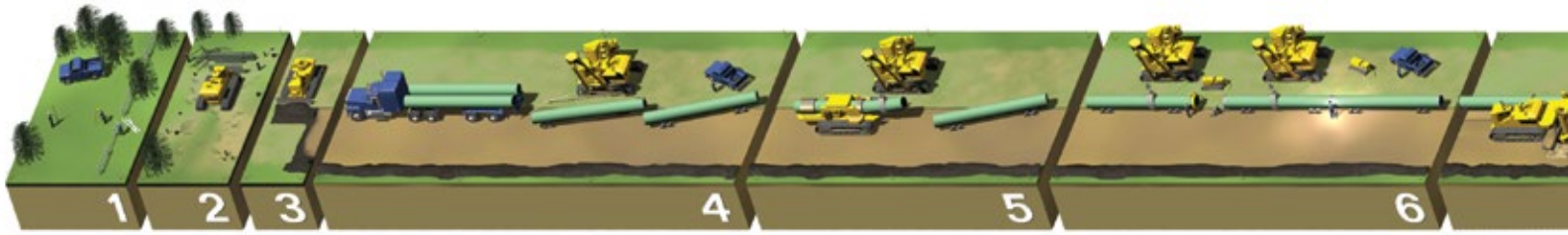
PIPELINE CONSTRUCTION

ENBRIDGE®

WE BUILD SAFETY INTO EVERY STEP OF PIPELINE CONSTRUCTION

Pipeline construction is a multi-step process. Many months prior to construction, field surveys are conducted along the propo



(1) Based on the information gathered during surveying, a final route is developed, and the route is then marked with stakes.

(2) Crews begin to prepare for construction by grading the right-of-way, removing trees and preparing the working space.

(3) In cultivated areas, the topsoil along the right-of-way is stripped and stored in piles for careful replacement following the installation of the pipeline.

(4) Crews then re-stake the center of the trench area, lay out, or "string," sections of the pipe along the right-of-way.

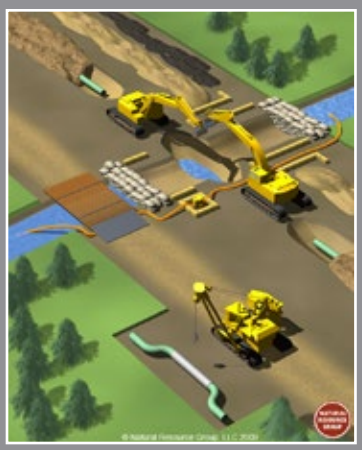
(5) Crews bend and weld the sections of pipe into a longer piece that follows the contours of the land.

(6) Individual sections are already coated to prevent corrosion. Each weld is inspected by X-ray and then coated.

(7a) Once this process is complete, a trench is dug to accept the pipe.

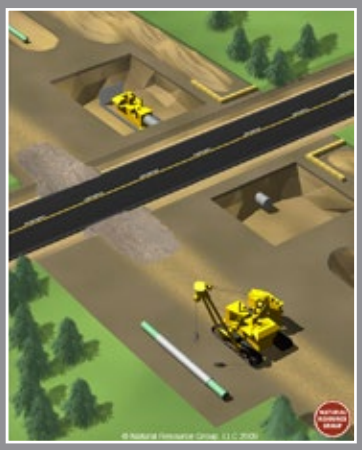
(7b) In agricultural areas, careful attention is paid to properly separate and store the topsoil and subsoil so they do not mix.

Special Construction Techniques



River Crossing

One of several river crossing methods selected in collaboration with regulatory agencies to avoid long-term impact.



Roadway Crossing

Typical road bore crossing method designed to minimize interference with traffic arteries.

Questions and Answers About Pipeline Construction

Planning for any pipeline project begins months and even years in advance of actual construction. Initial steps in the planning process include determination of demand from refineries, pipeline design, route alternatives and selection, environmental assessments, public consultation, landowner negotiations and government permitting. Once these steps are complete, the construction process begins.

Q: What environmental and safety measures does Enbridge take during pipeline design, construction and operation?

A: Enbridge is committed to protecting the public and the environment, and we build safety into every step of pipeline construction and operation. The design of the pipeline meets or exceeds industry standards and federal pipeline safety regulations. Enbridge conducts studies and assessments, and seeks permits from numerous local, state and federal agencies.

osed pipeline route, or right-of-way, to evaluate environmental, development and local conditions.

(8) The pipe coating is inspected one more time before the pipe is lowered into the trench.

(9) The pipe is lowered into the trench and laid within the prepared trench bottom.

(10) The trench is then carefully backfilled with subsoil and topsoil.

(11) Before operation, pressurized water is used to test the pipeline and verify the structural integrity of the pipe and welds.

(12) The right-of-way and workspace is regraded and vegetated according to agency requirements and landowner agreements.

The construction process usually takes less than two to three months to complete on an individual landowner's property, depending on weather conditions. Throughout the many phases of pre-planning and construction, Enbridge representatives work closely with communities and individuals along the route to provide information, seek input and answer questions.

NOTE: These illustrations are conceptual and general in nature; specific construction and restoration techniques could vary depending on circumstances.

We use modern construction and land restoration techniques to prevent soil erosion, protect agricultural topsoil, repair agricultural drain tiles and irrigation systems and alleviate soil erosion.

Q: What is a right-of-way or easement?

A: A pipeline right-of-way is a strip of land that is usually between 30 to 120 feet wide (depending on the proposed project) and that may contain one or more pipelines. Right-of-way is acquired from landowners, other utilities or government entities by obtaining an easement, permit or license.

Easements are legal agreements between landowners and Enbridge. Landowners retain ownership of the right-of-way, and in return for compensation, Enbridge is granted the right to construct, operate and maintain the pipeline along this strip of land.

The land can generally be used as it was prior to the pipeline installation; however, the easement agreement restricts the building of structures and planting of trees within the permanent right-of-way to protect the safety of landowners, residents, their families and neighbors, and the Enbridge facility or pipeline. Underground energy pipeline routes exist in many kinds of ecosystems, including under rivers, roads, parks, farmland, neighborhoods and urban areas. There are no restrictions against operating normal farming equipment on the easement. We will make every effort to accommodate your request to cross the pipeline easement, dig post holes or excavate, and to do so in a safe manner.

Q: Why is it necessary that the right-of-way be so wide?

A: The pipeline construction area consists of both temporary work space needed for equipment during pipeline construction and the permanent right-of-way required to operate and maintain the pipeline safely. During construction, additional temporary work space is required beyond the width of the permanent right of-way to provide room for soil, pipe welding and two lanes of construction equipment traffic. Landowners are compensated for the use of temporary work space in addition to the permanent right-of-way.

The amount of temporary work space and permanent right-of-way will vary depending on the size and type of pipeline, location, community development plans, soil conditions and regulatory requirements. An Enbridge representative will provide more specific information during discussions with the landowner.

Q: How will construction crews gain access to the temporary work space and right-of-way?

A: Construction crews will use existing access roads as much as possible. If additional routes are needed, Enbridge right-of-way representatives will negotiate access options with landowners and regulatory agencies as necessary.

Q: How will I know if a pipeline project is being proposed near me?

A: Landowners with property along a proposed pipeline route will be individually contacted by an Enbridge representative via mail and in person. Obtaining input and addressing questions early in the process is a priority for Enbridge.

Q: Will my land be restored to its original condition?

A: Enbridge's objective following construction will be to restore the land as close to its pre-construction condition as feasible and follow the agreements entered into with the landowners and regulatory agencies. To permit pipeline surveillance and maintenance, the permanent right-of-way must be kept clear of trees. Some areas are unique and may require special restoration methods. In farmed areas with drain tile, Enbridge will have a plan to restore the drain tile system to its pre-construction function. An Enbridge right-of-way representative will contact you to confirm that the restoration was completed and/or that you were compensated according to your agreement with Enbridge.

Q: Will I be compensated for crop or timber damages?

A: Enbridge will compensate landowners for damage to crops along the right-of-way. Compensation is determined by inspecting the type of crop, area of the right-of-way affected, yield and value based on current market value of the crop. Landowners will be compensated for crop losses using a formula that assumes 100 percent loss during the year of construction and a gradual improvement of yields over a specified period of time. The Enbridge right-of-way representative will negotiate with the landowner for market-based compensation for timber.

Q: What happens after construction is complete?

A: After the pipeline is tested, we begin transporting petroleum or natural gas. Enbridge has a comprehensive pipeline integrity management program that includes regular inspection and preventive maintenance on our pipelines. To allow for regular patrol and maintenance access, rights-of-way will be kept clear of structures, trees and brush. Enbridge will also send periodic mailings to those who live and work along the pipeline route regarding 811, the national "call before you dig" telephone number and the 24-hour Enbridge emergency number 800-858-5253 (888-838-4545 in ND and MT).

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

Learn more about pipeline construction at:

- **enbridgeUS.com**
- **pipeline101.com**