Prospecting Around PG&E-Owned Facilities

1. General Information

The following procedures apply to PG&E-owned facilities ONLY.

Use surface marks to indicate the approximate location of underground facilities. Exposing the facility is the only way to verify its actual location.

Use the following procedures to confirm the physical location of underground facilities.

Hand dig to find the outermost edge of an underground facility. Do not use power excavation equipment within 12 inches of a facility. Only hand digging is allowed within 12 inches of a facility. The only exception is for vacuum excavation.

Use care when prospecting to ensure that a hand-dug trench or probing operation is wide enough to allow for the equipment used. For example, the trench must be wide enough to prevent a cut made by the corner teeth on a backhoe bucket into the wall of the trench.

2. Physically Locate Facilities by Vacuum Excavation

A. Do not use vacuum excavation without permission from the facility owner/operator.

B. The excavator provides notice of intent to use vacuum excavation when calling for a USA ticket. Obtain an agreement to use vacuum excavation **before** vacuum excavation is used within 2 feet (ft) of the outside diameter of the facility.

C. Use a high-pressure water or air stream to break up and cut the soil while using a high-flow vacuum system to lift the soil up and out of the excavation area. Pressure control equipment is required to prevent air or water jet pressures from exceeding the pressures in Table 1. For water jet equipment, use a nozzle greater than or equal to the minimum nozzle angle identified in Table 1.

Table 1. Air/Water Pressure Specification for Vacuum Excavation

	High Pressure Air Maximum Pressure	**High Pressure Water** Maximum Pressure/ Minimum Nozzle Angle
Plastic pipe	120 pounds per square inch (psi)	1,500 psi/15 degrees
Steel pipe-bare	120 psi	1,500 psi/15 degrees
Steel pipe w/polyken tape	120 psi	1,000 psi/40 degrees
Steel pipe w/o polyken tape	120 psi	1,500 psi/40 degrees
Cast iron pipe	120 psi	1,000 psi/40 degrees
Wrought iron pipe		
Copper pipe		
Fiber conduit		
Electric tile duct		
Electric polyvinyl chloride (PVC) conduit		
Electric steel conduit		
Electric direct bury		

D. Do not allow rocks or other debris to contact the facility being excavated.

E. Once the top of the facility is exposed, the excavator must expose all sides of the facility to positively locate the center of the facility.

F. The excavator confirms that the facility marks on the ground are accurate by comparing them to the facility location. Once the marks are confirmed as accurate, the excavator may continue to excavate following the procedures in Work Procedure (WP) WP4412-05, "Excavation Procedures for Damage Prevention."

3. Physically Locate by Probing (Steel Gas Facilities *Only*)

A. Probing is not allowed for pipelines 2 inches or smaller in diameter. See Section 4, "Physically Locate by Hand Excavation," on Page 3.

B. Review the map and identify all fittings and attachments to the pipe that could be within the delineated area (e.g., bottom taps, pressure control fittings, service tees, elbows).

When fittings or attachments are suspected to be within the proposed excavation area, physically locate them using the following procedure:

C. The excavator may use fiber glass T-handled probes with a ball tip to verify the location of steel gas facilities **only**.

D. Drive a fiber glass T-handled probe into the ground perpendicular to the pipeline for the full width of the proposed prospecting excavation. Probe to a depth of approximately 24 inches. Spacing intervals must be no greater than 5 inches or half the diameter of the prospected facility, whichever is smaller (i.e., for a 4-inch main, the maximum spacing is 2 inches). If at any time ground conditions do not permit probing, remove the cover by hand digging. See Section 4, "Physically Locate by Hand Excavation," on Page 3.

1) If the facility is located within 24 inches of the surface, power excavation is not permitted within 12 inches of the facility. Only hand digging is allowed within 12 inches of the facility.

2) If the facility is located deeper than 24 inches from the surface, excavation by power-operated equipment is permitted to a depth 12 inches less than the actual initial probing depth.

   Continue probing and power-excavating by alternating between probing 24 inches deep and power excavating to a depth 12 inches less than the actual probing depth, until the excavation is within 12 inches of the facility. Only hand digging is allowed within 12 inches of the facility.

E. Once the top of the facility is exposed, the excavator exposes the sides of the facility by hand digging to positively locate the center of the facility.

F. The excavator confirms that the facility marks on the ground are accurate by comparing them to the actual facility location. Once the marks are confirmed as accurate, the excavator may continue to excavate, following the procedures in WP4412-05, "Excavation Procedures for Damage Prevention."

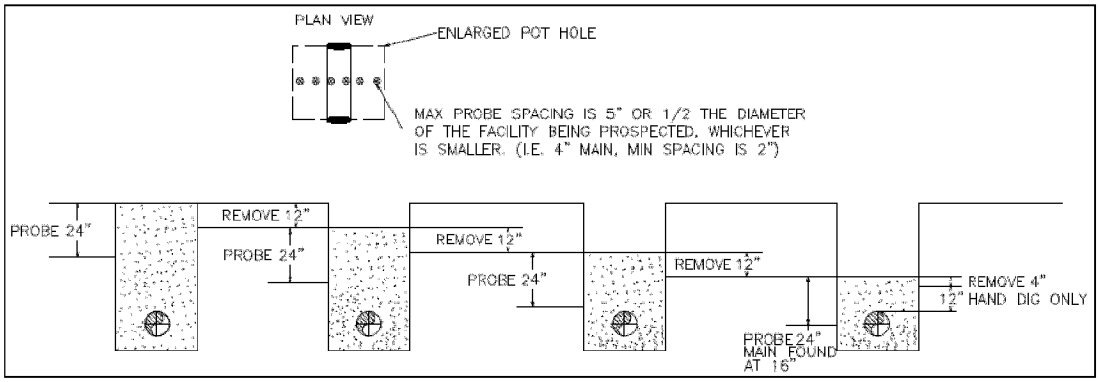

Figure 1. Excavation Procedures, Physically Locate by Probing

4. Physically Locate by Hand Excavation

A. Review the map and identify all fittings and attachments to the pipe that could be within the delineated area (e.g., bottom taps, pressure control fittings, service tees, elbows).

When fittings or attachments are suspected to be within the proposed excavation area, physically locate them using the following procedure:

B. Hand dig a trench perpendicular to the facility across the full width of the proposed prospecting excavation to an initial depth of at least 18 inches.

1) If the facility is exposed within the initial hand-dug trench, power excavation is not permitted within 12 inches of the facility. Only hand digging is allowed within 12 inches of the facility.

2) If the facility is not exposed within the initial hand-dug trench, excavation by power-operated equipment is permitted to enlarge the pothole area. The enlarged pothole must be at least 12 inches shallower than the hand-dug trench. For example, if the hand-dug trench is 30 inches deep, the enlarged pothole area must be no deeper than 18 inches.

   Remove an additional layer of soil from the hand-dug trench by hand digging, making the hand-dug trench at least 18 inches deeper than the enlarged pothole. If the facility is still not exposed within the hand-dug trench, an additional layer of soil can be removed from the enlarged pothole area with power-operated equipment. The enlarged pothole must be at least 12 inches shallower than the hand-dug trench.

   Continue removing additional layers of soil by alternately hand digging and power excavation. Power excavation is not permitted within 12 inches of the facility. Only hand digging is allowed within 12 inches of the facility.

C. Once the top of the facility is exposed, the excavator exposes all sides of the facility to positively locate the center of the facility.

D. The excavator confirms that the facility marks on the ground are accurate by comparing them to the facility location. Once the marks are confirmed as accurate, the excavator may continue to excavate, following the procedures in WP4412-05.

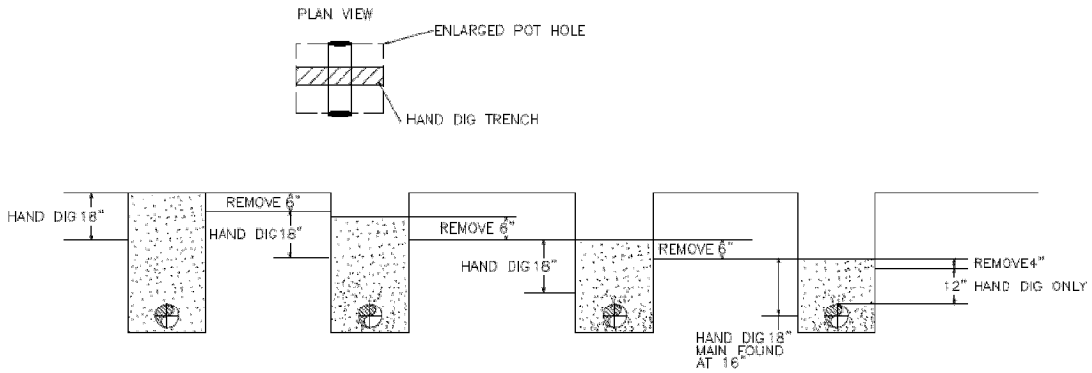

Figure 2. Excavation Procedure, Physically Locate by Hand Excavation