

Underground Hazard Identification

STD.8504

Scope

This standard defines a process for identifying Enterprise Products Company (Company) pipelines and utilities prior to excavation activities during a construction project. See Company Operations and Maintenance Manual, Section 3000 for locating and marking requirements of Company pipelines.

This standard covers recommended practices for the evaluation of an area prior to excavation activities for the identification of known and unknown hazards. Some of the hazards to be identified are pipelines (Company and foreign), utilities (electrical, telephone, water, sewer, etc.), underground obstructions, and equipment. With the identification of these hazards prior to excavation, damage to pipelines, utilities, underground equipment, and harm to personnel will be minimized. For existing pipelines, it is also strongly recommended to review the proposed work with the Company Pipeline Integrity Group prior to the construction/excavation activities. This group may have some concerns that need to be addressed during construction. See Company standard STD.4508 for additional information.

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1.0 REFERENCES

1.1. Pipeline and Hazardous Materials Safety Administration (PHMSA)

49 CFR §192.325	Underground Clearance
49 CFR §195.210	Pipeline Location
49 CFR §195.250	Clearance between pipe and underground structures

1.2. American Petroleum Institute (API)

API 1172	Recommended Practice for Construction Parallel to Existing Underground Transmission Pipelines
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1.3. Company Standards, Policies, and Procedures

Safety Policies Manual	3.4 – Excavation and Trenching
STD.0250	Project Records Management
STD.4508	Excavation, Support, and Backfill of Existing Pipelines
STD.9002	Surveying and Mapping
Operations & Maintenance Manual	Section 3000 – Damage Prevention Program

2.0 RESPONSIBILITY

Company and contractor employees involved in excavations during construction and repair activities are responsible for identifying hazards prior to and during excavation activities.

3.0 GUIDELINES

- (1) A survey of the proposed pipeline route showing foreign pipeline crossings is required for Right of Way agreements. Prior to project mobilization, Right of Way permits for pipeline construction will be in place to identify the exact location for the project. A review of these permits along with Approved for Construction alignment drawings and all necessary project drawings will assist in identifying the type of excavation required and the location of known hazards.
- (2) Company pipeline alignment or station drawings should be reviewed prior to any excavation work. The review should consist of evaluating hazards such as existing pipelines, conduits, utilities and underground equipment. API 1172 *Construction Parallel to Existing Underground Transmission Pipelines* is a useful resource at this stage of planning excavations.
- (3) Prior to construction activities, a survey of the Right of Way or layout of the station work site is required to identify working areas, stationing of pipelines, location of equipment, and boundaries of right of way agreements. During these activities, line-utility crossings, road crossings, pipeline alignment, valve-station sites and equipment locations shall be identified and marked.
- (4) A One Call notification is required at least 48 hours before any excavation can be performed. Some states require at least 72 hours notification. The size of each one call notification shall be limited to 5 miles, or as defined by state law, whichever is smaller. This notification shall be by telephone or online to the appropriate state One Call Notification Center. Some of the required information may include physical address of the work; Key Map page and grid numbers; names of intersecting streets and highways; type of work that will be performed and the dates when

excavation activities will occur. Commencement of excavation shall occur within ten days of the notification or a new one call notification is required. A one call ticket number shall be issued to the caller, by the state one call notification center, and will be documented for future reference. The Company representative on the project shall verify this notification, and retain a copy of each one call ticket.

- (5) State One Call Notification Centers will notify pipeline and utility member companies (who have pipelines or equipment in the area) of the proposed excavation activities. If the pipeline or utility companies determine that their pipelines or equipment are in the proposed excavation area, a site visit and survey will be coordinated with the contractor. During the site visit with the contractor representative, all efforts will be made to identify and mark their pipelines, utilities, or equipment that could be affected by the construction activities. Pipelines, utilities, and equipment can be located by verifying distances shown on existing alignment or station drawings, Approved for Construction drawings, line locator equipment, probing, or hand excavation. Notification of the Company Corrosion Department Representative for the area of the proposed excavation is recommended. This will allow the Corrosion Technician to locate and mark any cathodic protection cables in the area of the excavation.
- (6) Owners of water, wastewater, and slurry facilities may be exempt from participation in the state One Call Notification System. These can include systems owned by utility districts, municipalities, or cities. With this exemption, the One Call Notification System will not notify the above-mentioned owners that are not members. A telephone or email notification should be made to the local utility district, municipality, or city office 48 hours before any excavation is performed. Some states require 72 hours notification. The required information given in this telephone call or email will be the same as 3.0(4) of this standard.
- (7) Prior to excavation activities, attempts will be made to identify and locate existing pipelines, utilities, and equipment that could be encountered during construction. Lines, utilities, and equipment can be located by verifying distances shown on existing alignment or station drawings or Approved for Construction drawings. The use of line locator equipment, probing and hand excavation to locate these lines or utilities is recommended. Pipeline marker signs, road crossing vents and test lead stations are also indications of existing pipelines or utilities. There could also be signs of recent construction activities, such as lack of vegetation, sunken or built up areas that indicate new pipelines or utilities that are not shown on drawings.
- (8) A Third-party pipeline or utility representative should be on site to inspect any construction activity that may expose or disturb their lines, utilities or equipment. This representative should have the authority to shut down activities that may endanger their company's asset. If a Third-party representative is not available, the Person-In-Charge (PIC) or immediate supervisor shall be contacted prior to proceeding with the excavation.
- (9) Overhead hazards should also be identified during these activities. Some overhead hazards could be power and telephone lines. Poles for these overhead utility lines could also be a hazard during excavation.
- (10) After all known pipelines and utilities have been identified and marked, the excavation activities can begin. The preferred method of excavation in congested areas, such as terminal manifolds, is by hand or hydro-vac. Other equipment may be used if the situation dictates and if the work is performed safely. The slurry created during water blast shall not be used for backfill.
- (11) In areas where mechanical equipment can be used for excavation, probing before and during the excavation is required at locations such as tie-ins, near existing foundations or within areas that may have marked or unmarked lines and utilities. This process will be to probe 3 ft deep, at 4 in. grid spacing across and in length of the excavation, and excavate 1 ft deep. This process will be repeated until the excavation is completed. If any obstructions are found during the probing process, excavation with mechanical equipment would be stopped 18 in. from the obstruction. At this time, hand excavation is required to expose the obstruction before excavation with

- mechanical equipment inside the tolerance zone can begin. See Section 3.4.4 of the Safety Policy Manual for specific language of Mechanical Excavation within the Tolerance Zone.
- (12) During mainline pipeline construction, probing is only required at marked or identified line or utility crossings. All attempts to locate and identify existing pipelines, utilities and equipment will be made prior to starting excavation activities. During all excavation activities with mechanical equipment, the contractor will assign a spotter to work with each equipment operator to assist in identifying hazards in the excavation. The spotter will be familiar with and able to identify hazards in the excavation. The spotter's sole responsibility is surveillance of the pipeline, without distraction, during excavation activities. If at any time, the spotter sees an indication of a hazard, the equipment operator shall be shut down. To identify any pipeline, utility, or equipment that is encountered, the area will be excavated by hand. After identifying and clearly marking the hazard, excavation with equipment can proceed.
- (13) Documentation of exposed Company or foreign pipelines, utilities, and underground equipment shall be completed for all construction projects or line repairs. This documentation shall include the location of new piping and underground facilities from existing adjacent equipment and structures. The depth of piping and conduits shall be established by transit or level marks before backfilling, using known elevation as reference. Existing piping and facilities exposed during the course of construction shall be identified and located.

Attachment Revision Log

Revision 0.0		Publish Date: 24 Jun 11
Location of Change	Type of Change	Reason for Change
N/A	N/A	
Revision 0.1		Publish Date: 12 Nov 15
Location of Change	Type of Change	Reason for Change
Section 1.2	Addition	Added references to Enterprise Standards, Specifications and Manuals
Throughout document	Correction	Grammar and punctuation corrections
Revision 1.0		Publish Date: 20 Apr 17
Location of Change	Type of Change	Reason for Change
Scope	Clarification	Added wording to clarify where information on Locating and Marking requirements can be located in the O&M.
Section 1.1	Addition	Added reference of API RP 1172 to list as it is an industry standard.
Section 1.2	Addition	Added reference of the Company's Damage Prevention Program - Section 3000 to list.
Section 3.0 (1)	Clarification	Changed "line" to "pipeline" for consistency purposes. This change was made throughout the document.
Section 3.0 (2)	Addition	Included reference of API RP 1172.
Section 3.0 (4)	Addition	Included wording to clarify the notification time required for making a One-Call; also included wording regarding other state notification requirements; the size of each one-call ticket; and the acceptable methods by which one-calls can be made. Additional language was also included which clarified that the state one-call notification center is the entity who will issue one-call ticket numbers.
Section 3.0 (5)	Clarification	Wording was added that simply clarifies it is the state One-Call Center who notifies member companies of proposed excavation activities.
Section 3.0 (6)	Clarification	Wording added to bring clarity to possible exemptions; wording added regarding other state notification requirements.
Section 3.0 (8)	Clarification	Included reference to "Third Party."
Section 3.0 (10)	Clarification	Removed wording regarding the need to "expose" all known pipelines prior to beginning excavation. Changed the term, "water blast/vacuum" to "hydro-vac."
Section 3.0 (11)	Clarification	Added wording to clarify use of "mechanical" equipment.