





Copperhead helps utilities protect
their underground assets



Complete Utility Locating System™

Detect the precise location of underground utilities



What is the *COMPLETE UTILITY LOCATING SYSTEM™*

5 Steps to pinpoint the exact location of underground utilities

1

CONDUCT



2

CONNECT



3

GROUND



4

ACCESS



5

LOCATE



Why a Complete System?

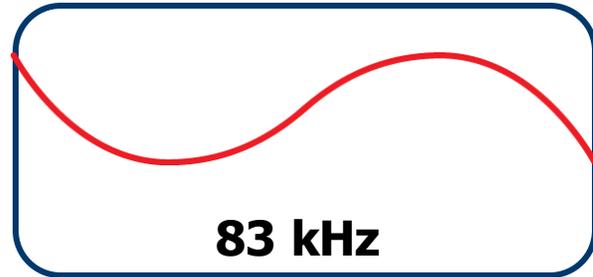
Tracer wire alone, or tracer wire that is improperly installed, is ineffective. A system of compatible components, including tracer wire, water-proof connections rated for direct bury, magnesium ground rods, and protective access points, is critical to ensuring signal continuity and detectability across the entire system.

A properly installed tracer wire system is the difference between having locatable utilities, or not.

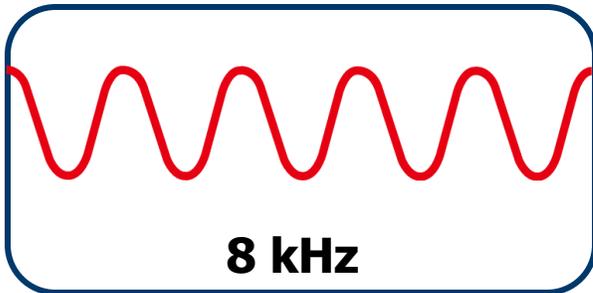
Typical Line Tracing Kit Components



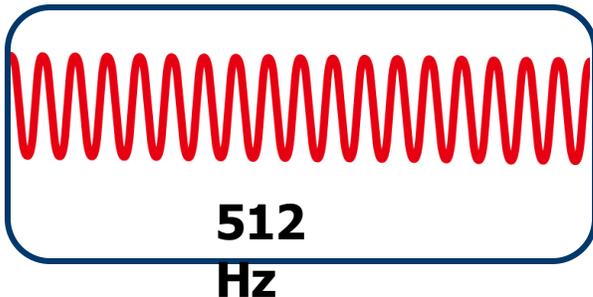
Typical Active Signal Frequencies



- High frequency (83 kHz)
 - Direct connection, clamp & induction
 - Shortest distance
 - Highest distortion and/or bleed-off



- Medium frequency (8.19 kHz)
 - Direct connection & clamp
 - Reasonable distance
 - Increased distortion and/or bleed-off



- Low frequency (512 Hz)
 - Direct connection
 - Longest distance
 - Lowest distortion and/or bleed-off

Importance of being able to locate on a 512Hz frequency
Tight tumbling signal = less Bleed off = less damage

**Water & Sewer typically
the deepest utility**

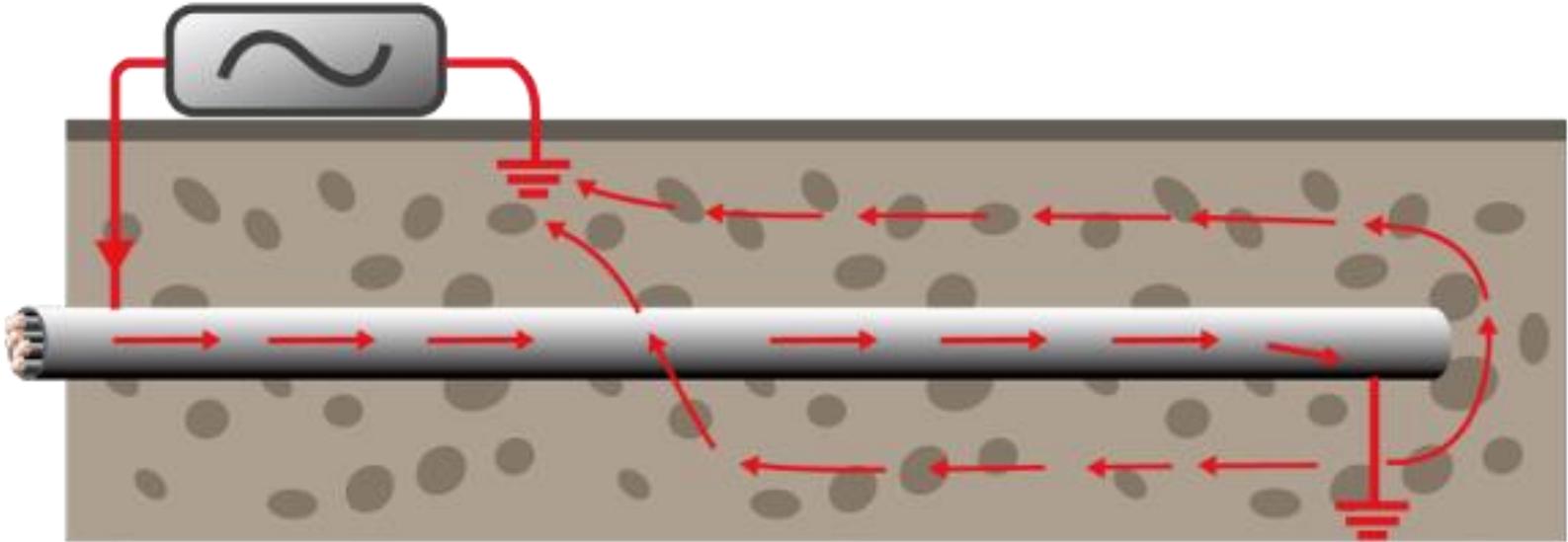


**A lot of other utilities get damaged
due to inaccurate or no locates**

Damages by Market:

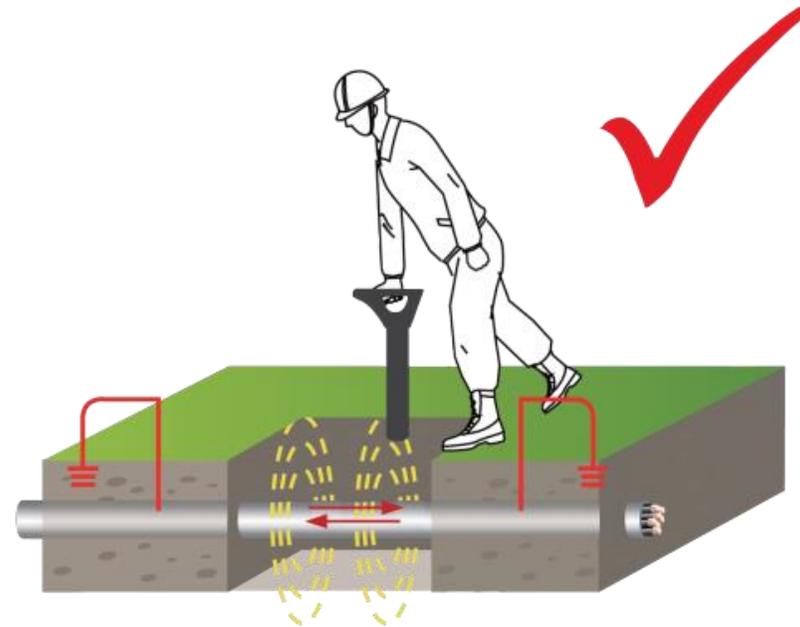
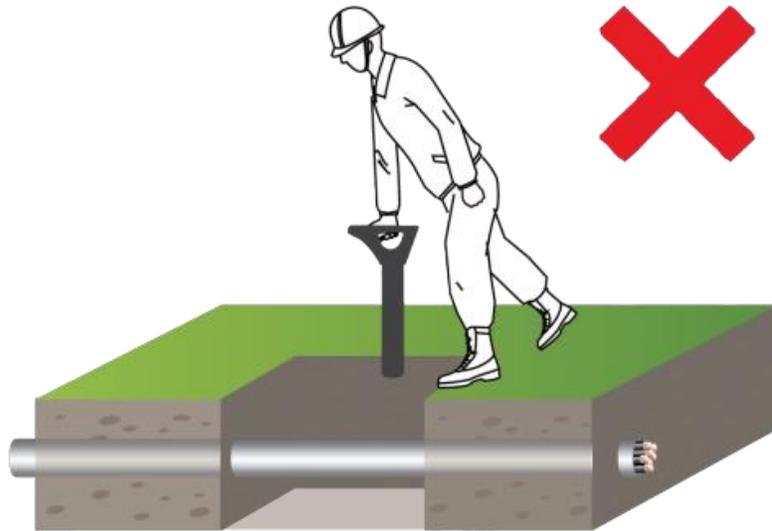
48% – Telecom
27% – Natural Gas
12% -- Cable TV
10% – Electric
3% -- Water & Sewer

The Theory of Locating



The Locating Signal

If there isn't any *AC CURRENT FLOWING*,
there will not be a *LOCATING SIGNAL*.



Never again access a trace wire
within the roadway



Never again access tracer wire
within the roadway



Life Expectancy

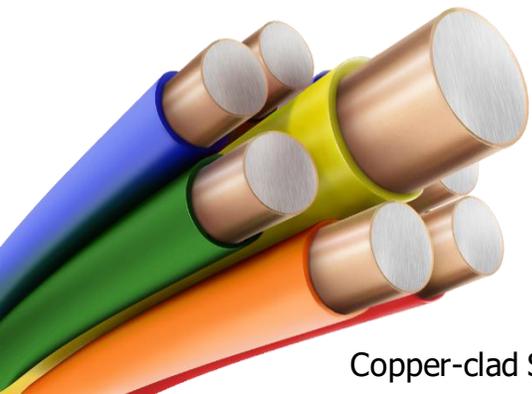
- The design-life of today's piping infrastructure is 50-100 years
- The design-life of a Complete Utility Locating System is also 50-100 years
 - To achieve this goal we must:
 - Properly specify quality components
 - Properly inspect proper installation

What should be specified?

- Wire Size or Gauge (AWG)
 - **Myth:** The bigger the wire the stronger the signal.
 - **Fact:** Larger diameter wire is specified for strength, not signal carrying abilities
- Breakage is the common failure during installation
- Specification standardizes 12 AWG wire

CCS Advantages Over Solid Copper

- More durable
- Longer lasting
- Stronger - up to 6 times the break load
- Reduced material cost
- More stable, longer-term pricing
- Reduced threat of theft due to lack of after-market value
- Lower shipping and handling costs due to lighter weight



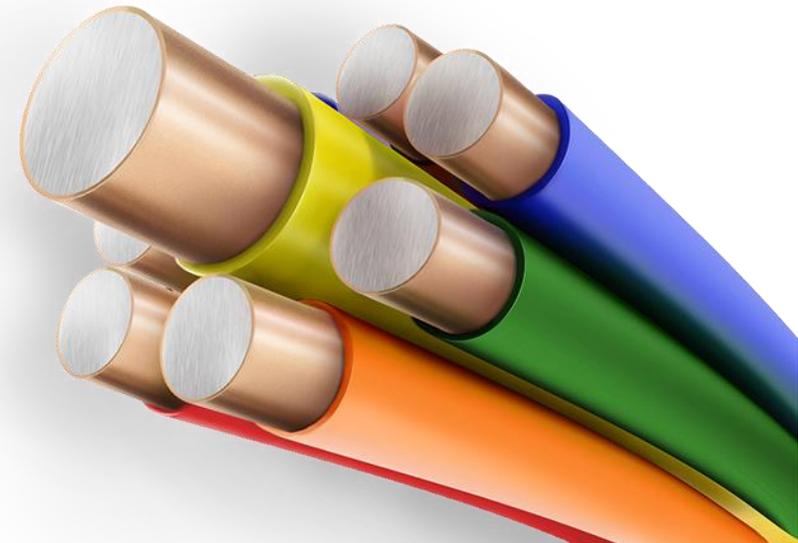
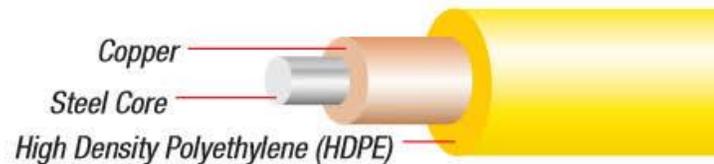
Copper-clad Steel (CCS)



Solid Copper

What Should be Specified?

- Wire Type - Copper Clad Steel (CCS)
 - Benefits include:
 - 2X the strength of solid copper
 - Equal conductivity to solid copper
 - As low as 50% of the price of copper



What should be specified?

Jacket Color

- Color is simple, follow the APWA uniform color code, without exception, just like the paint used for marking

APWA UNIFORM COLOR CODE	
WHITE	WHITE - Proposed Excavation
PINK	PINK - Temporary Survey Markings
RED	RED - Electric Power Lines, Cables, Conduit and Lighting Cables
YELLOW	YELLOW - Gas, Oil, Steam, Petroleum or Gaseous Materials
ORANGE	ORANGE - Communication, Alarm or Signal Lines, Cables or Conduit
BLUE	BLUE - Potable Water
PURPLE	PURPLE - Reclaimed Water, Irrigation and Slurry Lines
GREEN	GREEN - Sewers and Drain Lines

Installing a Complete Utility Locating System

Pinpoint the exact location of underground utilities.

1 CONDUCT

Choose 100% American-made Copperhead® copper-clad steel tracer wire designed for open cut, directional drill, and pipe bursting, with a protective high density polyethylene (HDPE) jacket. Color coding should follow American Public Works Association (APWA) Standards.



2 CONNECT

Solid connections are critical to allowing the locate signal to continue throughout the tracer wire system. Make sure connectors are corrosion-proof with non-hardening dielectric silicone sealant.

3 GROUND

Properly grounding the tracer wire system is the difference between being able to locate your utility, or not. Use a Copperhead® drive-in magnesium ground rod at all dead ends to pull the signal to the target.



4 ACCESS

Directly connect to your tracer wire system, protect tracer wire termination points, and turn ground on/off to isolate different sections of the tracer wire system with Copperhead® access points.

5 LOCATE

Locate tracer wire and other buried objects as needed, at the time of rough grade, and before final acceptance of the project with multi-function Copperhead® locating equipment.

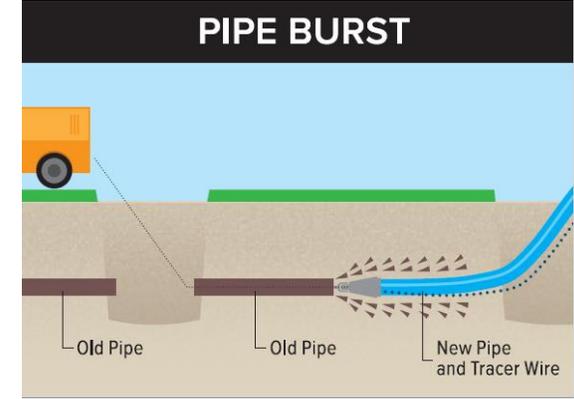
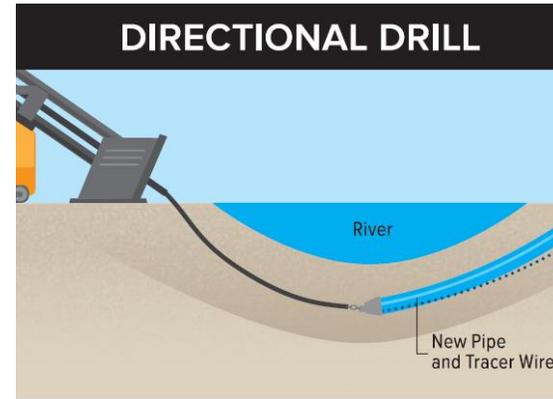
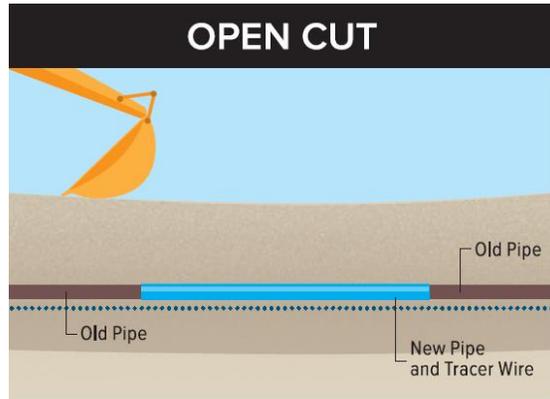


Step
1

Conduct

Copperhead® CCS Tracer Wire





Designed for Specific Applications



Copperhead® CCS Tracer Wire

Product Name	Product Benefits	Application	Wire Gauge (AWG)	Spool Size	Break Load	Coating Thickness
SUPERFLEX™	<ul style="list-style-type: none"> • As flexible as solid copper • Light-duty applications • Economical 	Open Cut	18, 16, 14, 12, 10	500, 1000, 2500	75-513 lb	30 mil, 45 mil
HIGH STRENGTH MOST POPULAR	<ul style="list-style-type: none"> • Most specified tracer wire for open cut applications • 2 times the break load of solid copper • Heavy-duty applications • Industry exclusive in strength and reliability 	Open Cut	18, 16, 14, 12, 10, 8	500, 1000, 2500	107-830 lb	30 mil, 45 mil
SOLOSHOT™ EXTRA-HIGH STRENGTH	<ul style="list-style-type: none"> • Engineered to handle the rigors of directional drilling • 6 times the break load of solid copper • Pulls through the first time • No need to pull multiple wires 	Directional Drill	12, 10, 8	500, 1000, 2500	1150-2785 lb	45 mil
SOLOSHOT™ XTREME	<ul style="list-style-type: none"> • Strongest, most durable tracer wire • Designed to withstand the volatile environment of pipe bursting and critical bores • Highest break load • Toughest protective jacket • No need to run multiple wires 	Pipe Burst and Critical Bores	3/16" 7x7 stranded CCS	Custom min qty 500' qty discount at 5,000'+	4700 lb	50 mil

What Should be Specified?

- **Placement of the wire in regard to pipe**
 - The trace wire should be placed in the same orientation to all installed pipe.
 - Install the trace wire on the bottom half of the pipe, between 3 & 9 o'clock.



ASTM B1010

Making sure the wire you
are installing meets the
latest ASTM B1010
requirements

Specifying and properly installing tracer wire that complies with ASTM B1010 is the best protection against underground utility damage.

ASTM B1010 is a new quality and safety standard specifically designed for CCS tracer wire used for underground utility locating. The standard covers bare round 21% conductivity copper-clad steel tracer wire, both annealed and hard drawn.

- ✓ Most stringent testing requirements focused on the needs of tracer wire industry
- ✓ Strict surface standards ensure best protection from corrosion and increases life of wire
- ✓ Highest tensile strength requirement means stronger wire, less breakage
- ✓ New reverse torsion test better guards against defects and imperfections under multi-directional twisting
- ✓ New language ensures consistent wire diameter along entire length of wire
- ✓ Applies to both annealed and hard-drawn CCS tracer wire

View and download the requirements of ASTM B1010 from www.astm.org.

Step

2

Connect

Strong connections are essential for signal continuity down the entire target line.



SnakeBite™ Locking Connector

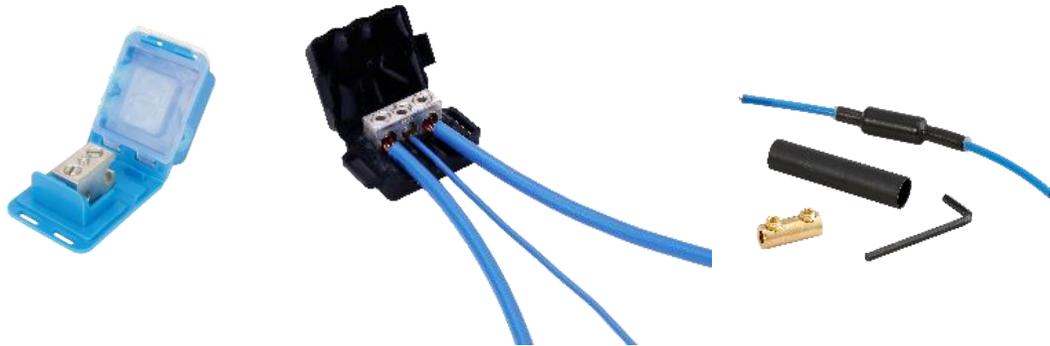
Connects up to 3 wires. Gauge specific (10, 12, 14 AWG).

- No wire stripping needed
- Exclusive 90-degree twist-lock design
- Simply insert wires, twist, and lock
- Clear view helps verify wires are inserted fully before locking
- Won't open during backfilling
- Waterproof, corrosion-proof
- Dielectric non-hardening silicon sealant
- Designed for direct bury
- Low voltage only

MAINLINE-TO-SERVICE CONNECTOR

Connects service lateral tracer wire to mainline tracer wire.

- No need to cut the mainline tracer wire
- 3-way connection
- Outer lid locks down in 3 places
- Waterproof, corrosion-proof
- Dielectric non-hardening silicon sealant
- Designed for direct bury



PIPE BURST CONNECTOR

Connects multiple wires. Non-gauge specific.

- Work with SoloShot™ Xtreme tracer wire
- Handles variety of wire size combinations
- Designed for direct bury

Copperhead® Connectors

Product Name	Connects at least 3 wires	No need to strip wires	Designed for direct bury	Waterproof connection
SnakeBite Locking Connector 	✓	✓	✓	✓
Mainline-to-Service Connector 	✓		✓	✓
Twist-On Connector 	✓		✓	✓
Pipe Burst Connector 			✓	
Pipe Burst Mainline-to-Service Connector 	✓		✓	✓

Step

3

Ground

Ground all tracer wire dead-ends – essential for completing the electrical circuit needed for line detection



GROUND ROD

Pulls the electrical current emitted by the locate transmitter down the tracer wire for detection.

- 1.5 lb drive-in magnesium ground rod
- Heavy-duty HDPE cap provides sturdy drive-in surface
- 20' copper-clad steel wire with 30 mil HDPE jacket

Failure to Properly Ground

- Locate signal can be applied at any tracer wire access box. Current will not want to flow up individual service laterals if the dead-end of the trace wire does not provide a path to ground.

The current uses ground to complete the circuit...



Step
4

Access

Access Points – tracer wire and ground rod termination and direct connection point for utility locate transmitters

SnakePIT® AND BOABOX®
ACCESS POINTS
(at grade)



COBRA™
ACCESS POINTS
(above-grade)



SNAKESKIN™
ACCESS POINT
(above-grade)



SnakePit® ACCESS POINTS

Provides ground-level access to tracer wire systems. Available with single-terminal cast iron lids or patent-pending, two-terminal switchable lids.

- Direct connect point for utility locate transmitter
- Encapsulated magnet provides easy detection by ferrous metal detector
- Anti-corrosion gel to protect wires



**SnakePit®
Lite Duty**

Lite duty or off-roadway applications



BoaBox®

Integrated Curb-stop and tracer wire access
And
Integrated Sewer Cleanout & tracer wire access



**SnakePit®
Lite Duty Adjustable**

Lite duty or off-roadway applications where fluctuations in grade or ground settling is likely



**SnakePit®
Lite Duty XL
Adjustable**

Lite duty or off-roadway applications where heavy shifting of soil is likely

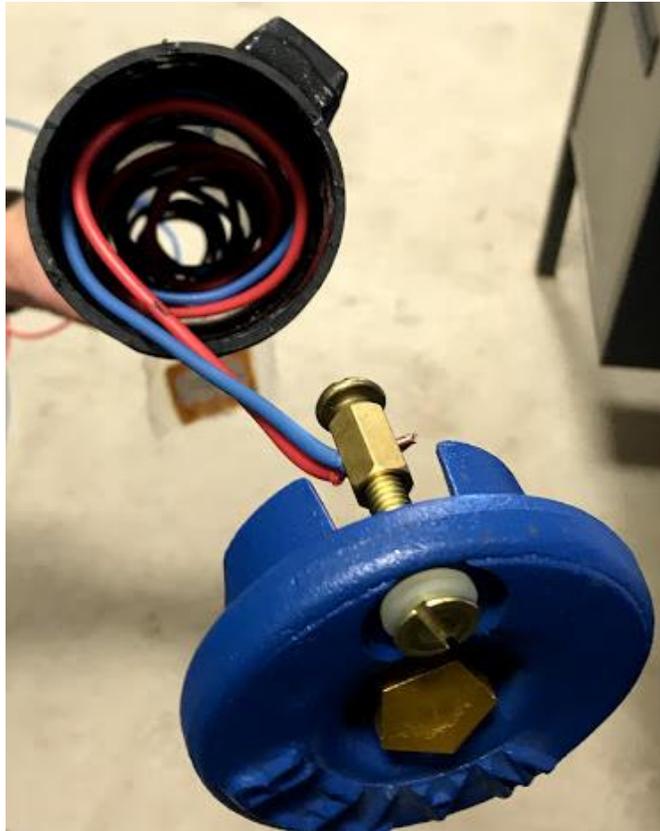


**SnakePit®
Concrete/Driveway**
Low traffic and driveway applications



**SnakePit®
Roadway**
Roadway applications

Original Single-Terminal Snakepit Lid



MADE IN



U. S. A.

2nd Generation Two-Terminal Snakepit Lid



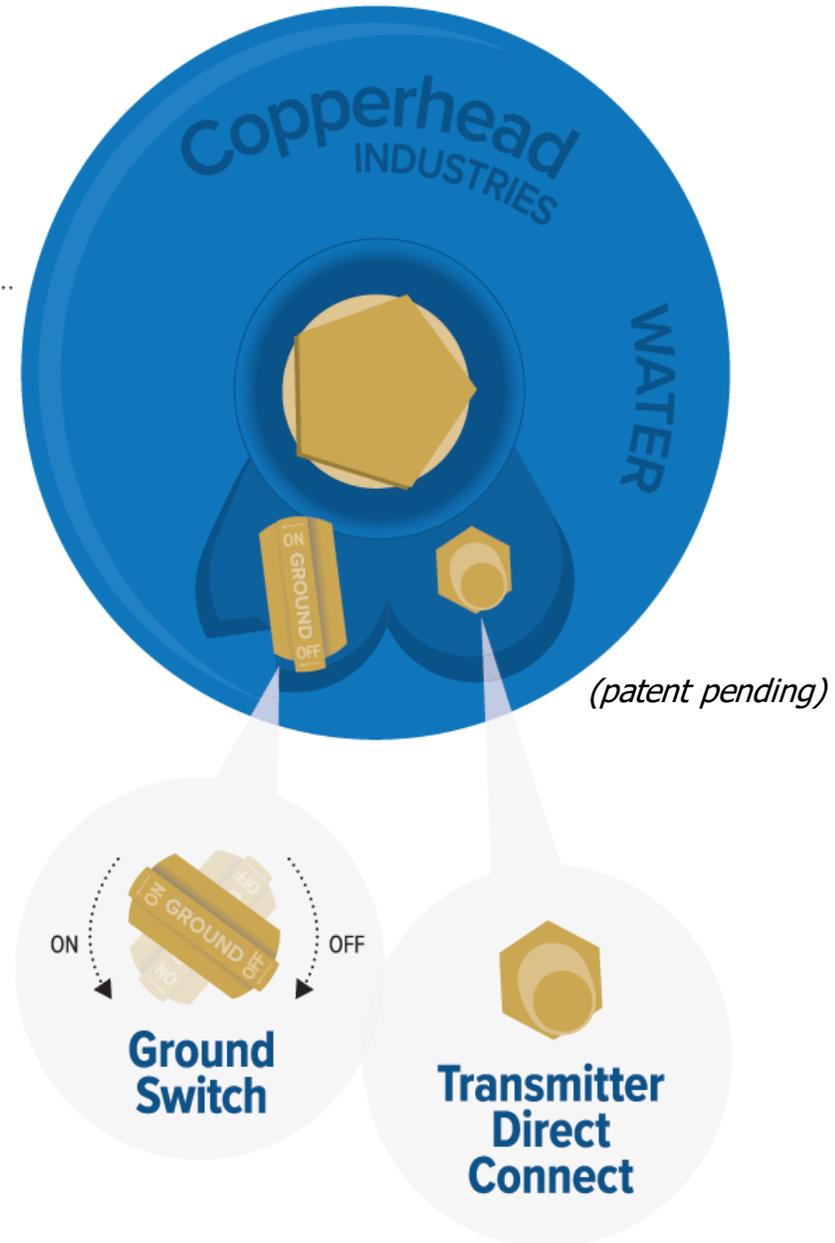
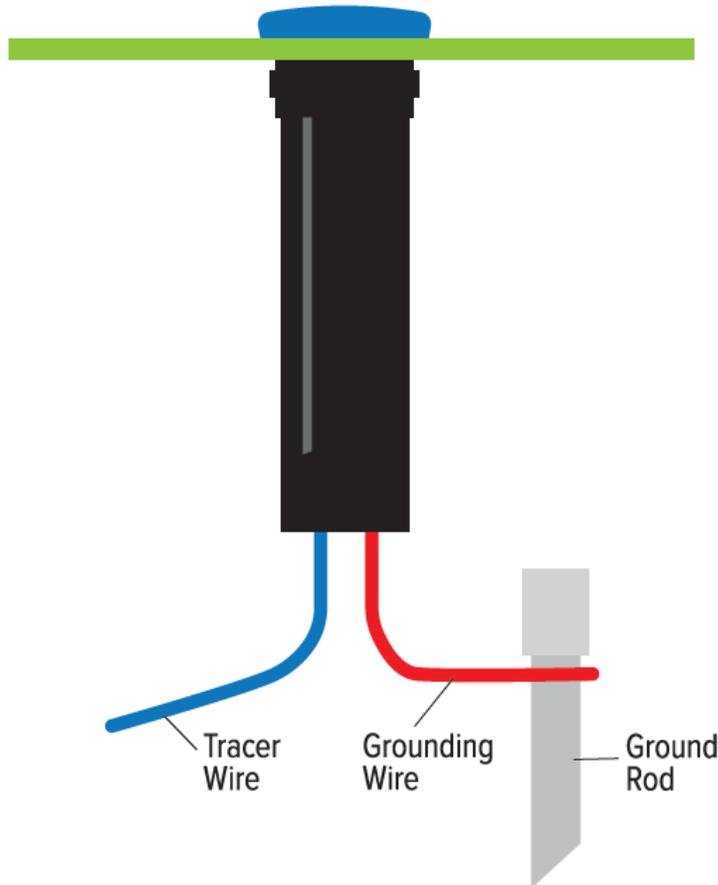
MADE IN

U. S. A.

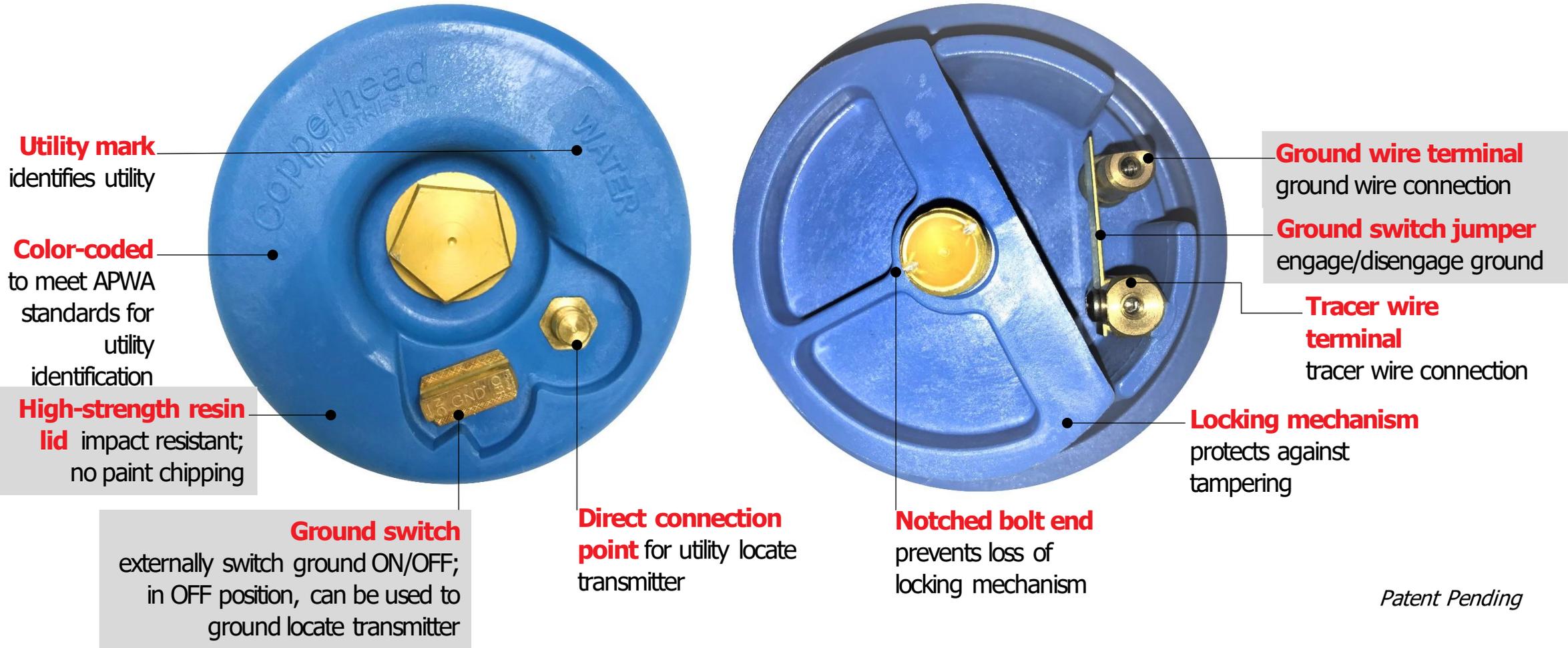
SNAKEPIT[®]

ACCESS POINT

*Two-terminal
Switchable Lid*



SnakePIT® Two-terminal Switchable Lid



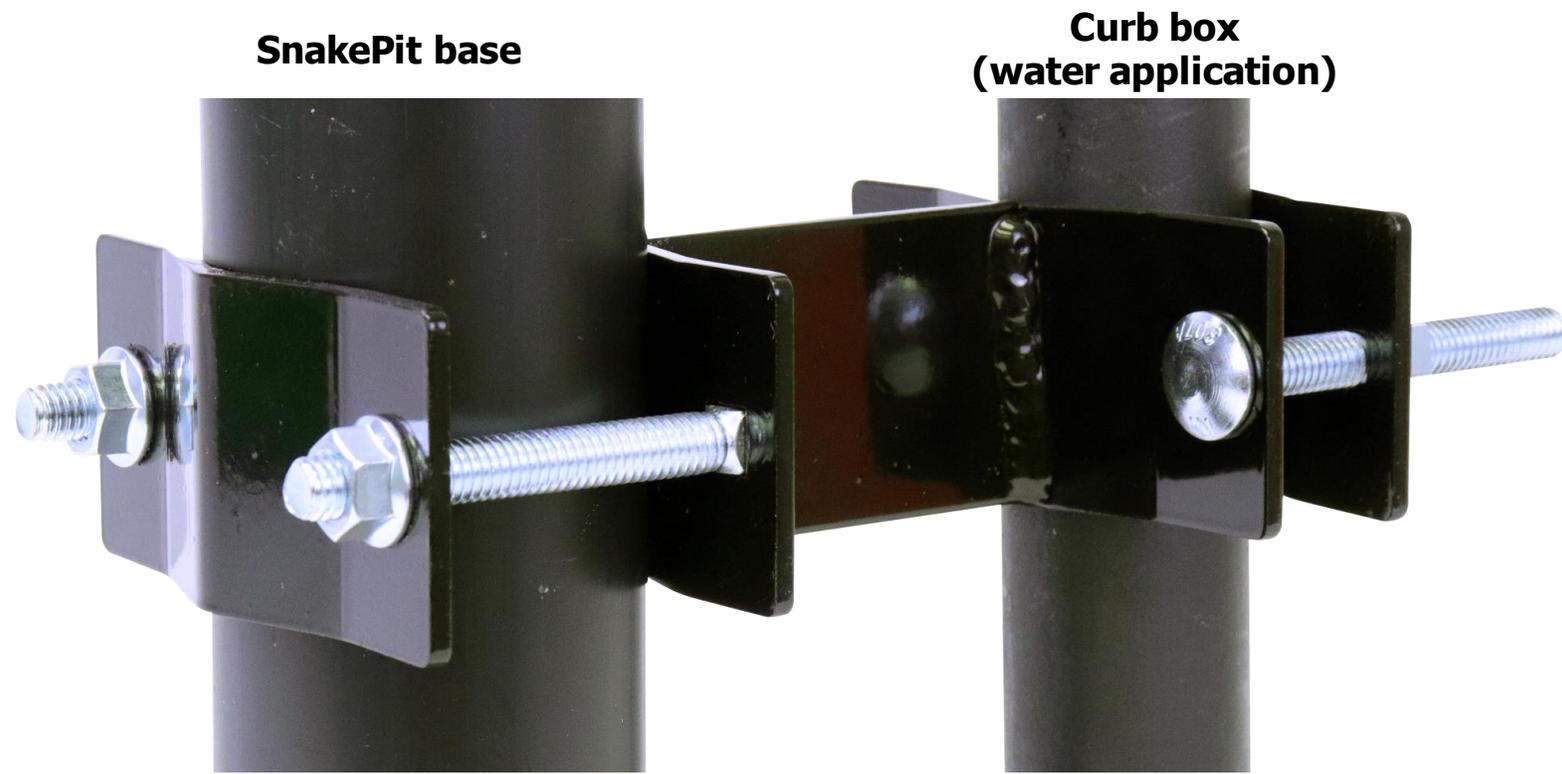
Patent Pending

Curbstop & SnakePit Pavement Option



SNAKEPIT® Bracket

Secures SnakePit alongside curb box.



COPPERHEAD INDUSTRIES

BOABOX™

WATER & SEWER



INTRODUCING THE ALL-NEW

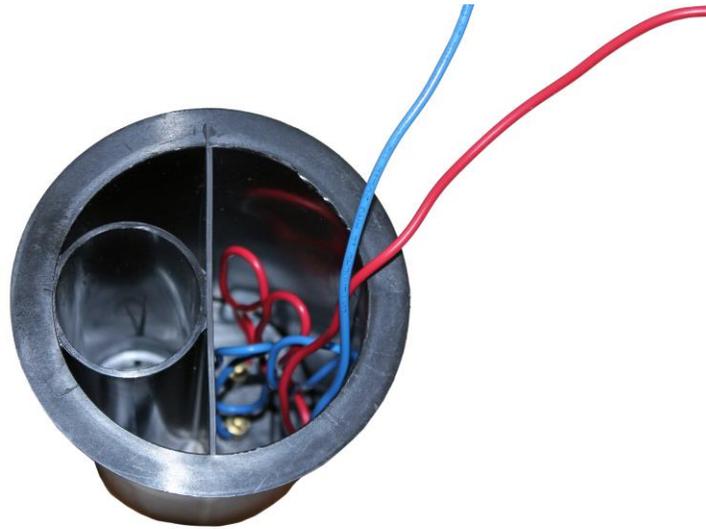
BOABOX™



AN INTEGRATED CURB
STOP VALVE AND
TRACER WIRE
ACCESS BOX

ADDRESSING THE COMPLAINTS OF TWO ACCESS LIDS IN THE HOMEOWNERS' YARD AND SIMPLIFYING THE INSTALLATION PROCESS





DUAL CHAMBERS FOR CURB STOP ACCESS AND ABOVE GROUND TRACER WIRE ACCESS

BoaBox™ Sewer Access Point

Industry's first combined tracer wire and clean-out access point with universal pentagon plug for both SDR35/26 and SCH40 pipe sizes.

The BoaBox Sewer is an **integrated clean-out and tracer wire access point for the sewer market.** It provides efficient 4" clean-out access and tracer wire system in one unit.

The dual compartment and integrated entry points **eliminate the need for two lids** in the yard or right-of-way simplifying installation and maintenance.



Making
installation
easier,
saving money
and more
aesthetically
pleasing



Features and Benefits

- Two access points in one – clean-out and tracer wire system
- Direct connection to tracer wire and ground rod from the top
- Gasket for inflow & infiltration
- Fits SCH40 IPS and Sewer SDR35/26 with provided sleeve
- Bottom flange adds strength and anchors into ground to accommodate earth's movement
- Encapsulated magnet in clean-out plug allows for detection by a ferrous metal detector
- ¼-turn pentagon style plug – NO cross threading
- Brass hardware means no rusting or seizing parts
- UV resistant, composite material
- Anti-corrosion gel protects wires
- Made in the USA



U.S. Patent No. 11.047.116

COBRA™ ACCESS POINT

Provides above-ground access to tracer wire systems.

- Multiple mounting options: post, hydrant, stake
- Can be used with rigid or flexible PVC conduit
- Color-coded to meet APWA standards for utility detection



2-terminal



Mounting Stake



Hydrant Flange Package

SNAKESKIN™ ACCESS POINT

Provides above-ground access to tracer wire systems when no ground is needed.

- Direct connection point (only) for utility locate transmitter
- No ground connection
- Color-coded to meet APWA standards for utility detection
- Protects against weed-whips
- Highly conductive aluminum cap pre-filled with non-hardening dielectric gel to protect wire



Step 5 Locate

VIPERMAG™ PIPE AND CABLE LOCATOR

A general-purpose locator designed to locate pipes and cables, as well as Copperhead's Complete Utility Locating System™.

- Active locating frequencies (512 Hz, 8.19 kHz, 83 kHz)
- Passive power locating (60 Hz)
- Conductive or inductive locating
- Ferrous metal detection – magnetic north/south indicator
- Optional fault find mode (8 kHz)



Standard Equipment:
receive, transmitter, direct connection
cables, ground rod, alkaline batteries,
soft-sided case, user guide

What Should be Specified?

- **Important Step:** Testing of a new system
 - Make sure the contractor, engineer/inspector and city operator perform a locate in common company
 - At the time that rough grade has been established
 - Prior to final acceptance of the project
 - Conductivity/continuity testing is not allowed
- Should be worded that the entire project to be located on 512hz, not continuity testing.

Choose American Made

- All manufacturing and in-house testing is done right here in the USA
- ASTM B1010 compliant
- AIS compliant
- BABA (Build America – Buy America)
- Third-party testing done at independent labs in the USA
- No outsourcing to another country at any point in the manufacturing process

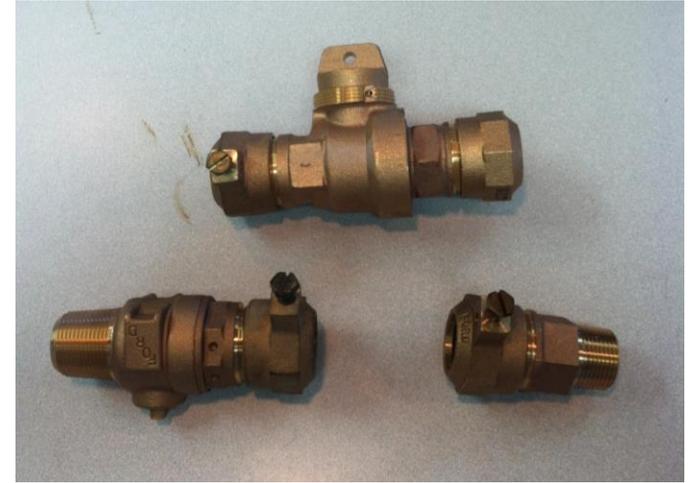


MADE IN THE USA

Imitation = Greatest Form of Flattery

- Copperhead Industries developed the **first and most widely used** complete tracer wire system, specified by more engineers, municipalities and utilities than any other manufacturer nationwide.
- Copperhead Industries manufactures the only complete tracer wire system that is **100% made in the U.S.A.**
- Many “copycats” have recognized money making opportunities in manufacturing and marketing “similar” looking products
- Life –expectancy of **50-100 years, insist on the best!**

Other items for discussion



Other Copperhead Products

Service Ready Kit

The ***SERVICE READY KIT*** is a convenient package of the components necessary to install the **Complete Utility Locating System™** on **service laterals**, ensuring accurate detection of underground utility assets from the mainline to the edge of right-of-way and to a building.



Kit contains: 100' CCS Tracer Wire, Mainline-to-Service connector, SnakeSkin Access Point, 2 SnakeBite Locking Connectors, 2 Ground Rods, SnakePit Lite Duty Access Point with Two-Terminal Switchable Lid

MAINLINE-TO-SERVICE CONNECTOR

Use to connect service lateral tracer wire to mainline tracer wire.

1. Strip mainline and service tracer wires 1/8"
 2. Place mainline tracer wire into open throat A
 3. Tighten set screw until contact is made with wire; after contact is made, tighten set screw 1/4 turn
 4. Place service tracer wire into hole B
 5. Tighten set screw until contact is made with wire; after contact is made, tighten set screw 1/4 turn
 6. Remove sealant cover and discard
 7. Close housing, aligning conductors until housing lid is fully latched
 8. Wipe excess sealant around wires
- Do not reuse.



SNAKEBITE™ LOCKING CONNECTOR

Use to connect up to three wires.

1. DO NOT strip jacket from wire
2. Connector is gauge specific; Verify wire gauge matches connector gauge
3. Insert wires into holes fully so they are visible in the clear cap
4. Twist connector closed until locked

To assist with strain relief, twist wires together approximately 8" from the connector. Do not pull on wires after connection is made.



GROUND ROD

Use to ground tracer wire.

1. Drive into virgin soil at designated location (see diagram), at same depth as utility
2. Strip 1/2" of insulation from end of red ground wire
3. Connect stripped end of ground wire to SnakePit® Lite Duty Access Point or SnakeBite™ Locking Connector



SNAKEPIT® LITE DUTY ACCESS POINT

Use to protect and terminate tracer wire and ground wire at edge of right-of-way. Provides direct connection point for utility locate transmitter and connection to ground rod.

1. Using a pentagon wrench, loosen pentagon head bolt and remove lid; Set aside
2. Remove wax pad from base; Set aside
3. Strip ends of tracer wire and ground wire 1/2"
4. Wrap 18"-24" of wires around outside of base to form spring-line shape; Remove wires from outside of base and guide inside the base from bottom, up
5. Under lid, loosen screw to hinged end of jumper, exposing hole in nut. Place stripped tracer wire into the hole from inside, out and tighten screw until firm contact is made with wire
6. Loosen screw attached to flip-side of jumper. Place stripped ground wire into hole from inside, out and tighten screw until firm contact is made with wire, ensuring jumper is down, connected to screw.
7. Remove wax pad from bag; Wrap wire connections with wax to protect from moisture and contaminates
8. Replace lid; Tighten pentagon head bolt to secure lid to base
9. Bury SnakePit® Access Point at ground level leaving lid exposed



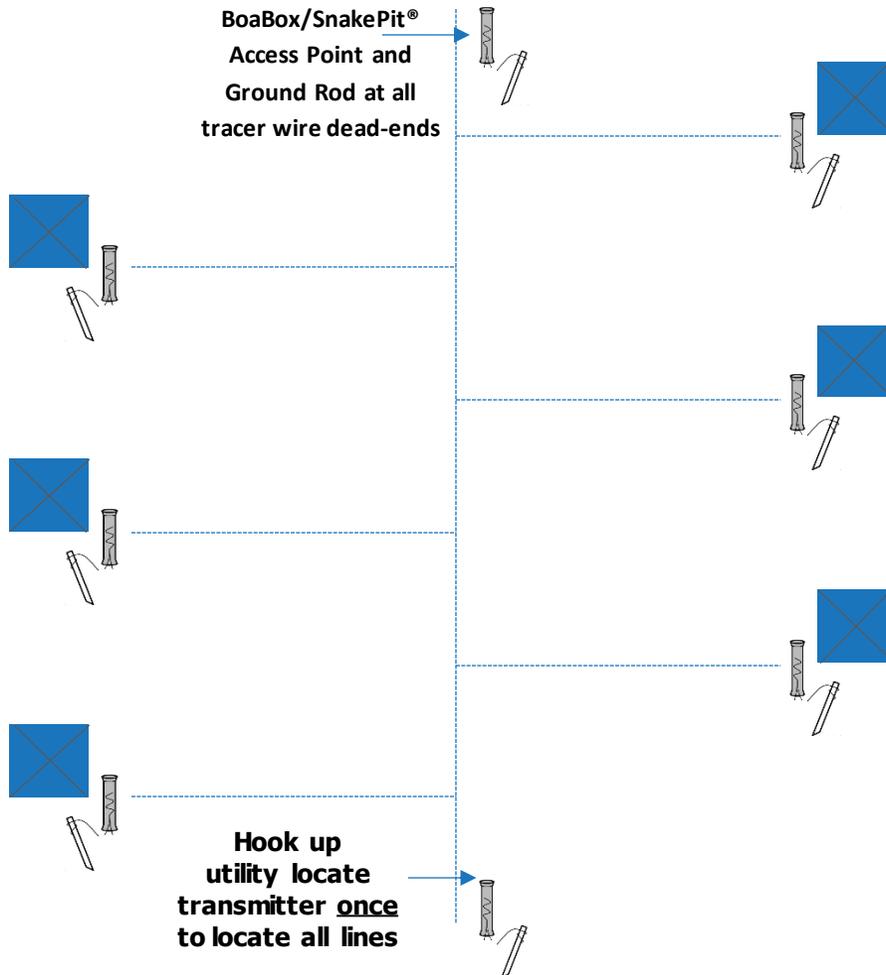
SNAKESKIN™ ACCESS POINT

Use to protect and terminate tracer wire at building. Provides direct connection point for utility locate transmitter.

1. Strip tracer wire 3/4"
2. Slide tracer wire into poly tube
3. Slightly back out set screw from insert
4. Push stripped wire fully into aluminum insert
5. Use 1/16" Allen wrench; Firmly tighten set screw on tracer wire



What problem does this solve?



Before...

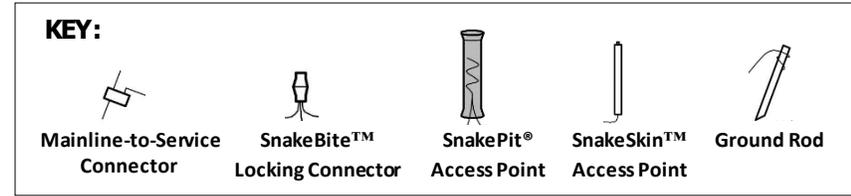
locators had to either **reposition** their utility locate transmitter or **remove access point lids to disconnect/reconnect** ground wires to locate target lines

After...

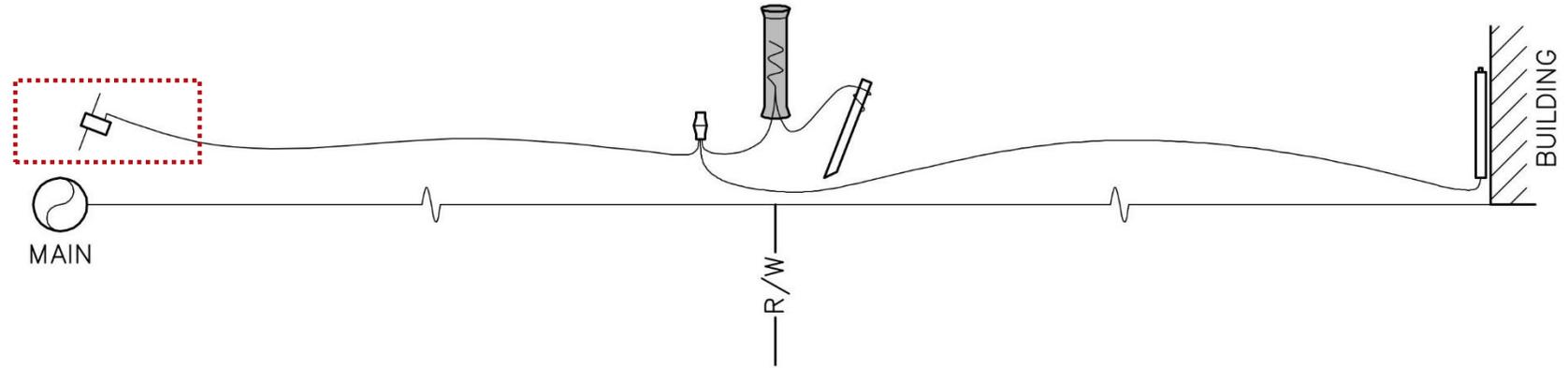
eliminates the need to remove lids, and allows locators to **isolate targeted sections** of tracer wire *without having to reposition the utility locate transmitter*

Makes locating more accurate and efficient

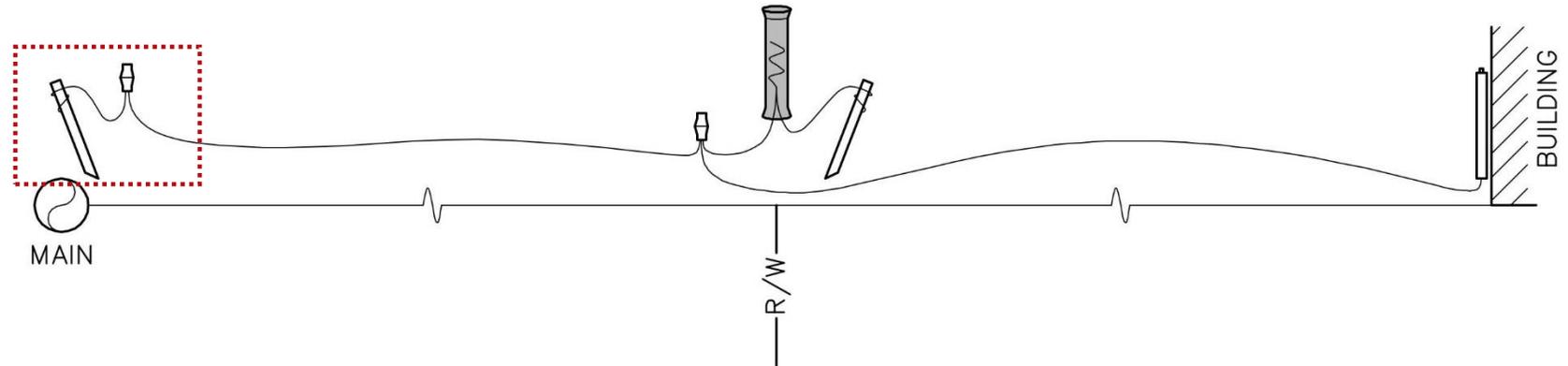
Service Lateral Scenarios



Mainline with tracer wire



Mainline without tracer wire



Why Specify Copperhead Products?

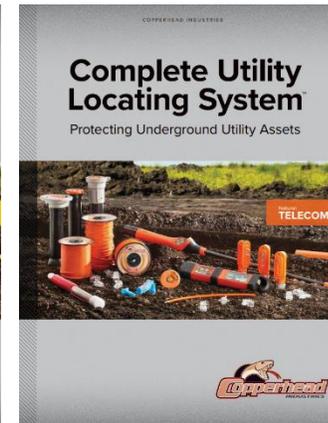
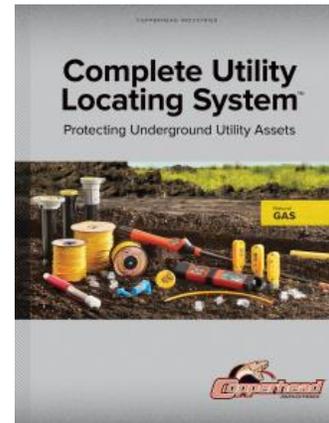
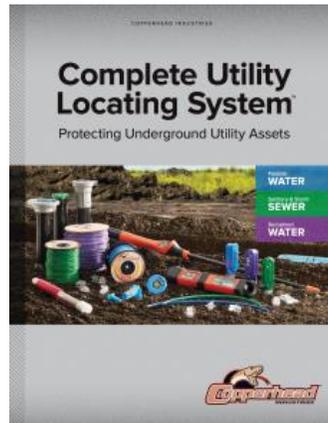
- Copperhead is the only CCS tracer wire supplier to be **100% American made**
- Copperhead pioneered copper-clad steel tracer wire with Copperweld who has **100+ year history** in the copper cladding process
- Copperhead has developed the **Complete Utility Locating System™** – a complete tracer wire system designed to ensure the protection of underground utility assets
- Copperhead has developed a **complete specification** based on best practices for installing complete tracer wire systems; We help utilities, municipalities, and engineers write specifications to meet their specific needs
- Copperhead has **global sales representation and distribution** and a **dedicated customer service team** who can assist you in every step of the selection, specification, and installation process
- Copperhead offers personalized **full-service** support, on-site training, product demos, spec writing assistance, pre-construction meetings, training, troubleshooting, location assistance
- Copperhead's sole core purpose is helping utilities protect their underground utility assets – this focus allows us to be the **best at utility location products and practices**

Product Resources

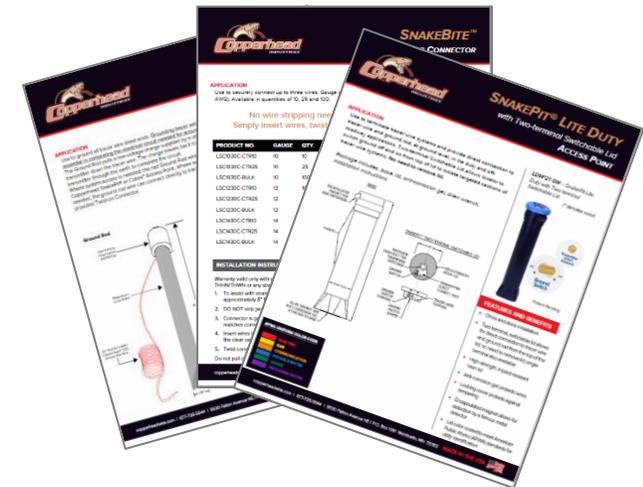
Product Educational Material



Website
Copperheadwire.com



Market-Specific Catalogs
(Can be downloaded from website)



Data Sheets & Specs
(Can be downloaded from website)

We protect underground utility assets with the
Complete Utility Locating System™.

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