

# Keokuk Municipal Waterworks

## Rules & Regulations



**Updated October 2015**

**Contact information:**

**Office:** 20 N. 4<sup>th</sup> St. Keokuk, IA 52632

Tel. 319 524 5285

Fax 319 524 2824

Hours of operation 8:00 AM to 4:30 PM Monday thru Friday

**Treatment Plant:** 8 N. Water Street

Telephone 319 524 2011

Hours of operation 24-7

**Distribution Shop:** 1402 S 7th St.

Telephone 319 524 8887

Hours of operation 8:00 AM to 4:30 PM Monday thru Friday

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## 100 Responsibilities

- **100.1** Keokuk Municipal Waterworks hereinafter referred to as KMWW/City is responsible for delivering safe high-quality water to municipal customers through a series of water mains referred to as the Distribution System. These public water mains are installed in the city right-of-way as well as easements on private property. The Distribution System consists of water mains, valves, fire hydrants, water meters and remote reading equipment.
- **100.2** The **Distribution System** is under the exclusive control of KMWW and no unauthorized use or operation of this system is allowed.
- **100.3** Only authorized KMWW representatives and personnel are allowed to operate tanks, valves, hydrants and any appurtenances within the KMWW

distribution system. The only exception to this rule is City of Keokuk fire fighting personnel will operate fire hydrants for fire fighting purposes.

- **100.4** No installation of a main or water service, or repair thereof, shall be made which does not conform to these rules and regulations and applicable plumbing codes.
- **100.5** KMWW personnel must inspect all repairs, disconnects or new installations to insure compliance with these rules and regulations.
- **100.6** Any customer allegedly aggrieved by the application of these rules and regulations can request a meeting with the Waterworks General Manager to discuss their concerns. If the matter is not successfully resolved, the interested party can request a hearing with the Waterworks Board of Trustees at the regular monthly meeting in an effort to satisfactorily resolve the matter.
- **100.7** These Rules and Regulations shall take effect upon adoption by the Board of Waterworks Trustees. The adoption of these Rules and Regulations, shall act to repeal or amend, as the case may be, any existing Rules and Regulations that are in conflict.
- **100.8** These Rules and Regulations may be changed and updated from time to time at the discretion of the Board of the Waterworks Trustees in accordance with law. These rules are on file at the KMWW office at 20 N 4<sup>th</sup> St. Keokuk, IA.
- **100.9** The Keokuk Municipal Waterworks Board of Trustee's will provide a Recognition and Appreciation Luncheon for all employees at least once annually. This luncheon provides the opportunity for employee interaction with the board members and allows the board to acknowledge the hard work and dedication of Waterworks employees.
- **100.10** Keokuk Municipal Waterworks has established a Wellness Incentive Program. The purpose of this program is to recognize those employees who have used no more than 8 hours of sick leave during the past 12 months. Since Plant Operators work a 24/7 rotating schedule and Distribution personnel can be called on for emergency repairs at any time, unnecessary sick leave use can be very disrupting to the Waterworks operations. Many times an absence, due to illness requires overtime compensation for another employee who may be required to return to work with very short notice.

This policy is not intended to discourage use of legitimate sick time off but to offer some incentive for those employees who have been successful in minimizing their need to use this time. Any employee who has achieved no more

than 8 hours of sick leave absence during a consecutive 12-month period will be given incentive compensation equal to one day's pay at their current rate.

- **100.11** Keokuk Municipal Waterworks will cover all reasonable employee travel expenses for business conducted in the interest of Keokuk Waterworks. These expenses include but are not limited to travel, lodging, food, registration and licensing fees. The employee will use their company credit card when paying for these services or turn in travel expense receipts for reimbursement. Any employee using their personal vehicle for travel will be reimbursed mileage according to the federal guidelines in effect at that time.
- **100.12** Keokuk Municipal Waterworks has established a Meal Reimbursement Policy. As a condition of employment, when employees are required to work through ordinary meal hours including those outside and beyond their ordinary scheduled hours of employment. In such situations, the Employer agrees to furnish or reimburse the employee for the cost of the meal within a reasonable amount. Keokuk Municipal Waterworks recognizes that under some circumstances this amount may exceed the current contracted amount.
- **100.13** Employees who handle cash are expected to be careful and accurate and to settle their funds on a regular basis without overages or shortages. The Keokuk Municipal Waterworks recognizes the possibility that differences may occur from time-to-time and we have developed the following recommended procedures.
  - ✓ Verbal Counseling should be given if an employee whose responsibilities include receiving and depositing funds has cumulative cash over or short of \$25 or more in one month. Every over or short must be reported to the Office Manager.
  - ✓ Written Warning should be given if an employee whose responsibilities include receiving and depositing funds has received a second verbal counseling's for over or short instances OR the employee exceeds a cumulative total of \$100 or more over or short at the end of the fiscal year. The employee must provide a written response to the immediate Office Manager no later than 24 hours after the occurrence. The events should be documented in the employee's personnel file, which is maintained in the Office.
  - ✓ Termination MAY be warranted for any single or cumulative shortage of \$200 or more and/or continued over/short instances by any one employee.



## 101 General

- **101.1** Water pressure varies throughout the distribution system depending upon the ground elevation. Information on pressure at a specific location may be obtained upon request at the KMWW office.
- **101.2** KMWW may interrupt a customer's water supply in order to make repairs to the system. Every effort will be made to provide 24 hours advance notification of any interruption. In case of emergencies such as a main break, mains or services may be shut down without notification.
- **101.3** Anyone wishing to purchase water shall make proper application at the KMWW office and shall be bound by all current rules, regulations and rate structure in effect.

## 101.4 Billing

- **101.4.1** Water meters will be read and billed by KMWW personnel on a monthly basis. Billings for each month will be generated on the 16<sup>th</sup> of each month. If the 16<sup>th</sup> falls on a weekend or holiday, bills will be generated the next business day. Any payment not received by the 5<sup>th</sup> of the next month will be deemed delinquent and subject to the monthly disconnection date set by the Waterworks.

A late payment penalty of five percent (5%) of the water user charge billed will be added to each delinquent bill on the 6<sup>th</sup> of each month and due on the 15<sup>th</sup> of each month. Disconnection notices will be sent at that time. Should the 6<sup>th</sup> fall on a weekend or holiday, notices will be sent the next business day.

A delinquent fee of twenty-five dollars (\$25.00) will be assessed at 8:01 a.m. on the 16<sup>th</sup> of each month for shutoffs with a balance over \$50.00. A delinquent fee may be waived at the discretion of the General Manager or Office Manager, but only upon being presented with a valid reason or proof by the customer or if a delinquent fee has not been assessed to the account within the past twelve (12) months.

- **101.4.2** At the request of the City of Keokuk, monthly water bills will include Water, Sewer and Refuse charges.
- **101.4.3** Payment may be made by automatic deduction from a checking and savings account, by mail or in person at the Waterworks office. Also through Payment Service Network using checking and savings account, credit and debit card, online and by phone.
- **101.4.4** A deposit will be required for all water accounts unless customer signs up for the Waterworks Direct Payment Plan. If two (2) returned payments or

discontinuation of our Direct Payment Plan occur a deposit will be required to keep on file in accordance with the current deposit policies.

- **Water Deposit= \$100.00**
- **Sewer Deposit= \$30.00**

- **101.4.5** Each connection to the city water system shall require a minimum monthly charge based on the rates in effect, along with a monthly customer service charge. Rate schedules may be obtained from the Keokuk Municipal Waterworks office, 20 N 4<sup>th</sup> Street. Said charges shall be made, whether or not the water is used, but is in readiness to be used if desired. This minimum charge shall cover each meter, and no combination of separate meters will be allowed.
- **101.4.6** A customer who has their water service turned off by mistake will be given a \$25.00 credit on their bill for one billing cycle.
- **101.4.7** A charge of \$25.00 will be assessed to a customer when a scheduled appointment for the same service has been missed by the customer for a third time.

## **101.5 Default in Payment**

- **101.5.1** When a customer is in default of payment of an account for water supplied or fails to comply with these rules and regulations, the water service may be terminated in accordance with the Turn Off and Collection Procedures in effect.
- **101.5.2** When the water service at an address has been shut off, the undersigned has been made aware of Keokuk Municipal Waterworks' rule not to restore water service to any building unless someone is actually present within the building to make certain that there is no water damage because of unclosed faucets and the like. The undersigned desires such water service to be restored, and as an inducement to the Keokuk Municipal Waterworks to do so, the undersigned does hereby undertake and agree to indemnify, exonerate, and save harmless the Board of Waterworks Trustees of the Keokuk Municipal Waterworks, its officers, employees, agents and servants from any and all claims and demands whatsoever that may be made or asserted because of turning on the water in contravention of the Rules of the Keokuk Municipal Waterworks. **(See attachment 118)**
- **101.5.3** The Waterworks may cause a lien to be placed against a property for non-payment of a water bill under Section 384.84(1) of the Code of Iowa.
- **101.5.4** A \$25.00 charge is assessed for the first shut-off for non-pay. A \$50.00 charge is assessed for the second shut-off for non-pay during a 12 month period, a

charge of \$75.00 is assessed for the third shut-off for non-pay during that 12 month period.

## **102 Definitions**

- **102.1** Public Distribution Water Main – Water Pipe, valves, and hydrants owned, operated and maintained by the KMWW and used for distribution of potable water and fire protection.
- **102.2** Private Distribution Water Main – Water pipe, valves, and hydrants owned and maintained by a private property owner and used for the distribution of potable water and fire protection on private property.
- **102.3** Private Water Service Line – The pipe laid from the public or private distribution water main to the point of service or building served.
- **102.4** The customer service line includes stop & curb boxes, pipes and valves between the public or private water main and the facility served.  
(see attachment 114A and 114B)

## **103 KMWW not Liable for Damages**

- **103.1** KMWW is not responsible for any damage that may occur when turning on or off private service lines or mains including stop/curb valves.
- **103.2** It is the property owner's sole responsibility to keep the service lines, corporations, stop and waste valves and other main apparatus in good working condition at their own expense.
- **103.3** In case any of the above are not in proper working order or the curb box becomes covered so it cannot be readily seen, the property owner will be notified by letter to make the necessary repairs. (See attachment 103.3A)
- **103.4** If the repairs are not made in a timely manner KMWW is authorized to make the necessary repairs and bill the cost to the property owner.
- **103.5** If these charges are not paid KMWW can discontinue service and/or file a lien for charges on the property.
- **103.6** Curb Valves frequently fail after long periods of non use; when operated KMWW is not responsible for repair of any failed curb box or valve.



## **104 Private Water Main/Service Ownership**

- **104.1** Private mains and service lines from the publicly owned distribution water mains, including, but not limited to, corporation stops, saddles, lines, hydrants, stop/curb boxes and valves inside the building are owned by the private property owner. The property owner is responsible for maintaining all of the above in good working condition at all times.
- **104.2** Privately owned water lines will have a **master water meter** installed as close to the KMWW owned water main as reasonably possible. On lines 6-inch and larger, to avoid this requirement, the line can be constructed to KMWW specifications and then ownership transferred to KMWW.
- **104.3** All newly installed water mains will be properly disinfected and pressure tested at 150 pounds per square inch or one and a half times the working pressure at the site, whichever is greater.

## **105 Leaks on Private Service Lines and Distribution Mains**

- **105.1** All leaks or other defects in a private service line or distribution main must be repaired promptly. If repair is not promptly addressed, KMWW will provide written notice to the owner and shut off service within 48 hours. On larger leaks, shut off may need to proceed immediately to avoid significant water loss or contamination of the distribution system.
- **105.2** If during repair the line is determined to be constructed of lead or galvanized steel, KMWW will require that the owner replace the line with type K Copper pipe. This is based on potential health risks and leak experience.

## **106 Abandoned Service Lines**

- **106.1** The property owner will permanently cap off, at the public or private distribution water main, all water service lines that are no longer to be used.
- **106.2** This entails excavating to the tap on the main, shutting the corporation stop and disconnecting the service line from the corporation. **(See attachment 106.2A)**
- **106.3** The old, unused stop/curb box must be removed. If the abandoned service has a tapping sleeve and valve or tapping saddle, these must be completely removed from the water main.

- **106.4** This would involve a water main shut down and will require planning and assistance from KMWW.
- **106.5** It is best to complete this work when demolishing a building or making a new tap.
- **106.6** If not completed in a timely manner KMWW or its agents will complete the work and bill the property owner.
- **106.7** The exception is where a copper service exists and KMWW is willing to wave this requirement and allow termination at the curb box.

## **107 Private Service and Private Water Main Locating Service**

- **107.1** locations are scheduled through the Iowa One-Call Utility Location Service. There is no charge for this during normal working hours.
- **107.2** Private contractors usually install private water distribution mains and services. The property owner is responsible for these private lines from the connection (Tap) at the public owned distribution main.
- **107.3** KMWW will, upon request, provide information and assistance in an effort to locate pipes, valves, stop/curb boxes and hydrants on private water distribution mains and services. This information will be provided on a need to know basis.
- **107.4** KMWW makes no assurance to the accuracy or validity of the records, maps, or information, and discretion should be used when making use of these records.
- **107.5** This service depends on the availability of KMWW personnel. The following procedure will be followed. A location request for a private water main or service will be received by KMWW either by phone or through the Iowa One-Call Utility Location Service.
- **107.6** The person placing the request must schedule an appointment to meet KMWW personnel at the location site. This can be scheduled by calling the Water Office at 319-524-5285 or the Distribution Shop at 319-524-8887.
- **107.7** When available, maps or drawings of the private lines will be provided by the property owner and presented at the scheduled meeting.

- **107.8** Normal working hours are Monday through Friday from 8:00 a.m. to 4:30 p.m.
- All materials and KMWW labor costs when necessary will be billed to contractor.

KMWW is a member of the Iowa One-Call Utility Location Service and follows the procedures and policies as set forth in the "Iowa One-Call Professional Excavators Manual". KMWW requires at least 48 hours advance notice to Iowa One-Call, 1-800-292-8989 for normal locations.

## **108 Supply of Distribution and Service Materials**

- **108.1** KMWW maintains an inventory of pipe, valves, fittings and other water main materials for construction of the water distribution system.
- **108.2** We provide assistance to the public or contractors during emergency situations by supplying part or materials for their work when available.
- **108.3** Cost of the materials used will be the responsibility of the contractor.
- **108.4** KMWW does not stock a variety or quantity of parts inventory for smaller water services, especially for lead or galvanized lines.

## **109 Plumber/Contractor Responsibilities**

- **109.1** All plumbing contractors are required to comply with these Rules and Regulations.
- **109.2** No one shall begin work on the construction, reconstruction, alteration or repair of any water pipe connected to the public water distribution system unless they have obtained the proper permit covering such work.
- **109.3** The plumbing contractor or property owner may apply for this permit at the KMWW office. The necessary information will include the name of the authorized plumbing contractor, location of such work, the amount and nature of work to be performed, and that all work will be in accordance with the KMWW rules and regulations and the ordinances of the City of Keokuk,

## **110 Plumbing Permits Issued**



- **110.1** Plumbing permits are issued by the City of Keokuk and generally include any work to be done from the curb box or property line to the facility, business or residence.
- **110.2** Upon approval by the City Inspector the permit will be issued to the specified plumbing contractor. The city reserves the right to refuse a permit to any plumbing contractor who has previously failed to comply with City ordinances or KMWW rules and regulations.
- **110.3** All permitted work is under the supervision of the City Inspector and or their authorized representative until completion.
- **110.4** If work is not in compliance with all local rules and ordinances City may revoke said permit upon which time all work will cease.
- **110.5** All permits require work to commence within thirty (30) days of issue and work is to be completed within ninety (90) days after starting.
- **110.6** Any permit exceeding (120) days is no longer valid and an extension or new permit must be obtained.
- **110.7** All plumbing work is to be approved by City Inspector or authorized representative.
- **110.8** It is the responsibility of the contractor to notify City Inspector upon completion of work to allow for final inspection.

## **111 Water Main Taps**

### **111.1 Tap Application**

- **111.1.1** The excavation contractor is required to submit a completed tap application signed by an authorized KMWW representative along with an excavation permit from the Public Works Director located at City Hall, 415 Blondeau St. before scheduling a tap.
- **111.1.2** The tap application forms are available at the KMWW office 20 N 4<sup>th</sup> St. Keokuk, IA.
- **111.1.3** The tapping application form must include all the appropriate names, addresses, telephone numbers and schematic drawing if it is a multi-family or multi-use property.

- **111.1.4** No tap will be made if these forms are not on file with KMWW. Completed tap applications may be faced to KMWW at 319-524-2824.

## **111.2 Tapping Service Scheduling**

- **111.2.1** Plumbers should schedule taps with KMWW at least 24 hours in advance. Taps will be scheduled as workload allows. KMWW does not schedule taps on short notice, except for emergencies. Taps can be scheduled Monday through Friday from 8:00 a.m. to 4:30 p.m., unless otherwise approved.

## **111.3 KMWW Tapping Policy**

- **111.3.1** All taps must be done by authorized KMWW representatives, including taps made on private water mains.
- **11.3.2** It is important for KMWW to insure the quality of materials and workmanship and to obtain location information on water main and water service construction.
- **111.3.3** Taps will not be made on new water main if KMWW final main inspection process, including pressure and bacteria testing is not complete.
- **11.3.4** KMWW personnel will make all 1-inch through 2-inch taps with corporations, curb stops, stop boxes and saddles purchased through KMWW.
- **111.3.5** Connections larger than 2" require the installation of a tapping sleeve and valve at the main.
- **111.3.6** Tapping sleeves, tapping valves and related appurtenances will be provided by the contractor. KMWW personnel will inspect and approve these materials.
- **111.3.7** Installation of a tee instead of a tap is not allowed unless pre-approved by KMWW.
- **111.3.8** KMWW personnel will not enter excavations that are unprotected against cave-ins.

## **111.4 Excavation for Tap**

- **111.4.1** The excavator will make the excavation required for the tapping of a water main.

- **111.4.2** The owner or his authorized agent (Contractor/Plumber) shall be responsible for excavations and insuring the site and shoring complies with OSHA and IOSH (Iowa Occupational Safety Rules).
- **111.4.3** The owner or his authorized agent shall provide a safe means of egress and at least one person on site during the tapping operation. This person will remain at the edge of the ditch to assist KMWW personnel in evaluating trench stability.
- **111.4.4** The floor of the excavation will be level and a minimum of 36-inches wide and extend under and entirely around the main leaving a clearance of at least 12-inches.
- **111.4.5** The excavation for taps 4-inch and larger must be excavated 8-feet out from the face of the main and 6-feet wide. **(See attachment 111.4A)**
- **111.4.6** The floor of the excavation must be excavated 12-inches below the center of the main. **(See attachment 111.4B)**
- **111.4.7** A ladder must be used for entry and exit purposes.
- **111.4.8** Ditch shoring and sloping will meet OSHA and IOSH guidelines.  
  
**(See attachments 111.4C & 111.4D)**
- **111.4.9** Place spoil piles at least 2 feet away from the edge of the banks. Remove any loose dirt from the street side of the ditch to minimize the chance of dirt falling or rolling into the ditch.
- **111.4.10** Tapping of a main through a tunnel with dirt or concrete overhead will not be allowed.
- **111.4.11** Taps will not be located on hydrant runs without prior approval from KMWW.
- **111.4.12** Taps on the backside or the top of the main will be made only with approval from KMWW.
- **111.4.13** Taps will not be made within 5 feet of a hydrant or valve and 18-inches to 24-inches from the end of a bell or from another tap.

## **111.5 Water Main Preparation for Tap**



- **111.5.1** Expose 3 to 4 feet of main. Scrape and clean all dirt and mud from this area. This will ensure a water tap is not too close to any existing bell joint, fittings or taps and that the tapping area is clear to allow room for the tapping equipment.
- **111.5.2** The width of the ditch, in the direction of the service, must be a minimum of 36-inches unless there is another utility or obstruction preventing this.

All of these guidelines are to be followed. In the event unforeseen circumstances arise KMWW personnel will need to authorize any alternatives to these normal procedures.

## **111.6 Water Main Tap Connection Fees**

- **111.6.1** When the Waterworks extends a water main, either by request or not, the fee for connection to this water main will be the actual fee in effect at that time, per residential customer.

The following are the current service connection fees for each new residential, commercial and industrial service connected to the city owned water main:

¾"	= \$325.00
1" – 1 ½"	= \$375.00
2"	= \$400.00
Over 2"	= \$550.00

Additional charges for tapping machine.

## **112 Tracer Wire on Water Main**

- **112.1** Tracer wire is to be installed on all PVC water mains.  
**(See attachment 112.1A)**
- **112.2** If this wire is cut or damaged during an excavation for a water tap or service repair, the wire must be spliced back together using a Twister DM Plus Wire Connector or 3M Vinyl Insulated Butted Seam Butt Connector (MVU14BC-16-14) and 3M Heat Shrinkable Cable Sleeves (ITCSN-0400).
- **112.3** KMWW will supply these connections on request. Contractor is responsible for all repairs. When the work is completed, KMWW personnel must inspect the repair before back-filling begins. This procedure is necessary since proper PVC pipe locating depends on an in-tact wire.

## **113 Water Use for Construction Purpose**

- **113.1** “Construction Water” is a temporary water service for a premise under construction.
- **113.2** If a fire hydrant is located within an acceptable distance, the contractor may request use of a fire-hydrant meter. This meter will be supplied by KMWW. Charges will be based on the most current rate structure. Fire hydrant meters cannot be used when freezing conditions may result in meter damage. Hydrant meter usage is limited 30 days per permit.
- **113.3** Contractor may establish a new water account in their name and request a new tap according to current KMWW rules and regulations and proceed with service line installation.
- **113.4** Property owner may establish a new account in his or her name and request a new tap and proceed with service line installation.

## **114 Service Lines**

### **114.1 Private Service Lines**

- **114.1.1** The property owner is responsible for the water service line at the connection to the City-owned main. This line consists of a corporation stop and saddle (when applicable) located at the water main; and a curb stop and stop box, generally located between the sidewalk and the street curb or within city right of way. On larger services, this includes a tapping sleeve, valve and valve box.  
**(See attachment 114A & 114B)**
- **114.1.2** Every property must have a direct service connection to a public water main.
- **114.1.3** Duplexes with one tap will have two stop boxes, after a tee, for separation of each side. Each stop box must be marked to identify the correct individual metered service. Installation of a master box before the tee is required.

### **114.2 Private Service Line Locations**

- **114.2.1** All service lines will be laid at least four (4) feet below the surface of the ground. There must be four (4) foot of cover after final grading.
- **114.2.2** Service pipes are to be laid in a straight line at right angles to the water main and connection made within two lines drawn parallel to the sides of the building or not more than 3-feet outside of these sides.

- **114.2.3** Allowance should be made when laying service lines to compensate for potential trench settling and expansion and contraction of the service line.

### **114.3 Adjacent Property**

- **114.3.1** All service pipes will be laid in streets, alleys, or public property to the premises to be served and enter at the front or rear of the building nearest main.
- **114.3.2** Water service pipes cannot be constructed across private lots or buildings to adjoining premises.

### **114.4 1" to 2" Service Lines**

- **114.4.1** Three quarter inch (3/4") is the minimum diameter service line allowed for all new service taps. **A one inch (1") is recommended for better flow and pressure characteristics (see attachment 114.4C)**
- **114.4.2** All water services up to 2" must be Type K copper pipe from the distribution main to the meter with the proper size corporation stop, curb shut off and valve installed on the service line. Line must be one continuous piece from main to stop/curb box. On lines over 100 feet, only one coupler per 100 ft. allowed. **(See attachment 114.4D)**
- **114.4.3** Only flared fittings will be used in copper service lines under paved areas. No compression couplers allowed.

### **114.5 Stop/Curb Box Standard**

- **114.5.1** Stop Boxes for 1" through 2" water service lines shall be of the extension type, 1" upper section, stainless steel self-centering rod, stainless steel pin, and Erie style lid.
- **114.5.2** Stop boxes must be flush with the surrounding ground or surface, visible from the sidewalk and, whenever possible, located in the City right-of-way. Installed Stop/Curb boxes are not to present a public hazard **(See attachment 114.4C and 114.4D)**
- **114.5.3** Stop boxes should not be installed in sidewalks or driveways. KMWW must approve any exceptions to this policy.

- **114.5.4 PVC pipe is allowed for a service line when meter is installed in an outside pit near the curb box. Only in this scenario can PVC plastic piping line be used for service line from the meter to the facility.**

#### **114.6 2 ½" or Greater Private Service Lines and Distribution Mains**

- **114.6.1** Private service lines and water distribution mains 2 ½" or greater must be installed per the design specifications of KMWW.
- **114.6.2** The Lines must be bacterial and pressure tested and flushed prior to installation of the water meter.
- **114.6.3** These activities are the responsibility of the plumbing contractor.
- **114.6.4** Meters for these lines will be located as close to the city owned water main as is reasonably possible.
- **114.6.5** On water mains 2 ½" and larger Ductile Iron poly wrapped or C900 PVC pipe will be used.
- **114.6.6** Every effort will be made to install new pipe in the right-of-way and not under a street or highway.
- **114.6.7** Pressure Testing – All newly installed service lines will be pressure tested at 125 pounds per square inch before being placed into service. If test fails, repairs will be made and the line re-tested.

#### **115 Multi-Unit Buildings**

- **115.1** Duplexes will have individual connections to the main with separate curb/stop boxes. **(See attachments 115.1A & 115.1B)**
- **115.2** A multi-unit building that has separate meters must have an outside stop box for each account. Multiple stop boxes and meters must be marked to identify the correct individual metered services.
- **115.3** Not more than one house shall be supplied with water from on service connection, except in a case where two or more apartments are located in one building, in which the owner will be responsible for all water used.

#### **115.2 Splitting an Existing Water Service**



- **115.2.1** The property owner must meet the following conditions to split a water service to an existing property where there is only one existing stop box.
- **115.2.2** Install stop boxes for each metered account.
- **115.2.3** If property owner requests separate meters and cannot meet the conditions stated above, all accounts will stay in the property owner's name. The property owner will be responsible for all water charges. Unpaid bills on any of the accounts will result in a shut-off to all accounts.

## **116 Fire Sprinkler System off Service Line**

- **116.1** When there is a fire sprinkler system in a building with only one water meter installed, the private water service line must be tapped outside with a separate shut-off valve or "stop box" so fire service isn't compromised if the domestic water service is shut off. (**See attachment 116.1A**)
- **116.2** You may tap the domestic line off the fire line. Install stop boxes a minimum of five feet away from the outside of the building.
- **116.3** If fire protection is a wet system, backflow protection is required.

## **117 Water Meters**

### **117.1 Meter Installation Policy**

- **117.1.1** KMWW furnishes meters up to 1". Larger meters will be purchased by the property owner through KMWW. This policy ensures a standard metering system.
- **117.1.2** KMWW prefers meters to be installed in vaults or meter pits especially for single family residences, in lieu of inside installations whenever practical.

**Note:** This allows access to metering equipment without entering customers business or residence.

- **117.1.3** The property must have a service tap completed before a meter will be installed.
- **117.1.4** KMWW personnel will install all water meters and turn on service at the plumber or property owner's request. Note: This allows proper inspection of the installation by KMWW.

- **117.1.5** Meters will be sized by KMWW based on usage, flow conditions and size of service line. No meter will be installed that is larger than the service line it meters.

## **117.2 Pit and Vault Installation**

- **117.2.1** All meters may be installed in outside meter vaults in lieu of inside installations.
- **117.2.2** When meter pits are installed at the curb box, property owner has the option of using type K copper pipe or PVC pipe from meter pit to facility.
- **117.2.3** Only type K copper will be used to penetrate any building foundation or footing
- **117.2.4** When outside meter pits are not used, and meter is located inside facility served, type K copper or Ductile Iron pipe will be used from the main to the meter.
- **117.2.5** For 1 inch and smaller residential meters, the pit is to be purchased from KMWW to insure uniformity and compliance.
- **117.2.6** Meter Vault specifications to meet KMWW requirements.

**(See attachment 117.2A & 117.2B)**

## **117.3 In-Side Installation**

- **117.3.1** Plumb meters horizontally and with the meter register up.

**(See attachment 117.2C & 117.2D)**

- **117.3.2** All meters must be visible for meter reading.
- **117.3.3** The center of the meter ends must be a minimum of 5 inches away from any wall, water heater, water softener, or any other object for proper meter spacing.
- **117.3.4** Meters may not be placed behind a water softener, furnace, water heater, etc.; they must be accessible at all times.



- **117.3.5** Meters 2-inch or smaller not be less than 12-inches or no more than 36-inches from the floor, measured to the bottom of the pipe entering or leaving the meter.
- **117.3.6** Stack multiple meters with a minimum of 8-inches between meter ends. Make sure the piping for the meters is properly supported and will stay in place independent of the water meter.
- **117.3.7** There must be only one inlet valve before and an outlet valve after each meter, plus a master valve if there are multiple meters. This does not include the RPZ valve. All valves and meters must be easily accessible.

#### **117.4 Requirements for Enclosures around Water Meters**

- **117.4.1** Both the front and backside valves must be contained in a water meter enclosure and be accessible.
- **117.4.2** The opening to the enclosure must be a minimum of 2'x 2' for 5/8" to 1" meters, 3' x 3' for 1 1/2" to 2" meters, with the door centered directly in front of the meter setting.
- **117.4.3** The opening should be a hinged door type and must allow room for a container to catch the backflow water during a water meter change.
- **117.4.4** Meters must be installed so that the digits can be easily read on the meter register.
- **117.4.5** If KMWW personnel determine that the meter installation is not in compliance with all requirements, the final meter inspection will not be approved until proper corrections are made.

#### **117.5 Meter Tampering and Unauthorized Water Consumption**

- **117.5.1** No person except authorized KMWW personnel shall, in any way, interfere with installed water meters. This is considered tampering and will result in a penalty against the property owner and can result in disconnection of water service.
- **117.5.2** By-passing a water service or meter without authorization from KMWW is prohibited.

- **117.5.3** Using a bypass line installed for fire protection or meter maintenance without KMWW authorization is considered unauthorized use of water and will result in fines and or disconnection of service.
- **117.5.4** Bypass lines are to be used only in emergency situations and in all cases KMWW is to be notified before a bypass line is used.

#### **117.6 Meter Inspections Permitted**

- **117.6.1** All persons occupying and/or owning any property where a KMWW water meter is located will permit KMWW personnel to inspect said metering equipment.
- **117.6.2** If access to equipment is not granted in a timely manner KMWW will provide appropriate written notice and disconnect the water service at the property owner's expense until access is gained.

#### **117.7 Meter Damage**

- **117.7.1** The property owner is responsible for the care and protection of all water metering equipment.
- **117.7.2** In all cases, where water meters are broken or damaged, except from ordinary wear, KMWW will make the necessary repairs to the metering equipment and the property owner will pay the cost of the repairs.
- **117.7.3** This includes meters that are allowed to freeze due to improper protection from the weather.

#### **117.8 Meter Tests**

- **117.8.1** Whenever a meter is suspected to be operating outside its installation and design specifications the property owner or KMWW may request a meter test to be conducted on said meter. If the test is requested by the property owner and the meter is found to be functioning properly the cost of performing the test will become the property owner's responsibility.

#### **118 Right to Suspend Use**

- KMWW reserves the right to suspend the use of hose and fountains for sprinkling lawns, gardens, pools or washing vehicles whenever emergency conditions exist to require such action.

## **119 Fire Hydrants and Fire Lines**

### **119.1 Fire Hydrant Usage**

- **119.1.1** A fire line and hydrant's primary usage is for the fighting of fires; therefore, operation of all City fire hydrants is restricted to authorized KMWW representatives or City Fire Department personnel.
- **119.1.2** Hydrants must be opened and closed slowly to prevent damage to the distribution system.
- **119.1.3** Only an approved hydrant wrench should be used to open and close fire hydrants.
- **119.1.4** When the owners or occupants of any premises are found to be using water from a privately owned un-metered fire protection system for purposes other than fire protection, KMWW may impose a penalty and or discontinue water service for said property.
- **119.1.5** KMWW may grant permission of the use of a fire hydrant to a contractor for construction purposes only, provided no other source of water is available. In all cases a fire hydrant meter and back-flow preventer must be supplied by KMWW.
- **119.1.6** The contractor/plumber must contact KMWW for a hydrant use application. If permission is granted, the contractor/plumber must complete a hydrant use information form and pay a hydrant meter deposit.
- **119.1.7** KMWW will furnish the meter equipped with an approved RPZ-type backflow preventer and a valve.
- **119.1.8** It is the responsibility of the contractor/plumber to supply the hoses and any couplings or fittings.
- **119.1.9** KMWW will operate the fire hydrant. Upon completion of the hydrant use/work, the contractor/plumber will be billed the appropriate rate.
- **119.1.10** When hydrants or any of the equipment supplied by KMWW is damaged as a result of negligence on the part of the contractor/plumber, the contractor/plumber or firm represented will be held liable for parts and labor required in the repair work.

## **119.2 Obstruction of Hydrants**

- **119.2.1** Nothing shall be erected or planted which shall interfere with the use of a fire hydrant. Sufficient clearance shall be maintained around the hydrant to permit easy connection of hoses and full circle operation of the hydrant using regular hydrant wrenches and hose spanners.
- **119.2.2** Shrubs, trees, flowers or weeds shall not be planted nor permitted to grow so as to prevent full view of a fire hydrant from the street.

## **119.3 Maintenance and Painting of Public Fire Hydrants**

- **119.3.1** Maintenance and Painting of public fire hydrants will be done by authorized KMWW personnel only.
- **119.3.2** Any unauthorized operation of a fire hydrant is a State and Federal offense and will be dealt with appropriately.

## **119.4 Private Fire Hydrants/Service**

- **119.4.1** Private fire hydrants are for fire protection services only and are allowed to be connected to the distribution system at the owner's expense. All connections must be approved by KMWW.

## **120 Bulk Water Station**

- **120.1** KMWW has a bulk water station located at the water treatment plant at 8 Water Street. The water station is open 24 hours 7 days a week.
- **120.2** This is not a coin or token operated station and it requires assistance from the plant operator on duty so calling ahead will expedite the filling process
- **120.3** The contact number is 319-524-2011. There is also a call box located at the front door of the water plant that will allow communication with the operator on duty.

## **121 Cross Connections and Backflow Prevention**

### **121 General**

- External source contamination of the public drinking water supply is a constant threat. The many sources of cross-connections are too numerous to mention. They range from industrial applications such as boilers and chemical feed systems to



common household cases such as filling a swimming pool with a sprinkler hose, hot water tanks, and in-house pressure boosting systems. Many consumers like schools, hospitals, nursing homes and restaurants never give a thought to the potential contamination of their drinking water by sources within their own facilities. This contamination can range from minor to very serious with hospitalization required. The only effective way to minimize this on-going threat requires the use of backflow prevention devices at every potential contamination source.

## **122 Cross Connection Control – Containment Provisions**

**Definitions.** The following definitions shall apply only to this section. For the purpose of this section, these definitions supersede definitions given elsewhere in this code.

- **122.1 Administrative Authority.** For the purposes of this section, the administrative authority shall be Keokuk Municipal Waterworks.
- **122.2 Approved Backflow Prevention Assembly for Containment.** A backflow prevention assembly which is listed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research as having met the requirements of ANSI-AWWA Standard C510-97, “Double Check Valve Backflow Prevention Assemblies”, of ANSI-AWWA Standard C511-97, “Reduced Pressure Principle Backflow Prevention Assemblies” for containment. The listing shall include the limitations of use based on the degree of hazard. The backflow prevention assembly must also be listed by the International Association of Plumbing and Mechanical Officials.
- **122.3 Approved Backflow Prevention Assembly for Containment in a Fire Protection System.** A backflow prevention assembly to be used in a fire protection system which meets the requirements of Factory Mutual Research Corporation (FM) and Underwriters Laboratory (UL), and the requirements of the fire code and the building code of Keokuk, in addition to the requirements of paragraph (a) (1). Devices sized smaller than 2 ½” which have not been listed by Underwriters Laboratory (UL) and tested by Factory Mutual Research Corporation (FM) may be allowed if they meet the requirements of the fire code and the building code of the Keokuk Building Division.
- **122.4 Auxiliary Water Supply.** Any water supply on or available to the premises other than City of Keokuk or its designee’s approved public water supply such as, but not limited to a private well, pond or river.
- **122.5 Containment.** A method of backflow prevention which requires the installation of a backflow prevention assembly at the water service entrance.

- **122.6 Cross-Connection.** Any actual or potential connection or arrangement, physical or otherwise, between a potable water supply system and any plumbing fixture or tank, receptacle, equipment, or device, through which it may be possible for non potable, used, unclean, polluted and contaminated water, or other substance, to enter into any part of such potable water system, under any condition.
- **122.7 Customer.** The owner, operator, or occupant of a building or property which has a water service from a public water system, or the owner or operator of a private water system which has a water service from a public water system.
- **122.8 Degree of Hazard.** The rating given by the Administrative Authority of a cross connection or water service which indicates it's potential to cause contamination or pollution of the public water supply.
- **122.9 Double Check-Valve Backflow Prevention Assembly.** A backflow prevention device consisting of two independently acting, internally loaded check valves, four properly located test cocks, and two isolation valves.
- **122.10 High Hazard Cross-Connection.** A high hazard cross- connection is a cross connection which may cause an impairment of the quality of the public potable water supply by creating an actual hazard to public health, through poisoning or through the spread of disease by sewage, industrial fluids, or waste.
- **122.11 Isolation.** A method of backflow prevention in which a backflow prevention assembly is located at the cross connection rather than at the water service entrance.
- **122.12 Low Hazard Cross-Connection.** A low hazard cross-connection which may cause an impairment of the quality of the public potable water supply to a degree which does not create a hazard to public health, but which does adversely and unreasonably affect the aesthetic qualities of such potable waters for domestic use.
- **122.13 Reduced Pressure Principle Backflow Prevention Assembly.** A backflow prevention device consisting of two independently acting internally loaded check valves, a pressure relief valve, four properly located test cocks, and two isolation valves.
- **122.14 Registered Backflow Prevention Assembly Technician.** A person who is registered by the State of Iowa to test and repair backflow prevention assemblies and report on the condition of those assemblies.

- **122.15 Thermal Expansion.** Volumetric increase of water due to heating resulting in increased pressure in a closed system.
- **122.16 Water Service.** Depending on the context, water service is the physical connection between a public water system and a customer's building, property, or private water system, or the act of providing potable water to a customer.
- **122.17 Public Water Supplier.** For the purpose of this section Public Water Supplier shall mean the entity providing public water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year.

## **123 Administrative Authority**

- **123.1** Keokuk Municipal Waterworks shall have the right to enter, with the consent of the customer or upon basis of a suitable warrant issued by a court of appropriate jurisdiction, any property to inspect for possible cross-connections.
- **123.2** Keokuk Municipal Waterworks shall maintain records of cross-connection hazard surveys, and the installation, testing, and repair of all backflow prevention assemblies installed for containment purposes.

## **124 New Water Services**

- **124.1** Plans shall be submitted to Keokuk Municipal Waterworks for review on all new water services to determine the degree of hazard.
- **124.2** Keokuk Municipal Waterworks shall determine the type of backflow prevention assembly required for containment based on the degree of hazard.
- **124.3** The Keokuk Municipal Waterworks shall inspect the installation of the required backflow prevention assembly for containment before the initiation of water service.

## **125 Existing Water Services**

- **125.1** Upgrades of existing water services shall be treated as new water services for the purpose of this section.
- **125.2** Customers whose premises are not classified as single family residential shall complete and return a cross-connection hazard survey to Keokuk Municipal Waterworks to be used to determine the degree of hazard of the facility.



- **125.3** Keokuk Municipal Waterworks shall, on the basis of information received from customers, or gathered through on-premise investigations or surveys, determine the degree of hazard and type of backflow prevention assembly required for containment.
- **125.4** Within the time frame specified in writing by Keokuk Municipal Waterworks, the customer shall install a backflow prevention assembly required for containment.
- **125.5** For existing water services, Keokuk Municipal Waterworks may inspect the premises to determine the degree of hazard. When high hazard cross-connections are found, Keokuk Municipal Waterworks shall:

Develop a schedule of compliance which the customer shall follow, or terminate the water service until a backflow prevention assembly for containment, required by the Keokuk Municipal Waterworks has been installed.

- **125.6** Failure of Keokuk Municipal Waterworks to notify a customer that they are believed to have a high hazard cross-connection and that they shall install backflow prevention assemblies for containment in no way relieves a customer of the responsibility to comply with all requirements of this section.

## **126 Customer**

- **126.1** The customer shall be responsible for ensuring that no cross connections exist without approved backflow protection within his or her premise starting at the point of service from the public potable water system.
- **126.2** The customer shall, at his or her own expense, cause installation, operation, testing and maintenance of backflow prevention assemblies.
- **126.3** The customer shall ensure that copies of records of the installation and of all tests and repairs made to all backflow prevention assemblies be submitted to the Keokuk Municipal Waterworks on the approved form within fifteen (15) days after testing and/or repairs are completed.
- **126.4** In the event of a backflow incident, the customer shall immediately notify Public Water Supplier of the incident, who will recommend steps to confine the contamination or pollution.

## **127 Required Backflow Prevention Assemblies for Containment-Water Services**



- **127.1** An air gap or an approved reduced pressure principle backflow prevention assembly is required for water services having one or more cross-connections which the administrative authority has classified as high hazard.
- **127.2** An approved double check-valve assembly is required for water services having no high hazard cross-connections which Keokuk Municipal Waterworks has classified as low hazard.

## **128 Required Backflow Prevention Assemblies for Containment-Fire Protection Systems**

A reduced pressure principle backflow prevention assembly shall be installed on all new and existing fire protection systems which are determined to have any of the following:

- Direct connections from public water mains with an auxiliary water supply on or available to the premises for pumper connections.
- Interconnections with auxiliary supplies such as reservoirs, rivers, ponds, wells, mills, or other industrial water systems.
- Use of anti-freezes or other additives in the fire protection system.
- Combined industrial and fire protection systems supplied from public water mains only, with or without gravity storage or pump suction tanks.
- Any other facility, connections, or condition which may cause contamination.
- A double check-valve assembly will be required for all other fire protection systems. The double check valve assembly shall be required on all new systems at the time of installation and on existing systems at the time that they are upgraded.
- Submittal of proposed backflow prevention devices to Keokuk Municipal Waterworks does not relieve the designer or the sprinkler contractor of the responsibility of submitting plans, including backflow prevention devices to the Keokuk Municipal Waterworks approval.

## **129 Backflow Prevention Assembly Technicians**

- **129.1** A Backflow Prevention Assembly Technician registered by the State of Iowa shall include his or her registration number on all correspondence and forms required by or associated with this section.

### **130 Registered Backflow Prevention Assembly Technician Non-Compliance**

- **130.1** Non-Compliance with any of the following by a registered technician shall be grounds for reporting said individual to the State Health Department.
- **130.2** Improper testing or repair of backflow prevention assemblies.
- **130.3** Improper reporting of the results of testing or of repairs made to Backflow Prevention Assemblies.
- **130.4** Failure to meet registration requirements.
- **130.5** Related unethical practices.

### **131 Installation of Backflow Prevention Assemblies**

- **131.1** The required backflow prevention assemblies for containment shall be installed in horizontal plumbing immediately following the meter, or as close to that location as deemed practical by Waterworks. In any case, it shall be located upstream from any branch piping. Installation at this point does not eliminate the responsibility of the customer to protect the water supply system from contamination or pollution between the backflow prevention assembly and the water main.
- **131.2** Reduced pressure principle backflow prevention assemblies shall be installed so as to be protected from flooding.
- **131.3** Reduced pressure principle backflow prevention assemblies shall not be installed in underground vaults or pits.
- **131.4** All backflow prevention assemblies shall be protected from freezing. Those devices used for seasonal water services may be removed in lieu of being protected from freezing; however, the devices must be reinstalled and tested by a registered backflow prevention technician prior to service being reactivated.
- **131.5** If hot water is used within the water system, thermal expansion shall be provided for when installing a backflow prevention assembly for containment.
- **131.6** Provisions shall be made to convey the discharge of water from reduced pressure principle backflow prevention assemblies to a suitable drain.

- **131.7** No backflow prevention assemblies shall be installed in a place where it would create a safety hazard, such as, but not limited to over an electrical panel, or above ceiling level.
- **131.8** If interruption of water service during testing and repair of backflow prevention assemblies for containment is unacceptable, another backflow prevention assembly, sized to handle the temporary water flow needed during the time of test or repair, should be installed in parallel piping.
- **131.9** All backflow prevention assemblies shall be installed so that they are accessible for testing.
- **131.10** All shut-off valves shall conform to the current edition of the Manual of Cross-Connection Control (University of Southern California) requirements for either ball or resilient seat gate valves at the time of installation. Ball valves shall be used on assemblies installed in piping two inches and smaller resilient seat gate valves on assemblies installed in piping larger than two inches.
- **131.11** Location and protection of the containment assembly shall be approved by Keokuk Municipal Waterworks prior to installation.

## **132 Testing of Backflow Prevention Assemblies**

- **132.1** Testing of backflow prevention assemblies shall be performed by a registered backflow prevention assembly technician. The costs of tests required in the following paragraphs 2-5 shall be borne by the customer.
- **132.2** Backflow prevention assemblies shall be tested upon installation and tested and inspected at least annually.
- **132.3** Backflow prevention assemblies which are in place, but have been out of operation for more than three months, shall be tested before being put back into operation. Backflow prevention assemblies used in seasonal applications shall be tested before being put into operation each season.
- **132.4** Any backflow prevention assembly which fails a periodic test shall be repaired or replaced. When water service has been terminated for non-compliance, the backflow prevention assembly shall be repaired or replaced prior to the resumption of water service. Backflow prevention assemblies shall be retested by a registered backflow prevention assembly technician immediately after repair or replacement.
- **132.5** Keokuk Municipal Waterworks may require backflow prevention assemblies to be tested at any time in addition to the annual testing requirement.



- **132.6** The registered backflow prevention assembly technician shall report the successful test of a backflow prevention assembly to the customer and to Keokuk Municipal Waterworks within fifteen (15) days of the test.
- **132.7** Keokuk Municipal Waterworks may require, at the owner's expense, additional tests of individual backflow prevention assemblies as it shall deem necessary to verify test procedures and results.

### **133 Repair of Backflow Prevention Assemblies**

- **133.1** All repairs to backflow prevention assemblies shall be performed by registered backflow prevention assembly technicians.
- **133.2** The registered backflow prevention assembly technician shall not change the design, material, or operational characteristics of a backflow prevention assembly during repair or maintenance, and shall use only original manufacturer replacement parts.
- **133.3** The registered backflow prevention assembly technician shall report the repair of a backflow prevention assembly to the customer and to the Keokuk Municipal Waterworks within fifteen (15) days of the repair. The report shall include the list of materials or replacement parts used.
- **133.4** At any time services are discontinued for a period of time longer than necessary to test the device; the tester is required to notify the fire marshal's office that the fire service is shut off for repair.

### **134 Customer Non-Compliance**

- Water service may be discontinued in the case of non-compliance with this section. Non-compliance includes, but is not limited to the following:
- Refusal to allow Keokuk Municipal Waterworks access the property to inspect for cross-connections.
- Removal of a backflow prevention assembly which has been required by Keokuk Municipal Waterworks.
- By-passing of a backflow prevention assembly which has been required by the Keokuk Municipal Waterworks.
- Providing inadequate backflow protection when cross-connections exist.

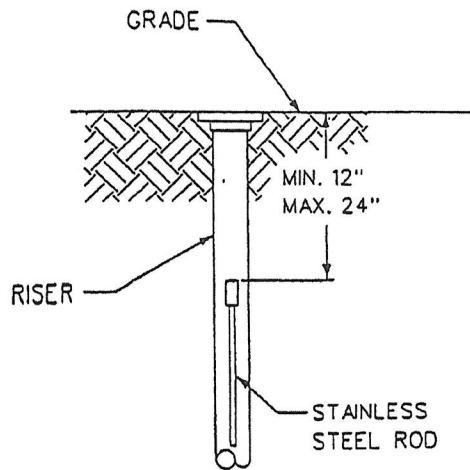


- Failure to install a backflow prevention assembly which has been required by Keokuk Municipal Waterworks.
- Failure to test and/or properly repair a backflow prevention assembly as required by Keokuk Municipal Waterworks.
- Failure to comply with the requirements of this section.

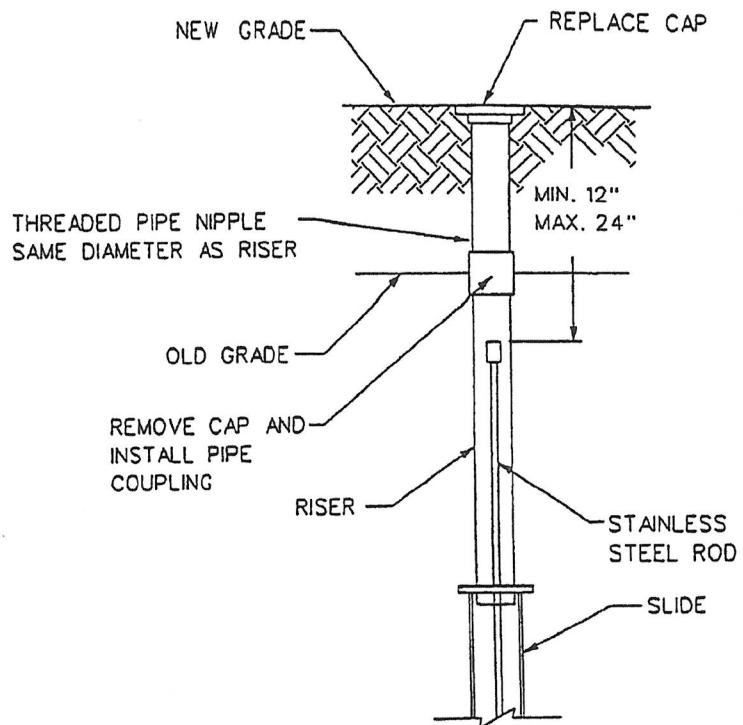
## ATTACHMENTS

Attachment #	Description
103.3A	Stop Box Adjustment
106.2A	Service Disconnect
111.4A	Excavation for Tapping Sleeve
111.4B	Typical Trench Section
111.4C	Trench Sidewall Slop
111.4D	Trench Shoring
112.1A	Tracer Wire
114A & B	Customer Service Line and Stop/Curb box Detail
114.4C	1" Service Installation
114.4D	1 ½" – 2" Service Installation
115.1A	Duplex Service Installation Example #1
115.1B	Duplex Service Installation Example #2
115.2C	Multiple Meter Installation Example #1
115.2D	Multiple Meter Installation Example #2
116.1A	Fire Service Line
117.2A	2 inch and Larger Meter Pit Detail
117.2B	Turbine or Compound Meter Pit Detail
117.2D	Meter Installation Guide
118	Indemnity Waiver Form

# ATTACHMENT 103.3A



NORMAL  
INSTALLATION



STOP BOX RAISED  
TO NEW GRADE

WHEN THE GRADE IS CHANGED IN THE VICINITY OF A STOP BOX, THE STOP BOX MUST BE RAISED OR LOWERED TO THE NEW GRADE. RAISING THE STOP BOX IS ACCOMPLISHED BY REMOVING THE CAP, INSTALLING A 1" PIPE COUPLING AND A 1" THREADED NIPPLE OF THE APPROPRIATE LENGTH AND REPLACING THE CAP. THE RISER MUST BE INTERGAL AND CONTINUOUS. TO LOWER THE STOP BOX, IT WILL BE NECESSARY TO CUT AND RETHREAD THE RISER PIPE AT THE NEW GRADE AND REPLACE THE CAP. ROD MUST BE LOWERED IN PROPER PROPORTION TO RISER PIPE.

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WATERWORKS



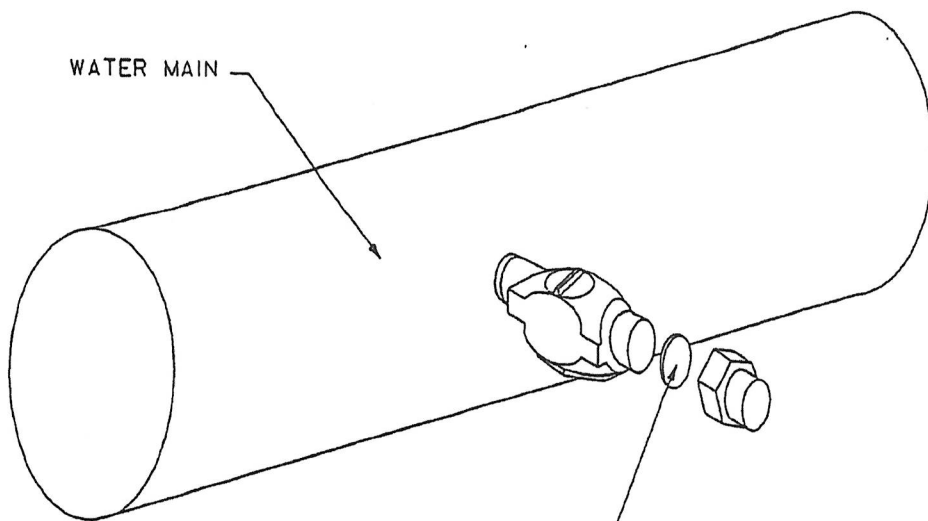
ADJUSTING STOP BOX TO NEW GRADE  
(ARCH PATTERN BOX)

SCALE: NONE

DATE: 8/01/05

# ATTACHMENT 106.2A

## DISCONNECTING SERVICE LINE



WASHER  
(PLUMBERS CAP  
MAY BE USED)

CLOSE CORPORATION. CUT LINE  
FLUSH WITH NUT. PLACE WASHER  
BETWEEN NUT & CORPORATION.  
CURB STOP VALVE TO BE REMOVED  
WHEN APPLICABLE.

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WATERWORKS



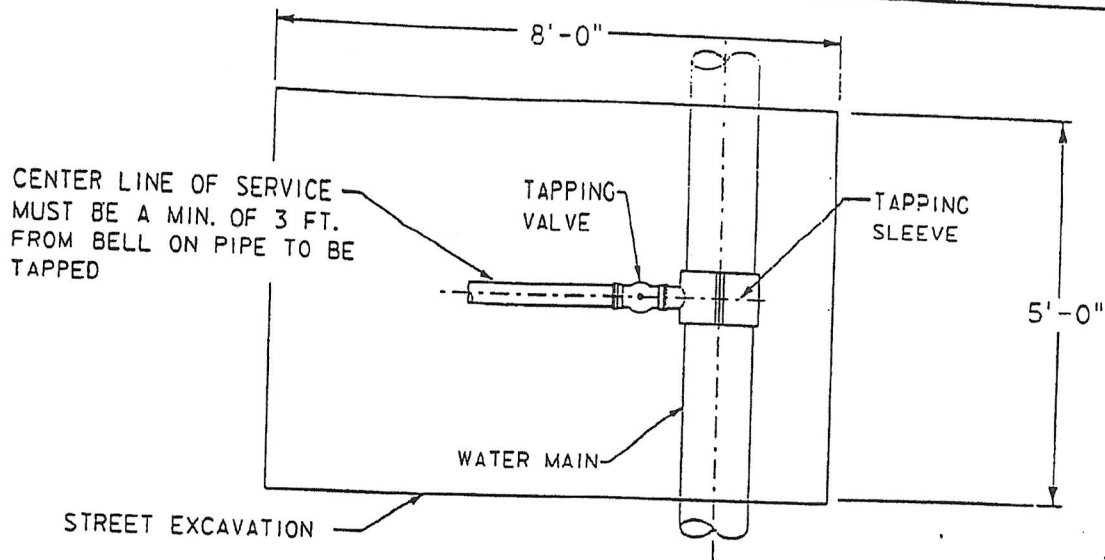
TAP CUT AT MAIN PROCEDURES  
3/4 TO 2" DIRECT TAPS ONLY

SCALE: NONE

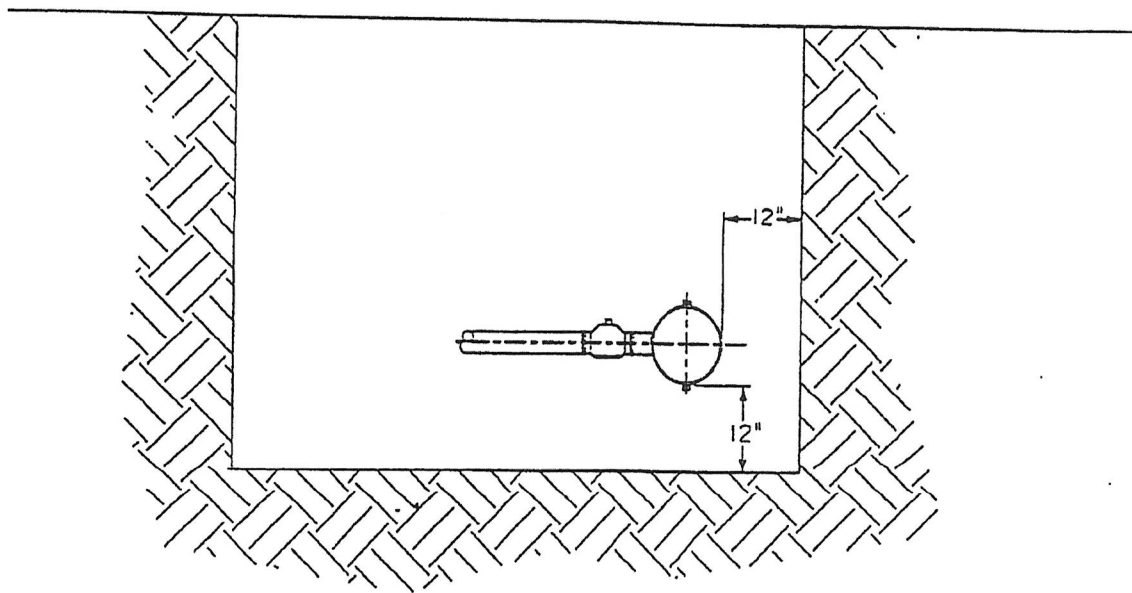
DATE: 8/01/05



# ATTACHMENT 111.4A



PLAN



SECTION

## NOTES:

1. IF 2 TAPS ARE TO BE MADE, A MIN. OF 3 FT. BETWEEN SERVICES (Q TO Q) SHOULD BE MAINTAINED AND THE WIDTH OF THE HOLE INCREASED TO 8 FT. IF BOTH ARE TO BE MADE IN SAME HOLE.
2. EXCAVATIONS OVER 4'-11" DEEP MUST BE SHORED BEFORE A TAP WILL BE MADE. EXCAVATION DIMENSIONS ARE FROM INSIDE FACE OF SHORING.

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WATERWORKS

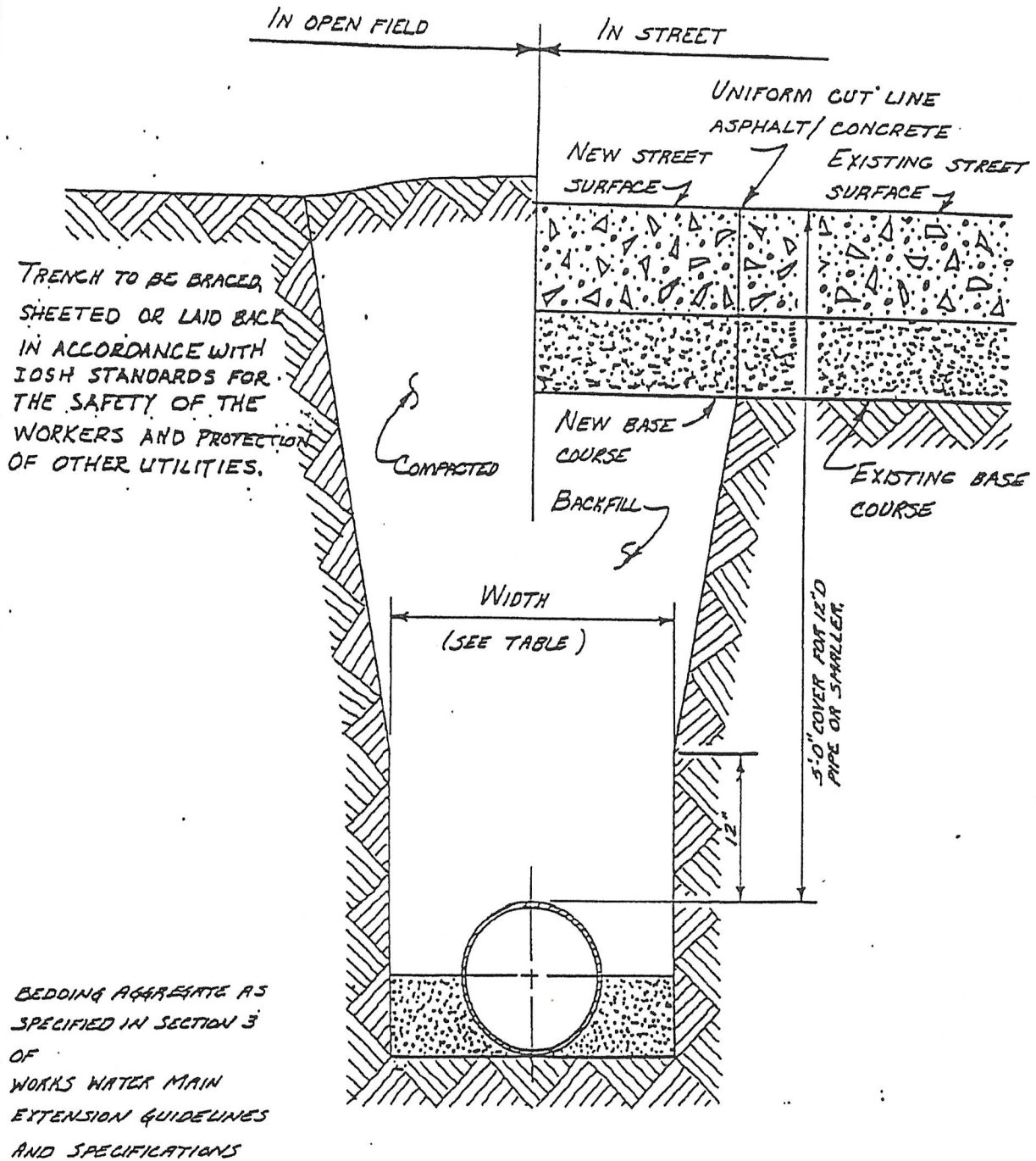


## EXCAVATION DETAIL FOR TAPPING SLEEVE

SCALE: NONE

DATE: 8/01/05

# ATTACHMENT 111.4B



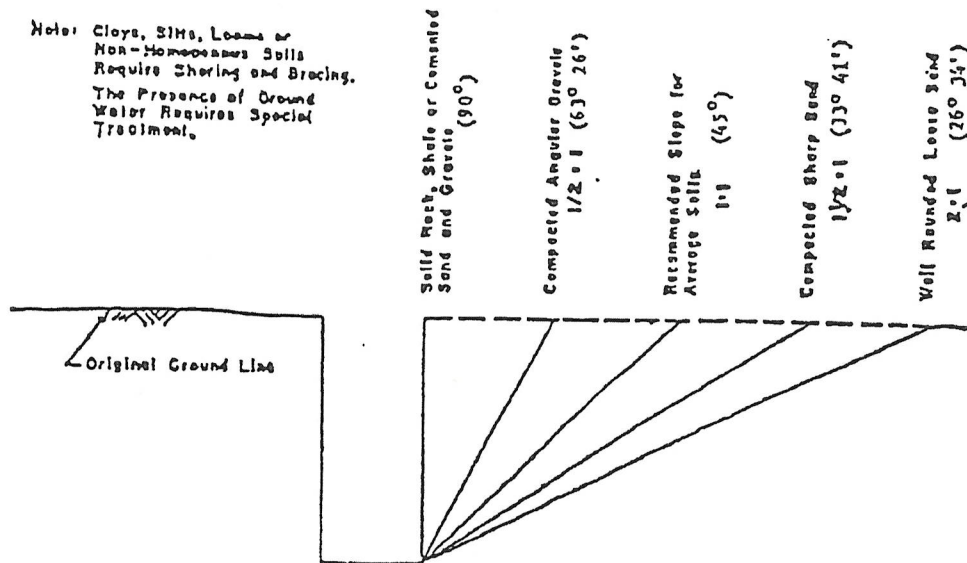
PIPE DIA.	MIN. WIDTH	MAX. WIDTH
4"	1'-4"	2'-4"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
11"	2'-1"	3'-1"

TYPICAL TRENCH SECTION

Table P-1

APPROXIMATE ANGLE OF REPOSE  
FOR SLOPING OF SIDES OF EXCAVATIONS

Note: Clays, Silts, Loams or Non-Homogeneous Soils Require Shoring and Bracing. The Presence of Ground Water Requires Special Treatment.



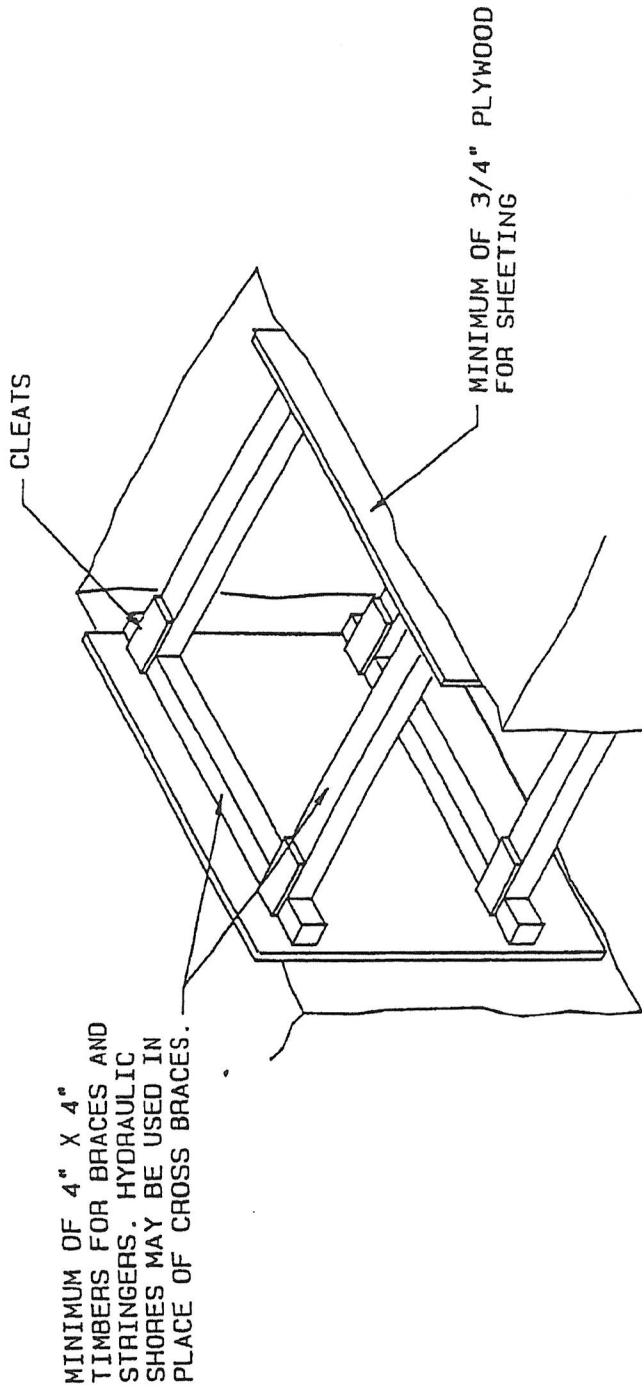
1926.652(g)(2)

TABLE P-2  
TRENCH SHORING—MINIMUM REQUIREMENTS

Depth of trench	Kind or condition of earth	Size and spacing of members										
		Uprights		Birrings		Cross braces <sup>1</sup>				Maximum spacing		
		Minimum dimension	Maximum spacing	Minimum dimension	Maximum spacing	Width of trench				Vertical	Horizontal	
						Up to 3 feet	3 to 6 feet	6 to 9 feet	9 to 12 feet			12 to 18 feet
Feet		Inches	Feet	Inches	Feet	Inches	Inches	Inches	Inches	Feet	Feet	
4 to 10	Hard, compact.....	3 x 4 or 2 x 6	6			2 x 6	4 x 4	4 x 6	6 x 6	8 x 8	4	6
	Likely to crack.....	3 x 4 or 2 x 6	3	4 x 6	4	2 x 6	4 x 4	4 x 6	6 x 6	8 x 8	4	6
	Soft, sandy, or silty.....	3 x 4 or 2 x 6	Close sheeting	4 x 6	4	4 x 4	4 x 6	6 x 6	8 x 8	8 x 8	4	6
	Hydrostatic pressure.....	3 x 4 or 2 x 6	Close sheeting	6 x 8	4	4 x 4	4 x 6	6 x 6	8 x 8	8 x 8	4	6
10 to 18	Hard.....	3 x 4 or 2 x 6	4	4 x 6	4	4 x 4	4 x 6	6 x 6	8 x 8	8 x 8	4	6
	Likely to crack.....	3 x 4 or 2 x 6	2	4 x 6	4	4 x 4	4 x 6	6 x 6	8 x 8	8 x 8	4	6
	Soft, sandy, or silty.....	3 x 4 or 2 x 6	Close sheeting	4 x 6	4	4 x 4	4 x 6	6 x 6	8 x 8	8 x 10	4	6
	Hydrostatic pressure.....	3 x 6	Close sheeting	8 x 10	4	4 x 6	6 x 6	6 x 8	8 x 8	8 x 10	4	6
18 to 20	All kinds or conditions.....	3 x 6	Close sheeting	4 x 12	4	4 x 12	6 x 8	8 x 8	8 x 10	10 x 10	4	6
Over 20	All kinds or conditions.....	3 x 6	Close sheeting	6 x 8	4	4 x 12	8 x 8	8 x 10	10 x 10	10 x 12	4	6

<sup>1</sup> Trench jacks may be used in lieu of, or in combination with, cross braces. Shoring is not required in solid rock, hard shale, or hard slag. Where desirable, steel sheet piling and lagging of equal strength may be substituted for wood.

[Sec. 1926.652, Table P-1]



NOTE:  
THIS IS AN EXAMPLE FOR AVERAGE DEPTH EXCAVATIONS.  
ADDITIONAL DEPTHS WILL REQUIRE EXTRA BRACING.



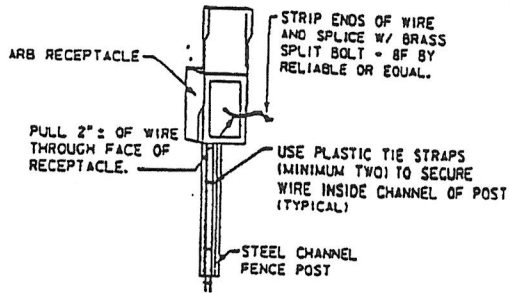
KEOKUK MUNICIPAL  
WATERWORKS

TYPICAL SHORING DETAIL:  
FOR AVERAGE DEPTH EXCAVATIONS

DATE: 8/01/05	APPROVED BY:
SCALE: NONE	REVISIONS:

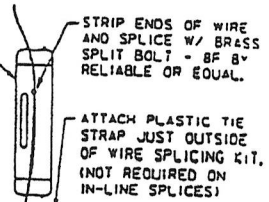


# ATTACHMENT 112.1A

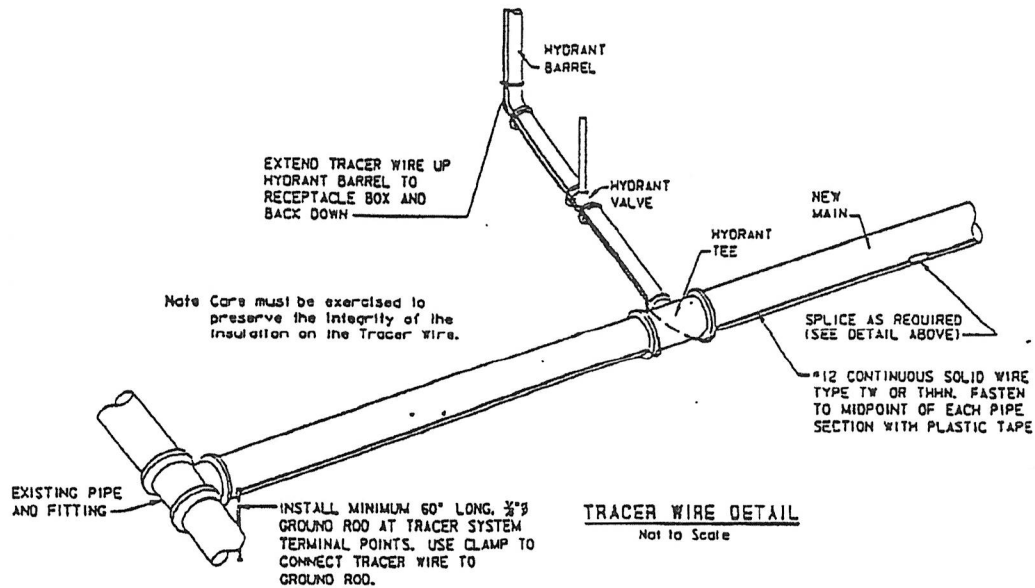


**TRACER WIRE RECEPTACLE DETAIL**  
Not to Scale

ENCASE SPlice IN WATERPROOF SPLICING KIT, (SCOTCHCAST BY JM - No. 3832 BURIED SERVICE WIRE SPlice ENCAPSULATION KIT)



**TRACER WIRE SPlice DETAIL**  
Not to Scale



**TRACER WIRE DETAIL**  
Not to Scale

KEOKUK MUNICIPAL  
WATERWORKS

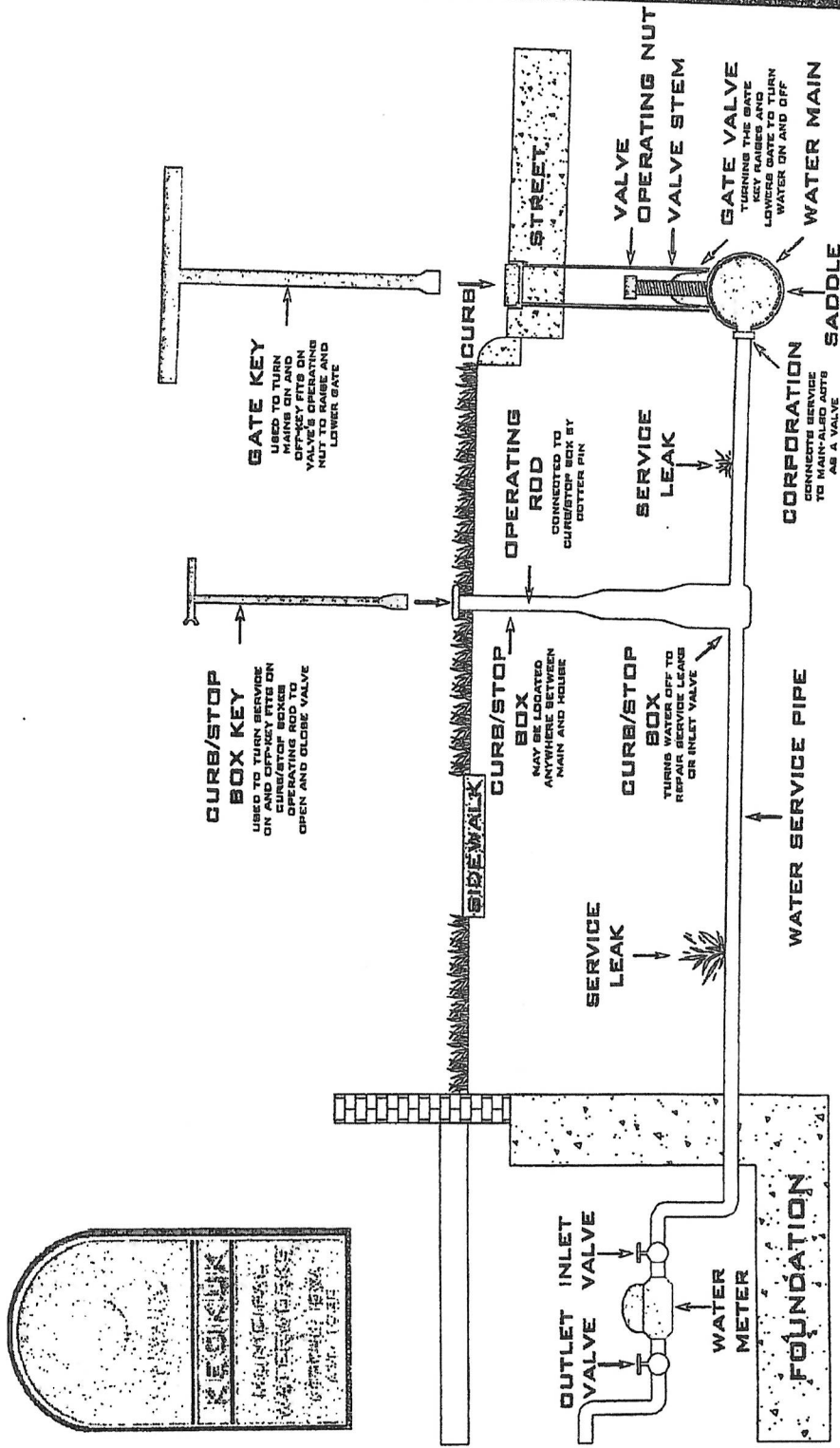


TRACER WIRE DETAIL

SCALE: NONE

DATE: 8/01/05

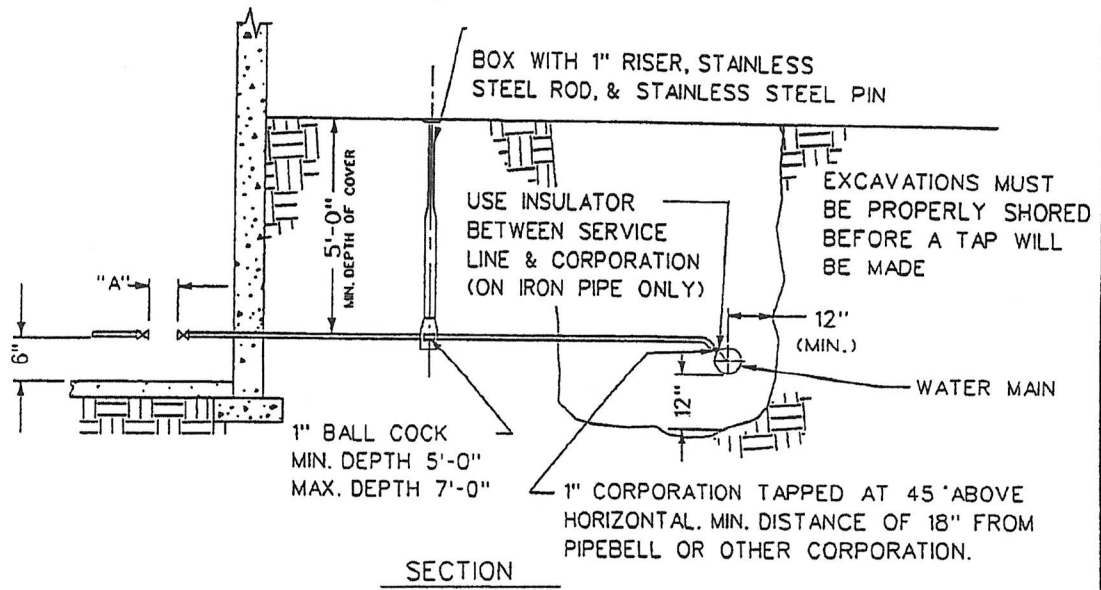
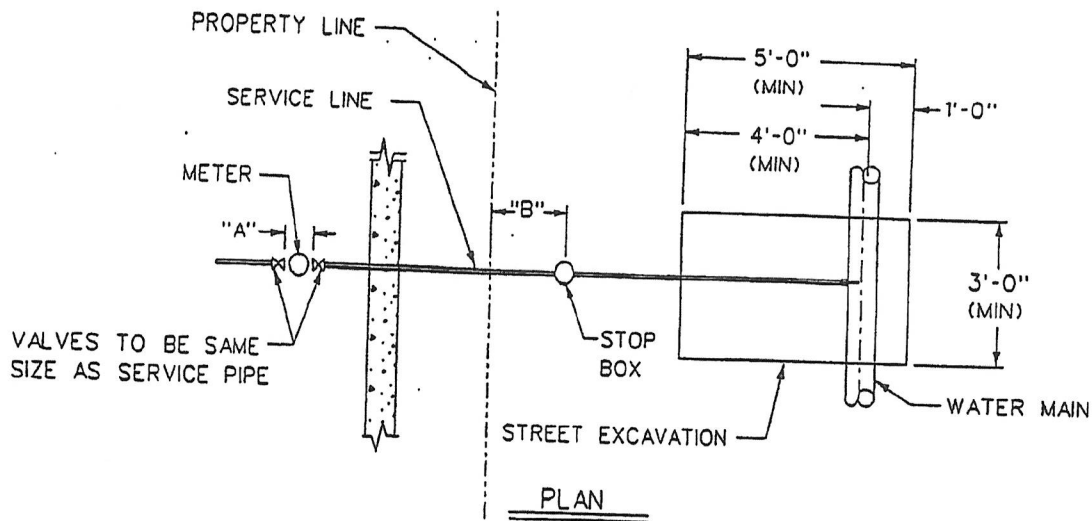
# YOUR WATER SERVICE



**CITY OF KEOKUK'S RESPONSIBILITY**  
**OWNER'S RESPONSIBILITY**

# ATTACHMENT 114.4C

DISTANCE "B"  
INSIDE CITY OF 1'-0" TO 6'-0"



## METER SPACING

SIZE OF METER	"A" - FACE TO FACE OF VALVES
5/8"	11-3/4"
3/4"	13-3/4"
1"	15-3/4"

KEOKUK MUNICIPAL  
WATERWORKS



## DETAIL OF 1" SERVICE INSTALLATION

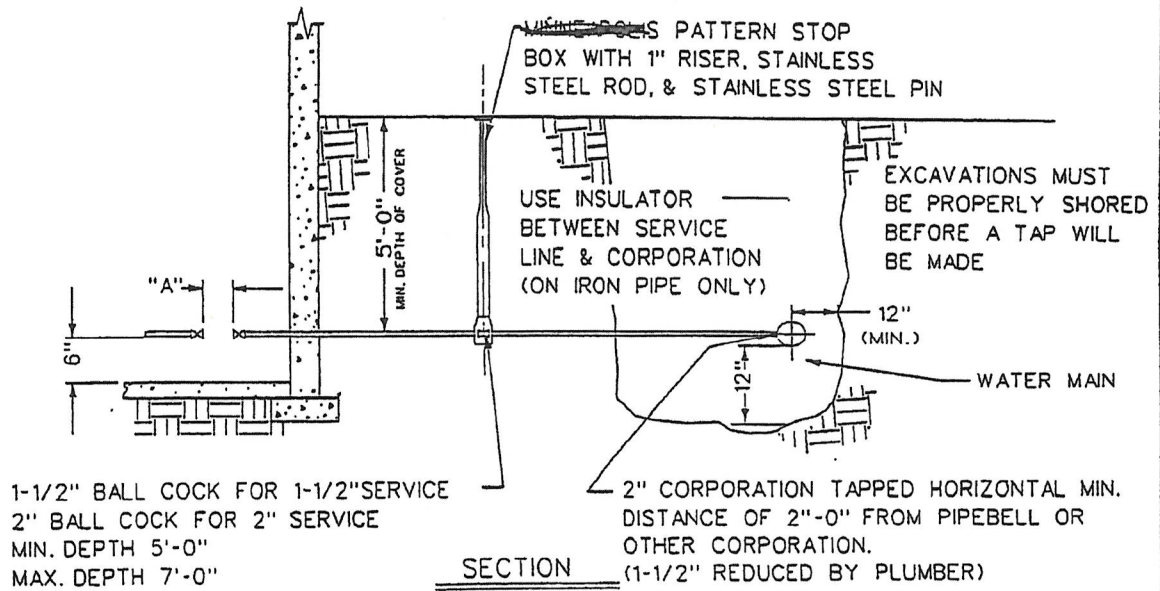
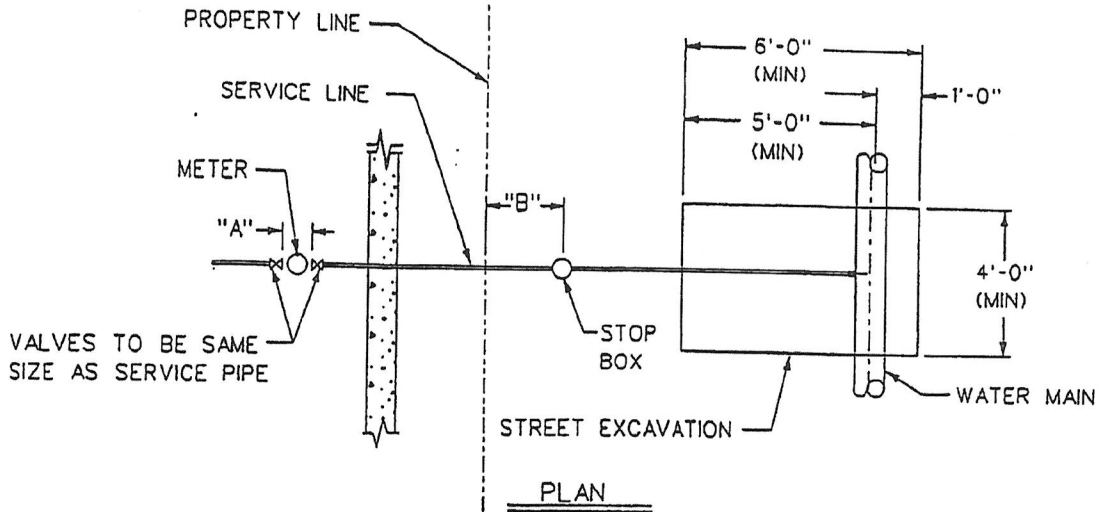
SCALE: NONE

DATE: 8/01/05



# ATTACHMENT 114.4D

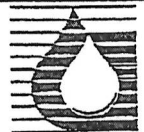
DISTANCE "B"  
INSIDE CITY OF 1'-0" TO 6'-0"



## METER SPACING

SIZE OF METER	"A" - FACE TO FACE OF VALVES
5/8"	11-3/4"
3/4"	13-3/4"
1"	15-3/4"
1-1/2"	30"
2"	30"

KEOKUK MUNICIPAL  
WATERWORKS



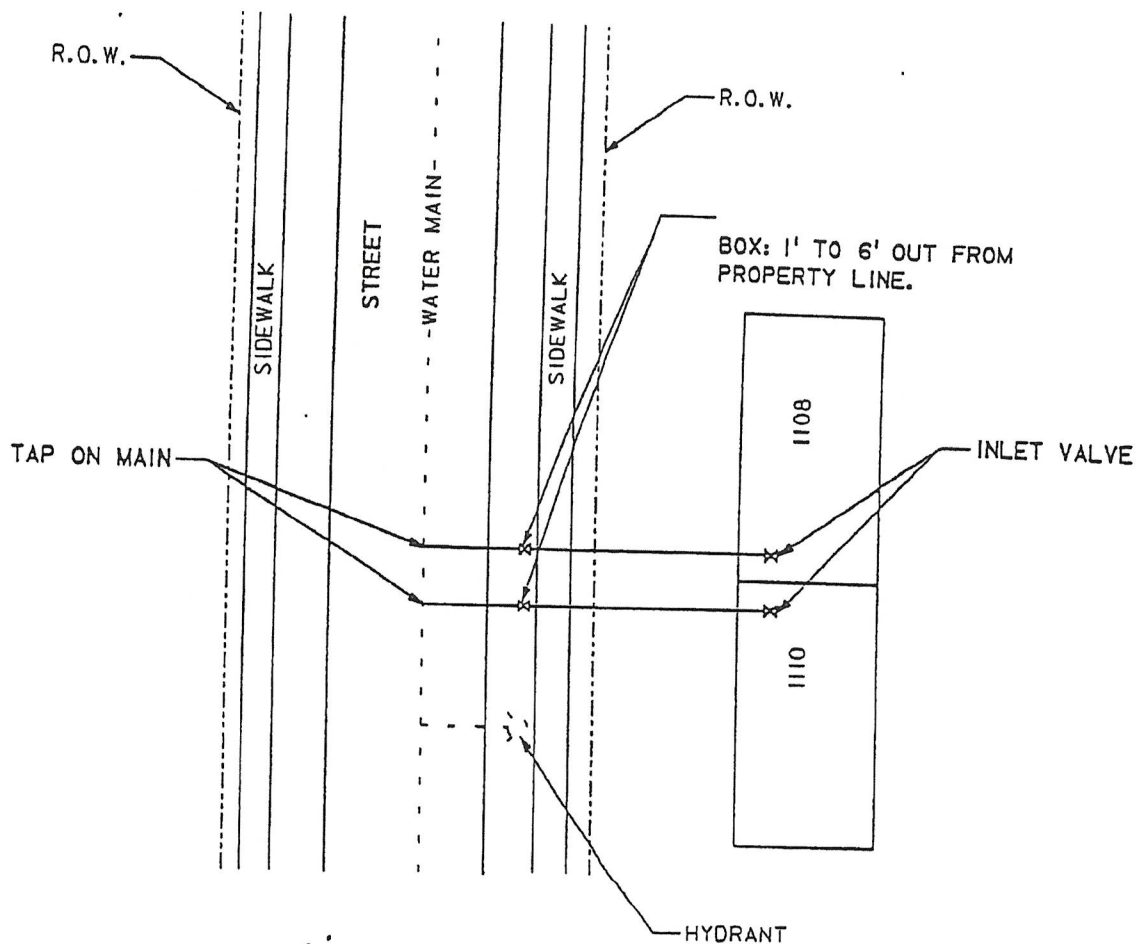
DETAIL OF 1-1/2" OR  
2" SERVICE INSTALLATION

SCALE: NONE

DATE: 8/01/05



# ATTACHMENT 115.1A



KEOKUK MUNICIPAL  
WATERWORKS

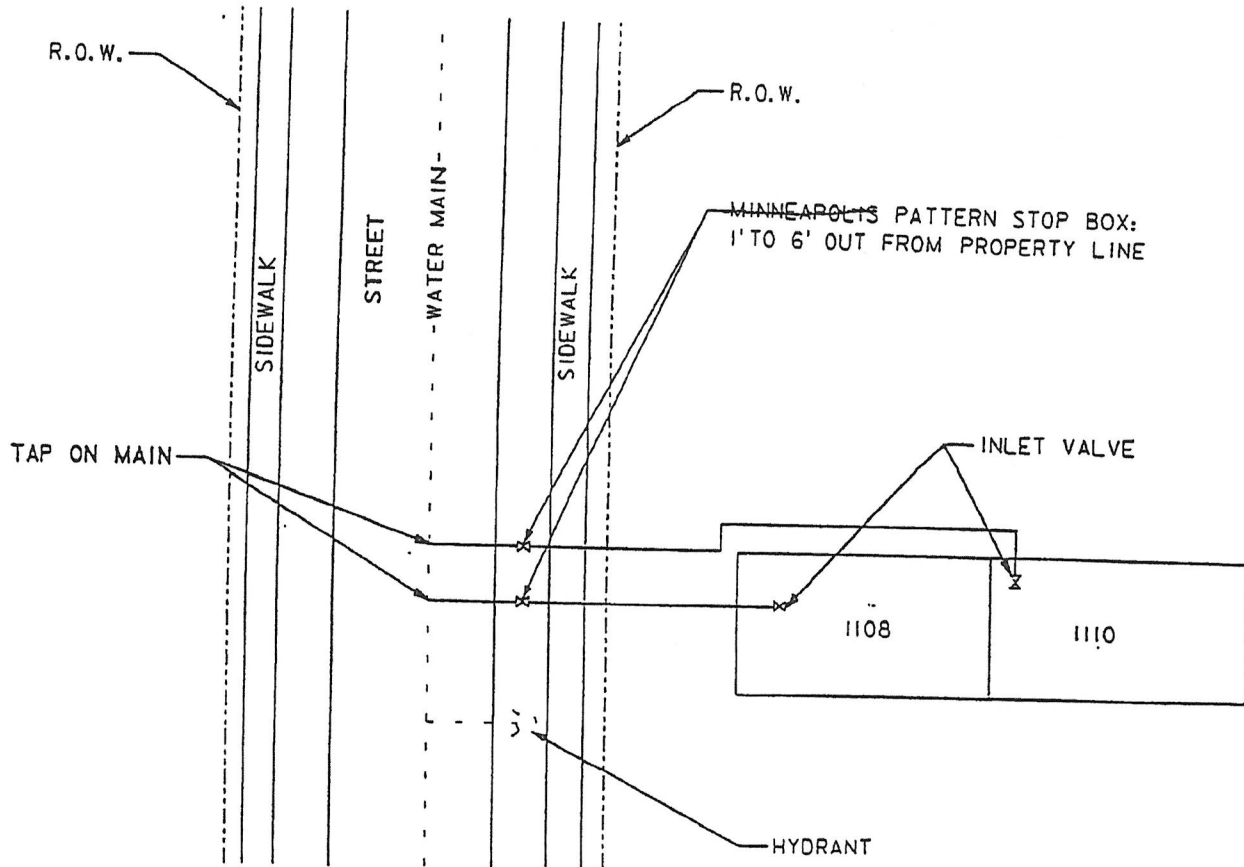


INSTALLATION OF SERVICE  
INTO A DUPLEX (OPTION #1)

SCALE: NONE

DATE: 8/01/05

# ATTACHMENT 115.1B



KEOKUK MUNICIPAL  
WATERWORKS

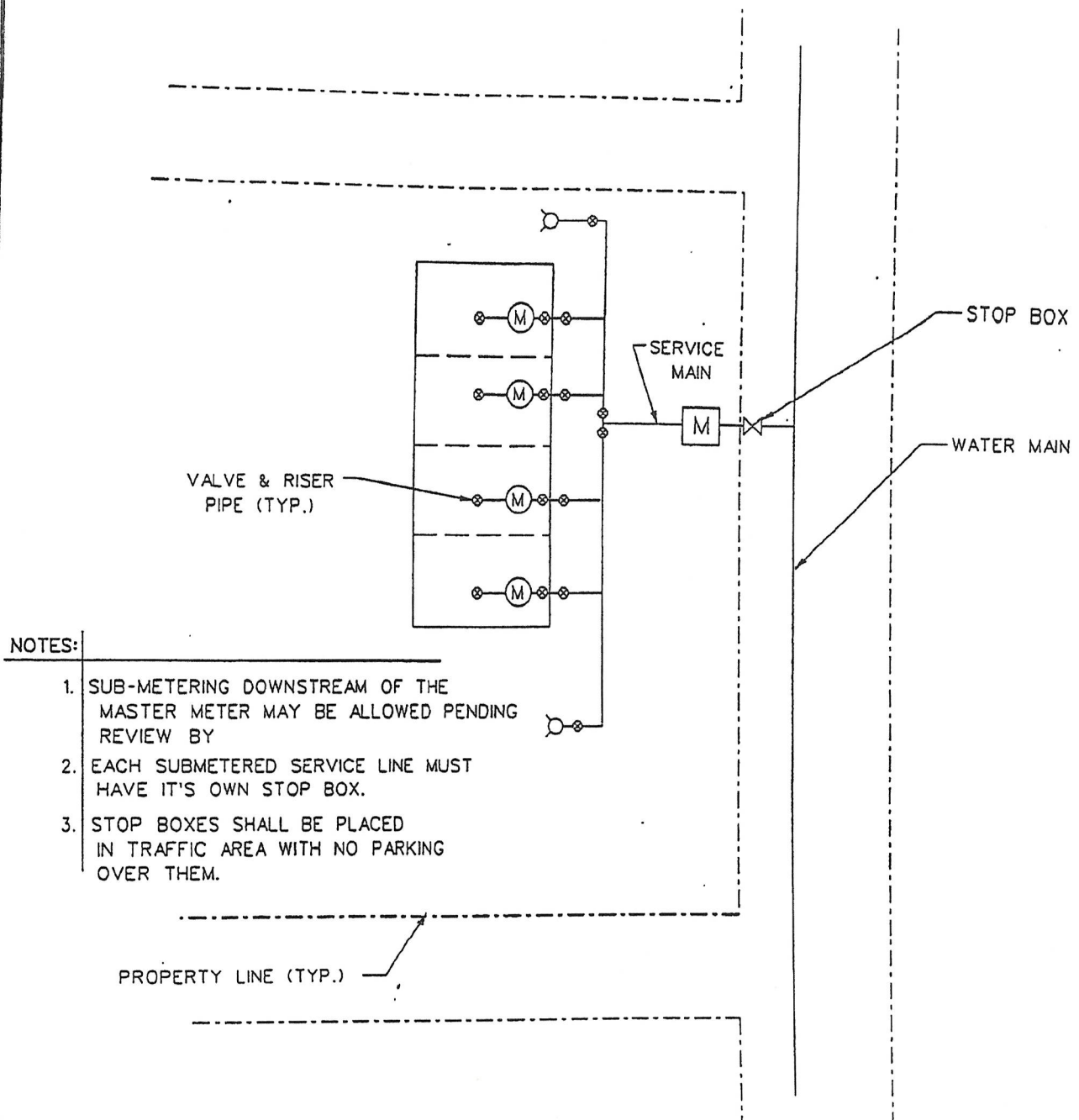


INSTALLATION OF SERVICE  
INTO A DUPLEX (OPTION #2)

SCALE: NONE

DATE: 8/01/05

# ATTACHMENT 115.2C



## NOTES:

1. SUB-METERING DOWNSTREAM OF THE MASTER METER MAY BE ALLOWED PENDING REVIEW BY
2. EACH SUBMETERED SERVICE LINE MUST HAVE IT'S OWN STOP BOX.
3. STOP BOXES SHALL BE PLACED IN TRAFFIC AREA WITH NO PARKING OVER THEM.

## LEGEND

- ⊗ — VALVE (TYP.)
- ⊙ — HYDRANT
- (M) — SUB-METER. RESPONSIBILITY OF BUILDING OWNER/TENANT
- [M] — MASTER METER PIT WITH U.L. LISTED FIRE SERVICE METER.

KEOKUK MUNICIPAL  
WATERWORKS

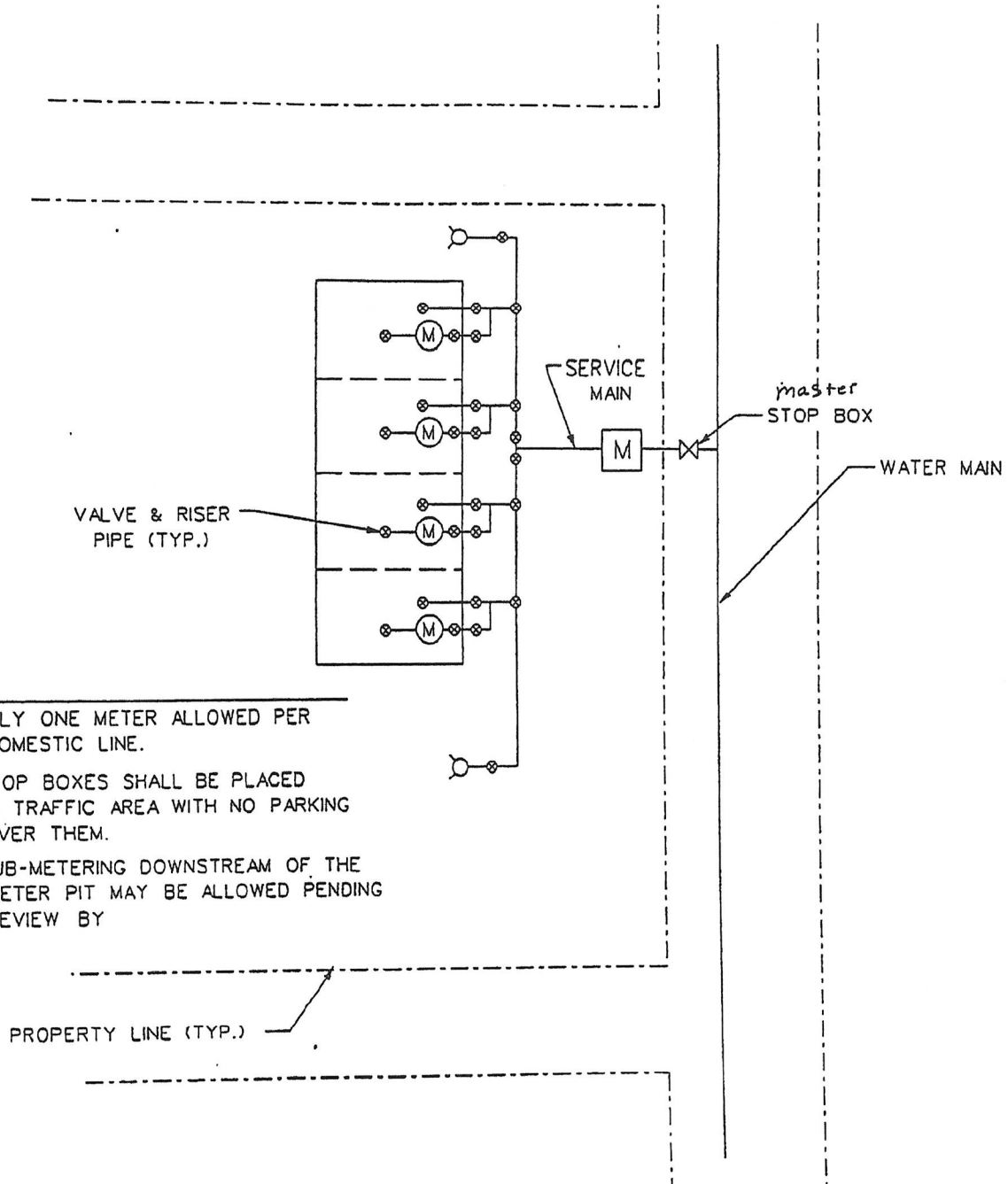


WATER SERVICE TO SHOPPING CENTER (CASE 1)  
MULTIPLE DOMESTIC METERS WITH FIRE SERVICE

SCALE: NONE

DATE: 8/01/05

# ATTACHMENT 115.2D



## NOTES:

1. ONLY ONE METER ALLOWED PER DOMESTIC LINE.
2. STOP BOXES SHALL BE PLACED IN TRAFFIC AREA WITH NO PARKING OVER THEM.
3. SUB-METERING DOWNSTREAM OF THE METER PIT MAY BE ALLOWED PENDING REVIEW BY

## LEGEND

- ⊗ — VALVE (TYP.)
- — HYDRANT
- Ⓜ — SUB-METER. RESPONSIBILITY OF BUILDING OWNER/TENANT
- Ⓜ — MASTER METER PIT WITH U.L. LISTED FIRE SERVICE METER.

KEOKUK MUNICIPAL  
WATERWORKS



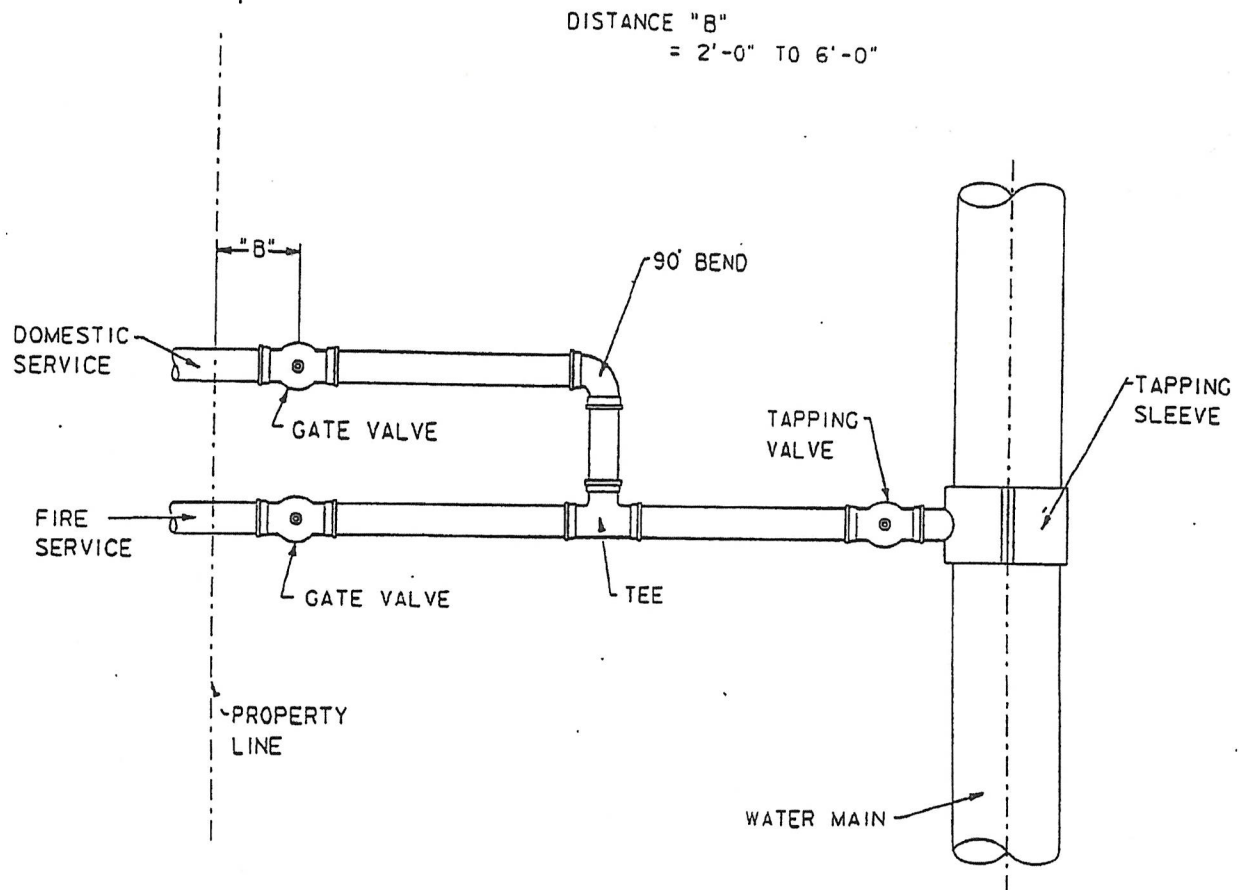
WATER SERVICE TO SHOPPING CENTER (CASE 2)  
MULTIPLE DOMESTIC METERS & INDIVIDUAL  
FIRE SERVICES

SCALE: NONE

DATE: 8/01/05



# ATTACHMENT 116.1A



KEOKUK MUNICIPAL  
WATERWORKS

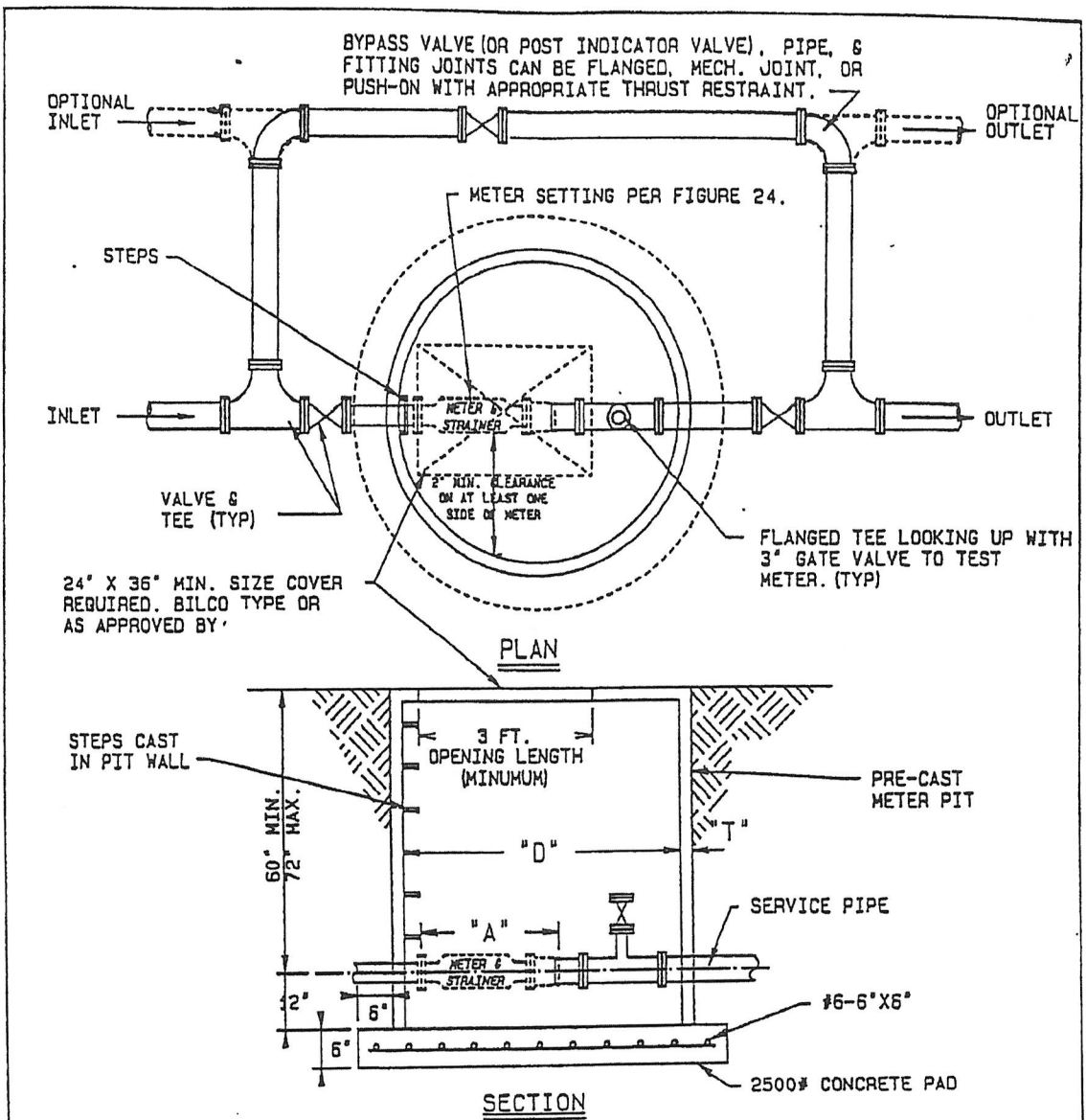


TYPICAL FIRE SERVICE LINE  
WITH DOMESTIC TEE IN LINE


SCALE: NONE

DATE: 8/01/05

## ATTACHMENT 117.2A



NOTE:  
NOTES AS WRITTEN IN FIGURE 24  
ALSO PERTAIN TO THIS FIGURE.

METER SIZE	DIMENSION "A"	DIMENSION "D"	DIMENSION "T"	 - KEOKUK MUNICIPAL WATERWORKS  2" & LARGER METER SETTING IN PIT - OPTION A
2"	29"	60"	6"	
3"	19"	60"	6"	
4"	22"	60"	6"	
6"	28"	72"	7"	
8"	31"	72"	7"	

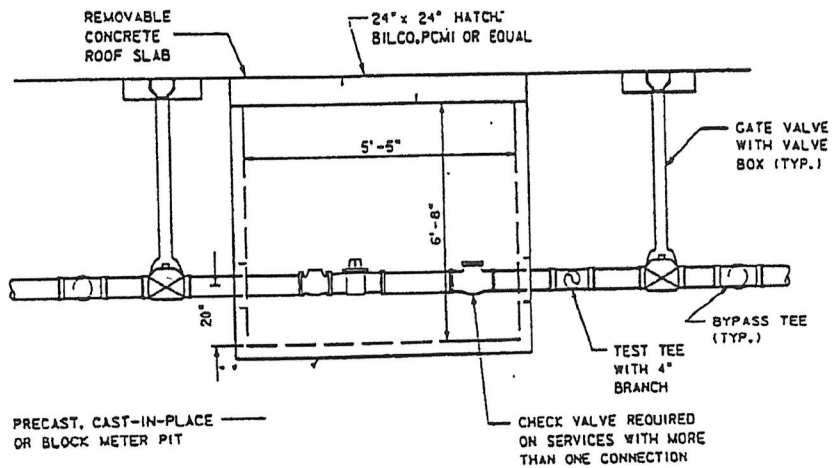
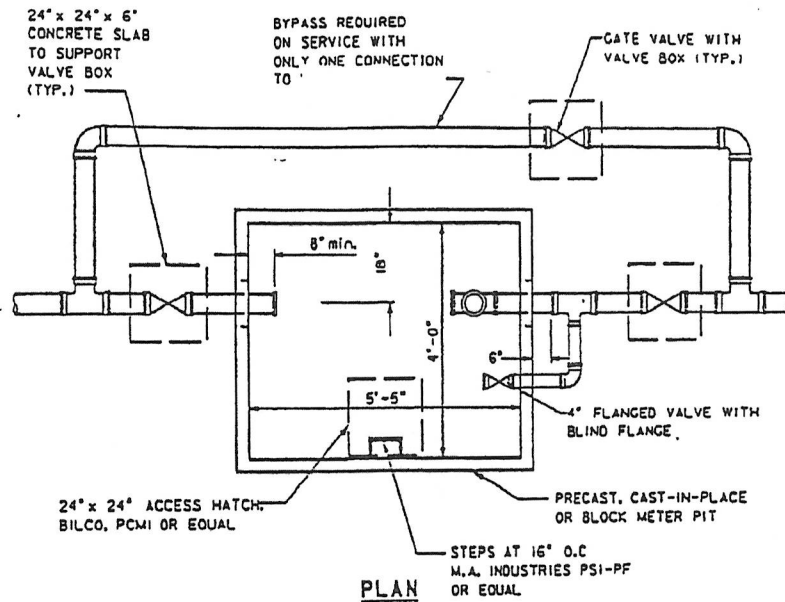
DATE: 8/01/05

SCALE: NONE

APPROVED BY:

REVISIONS:

# ATTACHMENT 117.2B



KEOKUK MUNICIPAL  
WATERWORKS

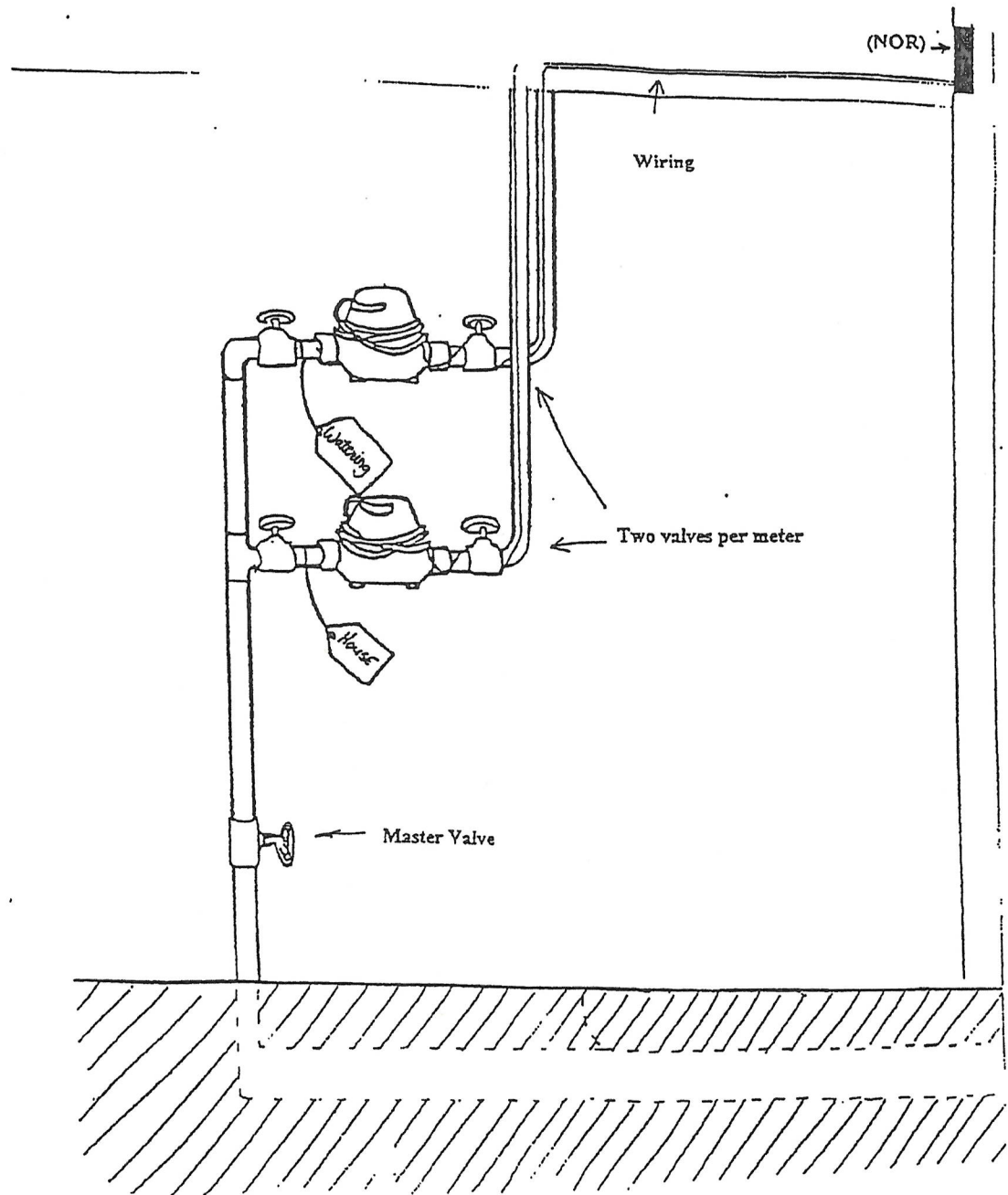


TURBINE OR COMPOUND  
METER PIT DETAIL

SCALE: NONE

DATE: 8/01/05

ATTACHMENT 117.2C  
Installation Of Single Purpose Watering Meter



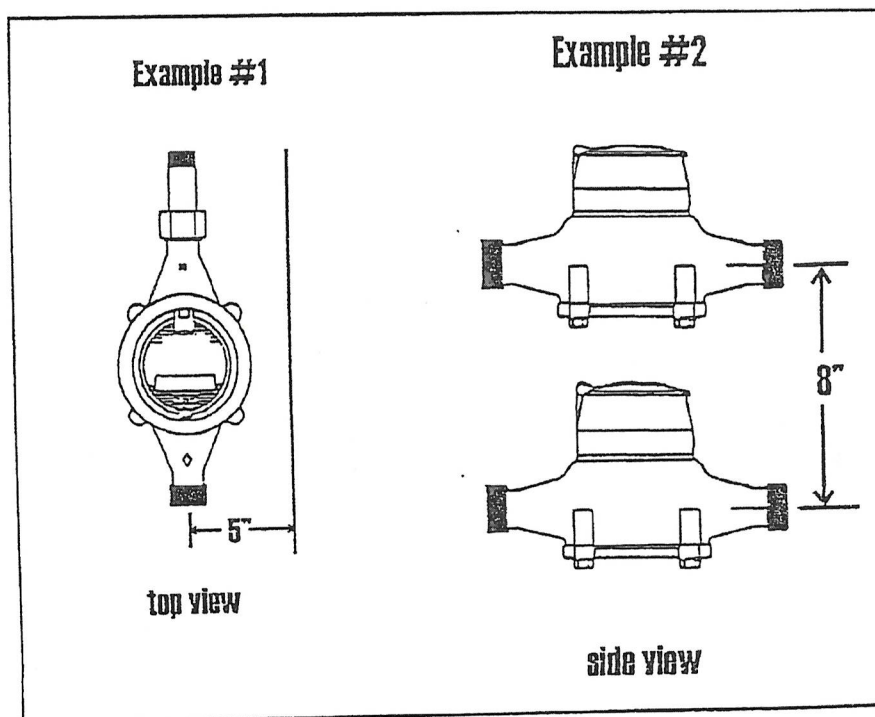


## ATTACHMENT 117.2D

## Meter Installation

- ☐ The center of meter ends must be a minimum of 5 inches away from any wall, water heater, or any other object for proper meter clearance. (See example #1)
- ☐ The stacking of water meters for apartment buildings, or 2nd meter for residential purposes must have a minimum clearance of 8 inches between meter ends. (See example #2)
- ☐ All water meters must be plumbed horizontal. the meter head must be straight up when placed in set.
- ☐ All water meteres must be visible for meter reading.
- ☐ Wires must be ran prior to "Final Meter Inspection."
- ☐ Failure to follow any of these rules will result in not passing the "Final Meter Inspection." Corrections must be made, at the owners expense, before we will attempt to inspect again.

We will be glad to answer any questions to help you!



ATTACHMENT 118

INDEMNITY AGREEMENT  
CONCERNING WATER TURN ON

The undersigned is a customer of the Keokuk Municipal Waterworks at the service address locally known as: \_\_\_\_\_.

The water service at above address has been shut off, and the undersigned has been made aware of Keokuk Municipal Waterworks' rule not to restore water service to any building unless someone is actually present within the building to make certain that there is no water damage because of unclosed faucets and the like. The undersigned nevertheless desires such water service to be restored, and as an inducement to the Keokuk Municipal Waterworks to do so, the undersigned does hereby undertake and agree to indemnify, exonerate, and save harmless the Board of Waterworks Trustees of the Keokuk Municipal Waterworks, its officers, employees, agents and servants from any and all claims and demands whatsoever that may be made or asserted because of turning on the water in contravention of the Rules of the Keokuk Municipal Waterworks. The undersigned further represents and warrants either:

1. That he or she is the owner (or he or she and members of his or her immediate family are the owners) of all property, both real and personal that might be exposed to water damage or,
2. That he or she is the tenant (or he or she are on the rental lease with tenant whose water is in question) of said property that might be exposed to water damage or,
3. That the persons whose signatures appear here on the appropriate space for "owners" are, together with the undersigned, collectively the owners of all such property.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

\_\_\_\_\_  
Owner Name

\_\_\_\_\_  
Customer Name

\_\_\_\_\_  
Owner Signature

\_\_\_\_\_  
Address

\_\_\_\_\_  
Rental Customer Signature

\_\_\_\_\_  
Telephone Number

\*Please note: This is a one-time waiver for a water service to be restored after it has been disconnected, due to non-pay, without anyone present at the property.

APPLICATION FOR PERMIT  
FOR WORK ON WATER LINES

TO BE COMPLETED BY APPLICANT:

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NO: \_\_\_\_\_

DESCRIPTION OF WORK: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE APPLICATION APPROVED: \_\_\_\_\_

DATE INSPECTED: \_\_\_\_\_

I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND  
STATE THAT THE INFORMATION GIVEN HEREIN IS CORRECT, AND I  
AGREE TO COMPLY WITH ALL KEOKUK MUNICIPAL WATER WORKS RULES  
AND REGULATIONS.

\_\_\_\_\_  
Permittee

\_\_\_\_\_  
Water Works Personnel

cc: Director of Public Works  
Water Works Distribution Supervisor  
m.l.