



## **SECTION 15345**

### **GAS SERVICE LINES**

#### **PART 1. GENERAL**

- 1.1 The Work to be performed herein shall consist of the installation of new or replacement polyethylene natural gas service lines operating at or below 60 psig, which includes but not limited to the anodeless riser, meter cock, service piping, tracer wire, excess flow valve (or service valve), and tapping saddle (or mechanical coupling) connection to existing facilities. All work shall be performed in accordance with this section and all additional OWNER standards and specifications that may or may not be referred to in this section.
- 1.2 KUB Standards and Specifications for Polyethylene Gas Service Line Installation are intended to meet or exceed the Code of Federal Regulations title 49 part 192 – Transportation of Natural and Other Gases by Pipeline : Minimum Federal Safety Standards (hereafter referred to as “MFSS”).
- 1.3 MFSS part numbers may be included in these standards as a reference for review purposes. KUB standard requirements shall provide the minimum requirements for service line installation, unless they do not meet MFSS requirements.
- 1.4 “Service Line” as defined by MFSS (192.3) means a distribution line that transports gas from a common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the outlet of the customer meter or at the connection to a customer's piping, whichever is further downstream, or at the connection to customer piping if there is no meter.

The aforementioned Sections shall also govern and are incorporated into this section by reference. In the event of a conflict between the referenced sections, the one requiring the highest quality of work shall control.

#### **PART 2. PRODUCTS**

See tables within this section for a list of required products.

#### **PART 3. EXECUTION**

##### **3.1 General**

- A. Prior to making service connection to an existing main, the depth of the main shall be confirmed to meet the MFSS minimum depth. See minimum depth requirements for Gas mains in Section 15720. If the existing main does not meet the MFSS minimum depth, OWNER's Engineering shall be contacted prior to making the service connection.
- B. Each service line that does not have a meter installed upon completion of the service installation shall be locked at the meter valve.
- C. New commercial services shall be 1-inch minimum with a service shut-off valve of the appropriate size. Existing commercial services may be sleeved with less than 1 inch if the current load requirements can be met with a smaller pipe; but a minimum 1 inch service valve shall be installed. See Fig. 3-15345-c & 6-15345-f & 7-15345-g.
- D. See tracer wire installation requirements for polyethylene pipe in Section 15105.
- E. Service lines larger than 1 inch shall be installed by specification requirements for mains.

### 3.2 Installation Depths

- A. Service lines shall be installed to the standard depth as listed in the following table. Depth shall be measured from ground level to the top of the service line.

	State Right-of-Way	Knoxville / Knox County Right-of-Way	Customer Property / KUB Easement
Standard Depth	36"	30"	18"
MFSS Minimum Depth	18"	18"	12"
Maximum Depth	60"	60"	60"

- B. Service lines installed at less than the standard depth or more than the maximum depth shall be approved by OWNER's Resident Project Representative based on individual site conditions.
- C. Service lines installed at less than the MFSS minimum depth due to underground structures, shall be approved by OWNER's Engineering based on a design to provide the service pipe with adequate additional protection to withstand anticipated external loads.
- D. All installations of service lines at less than the standard depth or more than the maximum depth shall be noted on the service card record. Details of the area shall be included in the service card drawing.

### 3.3 Installation Restrictions

- A. Service lines shall not be installed under buildings, permanent structures, or future proposed structures.
- B. Polyethylene pipe shall be installed below ground.
- C. Anodeless risers are marked with a correct burial depth, denoted as "GROUND LEVEL HERE". MFSS require finished grade to be at this level so that all polyethylene pipe is below ground and all steel piping without cathodic protection is above ground. Risers shall be vertically plumb.
- D. Service lines should run in the most direct (shortest) path feasible between the gas main and the meter location. Where possible, service lines should be as close as practical to perpendicular with the gas main.
- E. Each service line must be installed with at least 12 inches of clearance from any other underground structure. If this clearance cannot be attained, the service line must be protected from damage that might result from the proximity of the other structure.
- F. Each service line must be installed with enough clearance from any other underground structure to allow proper maintenance and to protect against damage that might result from proximity to other structures.
- G. In addition to meeting the requirements of paragraph E or F of this section, each plastic service line main must be installed with sufficient clearance, or must be insulated, from any source of heat so as to prevent the heat from impairing the serviceability of the pipe

### 3.4 Excess Flow Valves

- A. An Excess Flow Valve (EFV) shall be installed on all new single-residential natural gas service lines and on all replacement single-residential natural gas service lines.
- B. The EFV size shall be determined by OWNER based on the customer's gas demand and service length.
- C. For services up to 400 standard cubic feet per hour (scfh) flow rate and less than 500 feet in length, a 400 scfh EFV is required.
- D. For services with a flow rate in between 400 and 800 scfh and less than 500 feet in length, an 800 scfh EFV is required.
- E. If the customer's gas demand and/or service line length exceed the parameters listed in Parts C and D, contact OWNER's Engineering for proper service line piping and EFV design.
- F. An EFV shall not be installed on service lines that are in areas, determined by OWNER, to experience contaminants in the gas that could interfere with the proper operation of the EFV.
- G. An EFV generally will not be installed in pressure districts that operate at or below ten (10) psig. Only KUB's downtown district meets this requirement. This district is generally bounded by James White

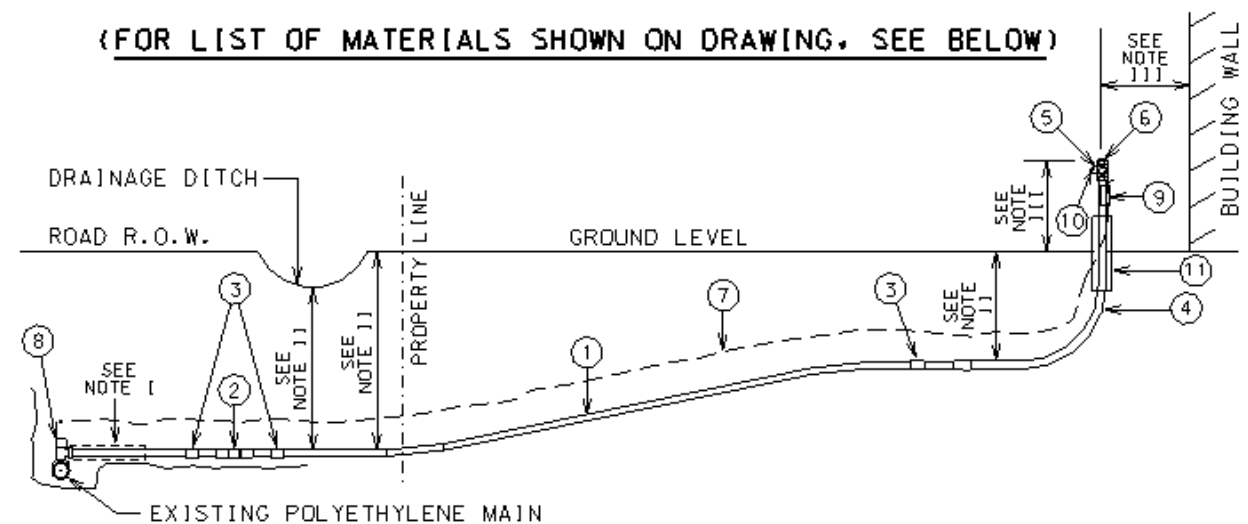
- Parkway, Fifth Avenue, Henley Street and the Tennessee River. If an EFV is requested in this area, OWNER's Engineering will consult with manufacturers to determine the availability of applicable materials for the request.
- H. The EFV shall be installed inline with, and at the same depth as, the service line piping and at no less than twelve (12) inches (with 18 inches being typical), and no more than twenty (20) inches from the connection of the service line to the gas Main or Stub (See Figure 6-15345-f).
  - I. If space does not permit the EFV installation as described in part H, then the EFV shall be located as near as practical to the supply main, but **NOT** under paving or a road bed unless it is impracticable to do otherwise and approved by OWNER's Engineering. If the EFV must be installed under pavement, then the EFV shall have fused connections.
  - J. New service lines shall **NOT** be connected to an existing service line that contains an EFV.
  - K. All new and existing service lines that have been retrofitted/modified/reconnected shall be protected with individual EFV's. *If an EFV is not present on an existing service line or stub, then a new service line may be connected to the existing service line or stub. When performing installations in this manner, the installer shall take care to follow the proper procedures as previously outlined in this section and to protect the maximum practical amount of pipe for BOTH service lines. These type installations shall also comply with all parts of this section – see especially 3.10.*
  - L. All residential service lines containing an EFV shall have a tag or other OWNER-approved EFV label attached to the riser in plain sight for the ease of field verification of EFV presence.
  - M. Gas service records shall indicate the existence of the EFV.

### **3.5 Standard Service Details**

#### **3.5.1 Polyethylene Service Connected to Polyethylene Main**

- A. Service line connection on polyethylene main shall be made by use of a polyethylene fusion service saddle (tapping tee), as shown on Figure 1-15345-a.
- B. All joints on service lines connected to polyethylene mains shall be made by socket, saddle, or butt fusion. (Butt fusion acceptable only for pipe larger than 2 inch).
- C. The critical stress area for polyethylene service lines is in the first several feet beyond the service tee. This portion of pipe shall be protected using a support sleeve (even if pipe is looped). This support sleeve should be included with service tee for polyethylene mains.
- D. If the support sleeve is not included, a piece of plastic pipe 12 to 18 inches long with a wall thickness equivalent to an SDR 17 may be used. For ½" and one inch services on polyethylene mains, the sleeve should be no larger than 2". For ½" and one inch services on steel, cast iron, or ductile iron mains, the sleeve should be 4". The sleeve shall completely cover the area where the service pipe inserts into the service tee.
- E. IF APPROVED BY OWNER's RESIDENT PROJECT REPRESENTATIVE, individual service lines may be looped in the trench when installation of a support sleeve is impractical. Approval shall be for each site prior to installation of looped connection. If a service connection is made by looping, then details of the connection shall be noted on the service card drawing.
- F. Backfill shall be well-compacted around the service tee and special care taken not to damage the piping during compaction.

### 3.5.1A. Residential Services



**Figure 1-15345-a : Typical Installation of 1/2" Fusion PE Residential Service on PE Mains**

Notes:

- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. If outside of paved roadway surface, EFV connection is 12 to 20 inches from service connection to main.
- II. For depth requirements see 3.2.
- III. For location requirements see 3.6.
- IV. Compact sidefills around and under tie-in.
- V. Test complete service line prior to tapping main, see 3.7.
- VI. Item 11 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.

**Materials List for Figure 1-15345-a**

**1/2" CTS Polyethylene Residential Service on Polyethylene Main**

Item	Quantity	KUB Item #	Description
1	1-Lot	381491	1/2" CTS Pipe
2	1	362046	400 scfh - 1/2" CTS Fusion Excess Flow Valve
		361892	800 scfh - 1/2" CTS Fusion Excess Flow Valve
3	3	374769	1/2" CTS Socket Fusion Coupling
4	1	361903	1/2" CTS x 3/4" Anodeless Service Riser
5	1	362167	3/4" Meter Valve
6	1	360354	3/4" Plug
7	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
8	1	361914	1-1/4" x 1/2" CTS Tapping Tee
		361925	2" x 1/2" CTS Tapping Tee
		361936	4" x 1/2" CTS Tapping Tee
		361947	6" x 1/2" CTS Tapping Tee
		361958	8" x 1/2" CTS Tapping Tee
		361969	12" x 1/2" CTS Tapping Tee
9	1	361980	Tracer Wire Clamp for 3/4" Service Riser
10	1	585971	Meter Valve Lock
11	1		4" HDPE corrugated perforated drain pipe

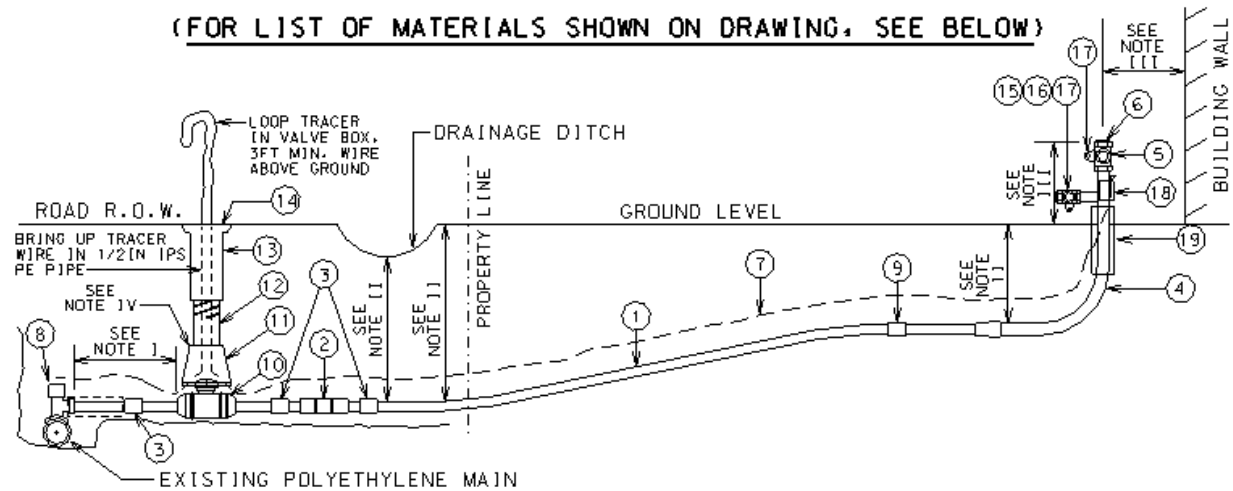


# KNOXVILLE UTILITIES BOARD STANDARDS AND SPECIFICATIONS

## Materials List for Figure 1-15345-a

### 1/2" IPS Polyethylene Residential Service on Polyethylene Main

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381558	1/2" IPS Pipe
2	1	361386	400 scfh - 1/2" IPS Fusion Excess Flow Valve
		362013	800 scfh - 1/2" IPS Fusion Excess Flow Valve
3	3	383828	1/2" IPS Socket Fusion Coupling
4	1	360022	1/2" IPS x 3/4" Anodeless Service Riser
5	1	362167	3/4" Meter Valve
6	1	360354	3/4" Plug
7	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
8	1	386029	1-1/4" x 1/2" IPS Tapping Tee
		384115	2" x 1/2" IPS Tapping Tee
		300049	2" x 1/2" IPS Electrofusion Tapping Tee
		380972	4" x 1/2" IPS Tapping Tee
		300050	4" x 1/2" IPS Electrofusion Tapping Tee
		386771	6" x 1/2" IPS Tapping Tee
		374850	8" x 1/2" IPS Tapping Tee
		360924	12" x 1/2" IPS Tapping Tee
9	1	361980	Tracer Wire Clamp for 3/4" Service Riser
10	1	585971	Meter Valve Lock
11	1		4" HDPE corrugated perforated drain pipe



**Figure 2-15345-b : Typical Installation of 1" Fusion PE Residential Service on PE Mains**

Notes:

- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. Service Line Valve shall be 24 inches from service connection to main.
- II. For depth requirements see 3.2.
- III. For location requirements see 3.6.
- IV. Do not allow box to rest directly on pipe or valve. To support box, use blocks or bricks parallel to pipe, but not in contact with pipe.
- V. Compact sidefills around and under tie-in.
- VI. Test complete service line prior to tapping main, see 3.7.
- VII. Item 19 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.

### Materials List for Figure 2-15345-b

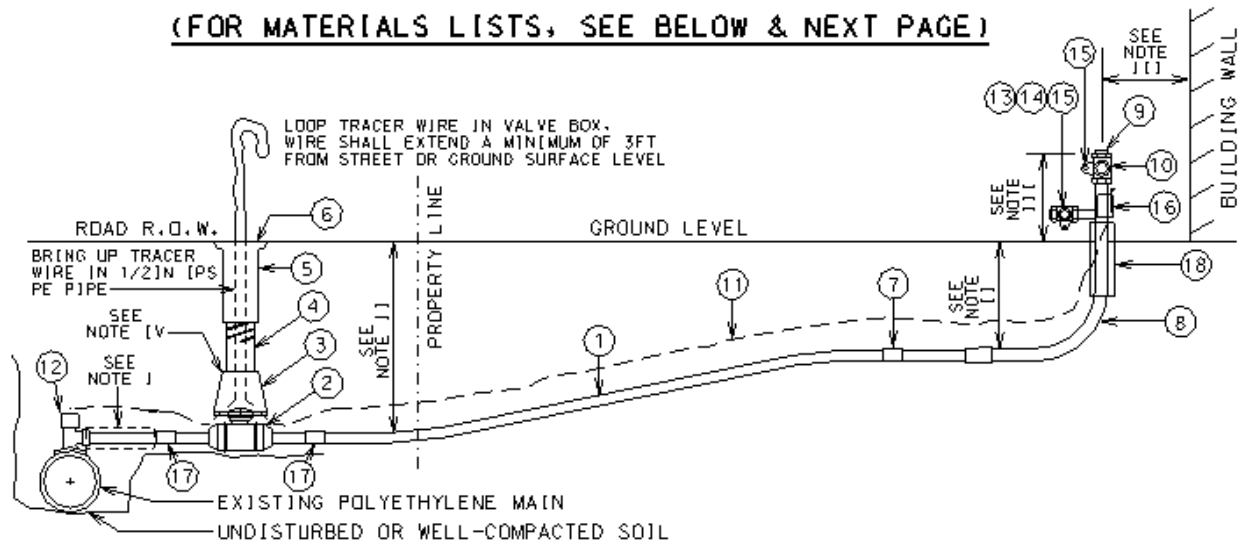
## 1" IPS Polyethylene Residential Service on Polyethylene Main

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	386060	1" IPS Pipe
2	1	362057	800 scfh - 1" IPS Fusion Excess Flow Valve
		362068	1800 scfh - 1" IPS Fusion Excess Flow Valve
3	3	385013	1" IPS Socket Fusion Coupling
4	1	360627	1 1/4" Anodeless Service Riser w/ Bypass
5	1	362189	1 1/4" Meter Valve
6	1	363846	1 1/4" Plug
7	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
8	1	386052	1 1/4" x 1" IPS Tapping Tee
		380949	2" x 1" IPS Tapping Tee
		380964	4" x 1" IPS Tapping Tee
		386789	6" x 1" IPS Tapping Tee
		374876	8" x 1" IPS Tapping Tee
		360902	12" x 1" IPS Tapping Tee
9	1	382598	1 1/4" x 1" Reducer
10	1	371708	1" IPS Valve
11	1	294074	Valve Box Base

12	1	360440	Valve Box Middle Section #60-B
13	1	360451	Valve Box Top Section #54-B
14	1	383398	Valve Box Cast Iron Lid
15	1	362178	1" Bypass Meter Cock
16	1	362814	1" Plug
17	2	585971	Meter Valve Lock
18	1	362112	Tracer Wire Clamp for 1 1/4" Service riser
19	1		4" HDPE corrugated perforated drain pipe

### 3.5.1B. Commercial Services

(FOR MATERIALS LISTS, SEE BELOW & NEXT PAGE)



**Figure 3-15345-c : Typical Installation of Polyethylene Commercial Service on PE Mains**

Notes:

- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. Service Line Valve shall be 24 inches from service connection to main.
- II. For depth requirements see 3.2.
- III. For location requirements see 3.6.
- IV. Do not allow box to rest directly on pipe or valve. To support box, use blocks or bricks parallel to pipe, but not in contact with pipe.
- V. Compact sidefills around and under tie-in.
- VI. Test complete service line prior to tapping main, see 3.7.
- VII. Item 18 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.

### Materials List for Figure 3-15345-c ; 1" IPS Commercial Polyethylene Service on Polyethylene Mains

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	386060	1" IPS Pipe
2	1	371708	1" IPS Valve
3	1	294074	Valve Box Base
4	1	360440	Valve Box Middle Section #60-B
5	1	360451	Valve Box Top Section #54-B
6	1	383398	Valve Box Cast Iron Lid



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7	1	382598	1 1/4" x 1" IPS Reducer
8	1	360627	1 1/4" Anodeless Service Riser w/ Bypass
9	1	363846	1 1/4" Plug
10	1	362189	1 1/4" Meter Valve
11	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
12	1	386052	1 1/4" x 1" IPS Tapping Tee
		380949	2" x 1" IPS Tapping Tee
		380964	4" x 1" IPS Tapping Tee
		386789	6" x 1" IPS Tapping Tee
		374876	8" x 1" IPS Tapping Tee
		360902	12" x 1" IPS Tapping Tee
13	1	362178	1" Bypass Meter Cock
14	1	362814	1" Plug
15	2	585971	Meter Valve Lock
16	1	362112	Tracer Wire Clamp for 1 1/4" Service Riser
17	2	385013	1" IPS Socket Fusion Coupling
18	1		4" HDPE corrugated perforated drain pipe

### Materials List for Figure 3-15345-c ; 2" IPS Commercial Polyethylene Service on Polyethylene Mains

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381160	2" IPS Pipe
2	1	371740	2" IPS Valve
3	1	294074	Valve Box Base
4	1	360440	Valve Box Middle Section #60-B
5	1	360451	Valve Box Top Section #54-B
6	1	383398	Valve Box Cast Iron Lid
8	1	360616	2" Anodeless Service Riser w/ Bypass
9	1	364174	2" Plug
10	1	362200	2" Meter Valve
11	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
12	1	372193	2" x 2" IPS Tapping Tee
		380311	4" x 2" IPS Tapping Tee
		380840	6" x 2" IPS Tapping Tee
		374835	8" x 2" IPS Tapping Tee
		360891	12" x 2" IPS Tapping Tee
13	1	362211	1-1/4" Bypass Meter Cock
14	1	363846	1-1/4" Plug
15	2	585971	Meter Valve Lock
16	1	362123	Tracer Wire Clamp for 2" Service Riser
17	2	383810	2" Socket Fusion Coupling
18	1		4" HDPE corrugated perforated drain pipe

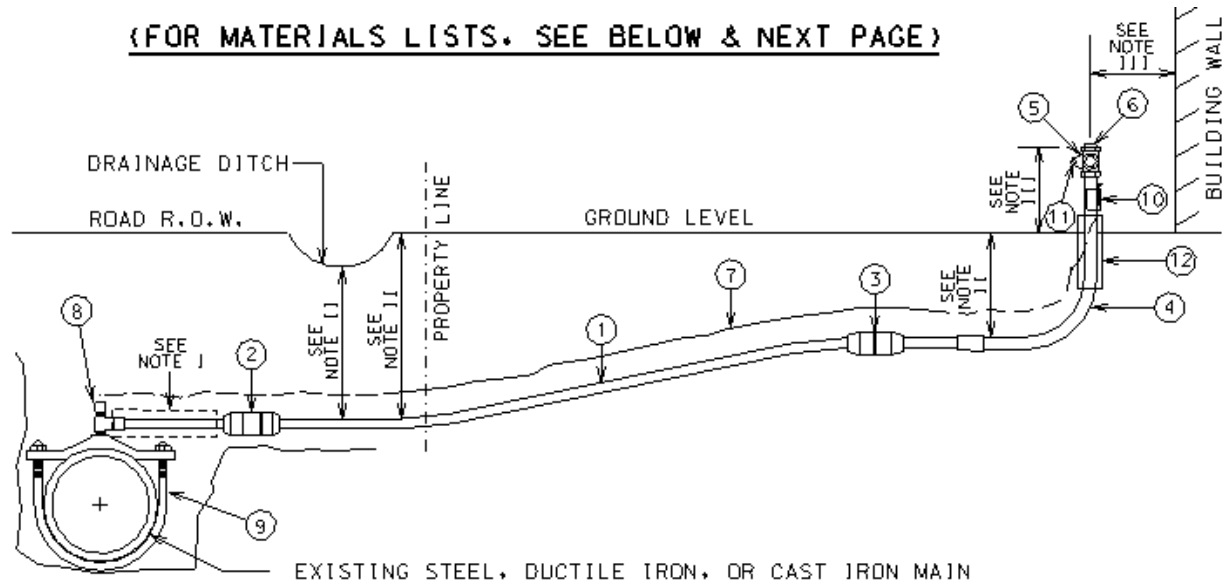
### 3.5.2 Polyethylene Service Connected to Steel / Cast Iron /Ductile Iron Main

- A. Joints on polyethylene services connected to Steel, Ductile Iron, & Cast Iron mains may be by OWNER-approved fusion or stab couplings.
- B. For service lines larger than 2", special design will be prepared by OWNER's Engineering.
- C. When connecting a 2" service to a 2" main, use a 1-1/4" saddle and tapping tee, and then use a polyethylene 2" X 1-1/4" reducer after Dresser coupling to go to 2" I.D.
- D. Saddles for cast iron & ductile iron mains will have the letters, "CIP", on straps. Saddles for steel mains will have the letters, "ST", on straps.
- E. Polyethylene pipe that is not encased shall have an electrically conducting #12 coated solid-copper tracer wire for locating the pipe while it is underground. Tracer wire should not be wrapped around the



- pipe, and contact with the pipe must be minimized. Tracer wire installed for pipe locating purposes must be resistant to corrosion damage.
- F. Polyethylene pipe that is encased in plastic shall also have a tracer wire. For 1" & larger steel encasement, the tracer wire shall be bonded to the steel casing, if it is impractical to install the tracer wire inside of the existing steel casing. For pipe smaller than 1", tracer wire shall be connected by use of a grounding clamp.

### 3.5.2A. Residential Services



**Figure 4-15345-d : Polyethylene 1/2" Residential Service Connection on CI, DI, or Steel Mains**

Notes:

- I. Service line shall be encased in the protective sleeve (4" plastic pipe 12 to 18 inches in length) at the connection of the service line to the service saddle. If outside of paved roadway surface, EFV is 12 to 20 inches from service connection to main.
- II. For depth requirements see 3.2.
- III. For location requirements see 3.6.
- IV. Compact sidefills around and under tie-in.
- V. Test complete service line prior to tapping main, see 3.7.
- VI. For Cathodic Protection, see 3.15.
- VII. Item 12 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.



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### Materials List for Figure 4-15345-d

#### 1/2" CTS Polyethylene Residential Service on ST/CI/DI Mains

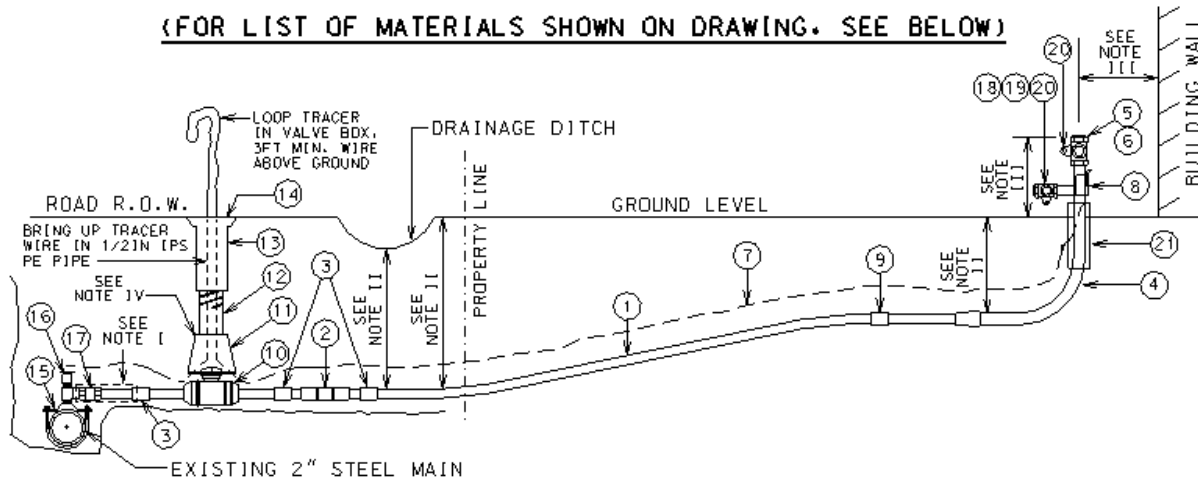
<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381491	1/2" CTS Pipe
2	1	360847	400 scfh - 1/2" CTS Stab Excess Flow Valve
		361991	800 scfh - 1/2" CTS Stab Excess Flow Valve
3	1	374769	1/2" CTS Stab Coupling
4	1	361903	1/2" CTS x 3/4" Anodeless Service Riser
5	1	362167	3/4" Meter Valve
6	1	360354	3/4" Plug
7	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
8	1	362024	Valve Tee, 1" STL x 1/2" CTS PE
9	1	364760	2" STL x 1" Service Saddle
		382085	4" STL x 1" Service Saddle
		382093	4" CI/DI x 1" Service Saddle
		382150	6" STL x 1" Service Saddle
		382168	6" CI/DI x 1" Service Saddle
		371872	8" STL x 1" Service Saddle
		382259	8" CI/DI x 1" Service Saddle
		382366	12" STL x 1" Service Saddle
		382366	12" CI/DI x 1" Service Saddle
10	1	361980	Tracer Wire Clamp for 3/4" Service Riser
11	1	585971	Meter Valve Lock
12	1		4" HDPE corrugated perforated drain pipe

### Materials List for Figure 4-15345-d

#### 1/2" IPS Polyethylene Residential Service on ST/CI/DI Mains

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381558	1/2" IPS Pipe
2	1	360825	400 scfh - 1/2" IPS Stab Excess Flow Valve
		360836	800 scfh - 1/2" IPS Stab Excess Flow Valve
3	1	374140	1/2" IPS Stab Coupling
4	1	360022	1/2" x 3/4" Anodeless Service Riser
5	1	362167	3/4" Meter Valve
6	1	360354	3/4" Plug
7	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
8	1	383877	Valve Tee, 1" STL x 1/2" IPS PE
9	1	364760	2" STL x 1" Service Saddle
		382085	4" STL x 1" Service Saddle
		382093	4" CI/DI x 1" Service Saddle
		382150	6" STL x 1" Service Saddle
		382168	6" CI/DI x 1" Service Saddle
		371872	8" STL x 1" Service Saddle
		382259	8" CI/DI x 1" Service Saddle
		382366	12" STL x 1" Service Saddle
		382366	12" CI/DI x 1" Service Saddle
10	1	361980	Tracer Wire Clamp for 3/4" Service Riser
11	1	585971	Meter Valve Lock
12	1		4" HDPE corrugated perforated drain pipe

(FOR LIST OF MATERIALS SHOWN ON DRAWING. SEE BELOW)



**Figure 5-15345-e**

(Typical Installation of 1" Fusion PE Residential Service on 2" Steel Mains)

Notes:

- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. Service Line Valve shall be 24 inches from service connection to main.
- II. For depth requirements see 3.2.
- III. For location requirements see 3.6.
- IV. Do not allow box to rest directly on pipe or valve. To support box, use blocks or bricks parallel to pipe, but not in contact with pipe.
- V. Compact sidefills around and under tie-in.
- VI. Test complete service line prior to tapping main, see 3.7.
- VII. For Cathodic Protection, see 3.15.
- VIII. Item 21 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.

### Materials List for Figure 5-15345-e

#### 1" IPS Polyethylene Residential Service on ST/CI/DI Mains 2" & larger

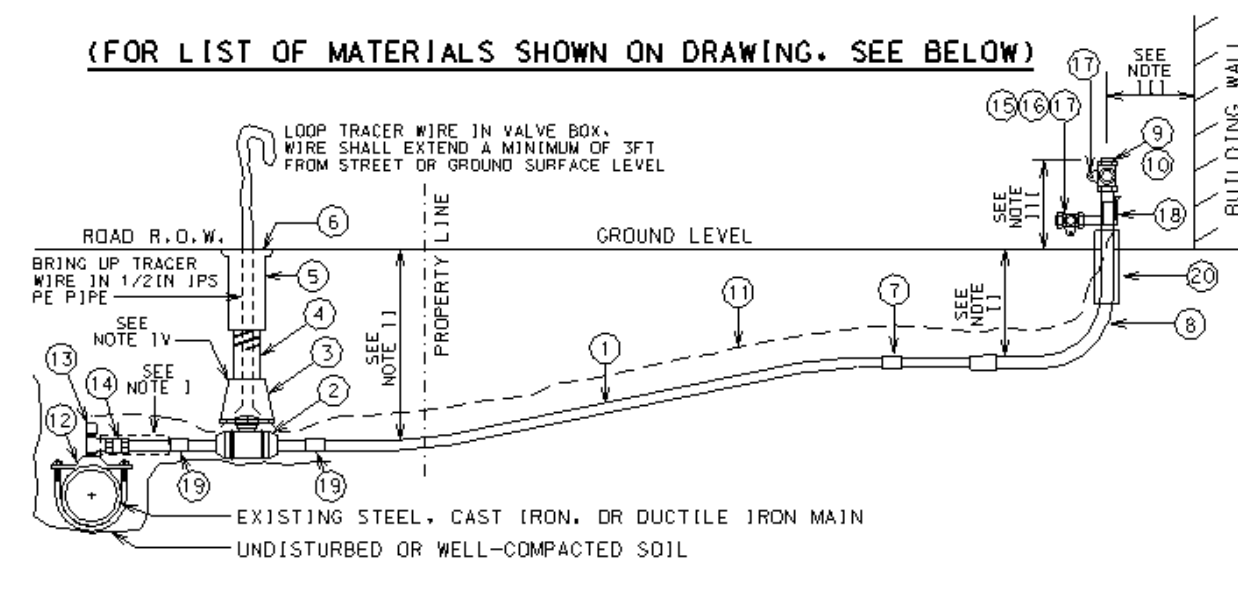
Item	Quantity	KUB Item #	Description
1	1-Lot	386060	1" IPS Pipe
2	1	360858	800 scfh - 1" IPS Fusion Excess Flow Valve
		360869	1800 scfh - 1" IPS Fusion Excess Flow Valve
3	3	374124	1" IPS Socket Fusion Coupling
4	1	360627	1 1/4" Anodeless Service Riser w/ Bypass
5	1	362189	1 1/4" Meter Valve
6	1	363846	1 1/4" Plug
7	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
8	1	362112	Tracer Wire Clamp for 1 1/4" Service Riser
9	1	382598	1 1/4" x 1" IPS Reducer
10	1	371708	1" IPS Valve
11	1	294074	Valve Box Base
12	1	360440	Valve Box Middle Section #60-B
13	1	360451	Valve Box Top Section #54-B
14	1	383398	Valve Box Cast Iron Lid
15	1	364760	2" STL x 1" Service Saddle



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16	1	362608	1" STL/CI/DI x 1" PE Valve Tee
17	1	372417	1" Plasti-Lok Coupling
18	1	362178	1" Bypass Meter Valve
19	1	362814	1" Plug
20	1	585971	Meter Valve Lock
21	1		4" HDPE corrugated perforated drain pipe

## 3.5.2B Commercial Services



**Figure 6-15345-f**

(Typical Installation of 1" Polyethylene Commercial Service on STL/CI/DI Mains)

Notes:

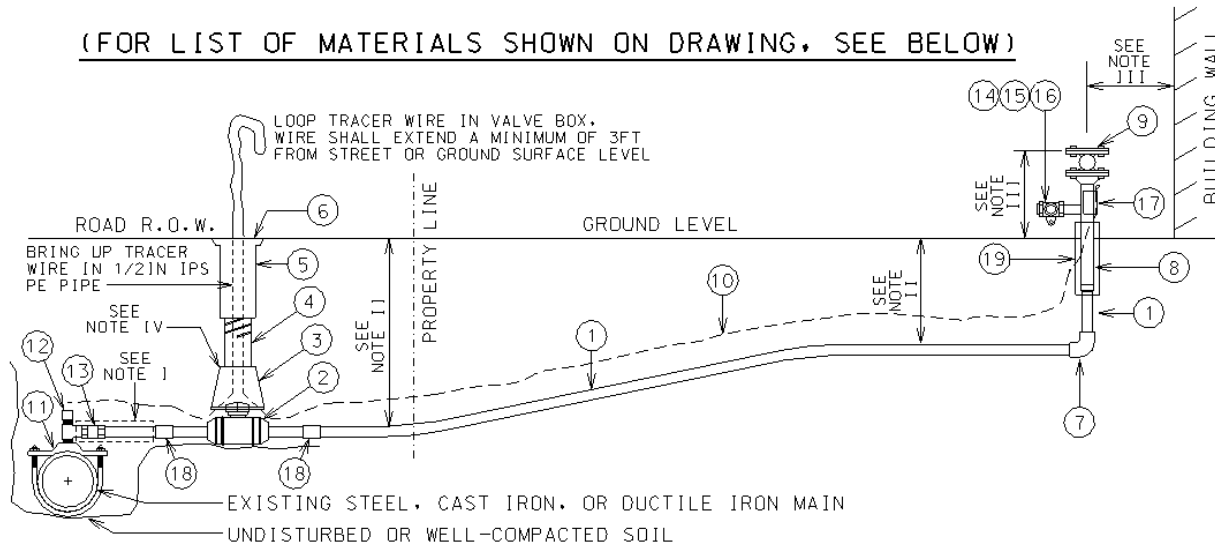
- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. Service Line Valve shall be 24 inches from service connection to main.
- II. For depth requirements, see 3.2.
- III. For location requirements, see 3.6.
- IV. Do not allow box to rest directly on pipe or valve. To support box, use blocks or bricks parallel to pipe, but not touching pipe.
- V. Compact sidefills around and under tie-in.
- VI. Test complete service line prior to tapping main, see 3.7.
- VII. For Cathodic Protection, see 3.15.
- VIII. Item 20 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.

### Materials List for Figure 6-15345-f 1" IPS Commercial Polyethylene Service on CI, DI, or Steel Mains

Item	Quantity	KUB Item #	Description
1	1-Lot	386060	1" IPS Pipe
2	1	371708	1" IPS Service Valve
3	1	294074	Valve Box Base
4	1	360440	Valve Box Middle Section #60-B
5	1	360451	Valve Box Top Section #54-B

6	1	383398	Valve Box Cast Iron Lid
7	1	382598	1 1/4" x 1" IPS Reducer
8	1	360627	1 1/4" Anodeless Service Riser w/ Bypass
9	1	362189	1 1/4" Meter Cock
10	1	363846	1 1/4" Plug
11	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
12	1	364760	2" STL x 1" Service Saddle
		382085	4" STL x 1" Service Saddle
		382093	4" CI/DI x 1" Service Saddle
		382150	6" STL x 1" Service Saddle
		382168	6" CI/DI x 1" Service Saddle
		371872	8" STL x 1" Service Saddle
		382259	8" CI/DI x 1" Service Saddle
		382366	12" STL x 1" Service Saddle
		382366	12" CI/DI x 1" Service Saddle
13	1	362608	1" STL/CI/DI x 1" PE Valve Tee
14	1	372417	1" Plasti-Lok Coupling
15	1	362178	1" Bypass Meter Cock
16	1	362814	1" Plug
17	1	585971	Meter Valve Lock
18	1	362112	Tracer Wire Clamp for 1 1/4" Service Riser
19	2	374124	1" IPS Socket Fusion Coupling
20	1		4" HDPE corrugated perforated drain pipe

(FOR LIST OF MATERIALS SHOWN ON DRAWING, SEE BELOW)



**Figure 7-15345-g** (Typical Installation of 2" Polyethylene Commercial Service on STL/CI/DI Mains)

Notes:

- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. Service Line Valve shall be 24 inches from service connection to main.
- II. For depth requirements, see 3.2.
- III. For location requirements, see 3.6.
- IV. Do not allow box to rest directly on pipe or valve. To support box, use blocks or bricks parallel to pipe, but not in contact with pipe.
- V. Compact sidefills around and under tie-in.



- VI. Test complete service line prior to tapping main, see 3.7.
- VII. For Cathodic Protection, see 3.15.
- VIII. Item 19 shall be 18" long and begin 2" below the transition on the riser to allow for placement of the tracer wire clamp.

**Materials List for Figure 7-15345-g 2" IPS Commercial Polyethylene Service on CI, DI, or Steel Mains**

<b>Item</b>	<b>Quantity</b>	<b>KUB Item #</b>	<b>Description</b>
1	1-Lot	381160	2" IPS Pipe
2	1	371740	2" IPS Service Valve
3	1	294074	Valve Box Base
4	1	360440	Valve Box Middle Section #60-B
5	1	360451	Valve Box Top Section #54-B
6	1	383398	Valve Box Cast Iron Lid
7	1	364232	2" 90-Degree Socket Fusion Ell
8	1	360616	2" Anodeless Service Riser w/ Bypass
9	1	383471	2" Flange Valve
10	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
11	1	362035	2" STL x 2" Service Saddle
		382127	4" STL x 2" Service Saddle
		382135	4" CI/DI x 2" Service Saddle
		382192	6" STL x 2" Service Saddle
		382200	6" CI/DI x 2" Service Saddle
		382283	8" STL x 2" Service Saddle
		382291	8" CI/DI x 2" Service Saddle
		362343	12" STL x 2" Service Saddle
		362343	12" CI/DI x 2" Service Saddle
12	1	361758	2" STL/CI/DI x 2" PE Valve Tee (Omit on 2 SS)
13	1	372458	2" Plasti-Lok Coupling
14	1	362211	1-1/4" Bypass Meter Cock
15	1	363846	1-1/4" Plug
16	1	585971	Meter Valve Lock
17	1	362123	Tracer Wire Clamp for 2" Service Riser
18	2	383810	2" Socket Fusion Coupling
19	1		4" HDPE corrugated perforated drain pipe

### **3.6 Riser location / Installation**

#### **3.6.1 General**

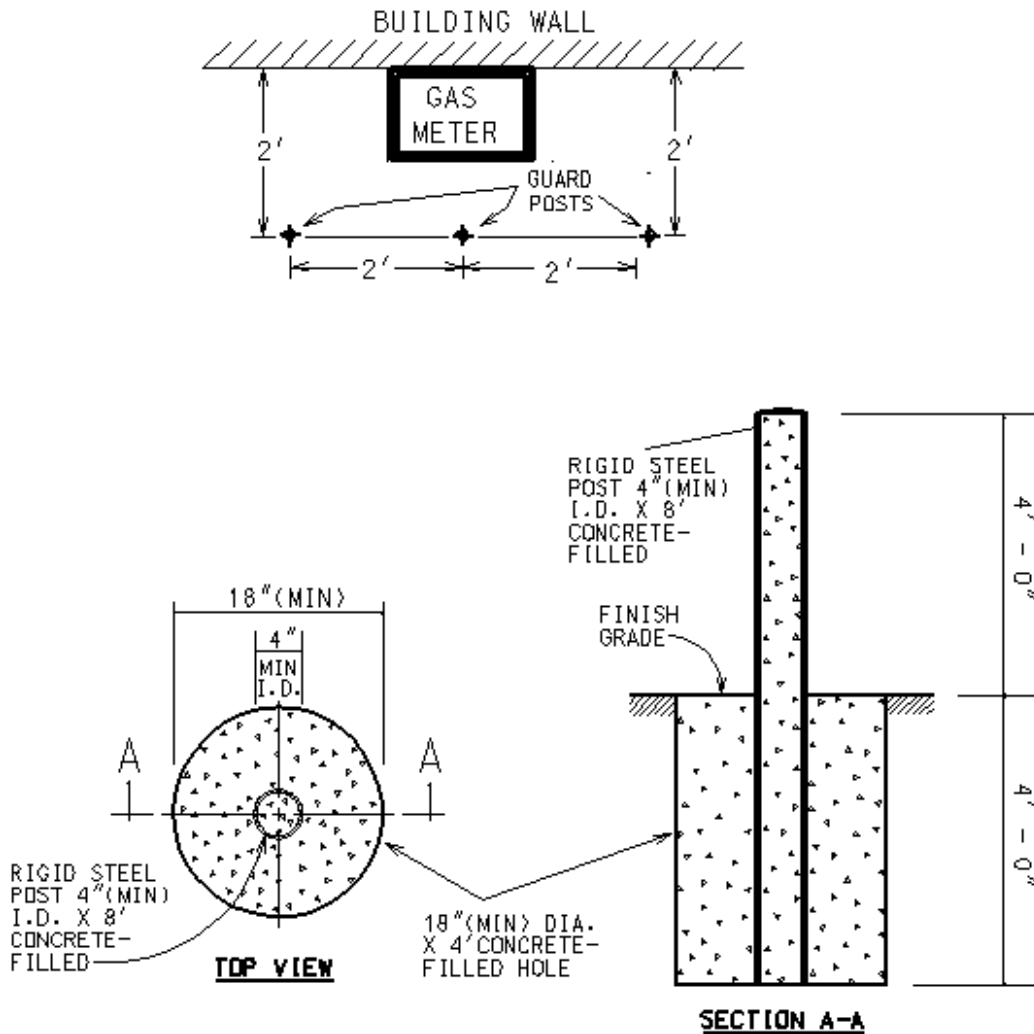
- A. When installing the service riser, make sure that the weight of the meter is supported by the steel riser and fuel line piping and not the plastic service line.
- B. Pre-bent anodeless risers shall be used for all service line applications, unless otherwise approved by OWNER. When other than anodeless risers are used, corrosion control practices as approved by OWNER's RESIDENT PROJECT REPRESENTATIVE shall be observed.
- C. All risers shall be installed through a non-metallic conduit. See service drawings for specific size and location requirements.
- D. Threaded connections shall be tightened with an appropriately sized pipe wrench and a sealing compound containing Teflon approved for use on outdoor high-pressure natural gas applications, KUB Item # 360800. Threaded connections shall be soap-tested for leaks during the pressure test.
- E. Risers shall not be installed under or immediately in front of operable first floor windows.
- F. Risers shall be installed at least 3 feet away from a dryer vent, furnace vent, air conditioner or any other potential source of ignition (i.e. electrical circuit breaker boxes, meters and receptacles).



- G. Risers shall be installed a minimum of 3 feet from fresh air intake vents or any other opening to a structure.
- H. Risers shall be installed a minimum of 15' from fire hose connections.
- I. Risers shall be installed in a readily accessible, outdoor, ventilated, aboveground location protected from anticipated vehicular damage.
- J. Riser installations that should be avoided include: area directly below roof valleys. Roof downspouts, decks or building overhangs.
- K. Risers shall not be installed under stairways or other structure openings that may be utilized as emergency exits.
- F. Meter valve operating nut shall be on the left side of riser with locking mechanism facing away from the building.

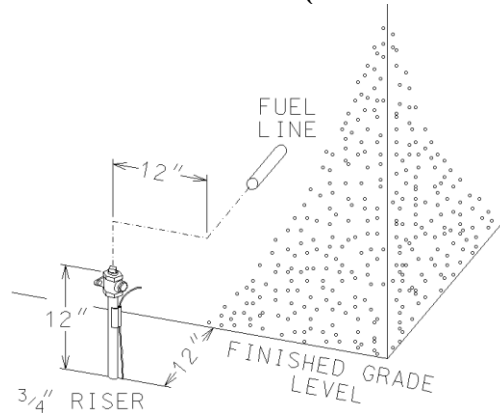
### 3.6.2 Meter Guard Posts

- A. Contractor shall furnish and install guard posts as directed by the OWNER in areas where vehicular damage may be anticipated.
- B. The quantity and arrangement of the guard posts shall be as directed by the OWNER's Engineer or Resident Project Representative.
- C. Guard posts shall be minimum 4 inch schedule 40 steel pipe.





### 3.6.3 Standard Location of $\frac{3}{4}$ " Riser (Residential Connected Load 0-700,000 BTU/hr)

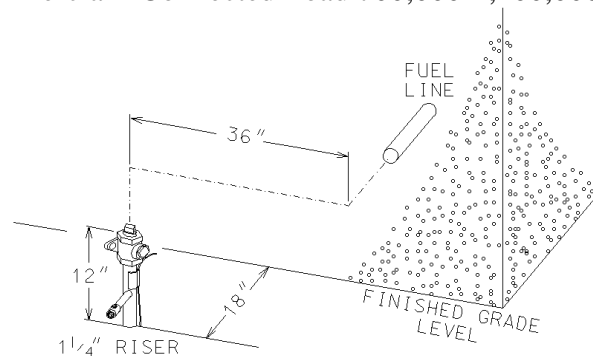


**Notes:**

- I.  $\frac{3}{4}$ " threaded risers shall be located 12" left of customer's fuel line.**

### 3.6.4 Standard Location of 1- $\frac{1}{4}$ " Riser

(Residential or Commercial - Connected Load 700,000-1,100,000 BTU/hr)

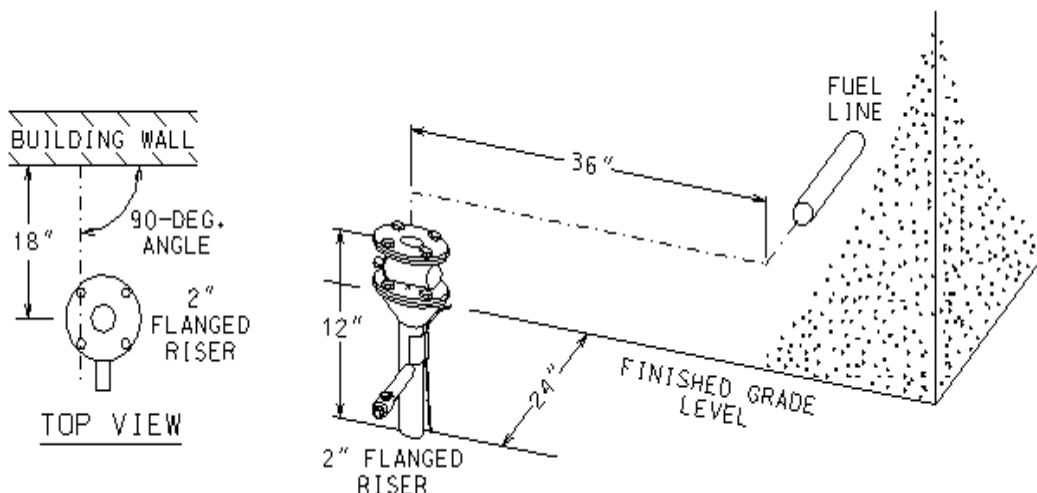


**Note:**

- I. 1  $\frac{1}{4}$ " threaded risers shall be located 36" left of customer's fuel line.**

### 3.6.5 Standard Location of 2" Riser

(Residential or Commercial - Connected Load 1,100,000-7,000,000 BTU/hr)



**Note:**

- I. 2" flanged risers may be located either 36" to the left or 36" to the right of customer fuel line.**
- II. Flange shall be installed with 2 adjacent bolt holes an equal distance from the building wall. If no building wall is at riser location, OWNER's Customer Service Representative must be contacted prior to installation.**
- III. Top of 2" flange shall be level.**

**3.7 Testing**

- A. The complete service including service line connection to the main shall be tested at a minimum of 100 psig for the duration required in 3.7-C.
- B. The test procedure shall insure discovery of all leaks in the segment being tested.
- C. Test duration:

Pipe size	150 feet or less	Greater than 150 feet & up to 500 feet	Greater than 500 feet
½" IPS/CTS	15 minutes	30 minutes	N/A
1"	30 minutes	1 hour	2 hours
2"	1 hour	2 hours	4 hours

- D. For pipe sizes not listed in above table, use the next larger listed pipe size to determine test duration. An approved electronic pressure testing instrument with GPS capability (i.e., Kuhlman K2 or other OWNER approved instrument) shall be used for pressure testing all Service Lines. The CONTRACTOR shall provide a printout documenting the successful pressure test for each Service Line. The print out must be attached to the applicable Natural Gas Utility Service Sheet. Each Natural Gas Utility Service Sheet will have an individual pressure test print out.
- E. The gauge used for testing shall be 200 psig maximum measured in no more than 2 pound increments.
- F. If OWNERS's Engineering determines that testing the complete service is not feasible, then the service line connection to the main may be given a leakage test at the operating pressure when placed in service. OWNER's Engineering must approve testing the service line connection separately based on the individual site conditions.
- G. Threaded connections shall be soap-tested for leaks during the pressure test.

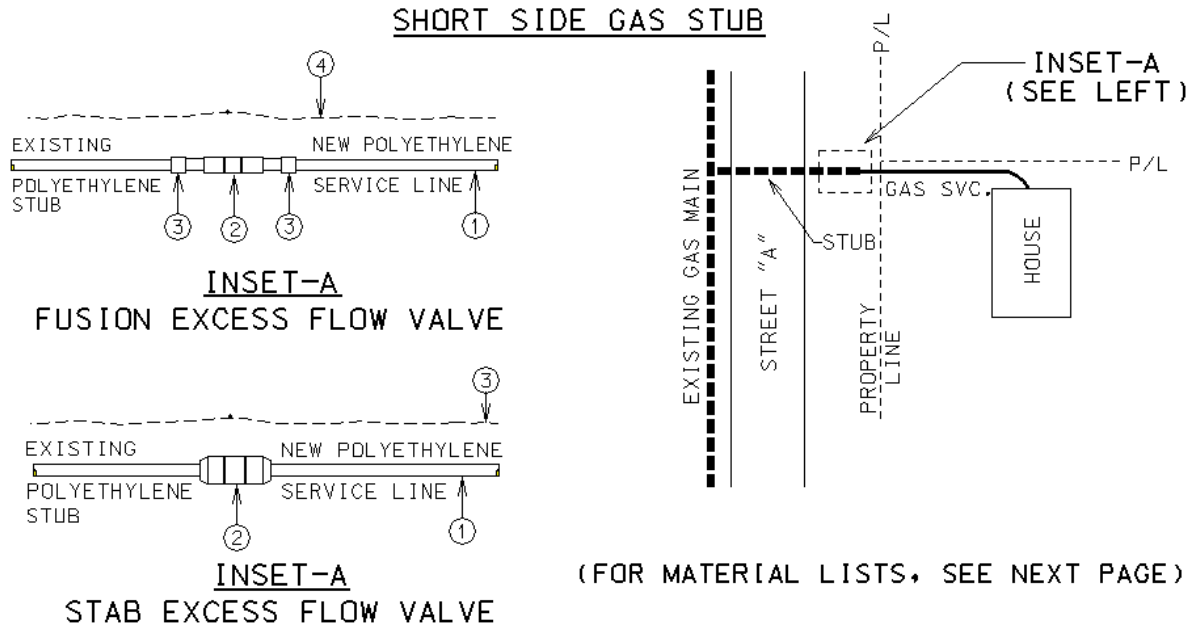
**3.8 Tapping – Service Connected to Polyethylene Main**

- A. Service connections to polyethylene mains must be allowed to completely cool before tapping the main.
- B. Service Saddle Caps should be hand tightened, according to manufacturer recommendation. Do not tighten with a wrench.

**3.9 Tapping – Service Connected to Steel / Cast Iron / Ductile Iron Main**

- A. Use ½" self-tapping outlet (valve tee) on Steel mains only. An OWNER-approved mechanical tapping tool shall be used for tapping of all CI/DI mains, and for 1" and larger services on Steel mains.

### 3.10 Short-Side Stub Service Connections



**Figure 8-15345-h**

(Polyethylene Stub Connection - Fusion & Stab EFV)

Notes:

- I. For service lines larger than 2", special design will be prepared by OWNER's Engineering.
- II. Compact sidefills around and under tie-in area.

**Materials List for Figure 8-15345-h**

**1/2" CTS Polyethylene Stub Connection - Fusion EFV**

Item	Quantity	KUB Item #	Description
1	1-Lot	381491	½" CTS Pipe
2	1	362046	400 scfh – ½" CTS Fus. Excess Flow Valve
		361892	800 scfh – ½" CTS Fus. Excess Flow Valve
3	2	374769	½" CTS Socket Fusion Coupling
4	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

**Materials List for Figure 8-15345-h**

**1/2" CTS Polyethylene Stub Connection - Stab EFV**

Item	Quantity	KUB Item #	Description
1	1-Lot	381491	½" CTS Pipe
2	1	360847	400 scfh – ½" CTS Stab Excess Flow Valve
		361991	800 scfh – ½" CTS Stab Excess Flow Valve
3	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

**Materials List for Figure 8-15345-h**

**Materials List for 1/2" IPS Polyethylene Stub Connection - Fusion EFV**

Item	Quantity	KUB Item #	Description
1	1-Lot	381558	½" IPS Pipe
2	1	361386	400 scfh – ½" IPS Fus. Excess Flow Valve



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		362013	800 scfh – ½” IPS Fus. Excess Flow Valve
3	2	383828	½” IPS Socket Fusion Coupling
4	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

## **Materials List for Figure 8-15345-h**

### **1/2" IPS Polyethylene Stub Connection - Stab EFV**

<b><u>Item</u></b>	<b><u>Quantity</u></b>	<b><u>KUB Item #</u></b>	<b><u>Description</u></b>
1	1-Lot	381558	½” IPS Pipe
2	1	360825	400 scfh – ½” IPS Stab Excess Flow Valve
		360836	800 scfh – ½” IPS Stab Excess Flow Valve
3	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

## **Materials List for Figure 8-15345-h**

### **1" Polyethylene Stub Connection - Fusion EFV**

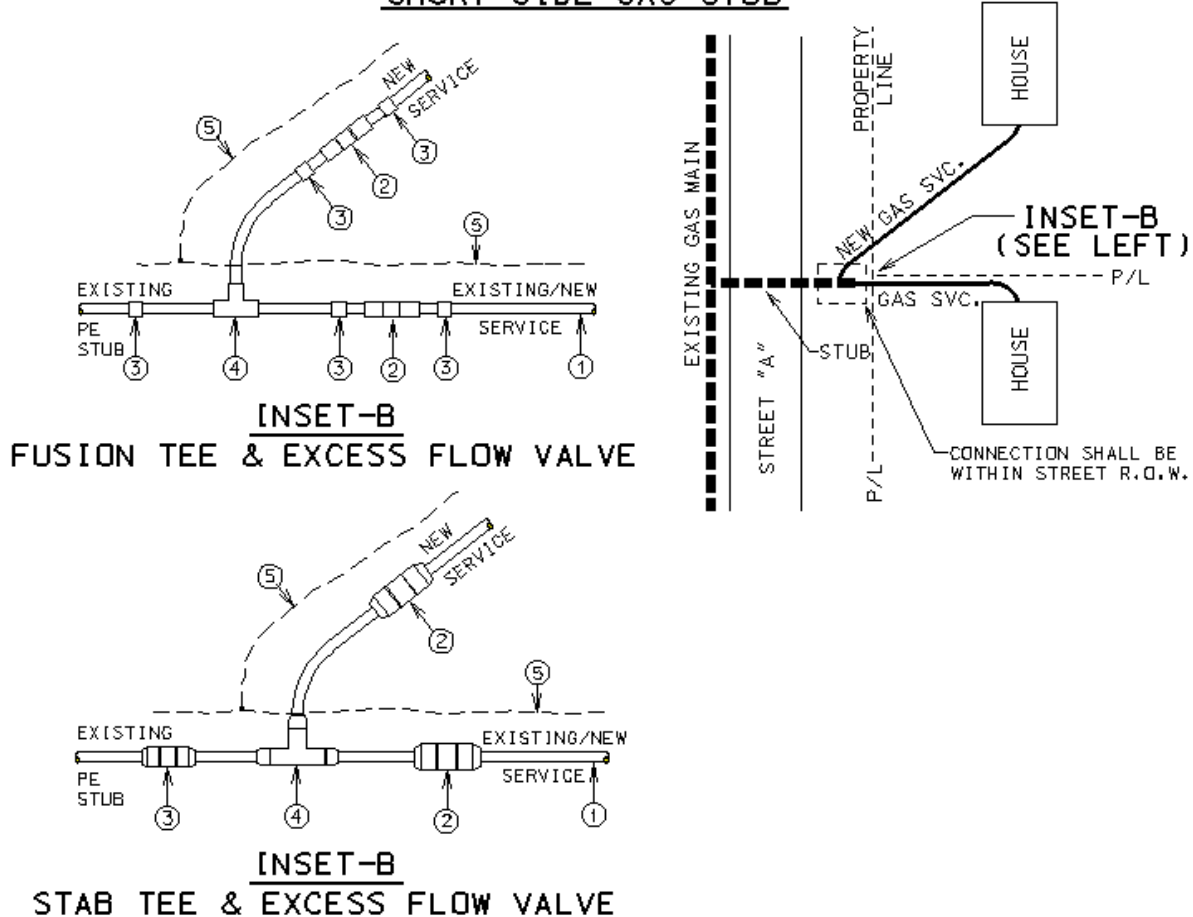
<b><u>Item</u></b>	<b><u>Quantity</u></b>	<b><u>KUB Item #</u></b>	<b><u>Description</u></b>
1	1-Lot	386060	1” IPS Pipe
2	1	362057	800 scfh – 1” Fusion Excess Flow Valve
		362068	1800 scfh – 1” Fusion Excess Flow Valve
3	2	385013	1” Socket Fusion Coupling
4	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

## **Materials List for Figure 8-15345-h**

### **Materials List for 1" Polyethylene Stub Connection - Stab EFV**

<b><u>Item</u></b>	<b><u>Quantity</u></b>	<b><u>KUB Item #</u></b>	<b><u>Description</u></b>
1	1-Lot	386060	1” IPS Pipe
2	1	360858	800 scfh – 1” Stab Excess Flow Valve
		360869	1800 scfh – 1” Stab Excess Flow Valve
3	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

**SHORT SIDE GAS STUB**



**Figure 9-15345-i**

**(Polyethylene Stub Additional Service Connection – Fusion & Stab EFV)**

Notes:

- I. For service lines larger than 2", special design will be prepared by OWNER's Engineering.
- II. Compact sidefills around and under tie-in area.
- III. Existing service shall be retested from point of disconnection to the meter cock. Disconnect existing meter/regulator and plug riser prior to testing. Prior to testing, seal meter cock with plug installed as required in 3.6.1-D. Also see 3.7.

**Materials List for Figure 9-15345-i**

**1/2" CTS Polyethylene Stub Added Service Connection - Fusion EFV**

Item	Quantity	KUB Item #	Description
1	1-Lot	381491	1/2" CTS Pipe
2	2	362049	400 scfh – 1/2" CTS Fus. Excess Flow Valve
		361892	800 scfh – 1/2" CTS Fus. Excess Flow Valve
3	5	374769	1/2" CTS Socket Fusion Coupling
4	1	374785	1/2" CTS Socket Fusion Tee
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

**See Next Page for additional materials lists of above drawing.**

**Materials List for Figure 9-15345-i**

**1/2" CTS Polyethylene Stub Added Service Connection - Stab EFV**



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<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381491	½" CTS Pipe
2	2	360847	400 scfh – ½" CTS Stab Excess Flow Valve
		361991	800 scfh – ½" CTS Stab Excess Flow Valve
3	1	374918	½" CTS Stab Coupling
4	1	362079	½" CTS Stab Tee
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### Materials List for Figure 9-15345-i

#### 1/2" IPS Polyethylene Stub Added Service Connection - Fusion EFV

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381558	½" IPS Pipe
2	2	361386	400 scfh – ½" IPS Fus. Excess Flow Valve
		362013	800 scfh – ½" IPS Fus. Excess Flow Valve
3	5	383828	½" IPS Socket Fusion Coupling
4	1	381152	½" IPS Socket Fusion Tee
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### Materials List for Figure 9-15345-i

#### 1/2" IPS Polyethylene Stub Added Service Connection - Stab EFV

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	381558	½" IPS Pipe
2	2	360825	400 scfh – ½" IPS Stab Excess Flow Valve
		360836	800 scfh – ½" IPS Stab Excess Flow Valve
3	1	374140	½" IPS Stab Coupling
4	1	381152	½" IPS Stab Tee
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### Materials List for Figure 9-15345-i

#### 1" Polyethylene Stub Added Service Connection - Fusion EFV

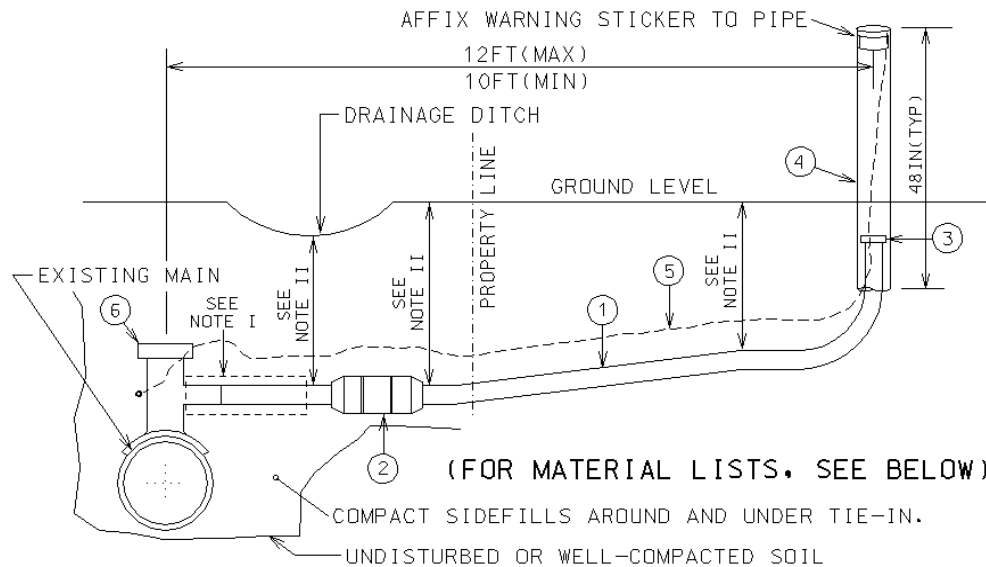
<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	386060	1" IPS Pipe
2	2	362057	800 scfh – 1" Fusion Excess Flow Valve
		362068	1800 scfh – 1" Fusion Excess Flow Valve
3	5	385013	1" Socket Fusion Coupling
4	1	362673	1" Socket Fusion Tee
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### Materials List for Figure 9-15345-i

#### 1" Polyethylene Stub Added Service Connection - Stab EFV

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1-Lot	386060	1" IPS Pipe
2	2	360858	800 scfh – 1" Stab Excess Flow Valve
		360869	1800 scfh – 1" Stab Excess Flow Valve
3	1	374024	1" Stab Coupling
4	1	362090	1" Stab Tee
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

## 3.11 Service Stubs



**Figure 10-15345-j**

**(Polyethylene Service Stub to Mains)**

Notes:

- I. Service line shall be encased in the protective sleeve (next larger size plastic pipe 12 to 18 inches in length) provided with the service saddle at the connection of the service line to the service saddle. If outside of paved roadway surface, EFV connection is 12 to 20 inches from service connection to main.
- II. For depth requirements see 3.2.
- III. For other types of service connections, see Figure 4-15345-d & Figure 5-15345-e.
- IV. Test service stub prior to tapping main, see 3.7.
- V. Tracer wire to extend to top of 4" location marker pipe.

**Materials List for Figure 10-15345-j**

**1/2" CTS Polyethylene Service Stub to Mains**

Item	Quantity	KUB Item #	Description
1	1-Lot	381491	1/2" CTS Pipe
2	1	360847	400 scfh - 1/2" CTS Stab Excess Flow Valve
		361991	800 scfh - 1/2" CTS Stab Excess Flow Valve
3	1	362101	1/2" CTS Fuse-On Cap
4	1	380998	4" Polyethylene Pipe
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
6	1	361914	1 1/4" x 1/2" CTS Tapping Tee
		361925	2" x 1/2" CTS Tapping Tee
		361936	4" x 1/2" CTS Tapping Tee
		361947	6" x 1/2" CTS Tapping Tee
		361958	8" x 1/2" CTS Tapping Tee
		361969	12" x 1/2" CTS Tapping Tee

**Materials List for Figure 10-15345-j**

**1/2" IPS Polyethylene Service Stub to Mains**

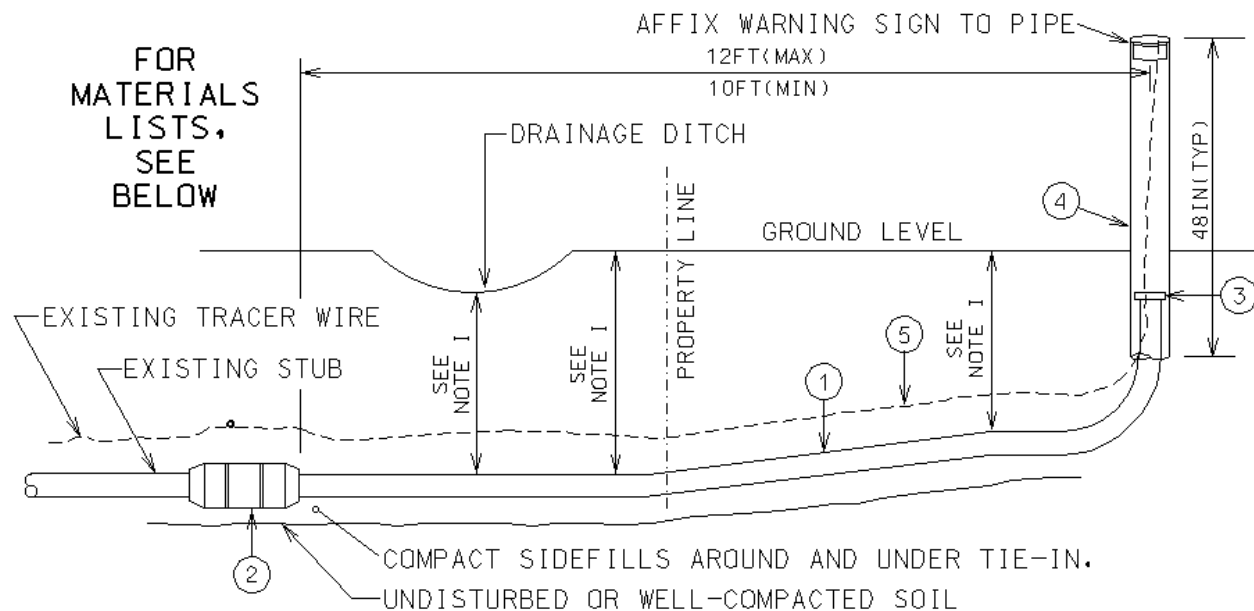
Item	Quantity	KUB Item #	Description
1	1	381558	1/2" IPS Pipe
2	1	360825	400 scfh - 1/2" IPS Stab Excess Flow Valve
		360836	800 scfh - 1/2" IPS Stab Excess Flow Valve
3	1	383802	1/2" IPS Fuse-On Cap

4	1	380998	4" Polyethylene Pipe
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
6	1	386029	1 ¼"x ½" IPS Tapping Tee
		384115	2" x ½" IPS Tapping Tee
		380972	4" x ½" IPS Tapping Tee
		386771	6" x ½" IPS Tapping Tee
		374850	8" x ½" IPS Tapping Tee
		360924	12" x ½" IPS Tapping Tee

### Materials List for Figure 10-15345-j

## 1" Polyethylene Service Stub to Mains

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1	386060	1" IPS Pipe
2	1	360858	800 scfh – 1" Stab Excess Flow Valve
		360869	1800 scfh – 1" Stab Excess Flow Valve
3	1	370155	1" Fuse-On Cap
4	1	380998	4" Polyethylene Pipe
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire
6	1	386052	1 1/4" x 1" Tapping Tee
		380949	2" x 1" Tapping Tee
		380964	4" x 1" Tapping Tee
		386789	6" x 1" Tapping Tee
		374876	8" x 1" Tapping Tee
		360902	12" x 1" Tapping Tee



**Figure 11-15345-k**

(Polyethylene Service Stub to Main Stub)

Notes:

- I. For depth requirements see 3.2.
- II. Test new service stub prior to making connection to existing main stub, see 3.7.
- III. Tracer wire to extend to top of 4" location marker pipe.

### Materials List for Figure 11-15345-k





## KNOXVILLE UTILITIES BOARD STANDARDS AND SPECIFICATIONS

### 1/2" CTS Polyethylene Service Stub to Main Stub

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1	381491	1/2" CTS Pipe
2	1	360847	400 scfh – 1/2" CTS Stab Excess Flow Valve
		361991	800 scfh – 1/2" CTS Stab Excess Flow Valve
3	1	362101	1/2" CTS Fuse-On Cap
4	1	380998	4" Polyethylene Pipe
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### Materials List for Figure 11-15345-k

#### 1/2" IPS Polyethylene Service Stub to Main Stub

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1	381558	1/2" IPS Pipe
2	1	360825	400 scfh – 1/2" IPS Stab Excess Flow Valve
		360836	800 scfh – 1/2" IPS Stab Excess Flow Valve
3	1	383802	1/2" IPS Fuse-On Cap
4	1	380998	4" Polyethylene Pipe
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### Materials List for Figure 11-15345-k

#### 1" Polyethylene Service Stub to Main Stub

<u>Item</u>	<u>Quantity</u>	<u>KUB Item #</u>	<u>Description</u>
1	1	386060	1" IPS Pipe
2	1	360858	800 scfh – 1" Stab Excess Flow Valve
		360869	1800 scfh – 1" Stab Excess Flow Valve
3	1	370155	1" Fuse-On Cap
4	1	380998	4" Polyethylene Pipe
5	1-Lot	300362	#12 Coated Copper Clad Steel Tracer Wire

### **3.12 Reconnection of Existing Polyethylene Services to New Mains**

- A. Existing Polyethylene Services shall be reconnected by socket fusion only.
- B. Services shall be tested according to Section 3.7 from the point of disconnection to the meter, prior to reconnection.

### **3.13 Sleeved Services**

- A. Services may be sleeved with new polyethylene pipe if approved by OWNER's Resident Project Representative.

### **3.14. Service Condemnation – General**

- A. Condemned service pipe shall be purged from the point of condemnation to the riser.
- B. Gas service riser shall be cutoff below ground and sealed using foam pack.
- C. Condemned service pipe shall be sealed at the main end using an owner approved expandable plug. KUB item #'s: 1/2" – 362959; 3/4" – 372003; 1" – 372029; 1 1/4" – 372045; 2" – 372086.
- D. Service tee tap shall be re-opened and the outlet shall be sealed using a KUB approved cap.

#### **KUB Approved Caps**

<u>Service Size</u>	<u>Service Type</u>	<u>KUB Item #</u>	<u>Description</u>
7/8"	XT	363630	7/8" Stainless Steel Swagelock Cap
1/2" CTS	PL	362101	Socket Fusion Cap

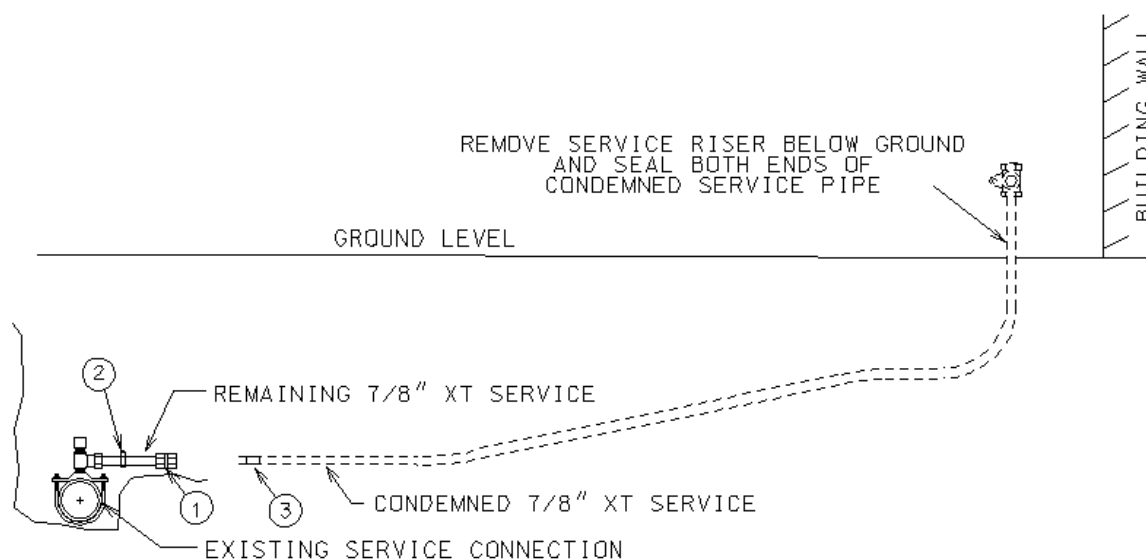


## KNOXVILLE UTILITIES BOARD STANDARDS AND SPECIFICATIONS

½" IPS	PL	383802	Socket Fusion Cap
¾" IPS	PL	372037	Socket Fusion Cap
1" IPS	PL	370155	Socket Fusion Cap
1 ¼" IPS	PL	386011	Socket Fusion Cap
2" IPS	PL	383646	Socket Fusion Cap
¾"	ST	372516	Companion Lock Cap
1"	ST	362681	Companion Lock Cap
1 ¼"	ST	363770	Companion Lock Cap
2"	ST	364059	Companion Lock Cap

- E. For Steel services, install an anode on the service. Do not cadweld to extrude service lines, see 3.15.
- F. For services with plug tees, the plug tee shall be removed and the tap shall be sealed using an approved leak repair clamp.
- G. All condemned service taps shall be marked by attaching a 3M EMS 4" Extended Range 5' Ball Marker – Gas 1405-XR to the tap tee. The marker ball shall be attached to the end of the remaining active service if less than 5' deep. If the depth of the service is greater than 5', the marker ball shall be placed directly above the end of the service at 5' deep.
- H. All exposed metal surfaces shall be cleaned, primed, and coated according to manufacturer's recommendations (wax tape primer Item #372821 – 4" cold-applied wax tape) to prevent contact between metal surfaces and the surrounding backfill.

### 3.15 7/8" Extrude Service Condemnation



**Figure 12-15345-1**  
(7/8" Extrude Service Condemnation)

**Notes:**

- I. After installing 7/8" cap, reopen tap in service tee to allow future sleeving of the gas main.
- II. Soap test all fittings.
- III. Install anode on service using grounding clamp. Do not cadweld to service line.
- IV. All exposed metal surfaces shall be cleaned, primed, and coated according to manufacturer's recommendations (wax tape primer Item #372821 – 4" cold-applied wax tape) to prevent contact between metal surfaces and the surrounding backfill.

**Materials List for Figure 12-15345-1**  
**7/8" Extrude Service Condemnation**

Item	Quantity	KUB Item #	Description
1	1	363630	7/8" Stainless Steel Swagelock Cap
2	1	N/A	3/4" Grounding Clamp
3	1	372003	3/4" Expandable Plug

### 3.16 Purging

- A. All purging shall be conducted in accordance with AGA's "Purging Principles and Practices."
- B. Gas shall be vented in a manner that will prevent Gas from entering a structure.
- C. Pipe shall be away from sources of ignition and grounded to reduce static discharge.



### **3.17 Cathodic Protection**

- A. Saddles on steel mains shall have all exposed metal surfaces cleaned, primed, and coated according to manufacturer's recommendations (wax tape primer Item #372821 – 4" cold-applied wax tape) to prevent contact between metal surfaces and the surrounding backfill.
- B. A 9# anode shall be installed at the service connection to Steel mains. Anode shall be bedded in at least 6 inches of clean dirt or sand backfill.
- C. Pipe-to-Soil potential readings shall be taken and recorded on the service card record.
- D. CI/DI pipes shall be visually inspected for graphitization. Pipe condition shall be noted on the service card record.

### **3.18 As-Built Records - Service Card**

- A. Records shall be maintained on all new piping system installations and repairs and/or changes to the existing piping systems in sufficient detail to provide historical information, physical locating, fittings used (including Excess Flow Valves), and other pertinent data necessary for the safe and continuous operation and maintenance of the gas system. Cathodic protection & test data reports shall be neat, legible, and accurate. Properly completed service record cards shall be provided for all natural gas service lines installed, modified, and/or connected to a Gas Main or Stub by OWNER or OWNER-approved Contractor for all projects. Service card records shall be completed by Contractor's installer on the job site; and returned to OWNER within 3 working days.

### **3.19 Safety**

- A. CONTRACTOR shall have a readily available 20 cubic foot or greater ABC fire extinguisher at the job site for use during purging and tapping activities according to the KUB or OWNER-approved Operator Qualification Program.
- B. CONTRACTOR must wear appropriate personal protective equipment (PPE) for the applicable task. At a minimum, CONTRACTOR must don American National Standards Institute (ANSI) approved hard hat, safety glasses, and safety-toed footwear while performing construction work or provide a job hazard analysis detailing the work and differing PPE.
- C. CONTRACTOR must don an appropriate class of high visibility vest while performing work in the road or road right-of-way or provide a job hazard analysis detailing the work and differing PPE.
- D. CONTRACTOR must don ANSI approved hard hat and safety glasses over a Nomex or CarbonX full-face balaclava, leather gloves with a sufficient cuff to cover bare wrists, safety-toed boots, and an HRC-2 or greater coverall or provide a job hazard analysis detailing the work and differing PPE when working or anticipated to work in a gaseous atmosphere.

END OF SECTION