



GUIDANCE DOCUMENTS FOR CONSTRUCTION – NATURAL GAS PIPELINE CROSSING GUIDELINES

The INGAA Foundation, Inc.

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Version 1**

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**INGAA Foundation Inc.
Guidelines for Crossing Natural Gas Pipelines**

EXECUTIVE SUMMARY

These Line Crossing Guidelines, developed by the INGAA Foundation members, are designed to enhance the safety of everyone involved with new natural gas pipelines crossing existing natural gas pipeline facilities. The Guidelines recognize safety is a shared responsibility between operators, contractors, locators and everyone involved in the planning and construction process. Each entity involved in a pipeline crossing must take responsibility to communicate with each other early and often to work out the details of crossings. The Guidelines provide hands-on technical guidance, a ready-to use form containing specifics of a crossing agreement, and an easy-to-view diagram. (See Attachment A, “Crossing: Mechanical Requirements Summary,” Attachment B, “Model Crossing Agreement” and Attachment C, Diagram.)

INGAA Foundation Inc. Guidelines for Crossing Natural Gas Pipelines

I. Introduction

The INGAA Foundation recognizes that the construction of pipeline crossings occurs on a regular basis. As these crossings occur, the industry's goal is to protect safety of the people, property and equipment in the vicinity of the crossing and the pipeline's right of way, protect the environment, and maintain the integrity of the pipelines involved to ensure reliable and efficient transportation of the products that fuel the nation's economy.

To accomplish these goals, the INGAA Foundation members have developed the following Guidelines to apply to crossings of one natural gas pipeline with another. At the core of the Guidelines is the belief that improving communications between the operator crossing the existing facilities and the owner of the existing facilities, and starting those communications early in the process, enhances the likelihood of a safe crossing. In addition, the Guidelines provide a set of parameters to guide the parties in "how-to" conduct safe crossings¹. In addition, we have developed an easy-to-use Model Crossing Form that can be used in the field, recognizing there may be a number of other considerations that may be appropriate if the crossing is particularly complex (e.g. several lines involved, difficult territory or other complicating factors).²

INGAA Foundation members engaged in pipeline construction involving the crossing of existing pipeline facilities, which includes operators of existing pipelines, operators of the new pipeline, designers, constructors, surveyors, locators, environmental professionals, excavators and consultants embrace the following statement:

"Damage prevention is a shared responsibility. Whether you are a facility owner/operator, locator, design professional, one-call center employee, excavator/contractor or other stakeholder, ensuring safety of those who work or live in the vicinity of underground facilities and protecting our vital services is everyone's responsibility."³

¹ The Parties to the crossing may, of course, negotiate modifications to these Guidelines, but may also find assurance in following a set of mechanical requirements deemed by the INGAA Foundation Members as methods to help enhance a safe crossing.

² For instance, many facets of these Guidelines apply to horizontal directional drilling (HDD) crossings although the complexity of an HDD crossing may require consideration of additional factors not discussed herein. While this approach was designed to apply to crossings of natural gas pipelines, the principles contained herein can be applied to other types of crossings. The members believe, however, that expanding this effort to other types of crossings of natural gas pipelines by electric transmission line, sewer and water facilities, or telecommunication equipment requires a separate initiative.

³ The concept of shared responsibility and working together is not a new one. It is embraced in the Common Ground Alliance Best Practices, Version 9.0, Inside Cover Page, March 2012, as well as in the INGAA Guidelines for Parallel Construction of Pipelines, December 2008.

II. Definitions

A. Active Excavation Area is the area where the edge of the disturbance is within 25 feet of the centerline of existing facilities.

B. Crossing Agreement is the agreement entered into between the Owner of the existing facility and Crossing Company installing the new facility to specify the rights and obligations of the parties during the Crossing Construction.

C. Crossing Angle is the angle measured between the existing pipeline and the proposed location of pipe and is recommended to be as close to perpendicular as practical (e.g. between 45 and 90 degrees).

D. Crossing Clearance Distance is the vertical separation between the existing pipeline facilities and where the new pipeline is being installed. The recommended crossing clearance distance between the new pipeline and the existing facilities is two feet (24 inches). The minimum distance is one foot (12 inches).⁴ The new pipeline should be installed at a level depth across the **ROW**, if practicable.⁵

E. Crossing Company is the entity that intends to install, operate and maintain a new pipeline that crosses existing pipeline facilities. The Crossing Company may designate a third party or parties to perform the tasks necessary to accomplish a crossing but remains responsible for the work performed by such third parties

F. Crossing Construction is construction of a new natural gas pipeline facility by a Crossing Company that will cross Owner's existing natural gas pipeline(s). The extent of the Crossing Area is established by the beginning and ending of the Encroachment Area. Crossing Construction begins with the first disturbance of soil in the Encroachment Area and ends when the ROW has been restored.

G. Crossing Plan is the plan devised between the Owner and Crossing Party to specify the details and provisions under which the **Crossing Construction** shall occur. Depending on the size and nature of the crossing, a Crossing Plan could be as simple as an exchange of the Mechanical Requirements and an email agreeing to follow those requirements. In more complex projects, the Crossing Plan include topics such as cathodic protection requirements, a blasting plan (if any), support and backfill requirements, and erosion control.

H. Designated Contact is the single point of contact identified within the company of the Crossing Company and the Owner who has the responsibility to

⁴ Specific situations may cause the desired Crossing Clearance Distance to vary. These may include, for instance, the presence of rock, sugar sand soils, and the need to bore or directional drill the new facilities into place.

⁵ For instance, this would not be practicable where the new pipeline route follows a steep incline or decline, or in cases where a bored crossing method is used.

communicate about and safely manage the Crossing. There will be a Crossing Company Designated Contact and an Owner Designated Contact.

I. Due Diligence Corridor is distance equal to the width of the proposed survey corridor plus 50 feet on each side for **Crossings Construction** involving a survey corridor. The survey corridor is the corridor width typically used for biological surveys, for example.

J. Encroachment Area is the area where the ground disturbance occurs within 50 feet of the centerline of the existing facility, or within the existing facility's **right-of-way (ROW)** or other easement, whichever is greater. Additional distance may be required for other considerations, such as topography, side-hill lays, cathodic protection, environmental or engineering conditions, size of pipe and operating equipment, and topography.⁶

K. Excavation Tolerance Zone is the area in which soil must be removed by non-mechanical means (such as hand digging, pot-holing, or hydro-vac) rather than mechanical means. It is an area within two feet (24 inches) of the existing facilities, or the distance mandated by state law where applicable, whichever is greater.⁷

L. Owner is the entity that owns or operates the existing pipeline facilities. The Owner may designate a third party or parties to perform the tasks necessary to enable a safe crossing of its facilities by Crossing Company, but remains responsible for work performed but such third parties.

M. Right of Way (ROW) is the property in which a pipeline company and a landowner both have a legal interest. The ROW is usually established through a written document known as an easement.⁸ The easement provides that each entity has a right to be there although each is permitted different uses of the land. Pipeline companies are typically granted permission to install, operate and maintain a buried pipeline (and sometimes, with surface appurtenances) across a certain portion of land without interference with its rights to do so.⁹

⁶ This is the same distance used for Encroachment Areas in the INGAA Foundation's Parallel Construction Guidelines.

⁷ This distance is the same as in the INGAA Guidelines for Parallel Construction but is more conservative than Common Ground Alliance (CGA) Practice 5-19 or the INGAA Foundation Trenching and Excavation Safety Guidelines which both stipulate a tolerance zone of 18 inches (which were designed to apply to a broader set of circumstances than trenching for natural gas pipeline crossings).

⁸ Permissions granted in cases where the land is owned by the government (local, state, or federal can also be called easements, licenses, or occupancy agreements).

⁹ Pipeline easements are typically non-exclusive easements. ROWs, however, may also be defined in exclusive easements or on land owned by the existing pipeline company. The presence of an exclusive easement or an ownership of the land likely provides the Owner legal rights to exclude the Crossing Company from entering the ROW without its explicit permission. Nonetheless, these Guidelines can provide an industry view upon which to base those negotiations.

III. Guidelines

A. Planning and Preconstruction

1. As part of its planning processes, **Crossing Company** will identify the general location of **Owner's existing facilities** within an **Encroachment Area** and begin communications with the **Owner** as soon as possible.
 - a. When the **Crossing Construction** is part of a larger more complex project, the **Crossing Company** will perform due diligence as part of its initial route selection to identify existing underground and adjacent aboveground structures and determine the service (pipeline [oil or gas], electric power line, sewer, water, telecommunication, or cable), size (diameter), materials of construction (steel, plastic, etc.), status of service (active or abandoned), pressure (or voltage) in a **Due Diligence Corridor**. The **Due Diligence Corridor** can be adjusted with respect to the centerline, based on the existence of wetlands, vegetative cover, topography, geology, pipe diameter, and required work area, among other factors.
 - b. It is the **Crossing Company's** responsibility to gain access for the purpose of conducting a survey of facilities within the **Encroachment Area**. This survey shall be conducted in accordance with Subsurface Utility Engineering (SUE)¹⁰ Quality Level C which requires inspection of the site, survey of visible facilities and correlation with existing records tied to aboveground facilities.
2. The **Crossing Company** and the **Owner** will establish single points of contact (referred to as "**Designated Contacts**") for purposes of planning and designing the details of the crossing. The **Designated Contacts** will meet to discuss and develop the **Crossing Plan**. In situations where the crossing is relatively straightforward, this process can be informal, conducted by telephone conference or email, or may even take place on location in the field. The contact should be initiated as soon as possible in the planning stage of any work involving a crossing.
 - a. The purpose of this contact is to encourage and facilitate communication early and often between the **Crossing Company** and **Owner** about the specifics of the **Crossing Construction** to enable the parties to reach a Crossing Agreement before soil is moved within the **Encroachment Area**.

¹⁰ ASCE 38-02, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, 2002.

- b. The exchange of information between the **Designated Contacts** should include key information about the **Owner's** existing and the **Crossing Company's** proposed new facilities and the respective work processes and procedures. The **Designated Contacts** should establish clear lines of communication, and discuss any other details needed to assure that the new facility may be constructed safely and efficiently, while simultaneously protecting the existing facility from damage. The contact should be initiated as soon as possible in the planning stage of any work involving a crossing.
 - c. Examples of the information discussed and exchanged between **Designated Contacts** includes: placement of the ROW; location of the existing and proposed pipelines within the ROW; the types of easements (exclusive, or open and undefined); construction methods and practices; unique landscape, terrain, or environmental situations; separation distances; restrictions on type and location of heavy equipment crossings, any potential pipeline integrity concerns, responsibility for cathodic protection after installation, and ground disturbance timing.
3. After discussions between the **Designated Contacts**, the **Owner** and **Crossing Company** will enter into an agreement about the **Crossing Construction in Encroachment Area** in the form of a **Crossing Agreement**. The **Crossing Agreement** may be as informal as the Owner sending the summary of mechanical requirements (Attachment A) to the **Crossing Company** and an email from the **Crossing Company** confirming agreement to use those mechanical requirements. It could take the form of signing an Agreement in the field in a form similar to Attachment B, Model Crossing Agreement.¹¹ Or, in projects that are more complex, it may be a more detailed written agreement executed by both parties following a negotiation. Regardless of the form of the **Crossing Agreement**, the **Crossing Company** will communicate the obligations and requirements in a **Crossing Agreement** to its contractors or sub-contractors involved in the **Crossing Construction** prior to the movement of soil in the **Encroachment Area**.
4. The **Crossing Company** will identify areas where blasting will be used along the route within 300 feet of the existing facilities to be crossed. Crossing Company will propose a blasting plan to which the Owner must acquiesce prior to blasting proceeding.¹²

¹¹ In addition to the operational aspects of a safe crossing construction, the Model Crossing Agreement contains boilerplate legal provisions deemed to be appropriate in Crossing Construction including requiring all parties to follow applicable law as well as an indemnification by the Crossing Party and an express probation of indirect or consequential damages.

¹² The members recognize this guideline differs from the one contained in the American Petroleum Institute's "Guidelines for Property Development" that specifies a blasting plan is required when blasting will occur within a quarter (1/4) mile of existing pipeline facilities.

5. The **Crossing Company's and Owner's Designated Contacts** will regularly communicate and coordinate with each other concerning the status of the project during the pre-construction phase and for the duration of the **Crossing Construction**.¹³

B. Construction

1. The **Crossing Company** will utilize One-Call in advance of beginning any ground disturbing activity in the **Encroachment Area**.¹⁴ The one-call request will include specific starting and ending points using geographic coordinates to ensure that any **Encroachment Areas** are included.
2. To eliminate potential confusion caused by the lack of a response to a One-Call, the Owner's **Designated Contact** will notify the Crossing Company's **Designated Contact** with a "positive response" indicating either that there is no conflict or that the line will be marked (referred to as "positive response"¹⁵).
3. The **Crossing Company** will provide the **Owner** with a proposed schedule for construction of the Crossing, and in a timely fashion will communicate changes to the schedule.
4. The **Owner** will cause its facilities within the **Encroachment Area** to be marked using appropriate line location methods that will ensure the accurate placement of the markers. Markers will be placed to a maximum spacing not exceeding 50-feet. Owner will ensure that all points of inflection ("PIs") within the **Encroachment Area** are clearly marked. The marks will be maintained in the **Encroachment Area** during **Crossing Construction**.
5. In general, the **Owner** has the option to have an inspector on site during any ground disturbance in the **Active Excavation Area**.¹⁶
6. In addition to using One-Call, the **Crossing Company's Designated Contact** will notify the Owner's **Designated Contact** that ground disturbance that is about to occur to provide ample time for the Owner to have an inspector present.
7. The **Crossing Company** will ensure the new pipeline will be installed in accordance with the **Crossing Plan**.

¹³ This is consistent with CGA, Planning and Design, Practice 2-4.

¹⁴ It is incumbent upon the Crossing Company to know the requirements of the One-Call law in the State in which the Crossing Construction occurs. Generally, One-Call laws require contact to be made at least two or three working days prior to commencement of work.

¹⁵ This is consistent with CGA, Locating and Marking, Practice 4-9. In some states, the one-call request at this stage results in creation of a design ticket. In some states this requires only an exchange of information. It is the intent of this agreement that existing lines be marked if they are within the Encroachment Area.

¹⁶ This is consistent with API 1166 – Excavation Monitoring and Observation.

8. Personnel at the site of the **Crossing Construction** have the authority to stop work at any time there is a belief the safety of personnel or existing facilities are endangered.
9. The **Crossing Company** will not excavate unless there is visual confirmation of the existing pipeline's location. This means that no excavation will be conducted within the **Active Excavation Area** of an existing pipeline unless there are marks indicating the placement of the pipeline (until such a point where the marks extend off the ROW indicating that the existing pipeline is no longer within the **Active Excavation Area**).
10. If the **Owner** observes excavation equipment in an **Encroachment Area** and is unaware of planned activities, **Owner** will undertake reasonable efforts to alert the excavator of the presence of any known pipeline in the area. This could include efforts to notify the excavator by phone, email, or using a contact card on a string, or other comparable method, on the door handle, or steering wheel, of the subject equipment. For example the card might state, "Natural gas facility in the vicinity, danger, call before you dig, Call 811".
11. The **Crossing Company** will be responsible for all damages, repairs and rehabilitation caused by its construction activities, as well as restoration of disturbed portions of the existing facility right-of-way, to the satisfaction of all parties, including the Owner and any authorizing agencies.

C. **Post Construction**

1. The **Crossing Company** and **Owner** will jointly share any lessons learned in the process of project execution or in the post-construction project review with the INGAA Foundation by accessing the "Lessons Learned" repository found at www.ingaa.org.
2. Each Party shall be responsible for collecting any as-built information about the **Crossing Construction** and providing that within its own organization to better identify the location of the new pipeline during future maintenance and expansion activities.

Attachment A
Crossing: Mechanical Requirements Summary

Attachment B
Model Crossing Agreement

Attachment C
Drawing Illustrating Crossing Guidelines

**Attachment A
Crossing: Mechanical Requirements Summary**

Crossing Company is the entity that intends to install, operate and maintain a new pipeline that crosses existing pipeline facilities (the **Crossing Construction**). **Owner** is the entity that owns or operates the existing pipeline facilities that will be crossed. The mechanical requirements based on the INGAA Foundation Guidelines for Line Crossings include:

1. Crossing Company and Owner shall designate a single point of contact within each company who has the responsibility to communicate about and safely conduct the Crossing. Each may also name a separate “on-site” representative.
2. Crossing Company shall not begin soil disturbance in an area within 50 feet of the centerline of Owner’s pipeline or within the Owner’s Right of Way (ROW) whichever is greater (the “Encroachment Area”) without first contacting Owner to discuss and agree upon a Crossing Plan for the Crossing Construction. The Crossing Plan may consist solely of the terms set forth herein. The Crossing Construction will be conducted in accordance with the Crossing Plan.
3. Crossing Company shall contact the statewide One-Call in accordance with state law which generally requires contact to be made at least two or three working days prior to disturbing the soil in the Encroachment Area. Owner will locate and mark the Property prior to any soil disturbance in the Encroachment Area.
4. Crossing Company shall not permit any soil disturbance within 25 feet of the centerline of the existing pipeline facilities (the “Active Excavation Area”) without a representative of the Owner being present.
5. Surface equipment crossing the existing facility shall only do so as dictated by Owner. Backhoe teeth shall be barred or curled each time the bucket approaches the existing pipeline. Plowing or ripping on the ROW may only occur if permitted by the Owner.
6. The Crossing Angle (the angle measured between the location of the Owner’s pipeline and the Crossing Company’s new pipeline) shall be as perpendicular as practical (e.g. between 45 and 90 degrees).
7. The Excavation Tolerance Zone (the area in which soil must be removed by non-mechanical means) is 24 inches from the Owner’s pipeline.
8. The recommended Crossing Clearance Distance (the vertical separation between the existing pipeline and the new facilities) is 24 inches (but with a minimum of 12 inches) and to the extent practicable, shall remain level across the ROW.
9. The amount and type of cover of the existing facilities shall be determined by the Owner Company representative on site with any change in amount or type of materials used for cover approved by Owner Company in advance.
10. Each party shall be responsible for cathodic protection of its own facilities unless otherwise agreed.

**Attachment B
Model Crossing Agreement**

Owner Company: _____
 Name of Designated Contact: _____
 Address _____
 Phone _____

Crossing Company _____
 Name of Designated Contact: _____
 Address _____
 Phone _____



CROSSING ENCROACHMENT LOCATION					
SECTION:	TOWNSHIP:	RANGE:	COUNTY:	ST:	PM:
LATITUDE:	LONGITUDE:	LENGTH:	STATION NO:		
LINE LIST NO.:	ROW WIDTH:		ALIGNMENT SHEET NO.:		

CROSSING DESCRIPTION

Owner Company ("Owner") of existing pipeline facilities within the above-referenced Company easement or other property ("the Property") hereby permits the Crossing Company to install, maintain and operate the above-referenced Crossing provided Crossing Company follows the terms and requirements set forth below:

1. As set forth above, Crossing Company and Owner has designated a single point of contact within each company who has the responsibility to communicate about and safely conduct the Crossing. Each may name a separate "on-site" representative.
2. Crossing Company shall not begin soil disturbance in an area within 50 feet of the centerline of the existing facilities or within the Owner's Right of Way (ROW) whichever is greater (the "Encroachment Area") without first contacting Owner to discuss and agree upon a Crossing Plan for the Crossing Construction (which can be the terms set forth herein). The Crossing Construction will be conducted in accordance with the Crossing Plan.
3. Crossing Company shall contact the statewide One-Call in accordance with state law which generally requires contact to be made at least two or three working days prior to disturbing the soil in the Encroachment Area. Owner will locate and mark the Property prior to any soil disturbance.
4. Crossing Company shall not permit any soil disturbance within 25 feet of the centerline of the existing pipeline facilities (the "Active Excavation Area.") without a representative of the Owner being present.
5. Surface equipment crossing the existing facility shall only do so as dictated by Owner. Backhoe teeth shall be barred or curled each time the bucket approaches the existing pipeline. Plowing or ripping on the ROW may only occur if permitted by the Owner.
6. The Crossing Angle (the angle measured between the location of the Owner's pipeline and the Crossing Company's new pipeline) shall be between 45 and 90 degrees unless stated otherwise here: Crossing Angle shall be ___ degrees.
7. The Excavation Tolerance Zone (the area in which soil must be removed by hand or by pot-holing) is 24 inches from the Owner's pipeline unless otherwise agreed here. The Excavation Tolerance Zone shall be ___ inches.
8. The Crossing Clearance Distance (the vertical separation between the existing pipeline and the new facilities) shall be 24 inches and shall remain level across the ROW unless otherwise agreed here: The Crossing Clearance Distance shall be ___ inches and remain level or _____.
9. The amount and type of cover of the existing facilities shall be determined by the Owner representative on site with any change in amount or type of materials used for cover approved by Owner in advance.
10. Each party shall be responsible for cathodic protection of its own facilities unless otherwise agreed.
11. The Crossing Company will be responsible for the expense of repairing any damage to the existing facilities occurring as result of its Crossing Construction activities, as well as any restoration of disturbed portions of the existing ROW to the satisfaction of the Owner.
12. Owner and Crossing Company shall comply with all federal, state, and local laws, rules, regulations and agency policies as well as guidance documents, including but not limited to those related to safety, pollution or protection of the health and environment.
13. Crossing Company agrees to protect, indemnify, hold harmless and defend Owner, its officers, agents or employees, from any liability or expense (including attorney's fees) arising from claims by any person for personal injury, death, or property damage arising out of the Crossing Construction.
14. Under no circumstances will either party be liable to the other for any special, indirect, incidental or consequential damages, including but not limited to lost profits, arising or resulting from the Crossing Construction.

IT IS SO AGREED.

OWNER COMPANY ("OWNER")
 BY: _____

CROSSING COMPANY ("CROSSING COMPANY"):
 BY: _____

Attachment C
Drawing Illustrating Guidelines

