GUIDELINES

FOR PROPERTY DEVELOPMENT

AN AMERICAN PETROLEUM INSTITUTE PUBLICATION

ISLAND ENERGY SERVICES

GUIDELINES
FOR PROPERTY DEVELOPMENT

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GUIDELINES
FOR PROPERTY DEVELOPMENT

THE LIQUID PETROLEUM PIPELINE INDUSTRY has developed these guidelines to improve understanding and increase awareness of the nature of underground pipelines that transport oil, petroleum products, natural gas liquids and other hazardous liquids (collectively "pipelines" or "pipeline" throughout this document) and how to conduct land development and use activity near pipeline rights-of-way.

The guidelines are intended for use by anyone who is involved in land development, agriculture and excavation/construction activities near a pipeline. The industry's goal is to protect public safety of the people who live and work along pipeline rights-of-way, protect the environment along rights-of-way, and maintain the integrity of the pipeline so that petroleum products can be delivered to customers safely and without interruption.

A pipeline right-of-way (ROW) is property in which a pipeline company and a landowner both have a legal interest. Each has a right to be there, although each has a different type of use for the land. Pipeline companies are granted permission from private landowners to transport petroleum products across their private lands. That permission is documented in a written agreement called an easement, and it is obtained though purchase, license, or by agreement with the landowner. In cases where the land is owned by the government – whether local, state or federal – similar arrangements for easements, licenses or occupancy agreements are obtained.

A pipeline requires regular observation, integrity assessment and maintenance to maintain the safety of its operations. Part of that task is to ensure that the pipeline ROW is kept clear of trees, structures and other encroachments that might interfere with the safe operation of the pipeline and the pipeline company's access to the line.

One of the key facilitators of ROW inspection is ROW clearing. Good communications between the pipeline operator and the public are important in minimizing any issues between the public and the pipeline operator, especially during initial clearing activities.

ROW clearing is performed for a variety of reasons with the paramount reason being safety. ROW clearing enables:

- Aerial surveillance – Patrols are completed to detect potentially harmful excavation activities along the pipeline ROW and visually assure no releases have occurred.
- Damage prevention – A clear ROW provides a visual corridor so the pipeline can be protected from unauthorized excavation and development.
- Routine maintenance access – Clear access to the pipeline is critical to completing required maintenance in a safe, efficient and effective manner.
- Emergency response access – Clear access to the pipeline allows for a prompt response in the event of an emergency.
- Corrosion protection – Tree roots can wrap around a pipeline, damaging the protective coating of the pipeline, compromising efforts to avoid pipeline corrosion.

The pipeline company and the landowner granting the pipeline easement are not the only ones who have access to the pipeline ROW. Third parties doing business along the ROW are also vital partners in protecting the environment by keeping pipelines safe and free of accidents. The cooperation of everyone involved in property development – including, but not limited to, real estate brokers, agents, developers, engineers, architects, general contractors and their subcontractors, and local elected officials and government staff – is essential. Construction work done anywhere near a pipeline, even in a homeowner's backyard, can affect the integrity and safety of underground pipelines.

The pipeline industry hopes that these guidelines will help both pipeline operators and people working and living along pipeline rights-of-way to better understand their respective responsibilities for maintaining the safety of this vital, but invisible, transportation system.

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FOR PROPERTY DEVELOPMENT

There are multitudes of underground facilities, some transporting volatile liquids or natural gas under high pressure. Many pipelines were placed in the ground years ago. Over time, what was once pastureland may now be someone's backyard, a residential development or a new business. With advance planning and shared information, future economic development can be done safely and in the most cost-effective manner for the developer and the pipeline company.

Most damage to pipelines is avoidable through better advance planning and using the **ONE CALL SYSTEM,** which can be accessed by dialing **811** on your telephone. The One Call System is a free public service established by state agencies, non-profit entities or public utilities to provide underground utility locating and marking for those who plan to dig or excavate in the vicinity of a utility.

Always use the One Call System in your state before undertaking a project that includes excavation or digging underground. Never assume that you know the location of pipelines. The permanent aboveground markers along the pipeline route are not exact indicators of the pipeline location – pipelines have bends and can change direction with no aboveground indication; the depths of the pipeline may vary substantially within even short distances; and more than one line or utility may exist within a single right-of-way.

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GUIDELINES

FOR CROSSING PIPELINES, GAS TRANSMISSION LINES, MAINS AND SERVICE CONNECTIONS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

COMMON GUIDELINES

"Foreign pipeline" means any hazardous liquid pipeline, gas transmission line, main, service connection, and utility pipe such as water line, sewer line or any other pipeline installed within the right-of-way (ROW) of an existing hazardous liquid pipeline.

A foreign pipeline crossing should cross perpendicular, or as close as possible to 90 degrees to the existing pipeline and its designated ROW.

A foreign pipeline should not run parallel or nearly parallel to an existing pipeline within the boundaries of the ROW for the existing pipeline, or within 25 feet of the existing pipeline without specific written approval from the company operating the existing pipeline. **(Note this distance may vary among pipeline operators so it is important to check with the pipeline operator during the design phase of the project.)** The placement of the foreign pipeline should also be consistent with the existing easement agreement.

A foreign pipeline should cross underneath an existing pipeline with a minimum clearance of 24 inches. This elevation should be maintained across the entire width of the right-of-way for the existing pipeline. Clearance of at least 24 inches should also be maintained between the existing pipeline and any other buried structure.

If the existing pipeline is unusually deep at the crossing location, the operator of the existing pipeline may consider allowing the foreign pipeline to cross over the existing pipeline as long as the facility is protected in some other manner acceptable to the operator of the existing pipeline.

Pipeline markers or identifying markers should be located to indicate the route of the foreign pipeline across the ROW of an existing pipeline. Such markers should adhere to regulatory standards and API Recommended Practice 1109, *Marking Liquid Petroleum Pipeline Facilities.*

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METALLIC PIPELINES

Foreign pipelines, other than utility lines, should install cathodic protection bonds and potential leads at all crossings and terminate them at aboveground locations. The operator of the existing pipeline will install all test leads on the existing pipeline.

The foreign pipeline should be coated with a suitable pipe coating for a distance of at least 50 feet on either side of the crossing. **(Note this distance may vary among pipeline operators so it is important to check with the pipeline operator during the design phase of the project.)**

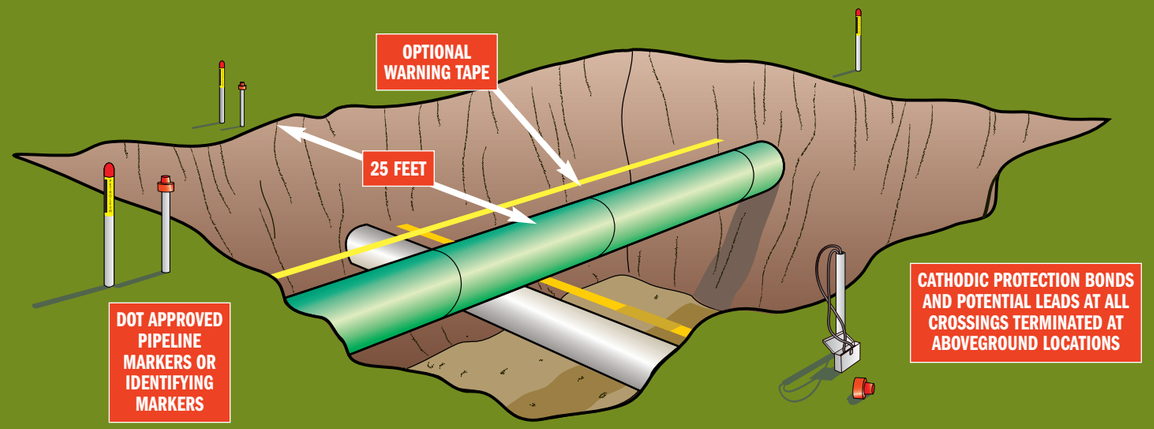
A warning tape, or warning mesh, should be used to indicate the location of a foreign pipeline for a distance of 25 feet on either side of the existing pipeline.

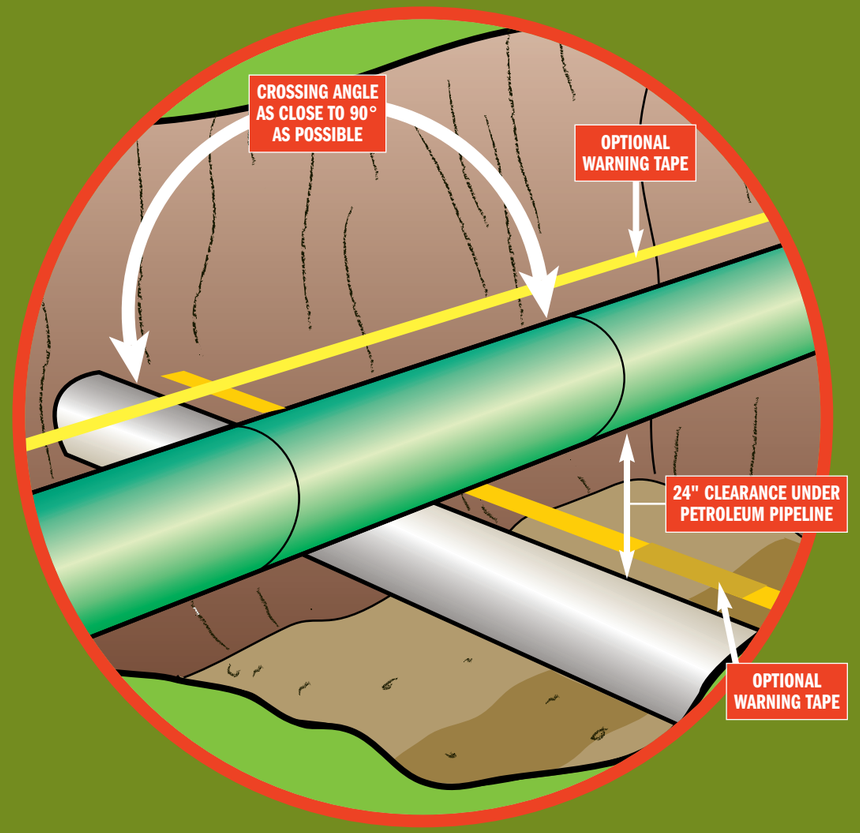
NONMETALLIC PIPELINES

A tracer wire for a nonmetallic foreign pipeline should be installed to assist in locating it in addition to the above-mentioned warning tape.

GUIDELINES

FOR CROSSING PIPELINES, GAS TRANSMISSION LINES, MAINS AND SERVICE CONNECTIONS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY





GUIDELINES

FOR AGRICULTURE: FIELD TILE DITCHING AND DEEP PLOWING ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

FIELD TILE GUIDELINES

This Guideline is intended to guide the field tile installer and the pipeline operator's representative on the safe installation of agricultural drainage tile around a pipeline system.

1. The project should be planned in advance. A representative of the pipeline operator or utility will help prevent dangerous and costly accidents and help avoid surprises during the work. The project plan should be followed. Many states establish required time frames for advance planning. Ample time is required to review the design and verify pipeline depths and operational requirements. Prior to the installation of any field tile within the pipeline right-of-way (ROW), the installer should communicate and plan the project with the pipeline operator. The pipeline operator should coordinate the safe installation within their ROW.

2. When working within 50 feet of the pipeline, the pipeline operator's representative should monitor the activity. This practice will provide adequate time and distance to maintain a safe operation.

3. The pipeline should be located and a depth analysis or pipeline depth profile performed by a representative of the pipeline operator. The pipeline should be marked in accordance with the APWA Uniform Color Code. Yellow flags should be placed to mark the pipeline. These flags should be numbered and placed at frequent intervals and should also indicate station and depth. The pipeline operator's representative should prepare a Depth Survey Report, which should include photographs showing the yellow flags.

4. It is recommended that long runs of parallel tile and pipeline should be spaced 25 feet from the existing pipeline. If a closer distance is necessary, the pipeline operator should be contacted for prior approval.

5. The pipeline should be crossed carefully, and only when the pipeline operator's representative is on site and able to observe the work. The crossing should be as near to perpendicular (ninety [90] degrees) as possible and clear the pipeline by a minimum of 24 inches.

6. Where the field tile crosses the pipeline, it is recommended that solid tile be used and that pea gravel be used to prevent settling. The pipeline operator should conduct a field inspection of this work verifying pipeline depths and installation clearances.

7. Plastic pipe is preferred when crossing the pipeline.

DEEP PLOWING

"Deep Plowing" is defined as the ripping or other cultivation method where the ground is disturbed at a depth of 16 inches or more.

Prior to any Deep Plowing, the pipeline operator should be notified well in advance. The pipeline should be located and a depth analysis or pipeline depth profile performed by a representative of the pipeline operator. Yellow flags should be placed to mark the pipeline. These flags should be numbered and placed at frequent intervals, and should also indicate station and approximate depth.

The pipeline operator's representative should prepare a Depth Survey Report, which should include photographs showing the yellow flags.

When working within 50 feet either side of the pipeline, the pipeline operator's representative should monitor the activity verifying pipeline depths and installation clearances.

Due to erosion and the removal of earthen cover in some areas, the existing depth of the pipeline may not support Deep Plowing. The pipeline operator should not allow Deep Plowing in areas where the integrity of the pipeline may be compromised.

OTHER LAND CONTOUR MODIFICATIONS

Projects near the pipeline that involve altering the land contour, including the installation of ponds, lakes and drainage ditches, require expert engineering in planning and implementation to ensure pipeline integrity. A plan should be developed and provided to the pipeline operator well in advance and take into consideration the integrity and safety of the pipeline system. There may be a conflict between the current location of the pipeline and the needs of the land modification project. The project planning process may indicate the need to relocate the pipeline or alter the land modification project. When planning the project, please call the pipeline operator. The operator should assign a pipeline expert to help with the planning process and advise on matters of pipeline safety. Ample time is required to review the design and verify pipeline depths and operational requirements.

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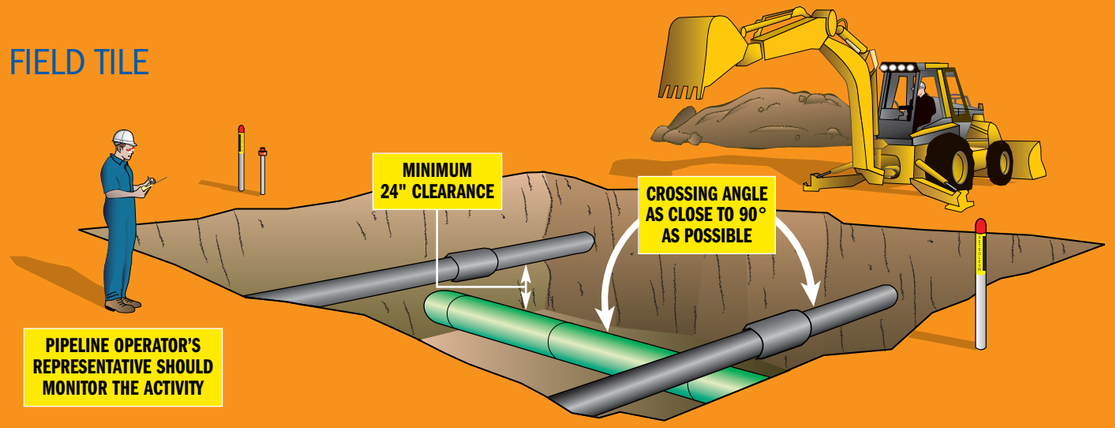
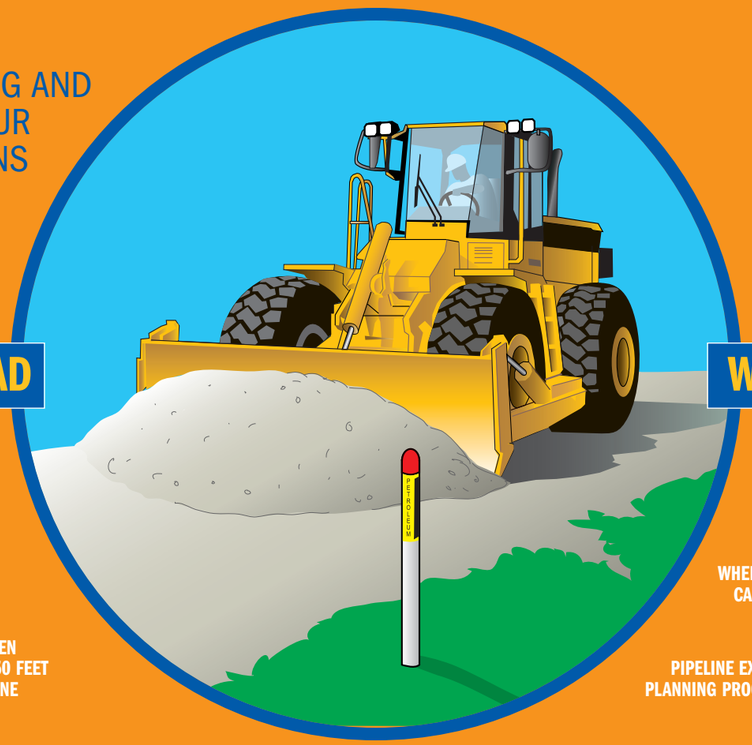
GUIDELINES

FOR AGRICULTURE: FIELD TILE DITCHING AND DEEP PLOWING ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

FIELD TILE



DEEP PLOWING AND LAND CONTOUR MODIFICATIONS



PLAN AHEAD

NOTIFY PIPELINE OPERATOR WELL IN ADVANCE

PIPELINE OPERATOR'S REPRESENTATIVE SHOULD MONITOR THE ACTIVITY WHEN YOU'RE WORKING WITHIN 50 FEET EITHER SIDE OF THE PIPELINE

WORK SAFE

PROJECT PLANNING IS THE KEY TO SAFETY

WHEN PLANNING YOUR PROJECT CALL THE PIPELINE OPERATOR

PIPELINE EXPERTS CAN HELP WITH THE PLANNING PROCESS AND PIPELINE SAFETY

GUIDELINES

FOR BORING, DRILLING, AND TUNNELING ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

BORING, DRILLING, AND TUNNELING PROCEDURES NEAR PIPELINES

Because both pipelines and the process of boring, drilling and tunneling are underground and not visible, special care must be given to the planning and execution of these operations when other utilities and pipelines are nearby. A pipeline operator representative should be given an opportunity to review and approve the plan for the operation, the equipment to be used and the proposed procedure well in advance of beginning the project. Two critical elements of the plan are the involvement of competent equipment operators who respect the primary need for safety, and the presence of the pipeline operator's representative when boring, drilling or tunneling occurs in close proximity to the pipeline.

COMMON GUIDELINES

Before beginning any conventional bore/utility service line boring, drilling or tunneling across or within a pipeline right-of-way (ROW), or within 25 feet of the pipeline, consultation and design approval permission should be received from the pipeline operator.

The pipeline operator should have a representative on site to monitor the crossing within the ROW.

Common crossings include all foreign pipelines and pipes, cable or other utility facilities. All crossings should be perpendicular, or as near to 90 degrees as possible, to the existing pipeline and its designated ROW, and should be designed to clear the pipeline by four (4) feet.

No crossing should run parallel or nearly parallel to an existing pipeline within the boundaries of the ROW for that existing pipeline, or within 25 feet of the pipeline, without the pipeline operator's express written approval. "Nearly parallel" means parallel to, or running at an angle 60 degrees or less to the pipeline.

"Cable" means any power or communications cable, including fiber optic.

No splice box, service riser, or energized equipment should be installed within 25 feet of the pipeline.

ADVANCED PREPARATION REQUIREMENTS

Depending on the many factors that may affect these jobs, the pipeline operator may also require:

- Inspection trenches and holes that view the tool and pipe prior to and during the crossing operations to ensure proper clearance.
- Special location equipment.
- Group meetings with other utilities, and validation of One-Call responses.
- Review time by engineers qualified to evaluate the job.

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SITE SPECIFIC DIAGRAMS

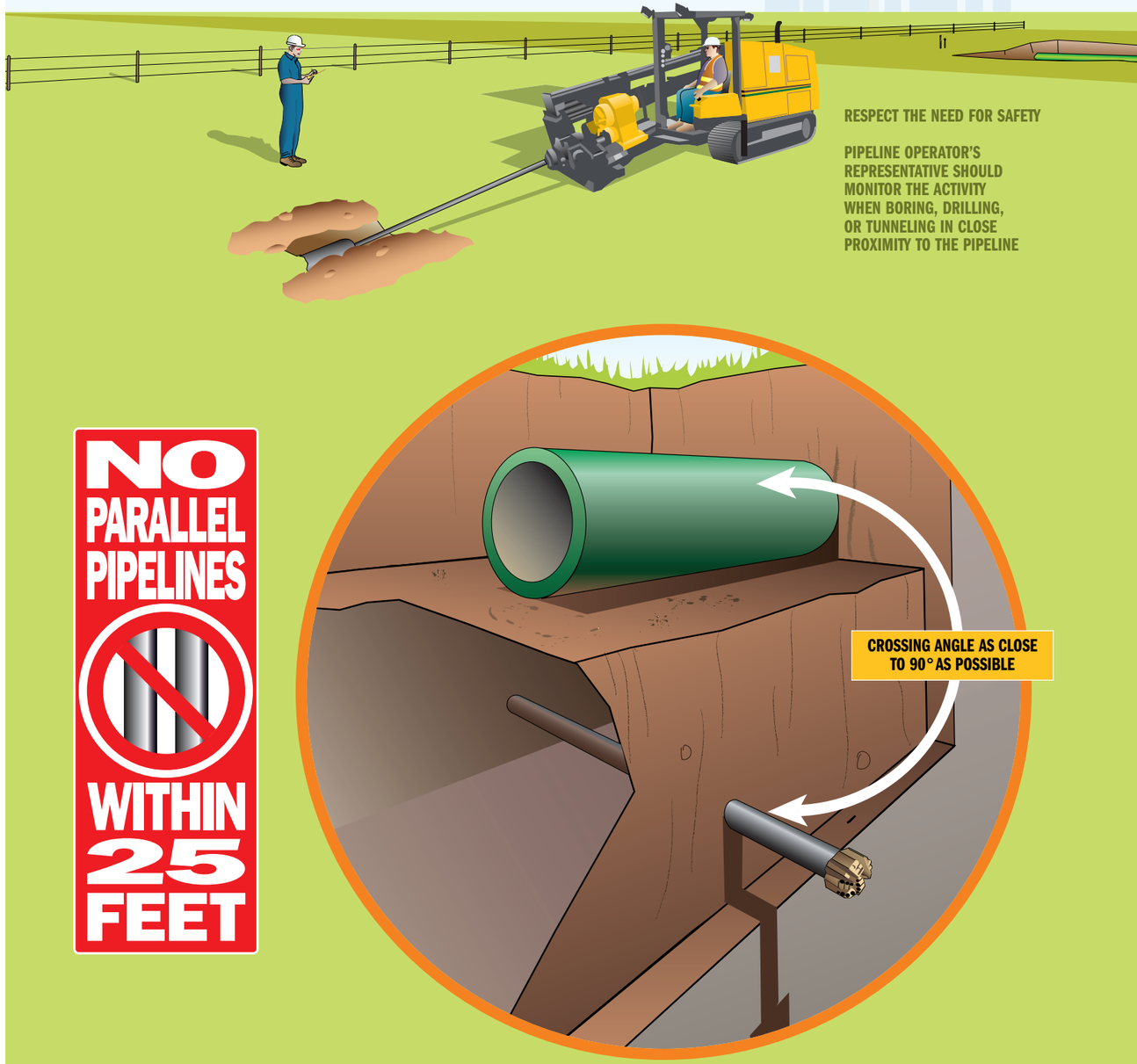
The plan should include diagrams that are site specific. The diagrams must show a plan and profile view. Generic plans should be redeveloped to include the title, date, and names, addresses and phone numbers of the responsible party and the tunneling contractor. Items that should be shown in the specific diagrams include:

- Survey benchmark locations.
- Property descriptions.
- A clear depiction of all other pipelines and utilities, along with measurements.
- Planned location of inspection trenches and holes.
- Allowance for proper clearance between pipe and new utility.
- Description of method and instruments used to follow the tool.

The pipeline operator may also request an "as-built" drawing depicting the verified angle of crossing, depth of the pipeline, and the clearance of the foreign line. This "as-built" drawing provides important information for later excavations and operational design compliance data.

GUIDELINES

FOR BORING, DRILLING, AND TUNNELING ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY



GUIDELINES

FOR OVERHEAD AND BURIED POWER AND COMMUNICATION CABLES INCLUDING FIBER OPTICS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

"CABLE" is defined as all wires and fiber optic facilities that transmit electrical power or communications signals. It is important that a pipeline operator knows the location of all cables that are buried near its pipelines. Unintentional excavation of a cable may create a hazardous situation and costly repairs may be required. Buried electrical cables can emit electrical currents that interfere with the pipeline cathodic protection system, and thus cause or accelerate corrosion of the pipe. These potential hazards can be easily mitigated with advance planning by first calling the statewide One Call number (**811**), then conferring at the site with a representative of the pipeline operator. It is also important to remember that communications cables, while not hazardous, are critical facilities that could affect the local emergency telephone system.

PLACEMENT OF CABLES

All cable crossings should cross underneath and perpendicular to (or as near ninety [90] degrees as possible) an existing pipeline and its designated right-of-way (ROW).

No cable should run parallel or nearly parallel to a pipeline within the boundaries of its designated ROW, or within 25 feet of the pipeline, without the pipeline operator's consultation and design review with express written approval. No splice box, service riser, or energized equipment should be installed within 25 feet of the pipeline.

A warning tape placed above the cable should be used to indicate the location of a cable for a distance of 25 feet on either side of the pipeline, if possible, or within the pipeline ROW.

All buried cables should be marked with proper signage and designation so that future work at these sites can be done without damage or interruption to the pipeline or cables.

BURIED CABLES

Buried cables should have at least a 24-inch clearance of the pipeline. The pipeline operator may require additional clearance or require implementation of corrosion control procedures.

Cable crossings should be installed with warning tape above the cable and signage aboveground. An extra length of cable should be looped to help with future excavations.

Critical buried cable should cross under an existing pipeline, should be contained within a PVC conduit of schedule 40 or greater strength, and either have a red colored concrete slab 6 inches thick above the conduit for a distance of 10 feet on each side of the existing pipeline, or be encased within concrete as long as there is 6 inches of red colored concrete above the conduit, or be otherwise installed according to National Electrical Code or local electrical code standards. The top of the concrete slab should have at least a 24-inch clearance of the pipeline. If metallic encasement is used as a conduit instead of PVC, it is important that cathodic protection and other issues be addressed with the pipeline operator.

All power cables should be marked with red signs indicating "buried power cable," according to National Electrical Code standards.

Non-critical buried cable may be buried directly below the pipeline and without a conduit. In certain cases, the pipeline operator may approve installation above the pipeline if cable is encased in protective conduit. **Note the requirements for this section may vary among pipeline operators so it is important to check with the pipeline operator during the design phase of the project.**

OVERHEAD CABLES

All overhead cable should maintain a minimum height of 20 feet above grade for a distance of 25 feet each side of the pipeline.

No part or portion of mechanical supports and service drops, including poles, towers, guy wires, ground rods and anchors, should be within 25 feet of the existing pipeline.

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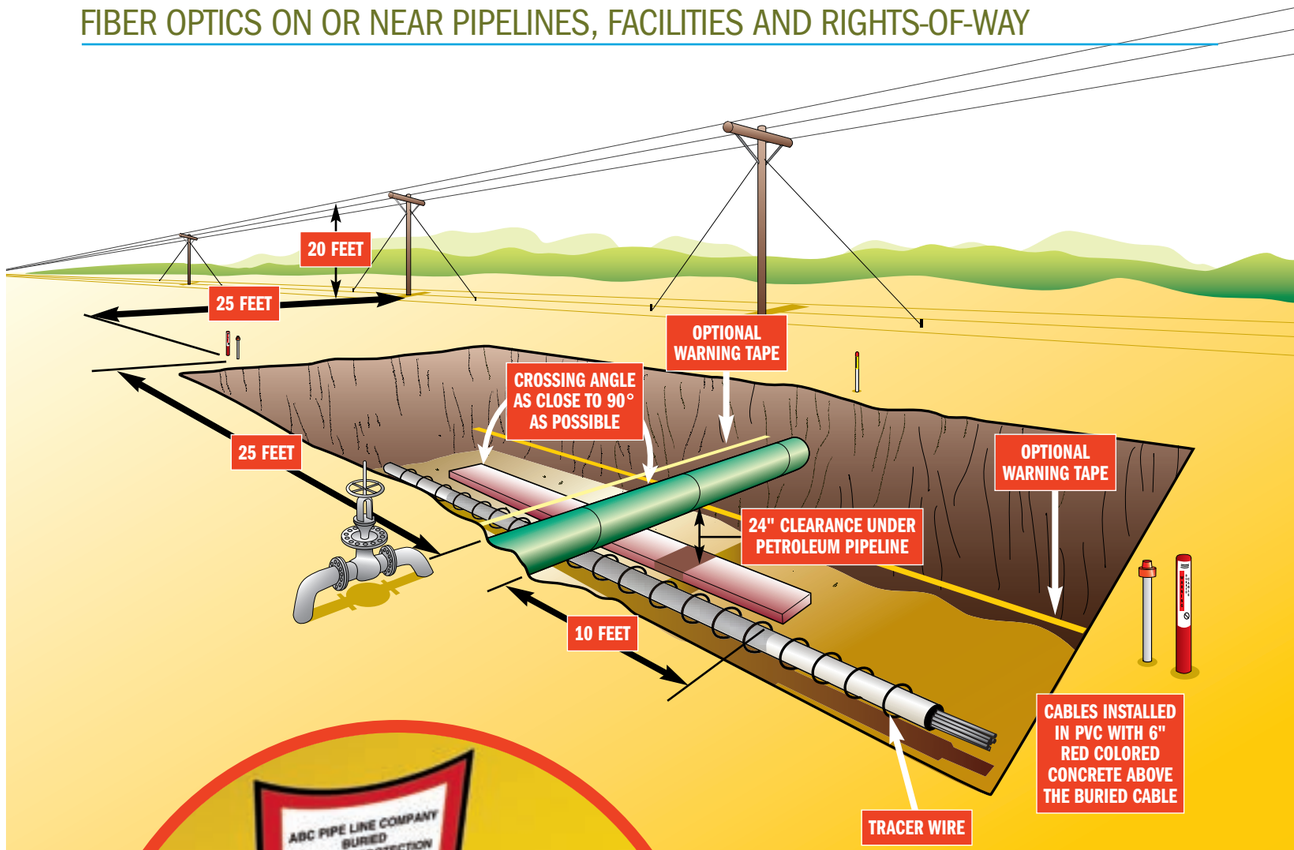
GUIDELINES

FOR OVERHEAD AND BURIED POWER AND COMMUNICATION CABLES INCLUDING FIBER OPTICS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY



GUIDELINES

FOR ROADS, RAILROADS, PAVED LOTS, AND HEAVY EQUIPMENT VEHICLES ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

For all the following examples, the responsible party should submit advance notice to the pipeline operator, and receive the operator's approval.

TEMPORARY CROSSING FOR AXLE LOADS LESS THAN 15,000 POUNDS

Any off-road traffic over a pipeline creates a stress on the underlying pipeline and should be minimized unless adequate precautions (discussed herein) are taken. Equipment with tracks, as opposed to having tires, is preferred if off-road travel over the pipeline is required. In general, a minimum cover of 48 inches over a pipeline is required where a vehicle crossing is to be made for axle loads up to 15,000 pounds. Site conditions (such as damp soil) may require that the crossing location be matted or provided with additional cover to compensate for soil displacement due to the subsidence caused by crossing. Each location is unique and should be evaluated by a representative of the pipeline operator to determine site-specific protective requirements. **Note the weight and cover may vary among pipeline operators so it is important to check with the pipeline operator during the design phase of the project.**

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PERMANENT CROSSING (AND TEMPORARY CROSSING FOR AXLE LOADS 15,000 POUNDS AND GREATER)

Permanent vehicle crossings, such as roads, railroads and paved lots, as well as temporary crossings for heavy equipment (15,000 pounds and greater) that are planned over or near a pipeline, will require engineering evaluation to ensure that the installation/crossing will not cause an excessive amount of stress on the underlying pipeline. The crossing party should provide the pipeline operator with a plan and profile drawing indicating the existing and proposed elevations of the proposed project; the pipeline and buried utilities within 25 feet of either side of the crossing should be clearly indicated in all views. The proposed surface encroachments should cross a buried pipeline, where reasonably possible, in a perpendicular alignment (90 degrees) to minimize the length of the impact to the underground facility, but in no event less than 45 degrees. A geotechnical report may be required to identify soil profile components. This subsoil study will show the load array characteristics of the site.

COVER OVER PIPELINE

A minimum cover of the pipeline of 48 inches for roads and 72 inches for railroads should be planned for both permanent installations over the pipeline, and temporary crossings of heavy equipment, unless the pipeline operator has provided written approval to the contrary. Temporary roads used for construction activity, such as for lumber trucks, logging wagons, or concrete trucks, may require extra cover and road matting to protect the pipeline from the additional loading stresses.

The crossing party should maintain a minimum of 36 inches from the top of pipe to grade at drainage ditches on either side of a road or railroad, or at the perimeter of a paved lot. The edge of a proposed surface improvement should maintain 25 feet of clearance, if possible, with a buried pipeline when running parallel with the underground facility.

Ground cover should not exceed 6 feet over the top of the pipeline unless approved by the pipeline operator.

PAVED LOTS

Any concrete paving, other than for road, street or driveway crossings of the pipeline (e.g., parking lots), to be installed over the pipeline should:

a) Be unreinforced,

b) Not exceed four (4) inches in thickness,

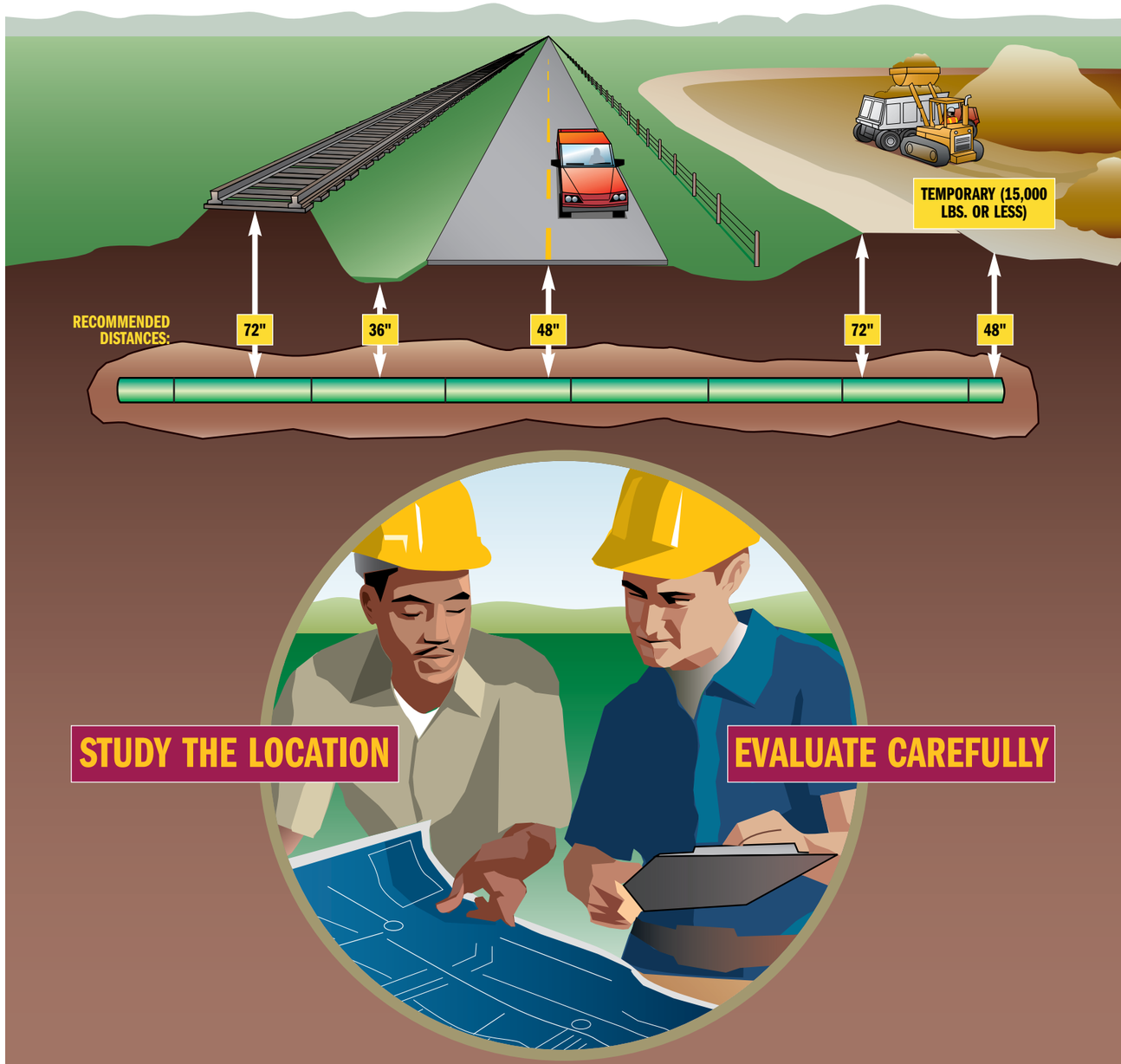
c) Be sectioned seven and one-half (7.5) feet from either side of the pipeline, with appropriate asphalt expansion joints every ten (10) feet, and

d) Conform to the minimum cover requirements.

Any deviation from these recommendations should be confirmed with written approval from the pipeline operator.

GUIDELINES

FOR ROADS, RAILROADS, PAVED LOTS, AND HEAVY EQUIPMENT VEHICLES ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY



GUIDELINES

FOR PROPERTY IMPROVEMENTS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

TO MAINTAIN SAFE OPERATING PIPELINES, pipeline operators routinely perform maintenance and required federal/state inspections on their pipelines. In order to perform these critical activities, the operator's maintenance personnel must be able to access the pipeline right-of-way (ROW), as provided in the easement agreement. Required access is accomplished by keeping the area on either side of the pipeline contained within the ROW clear of trees, shrubs, buildings, structures or any other encroachments that might interfere with access to the pipeline. Pipeline operators typically use aerial patrol to survey the ROW, providing critical information regarding potential issues involving the safe operation of the pipeline. The landowner, as well as potential land purchasers and/or developers, have the obligation to respect the pipeline ROW by not placing obstructions or encroachments within the ROW and in planning developments in a manner that maintains the visibility and accessibility of the ROW, such as in the platting of "greenbelts" or common ground across the ROW area.

The encroaching or crossing party should provide the pipeline operator with a plan and profile drawing indicating the existing and proposed property improvements within 50 feet of the pipeline, and such drawings should depict the distance and relationship between the property improvements and pipeline. At the encroaching or crossing party's request, the pipeline operator will locate and mark its pipeline location and depths to enable the location of the pipeline to be accurately surveyed and depicted on the plan and profile drawings. The pipeline operator may choose to have a representative at the site during improvement activities.

STRUCTURES

In general, no structure or obstruction is allowed within the pipeline's ROW. The terms of the license or easement agreement may contain specific language prohibiting structures within the ROW. The U. S. Department of Transportation/ Pipeline and Hazardous Materials Safety Administration, as well as fire departments, refer to **distances** from the pipeline where the pipeline operator should be consulted prior to any building or excavation in that area. The table embedded in the figure outlines suggested guidelines for acceptable buffer zone distances from the pipeline. These distances may exceed rights-of-way and are not intended to replace more stringent local regulatory requirements.

LANDSCAPING

Trees and bushes should not be planted within the cleared and maintained pipeline ROW. However, the pipeline operator may give written approval for landscape planting of ground cover and small ornamental trees not greater than three feet in height within 25 feet of the pipeline. Under no circumstances should landscape planting be allowed any closer than 10 feet to a pipeline. The pipeline operator may clear any vegetation within the ROW. Mechanical mowing and tree canopy trim removal vary based on geographical location, but are completed as needed or on scheduled intervals that may span several years. Tree canopy removal may extend to trees rooted outside of the ROW but have canopy that overhangs into the ROW. No vegetation should obstruct pipeline markers or signage.

FENCING

Fences generally impede the operator's access to inspect and maintain the pipeline and thus should be discouraged from being installed across the ROW. Fences, where permitted within the ROW, should be installed so that posts are not within five (5) feet of any pipeline and, if crossing the pipeline, should be equidistant from the pipeline. No fence should cross a pipeline ROW at less than a 60-degree angle to the pipeline. Fences parallel to a pipeline should be at least 10 feet from the pipeline.

Fences that are perpendicular to a pipeline should include a gate (12 to 16 feet minimum width, depending on the pipeline operator) or removable panels across the entire width of the ROW to allow the operator access to inspect and maintain the pipeline. No masonry, brick or stone fences should be installed on a pipeline ROW. No fences should obstruct the view of a pipeline ROW.

DRIVEWAYS OR LANES

Driveways or lanes should cross pipelines at no less than a 60-degree angle and should not run parallel within 25 feet of the pipeline. Generally, a minimum cover over the pipeline of 36 inches for driveways or lanes and 36 inches for side ditches is recommended, but the pipeline operator may want to evaluate the impact of the encroachment to the pipeline on a case-by-case basis. The pipeline operator should approve in advance any lesser amount of cover.

DRAINAGE AND SEPTIC SYSTEMS

Drainage and septic systems work on the principle of gravity. It is important that grade elevations and slope are considered before these systems are created. Septic systems and their leach fields should not be located within 25 feet of the pipeline.

REMOVAL OR DEPOSIT OF DIRT

No amount of cover should be either removed from, or added to, a pipeline ROW without written approval by the pipeline operator. This recommendation applies to removal or burying of rocks and ditching for farm drainage, as an example.

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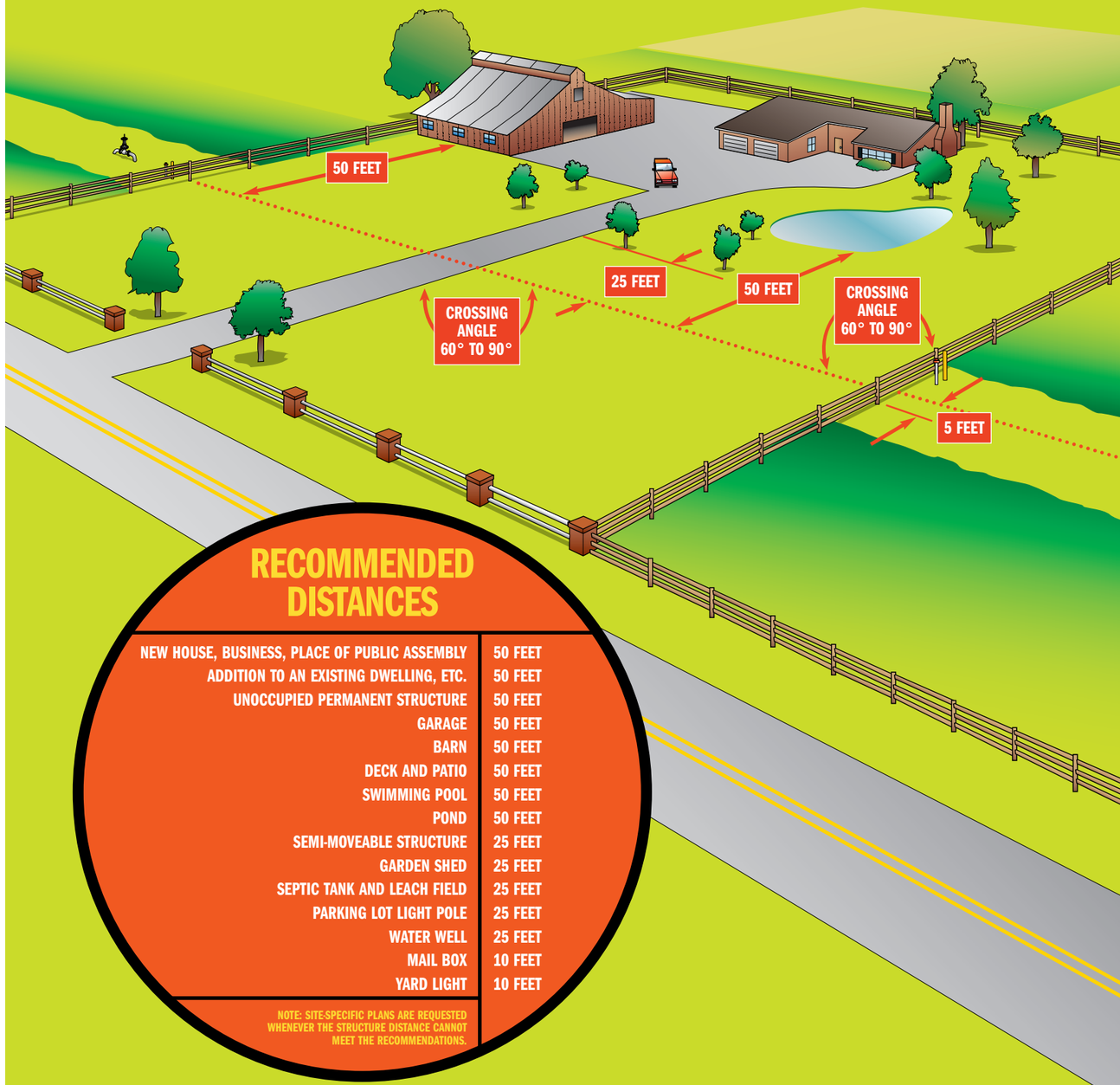
FOR PROPERTY IMPROVEMENTS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY



RECOMMENDED DISTANCES

NEW HOUSE, BUSINESS, PLACE OF PUBLIC ASSEMBLY	50 FEET
ADDITION TO AN EXISTING DWELLING, ETC.	50 FEET
UNOCCUPIED PERMANENT STRUCTURE	50 FEET
GARAGE	50 FEET
BARN	50 FEET
DECK AND PATIO	50 FEET
SWIMMING POOL	50 FEET
POND	50 FEET
SEMI-MOVEABLE STRUCTURE	25 FEET
GARDEN SHED	25 FEET
SEPTIC TANK AND LEACH FIELD	25 FEET
PARKING LOT LIGHT POLE	25 FEET
WATER WELL	25 FEET
MAIL BOX	10 FEET
YARD LIGHT	10 FEET

NOTE: SITE-SPECIFIC PLANS ARE REQUESTED WHENEVER THE STRUCTURE DISTANCE CANNOT MEET THE RECOMMENDATIONS.

GUIDELINES

FOR NON-EXPLOSIVE SEISMIC TESTING AND BLASTING OPERATIONS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY

THE PARTY RESPONSIBLE FOR THE SEISMIC TESTING or blasting operations should be in compliance with all applicable local, state and federal regulations and requirements.

A seismic testing or blasting plan should be submitted to the pipeline operator for approval prior to the start of the project.

Only experienced personnel who are trained and certified in such operations and who are aware of the hazards involved should conduct any seismic testing or blasting operations.

The party responsible for the seismic testing or blasting should notify the pipeline operator immediately if any changes are made to the seismic testing or blasting plans.

NON-EXPLOSIVE SEISMIC TESTING

No seismic testing with steady state vibrator or thumper sources should be conducted within 150 feet of a pipeline. All other non-explosive seismic sources, including the use of air guns, should not be used within 600 feet of a pipeline.

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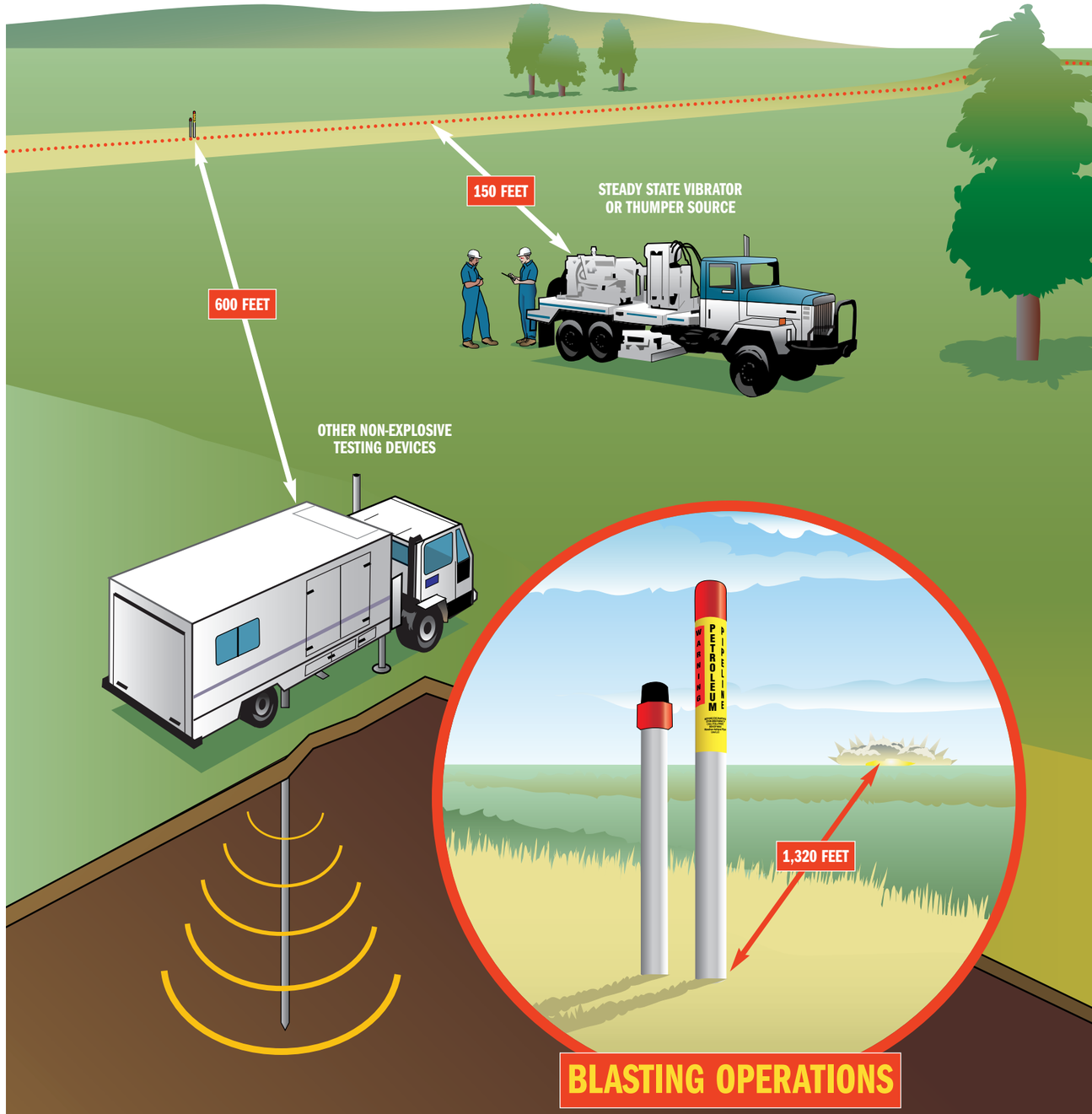
BLASTING OPERATIONS

For any blasting operation within one-fourth mile of a pipeline, the pipeline operator should be supplied with a pre-work survey, including a written report documenting any special conditions or proposed adjustments which are to be incorporated into the seismic testing or blasting activity plan to prevent possible damage to pipeline systems. This survey should be performed by an accredited third-party surveyor and reviewed by appropriately qualified personnel of the pipeline operator.

A seismic monitoring unit should be inserted directly over the pipeline and covered with sandbags if soil conditions prevent adequate insertion. The Peak Particle Velocity (PPV) should not exceed two (2) inches per second (IPS) for any blast. The pipeline operator should be notified of any PPV readings approaching or exceeding 2 IPS.

GUIDELINES

FOR NON-EXPLOSIVE SEISMIC TESTING AND BLASTING OPERATIONS ON OR NEAR PIPELINES, FACILITIES AND RIGHTS-OF-WAY



PIPELINE SAFETY AWARENESS

CALL 811 BEFORE YOU DIG

FOLLOWING THE PRACTICES RECOMMENDED IN THESE GUIDELINES WILL HELP PREVENT PIPELINE ACCIDENTS. BUT, IN CASE OF AN ACCIDENT, ALL WORKERS ON THE SITE SHOULD KNOW HOW TO RECOGNIZE, RESPOND TO AND REPORT PIPELINE DAMAGE OR A RELEASE.

INDICATIONS OF A PIPELINE RELEASE INCLUDE:

- A hissing, roaring or rumbling sound near the pipeline.
- Vapor clouds, heat waves, dying or discolored vegetation near a pipeline.
- Pooling or a soil stain of crude oil or petroleum products near or downhill from a pipeline.
- An odd or unusual odor, such as a gas, chemical or petroleum smell near or downwind from the pipeline. **Do not depend entirely on odor** to determine if there may be a leak as the natural gas in most transmission gas pipelines is not odorized.

ACTIONS TO TAKE IF YOU SUSPECT A PIPELINE RELEASE:

- If you are operating equipment or a motorized vehicle near a pipeline and suspect a leak, turn off the ignition immediately and walk **into** the wind and away from the site.
- Leave the area and prohibit non-emergency persons from accessing the area.
- Avoid contact with any fluids or vapors escaping from the pipeline. Walk **into** the wind and away from the site.
- From a safe area, call your local emergency officials or 911 to report the suspected leak.
- Call the pipeline operator whose telephone number is listed on a nearby marker.
- Never attempt to operate the pipeline valves or extinguish a pipeline fire. This could actually prolong an incident or even cause another leak in the pipeline.
- If you suspect a leak, it's important that you **not** create a spark. Potential ignition sources include smoking materials or open flames, cell phones, pagers, flashlights, vehicle keyless entry remotes, and motorized vehicles or equipment. If you are inside your home or business, do not operate light switches, phones or other electrical devices.

JOB SITE SAFETY IS VITAL

If you are a contractor, you should be able to answer "yes" to these important questions:

1. Do you hold regular weekly safety meetings that all workers attend?
2. Are regular reminders of job safety reinforced and updated?
3. Are there methods to track those meetings and who attends?
4. Are safety procedures enforced by management?
5. Are new employees and subcontractors required to follow those same procedures?
6. Are the safety requirements of the subcontractor written into your contract?

811®
Know what's **below.**
Call before you dig.

PIPELINE SAFETY AWARENESS

MARKER SIGNS ARE IMPORTANT!

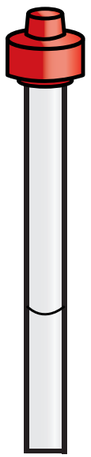
Pipelines are marked with aboveground signs (markers) within the right-of-way (ROW), as required by federal/state regulations, to alert the public, landowners and potential excavators to the existence and approximate location of a pipeline. Removal or tampering with marker signs is unsafe and violates federal law. The permanent pipeline signs and markers also help keep workers safe by keeping their focus on the **High Pressure Pipeline System.**

Pipeline markers are located at varying intervals along the ROW and typically on both sides of most road crossings. All pipeline markers list a telephone number for reporting pipeline emergencies and will indicate the product being transported in that pipeline. The placement of these markers indicates the **general** position of the buried pipeline and should **never** be used as a reference for the **exact** location of the pipeline.

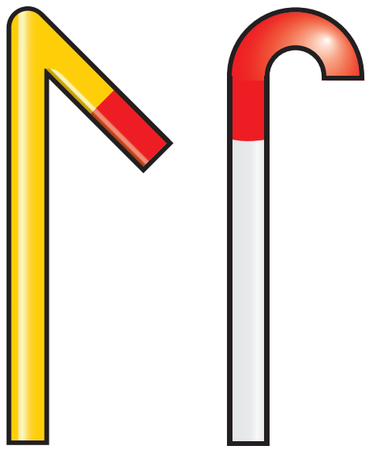
Remember, as the job site develops, the topography changes. Points of reference become unclear. New workers arrive. The pipeline marker becomes more critical when activity increases in the area. As people come to live and work near the pipeline system, the awareness and the respect for these markers must be maintained.

SIGNS LOCATED NEAR ROADS, RAILROADS, AND ALONG PIPELINE RIGHT-OF-WAYS

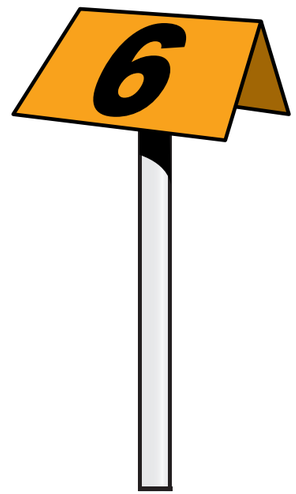
PAINTED METAL OR PLASTIC POSTS



TEST STATION



PIPELINE CASING VENTS



MARKER FOR PIPELINE PATROL PLANE

THE ONE CALL SYSTEM

CALL 811 BEFORE YOU DIG

Every excavation job requires a contact with One Call, no matter who is actually doing the digging or how small or large the project. Before digging, call **811,** the federally-mandated "Call Before You Dig" number, to be connected to your local One Call center. This is a ***free*** service. The One Call center will notify the appropriate utility that someone is proposing to dig near a pipeline or other buried utility, such as a power line or water main, and the line will be marked.

To dig without calling 811 is to make a risky assumption that can be life-threatening. Excavation damage can cause injury, loss of life and environmental damage. Striking a buried utility may also cause interruptions to vital services in your community and can involve tremendous repair costs.

A major source of pipeline leaks is damage caused when someone accidentally strikes a pipeline when digging in the right-of-way. Such damage may not immediately result in a pipeline break but can weaken metal or remove a pipeline's corrosion-prevention coating, which could possibly lead to a leak months or even years later.

Every state has different rules and regulations about digging, some stricter than others. To avoid project delays and possible fines, please allow adequate scheduling time when calling 811 or your state One Call center.

It's easy – just follow these steps:

- **CALL 811 BEFORE YOU DIG.**
- **ALLOW TIME FOR MARKING.**
- **RESPECT THE MARKS.**
- **EXCAVATE WITH CARE.**
- **FOLLOW YOUR STATE'S ONE CALL LAWS.**

811®

Know what's below.
Call before you dig.

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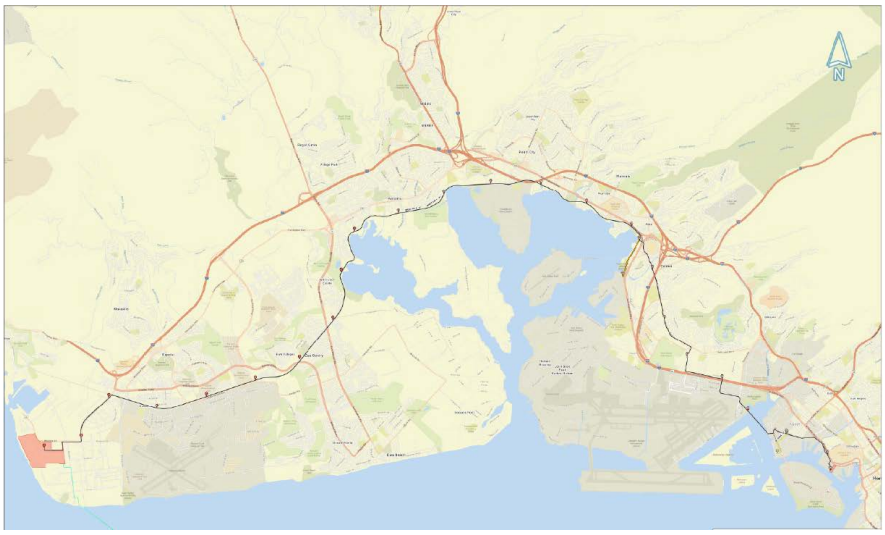

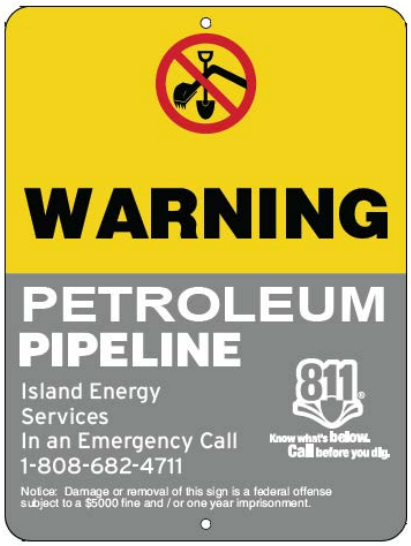

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