City of North Pole
Service Line Requirements for Water and Wastewater — Commercial and Residential Structures

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Prepared for:

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Abbreviations

ADEC	Alaska Department of Environmental Conservation
ADOT	Alaska Department of Transportation & Public Facilities
AWWA	American Water Works Association
CONP	City of North Pole
DIP	Ductile Iron Pipe
FNSB	Fairbanks North Star Borough
HDPE	High Density Polyethylene
NSF	National Sanitation Foundation
PEX	Cross-linked Polyethylene
PRV	Pressure Reducing Valve
ROW	Right of Way
FL	Flanged
MJ	Mechanical Joint

1.0 GENERAL

1.1 SCOPE

This document covers the acceptable design and construction features for service connection to the City of North Pole water and wastewater systems and will serve as the official inspection guideline prior to connection by the Utility. Deviation from this document is permitted only by written consent of the Utility. The Utility shall have the ultimate authority to interpret this document and may direct modifications for specific situations. Connection to the Utility is at the sole discretion of the Utility.

The City of North Pole assumes no responsibility or liability concerning the suitability or applicability of this document to the requirements of the Customer.

It is not the intent of this specification to supersede regulations, City ordinances, or other regulations, but rather to provide customers, designers, and installers a guide for design and installation of underground piping systems compatible with the Utility distribution system.

1.2 DEFINITIONS

The following definitions apply to this document:

Utility: North Pole Water & Sewer Utility.

Customer: That person contracting with the Utility to obtain water and/or wastewater service. The Customer has certain responsibilities and liabilities detailed in Section 3 of this document.

Designer: Any person who designs the system governed by this document.

Installer: Any person acting on behalf of the Customer who will perform installation, excavation, insulation, or any other work relating to complete or partial accomplishment of connection to the Utility system. The Installer is responsible to the Customer to provide a system which conforms to the requirements of this document.

1.3 OWNERSHIP

Utility services belong to the property owner of the lot served. The Utility's ownership is limited to the utility main, the Utility installed water meter and automatic meter reading equipment. All other piping, fittings, valves, pumps, and other material, whether required by law, necessity, or this document, remain the property and responsibility of the Customer. The Customer shall be responsible for the maintenance and all other costs associated with the service connection.

1.4 CUSTOMER RESPONSIBILITY

The Customer is responsible for paying for and obtaining verification from the designer and Installer that all design and installation work is in conformance with this document, Utility requirements, and applicable City of North Pole (CONP) ordinances. The Customer is responsible for obtaining and complying with all required permits including but not limited to those noted in Section 3.4 PERMITS.

The Customer is responsible for meeting the requirements of the City of North Pole utility ordinances. The Customer and Installer will be held accountable for violations of the City of North Pole utility ordinances and/or damage to Utility facilities resulting from failure to comply with the requirements of the City of North Pole utility ordinances, Utility requirements, and this document.

The Customer or their Installer shall be responsible for determining the location of all underground utilities and shall be responsible for any damages to underground utilities caused by the work.

The Customer is responsible for protecting and maintaining the water service piping, fittings, and appurtenances, including the meter, from freezing, breaking, or any other damage that may occur.

1.5 DESIGN REQUIREMENTS

This document is for services within the limits noted. The Customer is responsible for determining the suitability of this document for their service. The following general requirements should be addressed prior to construction both when using this document or custom design.

1. HDPE services shall not be used in areas where petroleum contamination is suspected or likely to be encountered. Metal piping and chemical resistant joints are required where petroleum contamination is suspected.
2. Circulation pumps are recommended on all water services. Circulation pumps are **required:**

    A. To maintain a minimum flow of 0.1 ft/s in service piping if no pitorifice is used;
    B. If water service piping length exceeds 50 feet from Water main to structure;
    C. On water services larger than 1 inch;
    D. On all water services outside of the City Limits, and in the Highway Park service area.
    E. A circulation pump many also be required in any event where freeze up have occurred regardless of the length of the service.

Refer to CONP Municipal Code Section 13.16.020.

1.6 INSTALLER REQUIREMENTS

For a residential structure (single family or duplex), the property owner may install the water service (but not the connection to the main), provided that the property owner does the actual installation. If the actual installation is not performed by the property owner, then the work must be performed by competent plumber~~s~~ holding valid Alaska

Department of Labor Journeymen Plumber Card~~s~~ or licensed Mechanical Administrator (required by Alaska State Law).

The connection to the main line must be done by a bonded contractor licensed in the State of Alaska. Connection includes excavating within 10' of the main, tapping the main, hanging valve or corporation stops, and backfilling within 10' of the main. Contractor must provide the City with the following:

1. Contractor's License number (State of Alaska).
2. Mechanical Contractor; Plumber Journeyman Certificate of Fitness or Plumber Utility Certificate of Fitness number.
3. Alaska Business License number.
4. City of North Pole Business License number.
5. Contractor proof of commercial liability insurance.
6. Proof of Workman's Compensation Insurance, if required by law.
7. Excavation permit (if excavating in City right-of-way) including any required bond.
8. Approved Utility Tie-in permit.
9. Work plan, including schedule.
10. If working in FNSB or DOT rights-of-way, proof of authorization to work in the ROW.
11. If a new easement is required, proof easement has been obtained; if vacation of an easement is required, proof the easement has been vacated.
12. Other proof of capability to perform such work as required by the Director of City Services.

The Installer is responsible for the protection of private and public property, including other utilities. The Installer is responsible for meeting the applicable requirements of this document, the Uniform Plumbing Code and amendments adopted by the City, and the Construction Code of the Occupational Safety and Health Standards except as modified by this document.

2.0 PROCEDURES FOR OBTAINING A NEW SERVICE

2.1 INFORMATION TO OBTAIN

Call or visit City Hall at 907-488-2281 or 125 Snowman Lane, North Pole AK 99705, for information on:

1. The availability of service.
2. The service type of connection allowed at a given property.
3. Whether or not assessments have been paid.
4. Application forms and procedures.
5. Scheduling field location of Utility mains, inspections, and other Utility services.

To obtain a new service, the Customer must:

1. Complete a Service Tie-in Application and pay the associated fees and assessments.
2. Secure necessary permits and easements.

The Customer must apply for service prior to requesting the scheduling of Utility services.

2.2 SERVICE LINE SIZE AND INSTALLATION

The type of service connection allowed by the Utility will depend upon location of water main, sewer main, service piping diameter, and Customer material preferences. Typically, residential services within North Pole City Limits require the use of pitorifices, while any service over 50 feet in length, and residential services outside North Pole City Limits require a circulation pump.

Each property owner shall coordinate with the Utility to verify the type of service connections allowed for a given property. The Customer is required to state the type and size of piping intended to be installed. Final determination of materials and connection type is to be made by the Utility.

A service connection shall serve no more than one (1) lot. No service connection may cross a lot line other than that for which it is intended to provide service unless an easement has been provided. A structure shall be served by a single service connection. Where multiple structures occupy a single lot, coordinate with Alaska Department of Environmental Conservation (ADEC) Drinking Water Program, 451-2108, for ADEC plan review prior to applying for service.

1. Water: Refer to Section 5.0 for Water Service Requirements. The Customer is responsible for all engineering calculations required for non-standard services:

   A. Minimum size for buried water service piping is 1-inch.

   B. The standard size for residential water services is 1-inch. This is generally sufficient for single family and duplex structures with service lengths of less than 300 feet from main to structure.

   C. Service lengths over 300 feet, or service flows over 10 gpm may require larger piping to provide adequate flow or pressure. Contact the Utility to confirm service sizing requirements.

      1. For non-standard water services the Customer is responsible for obtaining signed sizing computations from an Alaska registered professional engineer, and submitting calculations with the service application.

      2. Service size shall be based on the number of units to be served, and a minimum water main pressure of 50 psi or as directed by the Utility. Minimum flow for a single family home shall be 10 gpm. Size service to deliver no less than 40 psi at the service entrance, or furthest fixture for multiunit or multistory construction.

      3. For single family homes only, in lieu of submitting engineering calculations, or when directed by the Utility, for services greater than 300 feet, but less than 500 feet, provide 1.50 inch minimum service piping.

   D. Multifamily housing, commercial, and non-standard water connections, and all services with fire protection requirements require professional engineering calculations to determine size of service piping.

2. Wastewater: Wastewater services are generally four (4) inch minimum for residential services, with six (6) inch minimum for multifamily and commercial connections. Wastewater service line size is based on the number bedrooms for residential structures. Refer to Section 7.0 for Wastewater Service Requirements.

2.3 APPLICATION FOR SERVICE

Application: Apply for service and pay necessary fees at City of North Pole, 125 Snowman Lane, North Pole, Alaska 99705.

3.0 UTILITY SERVICE REQUIREMENTS

3.1 STANDARDS

Only work, materials, and tools meeting acceptable standards shall be permitted. All plumbing shall conform to the standards set forth in the most recent edition of the Uniform Plumbing Code as adopted by City of North Pole. All excavation shall conform to Occupational Safety and Health Administration Regulations. All work and materials shall be free of defects and leaks.

In the event of conflicts between this document and the most recent edition of other Standards, the following governance shall apply:

1. City of North Pole Ordinance
2. This Document
3. Uniform Plumbing Code adopted and amended by the City of North Pole

3.2 SCOPE OF UTILITY PERSONNEL WORK

Utility personnel will perform water and wastewater locates, shut off water main lines, and once the Installer has connected the service line reactivate the water main lines. Utility personnel will also install the water meter head. This, together with the inspection of service line's materials and construction, will constitute the entire scope of Utility personnel work unless specific arrangements have been made in writing.

3.3 REQUIRED INSPECTION

Inspection of a utility service is the responsibility of the Utility. Each phase of work must be inspected by Utility personnel or the Utility's authorized representative before going on to the next phase. Inspection No. 1 inspects the service line for correct installation of materials prior to authorizing the Customer's contractor to connect into the utility main. The Utility will notify the Customer upon successful completion of Inspection No. 1 and authorize the contractor to tap into the utility main. Inspection No. 2 inspects the amount of insulation on a service line and re-insulation on the main line prior to backfilling.

Water: The Utility will inspect all piping and appurtenances from the water main to the back-flow preventer(s).

Wastewater: The Utility will inspect all piping and appurtenances from the main to the first cleanout outside the structure (for gravity systems) or the exterior wall penetration of the structure (for pressurized systems).

3.4 PERMITS

Permits for the construction of a utility service may be required and may include, but are not limited to ADEC, Alaska Department of Transportation & Public Facilities (ADOT), CONP, and Fairbanks North Star Borough (FNSB).

3.4.1 Right of Way (ROW)

Permits are required for working within a ROW. These are typically owned by ADOT, CONP, or FNSB. The Customer is responsible for complying with all permit requirements.

ADOT: Contact ADOT Northern Region at 451-5400 or 1-800-475-2464 for permit(s) required to work within an ADOT ROW.

CONP: Within the CONP boundary limits, work within the Public ROW requires a Street Excavation permit. Contact the CONP at 488-2281 for additional information for applying for this permit. A PDF version of the application is available online at the CONP website (www.northpolealaska.com) at the Utility Department webpage.

FNSB: Within a Road Service Area of FNSB, work within the Public ROW requires a Construction in Right of Way (ROW) permit. Contact Rural Services Division at 459-1223 for additional permit information and to verify the applicable Road Service Area. A PDF version of the application is available online at the FNSB website (http://www.co.fairbanks.ak.us) Service Areas webpage. For FNSB ROW that is not within a Road Service Area, see 3.12 Surface Restoration of this document for typical road reconstruction section requirements

3.4.2 Alaska Department of Environmental Conservation (ADEC) – Plan Review

Any utility service connected to the public water system that serves two or more detached structures, or an auxiliary water use detached from the primary structure, such as a fire hydrant or free standing hose bib is classified as a utility main extension by ADEC. Approval to construct this type of utility connection requires a Utility Extension Permit issued by the CONP and a Plan Review and Authorization to Construct from the ADEC. All ADEC plan review applications, fees and requirements are the sole responsibility of the Customer. If you wish to install such a utility extension, contact the North Pole Utility at 907-488-2281.

3.5 EROSION AND SEDIMENT CONTROL

The Installer is responsible for erosion and sediment control as necessary to comply with federal, state, and municipal laws that prohibit unpermitted discharge of pollutants, including sediments, as a result of construction activities. The Installer shall complete work so that sediment is not transported onto the roadways or adjacent property. At a minimum sediment tracked onto paved surfaces shall be swept up within 24-hours to minimize dust, wash-off and other transport offsite.

3.6 UNDERGROUND UTILITIES

The Customer or the Installer shall be responsible for determining the location of all underground utilities and shall be responsible for any damages to underground and above grade utilities caused by the work. Possible underground

utilities to be located are telephone lines, cable TV lines, fiber optic lines, electrical lines, street light power, water and wastewater mains, gas lines, storm drains, etc. Call 811 to notify Alaska Digline prior to excavation; be aware that utilities including GVEA, North Pole Utility and North Pole Public Works Department, do not participate in the Alaska Digline and must be contacted directly.

For CONP Utilities, an appointment must be made in advance. Alaska Statutes require a forty-eight (48) hour notice; however, based on workflow, the Utility can normally support a twenty-four (24) hour notice. Water and wastewater utility locates are provided by the Utility without charge.

3.7 EXCAVATION

Excavation on CONP right-of-way, property or easements requires an Excavation Permit from the CONP. Information on applying for an Excavation Permits can be found at the CONP website (www.northpolealaska.com) North Pole Utility webpage.

The Installer is responsible for protection of private and public property and provisions of a safe excavation for service connection. Contact the Utility immediately if any damage to the main occurs. Repairs to a damaged main shall be performed by the North Pole Utility and billed to the Customer. All excavations shall meet the requirements of Alaska Department of Labor and Federal OSHA Regulations. The Installer shall furnish all necessary construction and safety equipment including but not limited to shoring, de-watering pumps, excavation equipment, ladders, barricades, and signs. The Installer shall remove all standing and inflowing water from the excavation. Connections will not be made in cases of improper excavation, excessive groundwater, or other unsafe conditions.

Installer shall support and protect all existing conduit and utilities not scheduled for removal or abandonment, where encountered in the excavation.

Remove materials unsuitable for bedding to a minimum of six (6) inches below the bedding surface. If any frozen or deleterious material exists in-situ, over excavate a minimum of twelve (12) inches. Replace with suitable material and compact to achieve desired elevation. Grade the bottom of trenches to provide uniform bearing and support for the entire pipe length. Compaction requirements vary with the ROW and permits issued but are generally 95% of maximum density within the roadway.

3.8 SERVICE LINE PLACEMENT

Buried piping shall be installed with a minimum of four (4) feet soil cover or additional insulation must be provided. Any cover less than four (4) feet requires written approval from the Utility prior to backfilling.

A minimum three (3') foot horizontal separation between water and wastewater services shall be provided. In addition, the bottom of the water service piping shall be installed at least twelve (12") inches above the top of the wastewater service piping. These separation distances are required by ADEC. The water service pipe shall be placed on a solid shelf excavated at one side of the common trench. If the water service cannot be installed above the sewer service at all locations, then it is necessary that the service lines be installed in two (2) separate trenches a minimum of ten (10) feet apart. Insulation for water and sewer services shall be separate; i.e., the two services shall not be foamed together.

Water and wastewater service lines shall be installed a minimum of ten (10) feet from lot lines unless services are installed within an existing utility easement.

Due to the risk associated with hydrocarbon permeation of HDPE water lines, HDPE service lines must be placed no closer than ten (10) feet to any underground fuel tank, fuel lines, or source of potential contamination. All trench backfill must be clean and free of measurable hydrocarbon or other contamination.

3.9 INSULATION

Insulation material shall be sprayed urethane foam. Applicator shall demonstrate prior experience of at least two (2) years and the North Pole Utility shall be the sole judge of the qualifications of system, application method, and applicator.

1. For water service lines with four (4) feet or more cover, the minimum insulation thickness shall be three (3) inches on the top, sides, and bottom.
2. For water service lines with less than four (4) feet of cover, the minimum insulation thickness shall be four (4) inches on the top, sides, and bottom, including where water services rise vertically near an outside wall. Typically, one (1) inch of insulation shall be provided for each foot of soil cover less than four (4) feet. Additional insulation will be required by the North Pole Utility for conditions such as shallow service lines installed under driveways and sidewalks, crossing other utilities, and vertical service lines.
3. Any hole cut in an outside concrete wall for service must be sprayed full of insulation.
4. The Installer shall be responsible for fully re-insulating the main at the service connection.

Installer shall apply waterproof coating to all insulation on the water main and the first six to 10 feet of the service line. If the water service is in contact with groundwater, it is recommended the waterproof coating be extended the entire length of the service.

3.10 BEDDING AND BACKFILL

Bedding is the gravel layer placed over the excavated subgrade in a trench before laying pipe. Bedding shall be placed to ensure the pipe is given a uniform bearing for its full length. Bedding material shall be placed in maximum layers of four (4) inches and compacted by hand-operated tampers up to the spring line of the pipe. Above the spring line, place bedding in uniform layers not more than six (6) inches deep and compact. Backfill within twelve (12) inches of the pipe shall be placed by hand. In situ material meeting requirements for bedding may be used in lieu of imported bedding subject to the approval of the North Pole Utility. When in situ material is used, trench bottom shall be graded and shaped prior to placing pipe.

Under unimproved areas (i.e. yards, lawns, woods, or brush) the backfill material shall be placed in layers not exceeding twelve (12) inches and compacted to a minimum of 85% of maximum density. Under improved areas (i.e. roadways, driveways, sidewalks, or paths) backfill material or subbase shall be subject to the CONP's Guidelines for Streets and Drainage available at the CONP website (www.northpolealaska.com) at the Public Works webpage and according to any DOT and FNSB permitting requirements in their ROWs.

Bedding and backfill shall be free of organic matter, frozen material, lumps or excessive amounts of clay or silt, and objectionable or foreign substances.

3.11 SURFACE RESTORATION

Restore all disturbed property, including drainage swales, pavements, driveways, pathways, utilities, and other improvements to preconstruction condition or as acceptable to impacted property owners.

To reconstruct a roadway, the Installer is responsible for complying with all requirements in the CONP's Guidelines for Streets and Drainage available at the CONP website (www.northpolealaska.com) at the Public Works webpage. Requirements for restoration of FNSB and DOT roadways will be specified in the FNSB or DOT ROW permit.

3.12 DEWATERING

Excavations shall be free from standing water. Pipes shall not be laid in water. The Installer shall be responsible for taking whatever action is necessary to provide an excavation sufficiently dry to properly construct the service and place and compact bedding and backfill. In no case shall water in the excavation be allowed to enter the service piping, nor will the North Pole Utility tap the main in standing water conditions.

Any dewatering activity shall be done in accordance with ADEC dewatering regulations. The Installer shall be responsible for obtaining and complying with any required dewatering permit.

Dewatering must be conducted without damage to adjacent property, inconvenience to property owners or impairment of traffic. The Installer shall assume all liability for flooding or related water damage to property as a result of dewatering.

4.0 MATERIALS

4.1 GENERAL

1. All materials in direct contact with potable water must be certified by an ANSI accredited organization to conform with ANSI/SF Standard 61. All pipe, fittings, and equipment shall be labeled with the NSF 61 marking.
2. Materials shall also be "lead free" per ANSI/NSF Standard 372 and not contain more than 0.2 percent lead when used with solder and flux and nor more than 0.25 percent lead by weighted average with respect to surfaces in contact with water.
3. All materials shall be new.

4.2 INSULATION

Field applied insulation shall be rigid closed cell, two component urethane foam, Quadfoam 2.0 or approved equal, with the following properties:

1. K Factor: 0.14 (BTU-in/FT^2 – Hr - ºF) per ASTM C518.
2. Compressive Strength (min): 35 psi per ASTM D 1621.
3. Nominal Density: 2.0 pcf per ASTM D 1622.

Waterproof coating shall be a two (2) component, one hundred (100) percent solids, sprayable polyurethane coating, Permax 700 by Resin Technology or approved equal, with the following properties:

1. Tensile Strength: 1800 PSI.
2. Elongation (percent): 120.
3. Water Vapor Transmission: 0.413 Perms.

Plastic film for bundling of water service piping prior to insulation shall be polyethylene film (2 mil thickness minimum) or non-adhesive plastic stretch bundling film (e.g., pallet wrap).

4.3 BALL MARKER

The North Pole Utility will provide at cost to the Installer an electronic utility locate ball marker. See the individual Water Service Details for the location the ball marker is to be placed for individual installations.

4.4 WARNING TAPE

Acid- and alkali-resistant polyethylene film warning tape is required above the length of the service line located within the CONP, FNSB or DOT right-of-way and is optional but recommended above the remainder of the service line on private property. The warning tape should be manufactured for marking and identifying underground utilities, minimum 6 inches wide and 5 mils thick, continuously inscribed with a description of utility, with detectable, metallic core encased in a protective jacket for corrosion protection

Tape Color: Blue for Water and Green for Wastewater

4.5 BEDDING

Imported bedding material will not normally be required provided the native material meets the below gradation and can be compacted. Large stone, unstable soils, saturated soils, and organic soils are not suitable materials. If native material is unacceptable, Installer is to provide imported material conforming to the following gradation:

Table 1: Bedding Gradation

U.S. Standard Sieve	Cumulative % Passing by Weight
2-inch	100
No. 4	20 – 60
No. 200	0 – 5

If wet trench conditions are encountered, the North Pole Utility may approve uniformly graded pea gravel (1/4” to 1/2") for use as bedding. The North Pole Utility must authorize the use of pea gravel prior to placement.

4.6 BACKFILL

Under normal circumstances, backfill material will be the native material obtained during excavation. The material shall be thawed and have a reasonably low moisture content. North Pole Utility rejected material shall be removed from the site and replaced with acceptable material.

4.7 WATER SERVICE PIPING AND FITTINGS

Each water service line (supply or return) shall be a minimum of one (1) inch diameter and as required by size of structure to be served. Refer to Section 2.2 Service Line Size and Installation for sizing requirements. Confer with the North Pole Utility for the appropriate material for your installation.

Flanged connections for underground piping runs and underground fittings are not acceptable except for valves.

4.7.1 HDPE

HDPE SDR 11 tubing for sizes one (1") inch and larger conforming to standard IPS. No joints are permitted in the tubing run between the main and the service entry where a continuous roll of tubing is feasible. HDPE shall be made from resin PE3408 or PE4710 and have a cell classification of 345434C in accordance with ASTM 3350-05.

HDPE fittings shall be factory molded from PE resins compatible with the pipe, or factory fabricated from previously specified PE pipe by means of thermal butt fusion. Field fabrication of fittings is expressly prohibited. HDPE fittings shall match the full pressure rating of the pipe (160 psi for PE3408, 200 psi for PE4710). Molded fittings may be rated at full pressure. Miter welded fittings require reduction of SDR and a heavier wall thickness. The fitting outlet ends shall be machined to match the adjoining pipe SDR. All fittings shall be long-sweep mitered or fabricated injection-molded fittings.

MJ adapters, when combined with standard MJ DIP fittings and gaskets shall provide a fully restrained, leak free joint to MJ joints and couplings. MJ adapters shall be by Central Plastics or approved equal.

4.7.2 Copper

Type "K" soft drawn copper for sizes one (1) inch and larger.

All fittings shall be threaded bronze or brass material. Brass flared fittings shall be used below ground to join copper tubing on long runs. No compression type couplings or unions shall be used. Soldered joints are not permitted in buried piping or the circulation loop; soldered joints are permitted only in the domestic branch after the check valve.

4.7.3 Ductile Iron

Ductile iron pipe may be used for pipe sizes four (4) inches and larger. Ductile iron pipe shall conform to the latest revision of AWWA C151. Ductile iron pipe shall be thickness Class 50, cement mortar lined.

Ductile iron fittings shall conform to AWWA C110/C153. Joints may be push-on (Tyton), mechanical, dresser coupling, or flanged. In no case shall flanged joints be acceptable underground without prior written approval from the North Pole Utility.

Thrust restraint shall be by use of Field Lok gaskets or mechanical joints with gripper glands. Submit thrust restraint plan to the North Pole Utility for approval. The use of anchors, restraining rods, and/or thrust blocks shall not be used.

4.7.4 Steel

Steel pipe (Schedule 40) and fittings conforming to ASTM A36/A53 are allowed for sizes two (2) inch, three (3) inch, four (4) inch, six (6) inch, and eight (8) inch. **GALVANIZED PIPE IS NOT PERMITTED.** Pipe shall be butt welded or connected with dresser type couplings with appropriate restraints. **THREADED PIPE IS NOT PERMITTED UNDERGROUND.**

4.7.5 PEX

Thaw tubing shall be ¾" PEX A or PEX B, complying with ASTM F876/F877. 90 degree bends shall be made and supported with plastic brackets manufactured for specific purpose of preventing kinks in PEX.

4.7.6 Transition Fittings

Manufactured Fitting-Type Transition Couplings shall be the same size as pipes to be joined. Pressure rating at least equal to pipes to be joined. End connections compatible with pipes to be joined. Submit proposed fitting product data to the North Pole Utility for approval prior to installation.

4.8 VALVES

4.8.1 Ball

Ball valves may be used in lieu of 2" and smaller gate valve.

Size 1 to 2 inches – Two-piece with full port, Bronze, or brass trim, CWP Rating 600 psig, ASTM B124; Chrome plated ball, Handle Stainless steel tee handle with vinyl insulator; features blow-out proof stem.

Approved manufactures: FNW, Apollo; Jamesbury; Marwin; Velan; Watts

4.8.2 Gate

Size 1" to 2 1/2" – Pressure Rating Class 300 psig cold working pressures, Body Bronze: ASTM B 62

Approved manufactures: FNW, Apollo; Jamesbury; Marwin; Velan; Watts

Size 3" and greater – Gate valves - AWWA C515 ductile iron body, epoxy coated; Trim hard faced with 13 percent chrome; Ends Flanged, AWWA C115; Features Resilient wedge seat type with non-rising stem, bolted bonnet with Teflon impregnated packing.

Approved manufacturers: American, AVK, M&H, Mueller, FNW

4.8.3 Corporation Stop

Bronze body 1- to 2-inch, with flare connection for copper or fully restrained adapter for HDPE. Services larger than 2" requires a gate valve.

4.8.4 PRV

Bronze body complying with AWWA C550 and meets requirements of ASSE 1003. Initial working pressure of 150 psig. Design Inlet Pressure of 160 psig and design outlet pressure setting of 60 psig, adjustable set point.

Approved manufactures: Cash Acme, Conbraco, Honeywell International, Watts, Zurn Industries

4.9 PITORIFICE

Copper, 1-inch size, manufactured by Ford Meter Corporation.

4.10 BACKFLOW PREVENTER

The minimum backflow prevention requirement for all water services is a double check valve (non-testable).

The North Pole Utility, at their discretion, may require a testable double check valve assembly or other back-flow prevention device on any water service connection with potential for contamination or backflow risk to ensure compliance with the North Pole Utility's Cross Connection Control Program. The Cross Connection Control Program is available at the CONP website (www.northpolealaska.com) North Pole Utility webpage.

4.10.1 Dual Check Valve (Residential Service)

Dual check valve shall consist of two (2) spring loaded, independently operating check valves with tightly closing shut-off valves; test cocks not required. Bronze body conforming to ASSE 1013, with a pressure loss of 5 psi maximum through the middle third of flow range.

Approved manufacturers: Ames Fire & Waterworks. Conbraco Industries, FEBCO, Flomatic Corporation, Watts, Zurn Industries

4.10.2 Double Check Valve Assembly (Commercial Service)

A manufactured assembly of two (2) independently operating spring-loaded check valves with tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve, UL listed as a backflow prevention assembly. Bronze or stainless steel body conforming to ASSE 1015, with a pressure loss of 5 psi maximum through the middle third of flow range.

Approved Manufacturers: Ames Fire & Waterworks. Conbraco Industries, FEBCO, Flomatic Corporation, Watts, Zurn Industries

4.10.3 Double Check Valve Assembly (Fire Sprinkler Service)

A manufactured assembly of two (2) independently operating spring-loaded check valves with tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve, UL listed as a backflow prevention assembly, and NFPA approved for fire service. Bronze or stainless steel body conforming to ASSE 1015 and AWWA C510, with a pressure loss of 5 psi maximum through the middle third of flow range.

Approved manufacturers: Ames Fire & Waterworks. Conbraco Industries, FEBCO, Flomatic Corporation, Watts, Zurn Industries

4.10.4 Reduced Pressure Principle (RPZ) Backflow Preventer Assembly

For higher risk services as specified by the CONP cross connection control program.

A manufactured assembly of two (2) independently operating spring-loaded check valves in series, with a vented, lower pressure zone between the valves that acts to release and vent pressure and flow in event of backflow. Equipped with tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve, UL listed as a backflow prevention assembly. Bronze or stainless steel body conforming to ASSE 1015 and AWWA C510, with a pressure loss of 5 psi maximum through the middle third of flow range.

Approved manufacturers: Ames Fire & Waterworks. Conbraco Industries, FEBCO, Flomatic Corporation, Watts, Zurn Industries

4.11 CIRCULATION PUMP

Services without pitorifices, services over 50 feet in length from the main to the structure's foundation, and services outside of the City Limits or in the Highway Park service area shall utilize a pumping system that is designed with consideration given to pump load requirements, circulation path, and heat balance. The Utility may also require a circulation pump on services with prior freezing problems.

The Customer is responsible for providing and maintaining the pump. The information provided in this section may be used for sizing and selecting pumps for typical and standard services. For non-standard services outside the specified ranges, the Customer shall submit a pumping and circulation plan.

Pump shall be a factory assembled and tested, single-stage, close-coupled, in-line, sealless centrifugal pumps as defined in ANSI / Hydraulic Institute (HI) 5.1-5.6. Pump and Motor Assembly: Hermetically sealed, replaceable-cartridge-type unit with motor and impeller on common shaft and designed for installation with pump and motor shaft mounted horizontally. Casing: Bronze or Stainless Steel, with threaded companion-flange connections. Impeller: Corrosion-resistant material. Pump shall be UL listed (electrical safety) and NSF 61 listed (sanitation and health safety). Acceptable pumps include:

1. Grundfos UP, UPS Stainless, or Alpha 1 Stainless
2. Taco 110 Series stainless steel or 0015 (3-speed) stainless steel.
3. Bell & Gossett Ecocirc Series, stainless.
4. Armstrong Astro 200 Series stainless.

Circulation pumps shall conform to the following requirements:

1. All services one hundred (100) feet or less in length (one way):
   Horsepower: 87 watts 1/8 HP
   Maximum flow at zero head: 24 GPM at high speed setting
   Maximum head at zero flow: 18 feet at high speed setting
   Grundfos UPS 15-55 SFC BF (three speed, use at high speed setting) or equal
   Rated for 145 PSI

2. All household services between one hundred (100) feet and five hundred (500) feet in length (one way):
   Horsepower: 205 watts 1/4 hp
   Maximum flow at zero head: 25 GPM
   Maximum head at zero flow: 30 feet
   Grundfos UP 26-96 BF or equal
   Rated for 145 PSI

3. All commercial services between one hundred (100) feet and five hundred (500) feet in length (one way), up to 4-inch diameter service with 1-inch return:
   Horsepower: 245 watts 1/3 HP
   Maximum flow at zero head: 34 GPM
   Maximum head at zero flow: 32 feet
   Grundfos UP 26-99 BF or equal
   Rated for 145 PSI

4. Any service over five hundred (500) feet in length shall utilize a pumping system that is designed with consideration given to pump load requirements, circulation path, and heat balance. Calculated thermal degradation shall be limited to two (2° F) degrees Fahrenheit over the entire distance through the service piping. Pump shall be sized to provide a minimum flow velocity of 0.1 feet per second in the largest pipe or ten (10) gallons per minute, whichever is larger, without consideration of the contributions of pitorifices. For such services, a circulation plan prepared and stamped by an engineer licensed in the State of Alaska is required.

4.12 PILOT LIGHT

Light that illuminates when power to the circulation pump is turned on.

4.13 SADDLE

Service saddles to conform to ANSI/AWWA C-800 Standard for Underground Service Line Valve and Fittings and have a minimum working pressure of 200 psig. The North Pole Utility will provide size and material type of main.

For hot tapping ductile iron mains, service saddles shall have a wraparound design with ductile iron body coated with nylon or other corrosion control coating, a broad pressure activated gasket molded of virgin rubber and two corrosion resistant, forged AISI C-1018 steel straps, zinc plated with dichromate seal. The gasket shall be permanently bonded into a cavity in the saddle body, which provides internal as well as external gasket retention.

Approved manufacturers: ROMAC 101N service saddle up to 2 inch, or ROMAC SST tapping sleeve for service up to 8 inch, or equal products by JCM Industries, Mueller, or Ford.

For hot tapping HDPE mains, service saddles shall be nylon coated ductile iron with single or dual stainless steel straps, minimum 2 inch band width for taps up to 2 inches. Full wrap around tapping sleeve for larger diameters. HDPE saddles must use spring washers to compensate for pipe contraction during temperature and pressure changes.

Approved manufacturers: ROMAC 101N-H HDPE service saddle up to 2 inch, or ROMAC SST-H for service up to 8 inch, or equal products by JCM Industries, Mueller, or Ford.

4.14 LOCATE WIRE

A tracer wire is required on HDPE pipe. A tracer wire is recommended but not required on copper or DIP services

Tracer wire shall be #12-gauge, insulated, copper coated steel or copper wire. Wire insulation shall be at least 30 mil HDPE jacket and be colored blue to correspond with water or green to correspond with wastewater. Copperhead High Strength 1230 or approved equal.

Connections shall be made using a mechanical connector Copperhead SnakeBite, 3M DBR, or approved equal.

5.0 WATER SERVICE REQUIREMENTS

5.1 PIPE

HDPE shall be joined by butt fusion. Procedures and qualifications must meet the requirements of Title 49 of the US Code of Federal Regulations #192.285 as it applies to butt fusion. Personnel who will perform the pipe butt-fusion attend a class given by an HDPE pipe manufacturer and obtain a written certification from the pipe manufacturer stating they have successfully completed the class within the last 12 months. Electrofusion must be preapproved by the North Pole Utility and only where other methods are not feasible.

1. Copper water service piping shall be installed such that a two (2) inch minimum horizontal separation is provided between supply and return.
2. Maintain a minimum of ten (10) feet horizontal separation between water and fuel or wastewater features including pipes, tanks, septic systems, and soil absorption systems.
3. Where water pipes must cross wastewater piping (including storm drainage), no joints shall be within 9 feet of the crossing and 18 inches shall be maintained between pipes.
4. Water service lines shall be sloped down to the main and installed as straight as possible (except for angle points) such that trapped air may travel towards the structure being served.
5. Installer shall minimize the number of joints in the buried sections of the service line and are restricted as in Sections 4.7.

5.2 CIRCULATION PUMP

Circulation pump installation is subject to approval by the North Pole Utility. The flow direction for the pump shall be as indicated on the standard service details.

The electrical installation must conform to the latest edition of the National Electric Code (NFPA 70) and amendments as adopted by the CONP with all applicable state and local statutes. Power for the circulation pump shall be provided from a dedicated circuit breaker within a Customer's electrical panel and clearly identified in the circuit schedule. The branch circuit breaker shall be rated for 15-amps at the pump's operating voltage. Branch wiring shall include a ground wire and all conductors shall be copper,14-awg at a minimum. Routing of conductors shall be in conformance with current electrical code and shall be protected from damage. The circulation pump shall be installed with a permanent power connection; a receptacle with cord and plug is not an acceptable means of power connection.

A local disconnecting means for the pump shall be provided by a pilot light. The pilot light shall be installed in an accessible location and labeled "Utility Circulation Pump."

Pumps will be rigidly installed to resist hydraulic and seismic loads. Supports and braces will allow access to the pump for service and replacement.

5.3 INTERIOR VALVES

A valve must be installed between the circulation loop and the meter for Customer use. The Customer shall not use the valves on the circulating loop. These valves must remain open for proper circulation in the service lines. Closing one of these valves could cause the service to freeze during winter months.

5.4 METER

The meter shall be located in a warm, dry, and accessible area. The plumbing must be installed in such a manner that will allow the meter to be installed horizontally with the register upward. The floor of the space where the meter is installed, shall be above flood elevation, unless the North Pole Utility approves otherwise at the time of application.

The size of meter is determined prior to installation of the service. Residential service meters are typically ¾-inch; meters for commercial services are sized based on water demand. Meter sizes are at the discretion of the North Pole Utility. The North Pole Utility will furnish the Installer with a meter base or meter assembly depending upon the meter type to be installed within the water service loop. The Installer will install the meter base prior to the first North Pole Utility inspection.

Multi-meter installations, e.g. multiplex residential housing or commercial retail, shall be in accordance with North Pole Municipal Code Section 13.16.030 Multiple Water Meters for a Single Structure. (www.codepublishing.com / AK / NorthPole). All such installations require prior review and approval by the North Pole Utility. See Section 2.2 regarding services to multiple structures.

5.5 PRV

PRV shall be provided by the Installer where the main pressure is higher than the desired operating pressure of the structure. The location of the PRV will be in accordance with the service installation diagrams. The Installer shall provide adequate space and isolation to service, adjust, and replace the PRV. Set field-adjustable pressure set points of water pressure-reducing valves to a pressure not to exceed 80 psi.

5.6 BACKFLOW PREVENTER

All water services at a minimum shall have a double check valve. Install the double check valve in accordance with the manufacturer's instructions.

Where the North Pole Utility has specified enhanced backflow prevention such as a testable double check valve assembly, or a reduced pressure principle (RPZ) assembly, install the device in accordance with the manufacturer's instructions. Installer shall have each assembly tested by an approved testing and certification agency. Submit test report to the North Pole Utility.

Backflow preventer assemblies will be considered defective if they do not pass annual tests and inspections. Replace defective assemblies immediately. At the Utilities request, Customer to submit annual double-check valve assembly test reports.

5.7 PRIVATE WELLS

All private wells, holding tanks, pressure vessels or any other water source shall be physically disconnected from the structure plumbing prior to connection to the North Pole Utilities water mains. There must be an "air gap" between the North Pole Water system and any other water system present on the Customers property. Valves or backflow preventers are not sufficient separation.

The North Pole Utility shall inspect disconnection of well, holding tank, or other water source prior to connection of service lines to structure plumbing.

Customer may continue to operate additional water system(s) that are physically separate from piping associated with connection to the Utility. Customer shall label and sign all such water systems and spigots as Non-Potable as indicated on the Standard details. Disconnected piping must remain exposed for confirmation by the North Pole Utility.

The North Pole Utility does not require abandonment or removal of well unless there is federal, state or CONP regulation that requires decommissioning of the well prior to installation of water service. The Customer shall coordinate with ADEC, and/or DNR for abandonment and closure requirements if Customer desires or is required to decommission the well for any reason.

5.8 CONNECTION TO MAIN

City statutes require a forty-eight (48) hour notice prior to connection to the main. The North Pole Utility requires that all the components of the water service be present at the time North Pole Utility personnel arrive on site to do the first inspection.

For 2" and larger services, gate valve end connection will normally be mechanical joint. Other configurations are available based on Customer's requirements.

5.9 FIRE SPRINKLER SYSTEMS

The installation of a fire booster pump is prohibited on the North Pole water systems without advance written approval from the North Pole Utility.

5.10 FIRE HYDRANTS

If a fire hydrant is installed on a service line, all equipment and methods of installation shall be designed and installed in accordance with the North Pole North Pole Utility Standards of Construction.

5.11 TESTING AND DISINFECTION

All piping shall be hydrostatically pressure tested, and thoroughly open bore flushed of all dirt and debris. Piping 2-inches and larger shall be disinfected. The Installer shall furnish all temporary hose, pipes, pumps, and fittings required to accomplish this work.

5.11.1 Pressure Testing

Residential services shall be tested at main line pressure upon energizing the service. All pipe and fittings shall be free of any drips or leaks during visual inspection. Large commercial services (other than fire systems) will be tested at one hundred fifty (150) pounds per square inch (psi). Leak-down tests are required for pipe runs of over one hundred-fifty (150) feet and shall be conducted in accordance with the current test procedure as published in the North Pole Utility Standards of Construction. See NFPA 13 and 24 for the applicable leakage rates for fire supply piping. Fire system test pressure shall be two hundred (200) psi for two (2) hours. Structure plumbing after the double check valve assembly may be isolated and does not need to be included or connected for pressure testing of the Utility service piping. Provide testing report documenting test pressure, duration, and results of pressure test.

5.11.2 Disinfection

Disinfection of service lines 2-inches and larger shall be with a chlorine solution of sufficient strength three hundred (300) parts per million (PPM) to provide a contact kill of bacteria and shall remain in contact with all inside surfaces of the piping for three (3) hours. Upon completing disinfection, the chlorinated water shall be flushed to a safe location and disposed of properly. One half (1/2) cup of Clorox bleach in five (5) gallons of water is approximately a three hundred (300) PPM solution. Provide disinfection report stating measured concentration of

chlorine solution and duration, or in lieu of concentration measurement, amount of chlorine chemical and water used. Large commercial water services (larger than 2-inch) shall be bacteria tested after disinfection and flushing. Two bacteria tests a minimum of 16 hours apart are required; provide laboratory test results to the Utility.

5.11.3 Flushing

Upon connection of the installed pipe to the North Pole Utility mains, the pipes shall be full bore flushed. Flushed water shall be conveyed to a safe location away from the excavation. The flushing shall be sufficient to remove all debris and disinfectant solution. Highly chlorinated water must be dechlorinated prior to discharge to the North Pole sewer system, a septic system, or any body of water.

5.12 CROSS CONNECTIONS

Cross connections to other water sources or interconnection to other water systems or services is expressly prohibited. Any connection that can allow entry of untreated or contaminated water or water from any other sources into the North Pole Utility distribution system is forbidden. All service connections must comply with the CONP Cross Connection Control Program. (See, CONP website, www.northpolealaska.com, North Pole Utility webpage.)

5.13 PROPERTY LOOP

Pitorifice service loops stubbouts have occasionally been installed with new water mains at the time of construction and extended to the property line. No warranty as to the current condition and proper function of the property loop piping can be made by the North Pole Utility. Complete shutoff can only be accomplished by excavating to the main.

Service loops belong to the property owner of the lot served by the loop. The property owner shall be responsible for the maintenance and all other costs associated with the service connection loop.

To determine if a service stub was installed at the time that the water main was constructed, consult the North Pole Utility. The as-built drawings indicate if there was a water service stub. In many cases the water service stub was marked with a white post along the property line. Service stubs installed in 2005 and later may have electronic ball markers that can be located by the North Pole Utility.

6.0 WATER SERVICE DETAILS

Figure 1: Residential Water Service (Interior Piping)

Figure 2A: Residential Main Connection (Copper Service Lines)

Figure 2B: Residential Main Connection (HDPE Service Lines)

Figure 3: Pitorifice Section

Figure 4: Copper Service Lines Section

Figure 5: HDPE Service Lines Section

Figure 6: Commercial Water Service 2" and Larger (Interior Piping)

Figure 7: Fire Sprinkler Service (Interior Piping)

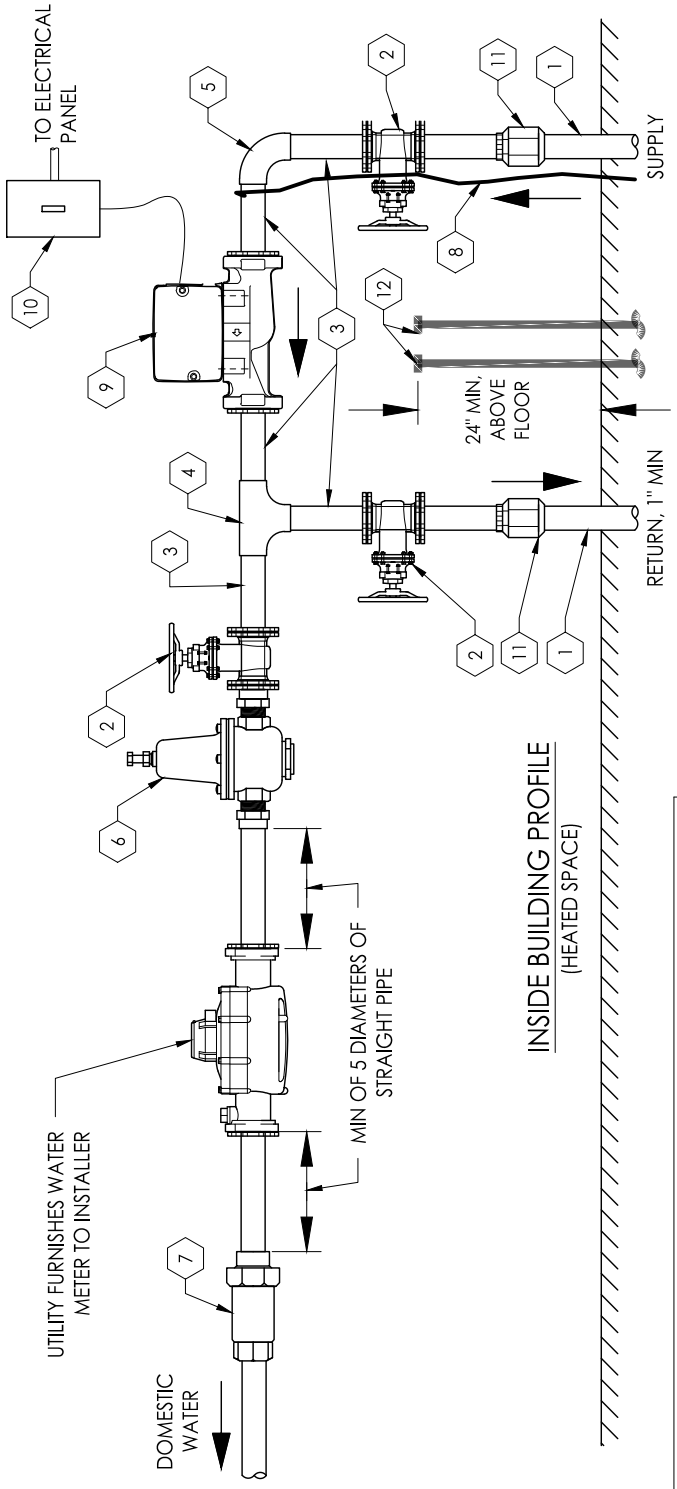
Figure 8: Commercial or Fire Sprinkler Main Connection

Figure 9: Commercial or Fire Sprinkler Service Lines Section

Figure 10: Disconnection from Existing Water Source

Figure 11: Multi-Unit Metering Detail

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



NOTES:

1. STANDARD RESIDENTIAL METER IS 3/4" NPT.
2. METER SHALL BE A MIN OF 1' AND MAXIMUM OF 4' ABOVE FLOOR LEVEL.
3. SEE SECTION 2.2 FOR SERVICE LINE SIZING REQUIREMENTS.
4. CIRCULATION PUMP OPTIONAL ON SHORT PITORIFICE CONNECTIONS. REQUIRED WHERE THE BUILDING IS GREATER THAN 50 FEET FROM THE WATER MAIN OR AS MANDATED BY THE UTILITY.
5. LOCATE WIRE OPTIONAL FOR COPPER SERVICE LINES.
6. HDPE WATER SERVICE NOT SUITABLE FOR ELECTRICAL GROUND.

MATERIAL LIST

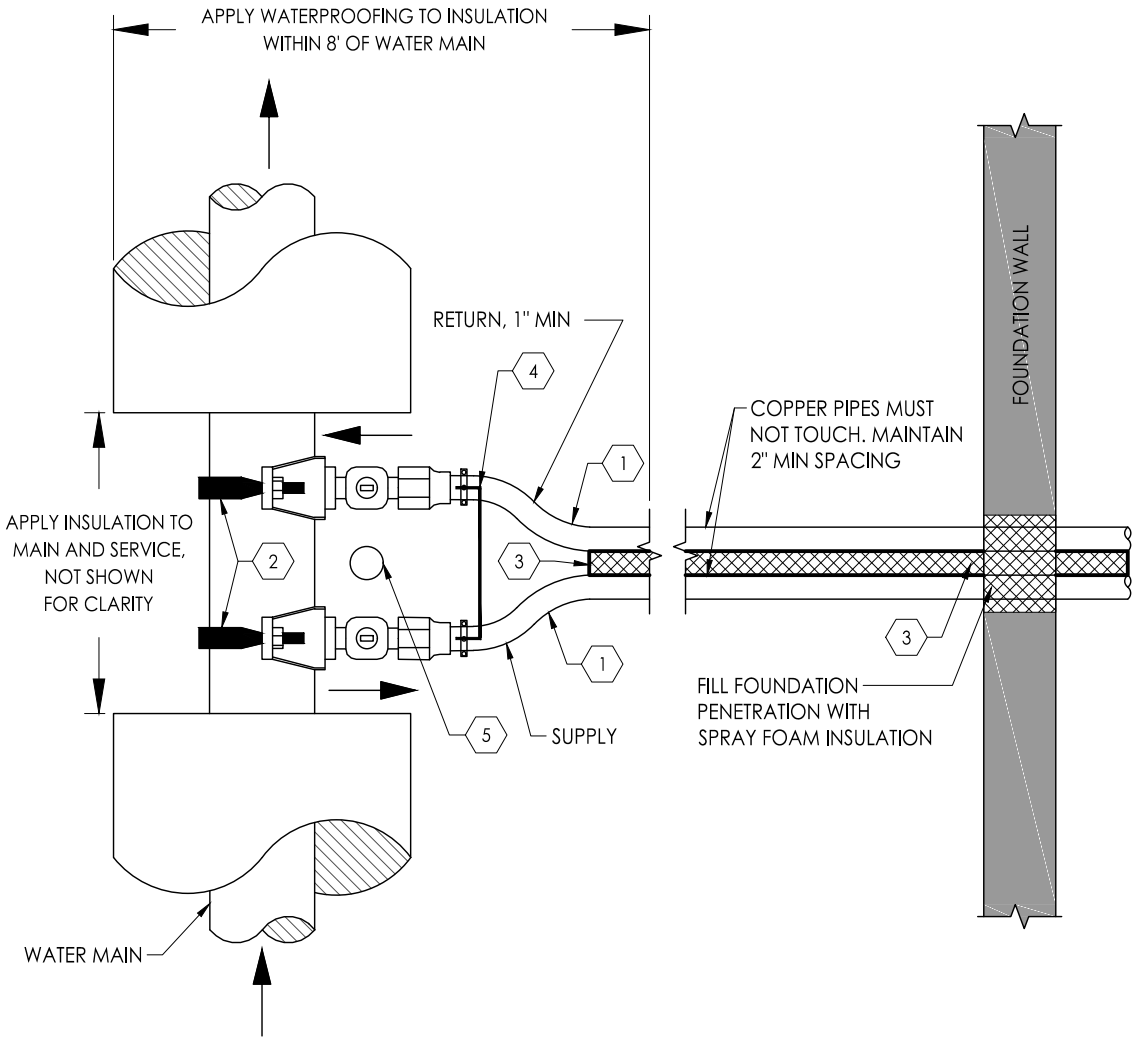
ITEM	DESCRIPTION
1	COPPER OR HDPE SERVICE LINE PIPE
2	GATE OR BALL VALVE
3	METAL PIPE AND NIPPLES, LENGTHS VARY
4	TEE
5	ELBOW
6	PRESSURE REDUCING VALVE; CONNECT ON EACH SIDE WITH UNION
7	DUAL CHECK VALVE
8	12 GA. JACKETED LOCATE WIRE (SEE NOTE 5)
9	CIRCULATION PUMP (SEE NOTE 4)
10	PILOT LIGHT
11	TRANSITION FITTING (FOR HDPE SERVICE LINES); ELECTROFUSION OR PUSH-TO-CONNECT
12	PEX THAW TUBES (FOR HDPE SERVICE LINES)

1 RESIDENTIAL WATER SERVICE (INTERIOR PIPING)

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

10 February 2020

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



MATERIAL LIST	
ITEM	DESCRIPTION
1	COPPER PIPE
2	SADDLE AND CORPORATION STOP
3	2" RIGID BOARD INSULATION AS SEPARATION BLOCKING
4	THAW BUSS, #1 AWG MIN, AND CLAMPS
5	UTILITY LOCATOR BALL BURIED ABOVE CORP STOPS

NOTES:

1. WATER SERVICE PIPES SHALL HAVE A LEVEL OR POSITIVE GRADE FROM THE WATER MAIN TO THE BUILDING (NO HUMPS OR DIPS) TO PREVENT AIR TRAPS.
2. PLACE BLUE UTILITY TAPE CENTERED OVER THE FULL LENGTH OF THE WATER SERVICE PIPING, 2' BELOW GRADE.
3. LOCATE WIRE OPTIONAL FOR COPPER SERVICES.
4. COPPER SERVICE IS REQUIRED IN AREAS WITH SOIL CONTAMINATION, AND OPTIONAL FOR GENERAL USE.

2A RESIDENTIAL MAIN CONNECTION (COPPER SERVICE LINES)

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
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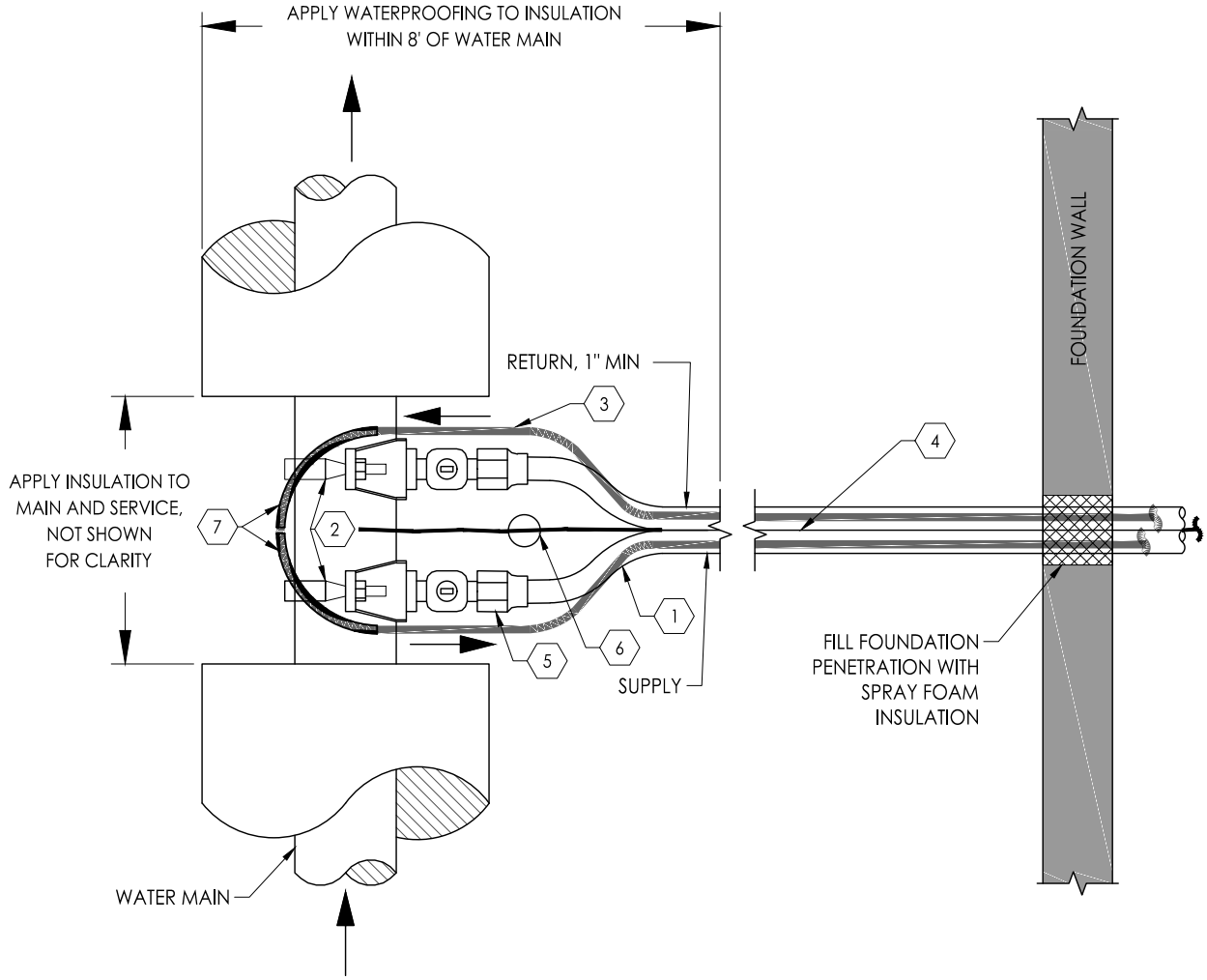


MATERIAL LIST - CUSTOMER ITEMS	
ITEM	DESCRIPTION
1	HDPE, SDR 11, PIPE
2	SADDLE AND CORPORATION STOP
3	PEX THAW TUBES
4	JACKETED LOCATE WIRE, 12 GA
5	TRANSITION FITTING
6	UTILITY LOCATOR BALL BURIED ABOVE CORPORATION STOPS
7	90 DEGREE PLASTIC BEND SUPPORTS REQUIRED

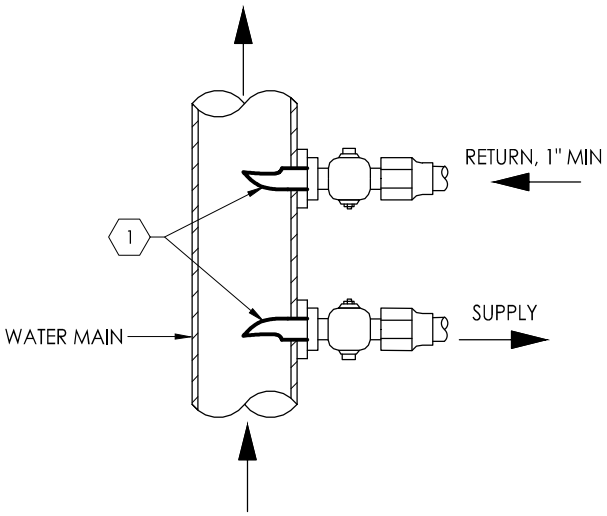
NOTES:

1. WATER SERVICE PIPES SHALL HAVE A LEVEL OR POSITIVE GRADE FROM THE WATER MAIN TO THE BUILDING (NO HUMPS OR DIPS) TO PREVENT AIR TRAPS.
2. PLACE BLUE UTILITY TAPE CENTERED OVER THE FULL LENGTH OF THE WATER SERVICE PIPING, 2' BELOW GRADE.
3. HDPE SERVICE ACCEPTABLE FOR GENERAL USE EXCEPT IN CASE OF CONTAMINATED SOILS.
5. THAW TUBE SHALL BE CONTINUOUS WITH NO FITTINGS, SUPPORTED TO PREVENT KINKING. OTHER INSTALLATION METHODS MUST BE PRE-APPROVED BY THE UTILITY.
6. THAW TUBE SHALL BE SECURED DIRECTLY TO SERVICE PIPING AND CORPORATION STOPS WITH ZIP TIES OR SHRINK WRAP PRIOR TO INSULATING (THAW LOOP IS SHOWN OFFSET ABOVE SO AS NOT TO OBSCURE TIE-IN DETAILS.)

2B RESIDENTIAL MAIN CONNECTION (HDPE SERVICE LINES)

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

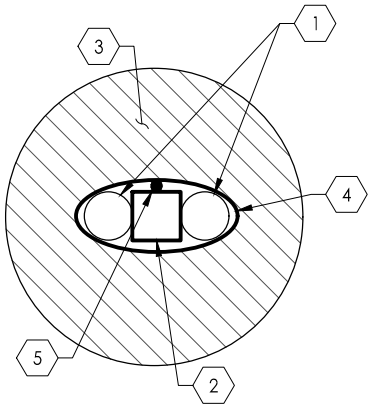
CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



MATERIAL LIST	
ITEM	DESCRIPTION
1	PITORIFICE

3 PITORIFICE SECTION

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)



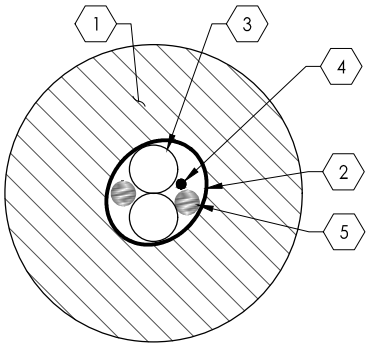
MATERIAL LIST	
ITEM	DESCRIPTION
1	COPPER SERVICE LINES
2	2" RIGID BOARD INSULATION AS SEPARATION BLOCKING
3	3" MIN POLYURETHANE INSULATION
4	PLASTIC FILM
5	12 GA, JACKETED LOCATE WIRE (OPTIONAL)

NOTE:

COPPER PIPES MUST NOT TOUCH EACH OTHER FOR ELECTRICAL THAW PURPOSES. MAINTAIN 2" MINIMUM SPACING.

4 COPPER SERVICE LINES SECTION

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

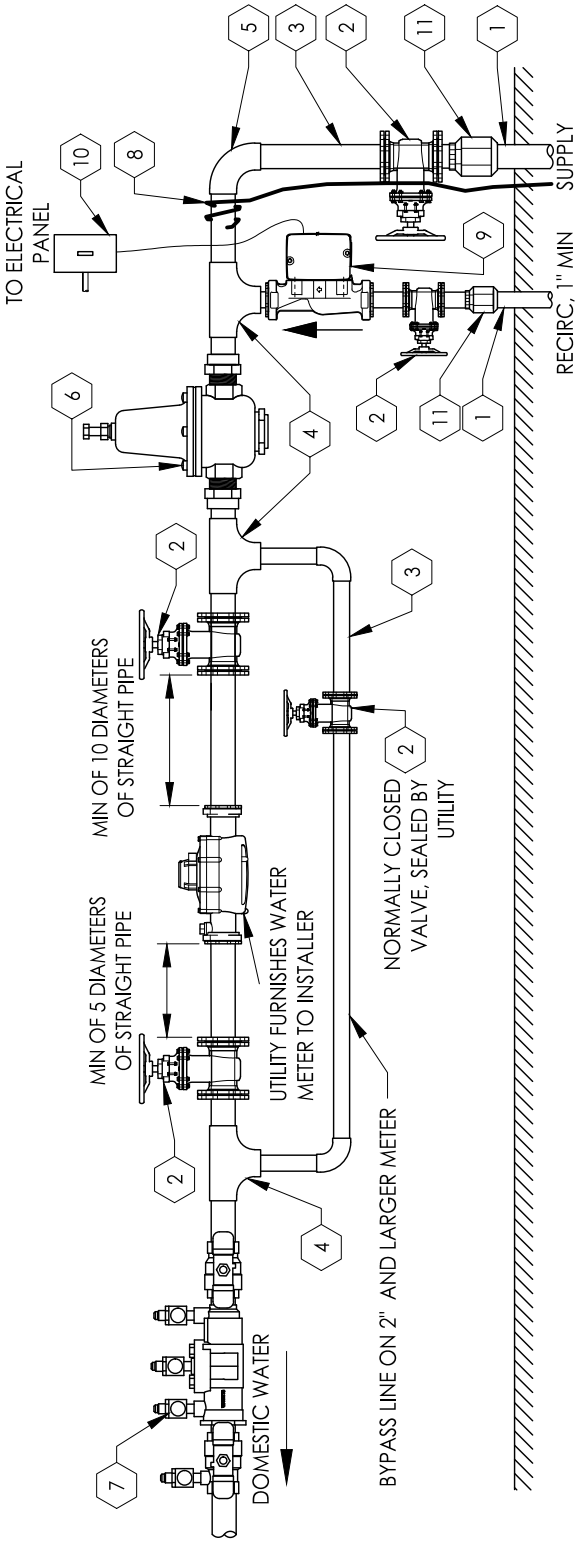


MATERIAL LIST	
ITEM	DESCRIPTION
1	3" MIN POLYURETHANE INSULATION
2	PLASTIC FILM
3	HDPE, SDR 11, SERVICE LINE PIPE
4	12 GA, JACKETED LOCATE WIRE
5	PEX THAW TUBES

5 HDPE SERVICE LINES SECTION

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



NOTES:

1. SEE SECTION 2.2 FOR SERVICE LINE SIZING REQUIREMENTS.
2. METER SHALL BE A MIN OF 1" AND MAXIMUM OF 4' ABOVE FLOOR LEVEL.
3. LOCATE WIRE OPTIONAL FOR COPPER OR DIP SERVICE LINES.
4. UTILITY MAY REQUIRE ENHANCED BACKFLOW PREVENTION SEE SECTION 4.10.

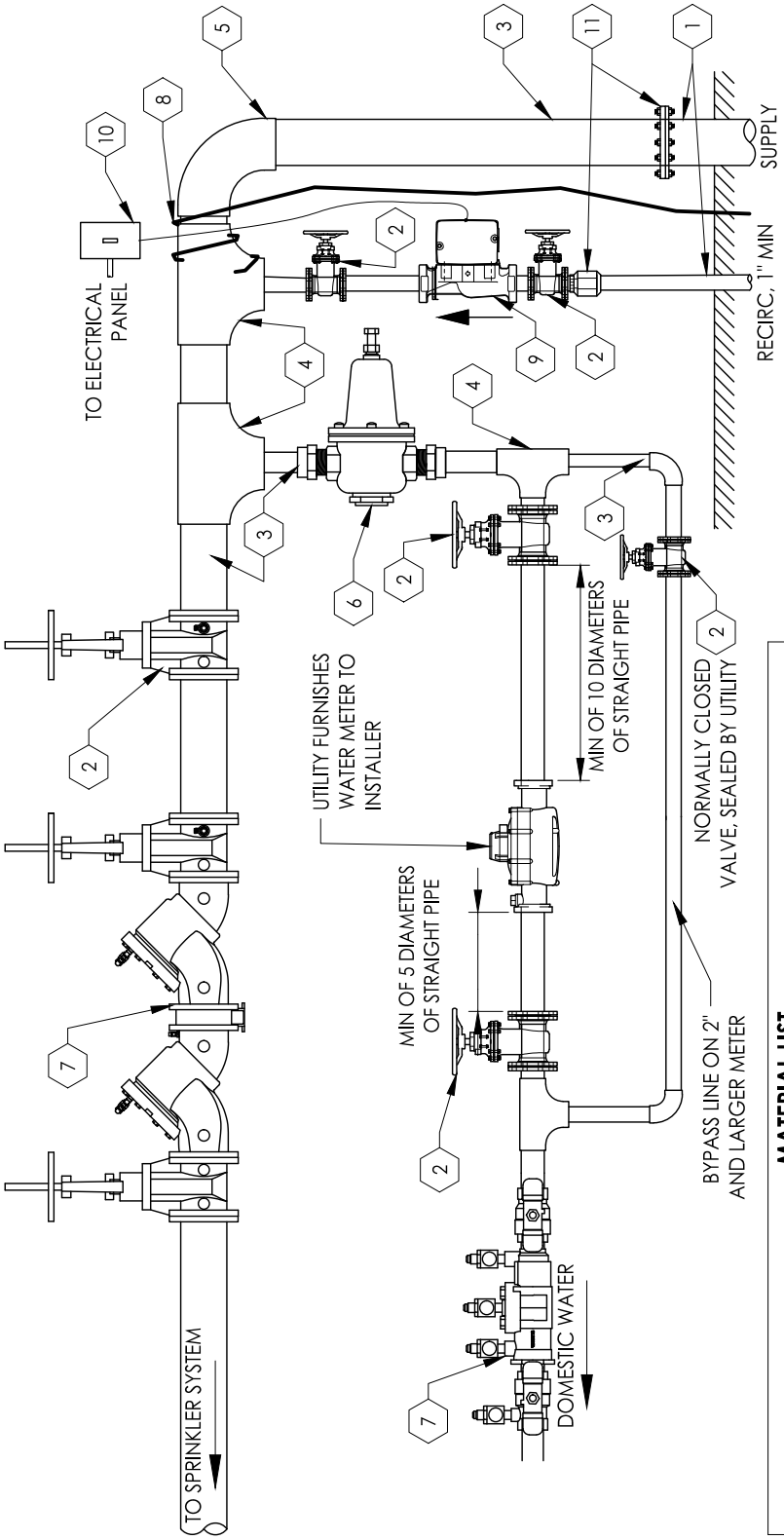
MATERIAL LIST

ITEM	DESCRIPTION
1	COPPER, HDPE, OR DIP SERVICE LINE PIPE
2	GATE VALVE
3	METAL PIPE AND NIPPLES, LENGTHS VARY
4	TEE OR SADDLE
5	ELBOW
6	PRESSURE REDUCING VALVE; CONNECT ON BOTH SIDES WITH FLANGE OR UNION
7	DOUBLE CHECK VALVE ASSEMBLY (SEE NOTE 4)
8	12 GA, JACKETED LOCATE WIRE (SEE NOTE 3)
9	CIRCULATION PUMP
10	PILOT LIGHT
11	TRANSITION FITTING (FOR HDPE SERVICE LINES); ELECTRO-FUSION OR PUSH-TO-CONNECT

6 COMMERCIAL WATER SERVICE 2" AND LARGER (INTERIOR PIPING)

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



NOTES:

1. SEE SECTION 2.2 FOR SERVICE LINE SIZING REQUIREMENTS.
2. METER SHALL BE A MIN OF 1' AND MAXIMUM OF 4' ABOVE FLOOR LEVEL.
3. LOCATE WIRE OPTIONAL FOR COPPER OR DIP SERVICE LINES.
4. UTILITY MAY REQUIRE ENHANCED BACKFLOW PREVENTION. SEE SECTION 4.10.
5. CUSTOMER RESPONSIBLE FOR NFPA AND CODE COMPLIANCE ON ALL FIRE PROTECTION DEVICES.

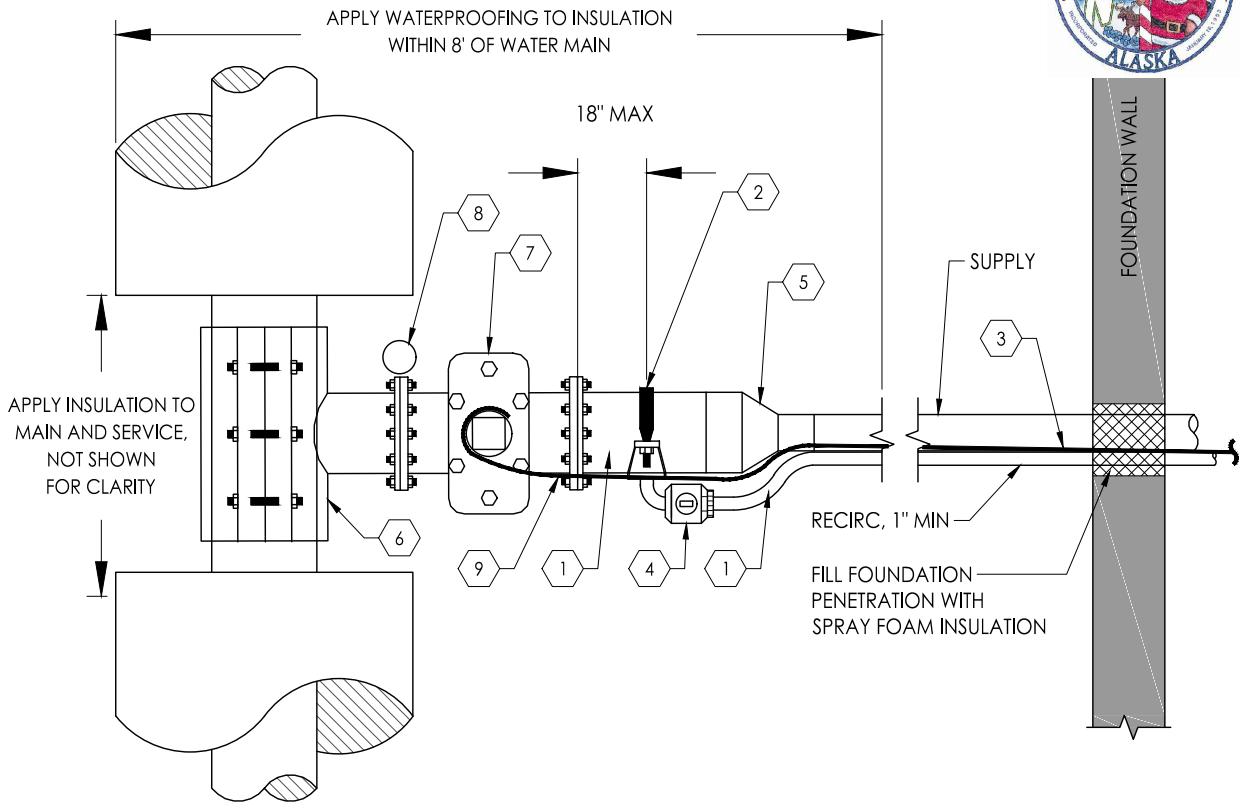
MATERIAL LIST

ITEM	DESCRIPTION
1	COPPER, HDPE, OR DIP SERVICE LINE PIPE
2	GATE VALVE
3	METAL PIPE AND NIPPLES, LENGTHS VARY
4	TEE OR SADDLE
5	ELBOW
6	PRESSURE REDUCING VALVE; CONNECT ON EACH SIDE WITH FLANGE OR UNION
7	DOUBLE CHECK VALVE ASSEMBLY (SEE NOTE 4)
8	12 GA, JACKETED LOCATE WIRE (SEE NOTE 3)
9	CIRCULATION PUMP
10	PILOT LIGHT
11	TRANSITION FITTING (FOR HDPE SERVICE LINES)

7 FIRE SPRINKLER SERVICE (INTERIOR PIPING)

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



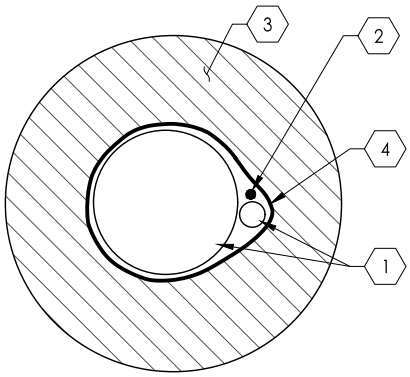
MATERIAL LIST	
ITEM	DESCRIPTION
1	COPPER, HDPE, OR DIP SERVICE LINES
2	SADDLE (OR TEE) WITH 90° FITTING
3	JACKETED LOCATE WIRE, 12 GA (OPTIONAL WITH HDPE)
4	TRANSITION FITTING AND CORPORATION STOP
5	REDUCER, AS REQUIRED
6	TAPPING TEE, 6" MIN
7	FLxMJ GATE VALVE, 6" MIN
8	UTILITY LOCATOR BALL
9	12 GA, JACKETED LOCATE WIRE (SEE NOTE 3)

NOTES:

1. WATER SERVICE PIPES SHALL HAVE A LEVEL OR POSITIVE GRADE FROM THE WATER MAIN TO THE BUILDING (NO HUMPS OR DIPS) TO PREVENT AIR TRAPS.
2. PLACE BLUE UTILITY TAPE CENTERED OVER THE FULL LENGTH OF THE WATER SERVICE PIPING, 2' BELOW GRADE.
3. LOCATE WIRE OPTIONAL FOR COPPER OR DIP SERVICE LINES.

8 COMMERCIAL OR FIRE SPRINKLER MAIN CONNECTION

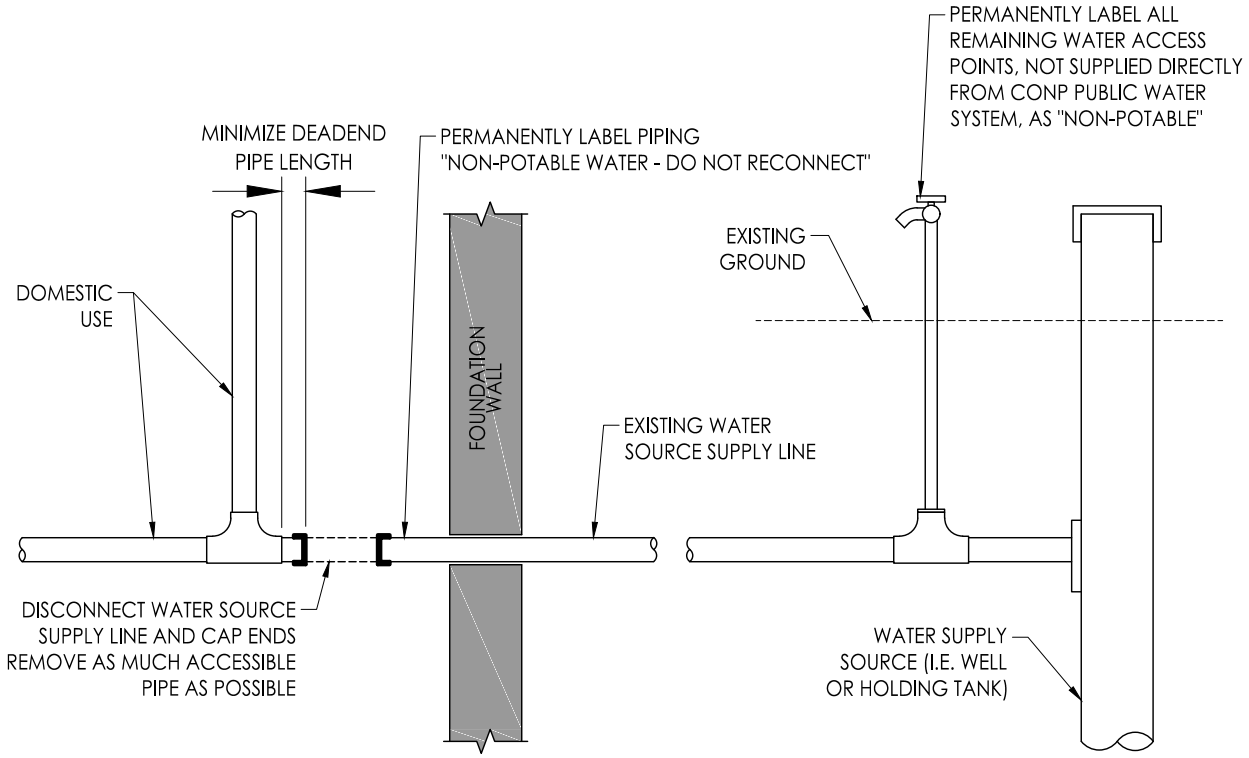
(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)



MATERIAL LIST	
ITEM	DESCRIPTION
1	COPPER,HDPE, OR DIP SERVICE LINES
2	JACKETED LOCATE WIRE, 12 GA (OPTIONAL WITH HDPE)
3	3" MIN POLYURETHANE FOAM INSULATION
4	PLASTIC FILM

9 COMMERCIAL OR FIRE SPRINKLER SERVICE LINES SECTION

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

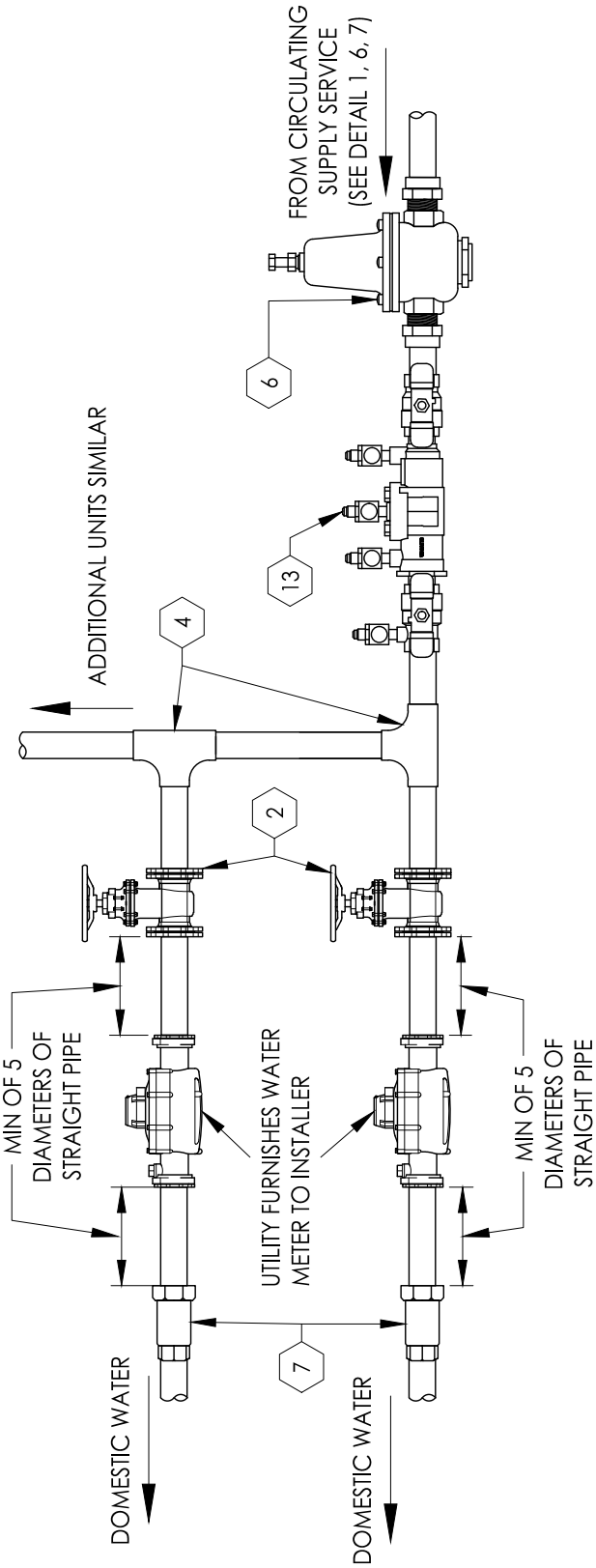


NOTES:

1. OWNER MAY MAINTAIN AND CONTINUE TO USE EXISTING WELL, ONLY IF IT IS PHYSICALLY DISCONNECTED AND SEPARATED FROM PUBLIC WATER SYSTEM BY "AIR GAP". A VALVE OR BACKFLOW PREVENTER ARE NOT ACCEPTABLE SEPARATION.
2. CONNECTION TO CONP WATER SYSTEM SHALL NOT OCCUR UNTIL ALL OTHER WATER SOURCES ARE PERMANENTLY DISCONNECTED AND LABELED "NON-POTABLE".
3. OWNER RESPONSIBLE FOR DRAINING AND/OR FREEZE PROTECTION OF REMAINING WELL SYSTEM OR HOLDING TANK.
4. OWNER RESPONSIBLE TO CLOSE ABANDONED WELLS IN ACCORDANCE WITH CURRENT ADEC AND DNR REGULATIONS.

10 DISCONNECTION FROM EXISTING WATER SOURCE

CITY OF NORTH POLE
WATER SERVICE LINE SPECIFICATIONS
2018 WATER SYSTEM EXPANSION



NOTES:

1. STANDARD RESIDENTIAL METER IS 3/4" NPT.
2. UTILITY MAY REQUIRE ENHANCED BACKFLOW PREVENTION, SEE SECTION 4.10.
3. PROVIDE BYPASS LINE FOR METER SERVICE 2" AND LARGER PER DETAIL 6.
4. ALL UNITS MUST BE WITHIN SAME BUILDING.
5. THE UTILITY MUST INSPECT AND APPROVE ALL PROPOSED MULTI-METER INSTALLATIONS PRIOR TO PROVIDING WATER METERS AND SERVICE TO THE PROPERTY, IN ACCORDANCE WITH NORTH POLE MUNICIPAL CODE 13.1.030 B.3.G.

MATERIAL LIST

ITEM	DESCRIPTION
2	GATE OR BALL VALVE
3	METAL PIPE AND NIPPLES, LENGTHS VARY
4	TEE
6	PRESSURE REDUCING VALVE; SEE DETAILS 1, 6, 7
7	DUAL CHECK VALVE
13	DOUBLE CHECK VALVE ASSEMBLY

11 MULTI-UNIT METERING DETAIL

(CUSTOMER TO SUPPLY ALL ITEMS ON MATERIAL LIST)

10 February 2020

7.0 WASTEWATER SERVICE REQUIREMENTS

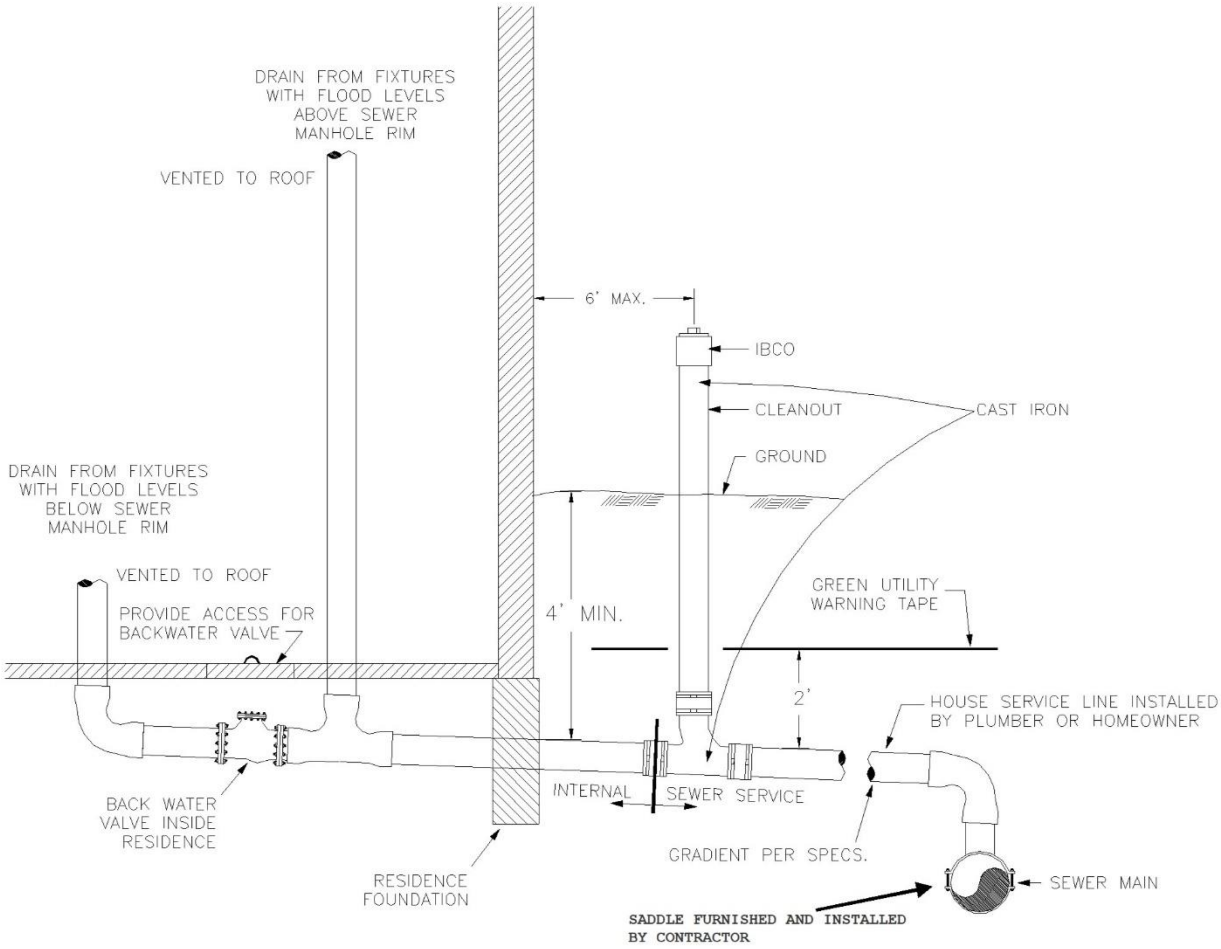


Figure 12: Wastewater Service

7.1 CONNECTION

A number of connection alternatives are acceptable depending upon the type of saddle, riser, fitting(s), and service line. All other work and material shall be provided by the customer/Installer.

All wastewater service piping shall be approved ductile iron or high-density polyethylene pipe. Wastewater service begins with the cleanout. Piping from the structure to the cleanout is considered internal plumbing.

The structure's wastewater service connection will be in compliance with Figure 12: Wastewater Service.

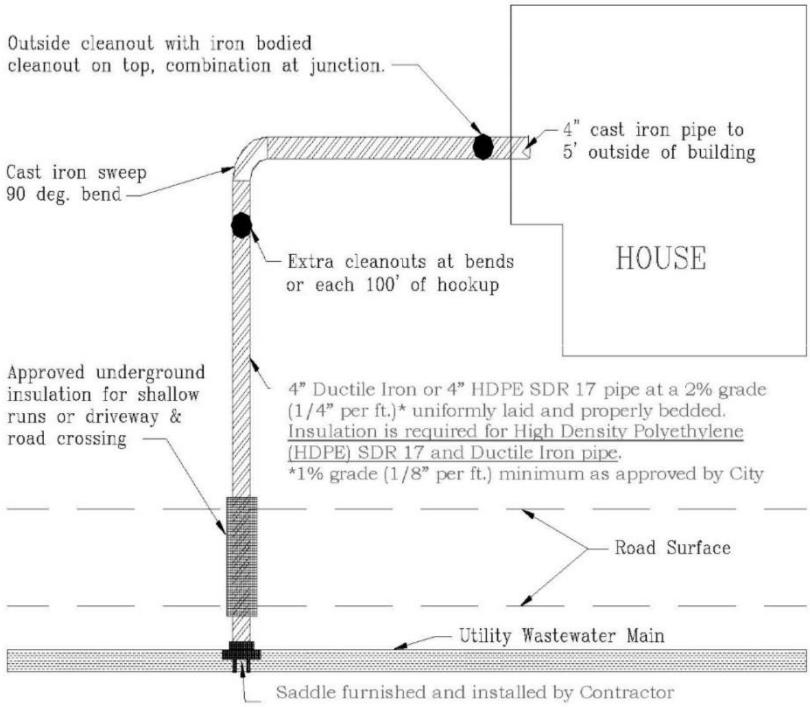


Figure 13: Typical Wastewater Service

7.2 STUB OUTS

The structure's wastewater service may be connected to a wastewater service stub out if available. Utility personnel shall verify the condition of the stub out against blockage and structural integrity prior to final connection. The Utility assumes no responsibility or liability for the found condition or integrity of the wastewater stub-out. Any repairs to the stub-out are the sole responsibility of the Installer.

Service connection stubs belong to the property owner of the lot served by the stub. The property owner shall be responsible for the maintenance and all other costs associated with the service connection stub.

To determine if a service stub was installed at the time that the water main was constructed, consult the City of North Pole. The as-built drawings indicate if there is a water service stub. In many cases the water service stub was marked with a white post along the property line. Service stubs installed in 2005 and later may have electronic ball markers that can be located by the Utility.

7.3 SERVICE REQUIREMENTS

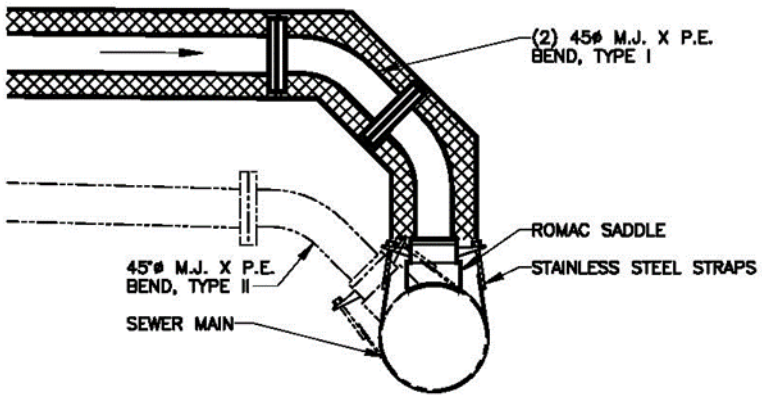


Figure 14: Connection Schemes

1. Wastewater service connections shall be cut or bored into wastewater mains. Only Contractors licensed in the State shall tap Utility mains and install wastewater service saddles and connections. All wastewater saddles, both new installations and upon replacement of a service line, shall be attached to the top of the main (Type I) as illustrated in Figure 10. Type II connections require Utility approval at the time of application. It is imperative that the Installer verifies the wastewater main elevation and the wastewater service elevation/slope prior to the installation of the wastewater service piping.
2. The wastewater service line shall be run in practical alignment and at a uniform slope of not less than one-quarter (1/4) inch per foot toward the point of disposal. Where it is impractical, due to the depth of the street wastewater main or to structure features to obtain a slope of one-quarter (1/4) inch per foot, any such pipe four (4) inches or larger may have a slope of not less than one-eighth (1/8) inch per foot.
3. The wastewater service line shall not be laid through any existing cesspool or septic tank unless such cesspool or septic tank has been excavated, backfilled, and compacted.
4. Wastewater service line piping shall be laid on a firm bed of approved materials that have been properly compacted throughout its entire length.
5. Wastewater service lines constructed of HDPE pipe must use pipe that is pre-insulated in a factory setting with a minimum of three (3) inches of urethane spray foam insulation. Insulation shall be rigid closed cell, two (2) component, urethane foam and be applied by an experienced applicator. Ductile iron must also be insulated.
6. Wastewater services that are insulated in the trench shall be laid to grade and blocked every five (5) feet so that there are no sags and the bottom of the pipe is at least three (3) inches above the bottom of the trench. This is necessary to ensure adequate insulation on the bottom of the service pipe.
7. Fittings shall consist of the following:

    A. No-Hub cast iron fittings for HDPE pipe (HDPE fittings are not allowed).
    B. Ductile iron fittings for ductile iron pipe.

8. Persons seeking approval of materials that are not specifically mentioned as being approved in this document must do so prior to installation.
9. High-density polyethylene pipe shall be installed with gas tight and water tight, non-fusion joints. The connection of HDPE to HDPE pipe or HDPE pipe to a No-Hub fitting shall be a flexible coupling, such as Mission Rubber Company XL 56-44 ARC Flex-Seal Coupling for four (4) inch diameter piping. Any substitute must be approved by the Utility in writing, prior to installation. The Utility does not allow the use of standard no hub clamps from the structure stub out to the wastewater main. Butt welding of HDPE pipe joints is not allowed. The Fernco Coupling 1056-44RCXL is an acceptable substitute. As an alternative, pipe connections may be made with an all stainless steel, full circle clamp coupling with neoprene gasket as a Rockwell No. 256, Romac style SS1.
10. When connecting wastewater service pipe having different outside diameters, an all stainless steel, full circle clamp coupling as described above shall be used and the smaller outside diameter pipe shall be built up with three (3) inch wide neoprene gasket material to match inside diameter.

7.4 CLEANOUTS

1. Wastewater clean-outs will be installed using a "No Hub" cast iron wye and one eighth (1/8) bend, or combination and a vertical cast iron pipe riser with iron bodied clean out cap, not less than four (4) inch in diameter.
2. A clean out shall be placed in every service line no farther than five (5) feet outside the structure and at intervals not to exceed one hundred (100) feet, in straight runs.
3. Changes in alignment or grade in excess of forty-five (45) degrees in a structure's wastewater service shall be served by a clean out.

7.5 BACKWATER VALVES

1. The Installer shall provide a suitable backwater valve (as shown in Figure 11) designed to prevent the flow of wastewater from Utility mains into the structure for that part of the wastewater service that is connected to fixtures with flood level rims located below the elevation of the nearest upstream manhole cover of the Utility wastewater system as required by Section 710 of the Uniform Plumbing Code.
2. Backwater valves shall be located where they will be accessible for inspection and repair at all times, and unless continuously exposed shall be enclosed in a watertight pit, fitted with an adequately sized removable cover.

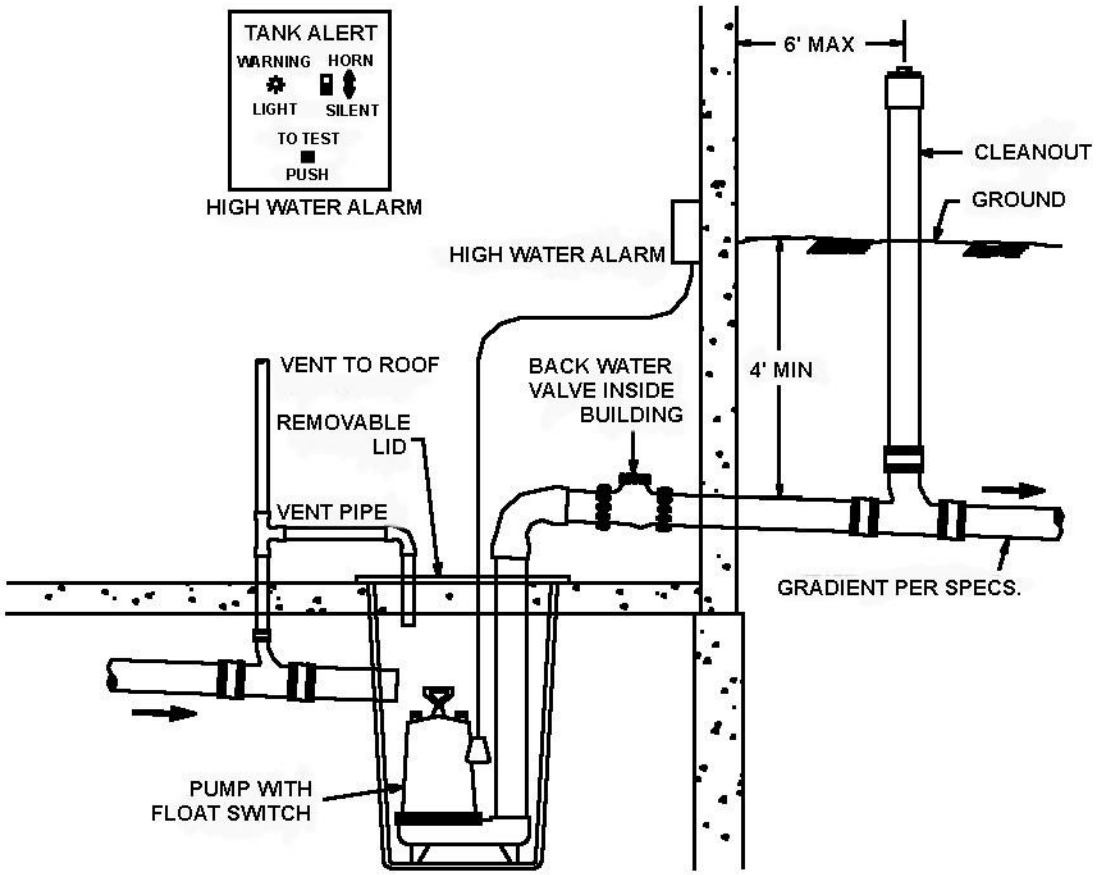


Figure 15: Wastewater Service Lift Station

7.6 LIFT STATIONS

1. Occasionally, the location and distance of the facility to be served by the Utility is such that gravity drainage is not possible along the entire length of the wastewater service. The Installer shall, at the direction of the Utility, install a suitable lift station to provide the necessary pumping capacity to meet the volume, elevation, and distance requirements of the wastewater service. Basic requirements and features of lift stations are as shown in Figure 11, and as described by the Uniform Plumbing Code.
2. The lift station shall feature a tank, a suitable pump with motor starting control, a level switch, an access plate for maintenance of the tank, and alarm switch contacts for high water level.
3. The Installer shall furnish an alarm light and audible alarm to be activated on high water level switch closure.

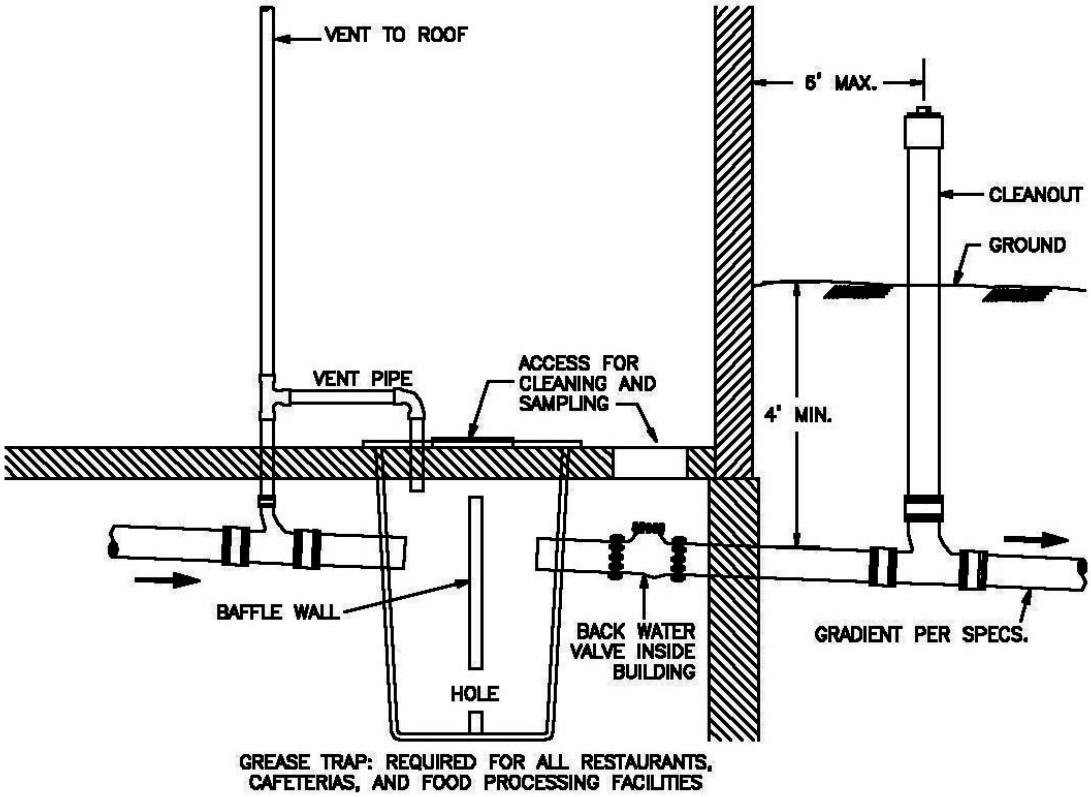


Figure 16: Typical Wastewater Interceptor Tank

7.7 PRE-TREATMENT

All solid or liquid wastes which are prohibited, by ordinance, from being discharged into the Utility wastewater system shall be removed from the waste stream or pre-treated prior to final discharge. The type of pre-treatment device or system will be determined by the Utility.

1. Grease Traps/Interceptors: The customer will furnish and maintain a grease trap/interceptor to trap animal and vegetable-based greases and oils. Final acceptance of such a device is subject to approval by the Utility. All commercial kitchens and other food processing facilities shall be equipped with such a device. Further applicability and information on this requirement can be obtained from the Utility. See Figure 16: Typical Wastewater Interceptor Tank.
2. Sand Traps and Oil/Water Separators: The customer will furnish and maintain an approved sand trap designed to collect sand, dirt, silt, and gravel from vehicle washing facilities or those facilities of similar purpose. As determined by the Utility, the customer will furnish and maintain an approved oil/water separator designed to collect petroleum or mineral based oils and greases. Those facilities requiring an oil/water separator include, but are not limited to, those performing vehicle maintenance and vehicle washing. Specific discharge limits and applicability of such pre-treatment devices shall be determined by the Utility.

3. Disposal: The sludges, grease, oils, silt, grit, or sand collected in the pre-treatment devices shall not be disposed in the wastewater main. The waste material must be disposed in a safe and acceptable manner in accordance with the Environmental Protection Agency and Alaska Department of Environmental Conservation regulations.