

505 WATER SERVICE INSTALLATION

505.1 DEFINITION

A service line is comprised of the piping and related appurtenances including the connection installed from the Des Moines Water Works water main to the outlet connection of the first shut off device within the building to be served.

505.2 APPLICATION

Refer to Section 503.

505.3 GENERAL LOCATION REQUIREMENTS

All service lines shall conform to the following requirements:

- 505.3.1 The water service shall normally be installed perpendicular to the main from the tap to the right-of-way line and shall tap in front of and within the projected lot lines of the property to be serviced. (Figures 1-2 & 5-12) (revised 2009)
- 505.3.2 A clearance of not less than 12" shall be maintained between the service line and any pipe, cable, or conduit in the same trench.
- 505.3.3 Service lines shall have a cover, wherever feasible, of not less than 5'. Whenever the local plumbing code conflicts with this section, the plumbing code shall be followed.
- 505.3.4 The water service shall extend through and beyond the outer wall of the building (see Section 509 for meter setting). Where the building has a rear basement or rear cellar only, the service may extend underground beyond the inner foundation wall a maximum of 2' and then may go vertically through the rear basement floor or wall, or extend around the building and enter through the side of the basement wall. (Figure 8)
- 505.3.5 In a building with a poured floor that has no basement, the service shall extend inside the outer wall of the building and into the building at which point it shall go vertical through the floor and a meter setting made. (revised 2008) (Figure 9)

505.3.6 For a building with a crawl space, see Figure 10.

505.3.7 For a building with a standard basement, see Figure 7.

505.4 SIZE OF WATER SERVICE LINES

505.4.1 New or replacement residential service lines shall not be less than 1" inside diameter. Reconnection of existing 3/4" type K copper water service lines from an existing main to a new main shall be allowed. Use of existing 3/4" type K copper water service stubs shall be allowed provided they meet the requirements of these Rules and Regulations. (revised 2007)

505.4.2 Commercial, industrial, and fire service lines shall be properly sized for the required demand but shall be no smaller than that specified for a residential service.

505.5 MATERIAL FOR SERVICE PIPING 2" AND SMALLER (revised 2007)

505.5.1 All water service pipes through 2" shall be type K copper, red brass or PEX pipe as specified in section 505.5.2

505.5.2 PEX SDR 9 160 psi. pipe can be used for 1" – 2" water service installations as follows:

- a. From the tap to the meter inside the premise on water service replacements. If PEX pipe is used PEX shall be installed all the way from the stop box to meter, from the tap to the stop box, or from the tap to the meter. PEX shall not be used for repairs or partial replacements.
- b. New water service installations from the tap to the meter inside the premise provided that the entire service line is installed as one installation.

Type K copper is required for all service lines which run parallel to the street before entering the property. Type K copper is required from the tap to the stop box for all new water service stubs in new developments and all other instances where the water service is stubbed to the stop box. Copper can also be used from the stop box to the meter inside the premise on any service line through 2". (revised 2008)

- 505.5.2.1 PEX pipe shall be installed in casing or bedded with approved backfill material. The minimum requirements for casing shall be SDR 26 PVC or SDR 13.5 HDPE sized to accommodate the service line and tracer wire. Backfill shall be manufactured sand, river sand, or 1/2" pea gravel placed a minimum of 3" below and 4" above the pipe.
- 505.5.2.2 PEX pipe shall be blue in color for all 1 inch installations.
- 505.5.2.3 PEX pipe shall be installed as one continuous piece from the tap to the stop box. Splicing of PEX pipe between stop box and meter inside the building is discouraged and will only be approved under special circumstances.
- 505.5.2.4 PEX pipe shall not be used within 200' of a Leaking Underground Storage Tank or in other areas where the soil may be contaminated. Information on the location of Leaking Underground Storage Tanks may be obtained from the Iowa Department of Natural Resources by following the instructions in Figure 36. (revised 2008)
- 505.5.2.5 Tracer wire shall be installed when PEX pipe is used. The tracer wire shall be installed according to Des Moines Water Works' specifications (Figure 1A, 1B, 1C). Tracer wire shall be #12 solid single strand copper wire with 45 mil linear low-density polyethylene insulation suitable for direct bury. Insulation shall be blue in color. When conduit is used the tracer wire shall be placed inside the conduit. When conduit is not used tracer wire shall be installed along side the pipe and shall be fastened to pipe with zip ties a minimum of every 5 feet.
- 505.5.2.6 PEX pipe shall be stored in a way that prevents damage as a result of crushing or piercing, excessive heat, harmful chemicals, or exposure to sunlight for prolonged periods.

- 505.5.2.7 Joint methods for attaching PEX pipe to fittings shall meet AWWA C 904 Standards and ASTM F1960, F2080, or F1807 Specifications. Fittings shall be installed in accordance with PEX Pipe Manufactures Installation Guidelines and related plumbing codes.
- 505.5.2.8 A tracer wire inspection is required for all PEX service line installations. Contact Des Moines Water Works' Dispatch at 283-8772 when the installation is ready for inspection. (revised 2008)

505.6 SERVICE LINE APPURTENANCES

All water service lines shall include a curb stop or valve between the water main and the property line as follows:

505.6.1 WATER SERVICES 2" IN DIAMETER OR LESS

Service lines 2" in diameter or less shall have a curb stop installed within a stop box located 1' to 6' out from the property line. Stop boxes installed in rural areas shall be installed within these guidelines outside of the drainage ditch areas whenever possible. When the main that the water service is connected to is a private water main on private property, the stop box shall be installed no more than 8' from the edge of the pavement. Where unusual circumstances prevent this location, the curb stop and stop box may be placed in the street but in such event must be installed within a roadway box. The curb stop shall be installed in the water service pipe so that the tee head is parallel with the curb when the water is turned off. The curb stop shall not have a waste opening.

505.6.1.1 CURB STOP/VALVE STANDARD

An unobstructed main shut-off on the water supply line for each customer shall be provided on public property, private property where public access is provided, or another location approved by the Des Moines Water Works. The shut-off shall be located as shown. (Figures 1, 2, and 34)

The shut-off for existing 3/4" service lines and new or existing 1" through 2" services shall consist of a "T" handle, quarter-turn, curb stop and a stainless steel self-centering rod with a stainless steel pin installed within a stop box housing with a 1" upper section and an Erie style lid. (See DMWW Specifications) The "T" handle on the curb stop will be parallel with the curb when the water is turned off. When installed, the curb stop shall not be less than 5' or more than 7' below the surface of the ground.

If the water service connection taps the water main outside of the property line, a general box will be required at a location specified by Des Moines Water Works.

505.6.1.2 STOP BOX STANDARD (CURB BOX)

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. All stop box installations shall be completed in such a manner that the top of the rod is between 12" and 24" below the surface, the lid is level with the surrounding surface, and the stop box does not present a hazard to the public. Stop boxes installed in paved areas shall be installed using a shield which prevents the lid of the stop box from being cast into the concrete. (Figures 1-2 & 14-15) (Revised 2009)

The design of all valves, curb stop boxes and valve boxes must meet the standards of the Des Moines Water Works.

505.6.1.3 New copper service lines 2" or less in diameter shall be one continuous piece of pipe from the corporation stop to the curb stop with no fittings when the service is less than 100' in length. Only one fitting shall be allowed per 100' of pipe.

505.6.2 WATER SERVICES LARGER THAN 2"

For the water services larger than 2" the valve shall be installed on the water service line adjacent to the water main. (Figure 22) The valve shall be installed in a roadway box. (Revised 2009)

505.6.3 Any valves, roadway boxes and precast concrete manhole vaults must have the approval of the Des Moines Water Works.

505.6.4 Curb stop boxes, roadway boxes and precast concrete manhole vaults shall be installed so that they will function properly and so that an access to the shut-off device is maintained. All shall be set vertically so the top is flush with the surrounding surface so as not to be a hazard to the public.

505.6.5 All service lines shall have a shut-off device or valve inside the building where the service enters the building. There shall be no appurtenances between this valve and the main, other than the curb stop or valve as previously described, or when an outside meter is approved. (Figures 1-2)

505.6.6 Tracer wire shall be installed with all water service lines except when the water service line is type K copper or red brass. Tracer wire shall be #12 solid single strand copper wire with 45 mil linear low-density polyethylene insulation suitable for direct bury. Insulation shall be blue in color. The tracer wire shall be installed according to Des Moines Water Works' specifications (see figures 17, 18, 18A, 20, 20A, 24, 26, and 35). (revised 2007)

505.7 COMBINATION SERVICE PIPES

A property requiring a domestic service line and a fire protection service line may be served from a single tap. When a single tap is used, the fire protection service line shall extend straight from the main into the property to a "tee" located outside the property line with valves on the fire and domestic lines in public right-of-way or the service may split immediately inside the building. The fire service shall run straight through the "tee" to a gate valve immediately following the "tee". The domestic shall "tee" off the fire service immediately outside the property line or immediately inside the building and have a shut off valve following the "tee". (Figures 20 & 33) (revised 2009)

505.8 MAINTENANCE OF WATER SERVICES

- 505.8.3 If an existing water service is to be repaired, the materials used for the repair shall be of the type and size specified for new services. If it is determined that half or more of either section of the service, between the main and the curb stop or the curb stop and the building, must be replaced, then that entire section must be replaced with materials as approved for new services and a new stop box complete with stainless steel self-centering rod, stainless steel pin, and Erie style lid must be installed. (See DMWW Specifications) Dissimilar metals may not be used in the repair of a service unless insulators are used.
- 505.8.2 If an existing 2" or smaller curb stop does not meet Section 505.6.1 of these Rules and Regulations, it does not need to be upgraded unless more than half of the service line from the main to the curb stop or from the curb stop to the building is being replaced.
- 505.8.3 If an existing arch pattern stop box, or the rod in an existing arch pattern stop box, must be replaced and the curb stop meets the requirements of Section 505.6.1, a rod and an arch pattern stop box which meet current requirements can be used with the existing curb stop. The rod can be attached to the curb stop using a stainless steel pin or an approved self-attaching coupling.

505.9 PRIVATE WATER MAINS

Private water mains shall not be allowed except under special circumstances as defined within this section. These exceptions must be met or a private water main will not be allowed.

- 505.9.1 General Requirements
- 505.9.1.1 Private water mains shall only be owned by one owner that may be either an association an individual, or a single entity.
- 505.9.1.2 Contractor will be required to submit detailed drawings in the planning phase of the design and as built upon completion of the project.

- 505.9.1.3 Tracer wire shall be required for private water mains. The tracer wire shall be installed according to Des Moines Water Works' specifications. Tracer wire shall be #12 continuous solid wire low density Polyethylene suitable for direct bury 45 mil., 600 volt (fasten to midpoint of each pipe section with plastic tape). Insulation color: blue.
- 505.9.1.4 If there are multiple buildings and some of the buildings are adjacent to public streets and some are not, all of the buildings have the option of tapping the private water main.
- 505.9.1.5 Individual services must meet all other requirements of the Des Moines Water Works' Rules and Regulations.
- 505.9.1.6 The design of the private main must comply with applicable fire and plumbing codes, and Des Moines Water Works' standard specifications. (revised 2007)

505.9.2 TOWNHOMES/CONDOMINIUMS

- 505.9.2.1 Each individual service line from the building to the private main will be the responsibility of each individual family dwelling it serves or of the townhome or condominium association as defined by the association's covenants or by-laws.
- 505.9.2.2 Townhome and condominium complexes where all units are not adjacent to public streets shall be served by a private water main and must meet the general requirements for private water mains. Multiple metering options are available for this scenario. (See metering for townhomes and condominiums in Section 509).

505.9.2.3 Townhomes and condominiums where all units are adjacent to public streets may tap the Des Moines Water Works' main making individual taps for each individual living unit, or install a private water main with one or more taps. (revised 2008)

505.9.3 APARTMENTS

Each individual service line from the building to the water main will be the responsibility of one common owner. (apartment complex owner)

For the purpose of Des Moines Water Works' Rules and Regulations, multiple duplexes/flats owned by one common owner will be considered an apartment.

505.9.3.1 Apartments on property adjacent to a public street shall tap the Des Moines Water Works' main and make individual taps for each individual building owned by the apartment complex owner, or install a private water main with one or more taps.(revised 2008)

505.9.3.2 Apartment complexes on property not adjacent to public streets shall be served by a private water main and must meet the metering requirements for private water mains. Multiple metering options are available for this option. (See metering for apartments in Section 509) (revised 2008)

505.9.4 DUPLEX/FLAT

Duplexes/flats shall not be served through a private water main.

505.9.4.1 Duplexes/flats shall install water service in one of the following ways:

- a. Install individual taps and individual meters for each living unit.

- b. Install one tap and one meter to supply both living units.

505.9.5 MANUFACTURED HOME COMPLEX

505.9.5.1 Homes in a manufactured home complex may be served by a Des Moines Water Works' main or a private water main owned by one common owner of the complex.

505.9.5.2 Manufactured home complexes where the individual homes will be connected to private water mains within in the complex shall be required to install individual services owned by one common owner. These individual service lines shall comply with the requirements of the Des Moines Water Works' Rules and Regulations for individual service lines. (revised 2007)

505.9.6 SHOPPING CENTER/INDUSTRIAL/STRIP MALLS

Private water main owner must also own the individual water service lines.

505.9.6.1 Water Service shall be installed in one of the following ways:

- a. Individual water services from the Des Moines Water Works' main may be installed to each business unit and shall meet all other requirements of the Des Moines Water Works' Rules and Regulations for individual service lines. The individual who owns the property that the service line is beneath shall own the individual service lines. This option allows for individual meters and individual bills for each business unit within the building. No other special requirements are needed.

- b. Private water mains may be installed with individual service lines from the private water main to each business unit. When a private water main is used, one and only one party shall own the service lines. The owner of the private water main shall be the owner of the property that the private water main is installed within. (see metering requirements in Section 509)