Best Practices for Installing and Testing Gas Distribution Tracer Wire Systems

This document provides the technical requirements necessary to ensure proper installation of tracer wire and related components for the purposes of locating both conductive and non-conductive underground gas distribution utilities. It recognizes that the first step in protecting underground utility assets is installing a quality, reliable locating system.

1. GENERAL

1.1. WORK INCLUDED

A. Tracer Wire System Installation – Complete system installation by trenching, plowing or horizontal directional drilling for polyethylene (PE) gas systems and pipelines

1.2. REFERENCES

A. APWA Uniform Color Code
B. Department of Transportation Pipeline Safety Regulations Part 192 – Transportation of Natural and Other Gas by Pipeline
C. ANSI GPTC Code
D. State Pipeline Safety Codes

1.3. SUBMITTALS

A. All materials shall be made in the U.S.A.
B. Tracer wire shall conform to ASTM B1010
C. All tracer wire shall have HDPE insulation intended for direct bury
D. All tracer wire connectors shall be gel filled and rated for direct bury
E. All locate access terminals will be designed for tracer wire and easily accessible

2. MATERIAL

2.1. TRACER WIRE

A. Open Trench Installation: Copperhead® copper-clad steel (CCS) High Strength #14 AWG (1430Y-HS) or #12 AWG (1230Y-HS) or SuperFlex #14 AWG (1430Y-SF) or #12 AWG (1230Y-SF), yellow in color, or pre-approved equal.
    a. #14 AWG minimum break load 280 lb. for High Strength; 194 lb. for SuperFlex
    b. #12 AWG minimum break load 450 lb. for High Strength; 302 lb. for SuperFlex
    c. Minimum 30 mil, HDPE insulation thickness
B. Horizontal Directional Drilling & Plowing Installation: Copperhead® CCS, SoloShot™ Extra-High Strength #12 AWG (1245Y-EHS), or pre-approved equal.
    a. Minimum break load 1,150 lb.
    b. Minimum 45 mil, HDPE insulation thickness

2.2. CONNECTORS

A. All mainline tracer wires shall be interconnected at intersections, at mainline tees and mainline crosses. Lockable wire connectors shall be specifically designed for direct bury, dielectric silicone gel filled, and designed to prevent uninsulated wire exposure.

B. Main line or service line splice: 3-way Copperhead SnakeBite™ Locking Connector (LSC1430C, LSC1230C)
C. Main line connection to service line: For new PE main line and new service line being installed at the same time, Copperhead Mainline-to-Service Connector (LSC1430C, LSC1230C) or Mainline-to-Service Connector (3WB-01).
If adding a service line to existing main, Mainline-to-Service Connector (3WB-01) must be used as mainline tracer wire cannot be cut.

2.3. GROUNDING

A. 1.5-lb, drive-in, magnesium Copperhead Ground Rod (ANO-14, ANO-12), minimum 20 feet #14 AWG or #12 AWG HDPE insulated copper-clad steel lead wire connected to the rod specifically manufactured for grounding purposes, or pre-approved equal.

2.4. TERMINATION/ACCESS

A. All tracer wire termination/access points must provide a direct connection point to the tracer wire (above ground or at grade) specifically manufactured for lite duty, concrete/driveway, or roadway applications.
B. All two-terminal tracer wire access points must include a manually interruptible conductive/connective link between the terminal for the tracer wire connection and the terminal for the ground rod wire connection.
C. All two-terminal tracer wire access points must have external direct connection points to both the tracer wire and ground rod wire from top of lid.
D. All at-grade access points shall include an encapsulated magnet molded into the top portion of the tube to allow for detection by a ferrous metal detector.
E. All at-grade access points shall be supplied with anti-corrosion wax/gel to protect wires.
F. At-grade, non-roadway: yellow in color, labeled ‘GAS’ or ‘TEST’, Copperhead SnakePit® Lite Duty (LD14Y2T-SW) or pre-approved equal.
G. At-grade, concrete/driveway: yellow in color, labeled ‘GAS’ or ‘TEST’, Copperhead SnakePit Concrete/Driveway (CD14Y2T-SW) or pre-approved equal.
H. At-grade, asphalt/roadway: yellow in color, labeled ‘GAS’ or ‘TEST’, Copperhead SnakePit Roadway (RB14Y2T-SW) or pre-approved equal.
I. Above-grade, with ground: Copperhead Cobra™ Access Point (T2-Y) or pre-approved equal.
J. Above-grade, without ground: Copperhead SnakeSkin™ Access Point (SNKS-Y-01) or pre-approved equal.

3. EXECUTION

3.1. PREPARATION

A. Access of the tracer wire system for locating purposes shall be provided at maximum intervals as appropriate. Access shall be provided by the following:
    a. At-grade access point
    b. Above-grade access point
    c. Meter riser protective direct connect access point
B. Access through valve box is not allowed.

C. System shall not be looped. Looping of tracer wire can result in difficulty for locating as the signal is nullified.
D. Continuous wire installations that have multiple wires laid side-by-side or in close proximity to one another shall not be allowed.

3.2. INSTALLATION

A. Install tracer wire along the pipe above or to the side of the pipe. Contact with the pipe is allowed but shall be minimized. Recommended 2" – 6" separation.
B. Install tracer wire as a single continuous wire. Splicing of wire, if necessary, shall be done in such a way to produce an electrically and mechanically sound joint.
C. Damage to the wire occurring during installation shall be immediately repaired by removing the damaged wire and installing a new section of wire with approved connectors.
D. Grounding
    a. Tracer wire must be properly grounded at all dead ends/stubs.
    b. Grounding shall be achieved by use of a 1.5 pound, drive-in magnesium ground rod with a minimum of 20 feet of lead wire.
    c. If grounding the tracer wire at the meter, two-terminal access points are required to accommodate both the tracer wire and the ground rod wire, and to allow for locates to be done from the meter or toward the meter.
    d. When ground rod wire will be connected to a tracer wire access point, a minimum of 2 feet of slack wire is required after meeting final elevation.
E. Long runs, more than 2,500 linear feet, without service laterals – tracer wire access must be provided utilizing an approved at-grade Copperhead SnakePit Access Point and grounded at dead-ends utilizing a drive-in magnesium Copperhead Ground Rod.
F. No bare tracer wire shall be exposed either below or above ground. Exposed ends such as at meter risers are not allowed and shall be protected from exposure.
G. Tracer wire shall not be taped to pipe.
H. Tracer wire shall not be wrapped around pipe.
I. Tracer wire shall not be connected to existing foreign/conduction utilities.
J. Non-locking friction fit, wire nut, spray-on waterproofing or taped connectors shall not be used.

3.3. TESTING

A. Verify tracer wire installation by using typical low frequency (512 HZ or similar) line locating equipment.
B. Verification shall be witnessed by the utility or their designated representative.
C. Verify tracer wire installation upon completion of rough grading and again prior to final acceptance of project.
D. Continuity testing of the tracer wire system in lieu of using locating equipment shall not be accepted.

ACCEPTABLE PRODUCTS

Refer to the Specification Checklist for products have been deemed acceptable and appropriate.

Complete Utility Locating System™
(Gas Market)

Specification Checklist

TRACER WIRE

☐ Verify Copperhead® copper-clad steel tracer wire by confirming that 'Copperhead®' is printed on wire (non-custom orders only)

☐  **High Strength**, Open Trench (1430Y-HS-** or 1230Y-HS-**)

☐  **SuperFlex**™, Open Trench (1430Y-SF-** or 1230Y-SF-**)

☐  **SoloShot**™ **Extra-High Strength**, Directional Drilling/Boring/Plowing (1245Y-EHS-**)

**spool size (500', 1000', 2500')

CONNECTORS

☐  **SnakeBite**™ **Locking Connector** (LSC1430C or LSC1230C)

☐  **Mainline-to-Service Connector** (3WB-01)

GROUNDING

☐  **Ground Rod** (ANO-14 or ANO-12) 1.5-lb magnesium ground rod

LOCATING

☐ Verify tracer wire installation can be located using low frequency (512 Hz) line tracing equipment.

ACCESS POINTS

Two-terminal Switchable Lid

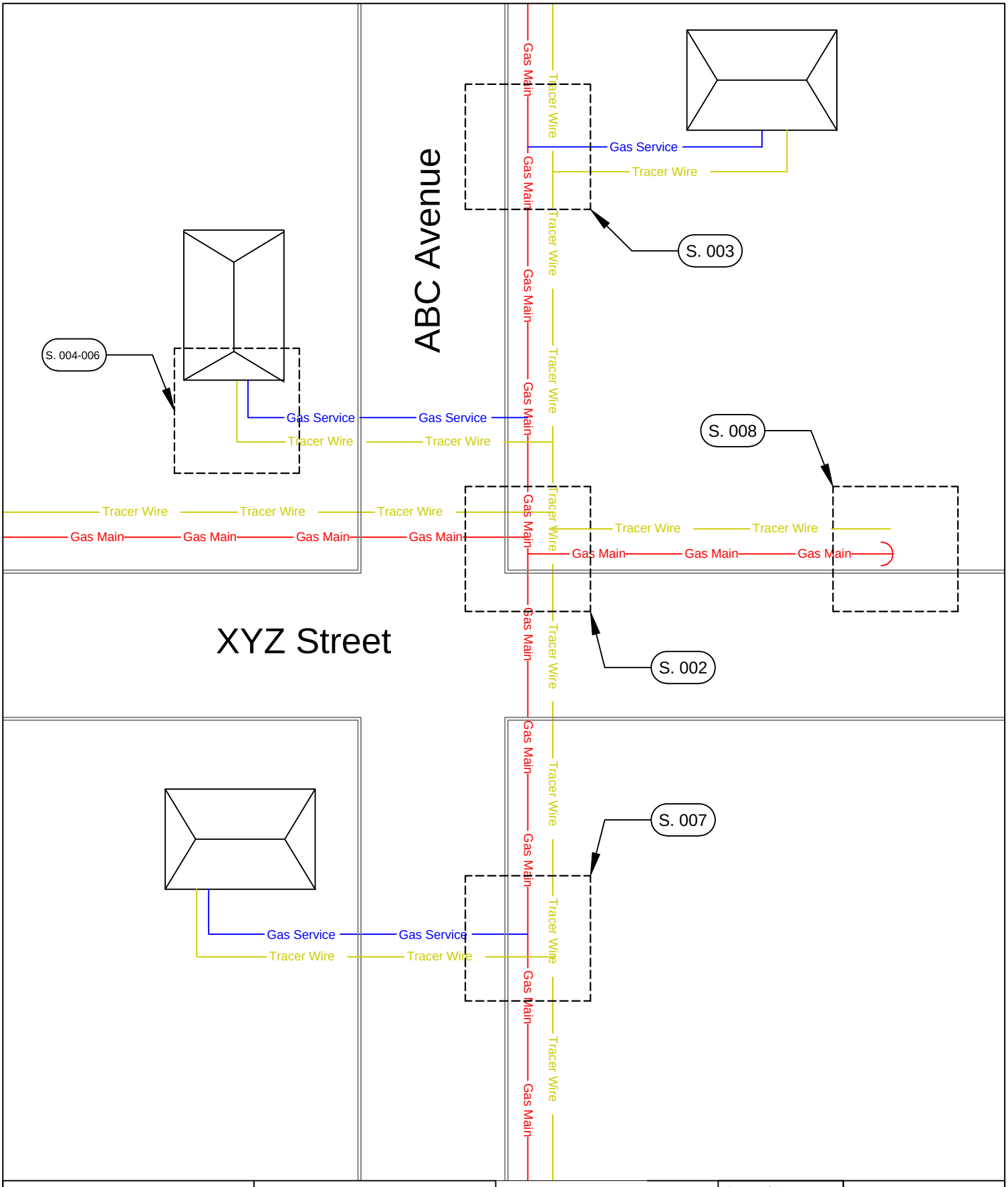
☐  **SnakePit® Lite Duty** Two-terminal Switchable (LD14Y2T-SW)

☐  **SnakePit® Concrete/Driveway** Two-terminal Switchable (CD14Y2T-SW)

☐  **SnakePit® Roadway** Two-terminal Switchable (RB14Y2T-SW)

☐  **Cobra**™ Two-terminal (T2Y)

☐  **SnakeSkin**™ (SNSK-Y)



See Gas Distribution Tracer Wire Specifications for Further Installation Information and Details

This Standard is intended to be used as a guide only. It is not designed to cover all gas systems.

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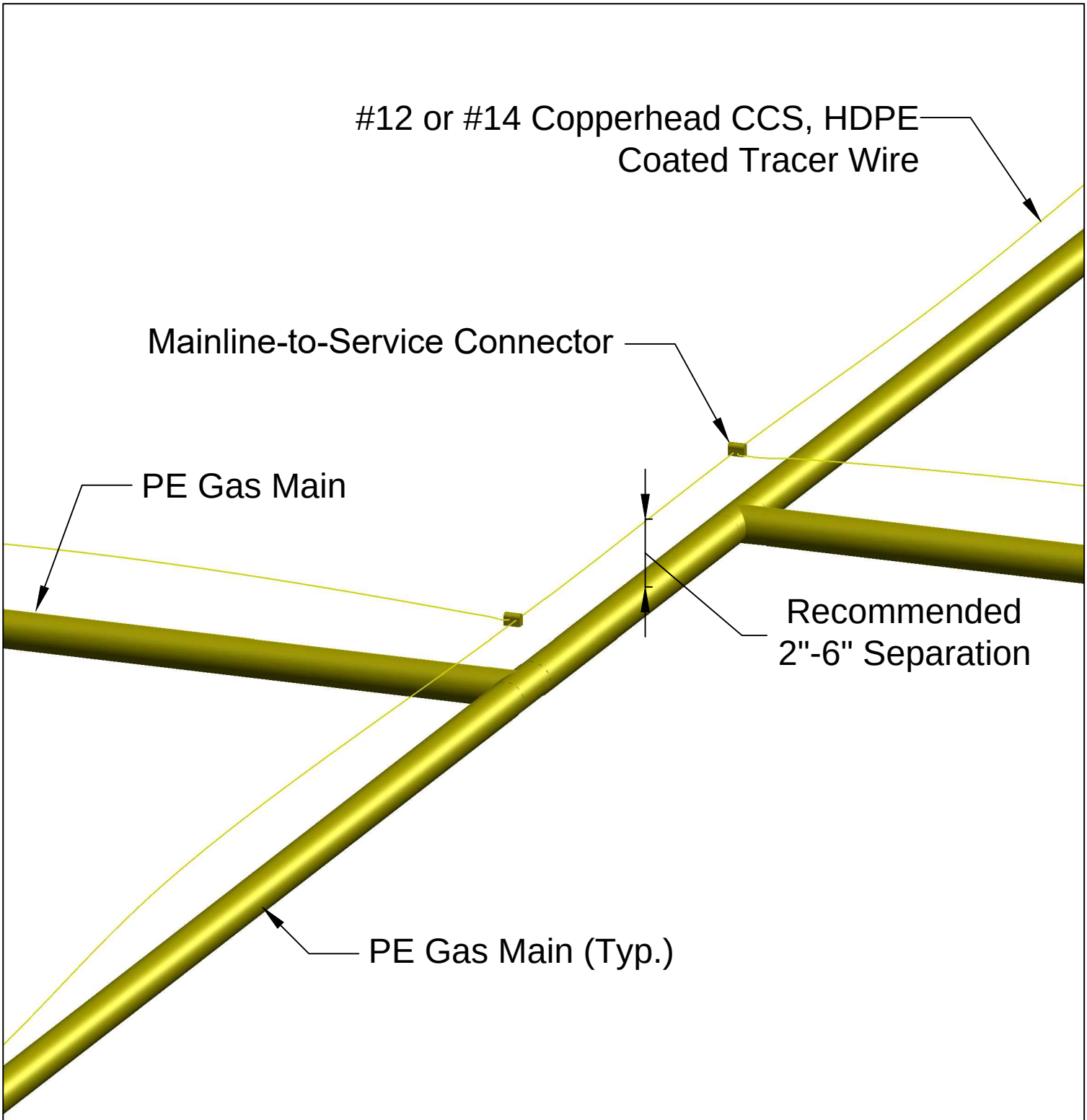
Tracer Wire Installation Standard



TYPICAL MAIN TEE DETAIL

See Gas Distribution Tracer Wire Specifications for Further Installation Information and Details

Copperhead Industries, LLC
copperheadwire.com
877-726-5644

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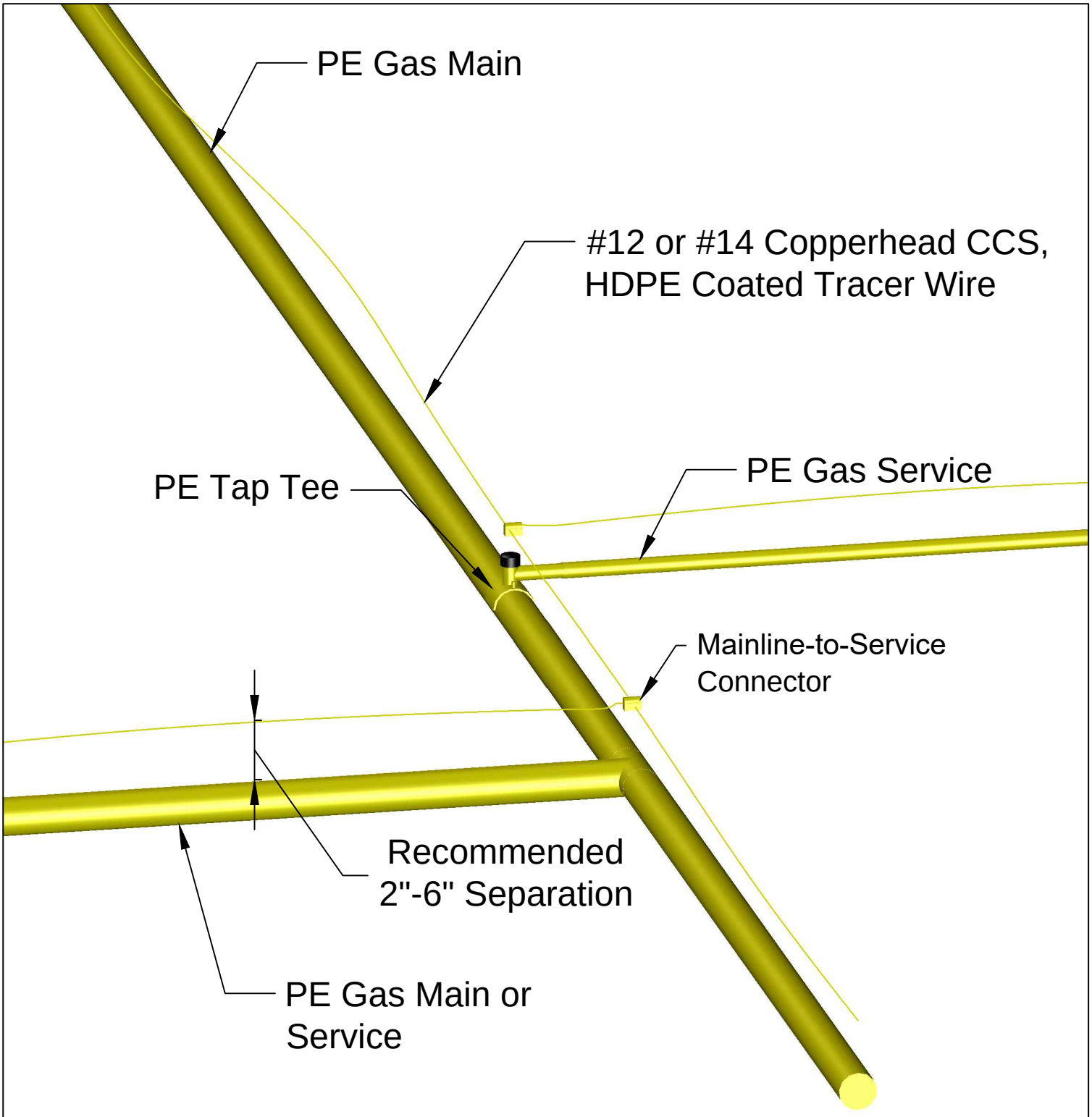

TYPICAL PE MAIN WITH PE TAP TEE DETAIL

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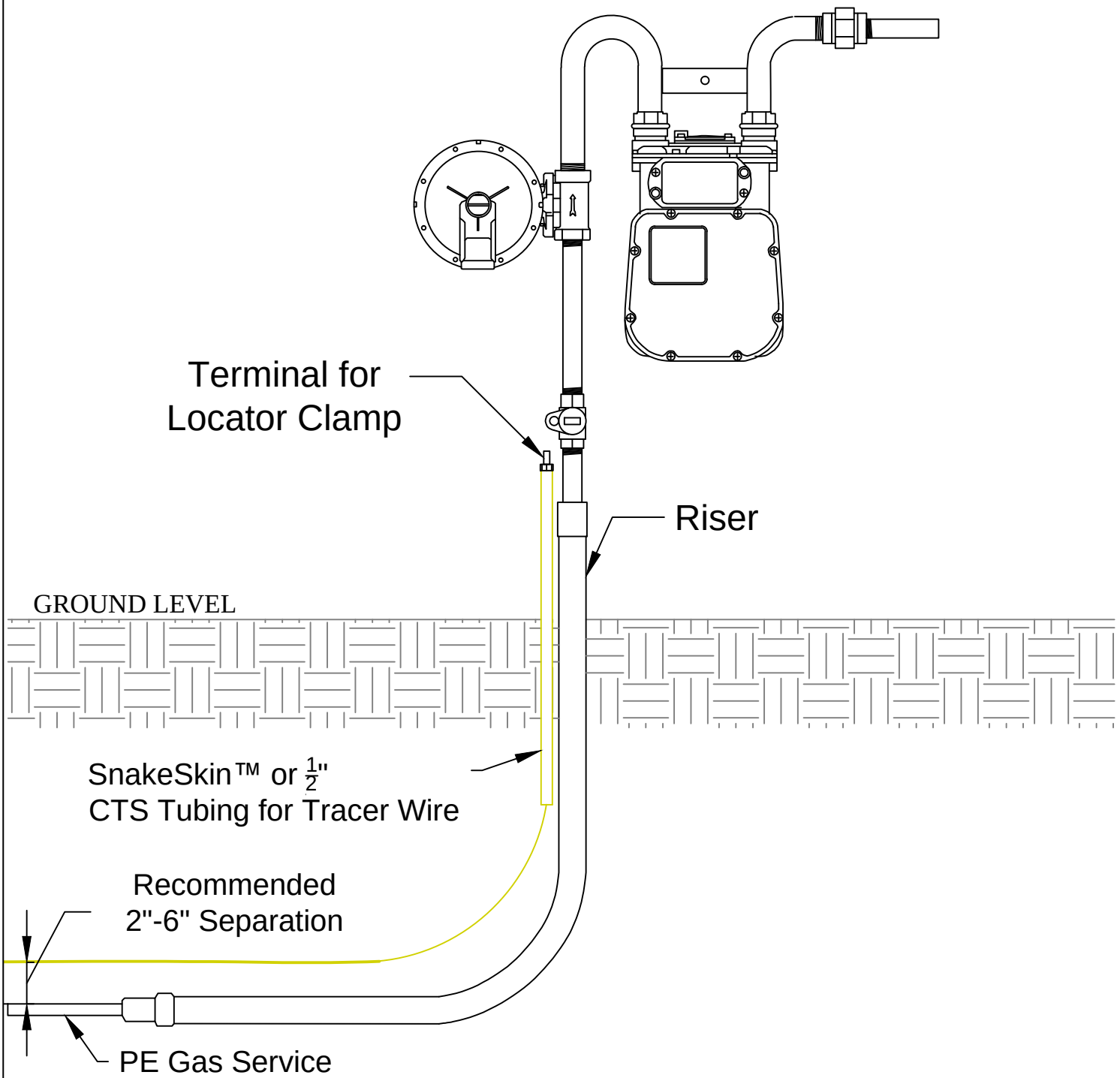

TYPICAL METER SET DETAIL

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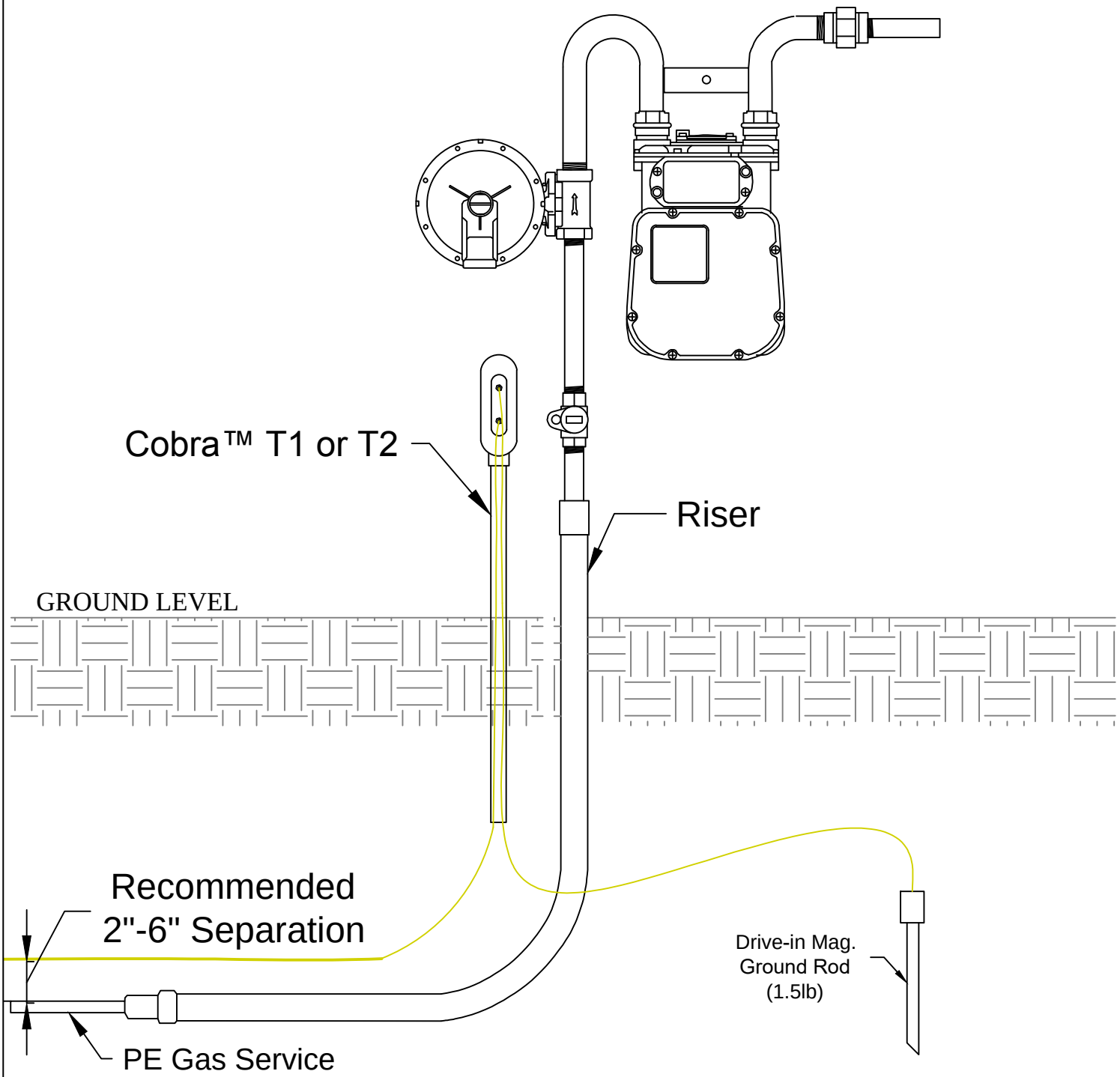
Above-Grade Access Point Option

Cobra™ T1 used with No Ground Rod
Cobra™ T2 used with Ground Rod



TYPICAL METER SET DETAIL

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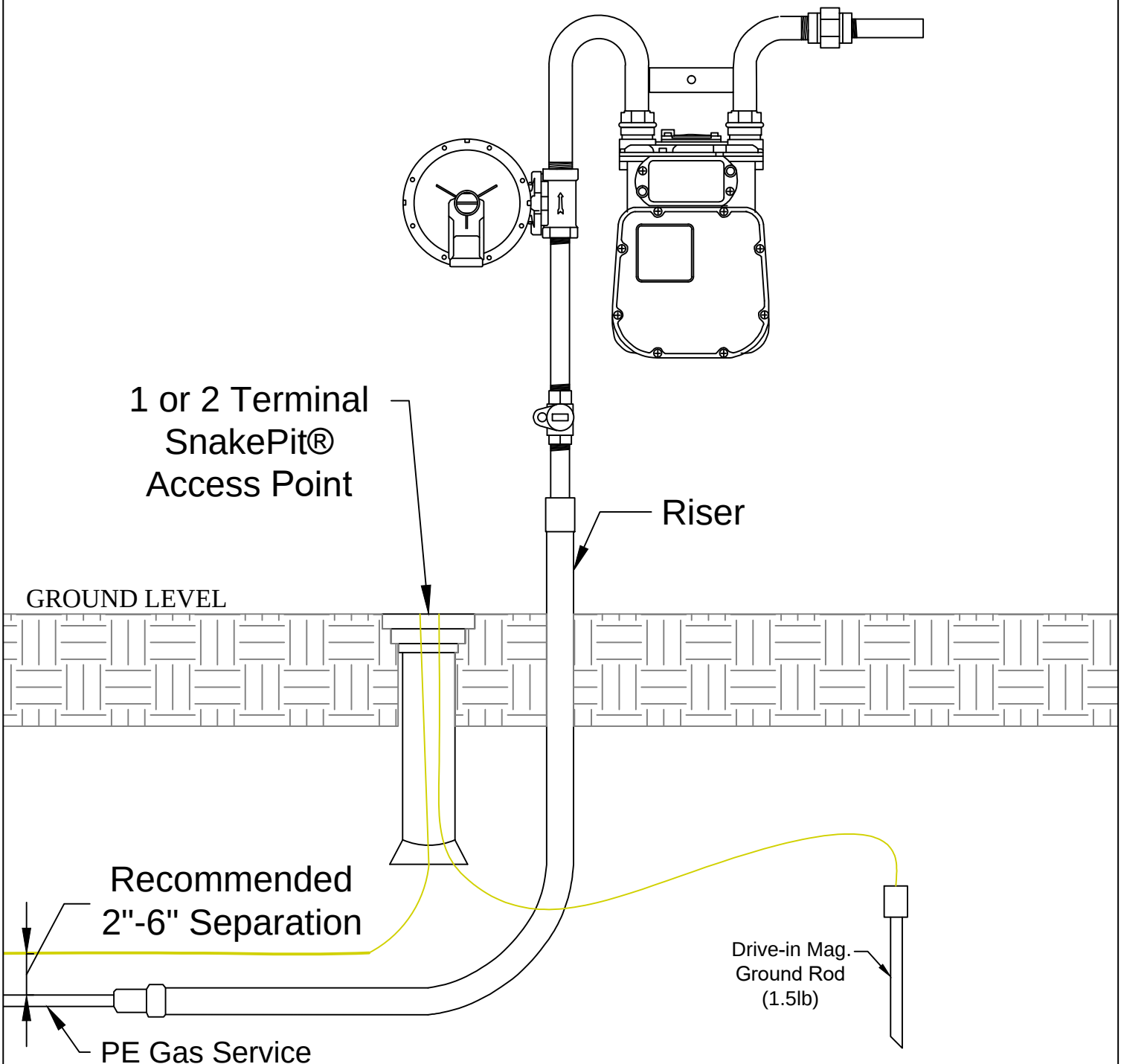
At-Grade Option

1 Terminal SnakePit® used with No Ground Rod
2 Terminal SnakePit® used with Ground Rod



TYPICAL METER SET DETAIL

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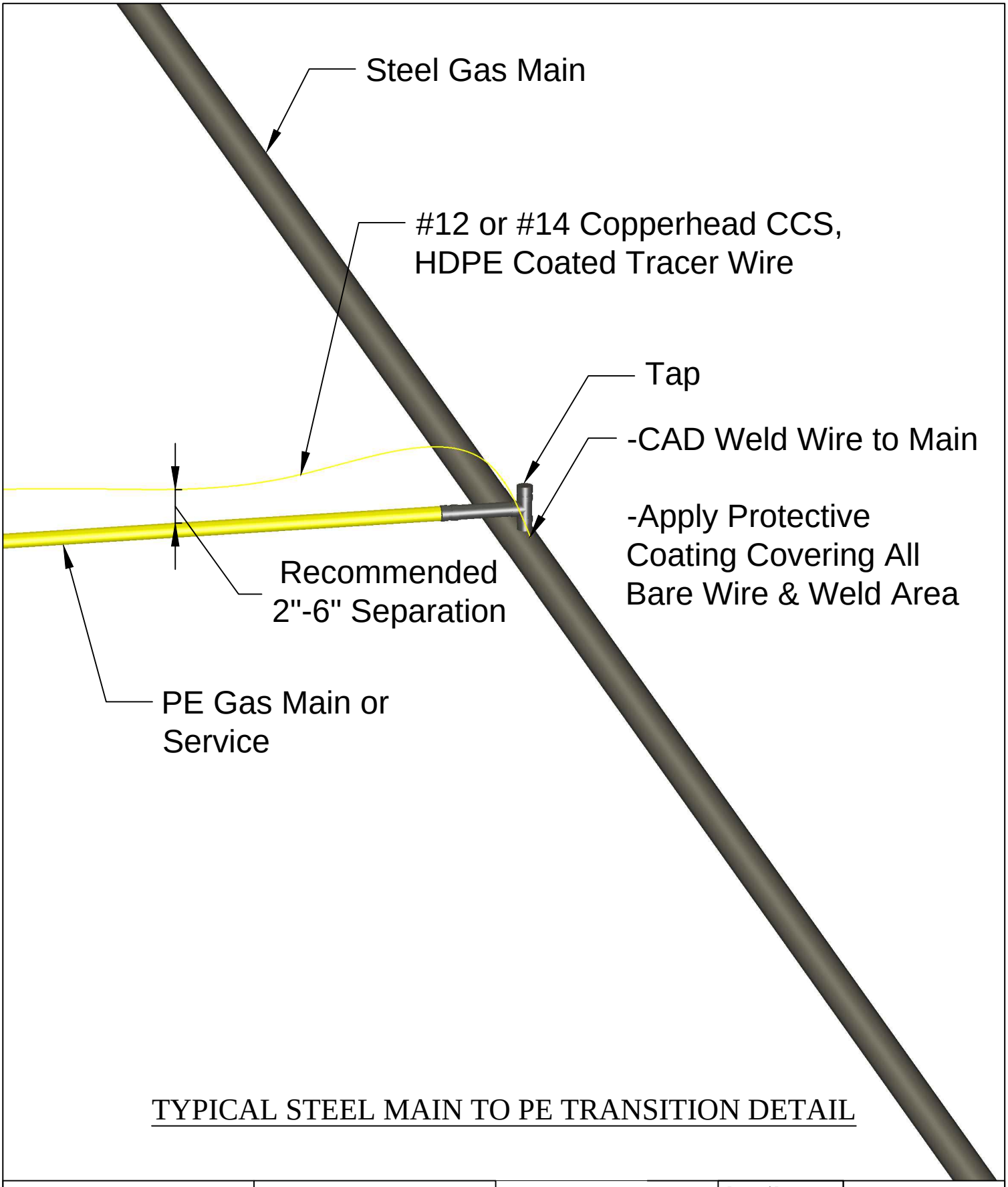

TYPICAL STEEL MAIN TO PE TRANSITION DETAIL

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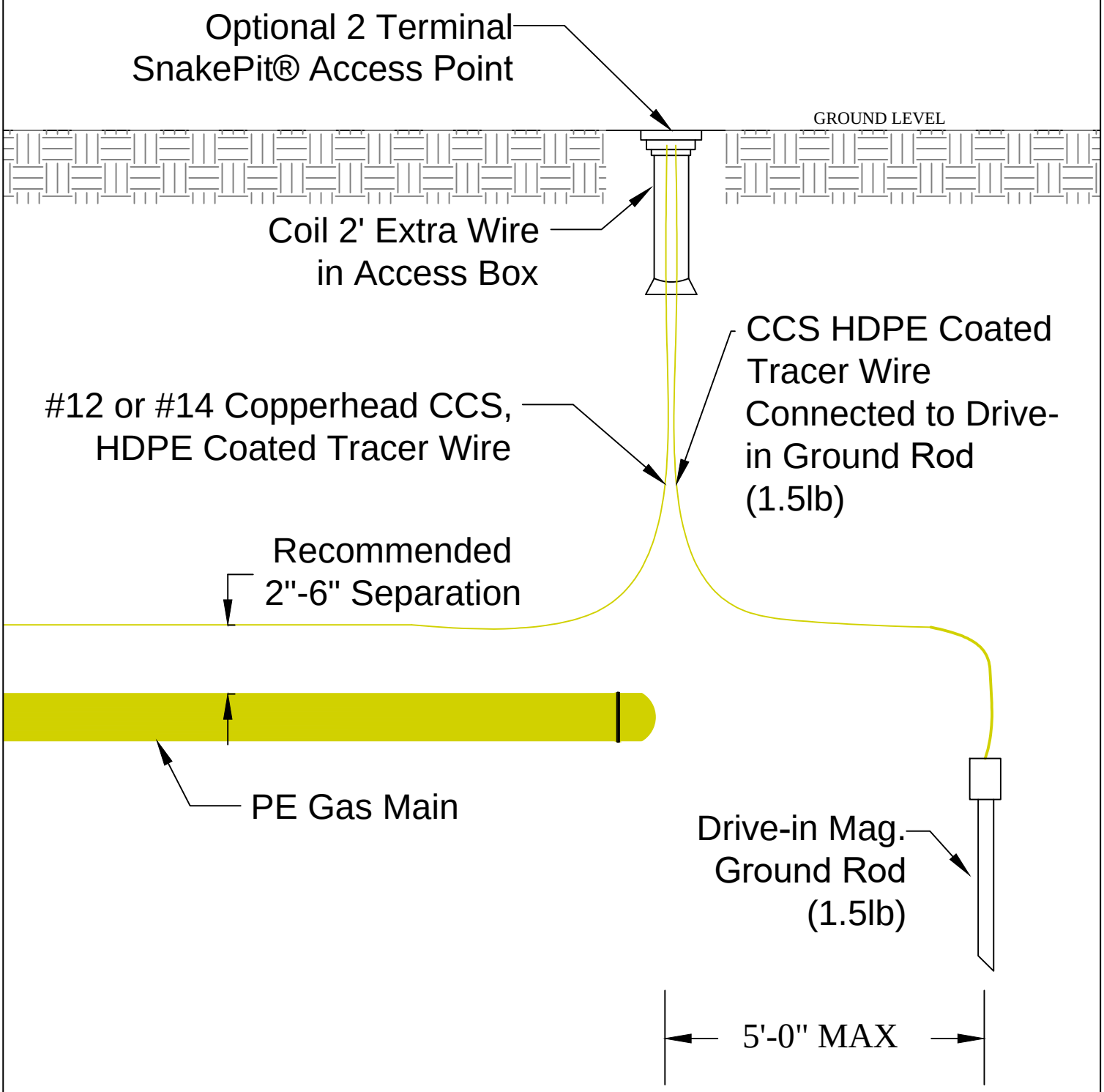

TYPICAL END OF MAIN/STUB DETAIL

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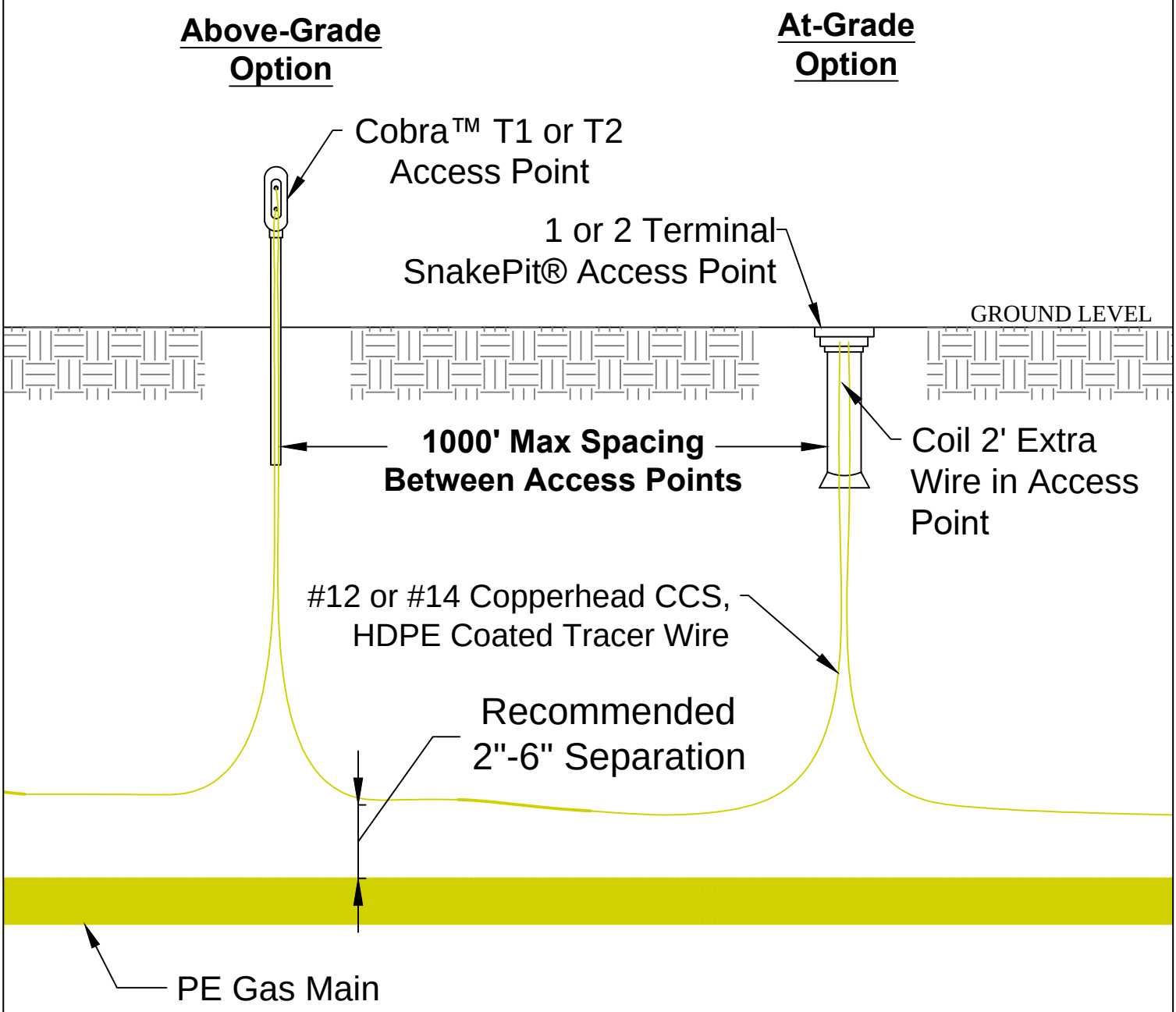

TRACER WIRE ACCESS POINT DETAIL

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