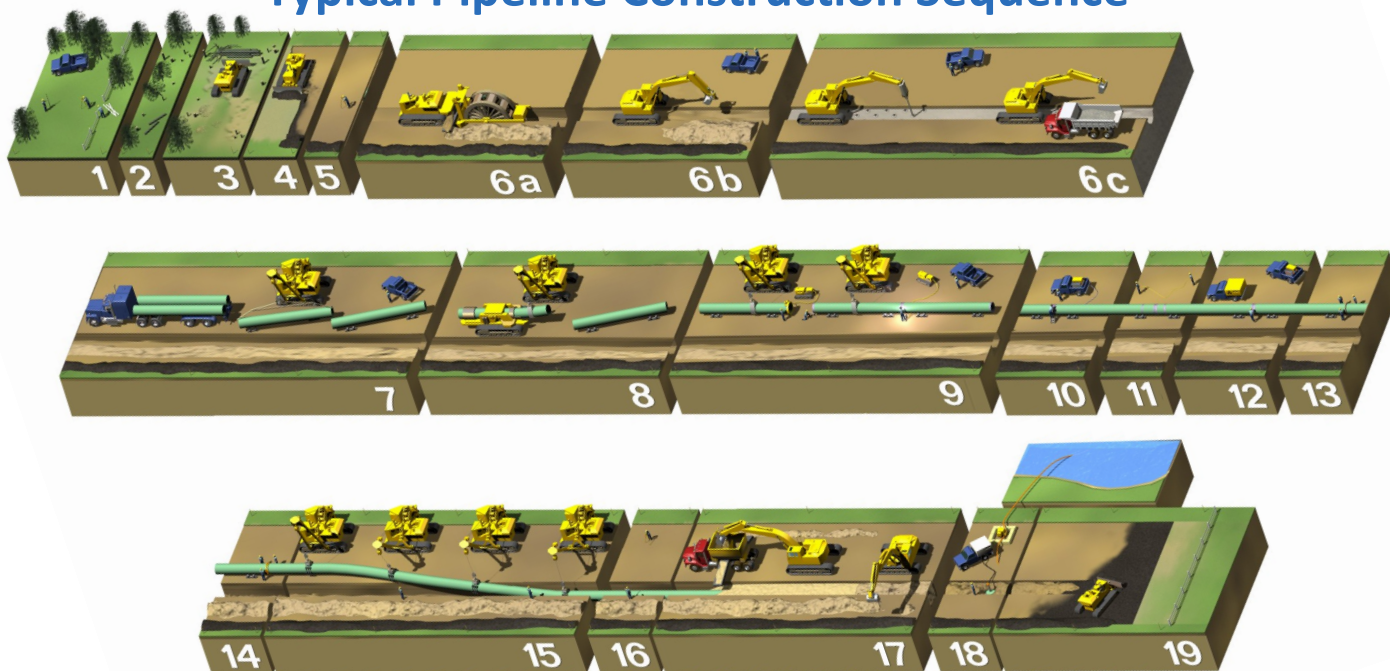


Determining customer demand for product is the first step in considering the construction of a pipeline. If the pipeline is deemed necessary, a process to plan and survey the route begins, which can take many months, sometimes years, to complete. Surveys as well as input from potentially affected landowners and other stakeholders help evaluate environmental, cultural and development conditions and ultimately help identify the proposed route. Many additional months are spent completing the regulatory process to ensure the pipeline meets all applicable federal, state and local regulations. Once construction begins, fully equipped, highly specialized teams work to develop each section.

Typical Pipeline Construction Sequence



- | | | |
|--------------------------------|-----------------------------------|--|
| 1. Survey and staking | 6c. Trenching (rock) | 13. Coating field welds |
| 2. Clearing | 7. Stringing pipe | 14. Inspection & repair of coating |
| 3. Front-end grading | 8. Field bending pipe | 15. Lowering pipe into trench |
| 4. ROW topsoil stripping | 9. Line-up, initial weld | 16. As-built survey |
| 5. Restaking trench centerline | 10. Fill & cap, final weld | 17. Pad, backfill, rough grade |
| 6a. Trenching (wheel ditcher) | 11. As-built footage | 18. Hydrostatic test, final tie-in |
| 6b. Trenching (backhoe) | 12. X-ray inspection, weld repair | 19. Replace topsoil, final cleanup, full |

continued

1. Surveying and staking

The survey crew carefully surveys and stakes the right of way to ensure that only the pre-approved construction workspace is cleared.

2. Clearing

The clearing crew is responsible for removing trees, boulders and debris from the construction right of way. This crew also installs silt fences along edges of streams and wetlands to prevent erosion of disturbed soil.

3. Front-end grading

The grading crew prepares a level working surface for the heavy construction equipment that follows.

4. ROW topsoil stripping

If necessary, especially in agricultural areas, topsoil is separated from subsoil, stripped to a predetermined depth and stockpiled along the sides of the right of way.

5. Restaking trench centerline

The survey crew stakes the center line of the trench.

6a-c. Trenching

The trenching crew uses a wheel trencher, backhoe or rock trencher to dig the pipe trench. The U.S. Department of Transportation requires the top of the pipe to be buried a minimum of 30 inches below the ground surface in rural areas. The Atlantic Coast Pipeline trench will be seven to eight feet deep. About a foot of soil would be under the 42-inch diameter pipe with another three feet of soil on top. The pipe is buried deeper in agricultural areas and at stream and road crossings.

7. Stringing pipe

At steel rolling mills, where the pipe is fabricated, pipeline representatives carefully inspect new pipe to make sure it meets industry and federal government safety standards. For corrosion control, the outside surface is treated with a protective coating.

The pipe is transported to a pipe storage yard near the project location. A stringing crew using specialized trailers moves the pipe to the right of way. The crew is careful to distribute the pipe joints according to the design plan as the type of coating and wall thickness varies based on soil conditions and location.

8. Field bending of pipe

A bending machine uses a series of clamps and hydraulic pressure to make very smooth, controlled bends in the pipe. Pipes are bent to account for changes in the route and to conform to the topography. All bending is performed in accordance with federally prescribed standards to ensure integrity of the bend.

9. Line-up, initial weld

The pipe gang and welding crew weld the various sections of pipe together into one continuous length. The pipe gang uses special pipeline equipment called side booms to pick up each joint of pipe, align it with the previous joint and make the first pass of the weld.

10. Fill & cap, final weld

The welding crew follows the pipe gang, completing each weld. Semi-automatic welding units are used along the pipeline, except at connection points and crossings, where hand-welds are required. This process follows federally adopted welding standards.

11. As-built footage

The survey crew records data regarding the length of the assembled pipeline.

12. X-ray inspection, weld repair

For quality assurance, technicians inspect the welds using X-ray technology.

13. Coating field welds

At the manufacturing mill, the majority of the pipe is coated to inhibit corrosion. A small section of each pipe end is left uncoated to prevent the material from interfering with the welding process. The coating is applied to these areas once the welding is complete.

14. Inspection & repair of coating

The pipe coating and welds are inspected one final time before being lowered into the trench.

15. Lowering pipe into trench

Operators lift the pipe and lower the welded sections into the trench. Non-metallic slings protect the pipe as it is moved into position.

16. As-built survey

The survey crew records the location of the pipeline after it is placed in the trench.

17. Pad, backfill, rough grade

Soil is returned to the trench in reverse order and the right of way is graded to final contour with the subsoil replaced first, followed by the topsoil.

18. Hydrostatic testing, final tie-in

Before the pipeline is put into service, the entire length is pressure tested using water. The hydrostatic test is one of the final construction quality assurance tests. Each section is filled with water and pressured beyond the maximum operating pressure to ensure no leaks are present and that the pipeline meets the design strength requirements.

19. Replace topsoil, cleanup, restoration

The final step in the process is restoring the land as closely as possible to its original condition.

