Safety Requirements For Excavation Adjacent To
Natural Gas Pipelines
ENSTAR Natural Gas Company/Alaska Pipeline Company

Safety
ENSTAR Natural Gas Company provides natural gas service through 3080 miles of gas mains to over 140,000 customers in South Central Alaska. ENSTAR's gas pipeline system is designed, installed, and maintained with the highest regard for safety in compliance with applicable federal, state, and local government statutes and regulations. ENSTAR is regularly inspected to ensure that its operation meets industry standards.


As an operator of a natural gas system, ENSTAR is required by the DOT regulations to:
1. Deliver gas safely and reliably to customers.
2. Provide qualification training and written instruction for employees.
3. Establish written procedures to minimize hazards resulting from gas pipeline emergencies.
4. Keep records of inspections and testing.
5. Test employees in safety-sensitive positions for prohibited drugs and alcohol.

Damage Prevention Law Enforcement Program
As of 1 January, 2016, standards for excavation in Alaska will be enforceable by PHMSA. The enforcement program protects the public from the risk of pipeline ruptures caused by excavation damage. Should an excavator operate in violation to 49 CFR parts 196 and 198, they may face civil and or criminal penalties under this new rule. More information about the PHMSA ruling can be found at http://www.phmsa.dot.gov/.

Pipeline Reliability
Safety is and always will be unequivocally the number one priority for the natural gas industry. The industry spends billions of dollars each year to ensure the safety and reliability of the natural gas infrastructure. Natural gas utilities are subject not only to their own stringent internal controls, but also must meet rigorous federal and state oversight. Inspections are performed regularly by PHMSA regulators to ensure that compliance is being met.

Historically, excavation damage is the leading cause of most serious pipeline failures. Over 30% of the 284 damages to ENSTAR's pipelines last year were done by excavators that failed to obtain locates. Call before you dig, it’s free and it’s the law. Calling for locates is now as simple as dialing 811 or go online to www.akonecall.com. Dialing 811 anywhere in the United States connects you with the Locate Call Center for that area. In Alaska, dialing 811 connects you with Alaska Digline Inc. Alaska Digline Inc. will take your excavation information and notify all affected utilities. Utilities have two business days to mark their utilities after receiving your call.

Pressure Classification
Natural gas is a potentially dangerous, compressible gas. Gas pipelines with the highest pressure contain the highest stored potential energy and present the greatest risk. Caution is always warranted when working around natural gas facilities. Extreme caution must be exercised whenever transmission pipelines are encountered. Contact ENSTAR Engineering Dept., (907) 334-7740 for specific instructions before working within 10 feet of any transmission pipeline.
Recognizing ENSTAR’s Pipelines

ENSTAR transmission pipelines are generally marked above ground with pipeline markers similar to the one shown. Transmission pipelines are located in the vicinity of the pipeline markers. Transmission pipelines are steel and range in size from 2” to 20” in diameter. They are typically coated with a protective coating. There is no single color but yellow and black are the predominant color while some are green or brown.

Distribution pipelines are steel, or High Density polyethylene with locate wire. These pipelines range in size from 1” diameter to 12” in diameter. Gas “Mains” are typically found in street right-of-ways or utility easements and supply the natural gas to an entire street or subdivision. Natural gas “service lines” are connected to the gas main. Service lines generally serve a single building or small group of buildings on private property. Service lines are typically ½” to 1” in diameter. Service lines can be rigid steel, steel tubing, copper or polyethylene with locate wire. Gas mains and service lines are generally black or yellow in color.

Excavation Requirements for Natural Gas Pipelines

1 **Line Locating is a Free Service:** To request a locate, dial **811** the new Nationally recognized One-Call number and you will be connected to Alaska Digline Inc. Call at least two but not more than 15 working days before the date scheduled for beginning the excavation. Hand digging is advised when excavating within 2 feet of a marked facility. After ENSTAR has field marked with yellow paint, or flagged the location of an underground facility, the excavator is responsible for maintaining the markings. **Failure to call is a violation of state statutes and federal regulations “PHMSA” could result in fines well in excess of the cost of the damage.**

2 **Support for Steel Pipeline Crossings:** If an excavation below a steel gas pipeline leaves the pipeline unsupported for a distance of more than 20 feet, the excavator must provide additional support for the pipeline. Support must be provided in a way as to not damage the pipe or its coating during construction, backfill placement, and compaction. Generally, a support spacing of 5 feet or less will provide the needed bracing. ENSTAR Engineering must approve all excavations crossing steel pipelines above 4-inch diameter. If support is required, ENSTAR engineering written approval is required prior to beginning construction. Call ENSTAR Engineering (907)334-7740 for further information. Extra care must be taken when geotextile fabric and/or rigid insulation are used. Geotextile fabric and/or rigid insulation shall be sufficiently separated from steel pipeline and in addition to continuous support under the pipeline, compacted fill material shall be placed between the geotextile fabric/rigid insulation and the pipeline (see item 8 clearance). Care shall be taken to insure stability for the ENSTAR facility. Failure to properly protect ENSTAR’s facilities could result in future damage if differential settlement occurs.

3 **Support for Polyethylene Line Crossings:** If an excavation is below a polyethylene gas pipeline the excavator must continuously support such pipeline during construction, backfill placement, and compaction. Geotextile fabric and/or rigid insulation shall be sufficiently separated from the polyethylene gas pipeline to prevent undue stress during the compaction/settlement process. (see item 8 clearance)

4 **Excavation Parallel to Pipeline:** Whenever an excavation (horizontal or vertical) is performed within 5 feet of a distribution pressure pipeline and 10 feet of a transmission pressure pipeline, the gas pipeline must be exposed to visually determine the exact location. When parallel excavations are expected to expose or undermine sections of pipeline, the excavator must notify ENSTAR engineering in advance. Care must be taken not to damage the pipeline, or to induce stresses due to differential settlement following construction. **Long parallel excavations exposing pipelines can be very dangerous if not properly performed and shall**

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### Pressure Classification

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<thead>
<tr>
<th>Transmission Pressure</th>
<th>Over 100 psi</th>
<th>Steel</th>
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<tbody>
<tr>
<td>Distribution Pressure</td>
<td>100 psi and under</td>
<td>Polyethylene, Steel, Copper</td>
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not be attempted without prior approval by ENSTAR. Unless otherwise approved by ENSTAR engineering, all excavations parallel to a gas pipeline shall be exposed at intervals no greater than every 25 feet to visually determine the pipeline’s exact location. Contact ENSTAR Engineering at (907)334-7740 for additional information.

5 Blasting: All blasting that is to be done within 500’ of any Company Facility, shall be reviewed by an ENSTAR engineer, with the person performing the blasting and appropriate measures, (i.e. require minimum distance from facilities, minimize blasting charge intensity, etc.) shall be taken to protect the integrity of the Company’s Facilities. A leak survey shall be performed before and after any blasting activity, which is within 500’ of any Company Facility. The leak survey zone shall include all Company Facilities within 500’ radius of the blasting.

6 Trenchless Excavation (Vertical or Horizontal): Whenever a trenchless excavation (horizontal or vertical) is performed within 5 feet of a distribution pressure pipeline and 10 feet of a transmission pressure pipeline, the gas pipeline must be exposed to visually determine the exact location. If the trenchless excavation is expected to cross the pipeline within the aforementioned distances, the pipeline in question shall be fully exposed to a minimum of 1 foot beneath the pipeline prior to the expected crossing to ensure that the pipeline is not unduly damaged due to ground movement in the immediate vicinity of the pipeline. When performing a trenchless excavation parallel to a gas pipeline, the gas pipeline must be exposed at intervals of 25 feet or less to visually determine the pipeline’s exact location. Trenchless excavation is defined as drilling, directional drilling, boring, pile installation etc.

7 Clearance: Natural Gas pipelines require a 12 inch minimum separation from other underground structures not associated with ENSTAR’s pipeline system. Additional clearance from other underground structures may be required to allow proper maintenance and reduce the possibility of damage due to the proximity of other structures (49 CFR § 192.325.) This clearance requirement includes rigid insulation and geotextile fabrics. ENSTAR requires a 36-inch minimum separation from certain electrical facilities, including any grounded components i.e. ground rods, non-insulated conductors and associated structures.

8 Pipeline Cover: ENSTAR pipelines in public rights-of-way are generally installed with 36 inches to 48 inches of cover, and in private rights-of-way with 12 inches to 36 inches of cover. Projects that decrease cover or increase cover in excess of 60 inches must receive prior approval from ENSTAR Engineering Department (907)334-7740. ENSTAR has limited ability to prevent the removal of cover over gas pipelines. Increasing pipeline cover more than 5 feet or decreasing pipeline cover to less than 3 feet may be considered a damage that may result in relocation of the gas pipeline at the expense of the Excavator. The depth of cover listed above cannot be assumed after installation. The excavator is responsible for any damage to ENSTAR pipelines regardless of the depth at which they are encountered.

9 Inspection/Standby Requirements: All excavations in the immediate vicinity of ENSTAR Natural Gas facilities (including backfill, compaction, temporary support, and shoring), is subject to prior approval and inspection by ENSTAR personnel. Transmission pipeline inspections are provided whenever an excavator is working within 10 feet of a transmission pipeline. If it has been determined that there was excavation either by hand or machinery within 5 ft. of ENSTAR Natural Gas Distribution mains or 10 ft. from ENSTAR Natural Gas Transmission Pipelines without either locates or standby (qualified ENSTAR personnel), ENSTAR Natural Gas reserves the right to excavate to determine if there has been any damage to ENSTAR Natural Gas facilities. If damage has occurred ENSTAR Natural Gas has the right to charge the excavator for repairs.

10 Landscaping: Most landscaping activities require locates, and when it is determined that landscaping activities are within 5 feet of a distribution pipeline, or 10 feet of a transmission pipeline, Inspection/Standby requirements as listed above are applicable. Planting of trees and shrubs over existing pipelines is not permissible and can present a safety and reliability hazard to the pipeline.

**Pipeline Components**

**Pipe Wall Protection**

Dents, scrapes, gouges and scratches reduce pipeline wall thickness and affect the safety of the facility in two ways. First, the reduced wall thickness decreases the pressure at which the pipeline can safely operate. Second, the damage serves as a stress concentration that can cause a future brittle failure of the
pipeline. An ENSTAR representative must inspect each dent, scrape, gouge or scratch, no matter how small, before it is reburied.

Corrosion Protection
ENSTAR’s steel pipelines are protected from corrosion by a dielectric coating and an impressed current or galvanic anode cathodic protection system. Direct contact with metallic objects (a short) or removal of the protective coating can compromise this system. Contact the ENSTAR Engineering Department (907)334-7740, whenever coating damage or a short is encountered. An ENSTAR representative must inspect each short or section of damaged coating before it is reburied.

Locate Wire Protection
ENSTAR’s polyethylene pipelines are installed with a parallel copper wire, which is used to locate the pipeline. If the locate wire or wire coating is damaged, ENSTAR’s ability to properly locate the pipeline may be severely compromised. Electrical continuity must be maintained. An ENSTAR representative must inspect and/repair each possible locate wire damage before it is reburied, accidental locate wire damage repair is free of charge.

Service Line Excess Flow Valves
An Excess Flow Valve (EFV) is a safety device installed in a natural gas service line near the gas main that is designed to automatically shut off the flow of natural gas in the event that the service line is broken. Effective February 12, 2010, all gas companies nationwide are required to install an EFV in any newly installed service line that serves one single family dwelling.

What does this mean to you as an Excavator?
Should you damage a natural gas service line that has an EFV, the gas will blow for a short duration and shut off automatically if the flow of gas is sufficient to close the EFV. Damages that do not sever the service line completely may not cause the EFV to close and the gas will continue to blow. Regardless, you must report all damages to ENSTAR immediately. EFVs are designed to allow a small amount of “bleed-by” so they can be reset without excavating the gas main. Backfilling a damaged service line with gas bleeding underground is extremely dangerous and could fuel an explosion if it is not repaired timely. Do not assume a damaged service is dead or abandoned if it is not blowing gas. The EFV may have shut down the flow of gas. Report all damages immediately by calling (907)277-5551.

Please remember that the vast majority of ENSTAR service lines WILL NOT have an EFV. Should you damage a service line without an EFV, gas will blow at full line pressure until ENSTAR can arrive to shut it off. Your best protection against damaging underground utilities is to call 811 for locates and hand dig within 2 feet of the locate marks.

What to do if You Damage a Gas Line or Smell Gas
If you damage a pipeline facility, call ENSTAR’s 24-hour dispatch number at (907)277-5551 or 1-844-Smell-Gas (1-844-763-5542). Call ENSTAR any time a gas line is broken, scraped, pulled, cut or otherwise damaged. If the damage results in a release of natural gas and there is a danger to life and/or property, immediately call 911 from a gas-free area. If it can be done safely, eliminate all ignition sources and evacuate the area of the damage. Wait for an ENSTAR representative/crew to shut off the flow of gas and make repairs.

Gas lines that have been pulled, stretched, kinked or bent could be damaged underground away from where the line is connected. If you pull or stretch gas lines call ENSTAR at (907)277-5551 and an ENSTAR Representative will investigate for possible underground leakage.
Qualified Personnel Requirements

Only qualified individuals meeting all applicable requirements may perform work on ENSTAR Natural Gas Company facilities. At a minimum, such individuals must comply with applicable federal, state and local regulation, statutes, and ordinances.

Additional pipeline information can be found on the following websites:
PHMSA/DOT  http://primis.phmsa.dot.gov/comm/Index.htm
Common Ground Alliance  http://www.commongroundalliance.com
Pipeline 101  http://www.pipeline101.com

For further information about ENSTAR, visit our web site @ www.enstarnaturalgas.com