

STANDARD OPERATING PROCEDURE

Working in Trenches or Open Excavations

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WORKING IN TRENCHES OR OPEN EXCAVATIONS

						
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The following is a step-by-step procedure on how to complete a specific task or meet a facility specific requirement. Standard Operating Procedures (SOPs) are written for all identified critical tasks. By virtue of the hazard or complexity associated with critical tasks it is paramount that the SOP be followed as written. SOPs contain a listing of high-level hazards associated with the task, for detailed hazard analysis reference the applicable Task Hazard Assessments. SOPs do not replace the requirements contained in the company Standards, Codes, and Processes nor does it replace the need to comply with required legislation. Section 8.0 references documentation that the worker shall understand before work commences.

1.0 PURPOSE

- To establish a company standard to safely and effectively carry out work as it applies to working in trenches or open excavations.

2.0 SCOPE AND APPLICATION

- This document applies to all company Heavy Construction and Mining operations. Ensure all site specific requirements are being met or exceeded before performing the task.

3.0 HAZARDS AND CONTROLS

- Unstable ground conditions leading to material or wall cave in with worker(s) or equipment in the trench.
 - Trenches and excavations will be designed as per 950C-C-014 Excavations and Trenching Code and in compliance with area legislation.
 - Soils will be stabilized using shoring or cutbacks.
 - Cut backs will be designed as per soil type classification when workers are working in trenches greater than 1.2 metres deep.
 - Classification of soil types will be consistent with 950C-C-014 Excavations and Trenching Code and will follow authority of the jurisdiction for the area the work is being conducted in.
 - Temporary protective structures and shoring will be designed as per 950C-C-014 Excavations and Trenching Code. Temporary protective structures greater than 3 m deep will require design, construction and installation in accordance with the specifications of a professional engineer.
 - Spoil piles will be placed so the leading edge of the pile is at least 1 metre from the edge of the excavation/trench with the slope of the pile no greater than 45 degrees and all loose materials are scaled/trimmed from the spoil pile i.e. rock, lumps.
 - Loose materials will be scaled and trimmed from the sides of excavations or trenches if workers may be on or near the sides.
 - Monitor ground conditions for shifting or cracking of materials.
 - If for any reason workers believe there is imminent danger of a trench or excavation wall failure, exit the trench or excavation immediately and inform a supervisor.
- Working in a restricted or confined space causing personal injury.
 - Restricted or confined space hazards apply to equipment and personnel working in trenches or excavations.
 - Trenches may be considered a restricted space due to limited access and egress.

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- Excavations and trenches may be considered confined spaces if hazards, in addition to limited access/egress, are identified. These hazards can include, but are not limited to, a hazardous atmosphere.
- Review and follow 950C-C-029 Hazardous Space Entry Code to ensure adequate controls are put in place.
- Where required, conduct initial or continuous atmosphere testing to determine air quality as well as explosive atmosphere conditions. Ensure appropriate confined space permits are put in place prior to workers entering the trench or excavation.
- Hazardous atmosphere causing personal injury and equipment damage.
 - Conduct initial or continuous atmosphere testing to determine air quality and explosive atmosphere conditions as required.
- Adverse weather conditions causing equipment damage or personal injury.
 - Sand icy areas. Wear appropriate task specific PPE (i.e. traction aids) in icy conditions.
 - Dress according to weather conditions.
 - Monitor environment for changes in weather conditions and implement appropriate controls.
- Inadequate ground conditions and housekeeping causing slips, trips or falls.
 - Watch footing when moving in and around excavations.
 - Keep ground in and around excavations and walking paths clear of debris and material.
- Inadequate access and/or egress causing equipment damage or personal injury.
 - Safe entry and exit points for trenches and excavations will be established.
 - Trenches greater than 1.2 m deep will have entry and exit points located within 8 metres from worker(s).
 - Walkways, ramps (chicken runs), stairways and ladders must be safely constructed and secured.
 - Always maintain 3-point contact on ladders.
 - Do not carry tools or materials when ascending or descending ladders.
- Water hazard causing personal injury.
 - Monitor water seepage into trenches or excavations.
 - Use pumps to remove water if necessary.
 - Divert run-off water from rain away from trenches or excavations.
 - Place wash rock on slopes and toes of excavations to help prevent soil movement.
 - Workers shall not be allowed to enter trenches or excavations where hazardous accumulations of water are present.
- Working in congested areas causing personal injury or equipment damage.
 - Excavators will follow 962C-SOP-023 Excavators Working in Congested Areas.

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- Operators will perform an equipment walk around at the start of shift, after breaks, following repositioning and anytime operator is unsure of proximity of people, equipment or obstacles.
- Operators will swing to “good side” whenever possible to enhance visibility.
- Operators will flag swing radius when operating in close proximity to people, other equipment or in high traffic areas.
- Operators will ground equipment implements when not in operation.
- Ensure positive communication with equipment and machine operators when entering a trench or excavation
- Ensure proper barricades and signage is in place at all times.
- Equipment and vehicles shall park parallel to trenches or excavations whenever possible.
- Ground personnel and light vehicles will follow 962C-COP-042 Approaching Equipment.
- Equipment and tools in and around trenches or excavations.
 - Ensure tools, equipment and materials are at least one meter away from the edge of trenches or excavations
 - Ensure tools and equipment used in trenches or excavations are properly inspected prior to use.
 - Ground excavator implements when checking grade, proximity to facilities, etc.
 - Never travel underneath raised equipment implements.
 - Maintain line-of-sight with equipment operators when working in close proximity to equipment.
 - Ground personnel and light vehicles will follow 962C-COP-042 Approaching Equipment.
- Contact with buried facilities causing personal injury or equipment damage.
 - Buried facilities will be clearly marked and located as per most recent as-built drawings.
 - Excavator implements must stay a minimum distance of 1.0 meters (3’) from the facilities in trenches and excavations.
 - Workers will use rakes and shovels to fill within 1.0 meters (3’) around facilities placed in trenches and excavations.
- Inadequate communication causing personal injury or equipment damage.
 - Ensure positive communication between workers, supervisors and equipment operators via radio, verbal or hand signals.

Note: If at any time the worker is unsure about the effectiveness of a control or needs assistance implementing a control, the worker will **contact a supervisor prior to commencing work activities**.

4.0 CHECKLIST

- Attend all preparatory meetings (IE: daily PSI; job scope; review of JSA’s and SOP’s for the job)
- Complete FLRA cards before starting the work.
- Ensure all personnel involved in the task are aware of the hazards and the controls to be used, as identified in the SOP’s; JSA’s; and FLRA’s
- Conduct a pre-job inspection of all equipment to be worked on and tools to be used.
- Standard of Training required for working on this job: On-the job training.**

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5.0 DEFINITIONS

5.1 Company

Means North American Construction Group Ltd. (NACG) and all directly or indirectly owned subsidiary companies, including joint ventures.

5.2 Company Personnel

Includes the Company's employees, officers, directors, agents, associates, consultants/contractors, temporary employees, and third-party processors.

5.3 HSE

Refers to the Health, Safety & Environment department

5.4 Trench

Long narrow dug out area of ground that is deeper than its width at the bottom.

5.5 Excavation

Dug out area of ground; does not include tunnel, underground shaft or open pit mine.

6.0 PROCEDURE

- 1) Conduct a hazard assessment (FLRA, JSA) prior to commencing task.
- 2) Determine if work area will be deemed a restricted space, confined space or neither.
- 3) Obtain permits as required (ground disturbance, confined space, etc.).
- 4) Ensure trench walls have adequate shoring, cutbacks or temporary protective structures if trench is greater than 1.2 metres deep and workers are present.
- 5) Establish safe entry and exit points for personnel and equipment.
- 6) Ensure buried facilities have been located and marked.
- 7) Conduct a pre-operation inspection of equipment prior to commencement of work.
- 8) Conduct a walk around inspection of equipment at the beginning of shift, after breaks, when repositioning equipment and anytime equipment operator is unsure of proximity to people, other equipment or obstacles.
- 9) Flag swing radius of equipment when working in close proximity to people, other equipment or high traffic areas. Use spotters in areas of limited visibility. Swing to the good side where possible.
- 10) Monitor weather and ground conditions when trenches and/or excavations are occupied by workers.
- 11) Mark trenches and open excavations with signage, barricades, flagging.
- 12) Conduct atmosphere testing and monitoring as required.

7.0 NOTES

If this task is to be done by a method different than described in this SOP, the work must **STOP** and the alternate method must be **DOCUMENTED** with an adequate hazard assessment tool such as a JSA. The document must be **APPROVED** by a supervisor before such procedures are implemented.

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8.0 REFERENCES

- Alberta Occupational Health and Safety Act, Regulation and Code – Part 5, Confined Spaces
- Alberta Occupational Health and Safety Act, Regulation and Code – Part 8, Entrances, Walkways, Stairways and Ladders
- Alberta Occupational Health and Safety Act, Regulation and Code – Part 32, Excavating and Tunneling
- 950C-C-014 Excavation and Trenching Code
- 950C-C-029 Hazardous Space Entry Code
- 962C-SOP-023 Excavators Working in Congested Areas
- 962C-SOP-022 Digging and Design of Trenches and Excavations
- 962C-COP-042 Approaching Equipment

9.0 APPENDICES

- No appendices.