

## WELDING

Each of these 40 foot sections need to be welded together. The welders that do this work have special certifications and are experts in this business. Each of these welds are x rayed to ensure all welds are perfect. Once completed, each weld is coated to minimize corrosion.

## LOWERING IN

Once the welding and coating are completed the pipe is lowered into the ditch by cranes.

## AS BUILT SURVEY

Once the pipe is in place another survey is conducted. This survey is an As Built Survey. This data is plotted on our GIS system so our Engineering and Operations groups know exactly where each section of pipe, each weld, and each valve are located. This helps minimize the effort involved in locating the pipe for future maintenance activities.

## PAD AND BACKFILL

The pipe is then padded when necessary, to minimize any abrasion by sharp rocks. Then the soil is backfilled into the ditch.

## TEST AND FINAL TIE IN

There are stringent standards that must be completed for testing of the pipeline prior to tying it in to other pipelines. Generally a hydrotest is completed. This involves filling the pipeline with water and pressurizing the water for 24 hours at a pressure higher than the pipeline will ever operate at. Once the pipe passes the hydrotest, it is ready for operation.

## REPLACE TOPSOIL AND CLEANUP

Topsoil is replaced and loosened when necessary to help vegetation grow. Then the right of way is reseeded and maintained until vegetation covers the right of way.

## SAFETY

Safety is paramount to Chief Gathering. Our goal is zero accidents or injuries. To be successful, employees and supervisors are trained in all of the OSHA requirements. Safety also requires cooperation between Chief Gathering and our Contractors. Chief Gathering ensures that our contractors are aware of our Safety requirements. Chief Gathering also follows the additional safety requirements of the Department of Transportation.

## CONTRACTING LOCALLY

Chief Gathering is building a pipeline in Pennsylvania. We believe that local businesses and individuals should have an opportunity to bid on our projects whenever possible. Chief Gathering uses a competitive bid system for our projects and always tries to include at least two Pennsylvania firms for each project.

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*Opportunity Under Our Feet*

# Gathering Pipelines and Compressors



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There are currently many interstate natural gas pipelines that transport natural gas from the production fields to the markets across the northeast. These pipelines are large in diameter (from 24" to 42") and run across most of the United States. Unfortunately these pipelines are not always near the natural gas wells. In order to get the natural gas from the well to the interstate pipeline, and ultimately the consumer, gathering pipelines are necessary. Gathering pipelines are smaller diameter lines that collect natural gas from multiple wells and deliver it to a centralized point, the tap, at the interstate pipeline.

## THE GATHERING PIPELINE

Gathering pipeline is generally smaller in diameter than interstate pipelines. The size can vary from 2" to 24" depending upon the volume of gas moving through that particular section of pipeline. This pipe is generally made of steel and is buried underground in a permanent right of way. The natural gas in the pipeline is under pressure. It is this pressure which moves the gas from the wells to the interstate pipeline.

## THE COMPRESSOR STATION

The natural gas comes out of the ground under pressure, but this pressure is generally not high enough to move the gas through the gathering lines and into the interstate pipeline. In order to increase the pressure of the gas, the gas moves through a natural gas compressor engine located at a Compressor Station. There may be one or more of these engines at a station depending upon the amount of gas flowing through the station. The engines are often located inside buildings (Compressor Buildings) in order to make maintenance easier during the winter, and to minimize sound. There will be some tanks on site. Some tanks will

be used to store new, and used engine oil for the compressor engines. There may be additional tanks that store water that is removed from the gathering pipeline. In addition, there may be a glycol dehydrator. This is a device that removes excess water from the gas and makes the gas "dry" enough to be pumped into the interstate pipeline. Although the compressor stations are generally unmanned, they are generally fenced and lit in order to help maintain security. You can expect a Chief Gathering Operations individual to visit the site several times per week. Several times a year trucks will visit to deliver and pick up the oil and water from the tanks.

## THE METER STATION

The natural gas that is collected from the wells travels through the Gathering Pipeline, is compressed at the Compressor Station, and is then delivered to the Interstate Pipeline. When this gas is delivered it needs to be measured to ensure accurate accounting. This is accomplished at the Meter Station. The Meter Station is generally a small building surrounded by a fence. This site will also generally be visited by an operator several times per week.

## WHAT YOU CAN EXPECT FROM THE PIPELINE

### CONSTRUCTION PROCESS

There are multiple steps in the Pipeline Construction Process. During much of this process there will be heavy equipment performing clearing and construction activities. Once the process is complete, the area will be revegetated with local seeds and grasses. The final pipeline corridor width is generally 30 feet wide.

### RIGHT OF WAY

#### ACQUISITION AND SURVEY

Chief Gathering needs to get the natural gas from the wells to the Interstate Pipeline. The Engineering and Planning Department work hard to develop the best route connecting all of these wells to the Interstate Pipeline. Once the plan is in place, contract Right of Way agents try to get approval from landowners for the use of their property. In some cases the plan must be adjusted several times. Once landowner approval is secured, a Survey team goes out and marks the centerline of where the pipeline will be located.

### ENVIRONMENTAL PERMITTING

Once the centerline survey is completed wetlands delineators visit the site and gather information on wetlands and stream crossings. Chief Gathering tries to minimize the permanent impact to these areas. Chief Gathering takes all of this data and submits permit applications to all of the varied agencies.

## CLEARING AND GRADING

Once all necessary permits have been received and all necessary notifications have been made Clearing and Grading can begin. Heavy Equipment will be onsite and will remove trees, stumps and underbrush. Some of the trees will be removed. Some small trees and shrubs will be chipped and used onsite. Once this is completed, grading of the right of way is completed. During this whole process contractors follow all guidelines in the approved Erosion and Settlement Plan.

## DITCHING

Since the pipeline is located several feet underground ditching must occur. This is the next step. Once the ditch is completed, the bottom is padded to minimize abrasion from sharp rocks.

## STRINGING

Stringing is the process of laying out the pipe sections. The sections of the steel pipe are brought in by truck and are laid in place by a crane. The sections are generally 40 feet in length and are laid end to end.

## BENDING

Since the lines are not always straight, bending needs to be completed. The exact angles are calculated by Engineers with the survey data. A large truck mounted pipebender is used to bend the pipe to the exact measurement while on site.

