
**Protection of DOT Regulated Pipelines During
Construction and Repair Activities**

ENGINEERING PROCEDURE**1 SCOPE AND INTENT**

- 1.1** Scope - This Engineering Specification provides requirements for protection of pipelines during construction and repair activities performed by the Company, Company Contractors or by other owner-users of the right-of-way.
- 1.2** Intent - The intent of this specification is to provide engineering methods to prevent damage to pipelines and associated equipment both above and below ground.

2 REFERENCES

- 2.1** ANSI B 31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
- 2.2** ANSI B 31.8 Gas Transmission and Distribution and Piping Systems
- 2.3** API RP 1102 Steel Pipelines Crossing Railroad and Highways
- 2.4** API RP 1109 Marking Liquid Petroleum Pipeline Facilities
- 2.5** DOT-005 Company Corrosion Control and Monitoring Specification

3 DEFINITIONS - For this specifications the following words or phrases are defined as:

- 3.1** Carrier pipe - any pipe transporting gas or liquid.
- 3.2** Casing Pipe - a conduit through which a carrier pipe may be placed.

Approved: _____ **Date:** _____
Manager, Safety, Health and Environmental

Approved: _____ **Date:** _____
Environmental Manager

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- 3.3 Load Bearing Devices - any device installed in the pipe ditch, above or around the pipe, to protect the pipe from external overload.
- 3.4 Pipeline Markers - signs placed along a pipeline for the purpose of locating and identifying the pipeline.
- 3.5 Protective Barriers - any structure placed around above ground equipment to prevent damage.
- 3.6 "Louisiana One Call" - an organization that tracks right-of-way owner-users and arranges for those owner-users to locate and mark their underground equipment for other owner-users to prevent damage during construction or repair activities.
- 3.7 Pipe pad - material added to the pipe ditch, around the pipe, to protect the pipe coating from damage.

4 GENERAL REQUIREMENTS**4.1 Markers for Buried Pipelines**

- 4.1.1 Pipeline markers shall be designed and installed in accordance with API RP 1109.
- 4.1.2 Pipeline markers shall be placed directly above the pipeline whenever possible.
- 4.1.3 Pipeline markers shall be placed along the pipeline and at all road crossings, river crossings and at all entrances to the right-of-way. Pipeline markers shall be installed at any change in direction of the pipeline.
- 4.1.4 An adequate number of markers shall be installed to allow other right-of-way owner-users to use line of sight to locate the pipe.

4.2 Protective Barriers

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- 4.2.1** All above ground equipment such as regulator stations, metering stations and vent pipes shall be protected by barriers.
- 4.2.2** Barriers shall be designed to allow free access to vehicular traffic on the right-of-way, if the right-of-way is designed for vehicular traffic.
- 4.3** Load Bearing Devices - Whenever possible heavier wall pipe shall be used in lieu of load bearing devices. When the load on the right-of-way exceeds the allowable external load for the pipe, load bearing devices are required.
 - 4.3.1** When load bearing devices are required, concrete tiles are preferred to steel casing. Concrete tiles do not interfere with the cathodic protection system and usually provide adequate protection.
 - 4.3.1.1** Concrete tiles shall be made from 3000 psi concrete.
 - 4.3.1.2** Concrete tiles shall be red in color.
 - 4.3.1.3** Concrete tiles width shall be at least 1.5 times the diameter of the pipe.
 - 4.3.1.4** Concrete tiles shall be placed at least 1.5 times the diameter of the pipe above the top of the pipe.
 - 4.3.2** When engineering or regulatory requirements make it necessary to use steel casings, the casings shall be designed to meet the requirements ASME/ANSI B31.4 and API RP 1102 and the following:
 - 4.3.2.1** Casing ends shall be sealed using a durable electrically non-conductive material.
 - 4.3.2.2** Insulator spacing shall not exceed 15 feet.
 - 4.3.2.3** A minimum of three insulators are required for any casing.
 - 4.3.2.4** Design shall allow for future injection of insulating medium.
 - 4.3.2.5** Cathodic Protection for the casing shall be in accordance with the Company Corrosion Control and Monitoring Specification DOT-005.

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4.3.2.6 Cathodic Protection test stations shall be installed in accordance with the Company Corrosion Control and Monitoring Specification DOT-005.

4.4 Clearance for Aboveground Pipelines

4.4.1 Aboveground pipelines laid on pipe supports shall have at least 18" clearance between the soil and the bottom of the pipe.

4.4.2 Pipelines that cross above roadways shall meet the requirements of the regulatory agency that controls the road. The elevation of the lowest point on the pipe shall be painted in bold colors on the pipe or on a placard placed near the pipe. The numbers shall be at least 12" tall and must be clearly visible to roadway traffic.

4.5 Damage to other right-of-way owner-users equipment is a concern that shall be addressed by using one or more of the following methods:

4.5.1 Use "Louisiana One Call" to locate and mark buried pipelines.

4.5.2 Call other owner-users and ask them to locate and mark their underground pipelines.

4.6 Handling of Materials

4.6.1 Instructions for handling materials of construction during transportation are in the Company Warehousing and Purchasing Procedure.

4.6.2 Instructions for handling pipe, coating material and consumables are in the Company Corrosion Control and Monitoring Specification DOT-005.

4.7 Damaged pipeline paint and/or coating systems will be repaired in accordance with the original paint and/or coating manufacturer's specification and/or Company Engineering Specifications PC-1.0.0 (External Protective Coatings) and PC-2.0.0 External Coating and Wrapping for Underground Carbon Steel Piping (Shop or Field)).

4.8 The right-of-way shall be compacted to 95% of the tested compaction of the undisturbed soil in right-of-way adjacent to the pipe ditch or to local regulatory requirements.

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- 4.9** Pipelines laid through ditches that have intermittent or constant water flow shall have the top six inches of backfill made of a mix of two parts native soil and one part concrete. The backfill shall be compacted to 95% of the original undisturbed soil outside of but adjacent to the ditch or to local regulatory requirements.
- 4.10** Pipeline right-of-way shall be returned to its original condition and elevation.
- 4.11** Pipeline markers and Cathodic Protection test stations removed during pipeline repair shall be re-installed in accordance with the Company Corrosion Control and Monitoring Specification DOT-005.
- 4.12** Protective barriers and load bearing devices shall be re-installed in accordance with the original specifications.
- 4.13** Any ditch and coating repairs shall be inspected by Company Inspection personnel.

5 MAINTENANCE

- 5.1** The right-of-way shall be maintained so as to have clear visibility and to give reasonable access to maintenance crews.
- 5.2** Access shall be maintained to valve locations.
- 5.3** Diversion ditches or dikes shall be maintained where needed to protect against washouts of the line and erosion of adjacent properties.
- 5.4** Damaged pipe ditches and pipe ditch pads shall be repaired in accordance with the ASME/ANSI B 31.4 sections 434.6. and 434.10
- 5.5** Pipeline markers and Cathodic Protection test stations removed during maintenance will be re-installed in accordance with the original specification.

6 OPERATIONS

- 6.1** Operations shall implement procedures for surveillance of pipeline right-of-ways to locate pipeline leaks, damaged above ground equipment, reduction of pipe

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cover caused by right-of-way degradation or any other situation that could effect the safe operation of the pipeline.

- 6.2** Operations shall cause repairs to be made to damaged equipment, including damage to protective devices, and right-of- ways as soon as practical.
- 6.3** Construction activities by others should be reported to the Company either by “Louisiana One Call” or by the sponsors of the construction. Unauthorized construction or evidence that indicates unauthorized construction has taken place, shall be reported to the Ethylene Terminal Manager/Unit Manager for investigation.