 <p>J-AAR EXCAVATING HEALTH, SAFETY & ENVIRONMENTAL PROGRAM</p>	Section: Safe Job Practices and Procedure – Underground Hazards and Locates						
	Initial HIRA score		15			Residual HIRA score	5
	Critical Task?	No	Location(s)	Jobsites		REVISION # 1	
	Description		Working around underground utilities			# OF PAGES:	7

SAFE WORK PRACTICES


General

- All underground utilities in the area of excavation must be located and marked prior to work commencing
- Ensure valid locates are with the operator at all times 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

Locates

Before any excavation can begin, locates for services and utilities must be acquired by the operator and spotter 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 should 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 should indicate in clear legible terms the locate information including additional clarifications, dimensions from fixed objects, orientation, and any unusual depths, if known.
- 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/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.

 <p>J-AAR EXCAVATING HEALTH, SAFETY & ENVIRONMENTAL PROGRAM</p>	Section: Safe Job Practices and Procedure – Underground Hazards and Locates						
	Initial HIRA score		15			Residual HIRA score	5
	Critical Task?	No	Location(s)	Jobsites		REVISION # 1	
	Description		Working around underground utilities			# OF PAGES:	7


- Most locate sheets expire. Read the date information on the sheet carefully. To ensure current locates are always available, the office will request new locate sheets every 30 days to 90 days as required. Please ensure that your locates are valid. Supervisors must request new 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 and labourers/signallers 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 and labourer/signallers to request copies of the locate sheets, if they have not received them.
- Copies of the current locate sheets must remain on-site at all times.

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.

 HEALTH, SAFETY & ENVIRONMENTAL PROGRAM		Section: Safe Job Practices and Procedure – Underground Hazards and Locates					
		Initial HIRA score		15		Residual HIRA score	5
		Critical Task?	No	Location(s)	Jobsites	REVISION # 1	
		Description		Working around underground utilities		# OF PAGES:	7


- At no time should a machine be used to dig within the boundary limits of the locate without first hand 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.

Digging and Excavating

- Operators who are digging in the vicinity of the utility must complete the “**Pre-Dig Hazard Assessments**” as part of their daily equipment inspection. The pre-dig assessment will be reviewed by the supervisor before digging starts.
- Mechanical excavation must not be used closer than 0.3 metre (1 foot) in any direction to the utility line.
- Excavation within 0.3 metre (1 foot) in any direction of the utility line must be carried out by hand digging.
- Operators use a signaller if needed. Ask your supervisor for help. Stop if you cannot see the utility line or safely dig near it.
- Use proper support procedures for the utility line. **See Union Gas example below.**
- If the utility is in clay or heavy soils, use caution. As soil is removed, undermining, or shifting of the utility line may occur.


Hydro Vac Trucks

- If using a hydro vac truck onsite for any excavation, valid locates for that area must be available. Hydro Vac trucks cannot be used without valid locates.
- Once a utility has been exposed, but may be buried again, mark/flag/stake the utility so its location is clearly visible.

 <p>JAAR EXCAVATING HEALTH, SAFETY & ENVIRONMENTAL PROGRAM</p>	Section: Safe Job Practices and Procedure – Underground Hazards and Locates						
	Initial HIRA score		15			Residual HIRA score	5
	Critical Task?	No	Location(s)	Jobsites		REVISION # 1	
	Description		Working around underground utilities			# OF PAGES:	7

JOB HAZARD RISK ASSESSMENT

Initial HIRA Score	Hazards	Controls	Residual HIRA Score
15	Lack of Documentation (locates)	<ul style="list-style-type: none"> Ensure valid locates are available and work is taking place within the located area 	5
15	Lack of Communication	<ul style="list-style-type: none"> Ensure workers involved understand the locates Ensure labourers and operators have pre-established means of communication 	5
15	Lack of Training	<ul style="list-style-type: none"> Ensure all equipment is operated by competent workers Ensure equipment inspections are carried out everyday Do not use mechanical excavation in locate boundaries Use non-intrusive methods of excavating 	5
15	Located utilities not marked	<ul style="list-style-type: none"> Ensure locates are valid and marked 	5
15	Unstable or live utilities	<ul style="list-style-type: none"> If a utility may pose a hazard, the service should be de-energized by an authorized person Ensure all underground utilities are protected, supported, or removed in order to keep workers safe 	10

 <p>J-AAR EXCAVATING HEALTH, SAFETY & ENVIRONMENTAL PROGRAM</p>	Section: Safe Job Practices and Procedure – Underground Hazards and Locates						
	Initial HIRA score		15			Residual HIRA score	5
	Critical Task?	No	Location(s)	Jobsites		REVISION # 1	
	Description		Working around underground utilities			# OF PAGES:	7

SAFE WORK PROCEDURES

Planning

1. Ensure valid locates are on site
2. Ensure all workers involved in the task are competent for the work assigned to them
3. Ensure all equipment and PPE required is available
4. Inspect all equipment and PPE. If anything is found to be defective, tag it and remove from service immediately
5. Complete a task specific hazard assessment. Ensure all controls identified are implemented before beginning work
6. Complete a J-AAR excavation permit if required
7. Ensure jobsite is secure and not a hazard to the public.

During the task


1. Review locates with relevant workplace parties
2. Locate centre line of utility
3. Ensure the operator has a copy of locates in the cab
4. Communicate with nearby workers/spotters
5. Support/protect/remove all utilities as required

If un-located utilities or damaged utilities are discovered

1. Stop all related work
2. Contact J-AAR supervision immediately. They will assess and document the situation

Completion

1. Ensure all equipment/tool/material are safely stored
2. Housekeeping as required

 HEALTH, SAFETY & ENVIRONMENTAL PROGRAM	Section: Safe Job Practices and Procedure – Underground Hazards and Locates						
	Initial HIRA score		15			Residual HIRA score	5
	Critical Task?	No	Location(s)	Jobsites		REVISION # 1	
	Description		Working around underground utilities			# OF PAGES:	7

Union Gas Notes:

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

 HEALTH, SAFETY & ENVIRONMENTAL PROGRAM		Section: Safe Job Practices and Procedure – Underground Hazards and Locates					
		Initial HIRA score		15		Residual HIRA score	5
		Critical Task?	No	Location(s)	Jobsites	REVISION # 1	
		Description		Working around underground utilities		# OF PAGES:	7

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).

