# SHAKOPEE PUBLIC UTILITIES COMMISSION

# WATER POLICY MANUAL

**Adopted by:**
**S.P.U.C. Resolution #1075**
**Dated August 4, 2014**

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## CHAPTER I – CUSTOMER SERVICE POLICIES

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## CHAPTER I

## Index

# I. CUSTOMER SERVICE POLICIES

## A. General

### 1 Purpose

The customer service policies of the Shakopee Public Utilities Commission are detailed in this document. The purpose of these service policies is to assure that water consumed by humans is potable, adequately treated and free from contaminants within the standards set forth by the Minnesota Department of Health and to assure a fair and equitable sharing of the cost of the municipal system. These service policies shall not limit the extent of the Utilities Commission's rights to set rules and regulations concerning the water system but is intended to be a statement of the policies of the Utilities Commission as of the date of adoption of this document.

The Shakopee Public Utilities Commission has appointed the Utilities Manager to act as their representative in applying and in the delegation of the policies set forth in this Water Policy Manual (WP Manual).

### 2 Watermain and Service Line Specifications

Requirements are contained in Chapter III of this WP Manual.

### 3 State Plumbing Code

The Minnesota State Plumbing code MHD 120-135 or latest revision thereof, is adopted as a part of this WP Manual by reference. The provisions of the state plumbing code shall apply with the exception of where stricter requirements are contained in this WP Manual, then this WP Manual shall apply.

### 4 Connection to Municipal System Required

(a) Any lot, place or parcel of land for which a building permit is issued, subsequent to the effective date of this article, and upon which there will be water consuming plumbing, facilities and upon which water will be used for domestic purpose or upon which will be human consumption of water shall, within three (3) years after such water service becomes available to it, connect to the municipal water system.

(b) This section shall not, however, prevent the drilling of private wells but is intended to give reasonable assurance to the public that water consumed is within the standard of potability as set forth by the Minnesota Department of Health.

5 Permit to Connect to System Required

No person shall make, construct or install any water service installation, or make use of any water service connected to the municipal water system except as provided and stated herein nor shall any person otherwise make, construct, install or make use of any installation connected by the municipal water system contrary to the regulatory provisions as detailed in this manual.

6 Permitting Use by Others

No person shall permit water from the municipal water system to be used for any purpose except upon their own premises except in emergency and then only if written permission is first obtained from Shakopee Public Utilities.

7 Water Availability

The availability of municipal water shall be upon approval by Shakopee Public Utilities for the particular service requested in an "Application for Service", and the payment of the Water Connection Charge. Availability of water is dependent on evidence that the Trunk Water Charge has been paid on the property seeking water service, that municipal watermain has been extended past the property, and that the installation meets current watermain specifications and design criteria. Water shall not be considered available after the effective date of these service policies until approval of and acceptance by Shakopee Public Utilities of the entire water system to that plat or parcel. See I-12 F. 12

8 Application for Permanent Service – Procedure

(a) All applications for service installations and for water service shall be made at the Shakopee Public Utilities office on printed forms furnished by Shakopee Public Utilities and shall contain the name of the owner, and a description of the property, lot, block and addition, the name of the street upon which the property fronts, the official street number assigned to the premises as shown by the records of the city and the signature of the applicant agreeing to conform to the rules and the regulations that may be established by the Utilities Commission as conditions for the use of water. Application form is also available on our website.

(b) Industrial and commercial installations shall also furnish information regarding planned hourly usage, flow rates, layout of water system on owner's property, and other pertinent information requested by Shakopee Public Utilities. Fire protection is determined by the City of Shakopee Fire Marshal.

9 Application for Permanent Service – Fees and Deposit

All applications for service installation shall be made by the owner of the property to be served, or by an authorized agent, and shall state the size of service connection required, and the applicant shall, at the time of making application, pay the amount of the service connection and meter fee required for the installation of the service connection as provided in this chapter, and pay the trunk water charge due in accordance with Utilities

Commission resolution if such has not been previously paid on that property. When service connections have been installed, application for water service may be made either by the owner, or a duly authorized agent, or by the tenant or occupant of the premises. Service connection rights shall run with the property on which it is located.

10 Application for Temporary Service for Building Construction

Where a water service line has been installed to a new building under construction, temporary water supply may be taken for construction use only upon application for permit with Shakopee Public Utilities, installation of a temporary meter with backflow provisions, and upon payment of the fee set for such service, provided that the length of time this service shall be permitted is no more than six (6) months. The use is of temporary water shall be restricted for construction work only and not for lawn, sod, or grass seed watering. Upon completion of the building, permanent water service shall be applied for.

The fee for service under Section 10 shall be a one-time charge per permit as set by the Utilities Commission.

11 Tapping and Costs

Taps or connection shall require a permit from Shakopee Public Utilities. No tap of any distribution main or pipe of the municipal water supply system shall be made unless approved by the Utilities Commission.

Taps shall be made on the same side of the watermain as the property to be served, and shall lie directly in front of that property perpendicular to the property line. All taps made by contractor shall be at least 3 feet from the bell end of the watermain. It is required to have a poured concrete kicker behind the tap and the tap itself and valve bolts shall be covered in plastic before the concrete is poured. It is also a requirement the watermain has copper grounding strap to the new service bypassing the wet tap valve.

12 Operating Valves

No person other than Shakopee Public Utilities personnel shall operate any valve on the municipal water system, except valves on residential service lines as described in Section 13.

13 Turning Customers' Water On or Off

The customer is responsible for locating and exposing the valve box before scheduling valve operation. The customer is responsible for keeping the service line valve in good operable condition.

Residential customers shall operate their own curb stop valve when necessary for repairs to the water service line. Shakopee Public Utilities personnel will not operate curb stop

valves under normal circumstances on residential services. Shakopee Public Utilities may provide a key to operate the curb stop to the customer.

14 Deficiency in Supply of Water and Shutting Off Water

The City and its Utilities Commission is not liable for any deficiency or failure in the supply of water to consumers, whether occasioned by shutting the water off for the purpose of making repairs or connections, or from any other cause whatsoever. In case of fire, or alarm of fire, water may be shut off to ensure a supply for fire fighting. In making repairs or construction of new works, water may be shut off at any time and kept shut off so long as necessary.

15 Restricted Use of Water Supply

The Utilities Commission has adopted a Conservation and Energy Management plan to guide restrictions on use of the municipal water supply.

Whenever the Utilities Commission shall determine that a shortage of water threatens the city, it may, by resolution, limit the times and hours during which water may be used from the municipal water supply system for lawn and garden sprinkling, irrigation, car washing, air conditioning, or other uses specified therein; and said resolution shall state the date upon which it shall become effective, and shall be made public through whatever means of communication the Utilities Commission deems appropriate and reasonable. Twenty-four (24) hours after said resolution becomes effective, any water customer who shall cause or permit water to be used in violation of the provisions of said resolution shall be deemed in violation of this section of water service.

In the event that the Utilities Commission is unable to convene within a reasonable time, the authority to restrict use of water from the municipal water supply system shall be delegated to the Utilities Manager.

16 Lawn Sprinkling Restrictions

The Utilities Commission has adopted by Resolution #539 limits on water usage for lawn sprinkling during certain days, months, and hours, and provided for a charge to discourage usage for sprinkling outside of permitted times.

The restrictions are based on the ODD/EVEN system with further HOURLY limitations as follows:

- Customers whose street address ends with an odd number may sprinkle the only on odd numbered dates of the month,

- Customers whose street address ends with an even number may sprinkle the lawn only on even numbered dates of the month,

- No sprinkling is permitted on any day between the hours of 12 Noon through 5 PM, regardless of the street address,

- Exceptions are allowed for new sod which has not yet rooted.

In the event of repeated violations of these sprinkling restrictions: after two warnings, a charge of $50 per instance will be applied to each subsequent violation.

17 Time, Water Taps

If, for any cause, the plumber making the tap should fail to have the tap started at the time specified in the application, notice shall be given to Shakopee Public Utilities fixing another day on which it is wished to make the connection. The notice must be given at least two (2) days previous to the tap and the tap must be made as specified in the watermain and service line specifications contained in this manual.

18 Private Water Supplies

No water pipe of the municipal water supply system shall be connected with any pump, well or tank that is connected with any other source of water supply. When such connections are found, the owner shall be notified to disconnect the water supply, and if not done immediately, the municipal water supply shall be turned off forthwith. Before any new connection to the municipal system is permitted, Shakopee Public Utilities shall ascertain that no cross connections will exist when the new connection is made.

19 Private Wells

Private wells may not be maintained and continued in use after connection is made to the municipal water system without specific written authorization by Shakopee Public Utilities. This authorization is not transferable with the property ownership. A double check valve is required adjacent to and downstream of the meter for residential applications. A RPZ type valve is required for commercial and industrial applications.

20 Supply From One Service

No more than one house or building shall be supplied from one service connection unless approved in writing by the Utilities Manager. Whenever two (2) or more buildings are supplied from one (1) pipe connecting with the distribution main, each building or part of building must have separate stop box and a separate meter. A written agreement regarding joint responsibility for maintenance of the common service shall be provided to Shakopee Public Utilities by the affected parties.

21 Repair of Leaks

It shall be the responsibility of the customer or property owner to maintain the service pipe from point of connection to the main into the house or building. In case of failure upon the part of any customer or property owner to repair any leak occurring in the service

pipe within twenty-four (24) hours after written notice has been given to the property owner or occupant of the premises, the water will be shut off and will not be turned on until the service reinstatement fee has been paid, in addition to all other costs incurred by Shakopee Public Utilities in shutting off and/or repairing the leak. When the waste of water is great, or when damage is likely to result from the leak, the water will be turned off if repair is not commenced immediately upon the giving of such notice.

22 Change of Service Line

Where it is desired to increase or change the old water service, no new connections to the main shall be made until all of the old service line and appurtenances have been removed and the main plugged and inspected by Shakopee Public Utilities personnel. . Refer to details WAT-020 and WAT-021. The water connection charge will apply in the case of an increase in service size.

23 Abandoned Services

All service installations connected to the water system that have has been permanently abandoned, or have not been used for three years, or for any reason have become useless for further service, shall be disconnected at the main at the property owner's expense. In the event the property owner neglects or refuses to so disconnect such service, Shakopee Public Utilities may so remove said service installation and shall bill the actual cost of such removal to the property owner. Refer to details WAT-020 and WAT-021.

24 Use of Fire Hydrants

(a) No person shall operate fire hydrants supplied with municipal water or interfere in any way with the municipal water system.

(b) Contractors or others desiring to obtain water from a hydrant for construction or other temporary or seasonal purposes shall make application to the Shakopee Public Utilities office for such service. Such application shall state the desired location or locations of the hydrant(s) to be used and include payment of the permit fee. Shakopee Public Utilities shall determine which hydrant is to be used. Each hydrant used shall be metered with a meter with backflow prevention supplied by Shakopee Public Utilities.

25 Detector Check Valve Assembly

A detector check valve assembly, including a five-eighth's inch by three-fourth's inch (5/8" x 3/4") water meter purchased from SPUC inventory or equivalent model, must be installed on fire services which do not contain chemical additives, and may also be required on such other services. The assembly shall be hydraulically balanced to provide meter operation upon any water use through that service. Should it be found that water is used through a fire connection for any purpose other than the extinguishing of a fire upon the premises, the property owner and occupant will be notified, and if such improper

conditions are not corrected within ten (10) days, the water will be shut off until proper adjustments are made.

26 Inspection

Inspections may be made from time to time of all fire service connections with all piping, fire gates, and other attached appurtenances. The inspector shall have access to the premises for such inspection and shall keep a record of all inspections made.

27 Inspection of Hydrants on Private Lines Connected to the Municipal System

(a) It is recognized that even though a fire hydrant is on a private water line, it is in the public interest that said hydrants be inspected by qualified personnel to give reasonable assurance that it is maintained in good working order.

(b) As with public hydrants, Shakopee Public Utilities shall inspect all fire hydrants directly or indirectly connected to the municipal system. A hydrant inspection fee for inspection of hydrants on a private line shall be charged per inspection per hydrant. The amount of the fee shall be as listed in the schedule of fees and charges reviewed and adopted annually by the Utilities Commission.

(c) In the event said inspection shall indicate that repairs are required, Shakopee Public Utilities shall notify the owner of said hydrant, by registered mail with a copy to the Fire Department, setting forth the repairs required. If said repairs are not made within ten (10) days of said notification, the necessary repairs shall be made by Shakopee Public Utilities and the cost of said repairs billed to the owner of said hydrant.

28 Assessment Procedures

When there is doubt as to whether the property proposed to be served has been assessed or will be assessed for the watermain and appurtenant facilities from which service is proposed, Shakopee Public Utilities may refer to the City of Shakopee the question of whether provisions have been or will be made to assess the property proposed to be served. No permit shall then be issued to tap or connect with any municipal watermain either directly or indirectly from any lot or tract of land unless it is certified that all water charges and/or assessments have been paid or provision to ensure payment thereof have been made.

29 Service Lines

Service lines are owned and maintained by the property owner from the point of connection to the municipal watermain, including all fittings, etc. on the watermain which are necessary for that connection. Services up to and including one and one-half inches (1 ½") in diameter shall be Type K copper tubing and copper or brass fittings through the meter and backflow preventor, if required. All services over one and one-half inches (1 ½") in diameter shall be ductile iron through the meter and backflow preventor.

30 Installation of Backflow Preventors

A reduced pressure zone (RPZ) device is used to prevent water from returning to the water supply after it has entered the customer's service. Any devices after the water meter and RPZ are the responsibility of the City of Shakopee. An RPZ type backflow preventor shall be installed downstream of the meter at the water meter location on all new commercial, industrial, apartment, and institutional services and on all residential buildings having more than single occupancy and with shared laundry facilities. A RPZ backflow preventor must be installed on fire services which do contain chemical additives. The backflow preventors shall be installed on existing installations that do not have an existing backflow preventor at the time that modifications are made to any part of the water supply plumbing system in those installations. The requirements of this section shall be in addition to any such devices on individual lines which may be required by state plumbing code. Maintenance of the backflow preventor shall be the responsibility of the customer. RPZ type backflow preventors must be installed in accordance with the manufacturer's requirements and recommendations.

Periodic testing of RPZ backflow preventors is required. Testing shall be done by a trained backflow preventor tester acceptable to Shakopee Public Utilities. Testing intervals shall not exceed one year, and records must be kept. A copy of all test reports shall be filed with Shakopee Public Utilities within thirty days of the test date. All devices must be tested after initial installation to assure that debris from the piping installation has not interfered with the functioning of the device. The devices shall be overhauled at least once every five years, and records must be kept. The installation of new backflow preventors must be at least 12 inches, but not more than 6 feet above the finished floor or ground level.

RPZ type backflow preventors shall meet latest AWWA standards for such devices. Refer to detail WAT-011.

31 Discontinuances of Service for Violation of Article

(a) Water service may be shut off at any curb stop valve, or disconnected for reasons including, but not limited to, the following:

i) The owner or occupant of the premises serviced, or any person working on any pipes or equipment thereon which are connected with the water supply system, has intentionally violated any of the requirements of this policy relative to the municipal water supply system.

ii) The owner or occupant of the premises served threatens to violate or causes to be violated any of the provisions of this part; or where any potential threat to quality or reliability of water exists in the judgement of the Utilities Manager.

iii) Whenever any charge for water, service, meter, or any other financial obligations imposed on the present or former property owner or occupant of the premises served is unpaid; or

iv) Fraud or misrepresentation by the property owner or occupant in connection with an application for service.

(b) The existence of a cross connection or a potential cross connection shall constitute a threat or potential threat to the quality of the municipal water system and shall be subject to discontinuance of service.

(c) Services which are shut off shall be charged a shut-off fee.

## B. Meters

1 Water to be Metered

Except for extinguishing fire, no person except as specifically authorized by Shakopee Public Utilities shall use water from the municipal water supply system or permit water to be drawn there from, unless the same be metered by passing through a meter owned by Shakopee Public Utilities. No person unless authorized by Shakopee Public Utilities shall connect, disconnect, take apart or in any manner change, or cause to be changed, or interfere with any such meter or the action thereof.

2 Meters Property of Shakopee Public Utilities

All water meters shall be and remain the property of Shakopee Public Utilities and may be removed or replaced or changed as to size and type when deemed necessary.

3 Installation

A water meter shall be required on all water services and shall be designed and installed in accordance with the provisions of the Utilities Commission design and construction standards and in accordance with all rules in this section. All water meters are to be sized by Shakopee Public Utilities, based on the maximum gallons per minute demand. Water meters shall be installed 12”-18” above the finished floor. Existing water services shall have their metering installations brought into conformance with current requirements at the time that modifications are made to any part of the water supply plumbing systems in those installations.

4 Water Meter Wiring

Shakopee Public Utilities requires an outside remote register to be connected to the water meter. The connection is via a three-conductor cable. The installation of the water meter wire shall be the responsibility of the installer.

The water meter shall be wired to the outside of the residence in the area of the electric meter, and shall be 6 inches to 12 inches from either side of the electric meter socket on the exterior wall. All wires to the outside of the residence shall be secured by use of wire ties or clips.
There shall be 2 feet of extra wire inside and outside of the residence. The wire inside shall be coiled next to the water meter, the wire outside shall be coiled and marked as water meter wire.

The wire shall be the three-conductor type, 18 gauge, 3 wire UL thermostat wire. Contact Shakopee Public Utilities for more detail.

5 Maintenance

Shakopee Public Utilities shall maintain and repair all meters when rendered unserviceable through ordinary wear and tear and shall replace them if necessary. Shakopee Public Utilities reserves the right to periodically have calibration procedures done in place with water meters over 1" in size. Water service may be shut down during this procedure. However, where replacement, repair or adjustment of any meter is rendered necessary by the act, neglect or carelessness of the property owner or occupant of any premises, any expense incurred by Shakopee Public Utilities shall be charged against and collected from the water customer and water service may be discontinued until the cause is corrected and amount charged collected.

6 Testing

(a) When a customer makes a complaint that the bill for any past service period has been excessive, Shakopee Public Utilities shall upon written request have such meter reread. If the customer remains dissatisfied and desires that the meter be tested, said customer shall request that the meter be tested, and Shakopee Public Utilities shall test the meter. The customer shall, if they so desire, be present when such test is made. In case a test shall show an error of over five percent (5%) of the water consumed, a new meter will be installed and the bill will be adjusted accordingly. Such adjustment shall not extend back more than one (1) service period plus one (1) month from the date of the written request and the minimum charge shall not be affected.

(b) Before making a retest of any meter within a twelve month period, the person requesting such test shall, at the time of filing a request with Shakopee Public Utilities, make a deposit for the amount charged for such test, subject to the conditions stated in this article, which charges are set by the Utilities Commission and listed in the Table of Charges.

| | |
|---|---|
| Five-eighth's inch (5/8") or three-fourth's inch (3/4") meters | Fixed Fee |
| One-inch (1") meters | Fixed Fee |
| One and one-half inch (1 ½") meters and over | Actual Costs |

7 Reading and Inspection

Employees delegated for the purpose of meter reading shall have free access at reasonable hours of the day to all parts of every building and premises connected with the municipal water supply system for reading meters and inspections.

## C. Rates and Charges

1 Basic Rates

The rate due and payable to Shakopee Public Utilities from each water user within the city for water taken during any month from the water supply system shall be fixed by the Utilities Commission and is subject to annual adjustment.

2 Water Usage Charges

Each water user within the city shall be charged a minimum charge and a unit charge for water used on a monthly basis. The minimum charge will be billed to each user connected to the system regardless of the quantity of water actually used. In addition to the minimum charge, a unit charge per 1,000 gallons of water used will be charged to each user based on water meter readings.

3 Water Bills

Water bills shall be mailed to the customers monthly and shall specify the water consumed and the charges in accordance with the rates set out herein. Payments for water bills shall be made at Shakopee Public Utilities office and shall be due on or before the 15th day of the month in which the bill is received by the customer.

4 Discontinuance of Water for Non-Payment of Bills

All charges for water shall be due on the monthly due date specified by Shakopee Public Utilities for the respective account, and shall be delinquent thirty (30) days thereafter. It shall be the duty of Shakopee Public Utilities to endeavor to promptly collect delinquent accounts, and in all cases where satisfactory arrangements for payments have not then been made, instructions shall be given to discontinue service by shutting off the water at the curb stop valve.

## D. Water Connection Policy

The Water Connection Policy was established by Resolution #261 of the Shakopee Public Utilities Commission on September 12, 1983 for the purpose of creating a Water Connection Fund. The Water Connection Fund shall accumulate funds collected by Water Connection Charges. Water Connection funds shall be used to pay costs incurred by the construction of water production and storage facilities.

## E. Trunk Water Policy

The Trunk Water Policy was established by Resolution #222 of the Shakopee Public Utilities Commission on February 2, 1981 for the purpose of creating a Trunk Water Fund. The Trunk Water Fund shall accumulate funds collected by Trunk Water Charges or connection fees. Trunk Water funds shall be used to pay costs incurred by the construction of trunk facilities.

## F. Trunk Water Service Area

1 New Service Area

All areas of the City of Shakopee in which water service is newly made available by the City of Shakopee, the Utilities Commission, or private development, shall be charged a Trunk Water Charge. If no such Trunk Water Charge is or was levied, a connection fee equivalent to a Trunk Water Charge in addition to all other connection fees shall be paid within thirty (30) days of the date said water service becomes available.

The land area against which said Trunk Water Charge shall be charged, shall be at a minimum, all the property abutting a proposed new watermain and extending a distance of up to one-half the difference between the proposed watermain, and the next parallel anticipated watermain, unless a different configuration is determined by Shakopee Public Utilities to be appropriate due to a land terrain or other logical barrier.

2 Existing Service Area

Areas which are construed to presently have municipal water service available are all properties, as of the date of Resolution #222, February 2, 1981, immediately abutting an existing watermain and extending a distance of one hundred fifty feet (150') in depth back from the watermain into this property provided that the watermain extends the full distance across or along the edge of the property in question. Also construed to have water service presently available is all land which has previously paid a Trunk Water assessment and which has lateral watermain extended to within one hundred fifty feet (150') to the point of use of the water. Such lateral extensions shall be in accordance with existing Utilities Commission watermain design criteria and specifications.

These areas shall not be charged a Trunk Water assessment.

3 Trunk Water Charge

The Trunk Water Charge was established by an engineering study and adopted by SPUC on February 2, 1981. The Trunk Water Charge was subsequently reviewed and adjusted by engineering and financial studies adopted by SPUC on April 21, 2003, and again on December 3, 2007. The Trunk Water Charge is reviewed and adjusted annually, on January 1st of each year. The annual adjustment is based on the change in the percent of the Engineering News Record Construction Cost Index (ENR-CCI) for the preceding twelve (12) months plus 2%, multiplied by the present Trunk Water Charge.
(Average ENR-CCI for preceding twelve (12) months/3378.19 = Adjustment Factor)

4 Trunk Water Costs

The trunk costs paid from the Trunk Fund will include the cost of oversizing material and the costs of construction labor due to oversizing as determined by the Utilities Commission. In addition to such construction costs, there shall be paid from the Trunk fund an allowance for engineering costs. Expenditures for oversizing, for purposes of this paragraph, must be authorized and approved by the Utilities Commission after the Utilities Commission is notified in writing of any planned installations of watermains within the City of Shakopee. The Utilities Commission in its exclusive discretion may then find it to be in the best interests of the municipal water system that larger size mains than those proposed be installed and elect to require the larger size mains and pay the difference as provided in this paragraph. Standard size watermains, for purposes of this paragraph, shall be six-inch (6") watermains in R-1A, R-1B, R-1C, and R-2 residential areas; eight-inch (8") watermains for R-3, B-1, B-2, B-3,BP, CC, NC; and twelve-inch (12") watermains for I-1, I-2, MR zoning. The Utilities Commission should not be obligated to pay any additional costs unless the plans of estimated costs shall have been presented to the Utilities Commission prior to construction of the watermain for review and approval, and actual cost data be furnished after the completion and acceptance of the watermain to the satisfaction of the Utilities Commission.

**SHAKOPEE PUBLIC UTILITIES COMMISSION**

**WATER POLICY MANUAL**

**CHAPTER II – CHARGES, RATES AND FEES**

**Adopted by:**
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**Dated August 4, 2014**

# CHAPTER II

## Index

## II. CHARGES, RATES AND FEES

### A. General

The Utilities Commission hereby establishes a system of fees and charges. The various fees and charges are detailed in Sections B and C and summarized in Section D. All fees and charges are subject to periodic review and revision by the Utilities Commission. At a minimum, the review will be done annually.

### B. Charges

1 Water Connection Charge

The Water Connection Charge was originally adopted on September 12, 1983 as part of Resolution #261. The rate is intended to be adjusted annually based on the Engineering News Record Construction Cost Index (ENR-CCI).

2 Trunk Water Charge

The Trunk Water Charge was originally adopted on February 2, 1981 as part of Resolution #222. The rate is intended to be adjusted annually based on the Engineering News Record Construction Cost Index (ENR-CCI).

3 Watermain Inspection Charge

A Watermain Inspection Charge shall be paid for all watermain construction projects. The charge shall be equal to actual labor and equipment costs based on current hourly rates. The project engineer shall estimate the installed cost of the watermain project and a deposit equal to 8.5% of the cost shall be paid to Shakopee Public Utilities in advance of the plan approval by the Utilities Manager. A final accounting of the inspection costs shall be provided upon completion of the project (acceptance of the record drawings). Any additional costs shall be billed, or conversely if a balance remains a refund shall be issued to the appropriate party.

### C. Customer Service Charges

1 Permanent Service Connection

The charges for a new permanent service connection shall include a permit charge for the service connection and a meter fee.

The fees shall be paid at the time application for service is submitted.

2 Temporary Service for Building Construction

Temporary water service may be available for limited use during building construction. A temporary meter is to be obtained from Shakopee Public Utilities. A RPZ backflow preventor is to be provided by the contractor. Water use is restricted to construction purposes only. Watering of lawn, sod or grass seed is not permitted.

A permit will be issued for a period of six (6) months upon receipt of the temporary service fee.

3 Use of Hydrants

Contractors or others desiring to obtain water from hydrants for construction or other temporary or seasonal purposes shall make application to Shakopee Public Utilities for such service. Such application shall state the location or locations of the hydrants to be used. Each hydrant used shall be metered by a meter with backflow prevention supplied by Shakopee Public Utilities. Permit must be renewed the first ($1^{st}$) of every year and for any location change. A Two Hundred Fifty Dollar ($250.00) deposit is required (to be refunded upon return of all equipment used or taken). There will be a water meter rental and fire hydrant use charge per week or fraction thereof. The water will be charged at the current rate per one thousand gallons (1,000) with a minimum charge of Twenty Dollars ($20.00) per month or any part thereof. Hydrant meters are to be returned to Shakopee Public Utilities when not in use.

4 Tapping Fee

Taps or connections to existing watermains shall require a permit and payment of the tapping fee.

5 Shutoff Fee

In the event that water service to a building is to be discontinued, a shutoff fee will be charged. This fee will be charged any time disconnection is required whether for non-payment of fees, service line damage, property abandonment, or any other cause.

6 Service Reinstatement Fee

For turning on water where service has been turned off for non-payment of a water bill, failure to repair a leak, discontinuance of service or any other cause, a service reinstatement fee shall be charged.

7 Meter Fee

SPUC shall annually set the meter fee to be charged to customers for water meters, and payment for same shall be made in advance before delivery and installation.

8 Meter Testing Fee

If requested by the customer, Shakopee Public Utilities may test individual water meters for a fee and adjust billings if appropriate as detailed in Section B.6, Testing of Water Meters, in Chapter I.

The person requesting the test shall make a deposit in the amount listed on the fee schedule for the various sized meters. Small meters five-eighth's inch (5/8"), three-fourth's inch (3/4"), and one-inch (1") meters will be charged a fixed fee, and one and one-half inch (1 ½") and larger meters shall be charged the actual cost of the test.

A deposit, as listed in the Summary of Charges, is required for testing any meter one and one-half inches (1 ½") and over. Any amount in excess of the actual cost shall be refunded. If the actual cost is in excess of the amount deposited, the balance owing shall be paid to Shakopee Public Utilities or added to the bill for the next billing period.

9 Tap Inspection Fee

Each new connection to the existing watermain shall be inspected by Shakopee Public Utilities personnel before covering the installation. A tap inspection fee shall be charged for each individual tap. The tap inspection fees shall be Seventy-Five Dollars ($75.00) for each tap.

10 Standby Fire Protection Service

Where an unmetered connection is made for fire service, a charge for such service shall be made on an annual basis as set by SPUC.

These rates shall apply in all cases where automatic sprinklers are installed and where fire gates and other outlets are sealed. No charge will be made for water used in extinguishing fire.

11 Special Equipment Charge

All costs incurred by Shakopee Public Utilities in the inspection of any special devices owned by the customer requiring periodic inspection or testing by Shakopee Public Utilities shall be billed at an hourly rate plus equipment rental.

12 Basic Water User Charges

(a) Minimum Charges

Each user shall pay a minimum charge for each month during which water service is furnished by SPUC.

(b) Unit Charges

In addition to the minimum charge, each user shall pay a unit charge per one thousand (1,000) gallons of water used for each month of the year. The water quantity used shall be determined from the individual water reading rounded to one thousand (1,000) gallons.

13 Operational Service Charge

Costs incurred by Shakopee Public Utilities in the operation of valves, flushing or filling new watermains, pressure testing of new watermains and associated work involving new construction and reconstruction shall be billed at an hourly rate plus equipment hourly rate.

14 Irrigation Valve Operation Fee

For the operation (turning on or off) of water system irrigation valves a fee of Twenty-Five Dollars ($25.00) shall be charged. Up to 3 valves are covered by this fee. If more than 3 valves are required to be operated the charge will be Fifty Dollars ($50.00).

## D. Summary of Charges, Rates and Fees

| Item | Reference Paragraph | Description of Charge/Fee | | Amount |
|---|---|---|---|---|
| 1 | [IIB.1] | Water Connection Charge | | Set by separate resolution |
| 2 | [IIB.2] | Trunk Water Charge | | Set by separate resolution |
| 3 | [IIC.1] | Permanent Service Connection Account Set-up Fee | | $ 15.00 |
| 4 | [IIC.2] | Temporary Service Connection Account Set-up Fee (Limited use, six-month term) | | $ 15.00 |
| 5 | [IIC.3] | Hydrant Use (Temporary or Seasonal) | | |
| | | Annual Permit Fee | | $ 25.00 |
| | | Equipment Deposit (Refundable when equipment is returned) | | $250.00 |
| | | Meter Rental & Hydrant Use Charge | | $ 9.00/wk. or fraction thereof |
| | | Water Charge | | |
| | | 0 to 10,000 gallons | | $ 20.00/month |
| | | Plus (in excess of 10,000 gallons) | | $ 2.00/1000 gal. |
| 6 | [IIC.4] | Tapping Fee | | $ 50.00 |
| 7 | [IIC.5] | Shutoff Fee | | $ 75.00 or $125.00 after hours |
| 8 | [IIC.6] | Service Reinstatement Fee | | $ 75.00 or $125.00 after hours |
| 9 | [IIC.7] | Meter Fee | | Set by separate resolution |
| 10 | [IIC.8] | Meter Testing Fee | 5/8” or 3/4" | $ 20.00 |
| | | | 1” | $ 22.50 |
| | | | 1 ½” and larger | All costs incurred ($50.00 deposit) |
| 11 | [IIC.9] | Tap Inspection Fee | | $ 75.00 |
| 12 | [IIC.10] | Standby Fire Protection Service | | $ 20.00/yr. |
| 13 | [IIC.11] | Special Equipment Charge | | Hourly rate plus equipment rental costs |
| 14 | | Basic Water User Charge (monthly) | | |
| | [IIC.12(a)] | Minimum Charge (all users) | | Set by separate resolution |
| | [IIC.12(b)] | Unit Charge ($1,000/gallon) | | Set by separate resolution |
| 15 | [IIC.14] | Irrigation Valve Operation Fee (Turn On/Off) | | |
| | | 1-3 Valves | | $ 25.00 |
| | | 4+ Valves | | $ 50.00 |
| 16 | [IA.27] | Private Hydrant Inspection | | $ 50.00 each |

**SHAKOPEE PUBLIC UTILITIES COMMISSION**

# WATER POLICY MANUAL

## CHAPTER III – STANDARDS

**Adopted by:**
**S.P.U.C. Resolution #1075**
**Dated August 4, 2014**

**SHAKOPEE PUBLIC UTILITIES COMMISSION**
**WATER POLICY MANUAL**

## CHAPTER III

## Index

## III. STANDARDS

The Shakopee Public Utilities Commission (Utilities Commission) is authorized by Minnesota Statutes, Chapter 412, other laws, and Shakopee City Code, Section 2.54. In accordance with that authority, the Utilities Commission hereby promulgates this watermain design criteria and watermain installation standards.

### A. Watermain Design Criteria

#### 1 General

All watermain plans shall be checked for conformance with the minimum design criteria specified herein prior to approval for construction. No watermain construction shall commence unless the contractor has in possession a set of plans approved by the Utilities Manager. All fees, including Trunk Water Charges and a deposit on inspection fees, must be paid prior to plan approval.

All additions to the municipal water system shall be designed in accordance with the Minnesota Department of Health, the latest version of Recommended Standards for Water Works, Great Lakes Upper Mississippi River Board of State Public Health and Environmental Managers, and the standards set forth in this and other sections of this WP manual, as approved by the Utilities Commission. In case of a conflicting requirement, the standards set forth in this WP manual shall take precedence. Any work performed in public right-of-way or in public easement shall be approved by the City of Shakopee City Engineer.

#### 2 Additional Approval Requirements and Drafting Standards

##### 2.1 Vicinity Map

Each sheet shall have an overall drawing of the development at a scale no larger than 1" = 1,000' showing the location of public watermains on that sheet in relation to the total development.

##### 2.2 Overall Plan

The overall plan of the study area shall have the following information:

(a) Location of City or USGS bench marks. All bench mark elevations shall be USGS 1929 Datum.
(b) Property lines and easement lines.
(c) Streets and street names.
(d) Existing water facilities including size, type and location.
(e) A master water plan shall be submitted for each planned development or other major development prior to approval of any portion of the water system.

2.3 Profile

All plans shall include a vertical profile for all mainline watermains. Service lines do not require the profile view. The profile shall show the elevation and location of all other utility lines where crossed, all main line tees, hydrant tees, and gate valves.

2.4 Plan

The following additional elements shall be shown on watermain plans:

(a) Pipes with size, type and structural class of pipe, including ASTM or AWWA specification designation.
(b) Special structures or details as required.
(c) Watermain alignment and depth.
(d) All fittings, valves, stubs and services shall have their stationing shown on the plans.
(e) Each service's length shall be indicated.
(f) Notes as follows: (see attached)
(g) Signature block: (Refer to detail WAT-016)
(h) Horizontal scale: 1" = 50'
(i) Vertical scale: 1" = 10'

3 Watermain

3.1 Main Size

The water distribution system should be designed to meet the maximum hourly water demand (9 gpm per acre) plus the fire flow demand as determined by ISO criteria. During peak demand and fire demand, the water pressure shall not be less than 20 psi at any point in the water distribution system. The velocity of the water in the water system shall not exceed 12 feet per second (fps). Design parameters and the critical conditions shall be shown on an overall plan of the study area. Under separate cover, the conditions shall be shown which isolated the critical condition. A complete analysis shall be shown which isolates the critical condition. A complete analysis shall be submitted for any fire demand in excess of 1,200 gpm unless waived by the Utilities Manager.

The minimum diameter for lateral watermains shall be as follows:

| | | |
|---|---|---|
| Zoning: | R-1A, R-1B, R-1C, R-2 | 6" |
| Zoning: | R-3, B1, B-2, B-3, BP | 8" |
| Zoning: | I-1, I-2, E | 12" |

Twelve-inch diameter feeder mains shall be spaced a maximum distance of 3,000 feet apart and looped to provide water from more than one source. No fire hydrant shall be supplied by a line less than six inches (6") in diameter.

The trunk system has been approximately located within the City based on projected development and is depicted in the Comprehensive Water Plan. Actual trunk main locations will be located as development and needs arise and will be located in areas most beneficial to the system as determined by the Utilities Commission.

## 3.2 Arrangement of Distribution System

The distribution system is based on a trunk system as noted in the Comprehensive Water Study. The lateral system must be designed using the minimum pipe size included herein and incorporating the trunk system. The Shakopee Public Utilities Commission has a grid water system arrangement. It is imperative that any extension perpetuate that concept. The system requires the completion of watermain loops and the design of a grid system that has a north-south and east-west six-inch watermain every 400 feet, or any combination of watermain which has at least the equivalent water carrying capacity in the north-south and east-west direction.

All watermains shall be looped, unless approved by the Utilities Manager. Temporary deadend watermains shall not be permitted unless approved by the Utilities Manager.

## 3.3 Insulation

Where a watermain or service line passes within three feet (3') of a storm sewer or catch basin lead, preformed insulation, PPG Foamglass or pre-approved equal, may be required and when it is shall be installed extending a minimum, depending on pipe sizes, four feet (4') from the watermain centerline in every direction from the point of crossing.

## 3.4 Easements

Permanent easements for watermain outside of street rights-of-way shall be a minimum of twenty feet (20') wide. Bury depths greater than eight feet (8') may require wider easements. The slope in any easement shall not exceed four feet (4') horizontal to one foot (1') vertical in the steepest direction. Temporary construction easements shall be obtained as necessary. All easements shall be obtained prior to plan approval.

# 4 Valves

## 4.1 General

Watermain valves shall be installed in the distribution system to isolate sections of watermain in the event of watermain failure or to reduce public inconvenience in the event the water must ever be shut off. Generally, place two valves at each watermain tee and three valves at each cross. Each hydrant lead shall be equipped with a gate valve for shutoff purposes. Valves are to be required at ends of watermains which run through private easements, unless waived by Shakopee Public Utilities.

4.2 Valve Spacing

Valve spacing shall be in accordance with the requirements of the following table:

**Table 1**
**Valve Spacing**

| Description of Main | Length |
|---|---|
| Arterial (16" and greater) | 1,300 |
| Feeder (12" not in commercial-industrial area) | 800 |
| Distribution (8"-12" in commercial-industrial and multi-family | 500 |
| Distribution (6" – 10") | 800 |

Additional valves shall be installed at such places designated by the Utilities Manager. The locations may be at the termini of new extensions or in locations which facilitate testing.

Gate valves/butterfly valves shall be installed in watermains sixteen inches (16") and larger.

Air and vacuum relief valves shall be installed at the high points of any watermain sixteen inches (16") or larger. The air and vacuum relief valves shall be in a valve manhole. Hydrants shall be installed at the high point of all watermains using a vertical tee to facilitate air removal.

Blowoff valves shall be installed at the low point of any watermain sixteen inches (16") and larger to facilitate flushing (see detail plate). Hydrants with a down turned tee may be used in lieu of a blow off valve. The blow off valves shall be in valve manholes. Fire hydrants shall be required at the end of dead-end mains where required by Shakopee Public Utilities. Fire hydrants as blowoffs shall be installed at the end of all permanent dead-end mains. Each hydrant lead shall be equipped with a gate valve for shut-off purposes.

5 Fire Hydrants

5.1 Distribution

Normally, fire hydrants shall be placed so that two fire hydrants shall be within 500 feet of every structure as measured along public right-of-way. All public hydrants shall be located within public right-of-way or permanent easement. Closer fire hydrant placement shall be required when the fire flow requirement, as determined by ISO Criteria, exceed 2,000 gpm or if additional fire hydrants are required in order to meet the requirements of the following table.

**Table 2**
**Standard Hydrant Distribution**

| Fire Flow Required (gpm) | Average Area per Hydrant (Square Feet) | Fire Flow Required (gpm) | Average Area per Hydrant (Square Feet) |
|---|---|---|---|
| 1,000 or less | 160,000 | 6,000 | 80,000 |
| 1,500 | 150,000 | 6,500 | 75,000 |
| 2,000 | 140,000 | 7,000 | 70,000 |
| 2,500 | 130,000 | 7,500 | 65,000 |
| 3,000 | 120,000 | 8,000 | 60,000 |
| 3,500 | 110,000 | 8,500 | 57,500 |
| 4,000 | 100,000 | 9,000 | 55,000 |
| 4,500 | 95,000 | 10,000 | 50,000 |
| 5,000 | 90,000 | 11,000 | 45,000 |
| 5,500 | 85,000 | 12,000 | 40,000 |

Fire hydrants as blowoffs shall be installed at the end of all permanent and temporary dead-end mains.

## 6 Water Services

### 6.1 General

All services, including irrigation lines, shall be shown on the plans. Service lines shall be run to the nearest property line of the property it is intended to serve in a trench laid out straight from the watermain to that property line and at a ninety degree (90°) angle to the property line. Except when it is impractical as determined by SPUC any changes to service line location or size from the approved plans shall require approval from the Utilities Manager.

The minimum size for new service lines from the corporation stop to the curb stop shall be one inch (1”). Service lines up to and including one and one-half inch (1 ½”) diameter shall be Type K copper tubing. Services greater than one and one-half inch (1 ½”) diameter shall be ductile iron, class 52 DIP (or higher).

An industrial or commercial complex shall have a single master meter for domestic usage, unless multiple meters are approved in writing by the Utilities Manager, and one detector check valve assembly for all fire lines.

Post-indicator valves may be installed on combined domestic and fire service lines with City Fire Inspector and Shakopee Public Utilities approval.

In installations where interruptions of water are critical, it is recommended that either a bypass (as shown on the detail sheet) or a manifold system using two (2) or more meters and backflow preventors be installed. This will allow for testing and maintenance without interruption of water service. See approved detail WAT-011.

**7** Record Drawings

The Engineer of Record shall provide two (2) printed copies and one (1) mylar copy of record drawings, four (4) printed copies of tie sheets, and electronic files of record drawings and tie sheets within sixty (60) days of the completion of the watermain improvements. Approval prints shall be submitted for review prior to the submittal of mylars. The mylars shall be signed by the Project Engineer. Ties shall be provided to each curb stop valve, gate valve and watermain stub.

Ties shall be to two (2) of the following structures and be 90° apart:

- Center of sanitary sewer or storm sewer manhole casting.
- Top nut of hydrant.
- Center of catch basin grate.
- Gate valve box.
- Another curb stop valve.

No ties shall exceed one hundred fifty feet (150') in length.

A third tie shall be provided and be the closest point of back-of-curb.

Horizontal location of as-built data (x and y values) shall be based on the Scott County plane coordinate system. The position tolerance for any point shall be +/- 0.5 feet.

Elevations for all as-built plans shall be based on N.G.V.D. 1929. Elevations shall be +/- 0.05 feet of the stated value.

This information shall be submitted as 1 print copy and on disk compatible with the latest version of AutoCad Map. The above information shall be submitted at the same time table as the Development "as-built".

## B. Watermain Installation Standards

1 General Conditions

The standards set forth in this and other sections of this WP manual, as approved by the Commission, and the "Standard Utility Specifications for Watermain Service Line Installation in the current City Engineers Association of Minnesota "shall apply to all work and material to be furnished.

Copies of Standard Utilities Specifications are available at the League of Minnesota Cities 145 University Avenue West, St. Paul, Minnesota 55103-2044, Telephone (800) 925-1122.

The Shakopee Public Utilities Commission standards shall have precedence over the Standard Specifications prepared by the City Engineers Association of Minnesota.

The term "Engineer" as contained in these specifications shall refer to the project engineer as designated in the contract documents. The City Engineer may be designated as the project engineer by the Utilities Commission.

"Customer Service Policies" are contained in Chapter I of this WP Manual, and "Watermain Design Criteria" are contained in Section A, Chapter III of this WP Manual. These installation standards are intended to detail the watermain and service line requirements of the service policies and design criteria.

No work shall be done on a water system extension or modification of the existing system unless plans for the work have been approved by the Utilities Manager and such work shall be in accordance with all provisions of these standards and the approved plans. The Utilities Manager's signature on the plans shall constitute approval.

Water service will not be available until installation has passed all requirements listed herein including but not limited to all testing and the submission of an operational plan to SPUC.

2 Materials (2611.2)

All materials shall be new and not previously used unless specific exemption is granted by the Utilities Manager in writing. Cast iron pipe shall not be used.

2.1 Ductile Iron Pipe and Ductile Iron Fittings (2611.2A1)

The minimum design thicknesses of ductile iron pipe shall be CL 52 unless approved by the Utilities Manager in writing.

| Pipe Size | Pipe Metal Thickness (Inches) | = | (Class) |
|---|---|---|---|
| 3"* | 0.28 | = | (52) |
| 4"* | 0.29 | = | (52) |
| 6" | 0.31 | = | (52) |
| 8" | 0.33 | = | (52) |
| 10" | 0.35 | = | (52) |
| 12" | 0.37 | = | (52) |
| 16" | 0.40 | = | (52) |

* Service line pipe only.

For pipe sizes larger than 16 inch, the pipe metal thickness and class shall be as required by the Utilities Manager. The Utilities Manager can require heavier grade pipe if depth conditions or other criteria require.

All ductile iron pipe will be wrapped in accordance with 2.9 (a) Corrosion Protection.

Zinc-coated water main and V-Bio polyethylene encasement shall be used when paralleling within 20 feet of a gas easement or any other easement containing an induced current cathodic protection.

When crossing a gas line or other cathodically protected pipeline, zinc-coated water main and V-Bio polyethylene encasement shall be used to a point where the water main extends to at least 20 feet outside of the easement.

Mechanical joint pipe shall comply with ASA Specification A-21.11.

All pipe and fittings shall be furnished with cement mortar lining meeting the requirements of ANSI A21.4 for standard thickness lining. All interior and exterior surfaces of the pipe and fittings shall have a tar or bituminous seal coating at least one mil thick except in cases of epoxy coated materials. Spotty or thin seal coating or poor coating adhesion shall be cause for rejection.

Fittings shall be ductile iron and shall be Class 350 for sizes up to and including twelve inches (12") in diameter, shall conform to ANSI /AWWA C153/A-01.53-84 or ANSI/AWWA C110/A21.15-83 covering short body and standard fittings, and shall be mechanical joint. Fittings over twelve inches (12") in diameter shall comply with the above specifications and may be a minimum Class 350. All fittings shall have the year of manufacture cast on the body, and shall not be older than one (1) year at time of installation.

All pipe joints shall be approved slip type or mechanical joint with rubber gasket. Gaskets shall be molded rubber rings made expressly for the joint used (ANSI A21.11).

Electrical conductivity must be provided across each joint including at fittings, valves, and hydrant boots by means of metal cables or straps welded or otherwise permanently fastened across the pipe joint or an approved conductive gasket with copper inserts similar to "Fastite" by American Cast Iron Pipe Company. The connection must be capable of withstanding 600 amperes of current and must be approved in writing by the engineer.

When so directed by the engineer, the contractor shall provide accurate scales near the site of the construction. The contractor shall weigh a sufficient number of pipes and fittings from each shipment to verify the weight. Should the weights prove inconsistent, the engineer may require the weighing of all materials delivered. The cost of all weighing shall be at the contractor's expense.

All pipe and fittings shall be manufactured in the United States and NSF 61 approved.

2.2 Concrete Pressure Pipe and Fittings (2611.2A2)

Concrete pressure pipe and fittings shall not be permitted in the system.

2.3 Polyvinyl Chloride (PVC) – Pressure Pipe (2611.2A3)

PVC pressure pipe shall not be permitted in the system.

2.4 Fire Hydrant Assembly (2611.2B)

Hydrant length shall provide for a cover of eight feet, six inches (8' – 6") over the centerline of the lead pipe (i.e., 8½ feet of bury). In the event existing grade necessitates the use of a longer hydrant, the contractor shall tip hydrant tee and use a 45° bend to maintain seven and one-half feet (7½') of cover in the street and correct bury of the hydrant location if this is not possible, then the contractor shall furnish and install an approved hydrant extension with no extra compensation.

In areas where the hydrant base is installed below ground water, the hydrant shall not have a drain and the hydrant shall be marked with a metal tag to indicate the requirement to pump the hydrant after use. The hydrant value shall be of the type to open against main pressure.

The valve shall be faced with specially processed valve rubber and shall have a tapered seat for positive closure. This entire mechanism shall be removable for repairs or replacement through the barrel without excavating.

Outlet nipples shall be bronze securely fastened into the nozzle section. Hose and steamer caps shall be provided with rubber gaskets.

"O" ring seals shall be provided to prevent water from reaching operating mechanism. Operating mechanism shall be lubricated through an opening in the operating nut or bonnet. All moving parts are to be bronze bushed. All parts of hydrants furnished shall be interchangeable with all other hydrants of the same size, model, and make without special fittings.

Hydrants shall be Waterous Pacer; traffic type and shall be painted with bright yellow (# m4106-1) enamel with a green (# m4105-1) bonnet. Waterous hydrants shall be WB67-250 with weather shield cover on operating nut, stainless steel bolts at hydrant bottom, five and one-fourth inch (5¼") by eight and one-half-foot (8½') bury, DDP nozzles, two (2) two and one-half inch (2½") and one (1) four and one-half inch (4½"), numbers 7532 and 40524, with National Standard fire hose coupling threads, six-inch (6") mechanical joint, #5 operating nut, open left (CCW), nut-type caps with chain, sixteen-inch (16") breakoff section, paint yellow (# m4106-1) with green (# m4105-1) bonnet. All hydrants to have year of manufacture and shall not be more than one (1) year older than year of installation.

2.5 Valves and Boxes (2611.2C1 and 2611.2C2)

Valves and valve boxes shall be manufactured in the United States.

Valves twelve inches (12") and smaller shall be ductile iron, resilient wedge gate valves rated for 250 psi. Valves sixteen inches (16") and larger shall be ductile iron, non-rising stem storm gate/butterfly valves with enclosed bevel gearing rated for 250 psi. The valves shall meet all applicable requirements of AWWA specification C515. The bonding process for bonding Styrene Butadiene rubber to the cast iron wedge shall meet ASTM tests for rubber-to-metal bond, ASTM 429-73. Valve ferrous metal parts shall be all ductile iron. All valves shall have the year of manufacture and shall not be more than one (1) year older than year of installation.

Valve boxes shall be cast iron of the three (3) piece type with five and one-fourth inch (5 ¼") shafts, screw-type, one and one-half inches (1 ½") between threads, bases may be a #6 round or a #160 oval suitable for a depth of eight feet six inches (8' – 6") to the centerline of the pipe. Valve boxes shall be Tyler 6860 Series Item G with a stay-put cover bearing the word "Water" on top or approved equal. Deep valves may be required to have nut extensions installed for elevation to accommodate standard 10' operating key. Bottom nut shall be bolted to valve nut and only one section. Valve boxes shall have at least six-inch (6") adjustment above and below specified depth of pipe with a thirty-six-inch (36") bottom section. Adjustments to be made with Tyler items 58, 59 or 60 extensions of appropriate length or approved equal. No screw-type adjustable risers such as Tyler Items 67,68 or 69 or similar risers shall be used. No slip-type adjustable risers such as Tyler Items 67-A, 68-A, 69-A, 64-A or 65-A or similar risers shall be used.

Valves, including all accessories, shall be considered as an integral unit, and the bid price shall include all these items.

Valves sixteen inches (16") and larger shall be provided with precast concrete vaults or manholes placed over the operators.

Watermain vaults may consist of precast concrete manhole sections with integral base and shall be manufactured to standards at least equal to or greater than the requirements of the standard specifications for reinforced concrete culvert storm drain and sewer pipe, ASTM designation C76-72 for Class II. The internal diameter shall be as shown on detail drawings. Precast top sections for manholes shall conform to requirements as shown on the detail drawings. Connections from the pipe to the manhole shall be made with the "cre-seal" or "reseal" or approved equal. Cast iron for manhole frames and covers shall be not less than Class 30 or grey iron, free from all injurious defects and flaws and shall conform with ASTM Designation A48-64. All covers must fit closely in the rings in any and all positions so that there will be no rocking from pressure applied on any point of the cover. All castings shall conform to the weight, type and size as shown on the detail drawings. Covers shall bear the words "Water" on the top. The supplier of castings must be approved by the engineer. The supplier shall certify to the engineer that each shipment conforms to these specifications. Such certification shall accompany each shipment to the job site.

RW gate valves/butterfly valves, including all accessories, manholes or vaults, and frames and covers shall be considered as an integral unit, and the bid price shall include all of these items.

## 2.6 Air Release Valve Assembly

Air/vacuum relief valves shall be installed at the high points of any watermain sixteen-inch (16") or larger if requested by the Public Utilities Department. Air release valve assembly shall include the complete valve assembly and the vented vault positioned over the watermain where the air/vacuum valve is installed. Hydrants may be installed at the high point of all watermains using a turned up tee to facilitate air removal.

The vault for the air release valve shall consist of precast concrete manhole sections with integral base which shall conform to the requirements for watermain vaults specified above and shall conform to the requirements as shown on the detail drawings. Connections from the pipe to the manhole shall be made with the "cre-seal" or "reseal" or approved equal. Where groundwater is below manhole floor grade, a one foot by one foot (1' x 1') sump hole is to be installed with one and one-fourth inch (1 ¼") crushed rock installed for drain.

## 2.7 Blowoff Valve Assembly

### (a) Temporary Two-Inch (2") Blowoff Assembly

Temporary two-inch (2") blowoffs shall be installed in those portions of the watermains which could not be chlorinated, flushed, or tested by other means.

The two-inch (2") blowoff assembly consists of all valves, pipe and materials necessary to install the blowoff valve complete in place and shall be constructed in accordance with the detail drawings (Refer to detail WAT-010).

(b) Six-Inch (6") Blowoff Assembly

A six-inch (6") blowoff valve shall be installed at each low point in all watermains of sixteen-inch (16") diameter or larger. The blowoff valve assembly shall consist of a line tee, six-inch (6") diameter blowoff line, a valve, vault and accessories. Hydrants with a turned down tee may be used in lieu of a blow-off valve if approved in the design stage.

The vault shall conform to the requirement for watermain vaults detailed above and shall conform to the requirements as shown on the detail drawings (Refer to detail WAT-010).

2.8 Water Service Pipe and Fittings (2611.2D)

(a) Curb Stop and Box

Curb stops shall be Mueller Company B-25154, Ford B22-333M, B22-444M, B22-777M, A.Y. McDonald 6104, or approved equal without drain, suitable for flared copper inlet and outlets.

Curb boxes shall be Mueller H-10300 or McDonald 5614 or approved equal for three quarter-inch (3/4") and one-inch (1") curb stops, McDonald 5614 or approved equal for one and one-half-inch (1 ½"), all with one and one-fourth-inch (1 1/4") steel pipe upper section adjustable up or down six inches (6") from seven and one-half feet (7 ½') of cover. Curb box base casting shall be threaded to match the curb stop. Lids to have pentagon plug with the word "Water" in raised letters. No operating rods are to be left in curb boxes by installation contractor.

If curb box ends up in a sidewalk, bikepath or driveway, a Ford A-1 cover or PowerSeal cover will be installed.

(b) Corporation Stops

Corporation stops shall be ball valve type Mueller B-25000; Ford FB600, A.Y. McDonald 4701B, or approved equal. Three quarter-inch (3/4") and one-inch (1") services shall have a flare-type joint for service pipe and be threaded on inlet end with standard corporation stop thread. Services over one inch (1") shall use a tapping saddle.

(c) Gate Valves

Gate valves used for water services shall conform to Article 2.5 of these specifications.

2.9 (a) Corrosion Protection (2611.2E)

Corrosion protection shall be incidental to construction where shown on the drawings. Ductile iron pipe and all fittings shall be wrapped in V-Bio Enhanced

Polyethylene Encasement tubing in accordance with AWWA Standard C105/A21.5 and these specifications to prevent corrosion when required. The polyethylene tubing shall meet the following specifications:

V-Bio Enhanced Polyethylene Encasement for Ductile Iron Pipe

Polyethylene encasement for use with ductile iron pipe shall meet all the requirements for ANSI/AWWA C 105/A21.5, *Polyethylene Encasement for Ductile Iron Pipe Systems*.

In addition, polyethylene encasement for use with ductile iron pipe systems shall consist of three layers of co-extruded linear low-density polyethylene (LLDPE), fused into a single thickness of not less than 8 mils.

The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of anti-microbial biocide to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.

Ductile iron pipe and the polyethylene encasement used to protect it shall be installed in accordance with AWWA C600 and ANSI/AWWA C105/A21.5 and also in accordance with all recommendations and practices of the AWWA M41, *Manual of Water Supply Practices — Ductile Iron Pipe and Fittings*. Specifically, the wrap shall be overlapped one foot in each direction at joints and secured in place around the pipe and any wrap at tap locations shall be taped tightly prior to tapping and inspected for any needed repairs following the tap.

All installations shall be carried out by personnel trained and equipped to meet these various requirements.

(b) Blue Bolts

COR-Blue t-bolts or equivalent must be used on mechanical joints. Shall be of domestic origin, high strength, and low alloy steel bolts only, meeting the current provisions of American National Standard AWWA C111 for rubber gaskets, joints for cast iron, or ductile iron pipe and fittings.

2.10 Insulation (2611.2J)

No detail – To be used only if prior approval in design stage

2.11 Alignment and Depth

To facilitate locating, watermains generally shall be placed twelve feet (12') south and west of street centerlines. Watermains shall have minimum cover of seven and one-half feet (7 ½'). That shall be seven and one-half feet (7 ½') below final grade and any intermediate grade, whichever requires the greatest depth. [When watermain pipe crosses sewer pipe, the watermain shall be laid above the sewer pipe with eighteen inches (18") vertical separation from the bottom of the water pipe to the top of sewer pipe.]

Watermain pipe shall be laid no closer than ten feet (10'), measured edge to edge, to any sewer pipe unless watermain quality, C900 PVC or CL 52 DIP sewer pipe is used.

There shall be a minimum clearance of 1 ½ feet between watermain pipe and any sewer structures.

2.12 Pipe Laying Operations (2611.3C2)

Fine grading to trench bottom should be true and even so that the barrel of the pipe will have soil support for its full length, shall proceed ahead of the pipe laying; and should any over-excavation exceeding two inches (2") be encountered, the material added shall be moistened if necessary and compacted to the satisfaction of the engineer, or foundation material shall be added at the expense of the contractor.

Before lowering and while suspended, the pipe, fittings and valves shall be inspected to detect any debris, defects or cracks. Any defective, damaged or unsound material shall be rejected, marked, and removed from project site.

The pipe shall be supported for the bottom ninety degrees (90°) and throughout its length as shown on the plans. Bell holes shall be dug adequate to make the joint, but no larger than necessary, so that maximum support on undisturbed ground will be provided for the pipe. The pipe backfill material shall be dry granular material or fine graded suitable material to flow under the pipe haunches, then compacted a minimum of one pass on each side of pipe with a mechanical compacter to the spring line of pipe so as to completely fill all voids under and adjacent to the pipe. The remainder of the pipe shall be surrounded to a height of at least twelve inches (12") above its top by granular materials or other suitable material as determined by the engineer. Bedding material within twelve inches (12") of the pipe shall be free of rock fragments larger than three inches (3") in diameter.

Ground water shall be kept at least zero point ten feet (0.10') below the invert of pipe at all times. If this cannot be accomplished with pumps and equipment on-site, a gasketed plug shall be placed into bell end and pipe laying ceased until water table is maintained zero point ten feet (0.10') below invert of pipe. It is the contractor's responsibility to have a plug on-site for all pipe diameters on project. A temporary plug or "cookie" shall be in the ditch at all times during pipe laying operations to be installed in the end of each pipe to prevent debris or soil from entering the pipe. Failure to follow this procedure shall be reason to stop contractor's pipe laying operations.

All foreign matter or dirt shall be removed from the inside of the pipe and fitting before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying. Any foreign objects found in mains and hydrants during flushing shall be removed by the contractor at the contractor's expense.

2.13 Blocking and Anchoring of Pipe (2611.3C4)

All plugs, caps, tees, bends, and other thrust points shall be provided with reaction blocking or movement shall be prevented by attachment of approved restraining devices in accordance with the plans and standard details. Refer to detail plates WAT-013 & WAT-014. Plugged tees and crosses on a straight run do not require restraint.

Cast-in-place concrete blocking, rodding, and *Megalug* EBAA Iron series 1100 joint restraints are considered suitable restraining device for the following applications as indicated:

**Horizontal Bends**. Cast-in-place concrete blocking, rodding, or *Megalug* joint restraints.

**Vertical Bends**. Rodding or *Megalug* joint restraints.

**Flushing Hydrants.** Rodding or *Megalug* joint restraints.

**Hydrant and Service Line Leads.** Rodding or *Megalug* joint restraints, tied all the way back to the tee with the main line.

Where ready-mix concrete thrust blocks are used, testing of lines shall not proceed until the concrete has had sufficient time to attain design strength. High early strength concrete may be used.

Where rodding is used, metal rods and riser clamps shall be installed as shown on the detail sheets. "I" bolts and washers shall be used to fasten rods to mechanical joints, duct lugs are not acceptable. When used, all rods, bolts, nuts, washers, and cad-weld shall be coated with bitumastic coal tar. Rods used for tying back shall be three-fourth's inch (3/4") diameter, steel, threaded rod with couplings (if used) designed for use with such rods.

When connecting to existing stubs, all necessary work to make the joint restraint shall be done at no additional compensation.

Where joint restraint is required, the minimum length of tied pipe shall be in accordance with the following table. This assumes sand excavation, in other soils or if pipe is polywrapped, additional joint restraint may be required.

All joints within steel casing must have restraining method pre-approved by Shakopee Public Utilities. Refer to detail plate WAT – 013. Utility requires 24-hour notice to witness filling the void in casing when filled with sand.

| **Feet of Restrained Pipe on Each Side of the Bend** | | |
|---|---|---|
| **Pipe Size** | **8' Cover** | |
| | **Bend Sizes (Degrees)** | |
| | **22 ½°** | **45 ½°** |
| **3"*** | **1** | **2** |

| | | |
|---|---|---|
| **4"*** | **1** | **3** |
| **6"** | **2** | **4** |
| **8"** | **3** | **5** |
| **10"** | **4** | **5** |
| **12"** | **5** | **8** |
| **16"** | **6** | **10** |

***Service line pipe only**

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**Notes: 1) Table is based on sand excavation, for silt increase 50%**
**2) If polyethylene wrapping is used, increase value by 100%**

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For pipe sizes larger than 16 inch, the feet of restrained pipe on each side of the bend shall be as required by the Utilities Manager.

When connecting to existing stubs, the contractor shall take every precaution necessary to prevent dirt or debris from entering the existing lines. A sump below invert shall be excavated, pumps shall be on hand and a course bag placed over the pipe to allow water to pass through but prevent debris from flowing back into pipe. A chlorine solution and rags shall be on-site to cover open pipe until time of connection. All necessary work to make the connection shall be done at no additional compensation, except where noted otherwise.

2.14 Water Service and Meter Installation (2611.3E)

Water services shall be located at least three feet (3'), measured horizontally and two feet (2') measured vertically, away from watermain quality pipe used for sanitary sewer services, ten feet (10') from all other sewer services. Water services shall be placed upstream from sanitary sewer services. Curb boxes shall be located one foot (1') inside the right of way on projects north of Trunk Highway (TH) 169 and one foot (1') inside the utilities easement on projects south of TH 169. A concrete block shall be placed under the curb box.

Copper service pipe shall be installed continuous without joints between the corporation stop at the watermain and the curb stop.

Every copper service pipe must be laid sufficiently waving to allow not less than one (1) foot of extra length and in such manner as to prevent rupture by settlement.

The service pipe must be placed not less than seven and one-half feet (7 ½') below the surface and in all cases so arranged as to prevent rupture by freezing.

Service pipes must extend from the city watermain to the curb stop and then, from the curb stop to the inside of the building. A shutoff or other stop cock of the size and strength required shall be placed close to the inside wall of the building, well protected from freezing.

Type K copper tubing shall be used up to and including one and one-half inch (1 ½") services. Two inch (2") or greater copper is not allowed for services, including lawn irrigation. A deburring tool must be used on all copper service pipes.

All joints or fittings on service lines shall be flared type fittings. No galvanized iron pipe or fittings are permitted.

Joints on copper tubing shall be kept to a minimum with no joint used for a one-inch (1") service up to one hundred feet (100') in length, and no joints in sixty feet (60') for one and one-half inch (1 1/2") service. No joints shall be under a concrete floor.

Service saddles shall be used wherever the tap size exceeds one inch (1") for twelve inch (12") diameter pipe size and one and one quarter inch (1 ¼") for sixteen inch (16") diameter pipe size. Service saddles shall have double stainless steel straps.

The line shall be left uncovered until inspected.

All services over one and one-half inches (1 ½") shall be ductile iron and shall be constructed and tested in accordance with these specifications for watermain pipe.

Water meter(s) shall be installed on the incoming water service line as near as practicable to its point of connection to the watermain, and shall be upstream of all other devices except that a single stop valve is to be installed upstream of the meter. Water meter installations shall also be at least 6" away from wall.

The service pipe from the watermain to the meter, when the same enters the building, shall be brought through the floor in a vertical position. The stop valve shall be installed about twelve inches (12") above the floor.
The meter shall be located so that the bottom is from twelve to eighteen (12"-18") measured horizontally from the inside line of the basement wall, unless an alternate method is approved in writing by Shakopee Public Utilities. The meter shall be set in a horizontal position and shall be readily accessible for maintenance and reading.

All meter installations shall have a stop valve on each side of the meter. All stop valves shall be ball valves for 1 ½" diameter and less. All stop valves greater than 1 ½" diameter shall be gate valves. In no case shall there be more than twelve inches (12") of pipe exposed between the point of entrance through the basement floor and the stop and the waste. Galvanized iron pipe or fittings shall not be used ahead of the meter.

The water pipe connecting with the main shall not run under any basement floor for a distance of more than two feet (2'), measured from the inside of the basement wall, before being connected to the water meter, unless approved in writing by Shakopee Public Utilities.

All five-eighth's inch (5/8"), three-fourth's inch (3/4") and one-inch (1") meters shall be set in an appropriate meter setting device approved by Shakopee Public Utilities with no iron pipe between main and meter.

## 2.15 Water Meter Installation Standards for Commercial and Industrial Installations

All meters shall be supplied by SPUC upon the payment of the appropriate fees.

(a) All meters and backflow preventors must be horizontal unless approved in writing by the Utilities Manager.

(b) Do not install check valves or pressure reducing devices upstream of the meter.

(c) Check valves and pressure reducing devices should not be located closer than five (5) pipe diameters downstream of the meter.

(d) Because of the need to test large meters periodically, the meter test outlet is required to provide for testing a water meter in line. The service saddle (or reducing tee) must be at least three (3) pipe diameters downstream of the meter's outlet flange.

(e) In installations where interruptions of water are critical, it is recommended that either a bypass (as shown in the detail sheet) or a manifold system using two (2) or more meters and backflow preventors be installed. This will allow for testing and maintenance without interruption of water service. (see WAT-011 Detail Plate)

(f) The detail plate for backflow preventors is a guide, all provisions of the state plumbing code must still be followed. Refer to Detail WAT-011

## 2.16 Connection To or Interruption of Existing Facilities

Prior to connecting to existing watermains, the project inspector and the Utilities Manager must be notified. Any residents/customers who will be affected by the shutting off of water shall be given advance written notice as to when and for how long service will be interrupted. A minimum of forty-eight (48) hours advance notice shall be given. It shall be the contractor's responsibility to provide this written notice.

The contractor shall at all times coordinate the work to be done with the Shakopee Public Utilities and obtain any necessary permits from the ROW authority. When it is necessary to connect to the existing water system or close existing portions of the water system due to construction operations, the contractor shall discuss that phase of the planned starting date to allow for orderly planning and coordination by Shakopee Public Utilities.

The contractor shall take the steps considered necessary by the Utilities Manager for the protection of the existing water system and the health and reasonable convenience of water users. No water shall be shut off or work done on the existing water system without approval of the Utilities Manager. Normally, water will not be shut off before 9:00 A.M. and shall be restored by 3:00 P.M. the same day, unless special conditions require otherwise.

The contractor will give at least forty-eight (48) hours prior notification to the Utilities Manager of any necessary valve operations or of any closings of the existing water system.

ALL WATERMAIN VALVES THAT ARE IN SERVICE SHALL BE OPERATED BY AUTHORIZED SHAKOPEE PUBLIC UTILITIES COMMISSION PERSONNEL ONLY. Unauthorized operation of the valves is subject to fines under city code. The contractor shall conduct operations in such a manner as to minimize inconvenience to the public due to disconnected water service.

In the event that interruption of water service is not permitted, temporary measures to ensure continuance of water supply shall be at the contractor's expense. Shakopee Public Utilities "Requirements for Potable Water By-Pass" must be followed and approved by a Utilities representative. In the event water service is disconnected beyond the specified time, the Utilities Manager shall have the authority to order a temporary utility service installed by utility forces or by a third party at the contractor's expense.

Prior to connecting to existing watermains, the contractor shall have all men, materials, and equipment ready to do the work, so as to keep the shutoff time to a minimum. As soon as possible after making the connections, Shakopee Public Utilities personnel shall flush mains at a velocity not less than three feet (3') per second so as to prevent any contamination of the existing facilities.

The contractor shall take every precaution necessary to prevent dirt or debris from entering the main.

Watermain connections shall be made under pressure where shown on the plans.

It will be necessary for the contractor to tap copper water services into existing mains where shown on the plans or directed by the engineer. The water service materials shall be paid in the same manner as other services.

2.17 Structure Adjustment

All valve boxes and manholes in bituminous pavement shall be set one-half inch (½") below the bituminous surface. Adjustments shall be considered incidental to installation regardless of the number of interim adjustments.

2.18 Setting Hydrants (2611.3F)

Hydrants shall be supported upon a precast concrete base eighteen inches (18") square and a minimum of five inches (5") thick. Each hydrant is to be securely tied back to its auxiliary valve, and that valve tied back to the tee as shown on the detail sheet, and as described under "Block and Anchoring of Pipe", Article 3.5 of this specification. Hydrant shall be set so that top nut of hydrant is thirty-four inches (34") above finished grade. There shall be 0.2" between finished ground level and bottom of flange.

Drainage rock at least one cubic yard (1 CY) per detail sheet shall be installed at each hydrant with compacted one and one-half inch (1 1/2") clear crushed stone under and around the hub end and concrete base, to a level of six inches (6") above the drain opening. Tee shall be six-inch (6") mechanical joint to hydrant.
Care must be taken when handling hydrants to protect the paint. Whenever the paint is chipped or scratched, the contractor shall repaint the hydrant per detail information.

Hydrants must maintain their position and must not be displaced out of plumb during backfilling. Any hydrant out of plumb shall be excavated, reset, rebraced, re-backfilled and possibly retested.

Top-of-guard posts where required, should be six inches (6") below the operating nut of the fire hydrant.

No plantings, bushes or trees will be allowed within 3-foot clearance radius around fire hydrant. Shakopee Public Utilities retains the right to clear and/or cut down planting within clearance area around hydrant.

2.19 Disinfection (2611.3G)

(a) General

The contractor shall disinfect and test all mains at no additional compensation regardless of existing conditions. This may include repairing existing facilities that must be included in the test and are not capable of holding test pressures. Mains shall be disinfected at 50 mg/L of chlorine initially with a residual of at least 25 mg/L after twenty-four (24) hours. The chlorine shall be introduced into the new main by use of tablets attached with permatex #1 to the top of each pipe interior at time of pipe laying. See following table for tablet guide.

**Chlorine Dosage for Watermain**
**Ductile Iron Pipe**

| Pipe Size (Inches) | Pipe Length (Feet) | # of 1/4 Oz. Tablets of 70% HTH |
|---|---|---|
| 4" | 18'/20' | 1 Tablet |
| 6" | 18'/20' | 1 Tablet |
| 8" | 18'/20' | 2 Tablets |
| 10" | 18'/20' | 3 Tablets |
| 12" | 18'/20' | 4 Tablets |
| 16" | 18'/20' | 8 Tablets |
| 18" | 18'/20' | 10 Tablets |
| 20" | 18'/20' | 12 Tablets |
| 24" | 18'/20' | 16 Tablets |

| | | | |
|---|---|---|---|
| 36" | 18'/20' | 36 | Tablets |

Based on 70% concentration of active chlorine.

1 oz. = 4 tablets to be attached to top of pipe with permatex #1

(b) Bacteriological Test

Water from all new mains must successfully pass a bacteriological test before the main is placed in service.

(c) Sampling

Shakopee Public Utilities will take all necessary samples on public watermains, at the minimum rate of one (1) sample per one thousand feet (1,000') of pipe for bacteriological test of the water and provide any equipment necessary to take these samples at no cost to the contractor. Private service lines are to have an accredited testing lab analyses the bacteriological sample taken by the contractor, witnessed by Shakopee Public Utilities personnel and have the results faxed/sent to Shakopee Public Utilities.

(d) Rechlorination

When unsatisfactory results are obtained from bacteriological tests, the engineer may direct the contractor to rechlorinate the main. When rechlorination is deemed necessary, it will be done by the contractor at no additional compensation in accordance with the provisions of AWWA C601.

(e) Flushing Main

The entire line shall be flushed after the specified chlorine contact period, minimum of 24 hours, and such flushing continued until the water is free from excess chlorine. The entire line, including hydrants leads, branch lines, and dead-end mains shall be flushed.

All flushing shall be performed by Shakopee Public Utilities personnel. The contractor shall be responsible for disposing of the water from flushing in a safe and satisfactory manner.

2.20 Restoration of Surface Improvement (2621.3K)

The contractor shall confine the work within the construction limits as specified. In all instances, restoration of any disturbed area outside the construction limits shall be at the expense of the contractor.

Portions of the existing roadway and curb and gutter that is disturbed by construction shall be replaced in accordance with the City of Shakopee Standard Specifications for street construction. The materials shall be placed on thoroughly compacted subgrade. The trench shall be compacted in lifts not to exceed one foot (1').

2.21 Operational Inspection (2611.3M)

At the completion of the project and in the presence of the inspector, the contractor shall operate all valves, hydrants, and water services to ascertain that the entire facility is in good working order, that all valve boxes are centered and valves are opened; that all hydrants operate and drain properly; and that all curb boxes are plumb and centered; and that water is available at all curb stops. All curb stops shall be operated / "sizzled" by the contractor after installation and prior to performing the leakage test. A Shakopee Public Utilities representative shall witness each curb stop operated.

2.22 Leakage/Hydrostatic Test

Prior to testing all storm and sanitary sewers must be installed. At the completion of the operational inspection, each line section shall be tested at a minimum 150 psi for no less than two (2) hours and will be accepted if the leakage does not exceed the quantity determined by the formula below:

$$L = \frac{ND\sqrt{P}}{7{,}400}$$

Where: L = Maximum permissible leakage (gallons per hour)
N = Number of joints in the length of pipe tested
D = Nominal diameter of pipe (inches)
P = Average test pressure (pounds per square inch, gauge)

Minimum and typical testing is from valve to valve. The contractor shall supply the pump and any material and labor needed to perform the leakage test. The Shakopee Public Utilities will supply the pressure gauge for use on hydrant nozzle. The leakage test is to be witnessed by Utility personnel.

2.23 Conductivity Test (2611.3H)

Conductivity test shall be run from hydrant to hydrant whenever possible. At no time shall valve stem or valve body be used. Maximum length of pipe tested as one unit is eight hundred feet (800'). Typical testing is from hydrant to hydrant. The conductivity test is to be witnessed by Utility personnel.

The current in the conductivity test shall be direct current 350A + 10% for five (5) minutes without excessive fluctuation. Pipe shall be filled with water during the conductivity test.

2.24 Methods of Measurement and Payment (2611.4)

(a) Foundation Materials

Foundation materials shall be considered incidental to the project unless a pay item is included in the Bid Schedule.

If there is a Bid item, material used for refilling to pipe foundation grade to assure firm foundation for pipe shall be paid for at the contract unit price per measured cubic yard volume in place. Payment shall be made only for the width of trench and shall not exceed the quantity of material used within the maximum allowable width of trench multiplied by the depth below the bottom of the pipe. Payment shall include cost of excavation, delivery, placement, and compaction.

No measurement or payment will be made for foundation materials required due to over-excavation of suitable materials by the contractor. Foundation materials used to correct over-excavation shall be considered incidental to the project.

(b) Base Material and Surfacing

The payment shall be by the unit price bid per ton for each type of aggregate. Payment shall include furnishing, placement, compaction, grading and tolerancing the base material.

(c) Calcium Chloride Solution

The payment for "Calcium Chloride Solution" will be made at the contract unit price per gallon of mixed solution, and shall be compensation for furnishing and applying the material as specified or ordered. The quantity of calcium chloride solution shall be excluded from the twenty percent (20%) of Article 8 of the General Specifications. Payment will be made at the unit price bid regardless of the adjustment of the quantities.

(d) Street Patching and Replacement of Curb and Gutter

Payment for furnishing, placing and shaping the patching shall be paid at the unit price per square yard or portion as specified in the proposal for each location.

Payment for furnishing and placing the curb and gutter shall be at the unit price per lineal foot measured along the face of the curb and gutter line.

(e) Air Release Valve Assembly

Air release valve assemblies shall be measured by the number of each type installed complete, including all valves and vented vault and accessories, as specified. The quantity measured shall be paid for at the contract unit price per each.

(f) Blowoff Valve Assembly

Blowoff valve assemblies shall be measured by the number of each type installed complete including line tee, blowoff line, valve, vault and accessories, as specified. The quantity measured shall be paid for at the contract unit price per each.

(g) Hydrant Assembly

Hydrant assembly shall be measured by the number of each installed complete including joint restraints, drainage pit, etc., as specified. The quantity measured shall be paid for at the contract unit price per each. Hydrant valves and six-inch (6") watermain are paid under a separate bid item.

(h) Gate Valves

Gate valves shall be measured by the number of each size installed including valve bedding, valve, valve box and cover, extension sections as required, fittings, installation, placing and compacting backfill, and associated work as specified. The quantity measured shall be paid for at the contract unit price for each size of valve with box installed.

(i) Butterfly Valve With Manhole

Butterfly valves shall be measured by the number of each size installed complete including all valves, manhole and accessories as specified on plan and details. The quantity measured shall be paid for at the contract unit price.

(j) Ductile Iron Pipe (DIP)

DIP shall be measured by the lineal foot of each size installed including excavating, temporary sheeting/shoring, temporary support of existing utilities, dewatering, watermain pipe, handling, laying, joint restraints, polyethylene encasement as required, maintaining water service to users, testing, disinfecting, placing and compacting backfill, as specified. The quantity measured shall be paid for at the contract unit price with no deductions for valves or fittings. Fittings shall be paid for under a separate bid item

(k) Watermain Fittings

Watermain fittings shall be measured for payment purposes only based upon the full body weights in accordance with ANSI/AWWA C110/A21.65-83 Class 350

D.I.P. body weight only including furnishing all materials, equipment, tools and labor necessary to complete the work as specified. The quantity measured shall be paid for at the contract unit price. Weights shall not include nuts, bolts, mega-lugs or other miscellaneous materials.

(l) Water Services

Water services shall be measured by the lineal foot of each size installed including excavation, service line pipe, handling, laying, testing, disinfection, placing and compacting backfill and related construction as specified. The quantity measured shall be paid for at the contract unit price. Corporations and curb stop valves and boxes shall be paid for under a separate bid item.

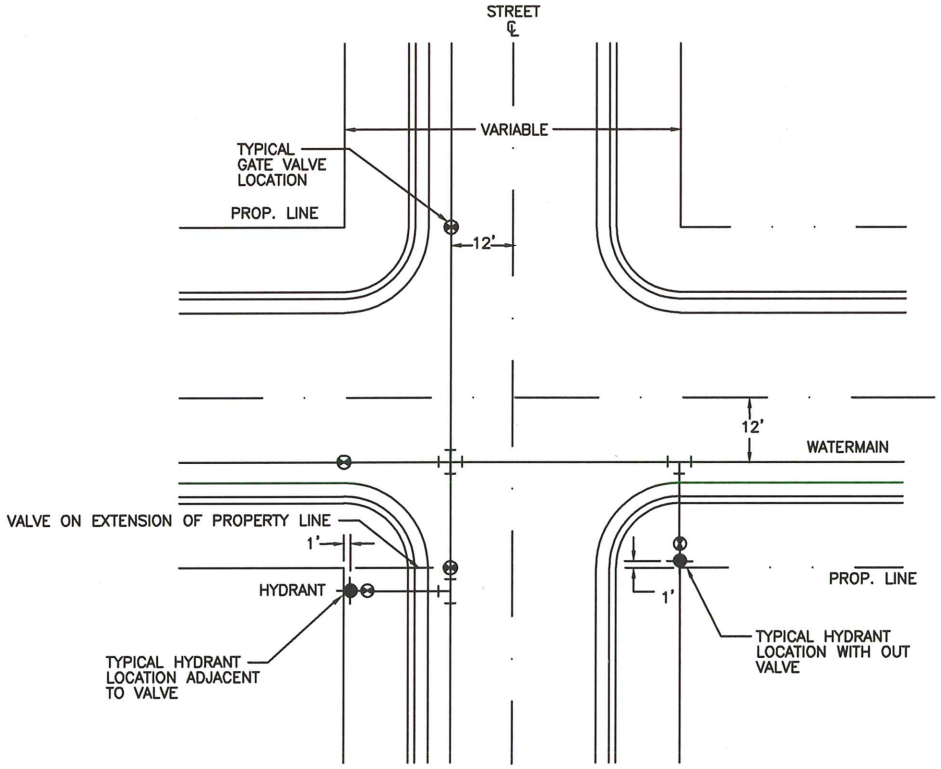
(m) Corporation Stop

Corporation stops shall be measured by each size installed including furnishing all materials, equipment, tools and labor necessary to complete the work as specified. The quantity measured shall be paid for at the contract unit price.

(n) Curb Stop Valve and Box

Curb stop valves shall be measured by each size installed including the curb stop valve box and cover, extension sections, and associated work as specified. The quantity measured shall be paid for at the contract unit price.

| C. | Detail Plates | Adoption Date | |
|---|---|---|---|
| | WAT – 001 | 8/4/14 | Typical Intersection Locations for Watermain |
| | WAT – 002 | 8/4/14 | Typical Valve Box Installation |
| | WAT – 003 | 8/4/14 | Typical Water Service Connection |
| | WAT – 004 | 8/4/14 | Standard Valve Manhole |
| | WAT – 005 | 8/4/14 | Air Release Vacuum Assembly |
| | WAT – 006 | 8/4/14 | Air Release Valve Manhole |
| | WAT – 007 | 8/4/14 | Thrust Restraints for Bends, Tees, and Plugs |
| | WAT – 008 | 8/4/14 | Standard Hydrant Installation |
| | WAT – 009 | 8/4/14 | Temporary 2” Blowoff Assembly |
| | WAT – 010 | 8/4/14 | 6” Blowoff Assembly |
| | WAT – 011 | 8/4/14 | Water Meter Installation for Commercial and Industrial Installations |
| | WAT – 012 | 8/4/14 | Watermain Offset Detail |
| | WAT – 013 | 8/4/14 | Jacking Detail (Single Pipe Crossing) |
| | WAT – 014 | 8/4/14 | Treated Wood Skid Detail |
| | WAT – 015 | 8/4/14 | Irrigation Hookup Detail |
| | WAT – 016 | 8/4/14 | Signature Block Detail |
| | WAT – 017 | 8/4/14 | Record Plans Accepted Signature Block |
| | WAT – 018 | 8/4/14 | Watermain Laying Condition Type 3 |
| | WAT – 019 | 8/4/14 | Watermain & Sanitary Sewer Joint Trench |
| | WAT – 020 | 8/4/14 | Retire Water Service Detail |
| | WAT – 021 | 8/4/14 | Retire Water D.I.P./C.I.P. Service Detail |
| | WAT – 022 | 8/4/14 | Double Check Detector Assemblies |




## TYPICAL LOCATIONS AT INTERSECTION

NO SCALE

N

NOTE:
MAINS TYPICAL WEST/SOUTH

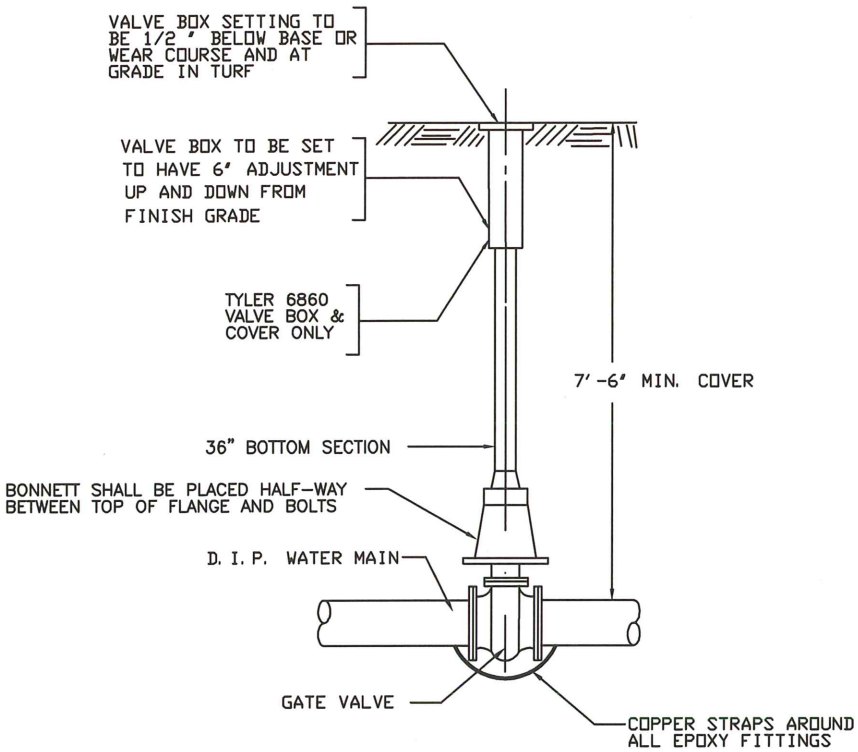
Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 001

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

NOTES:
1. VALVE BOX SHALL BE CENTERED ON OPERATING NUTS. STRAIGHT, FREE FROM DEBRIS, AND ALL SECTIONS UNBROKEN.
2. VALVES IN EASEMENTS SHALL HAVE CHANNEL POST WITNESS MARKERS WITH REFLECTIVE "G.V." SIGN.
3. DEEP VALVES SHALL HAVE NUT EXTENSIONS INSTALLED TO ELEVATION TO ACCOMMODATE STANDARD 10' KEY. BOTTOM NUT SHALL BE BOLTED TO VALVE NUT AND ONLY ONE SECTION.
4. COMPACTION WITH MECHANICAL TAMPER AROUND VALVE BOX SHALL BE PLACED AND COMPACTED WITH 2' LIFTS TO ACHIEVE 95% COMPACTION.




## TYPICAL VALVE BOX INSTALLATION

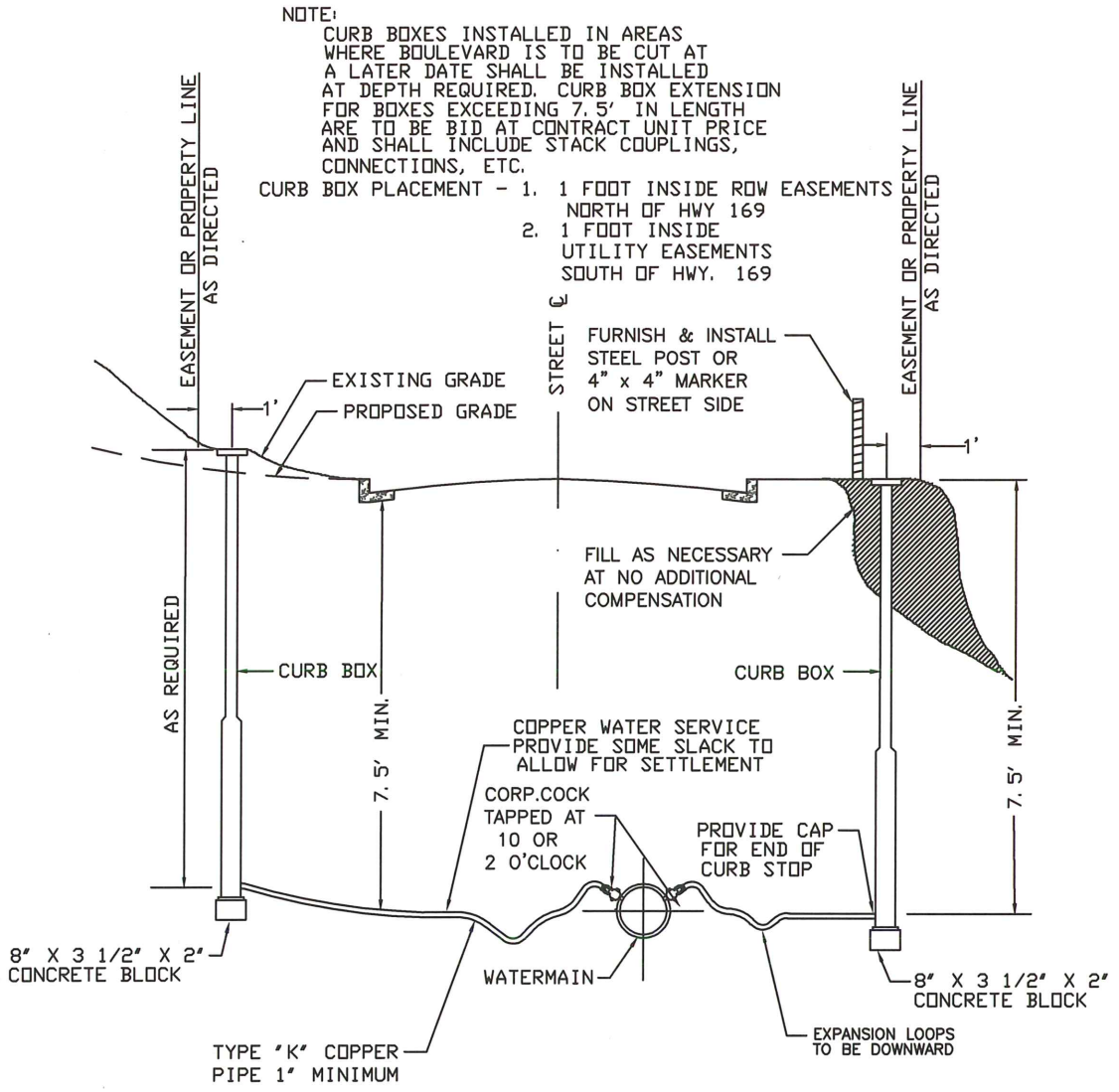
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 002

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




# TYPICAL WATER SERVICE CONNECTION

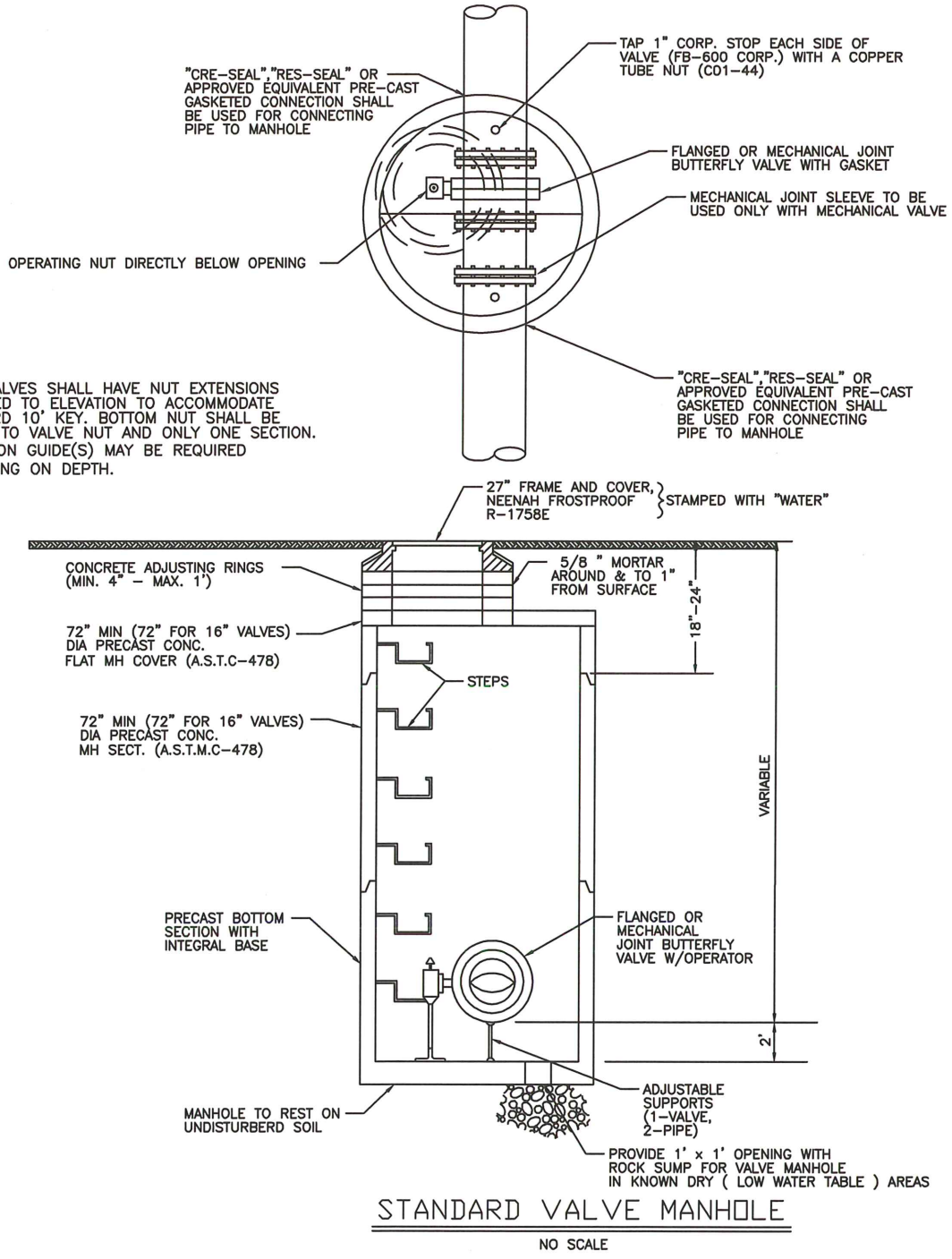
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 003

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




## STANDARD VALVE MANHOLE

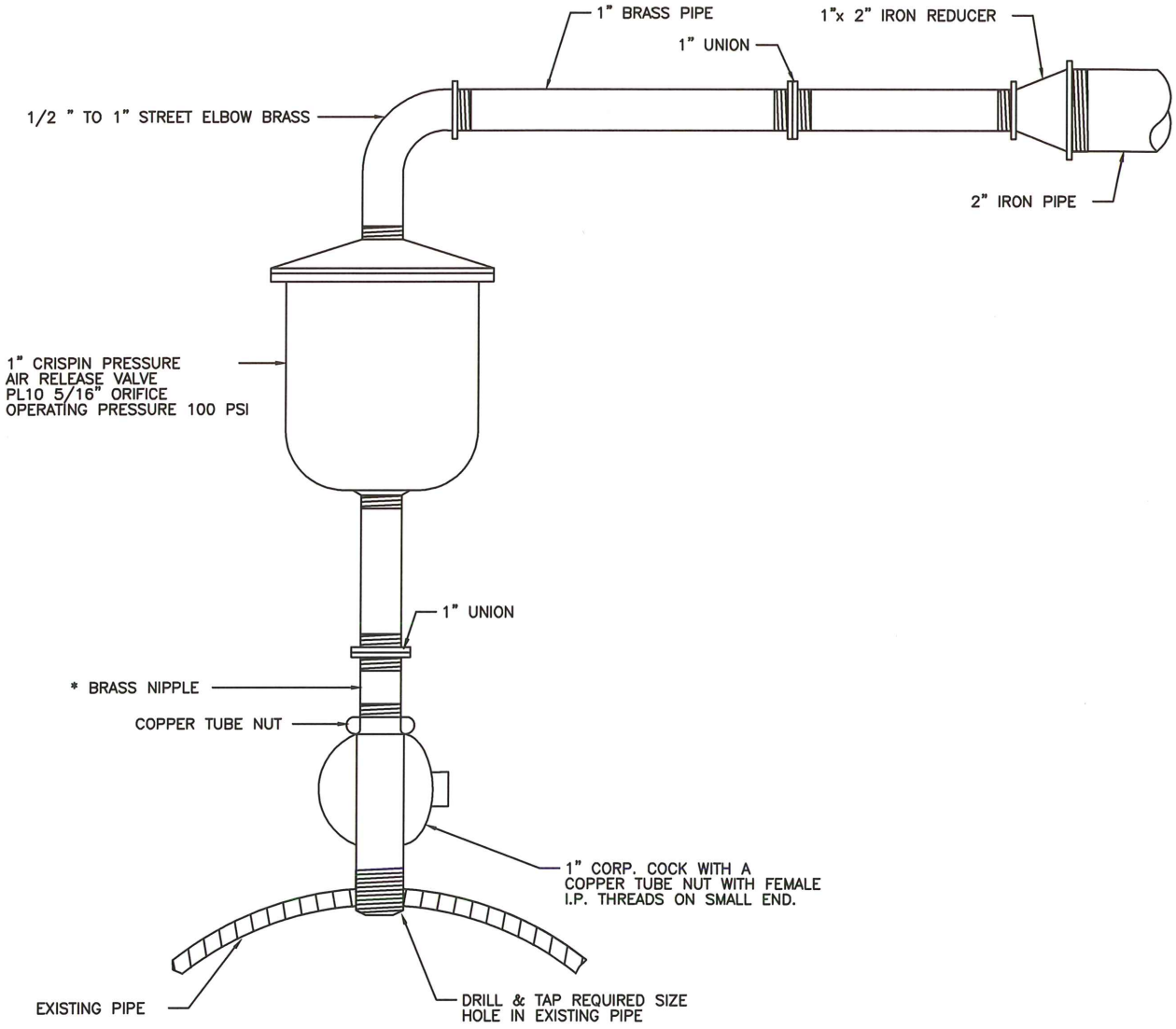
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 004

| ADOPTED | REVISION | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | 11-17-15 | JRC | APP'D | JDA |
| 08-04-14 | | | | |




NOTE: BRASS NIPPLES ARE TO BE KEPT AS SHORT AS POSSIBLE TO KEEP OVERALL HEIGHT TO A MINIMUM.

ALL 1" PIPE & FITTINGS ARE TO BE BRASS.

## AIR RELEASE ASSEMBLY

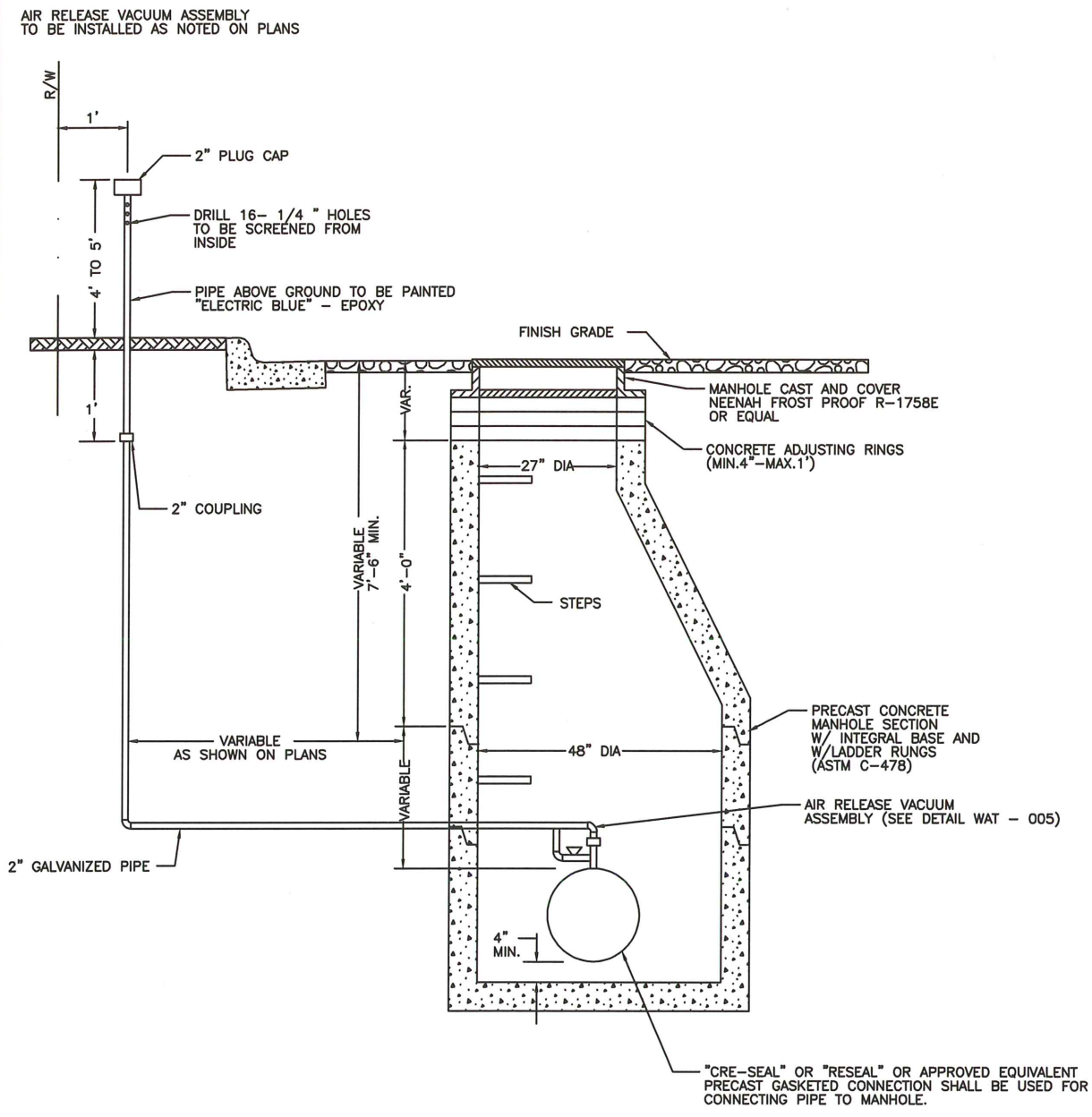
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 005

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | 11/2/18 | JRC | APP'D | JDA |
| 08-04-14 | | | | |




# AIR RELEASE VALVE MANHOLE

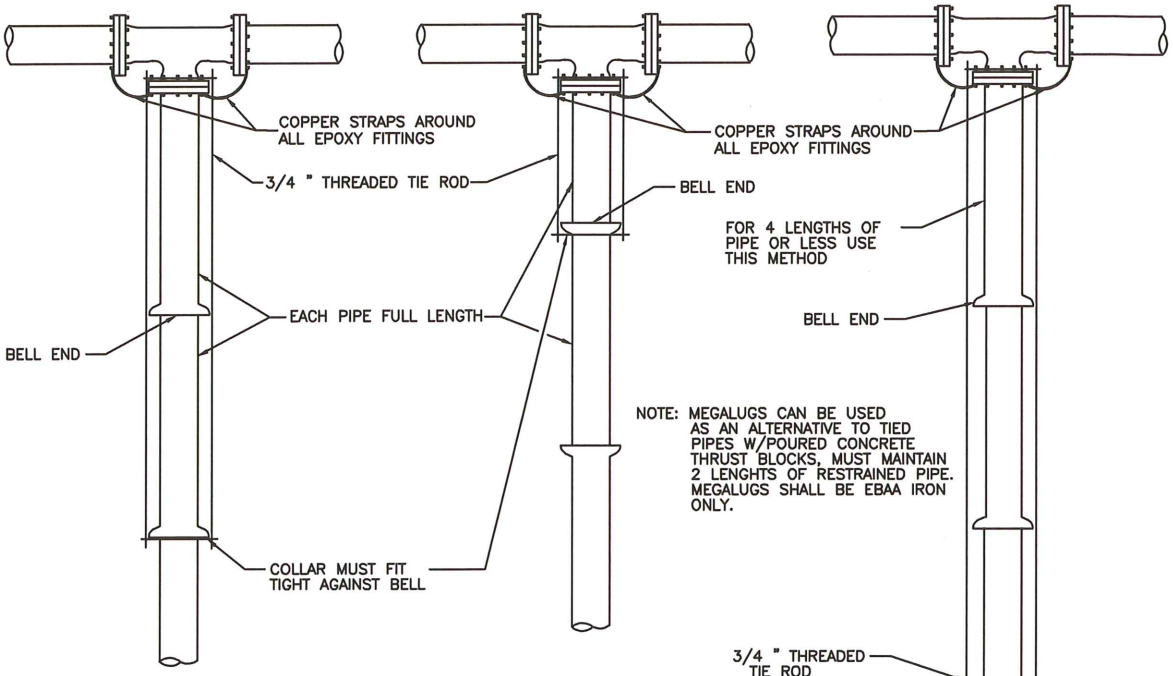
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT – 006

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

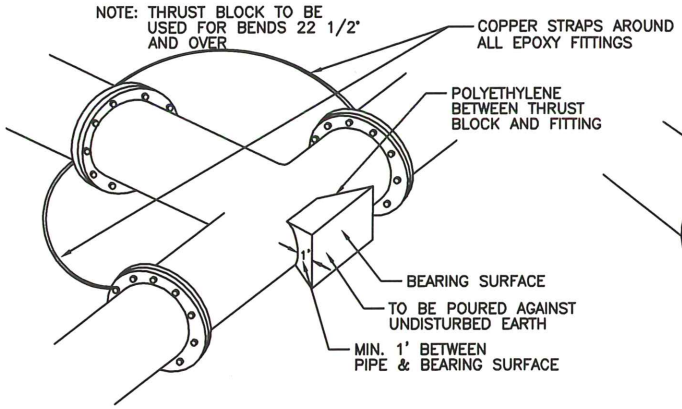



NOTE: MEGALUGS CAN BE USED AS AN ALTERNATIVE TO TIED PIPES W/POURED CONCRETE THRUST BLOCKS, MUST MAINTAIN 2 LENGHTS OF RESTRAINED PIPE. MEGALUGS SHALL BE EBAA IRON ONLY.

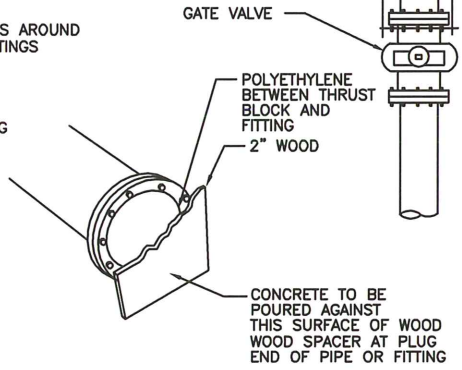
| PIPE SIZE | BEARING AREA |
|---|---|
| 6" | 2.50 SQ. FT. |
| 8" | 4 SQ. FT. |
| 12" | 9 SQ. FT. |
| 16" | 16 SQ. FT. |
| 18" | 19.5 SQ. FT. |

NOTE: EYE BOLTS ONLY WITH WASHERS IF RODDING USED. ALL METAL SHALL BE COATED WITH COLD TAR EPOXY.

NOTE: RESTRAINING NOT REQUIRED FOR 11 1/4° BENDS. NO 90° BENDS ARE ALLOWED..




TYPICAL THRUST BLOCK
(SHALL BE READY MIX CONCRETE MEETING MnDOT SPEC. 2461)




# THRUST RESTRAINTS FOR BENDS, TEES, AND PLUGS

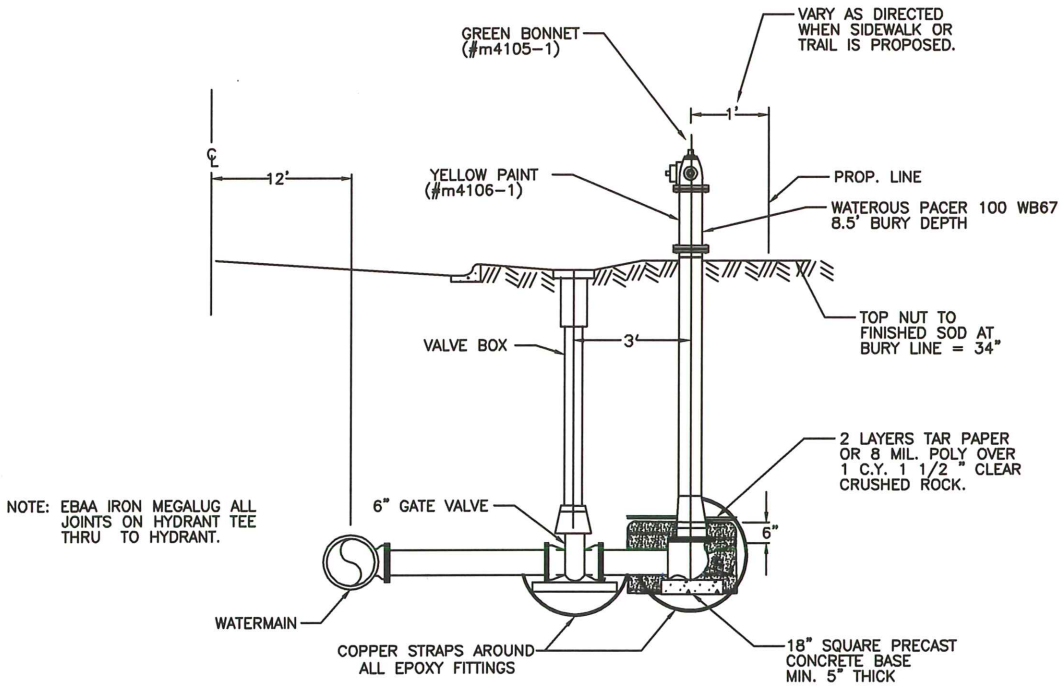
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 007

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




NOTE: HYDRANT TO HAVE NATIONAL STANDARD SCREW THREADS FOR FIRE HOSE COUPLING AND FITTINGS–ALL VALVES TO OPEN COUNTER–CLOCKWISE

NOTE: 1. FURNISH & INSTALL " HYDRAFINDER" MARKER
2. PROVIDE WATER OPERATOR (1) EXTRA "HYDRAFINDER" MARKER FOR EACH ONE INSTALLED.

## STANDARD HYDRANT INSTALLATION

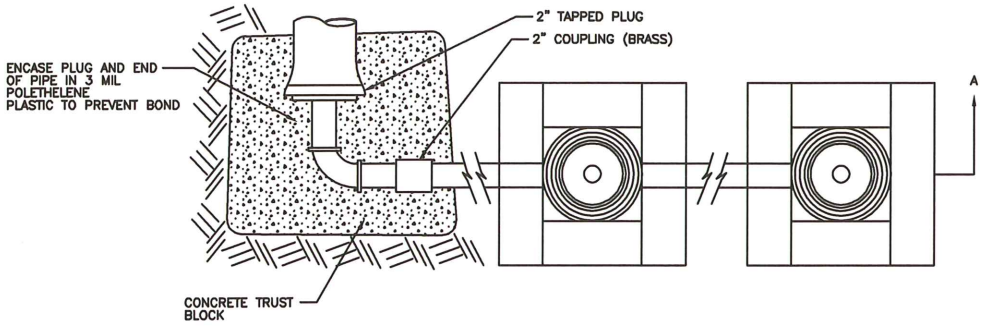
NO SCALE

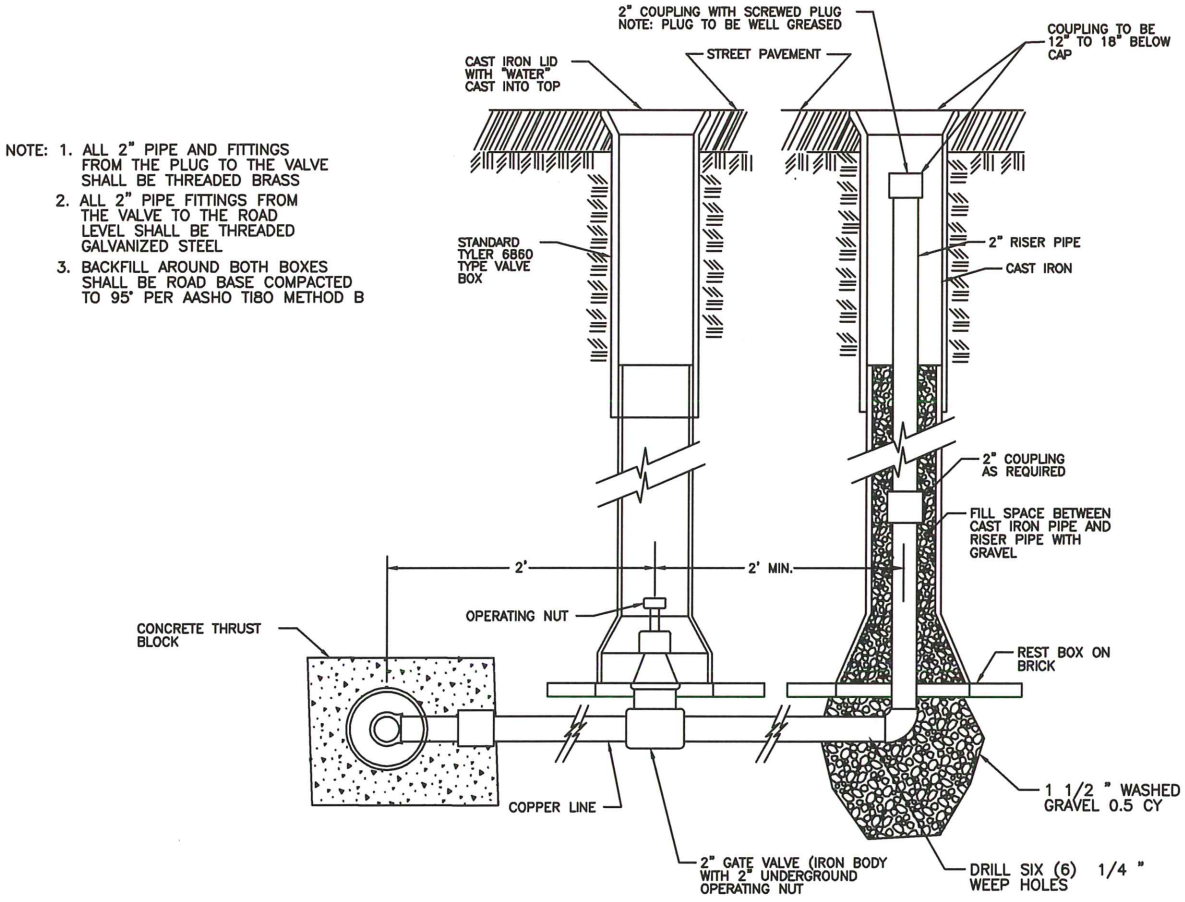
Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 008

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




NOTE:
1. ALL 2" PIPE AND FITTINGS FROM THE PLUG TO THE VALVE SHALL BE THREADED BRASS
2. ALL 2" PIPE FITTINGS FROM THE VALVE TO THE ROAD LEVEL SHALL BE THREADED GALVANIZED STEEL
3. BACKFILL AROUND BOTH BOXES SHALL BE ROAD BASE COMPACTED TO 95% PER AASHO T180 METHOD B

## TEMPORARY 2" BLOWOFF ASSEMBLY

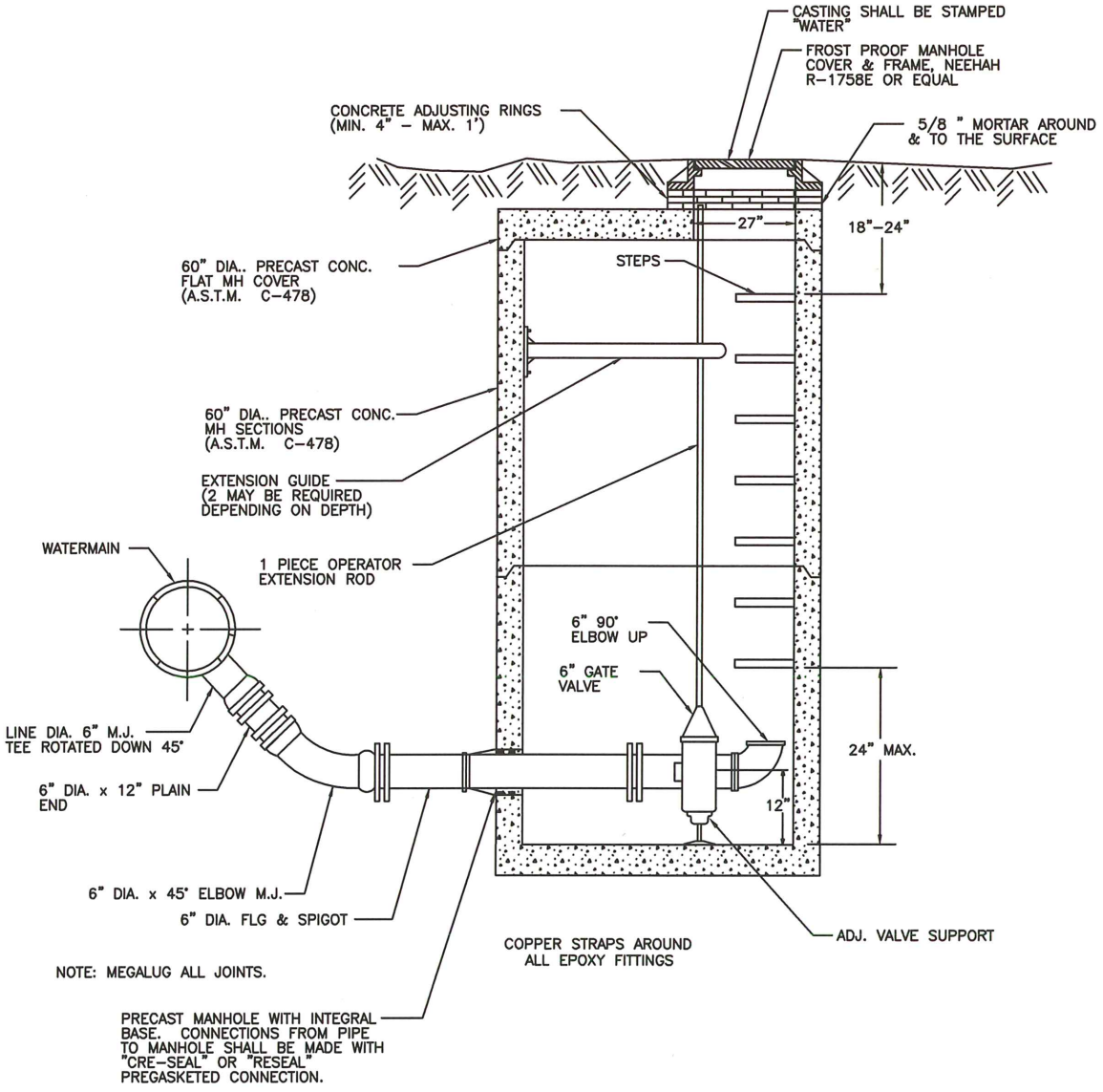
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 009

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




## 6" BLOWOFF ASSEMBLY

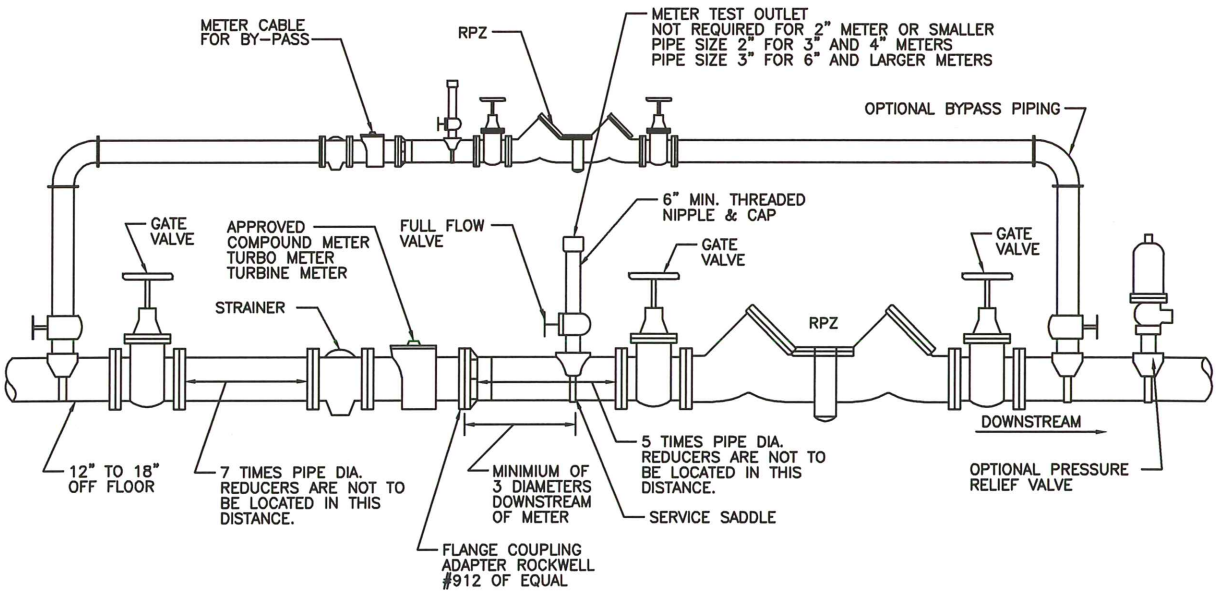
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 010

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




# WATER METER INSTALLATION FOR COMMERCIAL AND INDUSTRIAL INSTALLATIONS

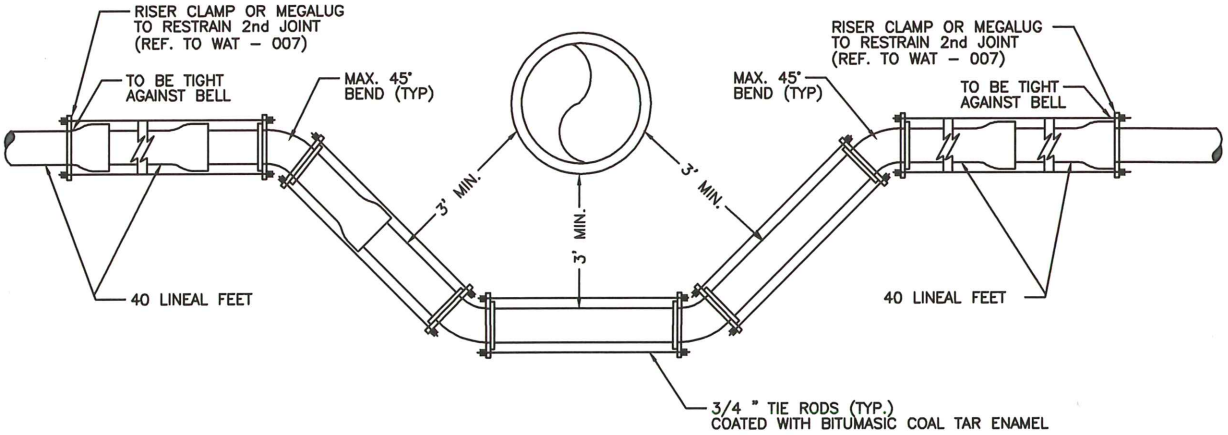
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 011

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




NOTE: 6"–10"DIA. PIPE 2 RODS
12" DIA. & LARGER TO HAVE 4 RODS

MEGALUGS MAY BE USED IN LIEU OF RODS
(REF. TO WAT–007)

COPPER STRAPS AROUND
ALL EPOXY FITTINGS

# WATERMAIN OFFSET DETAIL

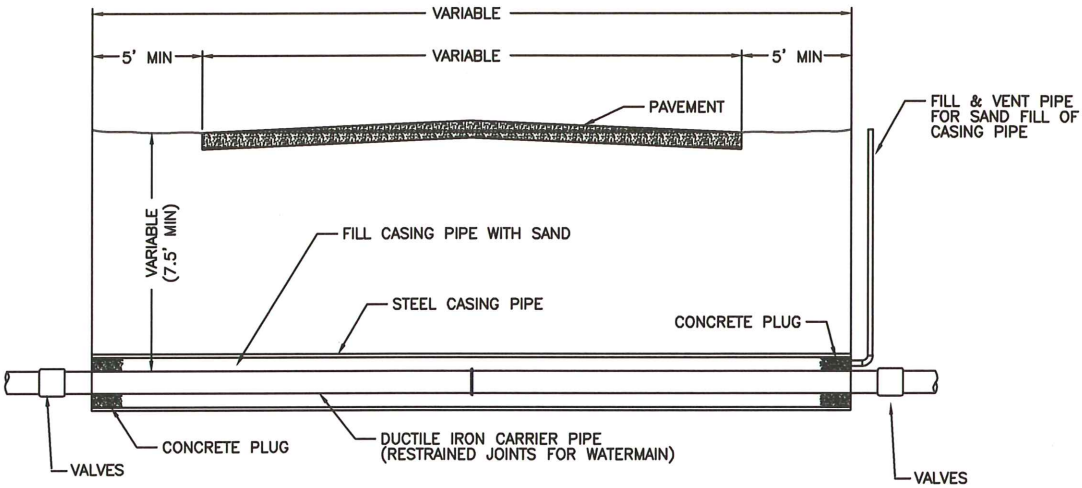
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 012

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

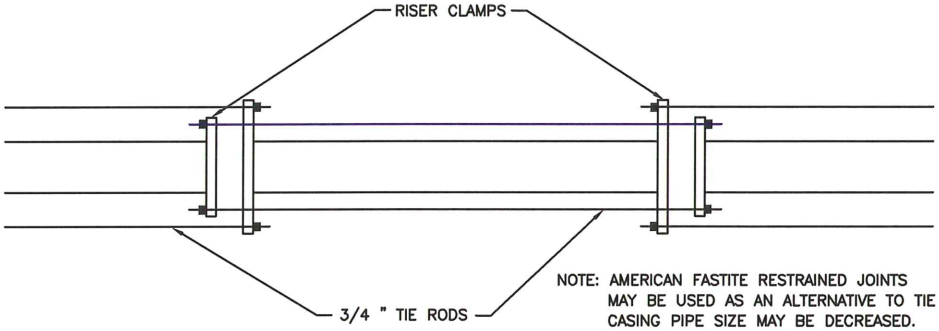



PIPE SIZE CHART

| CARRRIER PIPE | CASING DIA. | CASING DIAMETER WITH RODDED RESTRAINT JOINTS | CASING THICKNESS | NO. TIE RODS* |
|---|---|---|---|---|
| 6" | 18" | 22" | 0.250 | 2 |
| 8" | 22" | 26" | 0.250 | 2 |
| 10" | 26" | 30" | 0.250 | 2 |
| 12" | 30" | 36" | 0.250 | 4 |
| 16" | 36" | 42" | 0.250 | 4 |
| 18" | 42" | 48" | 0.250 | 6 |

* WITH AND WITHOUT RESTRAINED JOINT GASKETS

NOTE: SIZE OF TIE RODS ALL 3/4 "
COAT RODS WITH COAL TAR ENAMEL.




NOTE: AMERICAN FASTITE RESTRAINED JOINTS MAY BE USED AS AN ALTERNATIVE TO TIE RODS. CASING PIPE SIZE MAY BE DECREASED. CONSULT SPUC

# JACKING DETAIL (SINGLE PIPE CROSSING)

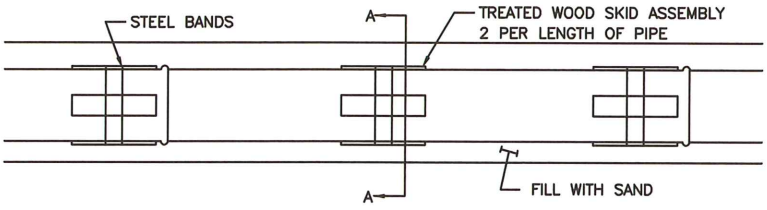
NO SCALE

Shakopee Public Utilities

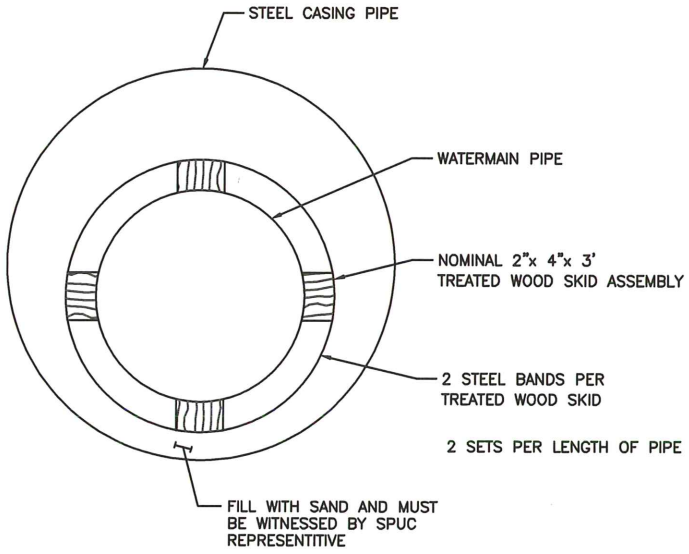
Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 013

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




TREATED WOOD SKID ASSEMBLY




SECTION A-A

# TREATED WOOD SKID DETAIL

NO SCALE

Shakopee Public Utilities

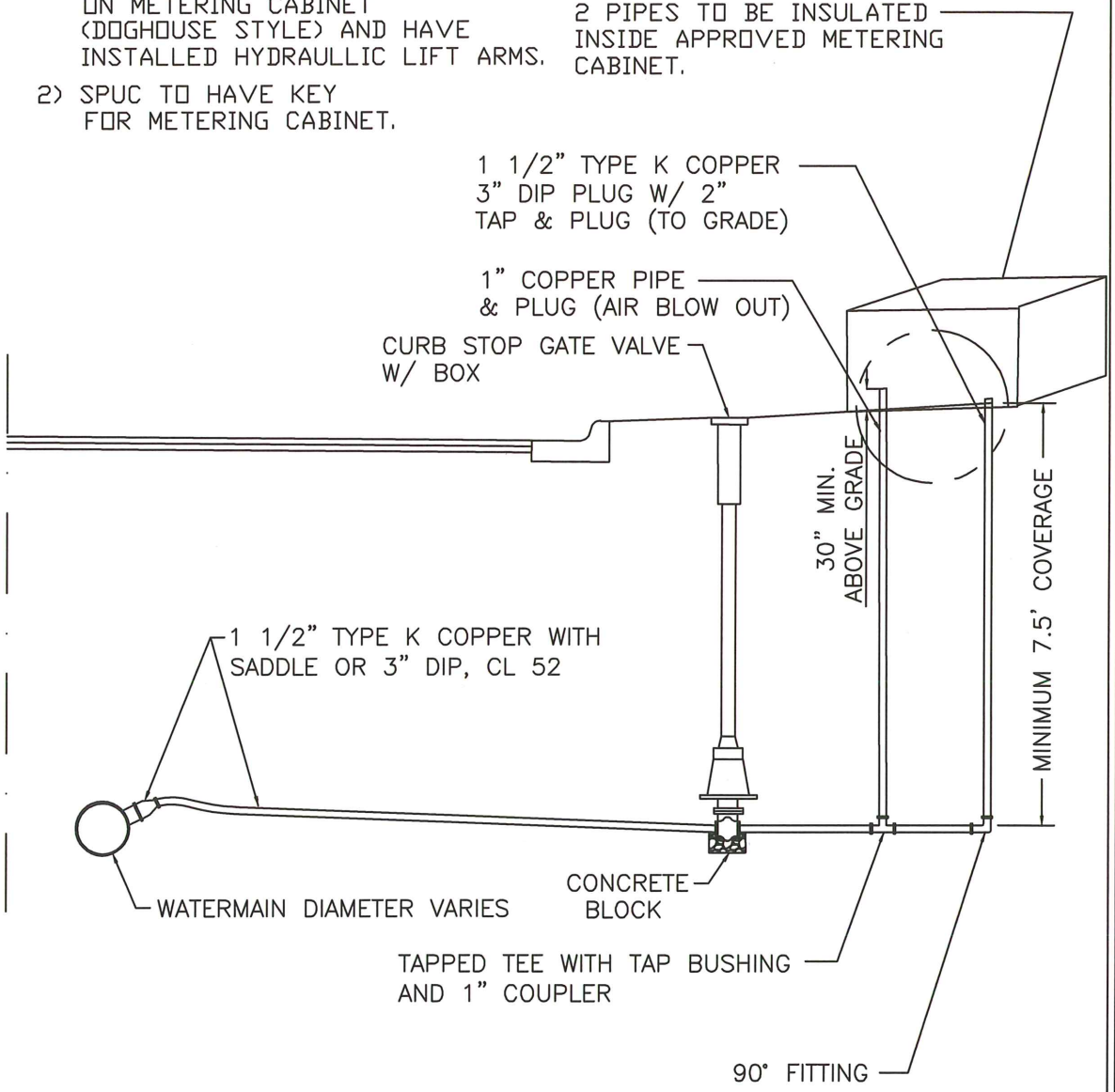
Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 014

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | RRM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

NOTE: 1) ALL COMMUNITY IRRIGATION SYSTEMS REQUIRE COVERS ON METERING CABINET (DOGHOUSE STYLE) AND HAVE INSTALLED HYDRAULLIC LIFT ARMS.

2) SPUC TO HAVE KEY FOR METERING CABINET.




## IRRIGATION HOOKUP DETAIL

NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 015

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

APPROVED FOR ONE YEAR FROM THIS DATE

SHAKOPEE PUBLIC UTILITIES COMMISSION

DATE

All materials and construction methods shall comply with Shakopee Public Utilities per water policy manual dtd. August 04, 2014.

Shakopee Public Utilities

# Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 016

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

RECORD PLANS ACCEPTED

_____ _____

SHAKOPEE PUBLIC UTILITIES COMMISSION

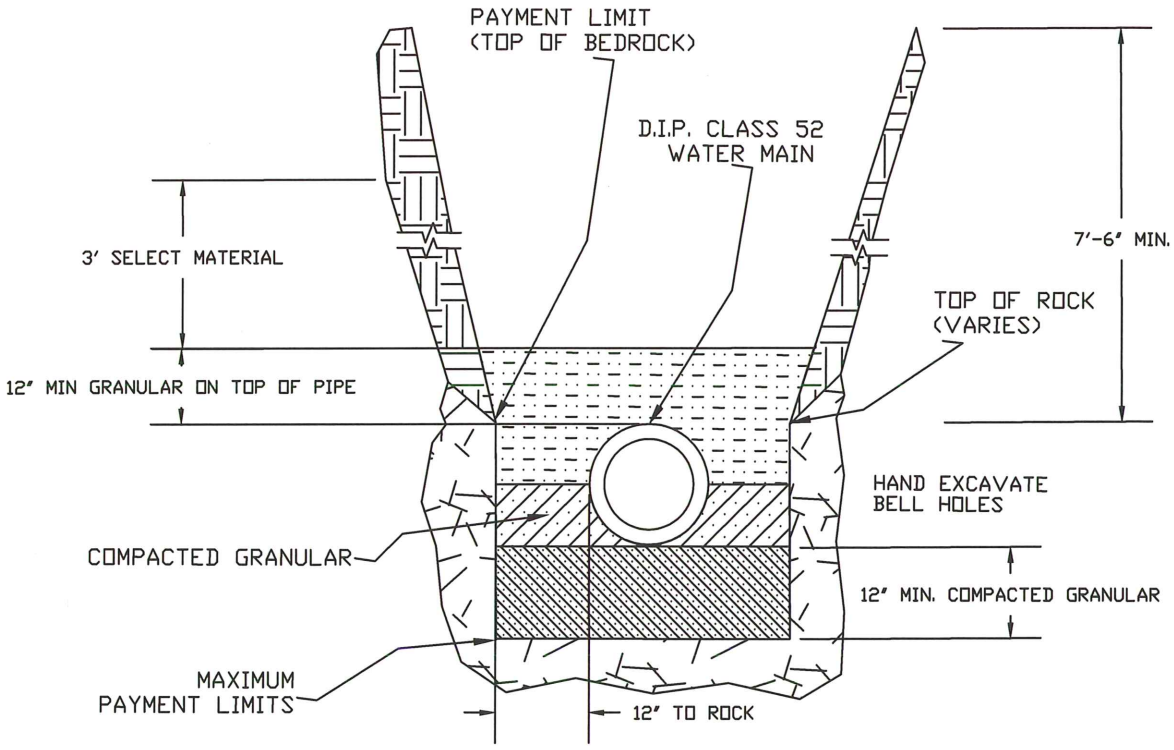
DATE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 017

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | SNM |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




NOTE: PAY LIMITS EXTEND ONE FOOT (1') ON EACH SIDE OF THE PIPE REGARDLESS OF DEPTH.

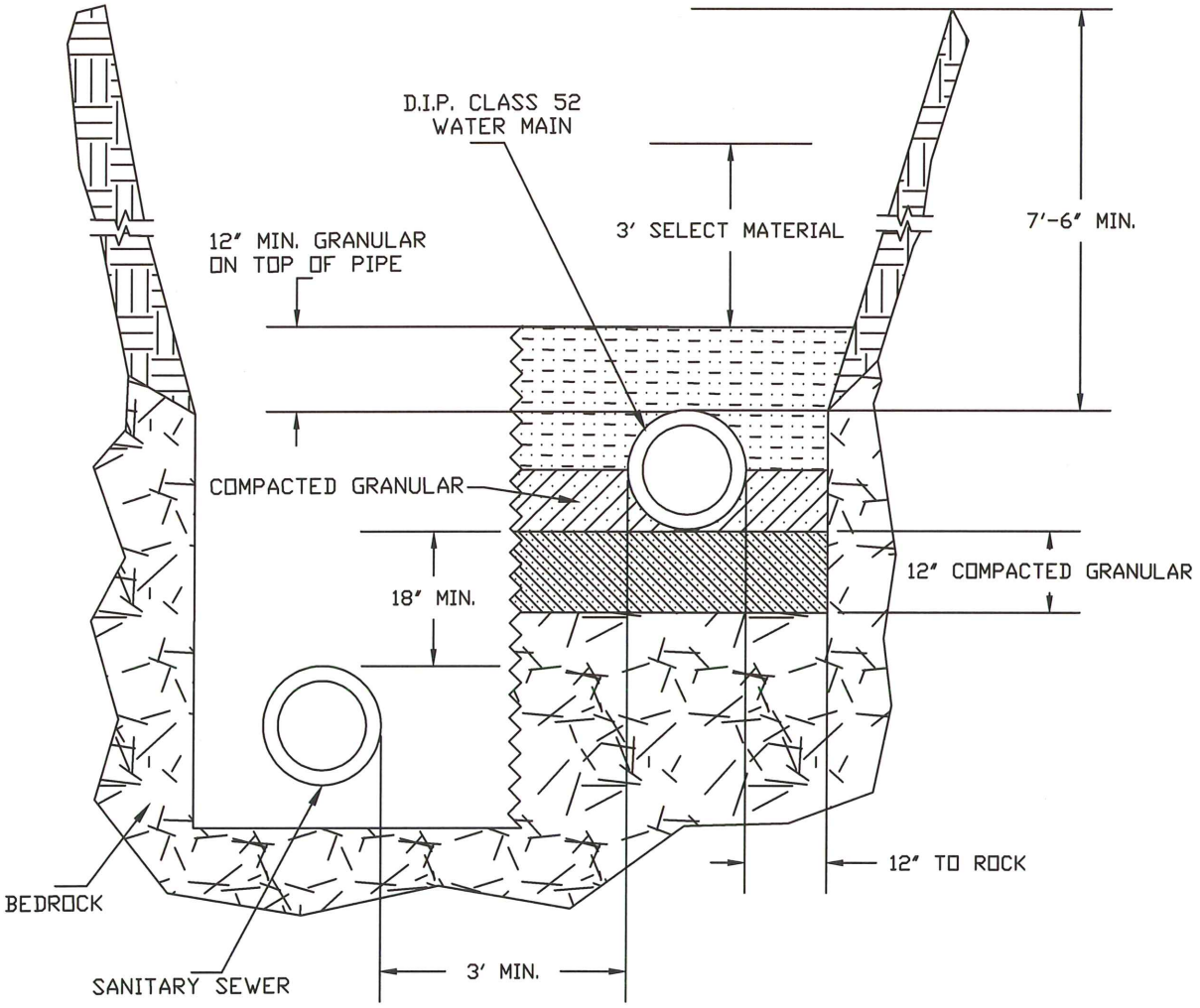
# WATERMAIN LAYING CONDITION TYPE 3

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 018

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | CJF |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




NOTE: 1. WATERMAIN AND SANITARY SEWER MAY NOT BE IN SAME TRENCH WHERE NO BEDROCK IS PRESENT

2. IF SANITARY SEWER IS NOT A MINIMUM OF 18" BELOW WATERMAIN, SANITARY SEWER SHALL BE WATERMAIN QUALITY

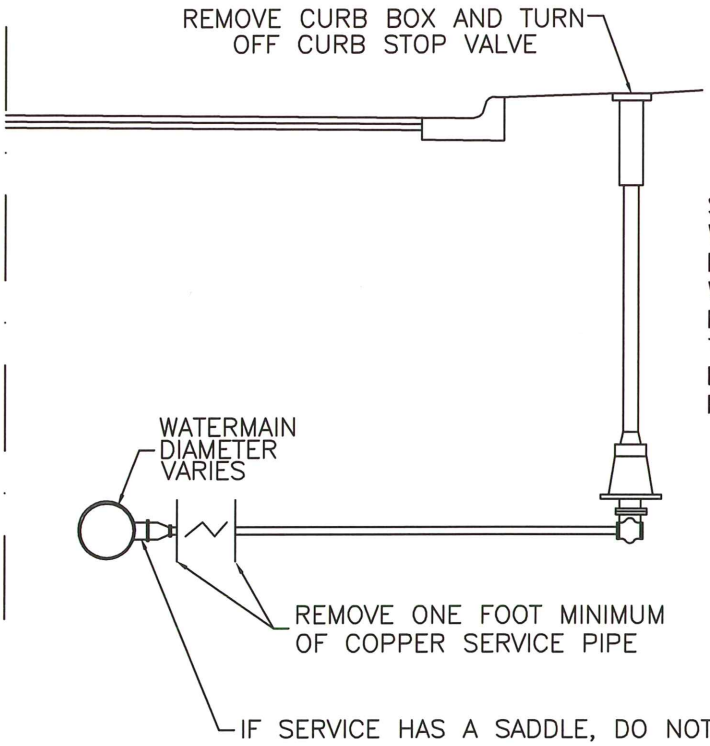
# WATERMAIN & SANITARY SEWER JOINT TRENCH

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 019

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | CJF |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




SHAKOPEE PUBLIC UTILITIES (SPU) WATER OPERATOR SHALL BE PRESENT WHEN RETIRING A WATER SERVICE LINE AND ALL MATERIALS MUST BE RETURNED TO SPU. CONTACT SPU WATER DEPARTMENT 24 HOURS BEFORE RETIRING LINE.

IF SERVICE HAS A SADDLE, DO NOT REMOVE THE SADDLE, EITHER

1) PLUG THE SADDLE AND REMOVE THE CORPORATION COCK
   –OR–
2) TURN OFF CORPORATION COCK AND INSTALL A DISC (COOKIE) IN CORPORATION COCK.

IF SERVICE DOES NOT HAVE A SADDLE

1) TURN OFF CORPORATION COCK AND INSTALL A DISC (COOKIE) IN CORPORATION COCK
   –OR–
2) REMOVE THE CORPORATION COCK FROM THE WATERMAIN AND INSTALL A PLUG INTO THE WATERMAIN

# RETIRE WATER SERVICE DETAIL

NO SCALE

FOR 5/8" TO 1–1/2" COPPER SERVICES

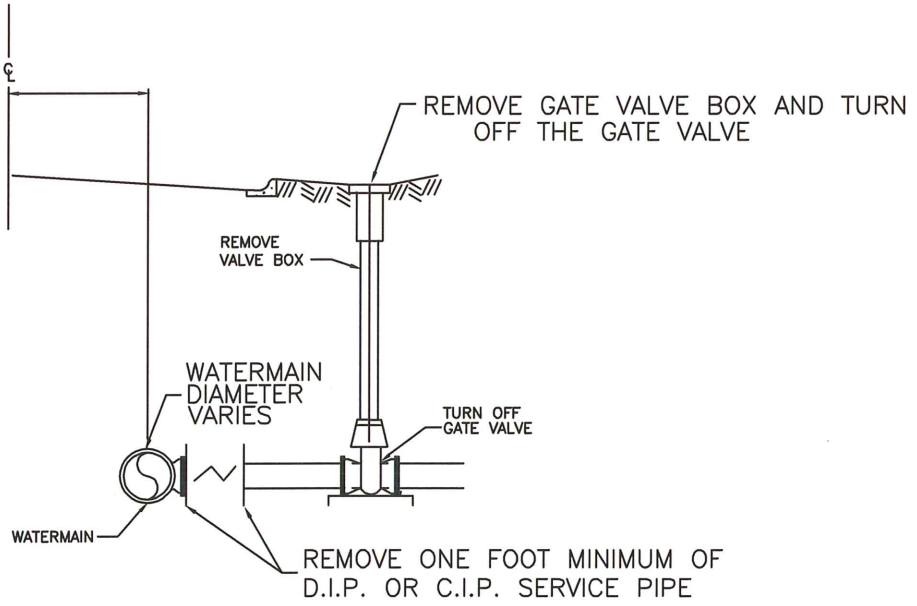
Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 020

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | JTB |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |

SHAKOPEE PUBLIC UTILITIES (SPU) WATER OPERATOR SHALL BE PRESENT WHEN RETIRING A WATER SERVICE LINE AND ALL MATERIALS MUST BE RETURNED TO SPU. CONTACT SPU WATER DEPARTMENT 24 HOURS BEFORE RETIRING LINE.




IF SERVICE IS A WET TAP, DO NOT REMOVE THE WET TAP AND SADDLE:

1) PLUG THE GATE VALVE AND MARK LOCATION WITH 4X4 OR OLD SERVICE
2) TURN OFF GATE VALVE
3) REMOVE GATE VALVE BOX

IF SERVICE IS NOT A WET TAP:

1) HAVE SPU WATER DEPARTMENT SHUT WATERMAIN OFF
2) REMOVE PIPE FROM SERVICE "T" AND REMOVE GATE VALVE AND GATE VALVE BOX
3) PLUG "T" WITH APPROPRIATE SIZE AT MAIN LINE CONNECTION
4) BEFORE BACKFILLING, TURN ON WATER TO CHECK FOR LEAKS WITNESSED BY SPU
5) MARK "T" WITH 4X4 OR OLD SERVICE PIPE

## RETIRE WATER D.I.P./C.I.P. SERVICE DETAIL

NO SCALE

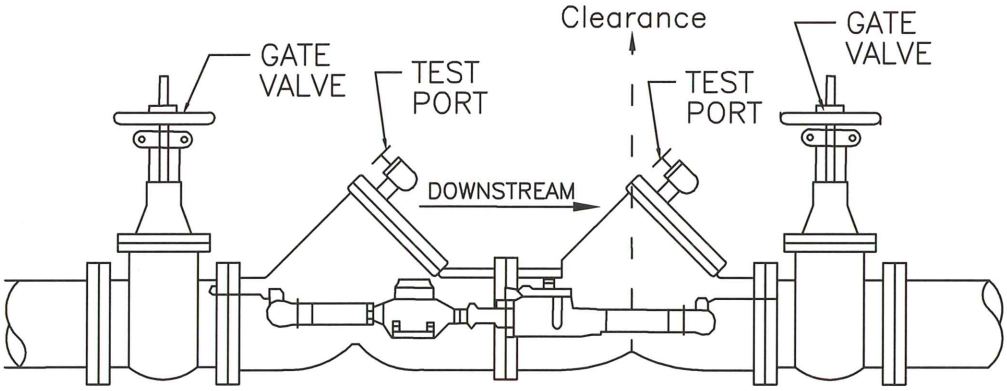
FOR 4" TO 16" DIP SERVICES

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 021

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | JTB |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




TO BE IN COMPLIANCE WITH:
AWWA Standard C510

## DOUBLE CHECK DETECTOR ASSEMBLIES

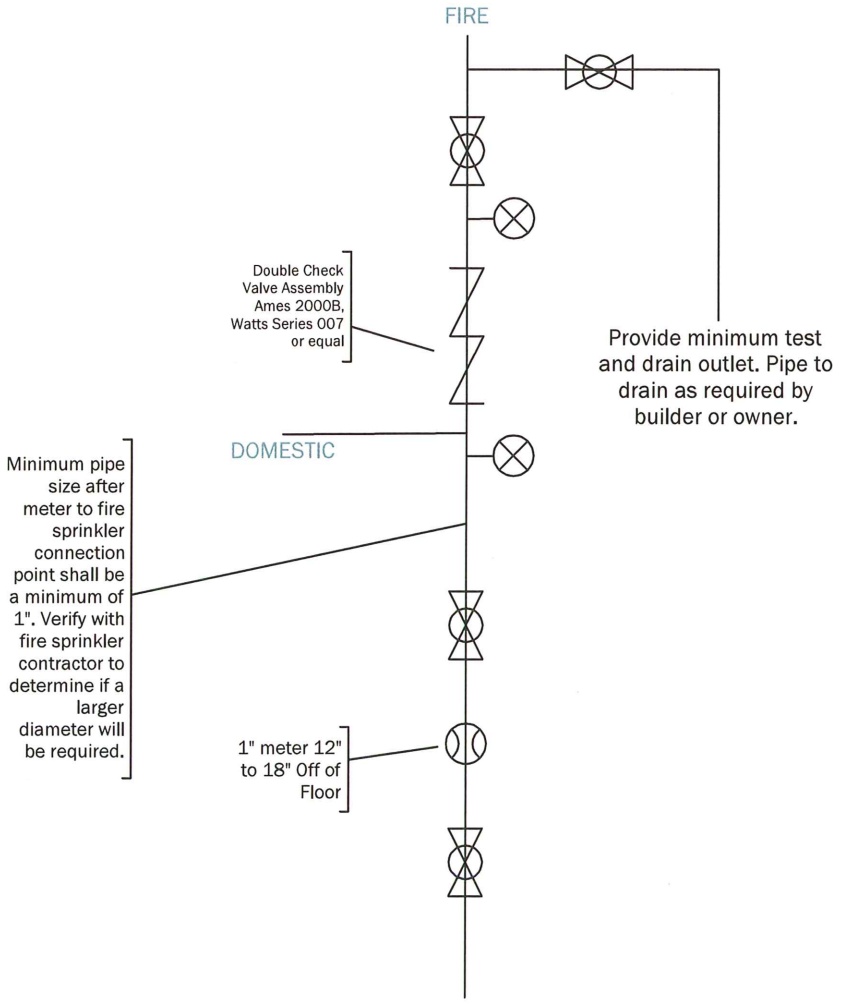
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 022

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | JTB |
| RES. # 1075 | | | APP'D | JDA |
| 08-04-14 | | | | |




## TYPICAL RESIDENTIAL INSTALLATION FOR SPRINKLED DWELLINGS

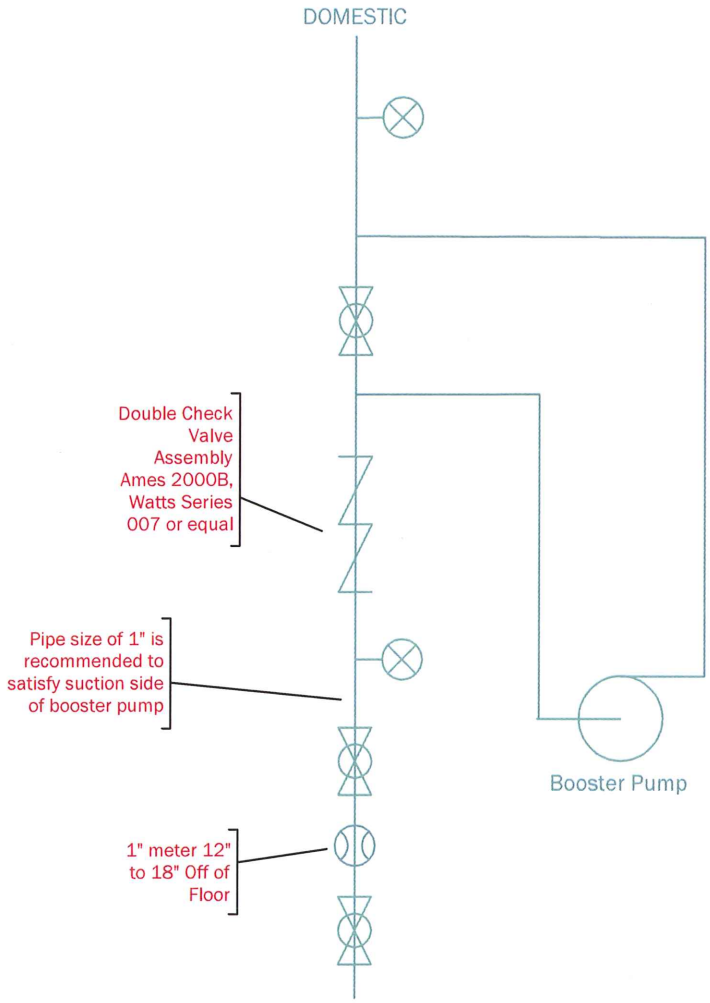
NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 023

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | JTB |
| RES. # 1075 | 6-30-15 | JRC | APP'D | JRC |
| 08-04-15 | | | | |




## TYPICAL RESIDENTIAL INSTALLATION WITH BOOSTER PUMP

NO SCALE

Shakopee Public Utilities

Shakopee Public Utilities Commission Details For Watermain Construction

WAT - 024

| ADOPTED | REV. | | DESIGN | |
|---|---|---|---|---|
| SPUC | DATE | APP'D | DRAWN | JTB |
| | | | APP'D | |
| | | | 6/6/16 | JRC |

# APPENDIX A

## Summary of
## Developer Requirements for
## Municipal Water Service

1. The developer shall submit a written request for municipal water service.

2. The developer shall submit for approval construction plans for a watermain distribution system designed in accordance with the Watermain Design Criteria adopted by the Utilities Commission. The developer shall include the engineer's estimate of the installed watermain cost.

3. The developer shall pay all Shakopee Public Utilities associated watermain plan review and construction inspection costs. The developer shall pay a cash deposit equal to 8.5% of the engineer's estimate of the installed watermain cost, prior to plan approval. The developer shall be responsible for all associated costs as described. If deposit is in excess of these costs, the amount will be returned at the end of the project.

4. The developer shall pay a Trunk Water Charge in accordance with the Trunk Water policy adopted by the Utilities Commission, prior to plan approval.

5. The developer shall install the watermain distribution system as approved by the Utilities Manager, within one (1) year of approval of plans.

6. The developer shall submit "as-built" record drawings of the completed watermain distribution system to Shakopee Public Utilities, within six (6) months of acceptance of the system.

# APPENDIX B

## Summary of
## Property Owner Requirements for
## Municipal Water Service

1. The property owner shall submit an Application for Service Line Installation.

2. If not previously paid or credited, the property owner shall pay a Trunk Water Charge in accordance with the Trunk Water policy adopted by the Utilities Commission, prior to plan approval.

3. The property owner shall pay the Water Connection Charge in accordance with the Water Connection Policy adopted by the Utilities Commission. The charge is to be paid at the time of connection to the system.

4. The property owner shall pay the associated water meter fee, when meter setting device is picked up at the Utilities.

5. The property owner shall adhere to all of the Customer Service policies as adopted by the Utilities Commission.

APPENDIX C

Summary of
Customer Requirements for
Municipal Water Service

1. The customer shall sign an Application for Utilities.

2. The customer shall pay a deposit equal to two months estimated usage charges, before service is provided.

3. The customer shall adhere to all of the Customer Service Policies as adopted by the Utilities Commission.

APPENDIX D

## Rate Revisions

**All rates listed herein are subject to change without prior notice. The rate revisions that have occurred since the Water Policy Manual was adopted are listed below:**

| | | |
|---|---|---|
| **2002 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #679, dated February 4, 2002) | $567.00/eq. SAC Unit (+4.8 cents/sq. ft. for Industrial) | Rate effective March 1, 2002 |
| Trunk Water Charge (Per Resolution #680, dated February 4, 2002) | $831.00/net acre | Rate effective March 1, 2002 |
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| **2003 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #728, dated July 7, 2003 | $859.00/eq. SAC Unit (+4.9 cents /sq. ft. for Industrial) | Rate effective May 7, 2003 |
| Water Connection Charge (Per Resolution #728, dated July 7, 2003) | $2,035.00/eq. SAC Unit (+4.9 cents/sq. ft. for Industrial) | Rate effective August 7, 2003 |
| Trunk Water Charge (Per Resolution #714, dated May 5, 2003) | $1,213.00/net acre | Rate effective January 1, 2003 |
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| **2004 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #735, dated September 15, 2003) | $2,120.00/eq. SAC Unit (+5.0 cents/sq. ft. for Industrial) | Rate effective January 1, 2004 |
| Trunk Water Charge (Per Resolution #753, dated February 2, 2004) | $1,258.00/net acre | Rate effective March 1, 2004 |
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| **2005 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #769, dated November 15, 2004) | $2,300.00/eq. SAC Unit (+5.4 cents/sq. ft. for Industrial) | Rate effective January 1, 2005 |
| Trunk Water Charge (Per Resolution # 768, dated November 15, 2004) | $1,348.00/net acre | Rate effective January 1, 2005 |
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| **2006 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #823, dated November 21, 2005) | $2,458.00/eq. SAC Unit (+5.8 cents/sq. ft. for Industrial) | Rate effective January 1, 2006 |
| Trunk Water Charge (Per Resolution #822, dated November 21, 2005) | $1,406.00/net acre | Rate effective January 1, 2006 |
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| **2007 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #867, dated December 18, 2006) | $2,846.00/eq. SAC Unit (+6.7 cents/sq. ft. for Industrial) | Rate effective January 1, 2007 |
| Trunk Water Charge (Per Resolution #866, dated December 18, 2006) | $1,628.00/net acre | Rate effective January 1, 2007 |
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| **2008 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge (Per Resolution #902, dated December 3, 2007) | $3,529.00/eq. SAC Unit (+8.3 cents/sq. ft. for Industrial) | Rate effective January 1, 2008 |
| Trunk Water Charge (Per Resolution #901, dated December 3, 2007) | $2,002.00/net acre | Rate effective January 1, 2008 |

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| **2009 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #927,<br>dated December 1, 2008) | $3,823.00/eq. SAC Unit<br>(+9.0 cents/sq. ft. for Industrial) | Rate effective January 1, 2009 |
| Trunk Water Charge<br>(Per Resolution #926,<br>dated December 1, 2008) | $2,169.00/net acre | Rate effective January 1, 2009 |
| | | |
| **2010 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #953,<br>dated December 7, 2009) | $3,895.00/eq. SAC Unit<br>(+9.2 cents/sq. ft. for Industrial) | Rate effective January 1, 2010 |
| Trunk Water Charge<br>(Per Resolution #952,<br>dated December 7, 2009) | $2,210.00/net acre | Rate effective January 1, 2010 |
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| **2011 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #977,<br>dated December 6, 2010) | $4,136.00/eq. SAC Unit<br>(+9.8 cents/sq. ft. for Industrial) | Rate effective January 1, 2011 |
| Trunk Water Charge<br>(Per Resolution #976,<br>dated December 6, 2010) | $2,347.00/net acre | Rate effective January 1, 2011 |
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| **2012 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1005,<br>dated December 5, 2011) | $4,322.00/eq. SAC Unit<br>(+10.2 cents/sq. ft. for Industrial) | Rate effective January 1, 2012 |
| Trunk Water Charge<br>(Per Resolution #1006<br>dated December 5, 2011 ) | $2,452.00/net acre | Rate effective January 1, 2012 |
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| **2013 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1027,<br>dated December 3, 2012) | $4,504.00/eq. SAC Unit<br>(+10.6 cents/sq. ft. for Industrial) | Rate effective January 1, 2013 |
| Trunk Water Charge<br>(Per Resolution #1028,<br>dated December 3, 2012) | $2,555.00/net acre | Rate effective January 1, 2013 |
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| **2014 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1058,<br>dated November 18, 2013) | $4,743.00/eq. SAC Unit<br>(+11.2 cents/sq. ft. for Industrial) | Rate effective January 1, 2014 |
| Trunk Water Charge<br>(Per Resolution #1059<br>dated November 18, 2013) | $2,690.00/net acre | Rate effective January 1, 2014 |
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| **2015 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1080,<br>dated December 15, 2014) | $4,927.00/eq. SAC Unit<br>(+11.6 cents/sq. ft. for Industrial) | Rate effective January 1,2015 |
| Trunk Water Charge<br>(Per Resolution #1081,<br>dated December 15, 2014) | $2,794.00/net acre | Rate effective January 1, 2015 |
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| **2016 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1106,<br>dated December 7, 2015) | $5,134.00/eq. SAC Unit<br>(+12.1 cents/sq. ft. for Industrial) | Rate effective January 1, 2016 |
| Trunk Water Charge<br>(Per Resolution #1107,<br>dated December 7, 2015) | $2,911.00/net acre | Rate effective January 1, 2016 |

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| **2017 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1144,<br>dated December 5, 2016) | $5,416.00/eq. SAC Unit<br>(+12.8 cents/sq. ft. for Industrial | Rate effective January 1, 2017 |
| Trunk Water Charge<br>(Per Resolution #1145,<br>dated December 5, 2016) | $3,071.00/net acre | Rate effective January 1, 2017 |
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| **2018 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Connection Charge<br>(Per Resolution #1178,<br>dated December 4, 2017) | $5,730.00/eq. SAC Unit<br>(+13.5 cents/sq. ft. for Industrial) | Rate effective January 1, 2018 |
| Trunk Water Charge<br>(Per Resolution #1179,<br>dated December 4, 2017) | $3,749.00/net acre | Rate effective January 1, 2018 |
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| **2019 Rate Revision** | **Revised Rate** | **Effective Date** |
| Water Capacity Charge<br>(Per Resolution #1218,<br>dated December 3, 2018) | $6,039.00/eq. SAC Unit<br>(+14.2 cents/sq. ft. for Industrial) | Rate effective January 1, 2019 |
| Trunk Water Charge<br>(Per Resolution #1219,<br>dated December 3, 2018) | $4,451.00/net acre | Rate effective January 1, 2019 |