

**September 20, 2012**

**EXCAVATING AND/OR TRENCHING**

**Purpose/Application**

Trenching and/or excavating is a necessary task involved with the construction of a Pipeline or Facility, or any services that are underground. Trenching/Excavating may be done by hand or by mechanical means, depending on the size of the excavation.

**PPE**

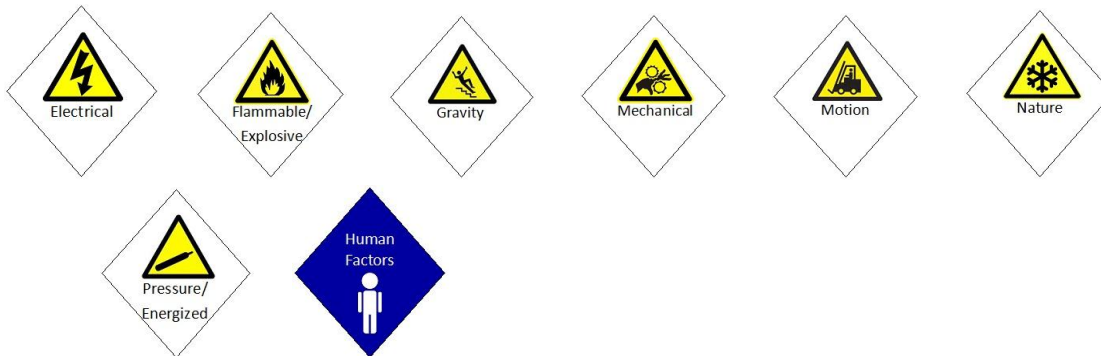
- Air Horn
- High Visibility Vest

**TRAINING**

- Orientation
- Competency

**TOOLS/EQUIPMENT**

- Excavator
- Trencher
- Bobcat



#	Job Steps	Hazards	Control Measures
1	Pre-Plan the excavation or trench	<ul style="list-style-type: none"> <li>▪ Miscommunication</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure you have looked at all aspects of the job</li> <li>▪ Communicate job plan with everyone involved</li> <li>▪ A competent Strike representative must supervise any ground disturbance activities, be involved in ground disturbance pre-planning, and sign off on the ground disturbance permit(s)</li> </ul>
2	Conduct a site specific hazard assessment	<ul style="list-style-type: none"> <li>▪ Unseen hazards (underground facility)</li> <li>▪ Slips, Trips, Falls</li> </ul>	<ul style="list-style-type: none"> <li>▪ Alberta 1<sup>st</sup> Call – call before you dig</li> </ul>
3	Obtain a Safe Work Permit (when necessary)		

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#	Job Steps	Hazards	Control Measures
4	Traffic Control – traffic must be controlled at roads and/or busy access ways	<ul style="list-style-type: none"> <li>▪ Vehicle/Equipment Traffic</li> <li>▪ Pedestrian Traffic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traffic controller in high visibility vest</li> <li>▪ Proper signage</li> </ul>
5	Prior to any excavation and/or trenching operation, all underground and/or overhead lines must be located, well marked and exposed in accordance with applicable AOH&S legislation and Alberta Pipeline Act regulations	<ul style="list-style-type: none"> <li>▪ Line Strikes</li> <li>▪ Contact with overhead utilities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Contact power company when within 7 meters of any power lines</li> <li>▪ Communicate hazards with everyone involved</li> <li>▪ Signage or Goalposts to help identify hazard</li> <li>▪ Hand expose underground facility using shovels or a hydro-vac unit</li> </ul>
6	Ensure use of a spotter at all times while Trenching/Excavating	<ul style="list-style-type: none"> <li>▪ Open Excavations</li> <li>▪ Contact with equipment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Restrict access to area</li> <li>▪ Stay out of swing radius of excavator</li> <li>▪ Eye contact with operator at all times</li> </ul>
7	Barricade Trench/Excavation when necessary and/or at the end of the workday	<ul style="list-style-type: none"> <li>▪ Cuts, scrapes</li> <li>▪ Open excavation</li> <li>▪ Sloughing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Stay out of line of fire</li> <li>▪ Use snow fence to barricade open excavations</li> <li>▪ Use signage to communicate hazards</li> </ul>

**Additional Precautions:**

**Note:** Reference AOH&S Regulations 442(1), (2), (3) & (4) for Classification of Soil Type definitions

**Note:** Even though AOH&S legislation allows a 30 degree cut back in "hard and compact" soil, the Strike minimum cut back in all soil types is 45 degrees from the vertical

- No worker may enter an excavation or trench that is more than **1.5 meters (5 ft)** deep in Alta and Sask and **1.2 meters ((4ft)** deep in BC, unless the worker is protected from cave ins or sliding or rolling materials by cutting back the walls, installing temporary protective structures or a combination of both.

**Note:** This does not apply if walls are solid rock throughout the entire length and width of each bank

- Determine side/end wall cut back
  - a) If the soil is classified as "**hard and compact**" or "**likely to crack or crumble**", the walls will be sloped to within 1.5 meters (5ft) of the bottom of the excavation/trench and at an angle of not less than **45 degrees** measured from the vertical
  - b) If the soil is classified as "**soft, sandy or loose**", the walls will be sloped **from the bottom** of the excavation/trench and at an angle of not less than **45 degrees** measured from the vertical
- Determine spoil deposits

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- The leading edge of the spoil pile must be at least **1 meter (3ft)** away from the edge of the excavation or trench and at an angle not more than **45 degrees** from the horizontal
- All loose materials must be scaled and trimmed from the side of an excavation and from the spoil pile to prevent such materials from accidentally falling into the excavation/trench

**Note:** If the toe of the spoil pile cannot be kept back a minimum of 1 meter (3ft) from the edge of an excavation/trench, then it becomes part of the total depth i.e. Total depth = depth of excavation/trench + height of spoil pile

- Determine temporary protective structures
  - Where the cut back method of worker protection is not possible then temporary protective structures of sufficient strength to prevent the walls or spoil material from moving into the excavation must be installed
  - Where the excavation/trench is **greater than 3 meters (10ft)** deep and bank cut back to meet legislative requirements is not practical, then temporary protective structures must be installed. These structures must be designed and approved by a professional engineer
- Determine entry and exit points
  - No worker shall enter an excavation or trench unless properly constructed entry/exit ramps or ladders, or a combination of both have been constructed and/or placed not more than **8 meters (26ft)** from the worker(s)
  - All ladders must be capable of extending 1 meter (3ft) above the top of the banks or protective structures

**See Schedule A**

Excavation and/or Trench Safety for Man Entry – Back sloping Requirements for Excavations and/or Trenches Over 1.5m Deep

**See Schedule B**

Excavation/Trench Safety for Man Entry and Exit – Ramps and/or Ladder.

**REFERENCE/REGULATIONS**

- Alberta O H & S Act, Code & Regulations – April 1, 2004
  - Code – Part 32, Excavating and Tunneling
- Alberta Pipeline Act
  - Regulations( in particular) 20, 21 & 22
- Strike SWP/COP-03 Confined Space Entry
- Strike SWP 46Excavating to Locate and Expose Buried Facilities.
- Strike SWP 24 Overhead Power Lines (working near)
- Alberta 1<sup>st</sup> Call

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