
PIPELINE BACKFILL PROCEDURE

PURPOSE

To provide a pipeline backfill procedure for personnel and representatives to use on completing excavations of client in-service pipelines.

This procedure is only a guideline and must be approved by clients in writing prior to implementation. Client Procedures or Standards must always take precedence and be adhered to.

PRECAUTIONS

The stated precautions must be adhered to during all work.

1. Do not start or continue work without:
 - a. A competent hoe operator
 - b. A hoe with responsive controls
 - c. A competent guide
2. The operator must be familiar with the machine, experienced in excavation work, skilled in operating a backhoe and readily follows directions. Hoe controls have to be precise; erratic or slow response will make any operator ineffective and represents a risk that cannot be tolerated. In addition, the operator and guide must be familiar with and consistently use standard hand signals as a communication tool whenever the hoe is operated near the pipeline
3. A client representative will be in close proximity of the dig site for backfilling and while heavy equipment is operating within 600 mm of the line
4. All Tools and Materials shall be removed from the excavation
5. The operator shall separate frozen lumps, rocks and debris from the spoil pile to ensure select fine fill is used for backfill around the pipeline

Personnel

Supervisors, Employees, Client Personnel

Responsibilities

A. Client Personnel

Ensure all parties at the work site are familiar with the procedure and all precautions are reviewed during the job planning stage.

Ensure all client procedures have been reviewed and that the pipeline work activities in the excavation are completed.

Review any unique circumstances with the excavation site and address specific procedures with all personnel.

Monitor all activities to satisfy that the procedures are being followed, that appropriate support is achieved and no damage occurs to the pipeline during the backfill operations.

B. Supervisors

Review and document work practices through the job to ensure adherence with this procedure and Provincial regulations.

Review all the applicable regulations (OH&S, etc.) prior to beginning the backfill work.

Hold an on-site safety meeting to outline the work and precautions.

C. Construction Crew

Review excavation site including the span of the excavation as identified in the excavation procedure. If required, provide additional support with sand bags/ foam pillows or other owner approved materials to ensure the maximum unsupported length as outlined in the excavation procedure continues to be maintained:

Maximum unsupported distances guidelines for pipe are as follows:

- 16" - 24" Diameter 8m (Max. Unsupported)
- 10" - 12" Diameter 7m (Max. Unsupported)
- 8" Diameter 6m (Max. Unsupported)
- 4" - 6" Diameter 5m (Max. Unsupported)

Additional support for the pipe section to reduce the maximum unsupported distances above will need to be considered where fixtures such as stopples, long or multiple sleeves, fittings, or valves are in the excavated area. Owner guidance (contact Plains' Engineering Group) will need to be obtained when an above-mentioned fixture or any other fixture is encountered upon excavation or installed after excavation.

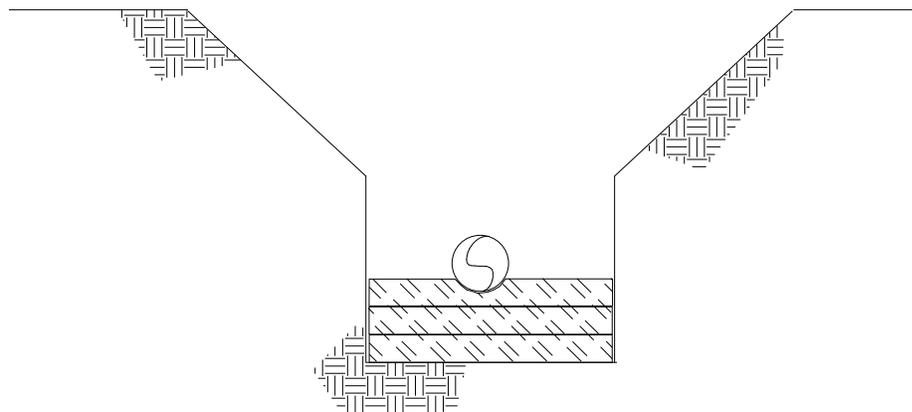
Where possible in winter conditions minimize the time the excavation is open and spoil pile has the opportunity to freeze

The operator shall segregate to the degree possible all frozen lumps/rocks and unsuitable fill from the spoil pile for the final portion of the backfill. Large rocks will not be backfilled into the trench, frozen lumps will be broken up by the excavator into smaller pieces prior to placement in the trench.

The operator will begin to spread and place the fine materials gently into the trench beneath the pipe in 12" lifts.

At each lift the operator will use the back side of the bucket to compact the material evenly until the bottom of the ditch is close to the bottom of the pipe.

The operator will then place additional material along the side of the pipe and then push and pull the soil lift with the bucket to force the material under the pipe for support.



Additional 12" lifts will be placed and compacted around the pipe until the backfill is a minimum of 30cm over the pipe.

Once the pipe is covered by a minimum of 30 cm, less select fill or frozen materials may gently be placed into the ditch and compacted to complete the backfill.

The area will be compacted using the excavator tracks going back and forth, known as track packing.

Topsoil as necessary will be spread on to the excavation with final grading and levelling.

Special Considerations

Backfill of unusual excavations such as roads, driveways or future traffic areas may require additional measures to ensure appropriate compaction is achieved.

Consultation with the owner will develop site specific requirements for backfill including the potential use of ditch tampers, or packers or the use of materials such as Fillcrete for compaction support.