

**Guidelines for safe working in the vicinity of high-pressure
gas pipelines**

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1 BACKGROUND

The risk related to gas transmission pipelines is very low. However, damaging pipelines as a result of works in the close vicinity can be dangerous. Incidents caused by external interference are characterized by potentially severe consequences and are the greatest risk to public safety. Such incidents could lead to negative publicity, criticism of stakeholders and local authorities on safety for future activities, public protest campaigns delaying operation start of new pipelines and high technical demands and costs on pipeline construction.

These guidelines provide high level general requirements for a safe execution of works near high pressure gas pipelines.

2 DEFINITIONS

Term	Meaning
Excavation operation	Any operation using non-mechanical or mechanical equipment in the movement of earth, rock or other material below existing ground level. This includes, but is not limited to, augering, digging, ditching, dredging, drilling, driving-in, trenching and tunneling.
Mechanical equipment	Any powered excavator or any other device that has the capacity to damage the pipeline.
Contractor or excavator	Individual or other entity including homeowner executing excavation operations with mechanical equipment.
Third-party damage	Third-party damage includes outside force damage to underground pipelines that can occur during excavation activities and is caused by someone other than the pipeline operator or its contractors
Pipeline operator	Any person, company or entity which operates or controls the operation of a pipeline

3 GENERAL REQUIREMENT FOR EXCAVATION OPERATION

It is not allowed to dig with mechanically powered excavators within a predefined distance of a pipeline without supervision of the pipeline operator or its representative. The predefined distance can vary for each pipeline operator, but is quite often 3 m, as shown in the example underneath.

Some pipeline operators prohibit all mechanical excavations close to the pipeline (e.g. 0,5 m) and allow only manual excavation within this distance.

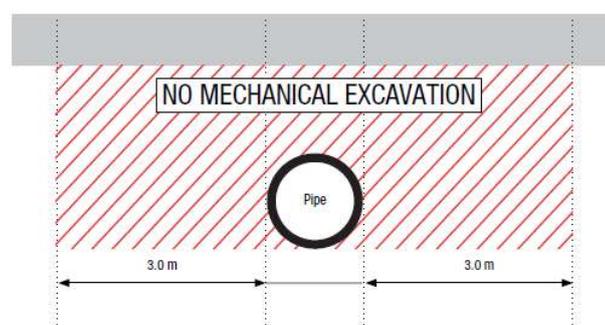


Figure 1 Example of predefined safety distance

- In case of trenchless drilling, a predefined minimum distance (5 meter for some operators) from the gas pipeline shall be kept.
- Due to the higher potential of toothed excavator buckets to damage pipelines, toothless buckets shall be preferred.
- It is recommended to uncover manually any fittings, attachment or connecting pipework on the pipeline.
- In some cases, and always when the excavation works cross the pipeline, "test" trenches need to be excavated to determine the exact location and depth of cover of the pipeline. Where "test" trenches in an area have been completed and the pipeline located, mechanical excavation may take place provided the following procedures are used:
 - Mechanical excavation without supervision must not be performed closer than a predefined distance in any direction to the pipeline.
 - Excavating within the predefined distance to the pipeline must always be supervised by the pipeline operator.
 - Excavation in close proximity to the pipeline must be carried out with manual tools; using a suction excavator is a good alternative.
- The working area shall be well prepared and special care shall be given to stable positioning and operation of heavy equipment, in such a way that a) the weight of the equipment does not burden the ground above the pipeline and b) equipment or materials cannot drop on the pipeline.
- Other, crossing and parallel positioned underground infrastructure shall be clearly identified and protected.
- It is forbidden to place equipment or store building material above pipelines without additional protection. Soil settlement shall be avoided when driving heavy trucks or heavy equipment above a pipeline
- Lifting heavy loads above the pipeline shall be avoided. Lifting heavy loads shall be in accordance to a well-considered and properly authorized lifting plan.
- In case of trenchless drilling, a larger minimum distance (e.g. 5 meter) from the gas pipeline shall be kept.

4 GENERAL REQUIREMENTS FOR CONTRACTOR OR EXCAVATOR

Mechanical excavation is not allowed around pipelines unless explicitly permitted and under the conditions stated by the pipeline operator!

- Prior to any work on site the contractor shall identify any existing gas pipelines.
- The contractor shall contact the pipeline operator prior to excavation when the proposed excavation is within a specified distance from a high-pressure gas pipeline. This can be done via the "one-call" system if that is operational in the area.
- When announcing the excavation plans to the pipeline operator, the contractor shall provide relevant information describing the location where the work will take place, the expected date and time when the work will begin, the scope of the work, the nature of the work, the expected duration, the name address and telephone number of the

contractor, and the name of the contractor site representative. This can also be done by a “one-call” system.

- Before any work starts, the contractor shall ensure adequate contact (like in a toolbox meeting) with the pipeline operator in which the work is clarified, appointments and agreements can be made and directions and guidelines can be acquired. All appointments, agreements, guidelines and directions shall be confirmed in writing.
- The contractor shall ensure that necessary permits, approved by pipeline operator, have been obtained.
- The contractor shall always comply with the requirements of the pipeline operator safety rules and will give the pipeline operator the possibility to supervise the activities.
- The contractor shall not excavate outside the area covered by the permit.
- The contractor shall not damage the cathodic protection system. Often cables are located near the pipeline.
- It is forbidden to lift heavy loads above the pipeline without precautions.

5 GENERAL REQUIREMENTS FOR PIPELINE OPERATOR

- The pipeline operator shall provide information about the location of the pipeline using labeled stakes, flags, and/or highly visible paint marks continuously or at regular intervals on the surface. The markings should clearly indicate the center line of the gas pipeline and the boundaries of underground installations (like valve stations), where applicable, in the defined area of the proposed excavation.
- When requested by either party, the contractor and the pipeline operator representative shall meet on site to confirm details of the excavation and the location of the pipeline and to secure their agreements in writing.
- The pipeline operator shall notify the contractor if he has no pipelines or other installations within the defined work area. This can be done via the “one-call” system.
- The pipeline operator representative is required to assess whether supervision is necessary during excavation and backfilling activities around the pipeline. The need or absence of the need for supervision is secured in writing.

6 GENERAL REQUIREMENTS FOR BACKFILLING TRENCHES

Where trenches are to be backfilled, the following requirements should be followed:

- No backfilling should be undertaken without pipeline operator agreement to proceed unless otherwise agreed (e.g. at shallow excavations above a pipeline with a large depth of cover).
- Backfilling is not allowed while any damage to the pipeline or its coating has not yet been repaired.

7 DAMAGE TO GAS PIPELINES

In case of damage, even without gas leak, the following precautions shall be taken immediately:

- Shut down all plant and machinery and extinguish any potential sources of ignition.
- Evacuate all personnel to a safe distance (taking into account the possibility of a delayed gas release) from the affected location.
- Notify the pipeline operator dispatching/control room using emergency number.
- Notify the pipeline operator responsible person.
- Ensure no one approaches the affected location until the situation is declared safe by the pipeline operator.

If only the pipeline coating has been damaged, the pipeline operator shall also always be notified.

8 CONCLUSIONS

The risk related to gas transmission pipelines is very low. However, damaging pipelines as a result of works in the close vicinity can be dangerous.

Good working practices of both contractors and pipeline operators and especially **good communication between the parties involved**, will keep the safety level well within acceptable limits.

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