HEALTH, SAFETY & ENVIRONMENTAL MANUAL	11.5 Working Near Underground Utilities Program					
	Initial HIRA Score:	15	Residual HIRA Score:	10	Critical Task: **Yes**	
	Procedures: **12.11.5**					
	Revision Number: **R0**		Number of Pages: **6**			
	Revision Date:	Approval Date: 10/01/2024	Effective Date: 10/01/2024		SIGNATURE:	

Working near Underground Utilities

General

- All underground utilities in the area of excavation must be located and marked prior to work commencing.
- Operators must complete "**Pre and Post Dig Assessments.**"
- Ensure valid locates are always with the operator during excavation.
- Ensure all workers involved understand the locates provided to them.
- If you find an error or an unidentified utility STOP work immediately and notify J-AAR supervision.
- While the excavation is open, utilities must be supported, protected, or removed as required to protect workers.
- Workers have been subject to serious injury or death when buried utility lines are damaged by:
  - digging without locates;
  - careless excavation once the utilities have been located and marked;
  - not getting new locates when paint/flags are missing or locates expire;
  - failure to properly support exposed utilities once they have been exposed

Note: Breaks in buried services threaten not only workers but also the general public.

Locates

Before any excavation can begin, locates for services and utilities must be acquired by the operator and reviewed:

- The utility shall provide information using labeled stakes, flags, and/or highly visible paint marks continuously or at regular intervals on the surface of the ground. The markings must clearly indicate the centre line of the utility line and the limits of underground structures in the defined area of the proposed excavation.
- The utility shall also provide a diagram describing the locate information. The diagram must indicate in clear legible terms the locate information including additional clarifications, dimensions from fixed objects, orientation, and any unusual depths, if known.
- The ground markings must match what is indicated on the locate drawing. Do not excavate if there is a discrepancy.
- Locates must be valid, not expired, and available onsite for the area of excavation. DO NOT excavate in any area without a valid locate or ground marks.
- Some areas may have other utilities that exist beyond those identified on public locates, such as existing commercial or industrial sites. Check with the owner or general contractor to see if private locates are available or needed.
- Remember that sites where temporary utilities may be installed, locate sheets may be unavailable (i.e. tower crane power supply cables). Always check with the site supervisor prior to digging to ensure your excavation location is clear.

- Most locate sheets expire. Read the date information on the sheet carefully.
- To ensure current locates are always available, the office will review and refresh the digital "OneDrive" files daily. This ensures that supervisors always have access to the most up-to-date files for any project or worksite needed.
- Supervisors must request new or missing locates as needed.
- Read the locates carefully to see what utility has been located and marked.
- Flags or markings may disappear or be displaced. Where the locate markings become unclear, a new locate must be requested.
- When excavating around utilities, leave the painted/flagged locate marks in place as long as possible.
- A locate can be called in on the phone as an "emergency", which is only appropriate when life threatening conditions exist. The locaters will respond immediately to the site and require somebody to meet them on site.
- A locate can also be called in on the phone as "priority zero" or "single ticket". These locates cannot be renewed and are a one-time locate only. They are suitable for urgent requests for one-time work, that is NOT life threatening. These locates turn around in 1-3 days on average. A site meeting may not be required for this.
- J-AAR supervisors must ensure that the operators have current copies of the locate sheets for all the necessary services and utilities in their excavation zone, however it is also the responsibility of the operators to request copies of the locate sheets, if they have not received them.
- Copies of the current locate sheets must be available on-site while excavating.

Note: If there is any doubt as to the location of the utility, locates that are not clear, exposed utilities not shown on the locates, or any other issue, STOP work and call the utility company for help.

Initial Locate Exposure Guidelines

Please refer to Section 228 of the Construction Regulations and the "Guideline for Excavation in the Vicinity of Utility Lines" booklet from the ESA and TSSA. The guidelines give instructions for digging around and uncovering services and utilities as outlined below.

Boundary Limits = the volume of soil contained by vertical planes placed 1 metre each side of the centre line of the marked utility line or 1 metre on either side of the marked limits of the underground structure.

- At no time will a machine be used to dig within the boundary limits of the locate without firsthand digging test holes.
- Hand dig test holes to determine exact centre line and depth of cover.
- When the excavation is parallel and within the boundary limits of the utility, expose the utility line by hand digging a series of test holes along the entire route at regular intervals. The test hole separation shall not exceed 4.5 metres.
- Test holes may be dug by one of the following methods:

a) Machine may dig test holes immediately outside boundary limits and then hand dig laterally (across) until the utility is found;
b) A combination of hand digging and machine digging as follows;
   - Hand dig between the boundary limits in cuts of at least 0.3 metre (1 foot) in depth;
   - Machine could then be used to widen the hand dug trench to within 0.3 metre of the depth of hand digging. Repeat steps until utility is found.

Union Gas - Line Support Procedures

Prior to trenching beneath a pipeline or service, temporary support shall be erected for pipelines if the unsupported span of pipeline in the trench exceeds the length indicated in Table 12.5.1.

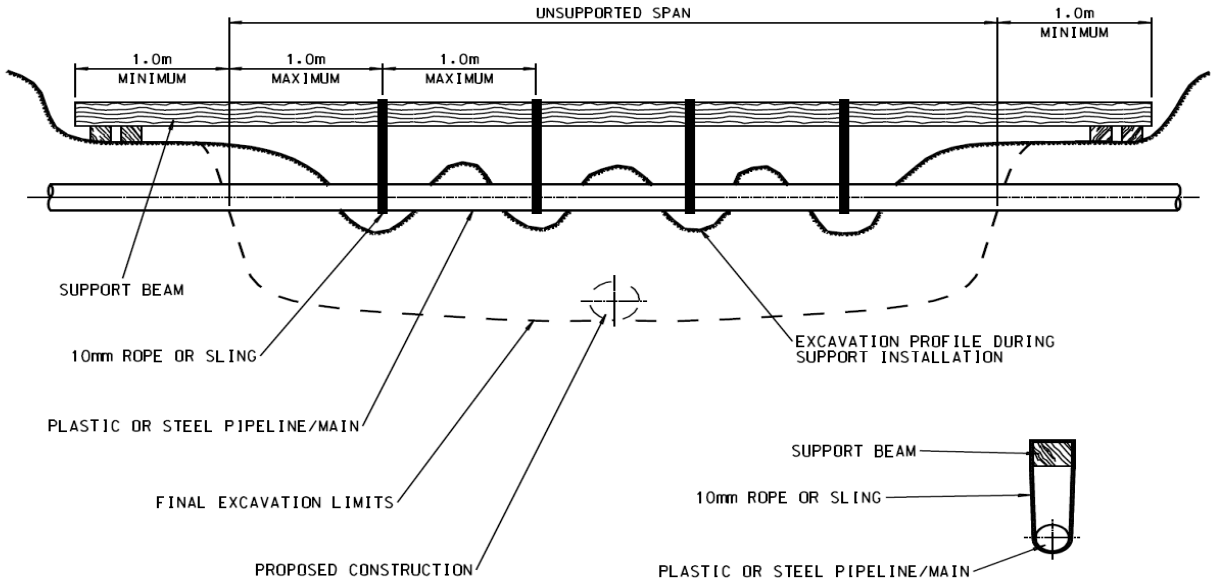
Table 12.5.1: Maximum Span Without Support Beam

Pipe Size (NPS)	Steel (m)	Plastic (m)
1/2	-	1
3/4 - 1 1/4	2.5	1.25
2	3	1.5
3-4	4.5	1.75
6	6	2
8	7	-

When temporary support is required, Table 12.5.2 indicates the required beam for a given span. The beam shall be a continuous length grade No. 1 Spruce-Pine-Fir (S-P-F) or equivalent (e.g., steel I-beam). For spans exceeding 4.5 m, contact Pipeline Engineering, Chatham Corporate for approval.

Table 12.5.2: Support Beam Sizes

Pipe Size (NPS)	Steel	Plastic	
	≤ 4.5 m	≤ 2 m	≤ 4.5 m
1/2 - 2	4x6	4x6	6x8
3 - 6	n/a	6x6	8x8



The beam shall be placed above the pipeline with the ends of the beam resting on firm undisturbed soil. The beam shall not bear directly on the gas pipeline. The pipeline shall be supported from the beam with rope or sling in a manner that will prevent damage to the pipeline and pipeline coating, and eliminate sag. The spacing between the ropes or slings shall not exceed 1.0 m (see Drawing 12.5.1 for further details).

Gas lines

The mandate of the Ministry of the Environment, Conservation and Parks (MECP) is to protect the environment and human health. Therefore:

- a strike or hit to a natural gas line can cause a release of natural gas to the atmosphere. This release is considered a **spill** to the natural environment as defined under the *Environmental Protection Act*.
- releases of natural gas can cause impairment to the natural environment, can have human health impacts, and can cause immediate harm or injury to persons.
- the Ministry enforces compliance with legislative requirements under the *Environmental Protection Act.* Legislative requirements include the duty to report spills to the natural environment; and the duty to mitigate and restore any impacts from spills.
- it may also be an offence under the *Environmental Protection Act* if a spill from a natural gas line results in an adverse effect. This may include harm to a person, impacts to their health, damage

to property or loss of the normal use of property, or if the spill of natural gas interferes with the normal conduct of business.

When is the MECP likely to get involved?

The ministry uses a risk-based approach to assess incidents and determine the appropriate level of ministry involvement. Incidents are evaluated on a case-by-case basis. The ministry is likely to be involved when incidents result in medium or major impacts to human health and safety, the local community where the spill occurred, and the environment. Some examples include:

- A fatality or serious injury that results in hospitalization.
- A fire or explosion.
- Widespread evacuation; or evacuation of a sensitive location such as a day care, school, or a retirement home
- The pipeline directly serves a municipal water/wastewater treatment facility, industrial facility, or compressor stations.
- Third-party property damage.
- Local businesses being required to close due to evacuations.
- Significant road closures that impact the community and flow of traffic.

MECP response to an incident:

- Spills Action Centre will notify the Technical Standards and Safety Authority
- Spills Action Centre will also seek confirmation from the utility company that work is underway to address the spill as quickly and practicable as possible.
- An Environmental Officer may contact the responsible parties to obtain information and use the appropriate compliance tools to ensure corrective actions are taken.

A response to an incident by an Environmental Officer does NOT mean an investigation will automatically occur.It shall be the responsibility of J-AAR management to ensure that MECP notifications are completed, if required.

Watermain Work

The protection of municipal drinking water is a top priority when working with and connecting to existing watermain structures. J-AAR employees must strictly follow all provincial and municipal regulations and procedures.

Water systems can only be operated by authorized and appropriately licensed personnel.

To be clear, employees of J-AAR or their subcontractors are not permitted to operate water valves or any other components of the drinking water system at any time. Only authorized municipal or appointed personnel may operate drinking water systems.

Typically, watermain work requires trenching and/or work in confined spaces. Safe work procedures are outlined in this Manual for those tasks.

When installing watermain sections and devices, follow all manufacturer instructions, including torque specs and bolt patterns.

Pressurized Watermains

Because of the high risk and potential injury hazards related to working on live or pressurized watermains, the following policy will be strictly enforced.

J-AAR's policy is that NO work is allowed to be conducted on live or pressurized watermain systems unless direct approval has been given. Approval will come from Top Management.

Workers must get approval from their supervisor for any work on live watermains and Supervisors must get approval from Top Management.

Procedure When Damage Occurs

(taken from the ESA and TSSA "Guideline for Excavation in the Vicinity of Utility Lines")
If damage to the utility line occurs, including damage to the coating, the Excavator shall

- leave the utility line exposed,
- barricade the area
- contact the utility immediately

If gas is escaping from a gas pipeline:

- shut off vehicles or equipment
- remove or extinguish all ignition sources
- barricade the area off, and keep public and workers away
- Call 911 and the Gas utility immediately. No attempt will be made to control the escaping gas

If there are any flames or sparks originating from the exposed electric distribution line or other works:

- barricade the area off, and keep public and workers away
- Call 911 and the Local Electric Distribution utility immediately.

Note: In no case shall the Excavator attempt to control or make repairs to the damaged utility line or equipment. **Note**: J-AAR Supervisors must immediately report all utility strikes and damage. Record the details on the HCSS Incident Report the same day.