HEALTH, SAFETY & ENVIRONMENTAL MANUAL	12.11.10 Trenches and Excavations – Critical Task Procedure				
	Initial HIRA Score:	20	Residual HIRA Score:	10	Critical Task: **Yes**
	Program: **11.10**				
	Revision Number: **R0**		Number of Pages: **5**		
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CRITICAL TASK PROCEDURE

Procedures

Planning

- Ensure valid locates are on site. Have a plan to support any utilities in the trench or excavation.
- Ensure all workers involved in the task are competent for the work assigned to them.
- Ensure all equipment and PPE required is available.
- Inspect all equipment and PPE. If anything is found to be defective, tag it and remove from service immediately.
- Operators complete the Daily Pre and Post Dig Permits. Ensure all controls identified are implemented before beginning work.
- Ensure worksite is secure and not a hazard to the public.
- Supervisor must plan for proper sloping methods or use of trench boxes.

During the task

- Post “Danger Due To” signs as required.
- Install modular fencing where required for public way protection.
- Ensure trench boxes or other protection devices are used as necessary throughout the operation.
- Maintain any stamped drawings onsite throughout the duration of work
- Ensure secure and safe means of access and egress. Install ladders in trench and trench box as needed.
- Ensure a site-specific material storage and staging plan is implemented.
- Ensure trenches are kept reasonably free of water/snow/ice.
- The supervisor must inspect the trench/excavation throughout the day. Use the form on HCSS.
- Ensure the excavation is secured at the end of the day if it is still open. Proper modular fencing and signage must be used.

Required Documentation

J-AAR supervisors must complete the **Trench Inspection** (form located in HCSS) at least daily or as conditions change. Changing conditions include:

- Change of soil type
- Change of crew
- Encountering a structure
- Water found in excavation
- Sudden change in vibration or surcharge

When trench boxes or other support systems are used, a drawing must be readily available.

Completion

- Ensure all equipment/tools/materials are safely stored at end of shift.
- Secure any open trenches or excavations with modular fencing and warning signs.

- Housekeeping as required.

Trench or Excavation Collapse

For victims of a trench collapse, time is the enemy. The longer the person is trapped the higher the incident potential for developing “Crush Syndrome”.

Many times, in addition to internal traumatic injuries, hypothermia which is considered a slow killer may occur. Ensure you have completed a rescue drill with workers onsite.

In the event of an emergency:

- Call 911 immediately.
- Notify the supervisor immediately.
- Move everyone and everything well back. Machinery, construction material, bystanders that are close to the edge of the trench (within three feet) can easily cause a second cave-in.
- Assess the potential hazards to the rescuers, including potential damaged or undermined nearby utilities. Utility owners shall be contacted immediately to assess and if possible blank out the affected utility.
- Start pumps immediately if groundwater is a consideration.
- Shut down all equipment and stop any nearby traffic that can cause vibration and aggravate the situation.
- Barricading the rescue area with barrier tape as soon as possible shall help to prevent unnecessary personnel and bystanders being too close to the trench. This can be delegated while other steps are being taken.
- Get workers who are not trapped out of trench. Leave all tools in place, tool location can assist in finding buried victim(s).
- Determine the location, number, and condition of the victim(s).
- If there are victim(s), determine how long the victim(s) have been buried.
- Prepare for rescue personnel (EMS, fire dept., etc.) They will need to know:
    - Depth of the trench
    - Soil type
    - Volume of soil in collapse
    - Number of people trapped
    - How much soil is covering the victim(s)
    - How long have they been trapped
    - Types of utilities involved (if any). Are hazardous utilities damaged
    - Are conditions stable
    - Potential for additional collapse
    - Potential for flooding

- Condition of surrounding soil

Rescue:

Trench rescue involves highly skilled and trained rescuers with the EMS departments. Workers must never enter a collapsed trench to rescue someone. Untrained or ill-equipped rescuers frequently become victims themselves from secondary cave-ins. However, the following steps can help with EMS rescue:

- Have ladders available for rescue.
- Support any unbroken utilities, if safe to do so.
- If the victim is conscious and trapped, pass them a shovel so that they can attempt to self-rescue.
- If a victim becomes free, assess them for injuries and treat where required (if safe to do so) until EMS takes over.
- Do not attempt to dig the victim out with a backhoe or excavator. Such equipment may further injure the victim.
- CPR may be required, once started DO NOT stop unless someone takes over or you cannot physically go any longer without becoming a victim yourself. You need to keep going so they have a greater chance of survival when EMS arrives.

Post-rescue

- Secure the scene for an investigation
- Contact the Ministry of Labour
- Secure all witnesses in a safe place for investigation.
- Contact top management and advise of the incident

Job Hazard Analysis

Initial HIRA Score	Hazards	Controls	Residual HIRA Score
20	None or improper shoring/sloping	• Every trench deeper than 1.2 meters requires proper slope or an engineered supportive device/shoring • Soil type needs to be determined before commencing work. • If proper slope cannot be maintained than engineered supports need to be used	10

CRITICAL TASK PROCEDURE

20	Underground hazards	• Ensure J-AAR crews are in possession of valid locates before work commences • Ensure there is adequate ground markings before commencing work • Support all utilities in trench with proper procedures. Consult utility owner if necessary. • No machine digging within 1' of utilities	10
20	Struck by	• Ensure signalers are used where an operator/driver's line of sight may become obstructed • Workers must not enter an excavator's swing zone without first communicating with the operator • Operators must be aware of changing site conditions • Workers in trench must stay clear of operating bucket or attachment until operator has confirmed that operation has been completed and the implement is stationary	10
9	Access and Egress to Work Areas	• Ensure the correct ladder is selected, inspected, and set up for trench access/egress	3
15	Lack of Documentation (locates)	• Ensure valid locates are available and work is taking place within the located area	10
15	Objects Stored Improperly	• A level area extending at least 1m from the top of an excavation shall be kept clear of equipment and material	5
15	Vehicle and pedestrian traffic	• Ensure trenches and excavations are properly secured with modular fencing • All reasonable precautions must be taken to ensure the safety of everyone effected by the work	5

CRITICAL TASK PROCEDURE

8	Poor Site Planning	• Ensure trench boxes are in good condition, available, and appropriately sized • Ensure equipment on site is the correct size to move material/equipment required • Ensure all workers involved are competent for the tasks assigned to them	4
8	Dewatering	• Trenches must be adequately dewatered before work commences	4
10	Lack of Training/Communication	• Ensure workers involved understand the locates • Ensure signalers and operators have pre-established means of communication • Ensure all equipment is operated by competent workers • Do not use mechanical excavation in locate boundaries until utility is located	5