

CITY OF INDEPENDENCE, MISSOURI



WATER SERVICE LINE
AND
BACKFLOW PREVENTION
STANDARDS

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IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT

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General Index

<u>General Description</u>	<u>Page No.</u>
FORWARD Forward	1
SECTION 1 Timing and Information Required for Tap Application	2
SECTION 2 Intent of Installation Standards and Requirements	3
SECTION 3 Taps - Water Service Line Connection - Excavation Standards and Requirements	4
SECTION 4 Installation Standards and Requirements for Water Service Lines - Depth and Termination Points	5
SECTION 5 Water Service Line Components - Size and Material Requirements	6 & 7
SECTION 6 Water Service Line Components Parts - Master Water Service Line	8
SECTION 7 Installation Standards and Requirements for Water Service Lines - Conflicts with Sewer Lines	9
SECTION 8 Water Service Line Component Parts - Meter Box, Stop Box, Stop Cock, etc.	10
SECTION 9 Installation Standards and Requirements for Water Service Lines - Alignment of Water Services Line Between City's Main and Premises	11 & 12
SECTION 10 Disconnection of Abandoned Water Service Lines	13
SECTION 11 Notification for Tap	14
SECTION 12 Discontinuance of Service Cross-Connection	15
SECTION 13 Installation Requirements for Backflow Preventer Drawing - Options	16 16-A
SECTION 14 Rules of Department of Natural Resources - Division 60 – Public Drinking Water Program; - Chapter 11 – Backflow Prevention	17 - 20

**General Index
(Cont.)**

<u>General Description</u>	<u>Page No.</u>
EXHIBIT "A" Tap Hole Dimensions for ¾" thru 2" Service Connections	EXA
EXHIBIT "A-1" Polywrap Installation for Service Line	EX A-1
EXHIBIT "B" Tap Hole Dimensions for Large Tap Holes 3" and Larger Service Connections	EXB
DRAWING 1 Typical Water Cross-Section – Domestic Water Service Line	1
DRAWING 2 Meter Box for ¾", 1" and 1-1/4" Service Lines	2
DRAWING 2A Ford Meter Yoke for ¾", 1" and 1-1/4" Service Lines	2-A
DRAWING 3 Meter Vault for 1-1/2" and 2" Service Lines in Traffic Areas	3
DRAWING 3A Meter Vault for 1-1/2" and 2" Service Lines in Non-Traffic Areas	3-A
DRAWING 4 Meter Vault for 3", 4" and 6" Service Lines	4 & 4-2
DRAWING 5 & DRAWING 5-A Meter Vault for Split Service Lines	5 & 5-2
DRAWING 5A & DRAWING 5- A2 Meter Vault for Split Service with Fire Department Connection	5-A & 5-A2
DRAWING 5B Installation of Fire Department Connection in a Meter Vault	5-B
DRAWING 6 Meter Vault for Double Check Detector Check	6
DRAWING 6A Double Check Detector Check Inside Installation	6-A
DRAWING 7 ¾" and 1" Connection for Street Crossing	7
DRAWING 8 Installation Standards and Requirements for Water Service Line – City Main Parallel to Street	8
DRAWING 9 Installation Standards and Requirements for Master Water Service Line	9
DRAWING 10 Installation Standards and Requirements for Water Service Line – Corner Lot	10
DRAWING 11 Installation Standards and Requirements for Water Service Line - City Main Not Parallel to Street	11

General Index
(Cont.)

<u>General Description</u>	<u>Page No.</u>
DRAWING 12 Installation Standards and Requirements for Water Service Line Existing Slab on Grade	12
DRAWING 13 Installation Standards and Requirements for Water Service – Flag or Irregular Shaped Lots	13
DRAWING 13A Curb Valve Replacement Detail – $\frac{3}{4}$ " thru 2" Service Connections	13-A
DRAWING 13B Meter Vault Riser Detail	13-B
DRAWING 13C Meter Well Removal Detail	13-C
DRAWING 14 Typical Water Service with Double Check Backflow Preventer Outside in Pit	14
DRAWING 15 Typical water Service with Double Check Backflow Preventer Inside	15
DRAWING 16 Typical Water Service with Reduced Pressure Principle Backflow Preventer Outside	16
DRAWING 17 Typical Water Service with Reduced Pressure Principle Backflow Inside	17
DRAWING 18 Typical Installation of Backflow Prevention Assemblies	18
DRAWING 19 Residential Lawn Sprinkler with Double Check Backflow Preventer	19
DRAWING 20 Missouri DNR Regulation Clause Regarding Backflow Prevention	20

FORWARD

The City of Independence Water Department is dedicated to helping its customers realize optimum value from its water service. Experience has shown that uniform standards for installation are the best way to accomplish our common goals. These standards are not intended to be restrictive or burdensome, but to assist in expediting service connections and backflow installations. It is, therefore, required that customer's service line installation and backflow comply with these standards.

This booklet is offered to assist architects, engineers, contractors and inspectors in the planning of water service and backflow preventer installations. The City of Independence Water Department is not responsible for the design or installation of customer-owned services and backflow preventers.

No set of rules or instructions will cover all conditions. The Water Department welcomes and encourages all inquiries concerning unusual or special needs of customers.

The Water Department should be contacted about each project as early as possible to provide time for necessary plan review, job checking, scheduling, and proper coordination.

Where new water service installations, backflow installations, additions, or alterations are contemplated, inquiry should be made in advance of design or purchase of equipment. Failure to do so may result in unnecessary costs to the customer for service relocations and possible delay in providing service.

Due to constant progress in the development of materials and methods, some procedures outlined herein may be modified. Upon request, information will be supplied concerning changes and revisions. Persons making regular use of this booklet should maintain contact with the Water Department.

City of Independence Water Department



City of Independence Water Department



SECTION 1

TIMING AND INFORMATION REQUIRED FOR TAP APPLICATION

Taps are made by the City of Independence Water department and only after the proper application and payments are made by the customer or the customer's authorized agent (the authorized agent will be required to have a letter from the owner stating that he/she has the owner's permission to sign up for the water meter and tap) for the tap and service. All applications shall be made at the Water Department office (Engineering Division) at 11610 E. Truman Rd. Request for taps and metered service must be filed in writing at least forty-eight (48) hours in advance of need. As a part of the proper application for a tap, the following data will be required:

1. Subdivision Name
2. Lot Number or description of property and survey
3. Street Name
4. House Number
5. Name of Applicant
6. Name of Property Owner
7. Size of service line to be installed
8. Maximum gpm
9. Permit Application for Opening Street or Right of Way

On water service line connections for any premises other than a single-family residential dwelling or duplex residential dwelling, the application for tap must be preceded or accompanied by four (4) copies of appropriate plans showing proposed premises to be served, service line size, service line, stop cock, meter vault location, and property lines for review by the Water Department's Engineering and Service Divisions for compliance with its Rules, at least two (2) days prior to the need for tap and service. Such plans, prior to submittal to the City, shall have been reviewed and approved by the appropriate fire district or department as to adequacy of fire protection, or if private fire protection is required.



City of Independence Water Department



SECTION 2

INSTALLATION STANDARDS AND REQUIREMENTS FOR WATER SERVICE LINES (Intent of Installation Standards and Requirements)

Installation standards and requirements for service lines require a separate water service line for each meter, in a straight line from the tap at the City's main, through the "stop box" and "meter box" to the premises being served. This arrangement assures a close relationship between the service line and the premises served, and improves the ability to field locate water service line components and read the meter (see Drawing 8).

Water service lines are not owned by the City, thus installation and maintenance responsibility is not that of the City.

All water service line components, such as the tap, stop cock, meter box, and vault, must comply with the provisions of current City specifications and applicable plumbing codes.

A typical cross-sectional view of a domestic water service line supplying a residential or commercial premise is shown on Drawing 1.



City of Independence Water Department



SECTION 3

TAPS

(Water Service Line Connection) (Excavation Standards and Requirements)

The tap excavation at the City's main must be:

- 1) Of approved size, construction and shape to allow city personnel to attach and operate the tapping machine, and
- 2) All excavations and trenching work shall be performed in accordance with current OSHA regulations on Excavations, Trenching, and Shoring. Some of the requirements of these regulations, as well as Department regulations are as follows:
 - 2a) Banks more than five feet high shall be benched. If benching is not possible, approved shoring shall be used.
 - 2b) Excavated material shall be stored at least two feet from the edge of the excavation.
 - 2c) Trenches shall be back-filled up to the edge of the last joint of pipe laid (as needed) to provide easy and safe access for the worker entering and exiting the trench, and to keep open trenches to a minimum.
- 3) Free of mud and water (See Exhibit "A" and Exhibit "B")
 - 3a) Whenever an excavation (including tap holes) is over five feet deep, a minimum of two workers from the Water Department shall be at the job site.
 - 3b) Where employees are required to be in trenches four feet deep or more, ladders or steps shall be provided and located as to provide a means of exit, with no more than 25 feet of lateral travel.

In addition, the exterior portion of the City's main must be cleaned where the tap is to be made.

If the city employee finds any part of the Water Service Line installation not ready, the tap will not be made and the city must be notified again by the plumber or customer of readiness before the tap is rescheduled for a subsequent day. (See Section 11-NOTIFICATION FOR TAP).

An excavation of a size approved by the City must be provided at the City's main, at the tapping point, and the Water Service Line complete with appurtenances, including stop cock and meter box at or near the property line must all be furnished and installed by the owner or authorized agent before the tap will be made and the meter set by the City. (See Exhibit "A" and Exhibit "B")

Under special conditions, tap connections, when approved by the City, may be made by the City prior to the installation of the Water Service Line.



City of Independence Water Department



SECTION 4

INSTALLATION STANDARDS AND REQUIREMENTS FOR WATER SERVICE LINES (Depth and Termination Points)

Before a tap is made, the following must be satisfied and inspected by the City:

1. All water service lines must be installed at least 3-1/2 feet below the surface of the ground (finished grade) at any point.
2. Water service lines, 3/4" and 1" in diameter, shall be extended to a minimum of one foot (1') beyond the far side of the City's main.
3. Water service lines with manifolds and multiple flexible leads for multiple connections to the water main shall be extended so that the manifold is not less than six feet (6') and not more than eight feet (8') from the main and each flexible lead extends one foot (1') beyond the far side of the main.
4. Water service lines of ductile cast iron pipe or rigid copper pipe shall be extended approximately eight feet (8') short of the water main. Following the tapping of the City's main, ductile cast iron or rigid copper water service lines shall be extended and connected by the plumber to the control valve portion of the tap at the City's main.



City of Independence Water Department



SECTION 5

WATER SERVICE LINE COMPONENTS (Size and Material Requirements)

For all new or replacement water service lines, the installation must be in accordance with the requirements of all governmental agencies having jurisdiction.

The minimum water service line requirements for material and construction shall be as follows:

- A. For New or Replacement Water Service Lines (Minimum 3/4" Inside Diameter) Having an Outside Meter Box.
1. Water Service Lines 3/4" and 1"
 - a) From the City's main to the stop cock shall be flexible Type "K" copper.
 - b) From the stop cock to four feet (4') beyond the meter box shall be flexible Type "K" or "L" copper. Also, copper must be used outside the building wall of the premises served, a minimum of ten feet (10').
 2. Water Service Lines Greater Than 1", But Less Than 4"
 - a) From the City's main to the stop cock shall be flexible or rigid Type "K" copper.
 - b) From the stop cock to four feet (4') beyond the meter box shall be flexible or rigid type "K" or "L" copper. Also, copper must be used outside the building wall of the premises served, a minimum of ten feet (10').
 3. Water Service Lines 4" and Greater
 - a) From the City's main to six feet (6') beyond the meter box must be a minimum of Class 52 ductile iron pipe conforming to applicable AWWA standards.
 4. On copper Water Service Lines, joints (excluding joints on pre-purchased "meter setters") shall be either flared, compression, or silver soldered. Use of any other type of joint is prohibited, unless specifically authorized in writing by the City.

SECTION 5 - WATER SERVICE LINE COMPONENTS (Cont.)

- B. For replacement water service lines with acceptable inside meter settings, materials shall be the same as for new water service lines, except the copper or ductile iron pipe shall extend from the City's main to the meter inside the premises served.

- C. For water service lines having no meter box (Private Fire Protection Service Lines), materials shall be the same as described in A.2.a), A.2.b), and A.3. above, except that the copper or ductile iron pipe must extend from the City's main to the premises served. If a detector check valve assembly is provided in the vault as part of the private fire protection service line, then:
 - 1. For private fire protection service lines 4" or greater, AWWA C900 plastic pipe can be used in lieu of ductile iron pipe from six feet (6') beyond the vault to the premises, or
 - 2. For private protection service lines less than 4", material other than copper can be used from six feet (6') beyond the vault to the premises, provided such material is in compliance with local plumbing codes.



City of Independence Water Department



SECTION 6

WATER SERVICE LINE COMPONENT PARTS (Master Water Service Line)

Where installation of a privately owned “Master Water Service Line” is permitted by the City’s Rules, the component or material requirements for the “Master Water Service Line” from the connection of the City’s main throughout its entire length are as follows:

1. For a size 3/4” or 1” – flexible type “K” copper is required.
2. For sized greater than 1”, but less than 4” – flexible or rigid type “K” or “L” copper is required.
3. Sizes 4” and greater – a minimum of Class 52 Ductile Iron pipe is required, conforming to applicable AWWA Standards.
4. In addition to the control valve portion of the tap at the City’s main, a stop cock is required at or near the property line where the “Master Water Service Line” enters the parcel or property (see Drawing 9).



City of Independence Water Department



SECTION 7

INSTALLATION STANDARDS AND REQUIREMENTS FOR WATER SERVICE LINES (Conflicts with Sewer Lines)

Water service lines shall be laid in a trench separate from sewer or building drainage trenches. The water service line and sewer trenches are to be horizontally separated by at least ten feet (10'). Where construction of separate trenches is not feasible, and approval is obtained from the appropriate governmental authority, the minimum requirement shall be to install the water service line on an undisturbed earth shelf on one side of the sewer or building drainage trench at such an elevation that the bottom of the water service line is at least eighteen (18) inches above the top of the sewer.

Where the water service line crosses a sanitary sewer main, a minimum of eighteen (18) inches vertical clearance must be provided either above or below the sewer, unless approved in writing by the appropriate governing authority.

The water service line trench from the City's main to the premises shall not be backfilled until after the tap is made, water turned on and, at the City's option, the City has made an inspection to ensure compliance with its Rules.



City of Independence Water Department



SECTION 8

WATER SERVICE LINE COMPONENT PARTS (Meter Box, Stop Box, Stop Cock, etc.)

When a meter (up through 1" in size) is to be installed outside of the building in a meter box, a tee head "angle valve" of bronze material and a design acceptable to the City shall be installed on the inlet side of an integral part of each yoke setting. For meters greater than 1", a water shutoff gate valve shall be installed in the meter box before and after the meter. In addition, on all service line installations, a "stop cock" of a material and design acceptable to the City (2" and smaller must be bronze material; larger than 2" must be gray or ductile cast iron material) complete with stop box shall be installed in the water service line located accessibly on the property line or in public right-of-way (subject to plumbing code requirements) near the right-of-way line.

If a basement meter setting exists, then a "stop cock" of material and design acceptable to the City, complete with stop box, shall be installed in the service line, located accessibly on the property line or in public right-of-way (subject to plumbing code requirements) near the right-of-way line.

A cast iron extension-type stop box of a design acceptable to the City shall be placed over each stop cock so that the stop cock is readily accessible for turning off or on by employees of the City.

The stop cock, of a design acceptable to the City, must be installed in a separate stop box and located in accordance with the applicable plumbing code but in no event shall the location be more than three feet (3') from the property or easement line, unless otherwise approved by the City.

The control valve portion of a tap at the City's main, which is also required, is not a substitute for the stop cock.

In every water service line installation, a stop and waste valve of a design acceptable to the City shall be installed in the water service line at or immediately beyond the point where the water service line enters the building wall of a premises, and also at a point such that water can be drained out of the pipes in the building. The stop and waste valve must be kept accessible at all times for readily turning water off or on by the occupant of the building or by City's employees.



City of Independence Water Department



SECTION 9

INSTALLATION STANDARDS AND REQUIREMENTS FOR WATER SERVICE LINES (Alignment of Water Service Line Between City's Main and Premises)

The installation arrangements for all water service lines shall be as follows:

CONDITION "A"

City's main or master water service line is parallel (or nearly parallel) to the edge of the street and the face of the premises or City's main is located in an easement where no street exists.

1. The "tap", "stop cock and stop box" and "meter box" should be in a straight line perpendicular to the City's main or master water service line and in front of the premises served (see Drawings 8, 9 and 10).
2. The water service line from the "tap" to the premises should be in a straight line perpendicular to the City's main or master water service line and the face of the premises served.

CONDITION "B"

City's main not parallel to edge of street nor the face of the premises.

1. The "tap", "stop cock" and "meter box" should be in a straight line perpendicular to the edge of the street and in front of the premises served (see Drawing 11).
2. The water service line portion from the "meter box" to the premises should be in a straight line and, where possible, perpendicular to the premises or, as an alternate, be parallel to the side of the front area of the premises served.

**SECTION 9 - INSTALLATION STANDARDS AND REQUIREMENTS
FOR WATER SERVICE LINES (Cont.)**

CONDITION “C”

For an existing building constructed on a concrete slab foundation, the water service line may be installed at right angles to the City’s main and then be allowed to pass the building in a line parallel to the side of the building, inside the property line and as close to the building as practicable, and then turn at right angle to enter the building through the side (see Drawing 12). In case such procedure does not allow the water service line to be installed as specified herein, special instructions or variance must be obtained by the plumber or their authorized representative from the Engineering or Service Division of the Water Department.

CONDITION “D”

Service to flag or irregular shaped lots shall be allowed if, in the opinion of the City, such service would not circumvent the location of a proper water main extension under Rule 22.

The water service line to a flag or irregular shaped lot must comply with the following (see Drawing 13):

1. The premises to be served must be addressed on the same street or road from which service is to be taken.
2. The driveway entrance of the premises to be served must be on land owned in fee by the owner.
3. The driveway entrance of the premises to be served must have frontage adjacent to the water main.
4. The meter pit and service line to the premises being served must be installed within twenty (20) feet of the center line of the driveway entrance.
5. Identifying objects such as mail boxes or a sign displaying names or addresses must be permanently displayed adjacent to the driveway entrance.



City of Independence Water Department



SECTION 10

DISCONNECTION OF ABANDONED WATER SERVICE LINES

Abandoned or unused Water Service Lines must be disconnected from the “tap” at the City’s main, and the tap(s) must be destroyed. For a corporation cock(s), destruction shall be by capping off the outlet threads with a galvanized cap on the threads of the corp (where) the service line connects City’s water main) or by sawing off the outlet threads. Abandoned taps, other than brass corporation cocks, shall be destroyed as directed by the City.

This disconnection and tap destruction shall be accomplished by the owner of the premises or the owner’s authorized agent as directed by the City. At the option of the City the destruction of the tap may be done by others. A new connection will not be made to service the same premises or a new premises on the same parcel of property or another premises on another parcel of property until all of the abandoned or unused Water Service Lines to the premises, referred to in the paragraph above are disconnected, the tap(s) destroyed, and is inspected by the City of Independence Water Department.



City of Independence Water Department



SECTION 11

NOTIFICATION FOR TAP

The Water Department Service Division must be notified when the plumber is ready for the tap to be made. This notification is assurance to the Water Department that the plumber has substantially complied with all the current rules and specifications for installing a service line. Completion of the tap does not constitute final approval of the service installation.

The tap will normally be made by the Water Department Service Division forty-eight (48) hours after notification, or sooner if possible.

If the tapper finds the tap hole or service line is not in compliance with current rules and specifications, it is the plumber's responsibility to complete the necessary work and to re-advise the Water Department of readiness. Upon being re-adviced of readiness, the Water Department will reschedule the tap request.

If the Water Department receives a second notice that a specific tap is ready and, upon getting to the site to make the tap, finds that it is not ready, a fifteen dollar (\$15.00) fee will be charged to the plumber or customer for that trip and for every subsequent rescheduled trip. Such charges must be paid before the tap is made.

All taps 4" and larger will be inspected prior to the scheduling of the tap being made.



City of Independence Water Department



SECTION 12

DISCONTINUANCE OF SERVICE CROSS-CONNECTION

No physical connection will be allowed between either a water service line from a main of the City or the internal plumbing of a premises and any pipe, tank, well, cistern, or other appurtenance which contains polluted or otherwise questionable substances or to a water supply not approved by the Missouri Department of Natural Resources. It shall be unlawful for any person to install or maintain any potable water supply piping which fails to comply with Sections 1001, 1002, or 1003 of the Uniform Plumbing Code, or the standards set out in Title 10, Division 60, Chapter 11 of the Missouri Code of State Regulations (10 SCR 60-11.010, et seq.). Whenever there is a conflict between the Uniform Plumbing Code and 10 CSR 60-11.010, et seq. piping, the more stringent requirement shall apply.



City of Independence Water Department



SECTION 13

INSTALLATION REQUIREMENTS FOR BACKFLOW PREVENTER

The following items are the installation requirements for a backflow preventer:

A. General Information

All backflow preventers will be installed with the following points in mind:

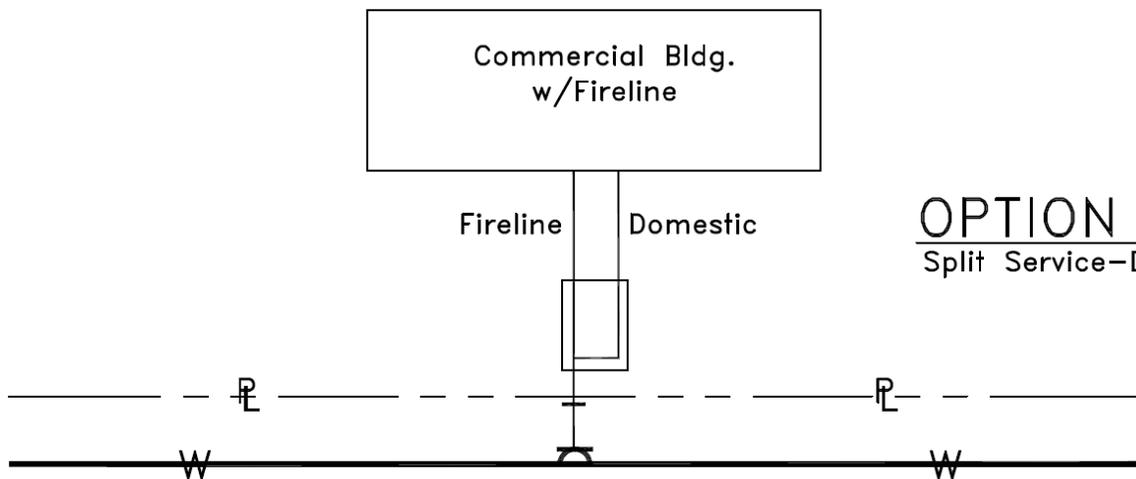
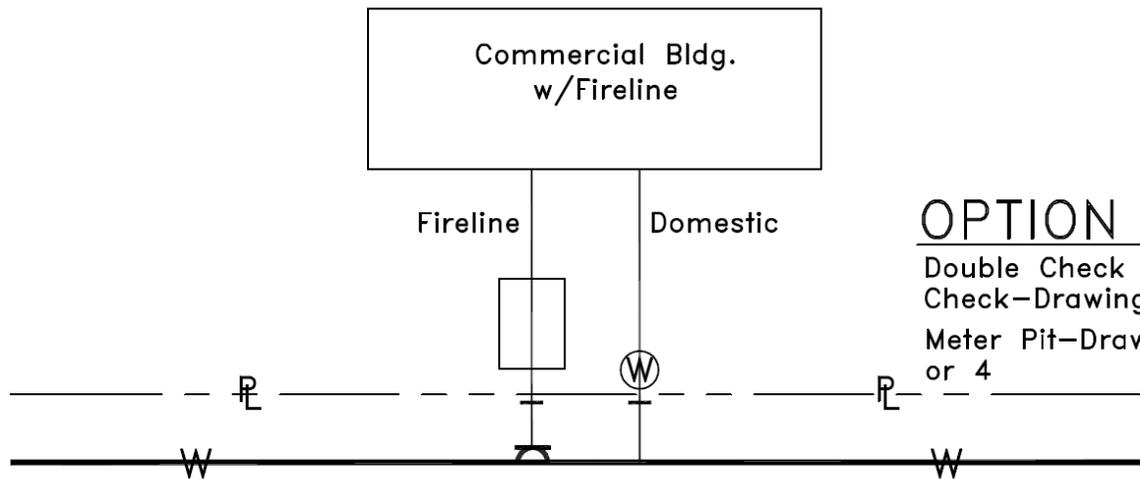
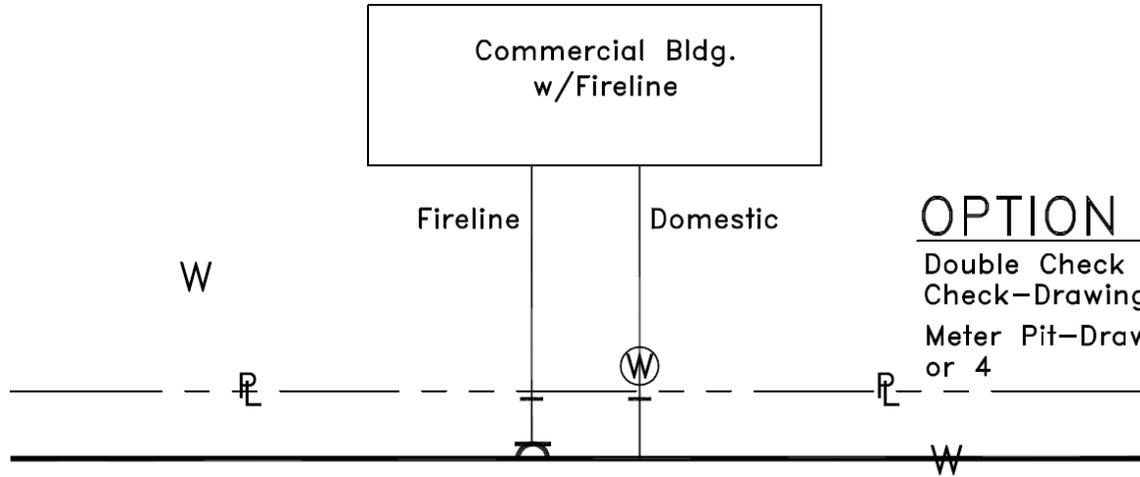
1. No bypass piping will be approved or allowed without the same degree of backflow protection installed on bypass (see Drawing 18).
2. All backflow preventers will be installed before any tees or wyes, in a horizontal and upright position. The only exception to this requirement is on a lawn sprinkler system (see Drawing 19).
3. All backflow preventers will be tested within thirty (30) days of the initial tap, or of installation date, by a State certified tester.
4. Backflow preventers will be installed at a location that allows easy access to the assembly maintenance and testing and that will not subject the assembly to excessive heat and freezing.

B. Reduced Pressure Principle Assemblies

1. Cannot be installed inside a vault that is below grade.
2. Must be installed with a minimum of 12" between the pressure differential relief valve port and the floor (see Drawings 16 and 17).
3. Will have no plugs or additional piping affixed to the pressure differential relief valve port (except for specifically-designed funnel apparatus available from the manufacturer).

C. Double Check Valve Assemblies

1. Will be allowed to be installed in a pit or inside the building (see Drawings No. 6-A, 14, 15 and 19) See page 16-A.





City of Independence Water Department



SECTION 14

RULES OF DEPARTMENT OF NATURAL RESOURCES (Division 60 – Public Drinking Water Program; Chapter 11 – Backflow Prevention)

(see attached pages)

**Title 10—DEPARTMENT OF
NATURAL RESOURCES
Division 60—Public Drinking Water
Program
Chapter 11—Backflow Prevention**

10 CSR 60-11.010 Prevention of Backflow

PURPOSE: This rule establishes requirements for protection of public water systems from introduction of contaminants by backflow.

(1) **Applicability, Exemptions and Compliance Dates.**

(A) **Applicability.** This rule applies to all community water systems.

(B) **Exemptions.**

1. This rule does not apply to customer facilities used solely for residential purposes unless a cross-connection is specifically identified or the rule indicates otherwise.

2. The department may issue an exemption from the requirements of paragraphs (3)(A)1. and (3)(B)1. of this rule if the customer can demonstrate to the department, the local governmental authority (if one exists) and the supplier of water that the activities taking place at the customer's facility and the materials used in connection with these activities or stored on the premises cannot endanger the health of customers or degrade the water quality of the public water system should backflow occur, or that any potential risk posed by these materials or activities is isolated from the public water system. Those customers granted an exemption in accordance with this paragraph shall report to the supplier of water any proposed change in process, plumbing or materials used or stored at the exempted facility at least fourteen (14) days prior to making the change.

3. Any exemption granted under paragraph (1)(B)2. of this rule shall be void if the supplier of water, local governmental authority (if one exists) or the department determines that the customer facility has become an actual or potential backflow hazard, or if the customer fails to provide notice at least fourteen (14) days prior to making any change in process, plumbing or materials used or stored at the facility.

(2) **Cross-Connections.** No customer shall cause or allow the construction or maintenance of an unprotected cross-connection.

(3) **Backflow Control by Containment.**

(A) **Class I Backflow Hazards.**

1. A Class I backflow hazard presents an actual or potential health hazard to customers of the public water system should backflow occur. The customer or the customer's autho-

rized representative shall construct a department-approved air-gap separation or install a reduced pressure principle backflow prevention assembly on the customer service line, in accordance with section (4) of this rule, when—

A. The supplier of water or local governmental agency (if one exists) requires protection from an actual or potential Class I backflow hazard at any facility;

B. Modification is made to the customer water system at an existing facility which is designated an actual or potential backflow hazard in paragraph (3)(A)2. of this rule. If an addition or modification requiring a separate customer service line is made to an existing facility, the new service line as well as the existing customer service line shall be equipped with department-approved backflow prevention assemblies;

C. A new customer service line connection is made to a facility listed in paragraph (3)(A)2. of this rule; or

D. A backflow incident occurs which introduces a contaminant into the public or customer water system which may create a health hazard.

2. Following is a list, not all inclusive, of actual or potential Class I backflow hazards:

A. Aircraft and missile manufacturing plants;

B. Automotive plants including, but not limited to, those plants which manufacture motorcycles, automobiles, trucks, recreational vehicles and construction and agricultural equipment;

C. Potable water dispensing stations which are served by a public water system;

D. Beverage bottling plants including, but not limited to, dairies, soft drink bottlers, and breweries;

E. Canneries, packing houses and reduction plants;

F. Car washes;

G. Chemical, biological and radiological laboratories including, but not limited to, those in high schools, trade schools, colleges, universities and research institutions;

H. Hospitals, clinics, medical buildings, autopsy facilities, morgues, mortuaries, veterinary facilities, dental clinics, and other medical facilities;

I. Metal or plastic manufacturing, fabrication, cleaning, plating or processing facilities;

J. Plants manufacturing paper and paper products;

K. Plants manufacturing, refining, compounding or processing fertilizer, film, herbicides, natural or synthetic rubber, pesticides, petroleum or petroleum products,

pharmaceuticals, radiological materials or any chemical which would be a contaminant to the public water system;

L. Commercial facilities that use herbicides, pesticides, fertilizers or any chemical which would be a contaminant to the public water system;

M. Plants processing, blending or refining animal, vegetable or mineral oils;

N. Commercial laundries and dye works;

O. Sewage, storm water and industrial waste treatment plants and pumping stations;

P. Waterfront facilities including piers, docks, marinas and shipyards;

Q. Industrial facilities which recycle water;

R. Restricted or classified facilities or other facilities closed to the supplier of water or the department;

S. Fire sprinkler systems using any chemical additives;

T. Auxiliary water systems, including but not limited to alternative water sources;

U. Irrigation systems with facilities for injection of pesticides, herbicides or other chemicals or with provisions for creating back pressure. The backflow assembly may be installed between the customer service line and the irrigation system;

V. Portable tanks for transporting water taken from a public water system;

W. Facilities which have pumped or repressurized cooling or heating systems that are served by a public water system; and

X. Facilities which contain any boiler system and are served by a public water system. The backflow assembly may be installed on the water service line to the boiler.

(B) **Class II Backflow Hazards.**

1. A Class II backflow hazard threatens to degrade the water quality of the public water system should backflow occur. The customer or the customer's authorized representative shall install, as minimum protection for Class II backflow hazards, a department-approved double check valve assembly on the customer service line in accordance with section (5) of this rule when—

A. The supplier of water or local governmental agency (if one exists) requires protection from an actual or potential Class II backflow hazard at any facility;

B. Modification is made to the customer water system at an existing facility which is designated an actual or potential backflow hazard in paragraph (3)(B)2. If an addition or modification requiring a separate customer service line is made to an existing facility, the new service line, as well as the existing customer service line, shall be



equipped with department-approved backflow prevention assemblies;

C. A new customer service line connection is made to a new facility listed in paragraph (3)(B)2.; or

D. A backflow incident occurs in any situation described in paragraph (3)(B)2. or subsection (3)(C).

2. Following is a list, not all inclusive, of actual or potential Class II backflow hazards:

A. Tanks to store water from the public water system for fire fighting only, unless the tanks meet the requirements of the department for construction to maintain bacteriological quality of the water;

B. Fire sprinkler systems not using chemical additives. This only applies to new fire sprinkler systems or fire sprinkler systems scheduled for modifications;

C. Irrigation systems without facilities for injection of pesticides, herbicides or other chemicals. The backflow assembly may be installed between the customer service line and the irrigation system; and

D. Cross-connections that could permit introduction of contaminants into the public or customer water system and create a nuisance, be aesthetically objectionable or cause minor damage to the public water system or its appurtenances.

(C) Customer facilities not designated a backflow hazard by subsection (3)(A) or (B) may be designated a Class I or Class II backflow hazard by written notification from the supplier of water or the department to the customer. The notice shall specify the nature of the customer activity which necessitates designation of the facility as a backflow hazard, the type of backflow protection required and the date by which the customer shall install or construct this assembly on the customer service line to the facility.

(4) Department-Approved Backflow Prevention Assemblies.

(A) The department shall maintain a current list of approved backflow prevention assemblies and shall make this list available to the public upon request.

(B) The discharge pipe of an approved air-gap shall terminate a minimum of two (2) pipe diameters of the discharge pipe above the flood level rim of the receiving vessel; in no case shall the distance be less than one inch (1").

(C) Only those models of double check valve assemblies and reduced pressure principle backflow prevention assemblies which are approved by the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California and are

on the approved list maintained by the department are acceptable.

(5) Standards of Construction and Installation.

(A) Reduced pressure principle backflow prevention assemblies shall be installed with no plug or additional piping affixed to the pressure differential relief valve port (except for specifically-designed funnel apparatus available from the manufacturer) and with the pressure differential relief valve port a minimum of twelve inches (12") above floor level. Additionally, the assembly shall be installed at a location where any leakage from the pressure differential relief valve port will be noticed, that allows easy access to the assembly for maintenance and testing, and that will not subject the assembly to flooding, excessive heat or freezing.

(B) All double check valve assemblies shall be installed at a location that allows easy access to the assembly for maintenance and testing and that will not subject the assembly to excessive heat or freezing.

(C) Backflow prevention assemblies shall be installed on the customer water system as close as possible to the point of service connection and prior to any other connection or branch line. If it is not possible to install the backflow prevention assembly as described, then installation shall be at the approval of the department.

(D) No bypass piping shall be allowed around a backflow prevention assembly unless the bypass is equipped with the same degree of backflow prevention protection.

(6) Backflow Prevention Assembly Testing and Inspection.

(A) All backflow prevention assemblies shall be inspected and tested by testers certified in accordance with the requirements and procedures in 10 CSR 60-11.030.

(B) Air-gaps shall be inspected each year by a date which is no later than thirty (30) days past the anniversary date established by the supplier of water to ensure that they continue to meet the requirements of subsection (4)(A).

(C) Reduced pressure principle backflow prevention assemblies shall be tested by a certified backflow prevention assembly tester each year by a date which is no later than thirty (30) days past the anniversary date established by the supplier of water to ensure that—

1. The pressure differential relief valve operates to maintain the zone between the two (2) check valves at least two pounds per square inch (2.0 psi) less than the supply pressure;

2. The #2 check valve is leak tight against reverse flow under all pressure differentials; and

3. The static pressure drop across the #1 check valve is at least three pounds per square inch (3.0 psi) greater than the pressure differential between the supply pressure and the pressure in the zone required to open the pressure differential relief valve.

(D) Double check valve assemblies shall be tested each year by a certified backflow prevention assembly tester by a date which is no later than thirty (30) days past the anniversary date established by the supplier of water to ensure that both the #1 and #2 check valves maintain at least one pound per square inch (1.0 psi) differential in the direction of flow and are leak tight against reverse flow under all pressure differentials.

(E) All certified backflow prevention assembly testers shall report to the appropriate governmental authority (if one exists), the supplier of water, the customer, and, if requested, the department the results of inspections or tests conducted in compliance with this section (6). Reports of tests shall contain the signature of the certified backflow prevention assembly tester attesting to the compliance (or noncompliance) of the assembly with established operational requirements. Routine reports shall be submitted within thirty (30) days after making the inspection or test. Falsification of testing or inspection information shall be grounds for removing the tester from the list of testers authorized to operate in Missouri.

(7) Customer Responsibilities.

(A) The customer shall furnish, install and maintain in working order at all times any backflow prevention assembly required by this rule.

(B) To ensure that each backflow prevention assembly required by this rule is in working order, the customer shall have each assembly inspected and tested by a certified backflow prevention assembly tester at the time of construction or installation and at the frequency specified in section (6).

(C) The customer shall permit access to the premises by the certified backflow prevention assembly tester, supplier of water and department representatives, at reasonable times and upon presentation of identification, for inspection of the customer water system or testing of backflow prevention assemblies installed in accordance with this rule.

(8) Responsibilities of the Supplier of Water.

(A) Because backflow may cause a health hazard through transmission of contaminants via the public water system, the supplier of

water shall remove the water meter or otherwise sever the public water system from the customer service line serving a facility when the supplier of water—

1. Has knowledge that the customer is causing or maintaining an unprotected cross-connection;

2. Has knowledge that the customer is failing or refusing to proceed without delay to correct any violation of the provisions of this rule after having been notified to do so;

3. Is so ordered by the appropriate local governmental authority (if one exists); or

4. Is so ordered by the department because of violation of any provision of this rule by the customer.

(B) The supplier of water shall retain records of the reports of inspections, tests and repairs on backflow prevention assemblies for a period of five (5) years.

(C) The supplier of water may develop, for use within his/her service area, written procedures to implement the provisions of this rule. In developing the procedures, the supplier of water will be permitted to take into account existing backflow prevention programs and incorporate ordinances, regulations or requirements of appropriate local governmental authorities. However, the written procedures shall be no less stringent than the provisions of this rule. The department will prepare and make available on request the appropriate forms needed to assist the supplier of water in implementing the provisions of this rule. The supplier of water may submit the procedures to the department for approval.

(D) The supplier of water shall record the date of the initial inspection or test of backflow prevention assemblies required under subsections (3)(A) and (3)(B) and shall require that an annual inspection or test report be submitted by a certified backflow prevention assembly tester. The supplier of water shall establish an annual anniversary date for these inspection or test reports. If these reports are not received by the supplier of water on or before sixty (60) days following this anniversary date, the supplier of water promptly shall notify the customer, the local governmental agency (if one exists) and the department.

(E) The supplier of water shall notify the department within forty-eight (48) hours whenever a cross-connection problem has occurred which resulted in contamination of the public water system.

AUTHORITY: section 640.100, RSMo (Cum. Supp. 1996). Original rule filed May 4, 1979, effective Sept. 14, 1979. Rescinded and readopted: Filed July 11, 1986, effective*

Jan. 1, 1987. Amended: Filed Dec. 4, 1990, effective July 8, 1991. Amended: Filed Jan. 2, 1997, effective Dec. 29, 1997.

**Original authority 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1995, 1996.*

10 CSR 60-11.030 Backflow Prevention Assembly Tester Certification

PURPOSE: This rule establishes certification and recertification requirements for backflow prevention assembly tester training programs.

(1) Applicability. This rule applies to all persons seeking certification or recertification as backflow prevention assembly testers. A certified backflow prevention assembly tester shall inspect, test and report on backflow prevention assemblies in accordance with applicable requirements in 10 CSR 60-11.010.

(2) Certification Requirements.

(A) Any person seeking to be a certified backflow prevention assembly tester shall—

1. Satisfactorily complete written and performance (hands on) examinations (including questions specific to Missouri backflow prevention rules) provided by the American Backflow Prevention Association (ABPA) Tester Certification Program or the American Society of Sanitary Engineering (ASSE); and

2. Ensure that ABPA or ASSE notifies the department that the tester has passed the examinations. The department shall not be held liable for any failure of ABPA or ASSE to notify the department that a person has passed the written and performance examinations.

(B) Certification shall be valid for three (3) years. Certification may be renewed in accordance with section (4) of this rule.

(C) Submittal of false information shall be grounds for denying or revoking certification.

(3) Examination Schedule. The department shall, in consultation with training providers, prepare an annual schedule of dates and locations of backflow prevention assembly tester examinations. The department shall make this schedule available to backflow prevention assembly tester training providers and to any interested person upon request. (Training providers may offer additional examinations, at their discretion.)

(4) Recertification Requirements.

(A) Any certified tester seeking to be recertified shall—

1. Satisfactorily complete ABPA's or ASSE's recertification requirements, includ-

ing examination questions on Missouri backflow prevention rules; and

2. Ensure that ABPA or ASSE notifies the department that the tester has satisfactorily completed the requirements. The department shall not be held liable for any failure of ABPA or ASSE to notify the department that a tester has satisfactorily completed the recertification requirements.

(B) Recertification shall be valid for three (3) years.

(C) Submittal of false information shall be grounds for denying or revoking recertification.

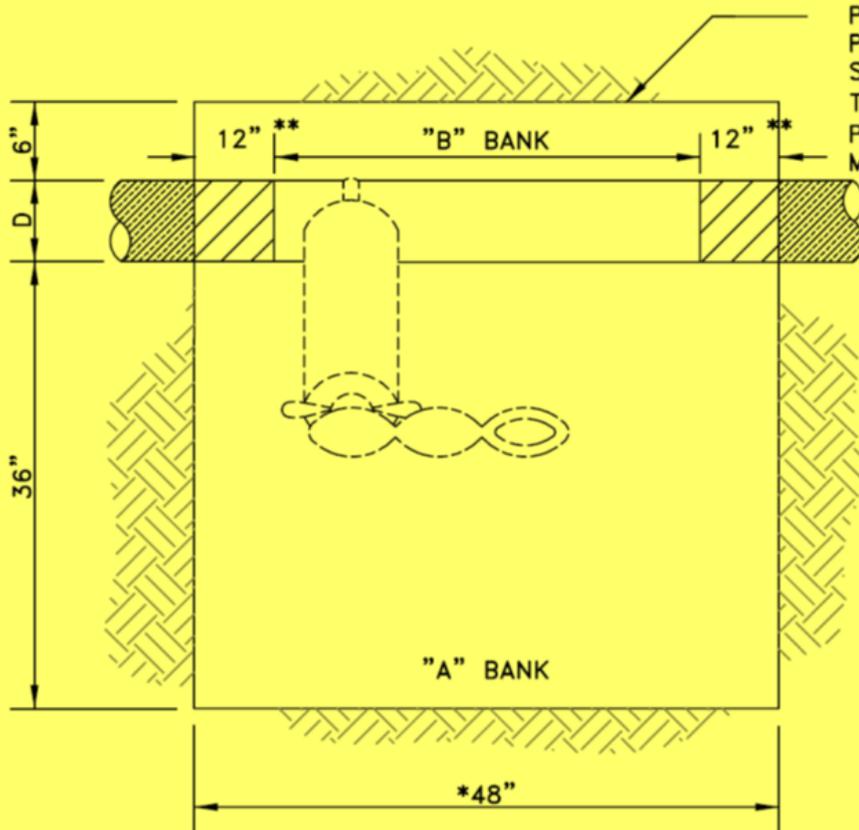
(D) Any certified tester who fails the ABPA or ASSE examination within three (3) years of the effective date of this rule shall, upon request and submission of proof having taken and failed the examination, be granted a one (1)-time one hundred twenty (120)-day extension of his/her certification. The tester shall submit, or ensure that the instructor or testing organization submits, to the department a copy of the course roster and test results or other documentation which in the opinion of the department are equivalent.

(5) Reciprocity. Any backflow prevention assembly tester listed with ABPA or ASSE may be certified by the department upon notification from ABPA or ASSE that the tester has satisfactorily completed an examination on Missouri backflow prevention rules.

AUTHORITY: section 640.100, RSMo (Cum. Supp. 1996). Original rule filed Jan. 2, 1997, effective Dec. 29, 1997.*

**Original authority 1939, amended 1978, 1981, 1982, 1988, 1989, 1992, 1993, 1945, 1996.*

INDEPENDENCE WATER DEPARTMENT



PLUMBER TO REPAIR ALL DAMAGED PLOYWRAP PRIOR TO TAP BEING MADE SEE EX A-1. PLUMBING CONTRACTOR TO INSTALL TWO (2) LAYERS OF POLYETHYLENE TAPE 12" IN WIDTH ON MAIN WHERE TAP IS TO BE MADE.

NOTE:
 BOTTOM OF TAP HOLE TO BE AT LEAST 6" BELOW BOTTOM OF MAIN FOR ENTIRE WIDTH AND REASONABLY LEVEL. THE EXCAVATION SHALL NORMALLY BE AT LEAST 42" DEEP.

THE "B" BANK MUST BE 6" FROM THE MAIN FOR ENTIRE WIDTH.

GENERAL RULES

1. "D" DIMENSION (MAIN SIZE) IS VARIABLE.
2. ALL EXCAVATIONS AND TRENCHING WORK SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA REGULATIONS ON EXCAVATIONS, TRENCHING AND SHORING. SOME OF THE REQUIREMENTS OF THESE REGULATIONS, AS WELL AS DEPARTMENT REGULATIONS ARE AS FOLLOWS:
 - 2A. BANKS MORE THAN 5' HIGH SHALL BE BENCHED. IF BENCHING IS NOT POSSIBLE, APPROVED SHORING SHALL BE USED.
 - 2B. EXCAVATED MATERIAL SHALL BE STORED AT LEAST TWO FEET FROM THE EDGE OF THE EXCAVATION.
 - 2C. TRENCHES SHALL BE BACKFILLED UP TO THE EDGE OF THE LAST JOINT OF PIPE (AS NEEDED) TO PROVIDE EASY AND SAFE ACCESS FOR THE WORKER ENTERING AND EXITING THE TRENCH, AND TO KEEP OPEN TRENCHES TO A MINIMUM.
3. WHENEVER AN EXCAVATION (INCLUDING TAP HOLES) IS OVER 5' DEEP, A MINIMUM OF 2 WORKERS FROM THE WATER DEPARTMENT SHALL BE AT THE JOB SITE.
 - 3A. WHERE EMPLOYEES ARE REQUIRED TO BE IN TRENCHES 4' DEEP OR MORE, LADDERS OR STEPS SHALL BE PROVIDED AND LOCATED AS TO PROVIDE A MEANS OF EXIT WITH NO MORE THAN 25' OF LATERAL TRAVEL.
- *4. FOR MULTIPLE TAPS FOR LARGER SERVICES ADD 18" OF WIDTH ALONG THE MAIN FOR EACH ADDITIONAL TAP.
5. IF PIPE BELL IS EXPOSED OR OTHER OBSTACLES ARE ENCOUNTERED, CALL 325-7664 FOR REVIEW BEFORE PROCEEDING.
6. TAP HOLE MUST BE FREE OF WATER AND MUD TO ALLOW FOR SAFE HANDLING OF MATERIALS AND TAPPING MACHINE. ALSO CLEAN ENOUGH TO ALLOW INSTALLATION OF OR REPAIR TO EXISTING POLYWRAP.
7. TAPS WILL NOT BE MADE BEFORE SERVICE IS INSTALLED.
- **8. IF PIPE IS POLYWRAPPED AND DAMAGED DURING EXCAVATION PLUMBING CONTRACTOR WILL REPAIR POLYWRAP BEFORE TAP WILL BE MADE.
9. IF PIPE IS NOT POLYWRAPPED, PLUMBING CONTRACTOR WILL POLY WRAP ALL EXPOSED PIPE BEFORE TAP WILL BE MADE.

IN ADDITION, THE EXTERIOR PORTION OF THE CITY'S MAIN MUST BE CLEANED WHERE THE TAP IS TO BE MADE. IF THE CITY EMPLOYEE FINDS ANY PART OF THE WATER SERVICE LINE INSTALLATION NOT READY, THE TAP WILL NOT BE MADE AND THE CITY MUST BE NOTIFIED AGAIN BY THE PLUMBER OR CUSTOMER OF READINESS BEFORE THE TAP IS RESCHEDULED FOR A SUBSEQUENT DAY.

AN EXCAVATION OF A SIZE APPROVED BY THE CITY MUST BE PROVIDED AT THE CITY'S MAIN AT THE TAPPING POINT. THE WATER SERVICE LINE, COMPLETED WITH ALL APPURTENANCES INCLUDING STOP COCK AND METER BOX AT OR NEAR THE PROPERTY LINE, MUST ALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR BEFORE THE TAP WILL BE MADE.

TAP HOLE DIMENSIONS FOR 3/4" THRU 2" SERVICE CONNECTIONS

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

EXHIBIT "A"

APPROVED BY: DR.

DRAWN BY: SM.

DATE: 01/03/2007

*SUBJECT TO REVISION WITHOUT NOTICE

EXA



Plumber to wrap two or three layers of poly tap completely around the pipe where the tapping machine will be placed.



City to mount the tapping machine on the taped area and make the tap(s) directly through the tape and polywrap. Install corporation stop.



Plumber to inspect the entire area for damage and repair any damaged polywrap if necessary.



Plumber to wrap copper service line within three (3) feet of the pipe with polyethylene.

POLYWRAP INSTALLATION FOR SERVICE LINE

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. EXA-1

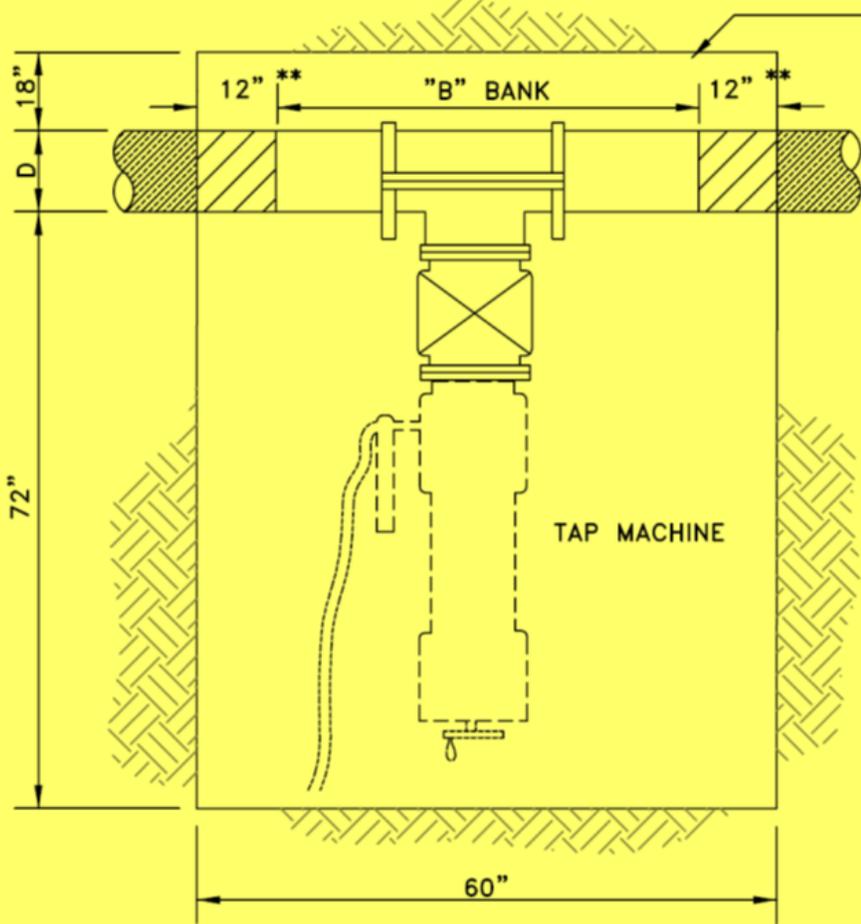
APPROVED BY: SM.

DRAWN BY: AM.

DATE: 11/14/2007

EX
A-1

INDEPENDENCE WATER DEPARTMENT



WATER DEPARTMENT WILL INSTALL NEW POLYWRAP ONCE TAP IS MADE.

NOTE:
 BOTTOM OF EXCAVATION TO BE AT LEAST 18" BELOW BOTTOM OF PIPE AND REASONABLY LEVEL. THE EXCAVATION SHALL NORMALLY BE AT LEAST 60" DEEP.

THE "B" BANK MUST BE 18" FROM THE SIDE OF PIPE FOR ENTIRE WIDTH.

GENERAL RULES

1. CONNECTION TO 12" OR LARGER MAINS WILL REQUIRE AN EXCAVATION 72" IN WIDTH.
2. ALL EXCAVATIONS AND TRENCHING WORK SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA REGULATIONS ON EXCAVATIONS, TRENCHING AND SHORING. SOME OF THE REQUIREMENTS OF THESE REGULATIONS, AS WELL AS DEPARTMENT REGULATIONS ARE AS FOLLOWS:
 - 2A. BANKS MORE THAN 5' HIGH SHALL BE BENCHED. IF BENCHING IS NOT POSSIBLE, APPROVED SHORING SHALL BE USED.
 - 2B. EXCAVATED MATERIAL SHALL BE STORED AT LEAST TWO FEET FROM THE EDGE OF THE EXCAVATION.
 - 2C. TRENCHES SHALL BE BACK FILLED UP TO THE EDGE OF THE LAST JOINT OF PIPE (AS NEEDED) TO PROVIDE EASY AND SAFE ACCESS FOR THE WORKER ENTERING AND EXITING THE TRENCH, AND TO KEEP OPEN TRENCHES TO A MINIMUM.
3. WHENEVER AN EXCAVATION (INCLUDING TAP HOLES) IS OVER 5' DEEP, A MINIMUM OF 2 WORKERS FROM THE WATER DEPARTMENT SHALL BE AT THE JOB SITE.
 - 3A. WHERE EMPLOYEES ARE REQUIRED TO BE IN TRENCHES 4' DEEP OR MORE, LADDERS OR STEPS SHALL BE PROVIDED AND LOCATED AS TO PROVIDE A MEANS OF EXIT WITH NO MORE THAN 25' OF LATERAL TRAVEL.
4. IF PIPE BELL IS EXPOSED OR OTHER OBSTACLES ENCOUNTERED, CALL 325-7664 FOR FIELD REVIEW BEFORE PROCEEDING. IT IS SUGGESTED THAT A TEST HOLE BE DUG AT TAP SITE, EXPOSING MAIN TO CHECK FOR BELL OR OTHER OBSTACLES BEFORE INSTALLING ANY PIPE.
- FOR MULTIPLE TAPS FOR LARGER SERVICES ADD 18" OF WIDTH ALONG THE MAIN FOR EACH ADDITIONAL TAP.
5. TAP HOLE MUST BE FREE OF WATER AND MUD TO ALLOW FOR SAFE HANDLING OF MATERIALS AND TAPPING MACHINE. ALSO CLEAN ENOUGH TO ALLOW INSTALLATION OF OR REPAIR TO EXISTING POLYWRAP.
6. TAPS WILL NOT BE MADE BEFORE SERVICE IS INSTALLED.
- **7. IF PIPE IS POLYWRAPPED, PLUMBING CONTRACTOR IS TO LEAVE 1' OF EXISTING POLYWRAP ON MAIN AS SHOWN.

IN ADDITION, THE EXTERIOR PORTION OF THE CITY'S MAIN MUST BE CLEANED WHERE THE TAP IS TO BE MADE. IF THE CITY EMPLOYEE FINDS ANY PART OF THE WATER SERVICE LINE INSTALLATION NOT READY, THE TAP WILL NOT BE MADE AND THE CITY MUST BE NOTIFIED AGAIN BY THE PLUMBER OR CUSTOMER OF READINESS BEFORE THE TAP IS RESCHEDULED FOR A SUBSEQUENT DAY.

AN EXCAVATION OF A SIZE APPROVED BY THE CITY MUST BE PROVIDED AT THE CITY'S MAIN AT THE TAPPING POINT. THE WATER SERVICE LINE, COMPLETED WITH ALL APPURTENANCES, INCLUDING STOP COCK AND METER BOX AT OR NEAR THE PROPERTY LINE, MUST ALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR BEFORE THE TAP WILL BE MADE AND THE METER SET BY THE CITY.

UNDER SPECIAL CONDITIONS, TAP CONNECTIONS, WHEN APPROVED BY THE CITY, MAY BE MADE BY THE CITY PRIOR TO THE INSTALLATION OF THE WATER SERVICE LINE.

TAP HOLE DIMENSIONS FOR LARGE TAP HOLE 3" AND LARGER SERVICE CONNECTIONS

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

EXHIBIT "B"

APPROVED BY: SH.

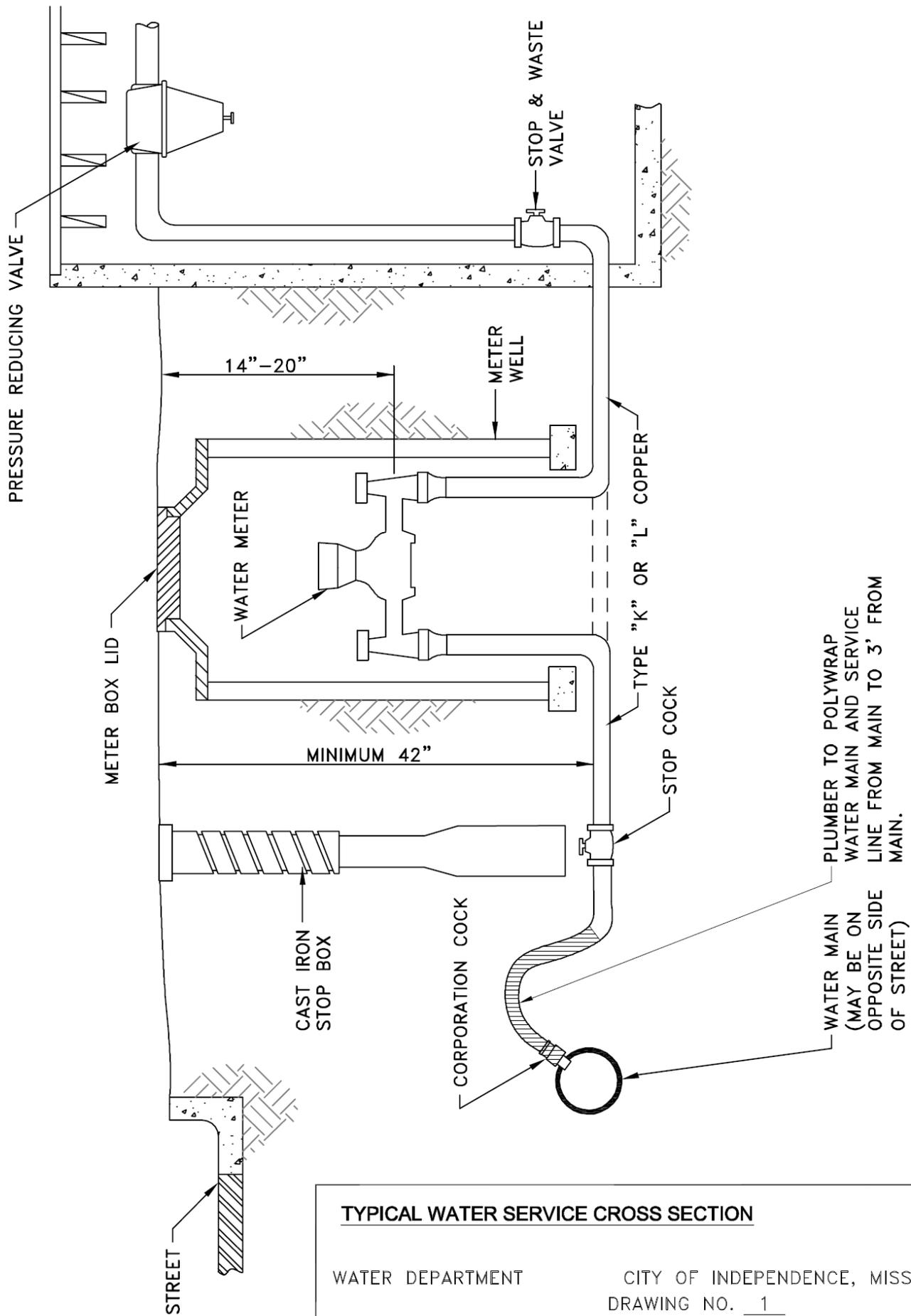
DRAWN BY: SH.

DATE: 8/28/00

*SUBJECT TO REVISION WITHOUT NOTICE

EXB

INDEPENDENCE WATER DEPARTMENT



TYPICAL WATER SERVICE CROSS SECTION

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 1

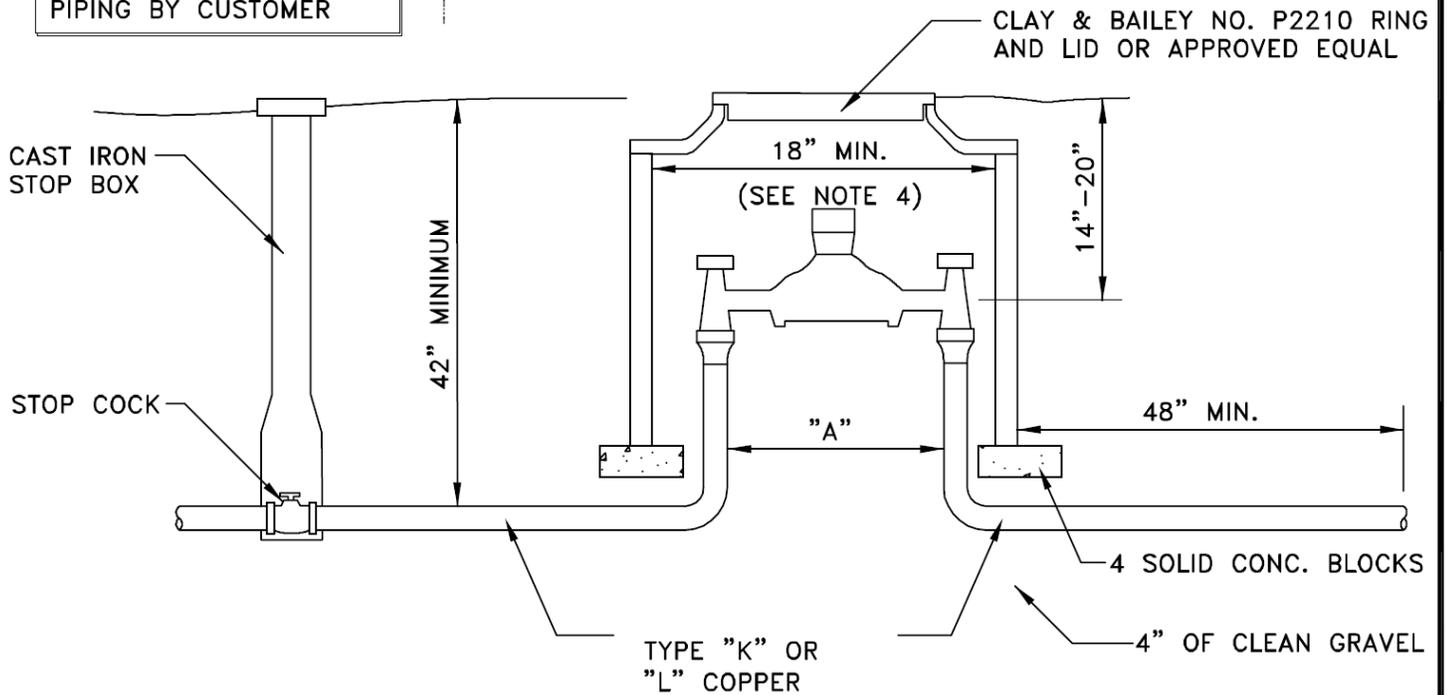
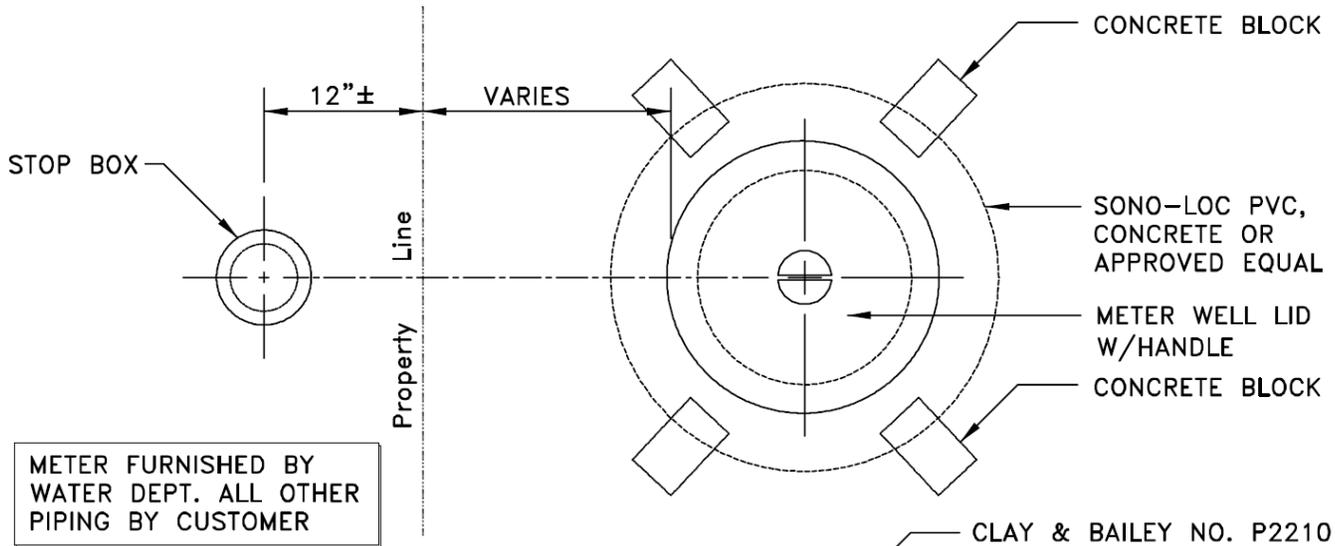
APPROVED BY: SDH

DRAWN BY: CJ

DATE: 12/18/17

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



GENERAL RULES:

1. METER PIT TO BE LOCATED OUTSIDE TRAFFIC AREA WHERE SURFACE WATER WILL NOT DRAIN INTO IT.
2. ALL FITTINGS TO BE BRASS OR COPPER.
3. WHEN SERVING MULTI-LEVEL STRUCTURE, SHUT OFF IS REQUIRED ON BOTH SIDES OF METER.
4. FOR 1" SERVICE USE 24" DIAMETER WELL WITH CLAY & BAILEY 2424 ADAPTER & P2210 RING & LID.
5. METER WELL TO BE SET ON 4" GRAVEL BEDDING.

METER SIZE	DIMENSION "A"
5/8"	12 1/4"
3/4"	13 7/8"
1"	16 5/8"

METER BOX FOR 3/4", 1" AND 1-1/4" SERVICE LINES

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 2

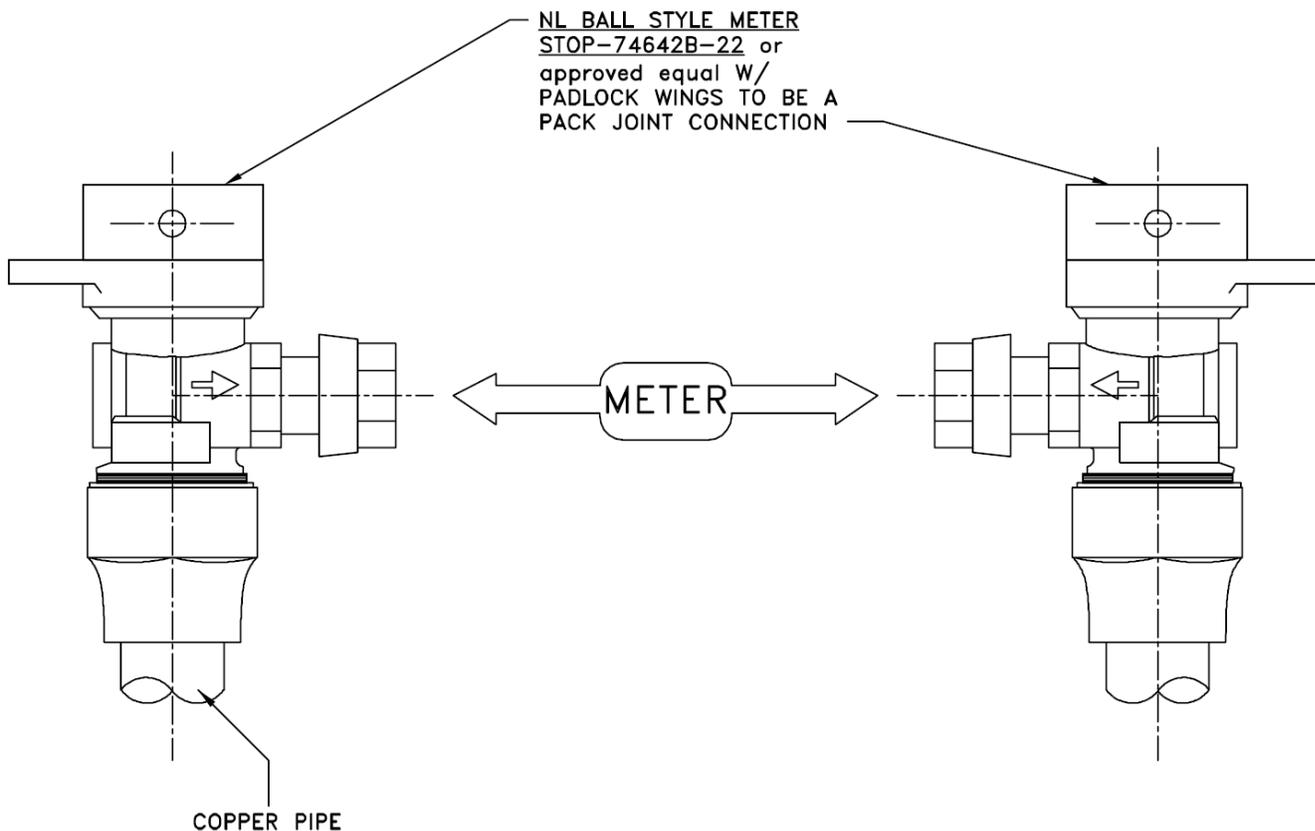
APPROVED BY: SDH

DRAWN BY: CJ

DATE: 12/18/17

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



METER SET FOR 3/4", 1" AND 1-1/4" SERVICE LINES

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 2-A

APPROVED BY: SDH

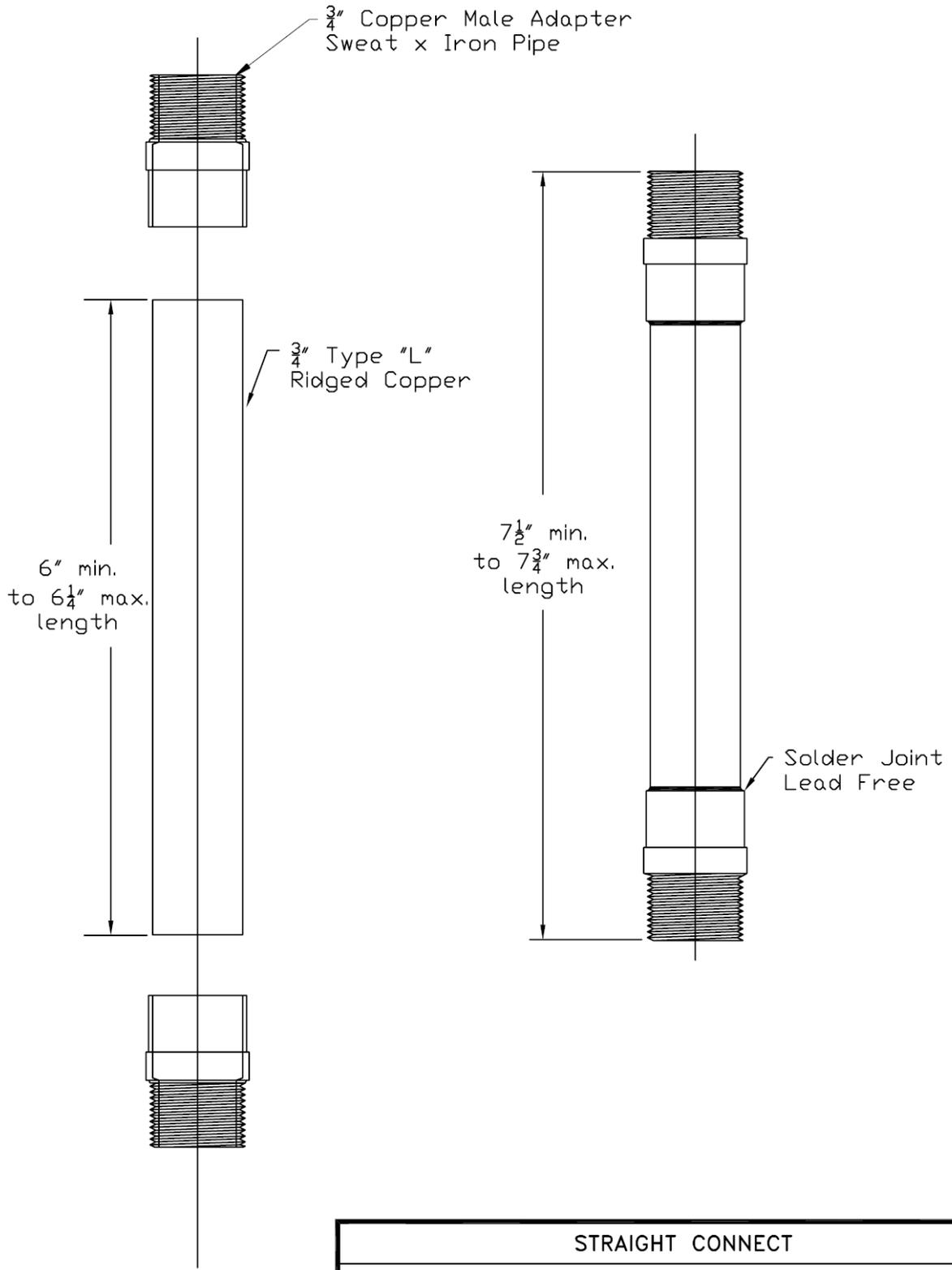
DRAWN BY: C.J.

DATE: 12/18/2017

2-A

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



STRAIGHT CONNECT

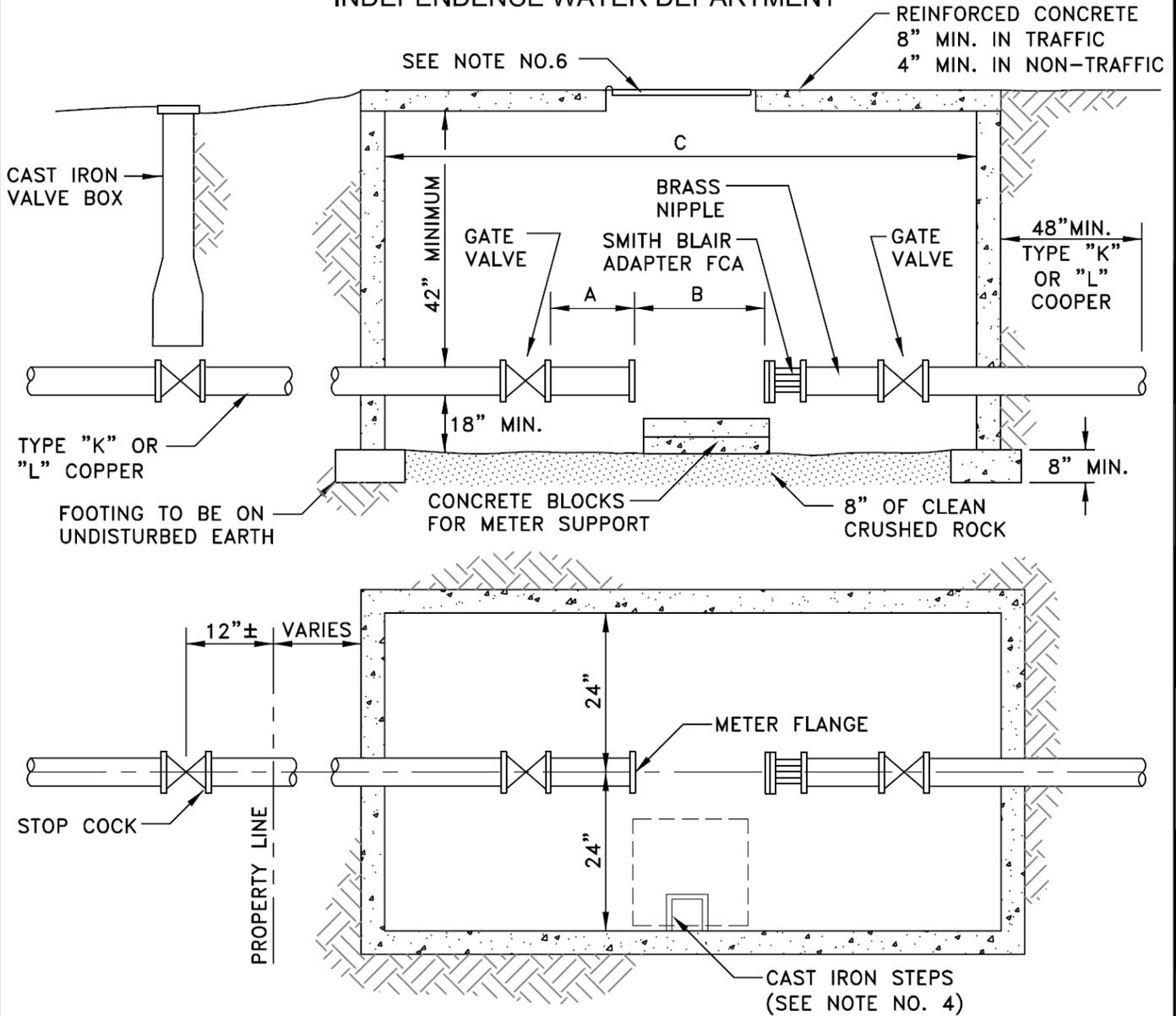
WATER DEPARTMENT CITY OF INDEPENDENCE, MISSOURI
CONSTRUCTION DETAIL NO. 2-B

Drawn by CJ

Approved by SDH
Date 4-28-2011

2-B

INDEPENDENCE WATER DEPARTMENT



GENERAL RULES:

1. METER VAULT WALLS TO BE POURED CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
3. ALL FITTINGS TO BE BRASS OR COPPER
4. CAST IRON STEPS CLAY & BAILEY 2104 OR APPROVED EQUAL TO BE ON 16" CENTERS
5. VALVES ON EACH SIDE OF METER MUST BE ADEQUATELY SECURED TO WITHSTAND WATER THRUST W/ METER REMOVED.
6. IN TRAFFIC: CLAY & BAILEY 2215, RING, INNER LID (20" 95 LBS., WITH HANDLE) AND OUTER LID (31" 155 LBS.) NON TRAFFIC: BILCO "K-1" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL. IF IN A PAVED OR CONCRETE AREA WHERE CARS WILL DRIVE OR PARK, THE METER VAULT MUST HAVE 4" STEEL POST BOLLARDS INSTALLED AROUND IT. BOLLARDS ARE TO BE FILLED WITH CONCRETE EXTENDING 48" ABOVE GROUND.

REVISED: 01/13/2010 BY: JSE

METER SIZE	DIMENSION		
	A	B	C
1-1/2"	13"	12"	60"
2"	17"	16"	72"

**METER VAULT FOR 1-1/2" AND 2" SERVICE LINES
IN TRAFFIC AREA**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 3

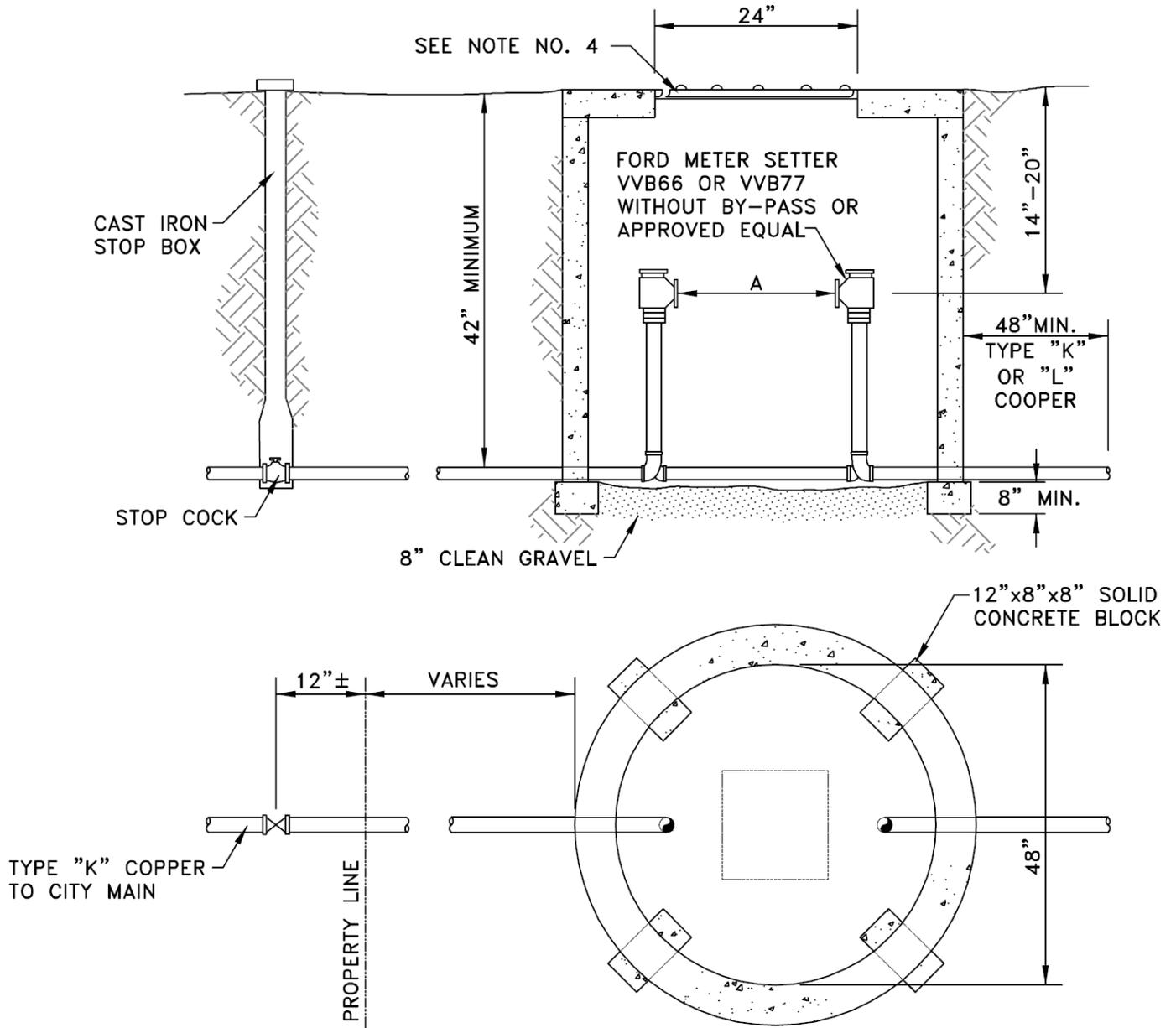
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



NOTES:

1. METER VAULT TO BE LOCATED OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
2. METER SETTER MUST BE USED WITH THIS VAULT. (FORD WB66 OR WB77 OR APPROVED EQUAL WITHOUT BYPASS)
3. VAULT MUST BE DESIGNED AND MAINTAINED FOR PROPER DRAINAGE.
4. BILCO "K" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL.
5. METER VAULT TO BE PRECAST CONCRETE.
6. ADAPTERS WILL BE REQUIRED FOR METERS SMALLER THAN SERVICE LINE SIZE.

METER SIZE	A
1-1/2"	13"
2"	17"

**METER VAULT FOR 1-1/2" AND 2" SERVICE LINES
IN NON-TRAFFIC AREAS**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 3-A

APPROVED BY: SDH

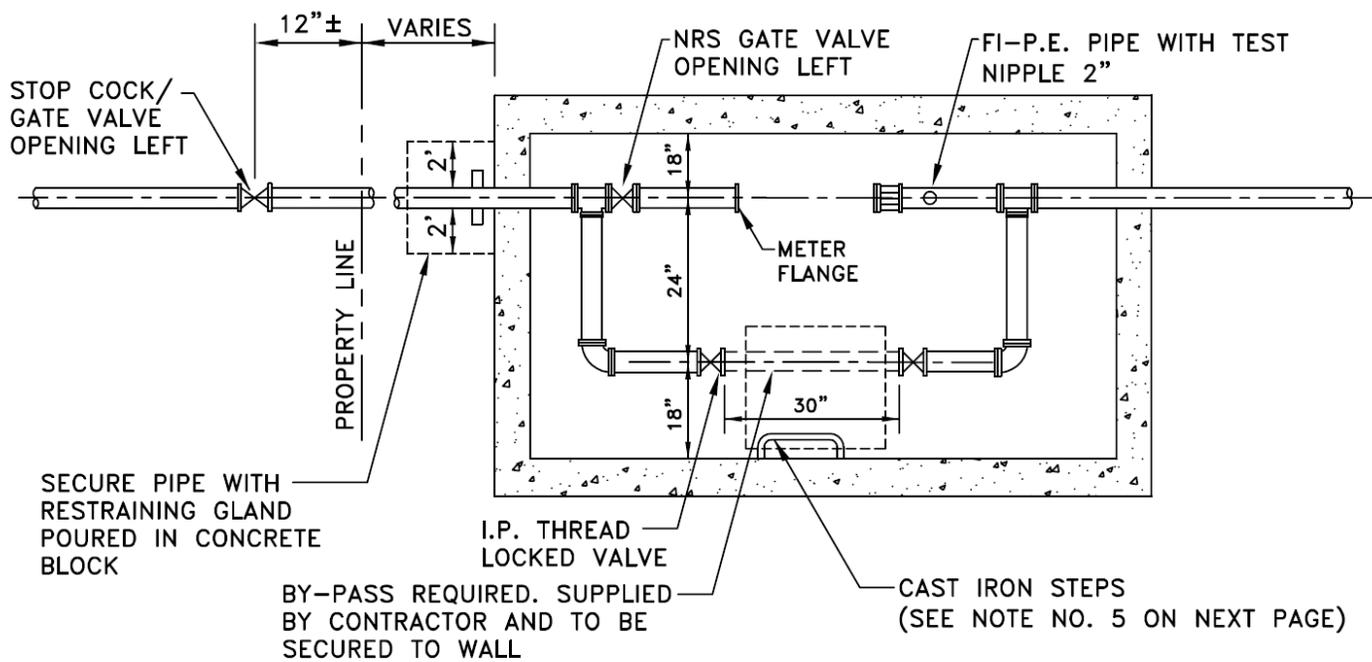
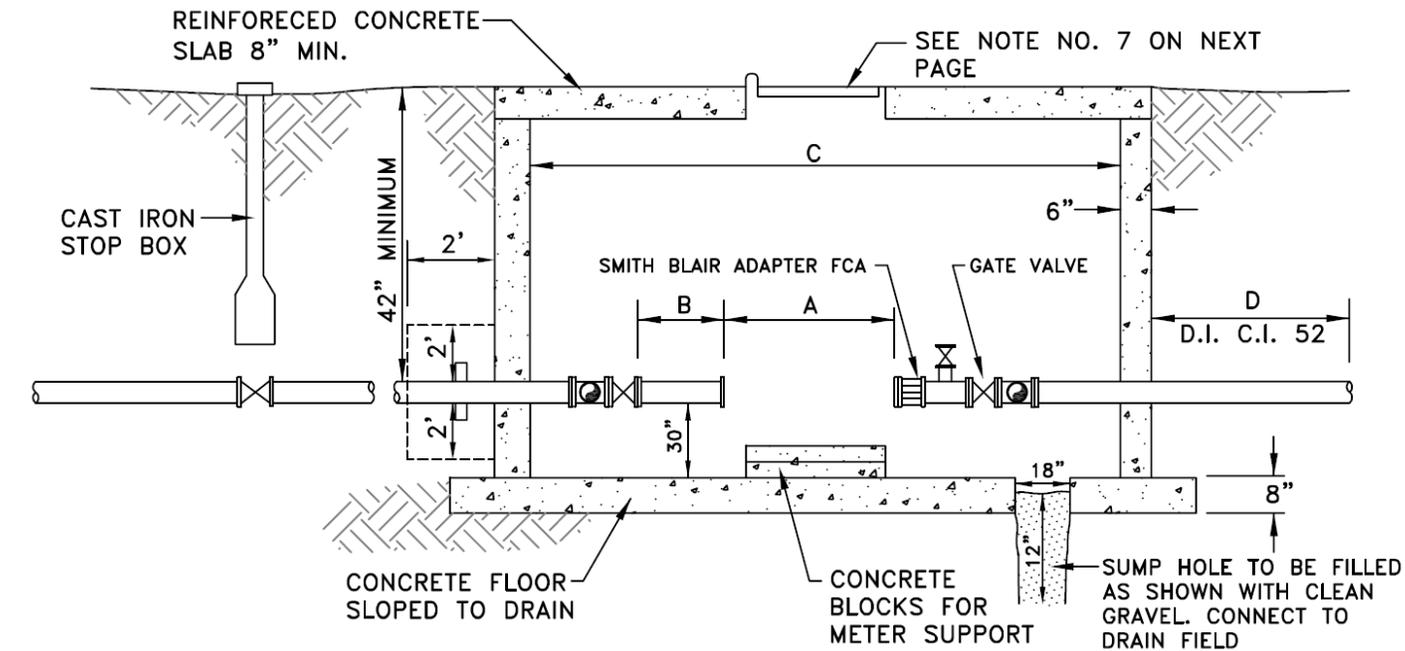
DRAWN BY: CJ

DATE: 12/18/17

*SUBJECT TO REVISION WITHOUT NOTICE

3-A

INDEPENDENCE WATER DEPARTMENT



REVISED: 06/01/2012 BY: DLP

METER VAULT FOR 3", 4" AND 6" SERVICE LINES

*REFER TO NEXT PAGE FOR GENERAL NOTES AND OTHER SPECIFICATIONS

WATER DEPARTMENT CITY OF INDEPENDENCE, MISSOURI
 DRAWING NO. 4
 APPROVED BY: D.R.
 DRAWN BY: SH. DATE: 1/31/94

*SUBJECT TO REVISION WITHOUT NOTICE

METER VAULT FOR 3", 4" AND 6" SERVICE LINES

GENERAL RULES:

1. METER VAULT WALLS TO BE POURED CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
4. DUCTILE IRON CLASS 52 THROUGH VAULT.
5. CAST IRON STEPS CLAY & BAILEY 2104 OR APPROVED EQUAL TO BE ON 16" CENTERS.
6. FLANGED VALVES ON EACH SIDE OF METER MUST BE ADEQUATELY SECURED TO WITHSTAND WATER THRUST WITH METER REMOVED
7. IN TRAFFIC: CLAY & BAILEY 2215, RING, INNER LID (WITH HANDLE) AND OUTER LID OR APPROVED EQUAL.
NON-TRAFFIC: BILCO "K-1" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL.
8. CONCRETE FLOOR REQUIRED. SLOPE TO DRAIN.
9. CONTACT THE SERVICE DIVISION OF THE WATER DEPARTMENT (325-7664) BEFORE INSTALLING THE VAULT

METER SIZE	A	B	C	D	BY-PASS (*)
3"	19-3/4"	24"	140"	48"	1-1/2"
4"	23-3/4"	33"	157"	72"	2"
6"	27-3/4"	41"	191"	72"	3"

(*) IF HIGH CONTINUOUS RATE OF FLOW IS REQUIRED, A LARGER BY-PASS MAY BE PERMITTED, BUT NOT LARGER THAN PRIMARY DOMESTIC SERVICE

REVISED: 09/19/2013 BY: CJ

METER VAULT FOR 3", 4" AND 6" SERVICE LINES

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 4 sheet 2

APPROVED BY: DR.

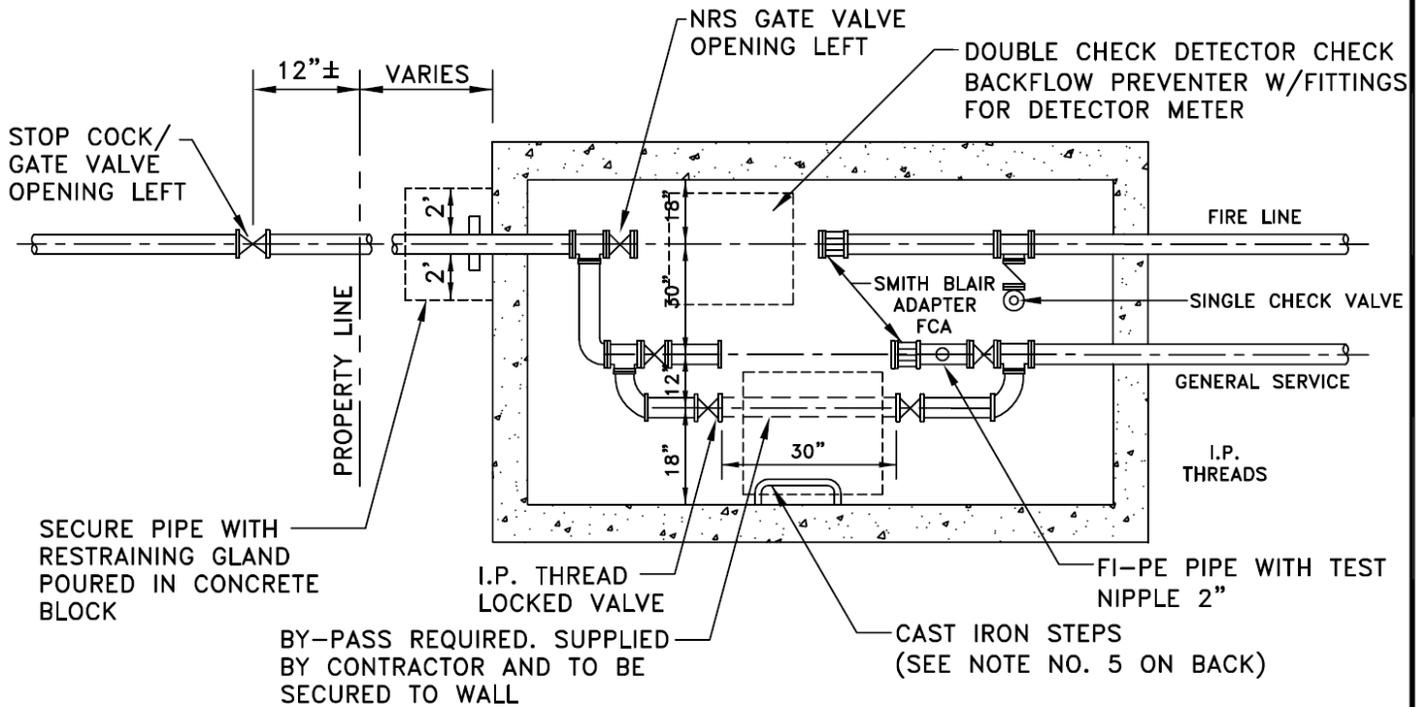
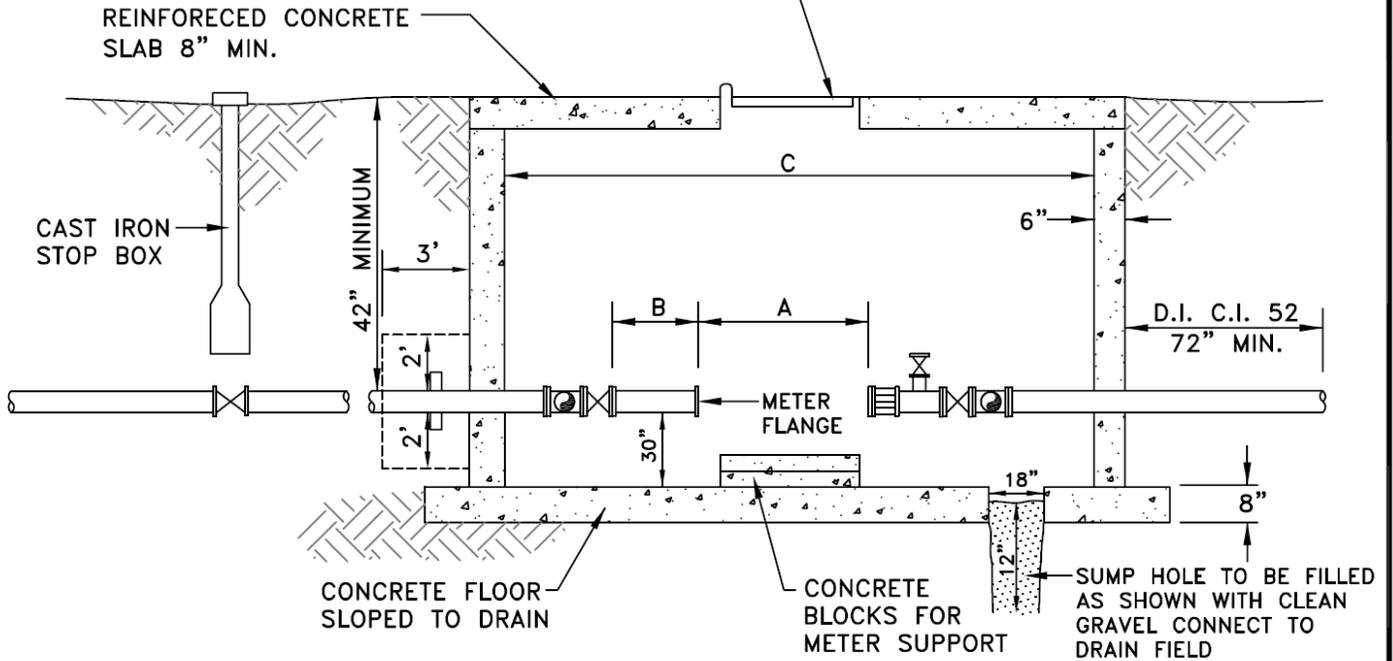
DRAWN BY: SH.

DATE: 1/31/94

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT

SEE NOTE NO. 7 ON BACK



REVISED: 07/13/2010 BY: JSE

METER VAULT FOR SPLIT SERVICE LINES

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 5

APPROVED BY: DR.

DRAWN BY: SH.

DATE: 1/31/94

*REFER TO NEXT PAGE FOR GENERAL NOTES AND OTHER SPECIFICATIONS

*SUBJECT TO REVISION WITHOUT NOTICE

METER VAULT FOR SPLIT SERVICE LINES

GENERAL RULES:

1. METER VAULT WALLS TO BE POURED CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE WITH OPENING CENTERED OVER GENERAL SERVICE METER ON FIRE LINE DETECTOR CHECK VALVE.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
4. DUCTILE IRON CLASS 52 OR TYPE "K" OR "L" COPPER THROUGH VAULT.
5. CAST IRON STEPS CLAY & BAILEY 2104 OR APPROVED EQUAL TO BE ON 16" CENTERS.
6. VALVES ON EACH SIDE OF GENERAL SERVICE METER FOR 1-1/2" OR 2" SERVICE TO HAVE SCREW ENDS, I.P. THREADS: FOR 3" AND ABOVE VALVES MUST HAVE FLANGED ENDS, BE IN ALIGNMENT AND BE ADEQUATELY SECURED TO WITHSTAND WATER THRUST WITH METER REMOVED.
7. NON-TRAFFIC: BILCO "K-1" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL. IN TRAFFIC: CLAY & BAILEY 2215, RING AND LID WITH HANDLE AND OUTER LID OR APPROVED EQUAL. NON-TRAFFIC METERS ARE PREFERRED; HOWEVER, IF A NON-TRAFFIC AREA IS NOT PROVIDED, VAULTS IN TRAFFIC WILL BE ALLOWED UNDER THE FOLLOWING CIRCUMSTANCES: IF IN PAVED OR CONCRETE AREA WHERE CARS WILL DRIVE OR PARK, THE METER VAULT MUST HAVE 4" STEEL POST BOLLARDS INSTALLED AROUND IT. BOLLARDS ARE TO BE FILLED WITH CONCRETE EXTENDING 48" ABOVE GROUND.
8. A DEPARTMENT OF NATURAL RESOURCES (DNR) APPROVED DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER MUST BE USED. AS OF 1 JANUARY 1987 THE DNR REQUIRES THAT FIRE SPRINKLER SYSTEMS USING CHEMICALS MUST HAVE A DNR APPROVED REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER INSTALLED. THIS DEVICE CAN BE INSTALLED IN AN UNDERGROUND VAULT ONLY WITH THE WRITTEN APPROVAL OF THE DNR WITH A COPY TO THE ENGINEERING DIVISION OF THE WATER DEPARTMENT
9. CONTACT THE SERVICE DIVISION OF THE WATER DEPARTMENT (325-7664) BEFORE INSTALLING THE VAULT.

GENERAL SERVICE				FIRELINE			
SIZE (***)	BY-PASS SIZE (*)	A	B	10" C	8" C	6" C	4" C
(**) 1-1/2"	NA	13"	12"	140"	130"	130"	130"
(**) 2"	NA	17"	16"	140"	130"	130"	130"
3"	1-1/2"	19-3/4"	24"	159"	157"	156"	155"
4"	2"	23-3/4"	32"	174"	172"	171"	170"
6"	3"	27-3/4"	48"	206"	204"	203"	202"

(*) IF HIGH CONTINUOUS RATE OF FLOW IS REQUIRED, A LARGER BY-PASS MAY BE PERMITTED, BUT NOT LARGER THAN PRIMARY DOMESTIC SERVICE

(**) FORD METER SETTER VVB66 OR VVB77 WITHOUT BY-PASS OR APPROVED EQUAL

(***) FOR 5/8", 3/4" AND 1" METERS USE FORD YOKE #501, 502 OR 503 OR APPROVED EQUAL. NO BY-PASS REQUIRED.

REVISED: 09/19/2015 BY: CJ

METER VAULT FOR SPLIT SERVICE LINES

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 5 sheet 2

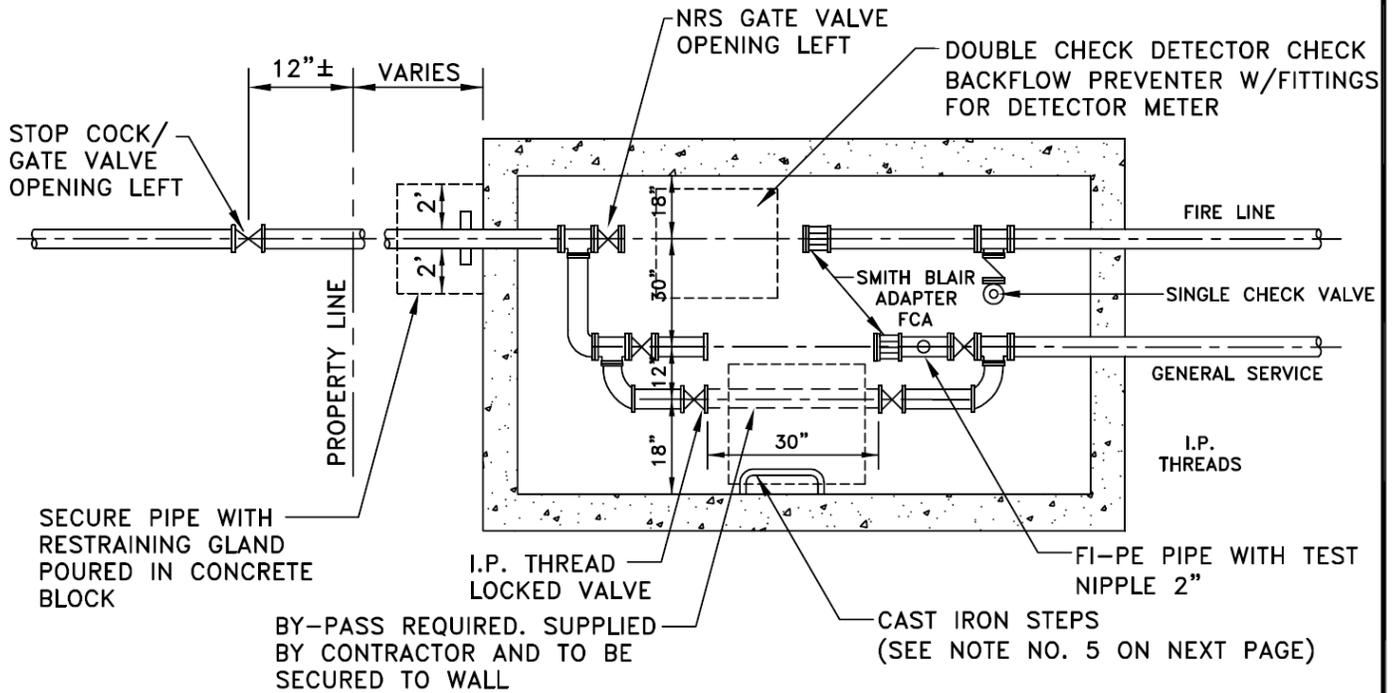
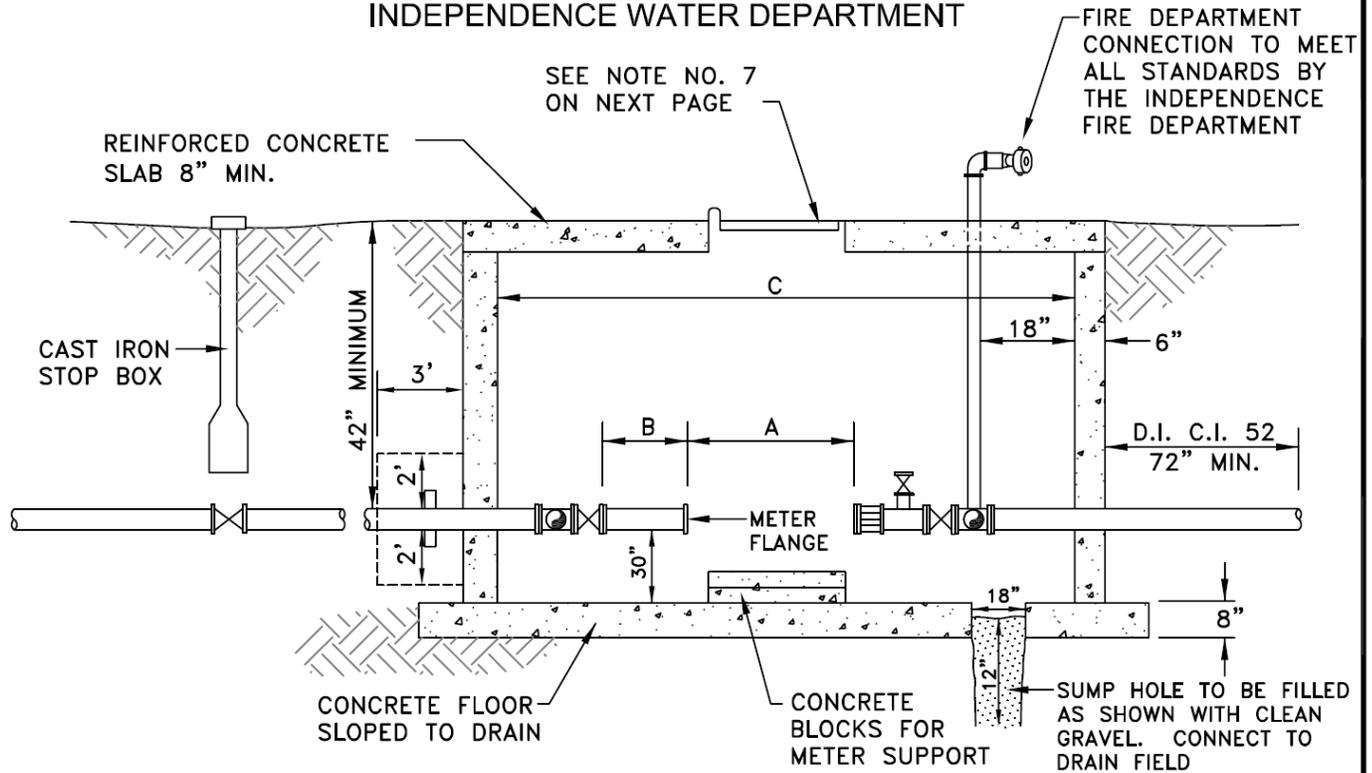
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 1/31/94

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



REVISED: 07/13/2010 BY: JSE

METER VAULT FOR SPLIT SERVICE WITH FIRE DEPARTMENT CONNECTION

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 5-A

APPROVED BY: SH.

DRAWN BY: AM.

DATE: 4/10/01

*REFER TO NEXT PAGE FOR GENERAL NOTES AND OTHER SPECIFICATIONS

*SUBJECT TO REVISION WITHOUT NOTICE

5-A

METER VAULT FOR SPLIT SERVICE WITH FIRE DEPARTMENT CONNECTION

GENERAL RULES:

1. METER VAULT WALLS TO BE POURED CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE WITH OPENING CENTERED OVER GENERAL SERVICE METER ON FIRE LINE DETECTOR CHECK VALVE.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
4. DUCTILE IRON CLASS 52 OR TYPE "K" OR "L" COPPER THROUGH VAULT.
5. CAST IRON STEPS CLAY & BAILEY 2104 OR APPROVED EQUAL TO BE ON 16" CENTERS.
6. VALVES ON EACH SIDE OF GENERAL SERVICE METER FOR 1-1/2" OR 2" SERVICE TO HAVE SCREW ENDS, I.P. THREADS: FOR 3" AND ABOVE VALVES MUST HAVE FLANGED ENDS, BE IN ALIGNMENT AND BE ADEQUATELY SECURED TO WITHSTAND WATER THRUST WITH METER REMOVED.
7. NON-TRAFFIC: BILCO "K-1" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL. IN TRAFFIC: CLAY & BAILEY 2215, RING AND LID WITH HANDLE AND OUTER LID OR APPROVED EQUAL. NON-TRAFFIC METERS ARE PREFERRED; HOWEVER, IF A NON-TRAFFIC AREA IS NOT PROVIDED, VAULTS IN TRAFFIC WILL BE ALLOWED UNDER THE FOLLOWING CIRCUMSTANCES: IF IN PAVED OR CONCRETE AREA WHERE CARS WILL DRIVE OR PARK, THE METER VAULT MUST HAVE 4" STEEL POST BOLLARDS INSTALLED AROUND IT. BOLLARDS ARE TO BE FILLED WITH CONCRETE EXTENDING 48" ABOVE GROUND.
8. A DEPARTMENT OF NATURAL RESOURCES (DNR) APPROVED DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER MUST BE USED. AS OF 1 JANUARY 1987 THE DNR REQUIRES THAT FIRE SPRINKLER SYSTEMS USING CHEMICALS MUST HAVE A DNR APPROVED REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER INSTALLED. THIS DEVICE CAN BE INSTALLED IN AN UNDERGROUND VAULT ONLY WITH THE WRITTEN APPROVAL OF THE DNR WITH A COPY TO THE ENGINEERING DIVISION OF THE WATER DEPARTMENT
9. CONTACT THE SERVICE DIVISION OF THE WATER DEPARTMENT (325-7664) BEFORE INSTALLING THE VAULT.

GENERAL SERVICE				FIRELINE			
SIZE (***)	BY-PASS SIZE (*)	A	B	10"	8"	6"	4"
				C	C	C	C
(**) 1-1/2"	NA	13"	12"	140"	130"	130"	130"
(**) 2"	NA	17"	16"	140"	130"	130"	130"
	1-1/2"	19-3/4"	24"	159"	157"	156"	155"
	2"	23-3/4"	32"	174"	172"	171"	170"
	3"	27-3/4"	48"	206"	204"	203"	202"

- (*) IF HIGH CONTINUOUS RATE OF FLOW IS REQUIRED, A LARGER BY-PASS MAY BE PERMITTED, BUT NOT LARGER THAN PRIMARY DOMESTIC SERVICE
- (**) FORD METER SETTER VVB66 OR VVB77 WITHOUT BY-PASS OR APPROVED EQUAL
- (***) FOR 5/8", 3/4" AND 1" METERS USE FORD YOKE #501, 502 OR 503 OR APPROVED EQUAL. NO BY-PASS REQUIRED.

REVISED: 09/19/2013 BY: CJ

METER VAULT FOR SPLIT SERVICE WITH
FIRE DEPARTMENT CONNECTION

WATER DEPARTMENT CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 5-A sheet 2

APPROVED BY: SH.

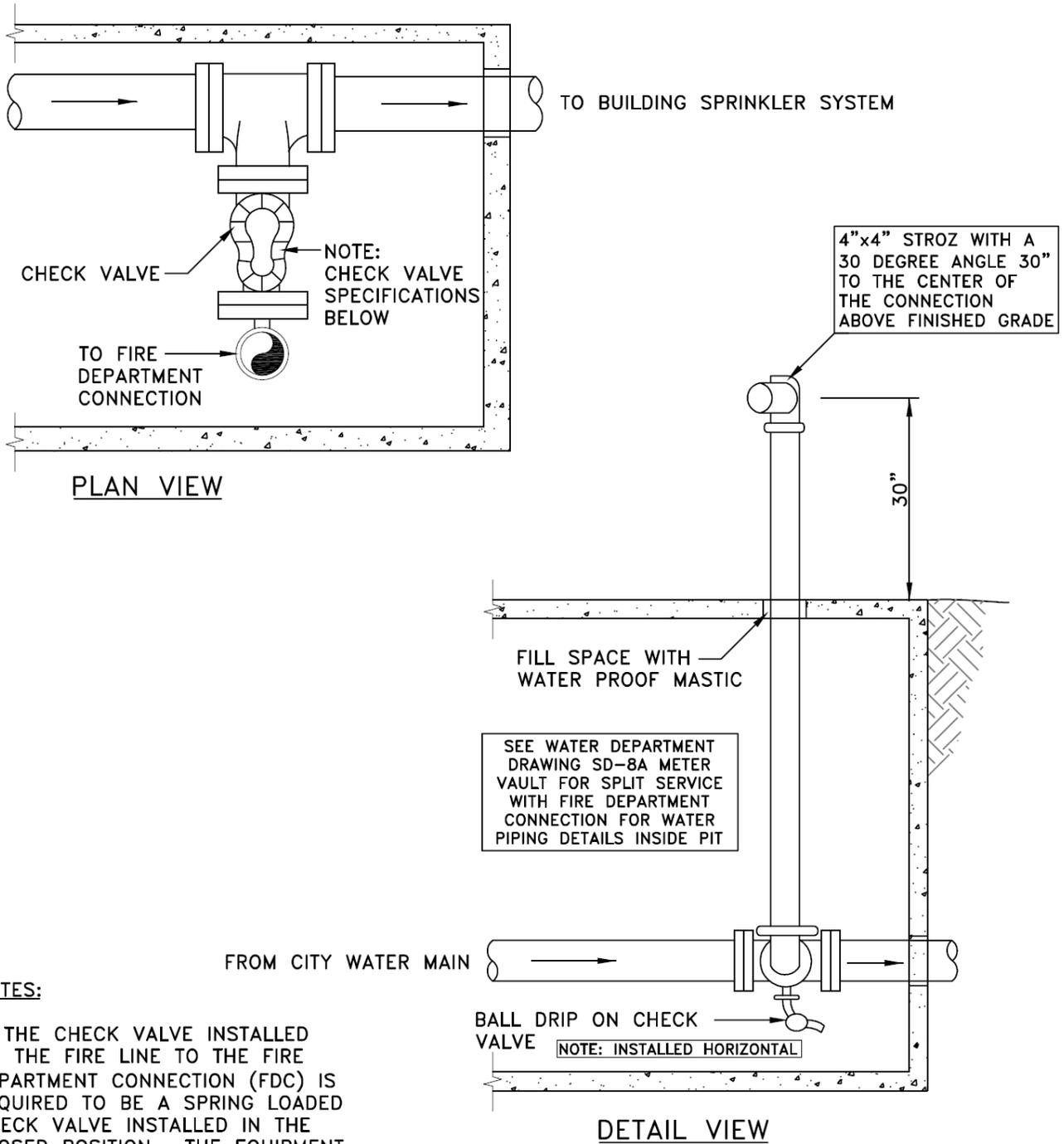
DRAWN BY: AM.

DATE: 4/10/01

*SUBJECT TO REVISION WITHOUT NOTICE

5-A2

INDEPENDENCE WATER DEPARTMENT



NOTES:

1. THE CHECK VALVE INSTALLED ON THE FIRE LINE TO THE FIRE DEPARTMENT CONNECTION (FDC) IS REQUIRED TO BE A SPRING LOADED CHECK VALVE INSTALLED IN THE CLOSED POSITION. THE EQUIPMENT USED FOR THE FDC IS TO BE UL LISTED FOR THE APPLICATION PER NFPA 13 STANDARDS.
2. AN AUTOMATIC BALL DRIP IS TO BE INSTALLED ON THE LOWEST POINT OF THE FDC PIPING.
3. FOR ANY QUESTIONS PLEASE CALL 325-7137.

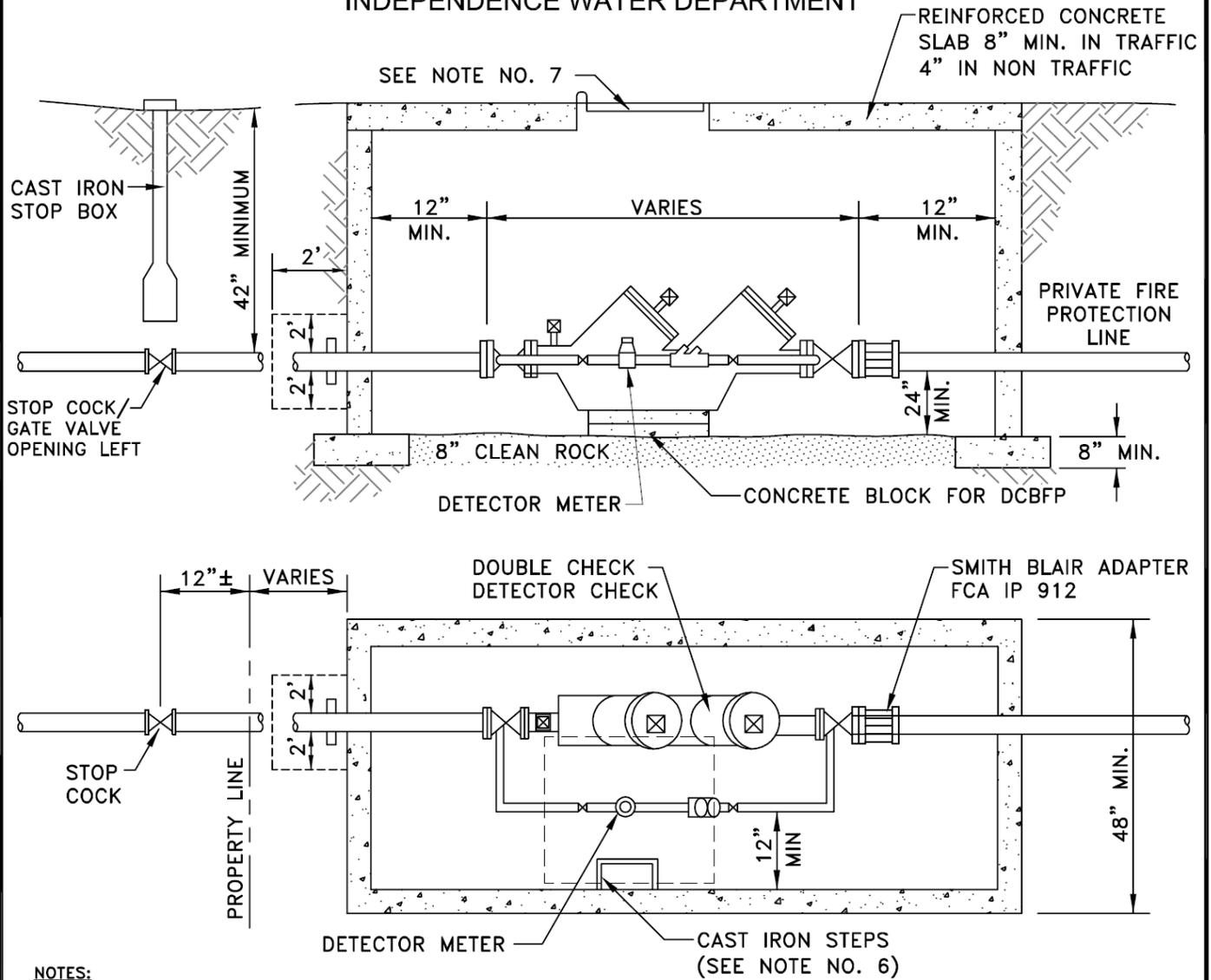
INSTALLATION OF FIRE DEPARTMENT CONNECTION IN A METER VAULT

WATER DEPARTMENT CITY OF INDEPENDENCE, MISSOURI
 DRAWING NO. 5-B
 APPROVED BY: JM.
 DRAWN BY: AM. DATE: 2/15/05

*SUBJECT TO REVISION WITHOUT NOTICE

5-B

INDEPENDENCE WATER DEPARTMENT



NOTES:

1. METER VAULT WALLS TO BE POURED CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE WITH OPENING CENTERED OVER DETECTOR METER.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
4. ALL PIPE TO BE DUCTILE IRON CLASS 52.
5. ALL FITTINGS TO BE BRASS.
6. CAST IRON STEPS CLAY & BAILEY 2104 OR APPROVED EQUAL TO BE ON 16" CENTERS
7. IN TRAFFIC: CLAY & BAILEY 2215, RING AND LID WITH HANDLE AND OUTER LID OR APPROVED EQUAL. IF IN PAVED OR CONCRETE AREA WHERE CARS WILL DRIVE OR PARK, THE METER VAULT MUST HAVE 4" STEEL POST BOLLARDS INSTALLED AROUND IT. BOLLARDS ARE TO BE FILLED WITH CONCRETE EXTENDING 48" ABOVE GROUND.
- NON TRAFFIC: BILCO "K-L" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL.
8. A DEPARTMENT OF NATURAL RESOURCES (DNR) APPROVED DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER MUST BE USED. AS OF 1 JANUARY 1987 THE DNR REQUIRES THAT FIRE SPRINKLER SYSTEMS USING CHEMICALS MUST HAVE A DNR APPROVED REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER INSTALLED. THIS DEVICE CAN BE INSTALLED IN AN UNDERGROUND VAULT ONLY WITH THE WRITTEN APPROVAL OF THE DNR WITH A COPY GOING TO THE ENGINEERING DIVISION OF THE WATER DEPARTMENT

REVISED: 06/01/2012 BY: DLB

METER VAULT FOR DOUBLE CHECK DETECTOR CHECK

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 6

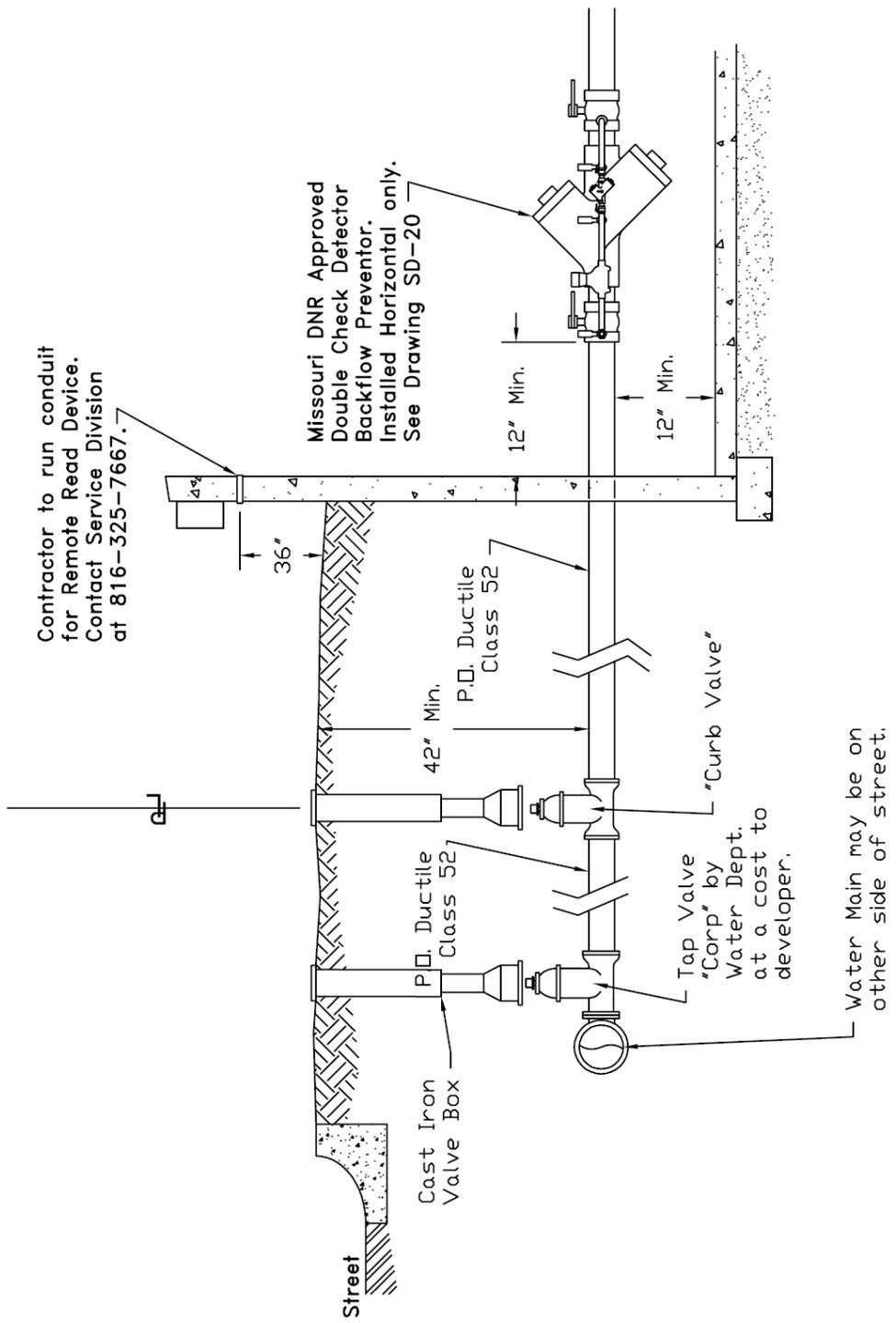
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



DOUBLE CHECK DETECTOR CHECK INSIDE INSTALLATION

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 6A

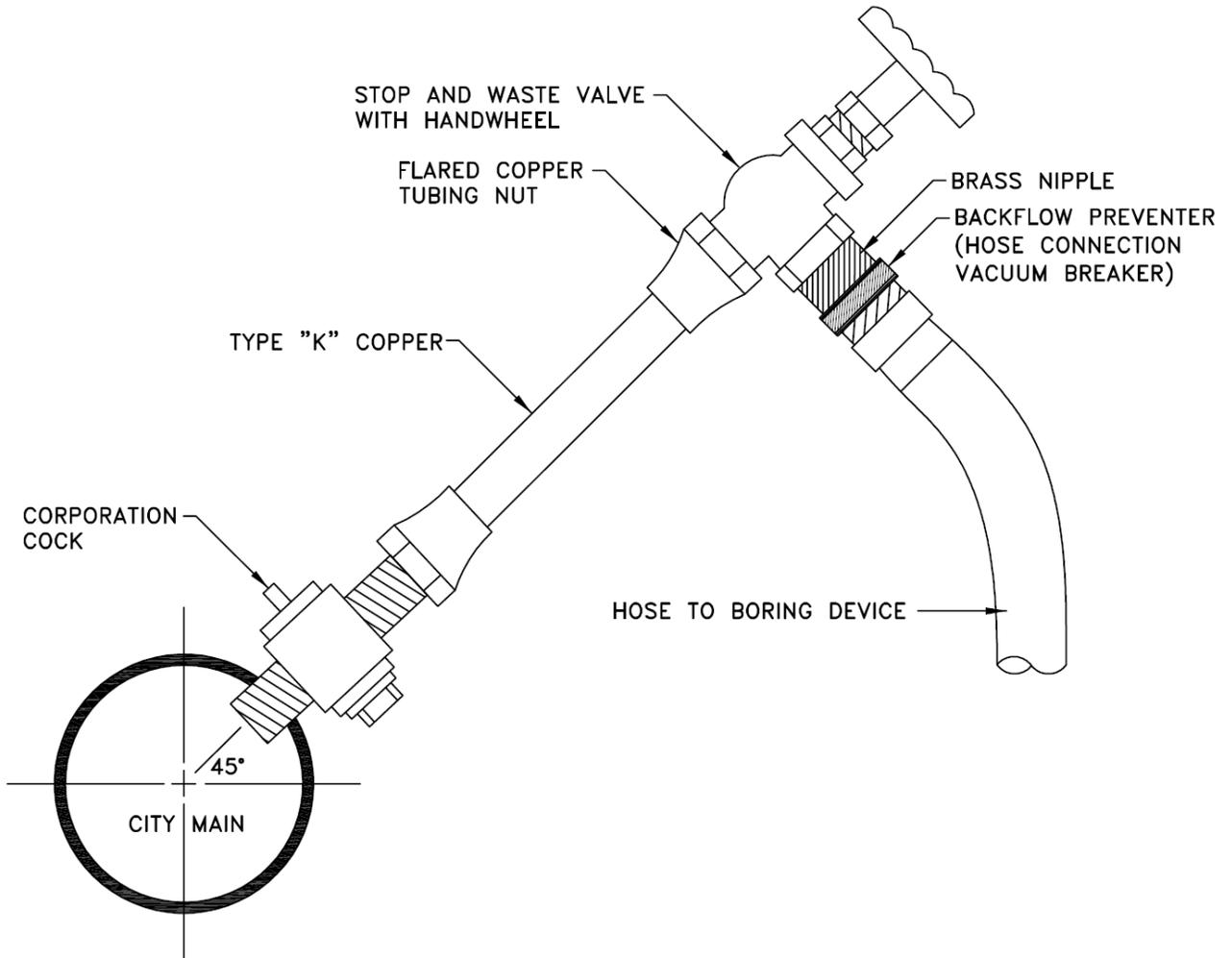
APPROVED BY: SH

DRAWN BY: CJ

DATE: 07/12/2010

6A

INDEPENDENCE WATER DEPARTMENT



GENERAL RULES:

1. DEVICE MUST BE ON JOB SITE AT TIME TAP IS MADE BY WATER DEPARTMENT FOR STREET BORING.
2. DEVICE WILL BE FURNISHED BY PLUMBER OR CONTRACTOR.
3. ALL FITTINGS TO BE BRASS OR COPPER.

3/4" AND 1" CONNECTION FOR STREET CROSSING

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 7

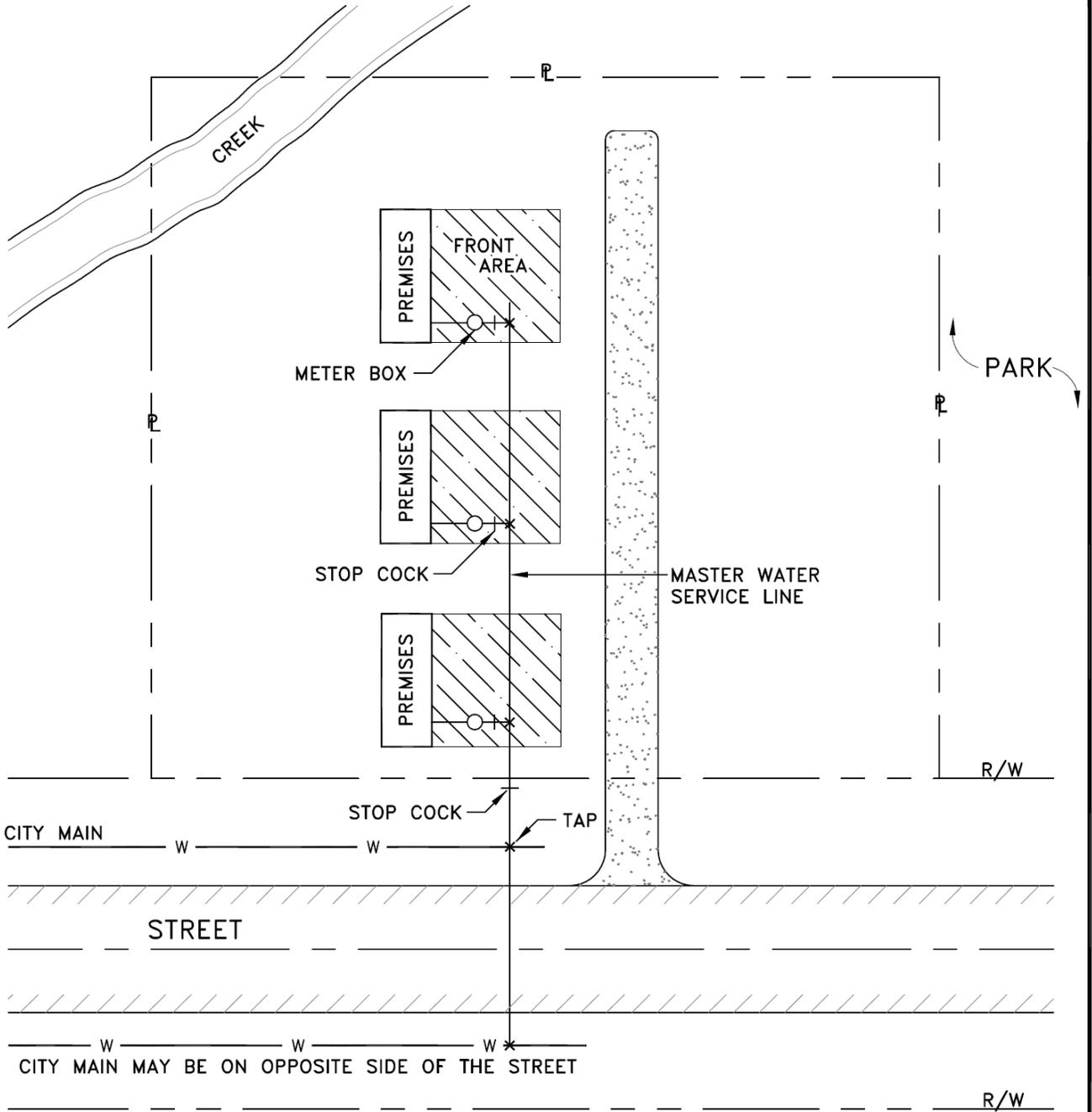
APPROVED BY: D.R.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



INSTALLATION STANDARDS AND REQUIREMENTS FOR
MASTER WATER SERVICE LINE

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 9

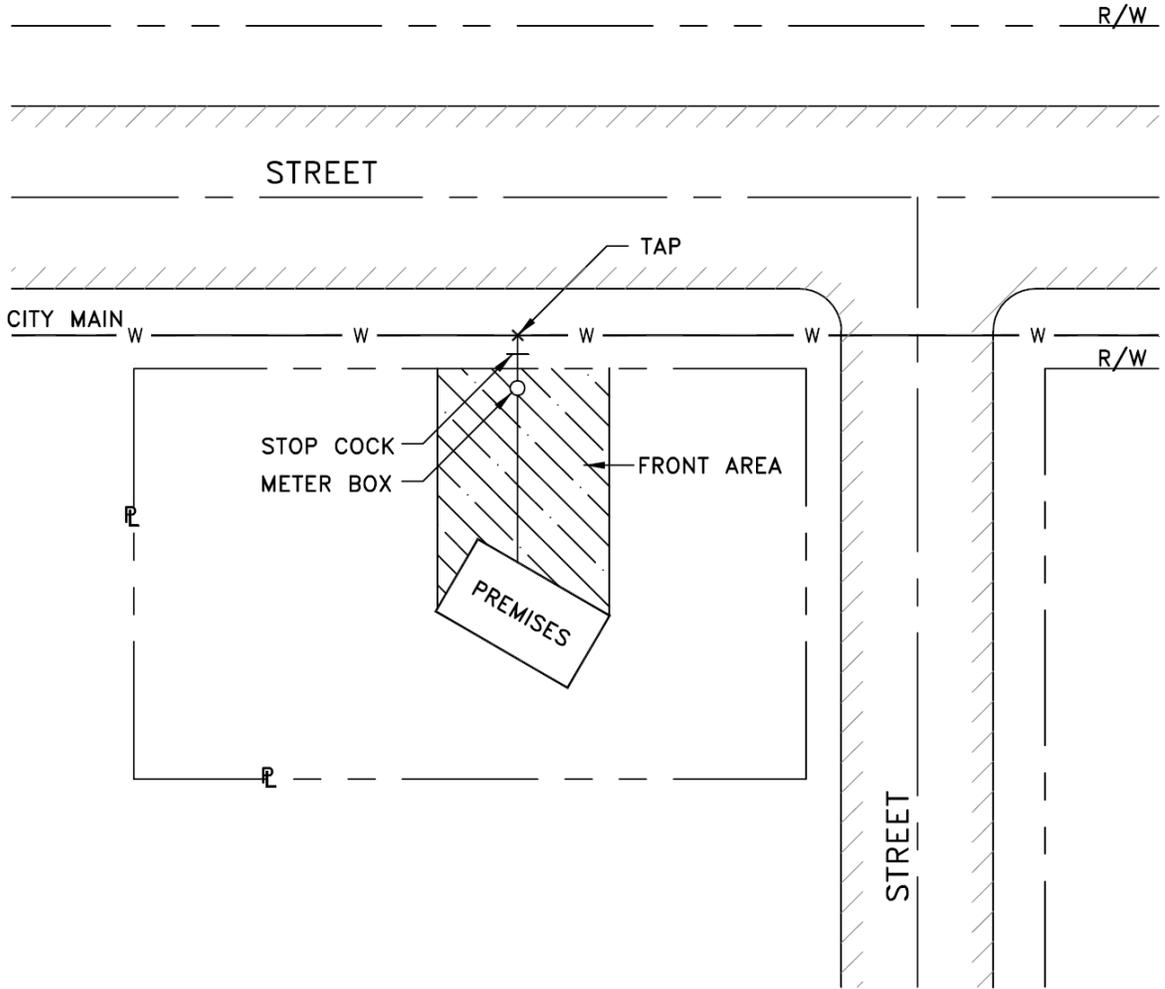
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



NOTE:

- 1. CITY MAIN PARALLEL TO STREET AND PARALLEL TO FACE OF PREMISES

**INSTALLATION STANDARDS AND REQUIREMENTS FOR
WATER SERVICE LINE - CORNER LOT**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 10

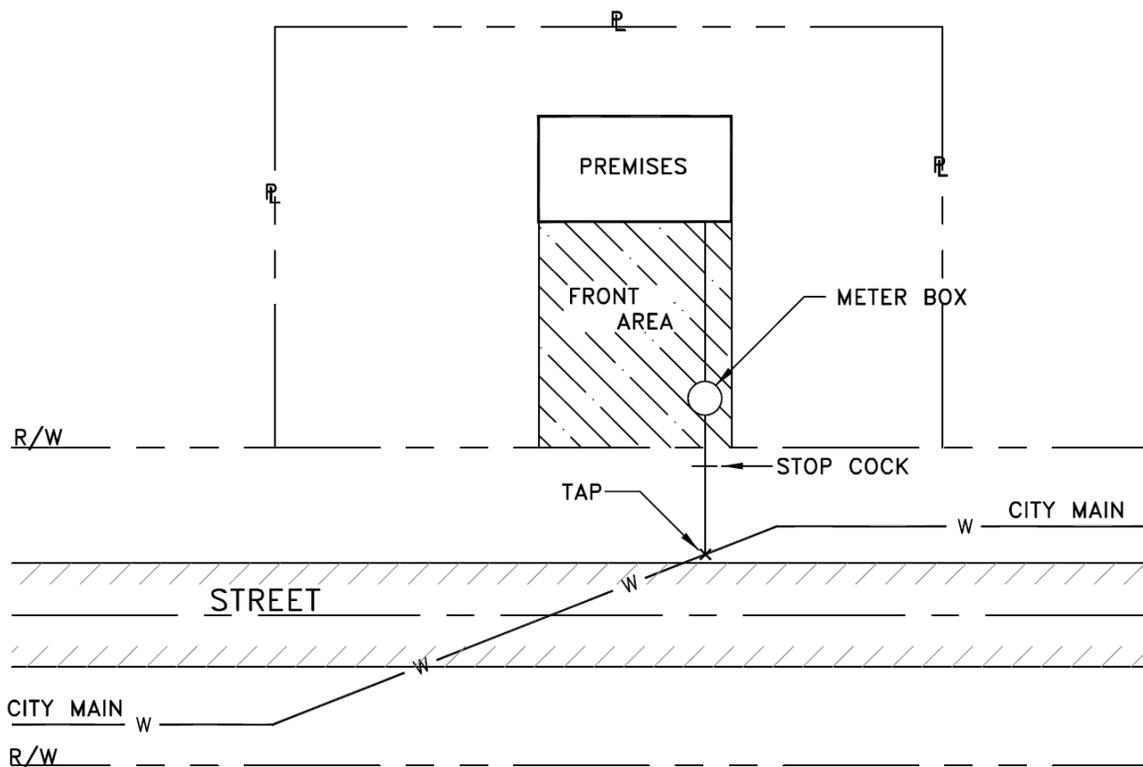
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



INSTALLATION STANDARDS AND REQUIREMENTS FOR
WATER SERVICE LINE - CITY MAIN NOT PARALLEL TO STREET

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 11

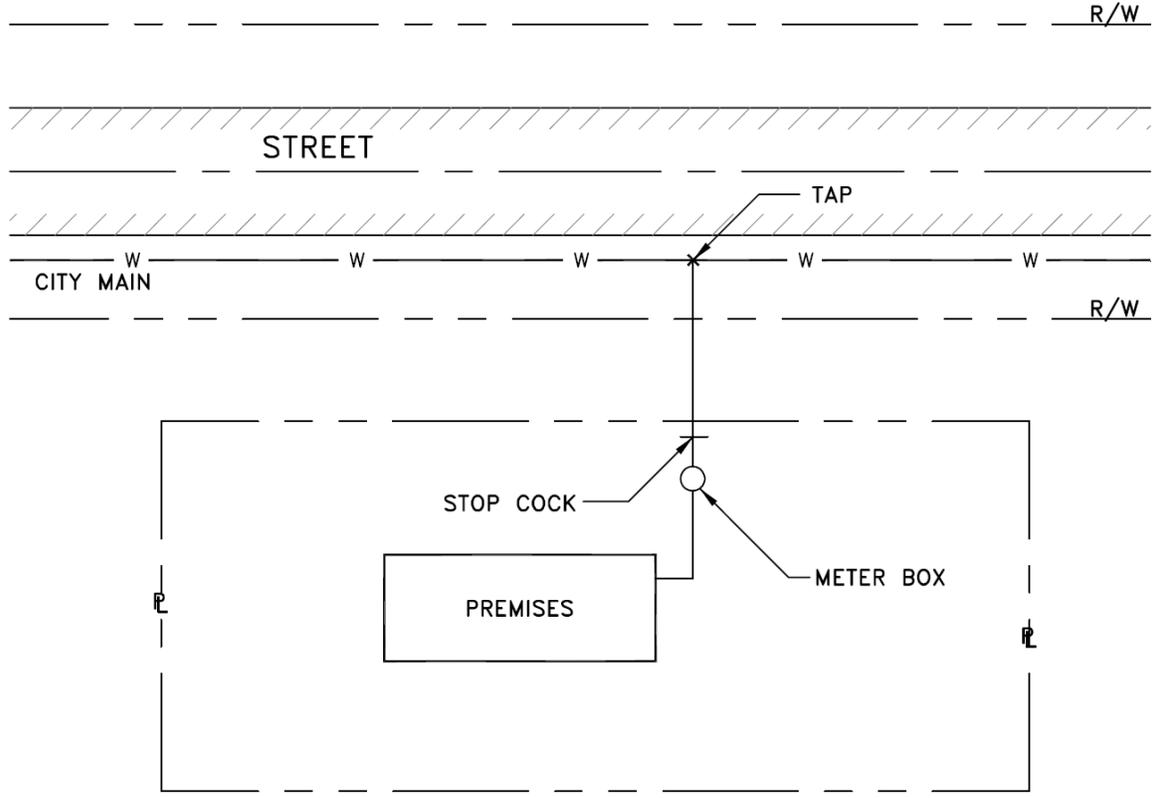
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



INSTALLATION STANDARDS AND REQUIREMENTS FOR
WATER SERVICE LINE - EXISTING SLAB ON GRADE

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 12

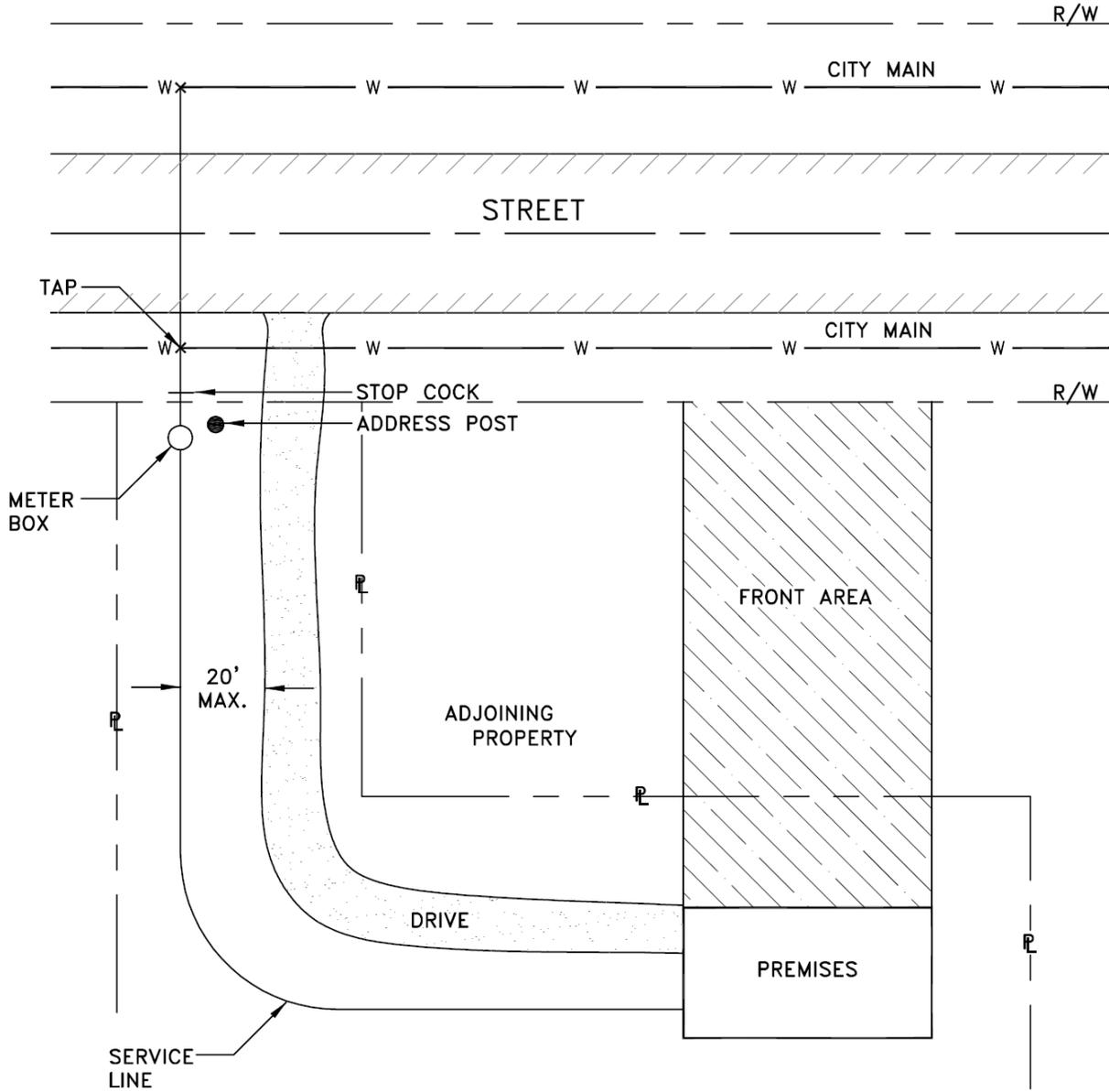
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



**INSTALLATION STANDARDS AND REQUIREMENTS FOR
WATER SERVICE LINE - FLAG OR IRREGULAR SHAPED LOTS**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 13

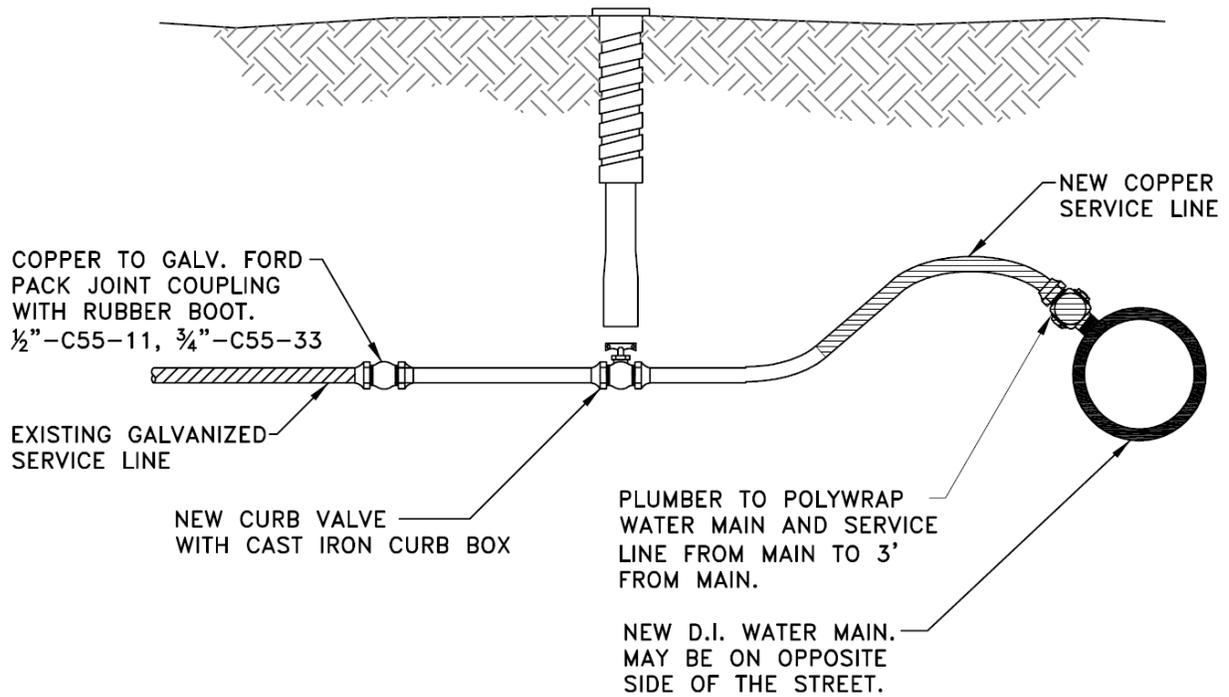
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 7/13/93

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



NOTES:

1. CONTRACTOR RESPONSIBLE FOR CUTTING IN CURB VALVE ON EXISTING LINES IF A VALVE DOES NOT EXIST
2. CONTRACTOR RESPONSIBLE FOR REPLACING CURB VALVES ON EXISTING SERVICE LINES IF THEY DO NOT WORK

CURB VALVE REPLACEMENT DETAIL
3/4" THRU 2" SERVICE CONNECTIONS

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 13-A

APPROVED BY: SH

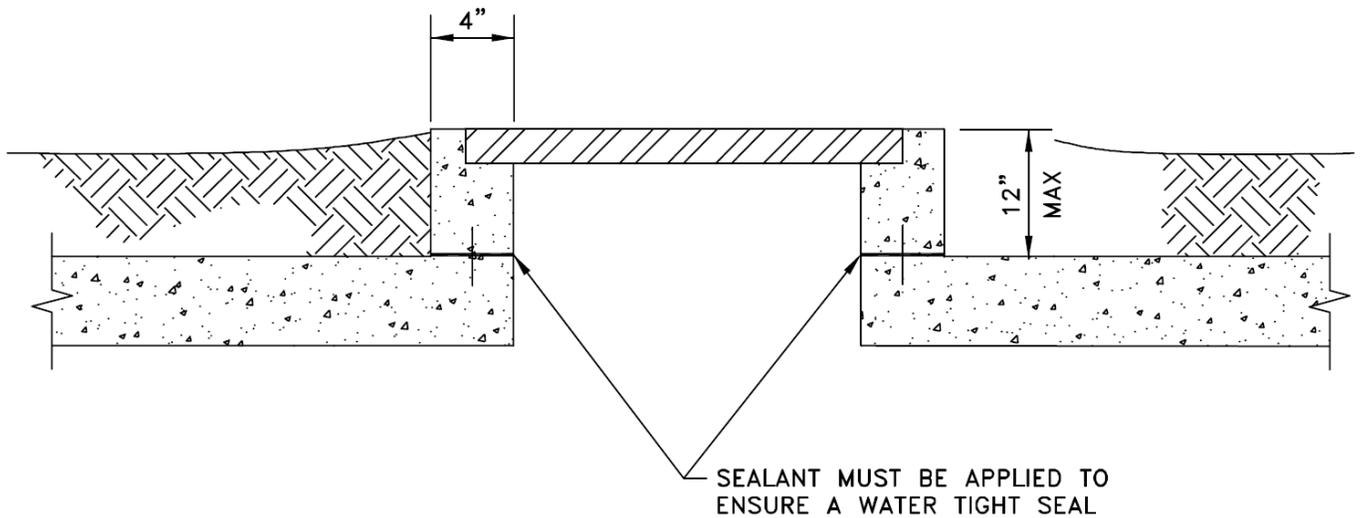
DRAWN BY: C.J.

DATE: 12/9/04

*SUBJECT TO REVISION WITHOUT NOTICE

13-A

INDEPENDENCE WATER DEPARTMENT



NOTES:

RISER MUST BE ATTACHED TO METER VAULT BY RODDING OR POURED WITH THE VAULT LID. CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE CONCRETE TOP OF THE METER VAULT TO SUPPORT ADAPTERS. RISERS WILL BE INSTALLED ON BOTH BILCO LIDS OF THE METER

REFER TO DRAWING NUMBER SD-XX AND/OR SD-XX

METER VAULT RISER DETAIL

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 13-B

APPROVED BY: _____

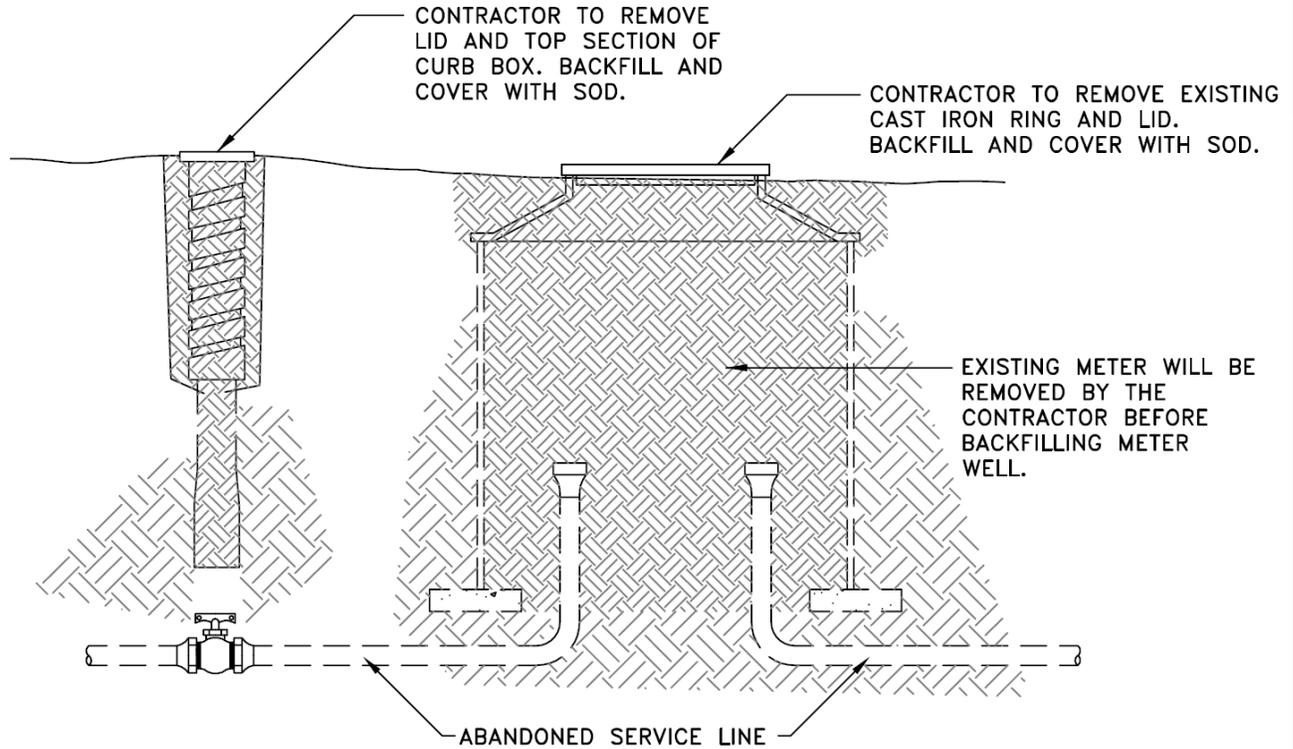
DRAWN BY: CJ

DATE: 3/1/2018

*SUBJECT TO REVISION WITHOUT NOTICE

13-B

INDEPENDENCE WATER DEPARTMENT



METER WELL REMOVAL DETAIL

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 13-C

APPROVED BY: SH.

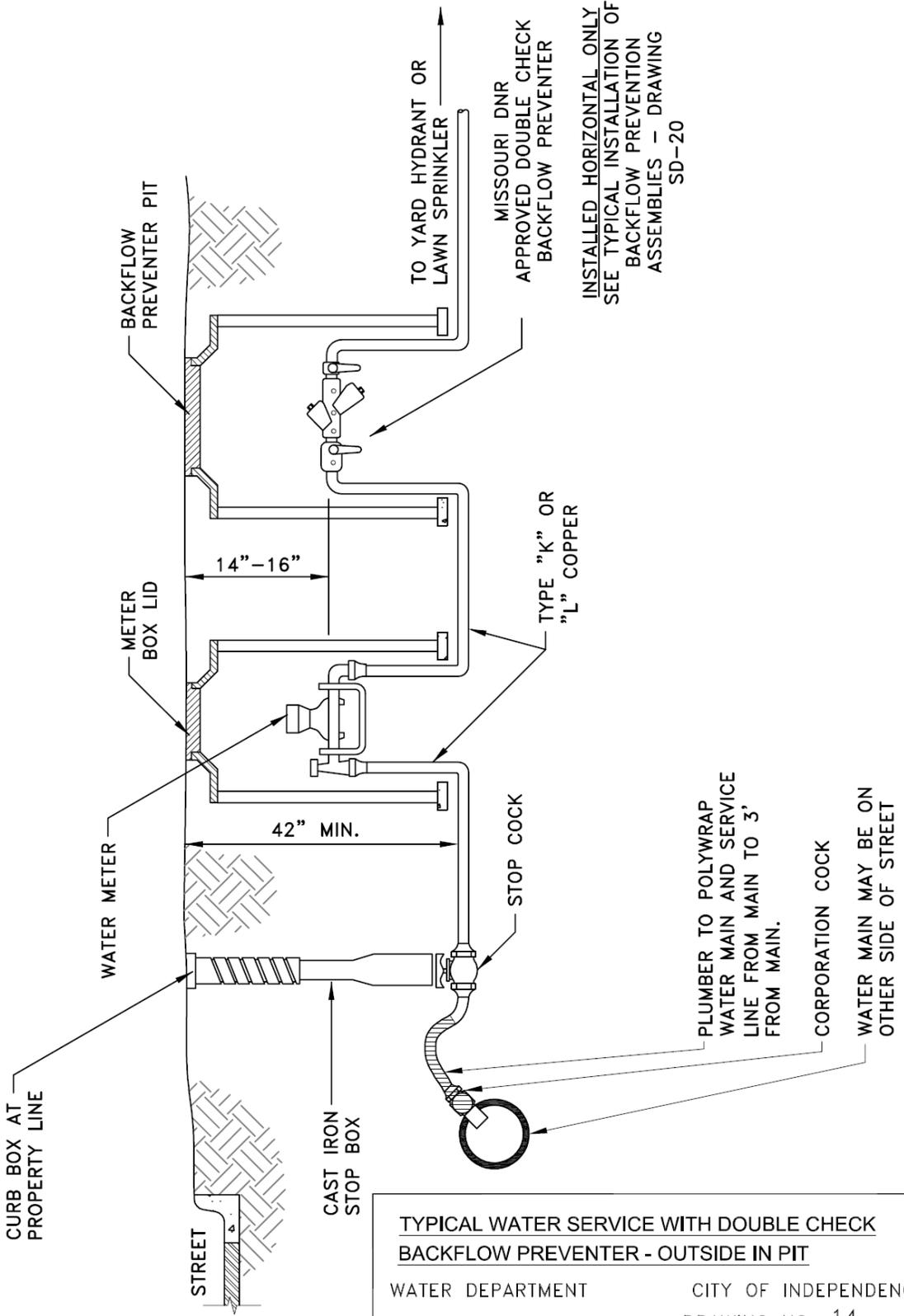
DRAWN BY: C.J.

DATE: 12/9/04

*SUBJECT TO REVISION WITHOUT NOTICE

13-C

INDEPENDENCE WATER DEPARTMENT



TYPICAL WATER SERVICE WITH DOUBLE CHECK BACKFLOW PREVENTER - OUTSIDE IN PIT

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 14

APPROVED BY: DR.

DRAWN BY: SH.

DATE: 01/03/2007

*SUBJECT TO REVISION WITHOUT NOTICE

INSTALLED HORIZONTAL ONLY
SEE TYPICAL INSTALLATION OF
BACKFLOW PREVENTION
ASSEMBLIES - DRAWING
SD-20

MISSOURI DNR
APPROVED DOUBLE CHECK
BACKFLOW PREVENTER

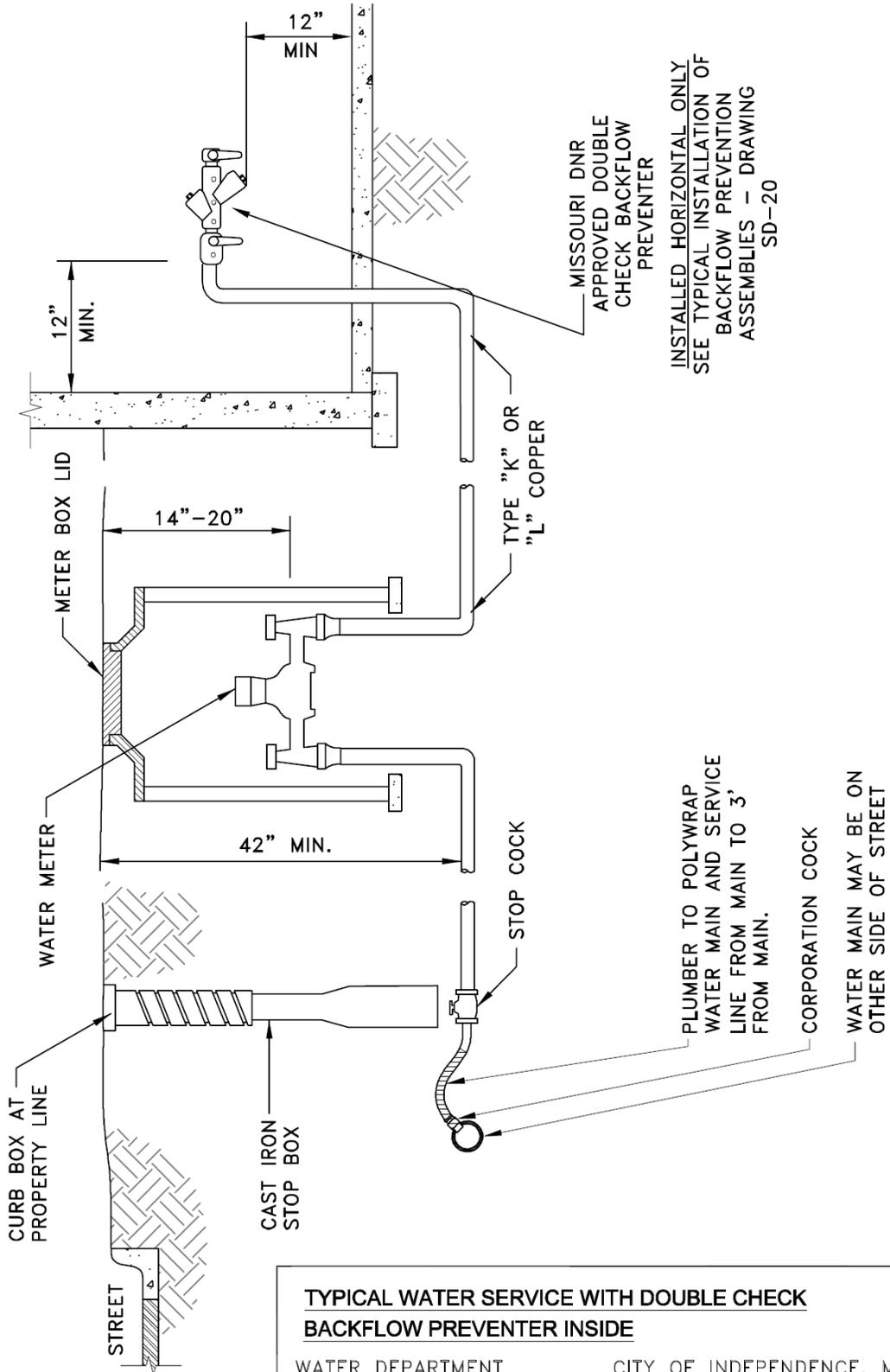
TYPE "K" OR
"L" COPPER

PLUMBER TO POLYWRAP
WATER MAIN AND SERVICE
LINE FROM MAIN TO 3'
FROM MAIN.

CORPORATION COCK

WATER MAIN MAY BE ON
OTHER SIDE OF STREET

INDEPENDENCE WATER DEPARTMENT



MISSOURI DNR
APPROVED DOUBLE
CHECK BACKFLOW
PREVENTER
INSTALLED HORIZONTAL ONLY
SEE TYPICAL INSTALLATION OF
BACKFLOW PREVENTION
ASSEMBLIES - DRAWING
SD-20

PLUMBER TO POLYWRAP
WATER MAIN AND SERVICE
LINE FROM MAIN TO 3'
FROM MAIN.
CORPORATION COCK
WATER MAIN MAY BE ON
OTHER SIDE OF STREET

**TYPICAL WATER SERVICE WITH DOUBLE CHECK
BACKFLOW PREVENTER INSIDE**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 15

APPROVED BY: SDH

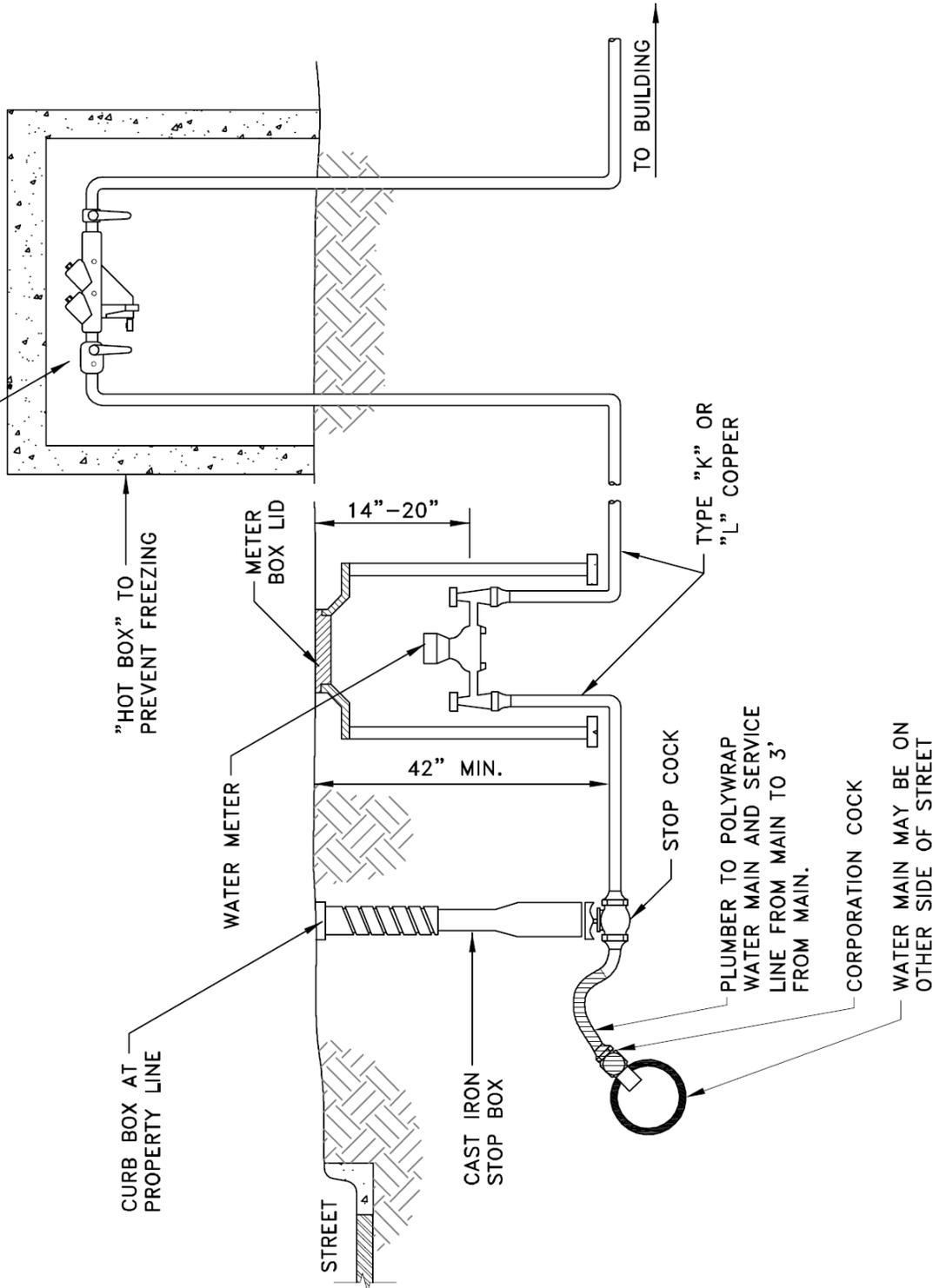
DRAWN BY: CJ

DATE: 12/18/17

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT

MISSOURI DNR
 APPROVED REDUCED PRESSURE
 PRINCIPLE BACKFLOW PREVENTOR
INSTALLED HORIZONTAL ONLY
 SEE TYPICAL INSTALLATION OF
 BACKFLOW PREVENTION
 ASSEMBLIES - DRAWING
 SD-20



**TYPICAL WATER SERVICE WITH REDUCED PRESSURE
 PRINCIPLE BACKFLOW PREVENTER - OUTSIDE**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 16

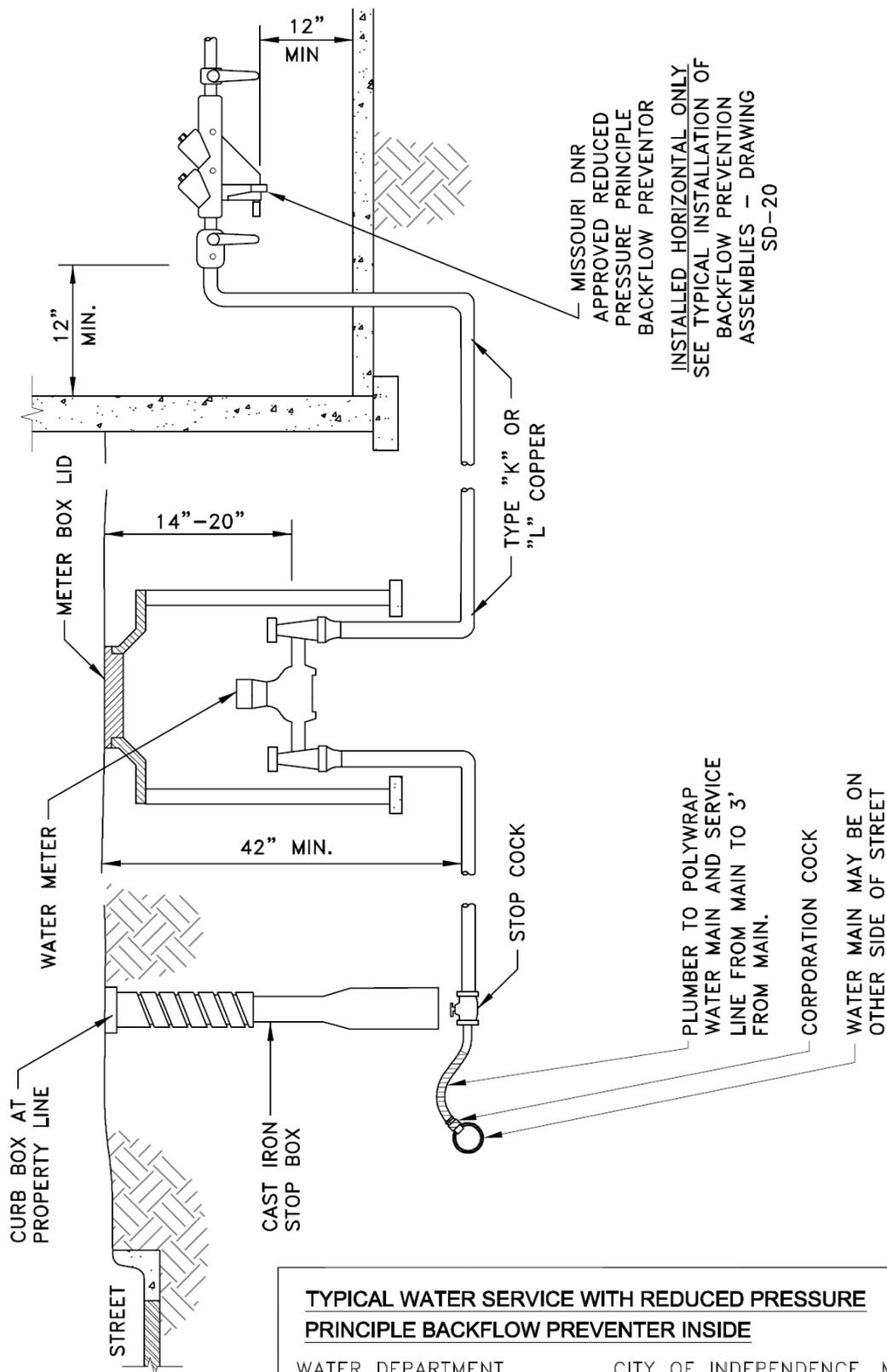
APPROVED BY: SDH

DRAWN BY: CJ

DATE: 12/18/17

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



TYPICAL WATER SERVICE WITH REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER INSIDE

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 17

APPROVED BY: SDH

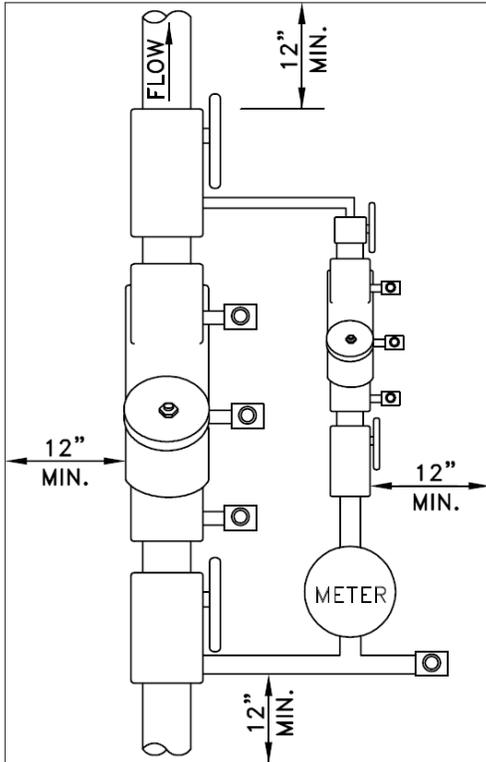
DRAWN BY: CJ

DATE: 12/18/17

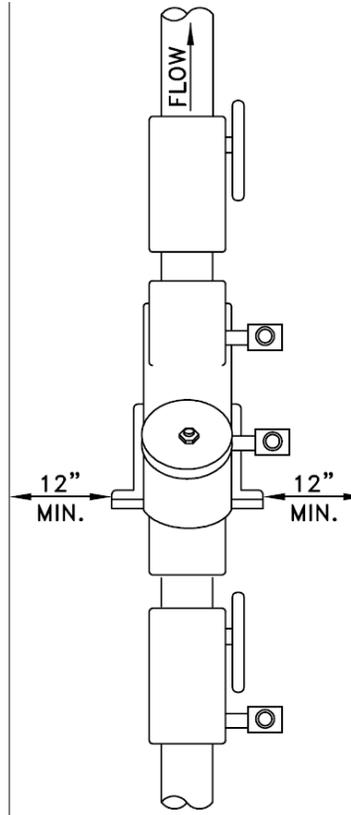
*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT

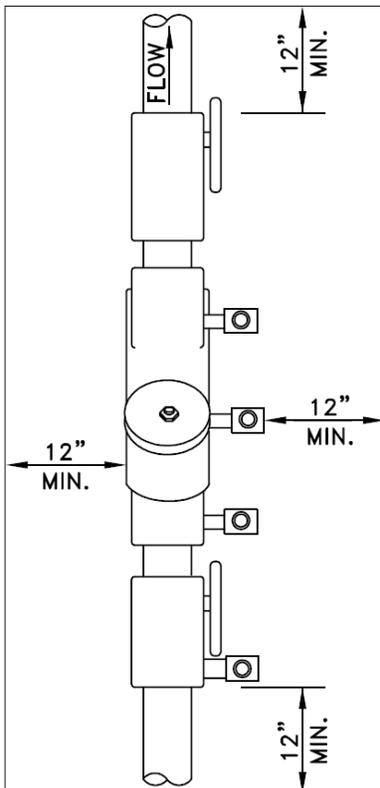
DOUBLE CHECK DETECTOR CHECK



REDUCED PRESSURE PRINCIPLE



DOUBLE CHECK



NOTES:

1. TEST COCK LOCATION MAY VARY WITH EACH BRAND. DOUBLE CHECK AND REDUCED PRESSURE WILL HAVE 4 TEST COCKS EACH AND DOUBLE CHECK DETECTOR CHECK WILL HAVE 7 TEST COCKS.
2. MEASUREMENTS ARE MINIMUM FROM ALL WALLS AND OTHER APPURTENANCES.
3. DOUBLE CHECK AND DOUBLE CHECK DETECTOR MAY BE INSTALLED IN BUILDING OR WATER DEPARTMENT APPROVED VAULT. REDUCED PRESSURE PRINCIPLE MAY BE INSTALLED EITHER ABOVE GROUND OR IN BUILDING.
4. ALL ASSEMBLIES WILL BE INSTALLED IN THE HORIZONTAL POSITION.
5. ALL ASSEMBLIES WILL BE INSTALLED WITH EASY ACCESS FOR MAINTENANCE AND REPAIRS.
6. MINIMUM CLEARANCE FROM BOTTOM OF VAULT WILL BE NO LESS THAN 18".

TYPICAL INSTALLATION OF BACKFLOW PREVENTION ASSEMBLIES

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 18

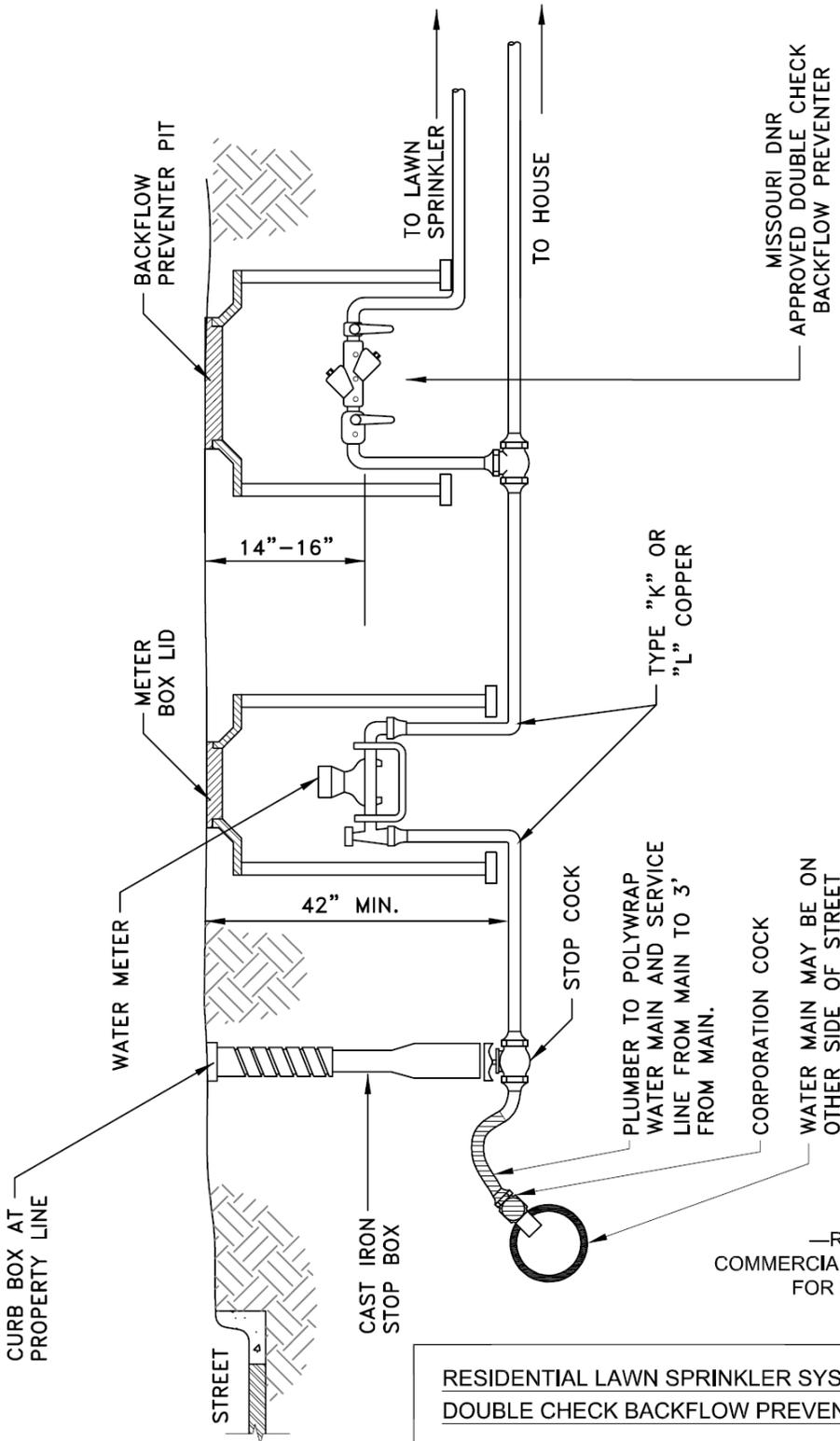
APPROVED BY: DR.

DRAWN BY: SH.

DATE: 2/24/97

*SUBJECT TO REVISION WITHOUT NOTICE

INDEPENDENCE WATER DEPARTMENT



INSTALLED HORIZONTAL ONLY
SEE TYPICAL INSTALLATION OF
BACKFLOW PREVENTION
ASSEMBLIES - DRAWING 18

—RESIDENTIAL ONLY—
COMMERCIAL REQUIRES A SEPERATE TAP
FOR IRRIGATION SYSTEMS

**RESIDENTIAL LAWN SPRINKLER SYSTEM WITH
DOUBLE CHECK BACKFLOW PREVENTER**

WATER DEPARTMENT

CITY OF INDEPENDENCE, MISSOURI

DRAWING NO. 19

APPROVED BY: D.R.

DRAWN BY: SH.

DATE: 01/03/2007

*SUBJECT TO REVISION WITHOUT NOTICE

MISSOURI DNR REGULATION CLAUSE REGARDING BACKFLOW PREVENTION

Effective January 1, 1987 the Missouri Department of Natural Resources established a new regulation governing the installation and testing of "backflow preventers."

To insure that the backflow preventer required at the project is in proper working order, the customer or owner shall have the device inspected and tested by a State certified backflow prevention tester, and the report of the test returned to the Independence Water Department.

If the report of test is not received by the Independence Water Department within **thirty (30) days** after the installation of the backflow prevention device, water service to this project will be subject to discontinuance.

Install device in a horizontal and upright position, before any tees or wyes.

The test reports for the new backflow device(s) must be received by the Independence Water Department before the Final Inspection of the project can be approved.

