

Line Markers and Signage for Hazardous Liquid Pipelines and Facilities

API RECOMMENDED PRACTICE 1109
FIFTH EDITION, OCTOBER 2017



AMERICAN PETROLEUM INSTITUTE

Special Notes

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to ensure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

Information concerning safety and health risks and proper precautions with respect to particular materials and conditions should be obtained from the employer, the manufacturer or supplier of that material, or the material safety data sheet.

Where applicable, authorities having jurisdiction should be consulted.

Work sites and equipment operations may differ. Users are solely responsible for assessing their specific equipment and premises in determining the appropriateness of applying the RP. At all times users should employ sound business, scientific, engineering, and judgment safety when using this RP.

API is not undertaking to meet the duties of employers, manufacturers, or suppliers to warn and properly train and equip their employees, and others exposed, concerning health and safety risks and precautions, nor undertaking their obligations to comply with authorities having jurisdiction.

All rights reserved. No part of this work may be reproduced, translated, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 1220 L Street, NW, Washington, DC 20005.

Copyright © 2017 American Petroleum Institute

Foreword

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

The verbal forms used to express the provisions in this document are as follows.

Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the standard.

Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the standard.

May: As used in a standard, “may” denotes a course of action permissible within the limits of a standard.

Can: As used in a standard, “can” denotes a statement of possibility or capability.

This document was produced under API standardization procedures that ensure appropriate notification and participation in the developmental process and is designated as an API standard. Questions concerning the interpretation of the content of this publication or comments and questions concerning the procedures under which this publication was developed should be directed in writing to the Director of Standards, American Petroleum Institute, 1220 L Street, NW, Washington, DC 20005. Requests for permission to reproduce or translate all or any part of the material published herein should also be addressed to the director.

Generally, API standards are reviewed and revised, reaffirmed, or withdrawn at least every five years. A one-time extension of up to two years may be added to this review cycle. Status of the publication can be ascertained from the API Standards Department, telephone (202) 682-8000. A catalog of API publications and materials is published annually by API, 1220 L Street, NW, Washington, DC 20005.

Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

Contents

	Page
1 Scope	1
2 Normative References	1
3 Terms and Definitions	1
4 Conflicting Requirements	3
5 Pipeline Facility Marking Practice	3
5.1 General Description, Use, and Placement of Signage	3
5.2 Types of Posts	4
5.3 Line Markers	4
5.4 Signage	6
5.5 Installation	8
6 Aboveground Pipeline Facility Marking and Signage Practice	10
6.1 Pipelines	10
6.2 Pipeline Facilities Signs	10
6.3 Sign Placement	10
7 Inspections and Maintenance	10

Figures

1 Examples of Cross Country Right-of-Way Marking Locations	5
2 Examples of Cross Country Markers and Signs	6
3 Examples of Offset Markers and Signs	7
4 Line Markers	9
5 Line Marker	11
6 Examples of Surface Markers	12
7 Pipeline Sign for Navigable Waterways	13
8 Typical Aerial Markers	14
9 Typical Pipeline Facility Signs	15

Introduction

Pipelines are, for the most part, buried conduits. As such, they operate safely, quietly, and hidden from view, with little disruption to the public or the surrounding environment. These attributes, which are highly desirable in any mode of transportation, generate the need for an organized system of markers and signs that visually alert the public to the presence of a pipeline and provide a contact number of the Pipeline Operator that can be used in the event of an emergency or before excavating near pipelines. Strategic placement of markers and signs also helps the Pipeline Operator to perform right-of-way surveillance, inspections and other day-to-day activities. Pipeline markers are an integral component of an Operator's operating and maintenance program including damage prevention and public awareness programs.

This recommended practice (RP) was prepared by a committee composed of representatives from pipeline operating companies. Its purpose is to present guidelines concerning the design, fabrication, installation, and maintenance of permanently installed pipeline markers and signs.

Marking Liquid Petroleum Pipeline Facilities

1 Scope

1.1 This RP addresses the permanent marking of hazardous liquid pipeline transportation facilities. It covers the design, message, installation, placement, inspection, and maintenance of markers and signs on pipeline facilities located onshore and at inland waterway crossings. Markers and signs indicate the presence of a pipeline facility and warn of the potential hazards associated with its presence and operation. The markers and signs may contain information to be used by the public when reporting emergencies and seeking assistance in determining the location of a buried pipeline.

1.2 The provisions of this RP cover the minimum signage (markers and signs) requirements for hazardous liquid pipeline facilities. The Pipeline Operator is responsible for determining the type and extent of signage. Consideration should be given to the hazardous characteristics of the commodity being transported; the pipeline's proximity to industrial, commercial, residential, and environmentally sensitive areas; susceptibility to excavation-related damage; consequences of failure; and applicable state and federal laws. Several examples of markers and signs with locations are illustrated in Figure 1, Figure 2, Figure 3, Figure 4, Figure 6, and Figure 8. The pipeline marking programs are integral components of the Pipeline Operator's operations, maintenance and emergency plans, damage prevention programs, and public awareness programs.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASME B31.4 ¹, Pipeline Transportation Systems for Liquids and Slurries

49 Code of Federal Regulations Part 195 ², "Transportation of Hazardous Liquids by Pipeline"

3 Terms and Definitions

For the purposes of this document, the following definitions apply.

3.1

aerial patrol or air patrol marker

A marker observable from the air, which is used to identify a pipeline's reference location by the aerial patrol pilot while conducting aerial surveillance of a pipeline right-of-way (ROW).

NOTE Information on the marker might consist of distance from a point of reference, usually in miles, name or numbers of above ground facilities, direction of the ROW, a Point of Intersection (PI) where the ROW turns, or other information useful to the pilot.

3.2

hazardous liquid

Petroleum, petroleum products, anhydrous ammonia, ethanol, or carbon dioxide and any substance that may pose an unreasonable risk to life or property if released, when transported by a hazardous liquid pipeline facility in a liquid state.

¹ ASME International, 3 Park Avenue, New York, NY 10016-5990, www.asme.org.

² The *Code of Federal Regulations* is available from the U.S. Government Printing Office, Washington, DC 20402.