

June 24, 2022

EXCAVATING OPERATING PIPELINES

Purpose/Application

Exposure of live pipelines is a critical task; this document provides the steps and precautions to perform the task. Additional site hazards and conditions will require individualized daily hazard assessment and controls identified through HIAC process. Many facility owners or Prime Contractors have specific procedures and controls which must be implemented when exposing lines, always review these prior to beginning work.

PPE

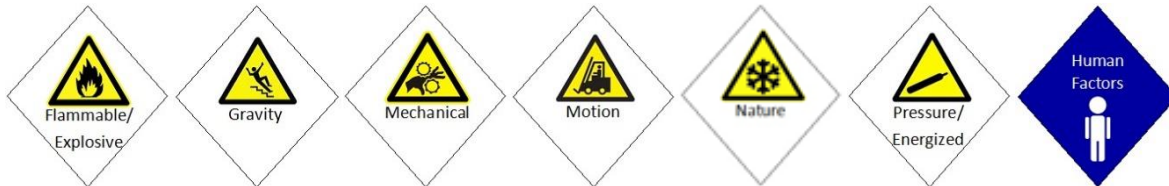
- CPES Minimum PPE
- Air Horn (Where Appropriate)
- High Visibility Vest/Spotter Identification as per Site Policy

TRAINING

- CPES and Customer Orientations
- Equipment Operator Competency Assessment
- Ground Disturbance Training (in accordance with CPES Ground Disturbance COP-07 and site or Owner/Prime Contractor requirements)
- CPES Spotter Training

TOOLS/EQUIPMENT

- Excavator and attachments (Clean-up Bucket, Digging Buckets, Spoon Attachment, etc.)
- Shovel
- Probes (where required)
- Temporary fencing (open excavation signage, t-post, snow fence, post pounder, and/or construction fencing, etc.)



| # | Job Steps | Hazards | Control Measures |
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| 1 | Pre-Plan the excavation | <ul style="list-style-type: none"> ❖ Unidentified underground facilities ❖ Conflicts between CPES and Customer Ground Disturbance requirements ❖ Damaged equipment ❖ Inaccurate site drawings/line depths ❖ Work around in service equipment | <ul style="list-style-type: none"> • Verify all locates have been completed (one-call, secondary sweeps, communication lines) as per COP-07 and Owner procedures • Hold tailgate meeting to review work scope, review COP-07 Ground Disturbance • Review Operating Authority (Prime Contractor/Site Owner) Ground Disturbance Requirements • Obtain a Safe Work Permit/Authorization (where required) • Verify both the Spotter and the Operator have a valid Ground Disturbance ticket from an approved provider (see Ground Disturbance COP-07 for details) |

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| | | | <ul style="list-style-type: none"> • Verify the Equipment Operator has been deemed competent according to the CPES process (CF-S-30F – Competency Checklist - Excavator) • Complete HIAC and verify all known identified hazards have been controlled • Verify there are no side cutters on the bucket of the excavator • Verify all underground facilities within 30M [100'] of the excavation area have been identified • Review completed line locates and available site drawings • Inspect equipment prior to use pay particular attention to structural components of equipment. Any defects identified must be reviewed with Site Supervisor before work begins • Consult with utility owner on appropriate teeth or plate selection on buckets for digging (CPES preference is to use plate when exposing existing lines) • Verify the depth and location of any existing facility has been confirmed through daylighting, hand exposure or other regulatory approved method, within 5M of any new excavation • Hydrovac holes should be covered with plywood or other material (e.g., t-post & snow fence) whenever not in use • All above ground facilities must be clearly marked with high visibility flagging • Use personal gas detection monitors and wear FR clothing in accordance with site policy and CPES HSEMS Section 6 PPE |
| 2 | Ground disturbance preparation | <ul style="list-style-type: none"> ❖ Unidentified underground facilities ❖ Conflicts between CPES and Customer Ground Disturbance requirements ❖ Damaged equipment | <ul style="list-style-type: none"> • For any excavation within 5M of an existing pipeline, verify written approval from the pipeline owner has been received • Verify the facility owner's requirements for approach distance (e.g. 10M [30']) where an Owner Representative must be present throughout the excavation, be sure you follow the owner's policy |

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| | | <ul style="list-style-type: none"> ❖ Inaccurate site drawings/line depths | <ul style="list-style-type: none"> • In many cases site rules require an Owner Representative on site during all ground disturbance activities and work must stop if Owner Representative leaves the direct line of sight of the Operator. Review the site expectations with the Facility Owner prior to starting work |
| 3 | Stripping topsoil | <ul style="list-style-type: none"> ❖ Work around mobile equipment ❖ Contact with buried facilities ❖ Equipment leaks ❖ Work in congested areas | <ul style="list-style-type: none"> • Note: A disturbance that is less than 30 cm deep is not defined as ground disturbance under legislation. However, many facility owners classify any stripping of topsoil as ground disturbance. In these cases all ground disturbance rules apply. Verify the owner's classification of "ground disturbance" before beginning work • Note: Where the Utility Owner classifies stripping of topsoil as ground disturbance. Stripping will be treated as a new excavation and if it is or becomes more than 5M from an existing excavation it requires the depth of the pipeline be confirmed through hydrovac or hand exposure • Where Utility Owner classifies stripping topsoil as ground disturbance and where a Customer Excavation Coordinator is required be present for Ground Disturbance, verify an Owner Representative is present for any Ground Disturbance activities • Where the Utility Owner/Prime Contractor has not classified Stripping Topsoil as Ground Disturbance, stripping must not exceed 30 cm in depth • Spotter must be positioned a safe distance away from equipment and maintain a safe zone around the equipment • Avoid blind spots when approaching equipment. Ensure the operator has made eye contact with you and has placed the bucket on the ground with their hands off the controls and/or controls are locked • Spill kits must be available on all equipment |

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| 4 | Excavating Around Pipeline | <ul style="list-style-type: none"> ❖ Contact with existing facility ❖ Fire or explosion in the event of a contact or gas release ❖ Crush points between excavator and line ❖ Property damage ❖ Trench collapse or slough in | <ul style="list-style-type: none"> • CPES Spotters must always be in place. All mechanical excavation must be suspended if the line of sight on the facility is lost until line has been hand exposed • Excavations within 600 mm of an existing line will generally require direct oversight by the Owner Representative, verify the Owner requirements before starting work • Spotter must be in place a safe distance away from equipment • Spotter must maintain the "Safe Zone" around the Equipment keeping other workers out of the Operator's blind spots • Before approaching equipment ensure operator has made eye contact with you and has placed the bucket on the ground with their hands off the controls and/or control lock engaged • Keep the spoil pile and equipment minimum of one meter back from the edge of the excavation, maintain proper sloping according to COP 07 • No mechanical excavation can take place directly over a buried facility unless the buried facility has been daylighted or hand exposed and appropriate clearance is maintained • Spotter or Excavation Coordinator to clear the top and the side of the pipe (9 o'clock to 3 o'clock) rather than excavating directly over the line. Operate the bucket off to the side of to the facility • Use the back of the bucket to sweep the soil off the pipeline • Ensure the bucket is curled when swung over the facility • Pipe must remain visible during excavation, if it becomes covered, work must stop until pipe can be exposed |
| 5 | Entering Excavation | <ul style="list-style-type: none"> ❖ Slough in of trenches ❖ Limited access and egress | <ul style="list-style-type: none"> • A Ground Disturbance Supervisor must determine soil type and establish slope requirements for excavation • Access/egress are required at a minimum of every 8M [26'] (Note: some |

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| | | | <p>Owners/Prime Contractors may require more access, verify site requirements)</p> <ul style="list-style-type: none"> • Ground Disturbance/Site Supervisor must inspect the ditch before any workers enter • Where ladders are used for access, they must be secured against movement |
| 6 | Use of spoons | <ul style="list-style-type: none"> ❖ Contact with existing facility ❖ Limitations with maintaining line of sight while using the attachment around the pipe ❖ Wedge bolt slippage | <ul style="list-style-type: none"> • Review applicable SJPs prior to use and follow all controls included • Increase the slope on the bank to increase the line of sight and room to operate • Excavations within 600 mm of an existing line will generally require direct oversight by the Owner Representative, verify the Owner requirements before starting work • Ensure pipe has been exposed from 3 o'clock to 9 o'clock prior to the utilization of the spoon. Do not dig under pipe with the spoon prior to exposing the top half of the pipe • Periodically inspect and tighten the wedge bolts after the first couple of scoops with the spoon attachment |
| 7 | Maintaining open excavations | <ul style="list-style-type: none"> ❖ Workers, equipment, or wildlife falling into the excavation ❖ Change in the stability of the trench banks | <ul style="list-style-type: none"> • Excavation must be inspected daily before entry • Excavations should be marked with warning signs at access and/or near the excavation • Install temporary fencing and open excavation signs around the excavation when not in use |

REFERENCE/REGULATIONS

Additional Precautions:

- COP 03 Confined Space Entry
- COP 07 Ground Disturbance
- SWP 46 Excavating to Locate and Expose Buried Facilities.
- SWP 24 Overhead Power Lines (working near)

Federal Standards

- Northern Pipeline Act
- Canadian Energy Regulator - Pipeline Damage Prevention Regulations



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- Oil and Gas Operations Act
- Canadian Standards Association (CSA) Z662-19: Oil and Gas Pipeline System

Alberta Energy Regulators

- Alberta Pipeline Act
- Directive 077: Pipelines – Requirements and Reference Tools

Alberta OH&S Code

- Part 19 Powered mobile equipment
- PART 17 Excavations, Trenches, Tunnels and Excavated Shaft

British Columbia OH&S Regulation

- Part 20 Safe Work Areas and Safe Access
- Part 16 Mobile Equipment

Saskatchewan OH&S Regulations

- PART 17 Excavations, Trenches, Tunnels and Excavated Shafts
- Part 25 Fire and Explosion Hazards

Manitoba OHS Regulations

- Part 22 Powered Mobile Equipment

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