BOX 1129 · BANGOR, ME 04402-1129
TEL: (207) 947-4516 · FAX: (207) 947-5707
www.bangorwater.org

Kathy Moriarty
General Manager

Main Extension Agreement

This agreement entered into this _____ day of _____, 20__ by and between _____ of _____, _____ (hereinafter called the "applicant") and the Bangor Water District, a water utility duly established under the laws of the State of Maine with its principal place of business at Bangor, Maine (hereinafter called the "utility").

WHEREAS, the utility is engaged in the business of supplying water service to the public in the City of Bangor and several other cities and towns in Maine, and

WHEREAS, the applicant has requested that the utility's water main be extended to service property owned by the applicant on _____ in _____, a distance of approximately _____ feet of _____-inch main from the existing water main on _____,

NOW THEREFORE, it is agreed between the applicant and the utility as follows:

1. The applicant agrees to pay the utility \$_____ for fire protection charges as required by the Maine Public Utilities Commission regulations. The applicant also agrees to pay the utility the following fees:

- utility jobbing fees _____

Within 60 days following determination of the final utility costs incurred for the extension, including engineering review fees, inspection fees, fire protection charge and utility jobbing fees, the amount advanced shall be adjusted to the actual cost less the investment amount (if applicable), either by the utility's return to the applicant of any excess amount, or by an additional payment by the applicant to the utility to cover any deficiency.

2. The utility agrees to provide service to the new main described above after satisfactory installation of water main and appurtenances in accordance with the Utility's Material Specifications, Water Construction Specifications and Procedures, Terms & Conditions and other applicable utility policies and receipt of the amount required in paragraph 1.

3. A contractor hired by the applicant will install this main and appurtenances, which is intended to be conveyed to the District as a main extension. The applicant agrees to install the main and appurtenances in strict accordance with the utility's specifications and understands that failure to do so may result in delay in providing water service until deficiencies are satisfactorily corrected.

4. Where these facilities are being installed on private property, the applicant agrees to furnish the utility a permanent easement, in accordance with the District's policy thereon, free of encumbrances, entitling the utility to construct, own, maintain, and replace the above described facilities.

5. Each time a customer is connected to the water main until 10 years after connection of the first consumer, the utility will make an investment in the main extension in an amount as per the attached Main Extension Investment Sheet calculated for _____. The utility will pay the investment amount to the developer. In no event shall the aggregate amount of investment by the utility pursuant to paragraph 5 exceed 50 percent of the total cost of the main extension.

6. Upon acceptance by the utility, the water main extension and utility portion of all service lines shall become the property of the utility. The utility will have a continuing obligation to maintain it.

7. The utility shall have the right to extend its main further beyond the extension and to serve other mains, or to tap and take off from the extension laterally. Further or lateral extensions shall not be considered as part of the main extension agreed to herein for purposes of investments by the utility or customer contributions.

8. This contract is subject to the rules of the State of Maine Public Utilities Commission governing water main extensions (65-407 CMR 65), which are hereby incorporated by reference into this contract. In the event of a conflict between this contract and the Commission's water main extension rules, the rule shall govern. The parties understand that the provisions of this contract are subject to alteration by a decision or rule of the Maine Public Utilities Commission.

9. Disputes arising under this contract or under the Public Utilities Commission water main extension rule may be referred pursuant to the rules to the Commission for resolution.

10. This agreement shall bind and inure to the benefit of the heirs, executors, administrators, successors and assigns of the parties hereto.

IN WITNESS WHEREOF, said parties hereto have caused this agreement to be executed by their duly authorized officers on the date first written above.

WITNESSES

BANGOR WATER DISTRICT

Kathy Moriarty
General Manager

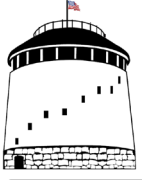
Applicant

- Require right of way
- Accepted street or road
- In process of acceptance
- Established grade (accepted)
- Require easement on private property

Customer contributions:

Fire protection charges \$ _____

BWD-estimated cost of project: \$ _____



BANGOR WATER DISTRICT
 P.O. BOX 1129 · BANGOR, ME 04402-1129
 TEL: (207) 947-4516 · FAX: (207) 947-5707
 www.bangorwater.org

Kathy Moriarty
 General Manager

Private Line Agreement

This agreement entered into this _____ day of _____, 20__ by and between _____ of _____, _____, _____ (hereinafter called the "applicant") and the Bangor Water District, a water utility duly established under the laws of the State of Maine with its principal place of business at Bangor, Maine (hereinafter called the "utility").

WHEREAS, the utility is engaged in the business of supplying water service to the public in the City of Bangor and several other cities and towns in Maine, and

WHEREAS, the applicant has requested that the utility provide water service to property owned by the applicant on _____ in _____.

NOW THEREFORE, it is agreed between the applicant and the utility as follows:

1. The applicant agrees to pay the utility the following fees:

- utility jobbing fees _____

Within 60 days following determination of the final utility costs incurred for the extension, including inspection fees and utility jobbing fees, the amount advanced shall be adjusted to the actual cost less the investment amount (if applicable), either by the utility's return to the applicant of any excess amount, or by an additional payment by the applicant to the utility to cover any deficiency.

2. The utility agrees to provide service to the new line described above after satisfactory installation of water main and appurtenances in accordance with the utility's Material Specifications, Construction Specifications, Terms & Conditions and other applicable utility policies and receipt of the fee amounts referenced in paragraph 1.

3. A contractor hired by the applicant will install this water line and appurtenances, which is intended to remain as a private line serving leased tenants on the subject property. The applicant agrees to install the water line and appurtenances in strict accordance with the utility's specifications and understands that failure to do so may result in delay in providing water service until deficiencies are satisfactorily corrected.

4. Whereas the subject property is to be developed as a multi-building mixed retail space to be leased from a single owner (the applicant) and the Applicant agrees that the water main will never be extended beyond the subject property and it is unlikely that the property will be further divided, this installation will be considered a private line. The applicant will have a continuing obligation to maintain the water line and appurtenances. Except as provided below, the utility will have no obligation to maintain the private main on private property.

5. Whereas these facilities are being installed on private property, the applicant agrees to furnish the utility a permanent easement, in accordance with the District's policy thereon, free of encumbrances, entitling the utility to construct, own, maintain, and replace individual curb stop shutoffs to each leased or rented premise on the subject property.

6. This contract is subject to the rules of the State of Maine Public Utilities Commission governing water main extensions (65-407 CMR 65), which are hereby incorporated by reference into this contract. In the event of a conflict between this contract and the Commission's water main extension rules, the rule shall govern. The parties understand that the provisions of this contract are subject to alteration by a decision or rule of the Maine Public Utilities Commission.

7. Disputes arising under this contract or under the Public Utilities Commission water main extension rule may be referred pursuant to the rules to the Commission for resolution.

8. This agreement shall bind and inure to the benefit of the heirs, executors, administrators, successors and assigns of the parties hereto.

IN WITNESS WHEREOF, said parties hereto have caused this agreement to be executed by their duly authorized officers on the date first written above.

WITNESSES

BANGOR WATER DISTRICT

Chuck Harrison
General Manager

Applicant

Bangor Water District Easement (Sample)

KNOW ALL MEN BY THESE PRESENT, that (**OWNER**) of (**LOCATION**), in consideration of One Dollar (\$1.00) and other valuable consideration paid by the Bangor Water District, a quasi-municipal corporation duly organized and existing under the laws of the State of Maine and located in Bangor, County of Penobscot, State of Maine--the receipt of which is hereby acknowledged--do hereby give, grant, bargain, sell and convey unto Bangor Water District, its successors and assigns, the right to perpetually enter and have access to at any and all times areas of land 10 feet wide and 10 feet long on the property owned by (**OWNER**) as recorded in the Penobscot County Registry of Deeds B_____, P_____, hence illustrated in Exhibit A.

AND to construct, operate, and perpetually maintain through, under and across said areas, valves, and valve boxes necessary for the external control of the water supply and services, together with the right at all times to trim, cut down, and remove bushes and other obstructions to such extent as necessary in the judgement of the Grantee

AND reserving to the Grantor, his heirs and assigns, the use and enjoyment of said areas for such purposes only as will in no way interfere with the perpetual use thereof by the Grantee, its successors and assigns, for the purposes above mentioned, provided that no building or any kind of permanent structure shall be erected on said areas by grantor, his heirs or assigns, and that the Grantor, his heirs or assigns, shall not remove earth from said strip or place fill thereon without the written permission of the Grantee, its successors and assigns.

TO HAVE and to hold the aforementioned and bargained premises with all privileges and appurtenances thereof to said Bangor Water District its successors and assigns to its and their use and behoof forever. And he does hereby covenant with the said Grantee, its successors and assigns, that he is lawfully seized in fee of the premises that they are free of all encumbrances; that he has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that he and his heirs and assigns shall and will warrant and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS THEREOF, the said (OWNER) as Grantor, and relinquishing and conveying rights by descent and all other rights in the above-described premises, have hereunto set his hand and seal this ____ day of _____, 20__.

Signed, Sealed and Delivered
In said Presence of:

(OWNER)
Bangor, Maine

Witness (NAME)

By _____
Owner

State of Maine, (Date)_____

County of Penobscot, ss.

The foregoing instrument was acknowledged before me this (DATE) by (APPLICANT NAMED ABOVE), (TITLE) of (COMPANY NAME), a Maine corporation, on behalf of the corporation.

Before me,

Notary Public

SECTION VI. QUICK REFERENCE GUIDE TO ESTABLISHING SERVICE

All installations shall conform to BWD material and construction specifications. Service will not be activated until the plans have been approved, the installation has been inspected and accepted, and all applicable fees have been paid. Please contact BWD to schedule your appointment 5 business days prior to the desired date of activation.

Service Renewal or Replacement (any size)

The following steps must be taken if you wish to renew or replace your service line from the shut-off to the building:

1. Submit completed New Construction Information Sheet.
2. Submit completed fixture count form for domestic services, or sprinkler design for fire services.
3. Submit sketch of proposed installation.
4. Make necessary corrections to the sketch as instructed by BWD and resubmit for final approval.
5. Pay the inspection fee to BWD.
6. Schedule times to have the water service shut-off for construction, and to be turned back on after the installation.
7. Install water service with BWD inspection, prior to backfilling.

New Service Line (2-inch or smaller)

The following steps must be taken if you wish to install a new service line:

1. Submit completed New Construction Information Sheet.
2. Submit completed fixture count form for domestic services, or sprinkler design for fire services.
3. Submit sketch of proposed installation.
4. Make necessary corrections to the sketch as instructed by BWD and resubmit for final approval.
5. Pay the inspection fee to BWD.
6. Install water service with BWD inspection, prior to backfilling.
7. The entity who will be paying the water bill must sign up for service by completing an Application for Service and paying the application fee, or by completing any necessary fire service agreements.
8. Schedule meter installation. Allow 2 – 5 business days for meter installation.

New Service Line (4-inch or larger)

The following steps must be taken if you wish to install a new service line:

1. Submit completed New Construction Information Sheet.
2. Submit completed fixture count form for domestic services, or sprinkler design for fire services.

3. Submit sketch of proposed installation, or a set of plans for review, stamped by a Professional Engineer licensed to practice in the State of Maine, as required by BWD. A profile may be required.
4. Make necessary corrections to the plan or sketch as instructed by BWD.
5. Pay the inspection and other jobbing fees to BWD.
6. Install water service with BWD inspection, prior to backfilling.
7. The entity who will be paying the water bill must sign up for service by completing an Application for Service and paying the application fee, or by completing any necessary fire service agreements.

New Private Water Main

The following steps must be taken if you wish to install a private water main, as defined by the Maine Public Utilities Commission:

1. Submit completed New Construction Information Sheet.
2. Submit completed fixture count form for domestic services, or sprinkler design for fire services.
3. Submit a set of plans and a profile for review, stamped by a Professional Engineer licensed to practice in the State of Maine.
4. Make necessary corrections to the plans as instructed by BWD.
5. Submit a signed Private Line Agreement and a copy of the recorded necessary easements to BWD.
6. Pay the inspection and other jobbing fees to BWD.
7. Install water service with BWD inspection, prior to backfilling.
8. Submit as-builts to BWD prior to the new main or any services being activated.
9. The entity who will be paying the water bill must sign up for service by completing an Application for Service and paying the application fee, or by completing any necessary fire service agreements.
10. Schedule meter installation. Allow 2 – 5 business days for meter installation.

If service line stubs have been installed from the new private water main to individual curb stops for future buildings, the process for “New Service Line (2-inch or smaller)” or “New Service Line (4-inch or smaller)” must be followed each time a service line is installed from a shut off to a new building.

New Public Water Main

The following steps must be taken if you wish to install a public water main, as defined by the Maine Public Utilities Commission:

1. Submit completed New Construction Information Sheet.
2. Submit completed fixture count form for domestic services, or sprinkler design for fire services.
3. Submit a set of plans and a profile for review, stamped by a Professional Engineer licensed to practice in the State of Maine.

4. Make necessary corrections to the plans as instructed by BWD.
5. Submit a signed Main Extension Agreement, fire protection charges, and a copy of any recorded necessary easements to BWD.
6. Pay the inspection and other jobbing fees to BWD.
7. Install water service with BWD inspection, prior to backfilling.
8. Submit as-builts to BWD prior to the new main or any services being activated.
9. The entity who will be paying the water bill must sign up for service by completing an Application for Service and paying the application fee, or by completing any necessary fire service agreements.

If service line stubs have been installed from the new private water main to individual curb stops for future customers, the process for “New Service Line (2-inch or smaller)” or “New Service Line (4-inch or smaller)” must be followed each time a service line is installed from a shut off to a new building.