

Addendum to GTM Construction Safety Manual for Projects Contractors on GTM Westcoast Brownfield Worksites

The following represent additional safety related requirements that may impact Projects Contractors working on GTM Westcoast Brownfield Worksites. They have been drawn from regional “Westcoast Transmission Safe Work Practices” documents.

Excavation and Trenching (addition to GTM Construction Safety Manual 6.13):

- Appendix A: GTM Westcoast Safe Excavation & Trench “Short Form” is required for all excavations and is to be completed by the Ground Disturbance Supervisor.
- Appendix B: GTM Westcoast Excavation and Trenching Hazard Assessment “Long Form” is required when intrusive work is performed on the pipeline or when trench construction specifications cannot be met.
- Completed forms must be readily available and posted at site.

First Aid (addition to GTM Construction Safety Manual 8.3):

First Aid Attendant (BC Level 3) and MTC are required whenever 6 or more personnel are performing hands on work on a given worksite

Facial Hair Practice (addition to GTM Construction Safety Manual 6.39):

As of May 2022, GTM Westcoast Operations will no longer require the facial hair practice as previously applied.

Requirements for H₂S Alive and corresponding facial hair rules for positive pressure SCBA respirator use may still be applied if work is being conducted at the following sites:

- Compressor Station 1 (CS1)
- T-North Pigging Sites located next to raw gas processing facilities: Fort Nelson Mainline, Pine River Gas Plant, Grizzly Valley Sending

If work will be conducted at CS1 or the pigging sites, consult with local operations on requirements.

Appendix A: GTM Westcoast Safe Excavation & Trench “Short Form”

**Project - Safe Excavation & Trench
Verification Worksheet**



Project Name / #		Location	
1. Confined Space – is an area that meets all of the following criteria: (answering NO to any one criteria below eliminates confined space criteria)			
Criteria	Yes/No	Comments	
a) Is enclosed or partially enclosed			
b) Is designed or intended for continuous human occupancy			
c) Has limited or restricted means for entry or exit that may complicate the provision of first aid, evacuation, rescue or other emergency response service (<i>Steps, Stairs or Chicken Run within 8m of a worker</i>)			
d) Is large enough and so configured that a worker could enter to perform assigned work			
2. Safe Excavation and Trench – must have each of the below criteria in place to be deemed a safe excavation or trench			
Criteria	Yes/No	Comments	
a) Excavation or trench configuration is appropriate for the soil type			
b) The slope of the excavation or trench is a maximum of 45°			
c) Spoil piles, equipment and loose materials at the top edges of the excavation are at least 1.2 m (4 ft.) back from the edge of the excavation			
Verification By:	Contractor Foreman/Straw	Witnessed By: Enbridge Representative	
Name (print):			
Title:			
Initials:			
Date:			
Safe Work Permit #:			
Subsequent Entries Into the Excavation/Trench Requires the Contractor Foreman/Straw to Conduct a Pre-Entry Review to Verify the Excavation/Trench is Still Safe to Enter as Specified in the Verification Above and Includes findings in FLHA & Tailgate.			
Date mm/dd/yy	Position	Name (Print)	Safe Work Permit #: Initials

**Additional Pre-Entry Review On Back Page*

- A Excavation or Trench that is modified requires a new verification form to be completed
- Once the excavation or trench activity is complete, the completed Verification Worksheets shall be retained by the Contractor.

**Project - Safe Excavation & Trench
Verification Worksheet**

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Appendix B: GTM Westcoast Excavation and Trenching Hazard Assessment “Long Form”



Western Canada Gas Transmission & Midstream
Excavation and Trenching Hazard Assessment FORM

Upon the request of WorksafeBC and the Transmission Director:

This LONG FORM must be completed for all pipelines and mainline excavations.

Update August 30, 2018

If the pipeline or mainline excavation/trenching meets **all** of the conditions in the following definition please complete this excavation and trenching assessment

Definiton of a “Confined Space”, except as otherwise determined by the Board (WCBBC), means an area, other than an underground working (a Mine), that

- a) Is enclosed or partial enclosed*
- b) Is not designed or intended for continuous human occupancy*
- c) Has limited or restricted, means for entry or exit that may complicate the provision of first aid, excavation, rescue or other emergency response service, and*
- d) Is large enough and so configured that a worker could enter to perform assigned work;*
- e) Is over 1.2 m (4 ft) in depth.*

If any **one** or more of the above conditions listed in a, b, c, d, or e can be removed then the assessment is **not** required.

Example: Using a portable stairway, placed within 25 ft of the work enables the work crew to provide un-limited access to egress then the “space” is no longer deemed confined.

For Excavations and Trenches in Gas Processing Facilities follow the safe work permit process and if the trench or excavation is deemed a confined space document on the safe work permit. E.g – use of a trench box


Excavation and Trenching Part 9 BC OHS Regulation Exclusionary Criteria Assessment

Note: If the original Exclusionary Criteria Assessment prepared to perform the excavation does not accurately capture the subsequent work that will be conducted within the excavation another Exclusionary Criteria Assessment must be completed to assess the new scope of work. (i.e. digging the trench, installing scaffolding, ladders vs. welding, cutting, grinding, installing pipe/infrastructure, etc.)

The goal of the assessment is to ensure a safe work environment for workers. The template is to assist in ascertaining whether or not the excavation may be excluded as a confined space per WorkSafe BC requirements. Once this assessment is complete, consultation will occur with [one of the following: worker, worker health and safety representative or joint committee] to make a determination that the space is not a confined space for the purposes of Part 9 of the Regulation. A record of the determination is included at the bottom of this assessment.

If the excavation cannot be excluded based on your assessment, then the job must follow the Confined Space criteria established in Part 9 of the *Occupational Health and Safety Regulations* when provincial contract workers will be performing the work.

Identification of Job	(Insert Job Name or Identifier)	Date of Assessment	(Insert Date)
Location	(Insert the location of the job) ie. latitude and longitude.		
Work Description / Phase	Describe the scope of work. Is it to excavate the trench; is it to work in the trench excavations—if so, what kind of work; is it to weld in the trench; if so, what kind of pipe; will others be in the trench performing other tasks? Be as specific as you can about what the work entails.		

<p>Excavation Description</p>	<p>Basic Excavation Description:</p> <p>This will depend on what the scope of work is. Is this for the initial trench excavation? If so, describe what you anticipate the excavation will be like; how large, soil type, is it stable soil, etc.</p> <p>Will anyone have to enter the trench for any reason, e.g. hand-digging, putting in scaffold, ladders, etc. If so, outline the characteristics of the trench here. For example how long, wide, deep and how many cubic metres is the trench. If you have supporting photos, include them.</p>  <p>Discuss methods of ingress and egress for the workers working in the trench. For example:</p> <p>The angle of the stairs is less than 45 degrees (30 degrees). This design will allow transporting any injured worker in a device inclined at any time to an angle of less than 45 degrees (as per WCB regulation).</p>
<p>Isolation Points</p>	<p>If applicable, discuss how the pipeline or equipment within the excavation will be isolated if intrusive work is going to occur.</p> <p>If applicable, reference the Lock Out Tag Out procedures / documentation for this job.</p>

Does this space meet the requirements to be considered an "Excluded Confined Space"?	
BC-OHS Regulation Excavation Excluded Confined Space Criteria	Worksite Description
<p>1. The design, construction, location, and intended use of these spaces will ensure these spaces are characterized by clean respirable air at all times.</p>	<ul style="list-style-type: none"> • Clean, respirable air means an atmosphere which is equivalent to clean, outdoor air and which contains: <ul style="list-style-type: none"> ○ about 20.9% oxygen by volume, ○ no measurable flammable gas or vapour as determined using a combustible gas measuring instrument, and ○ no air containment in concentrations exceeding either 10% of its applicable exposure limit in Part 5 (Chemical Agents and Biological Agents) or an acceptable ambient air quality standard established by an authority having jurisdiction over environmental air standards, whichever is greater. • In order to meet this exclusion criterion, you must ensure (NOT simply expect or anticipate) that the spaces will have clean respirable air at all times. Document what tests have been done to ensure that there will be clean respirable air at all times in the excavation. If you cannot do this, the excavation must be treated as a confined space.
<p>2. The space must have an interior volume of not less than 64 cubic feet (ft³) per occupant.</p>	<ul style="list-style-type: none"> • Discuss what volume of air the excavation will have inside it, and if applicable. For example: the volume air inside the trench during initial entry by a worker is approximately XX m³ or XX ft³.
<p>3. The space must have openings to the atmosphere that are known to provide natural ventilation.</p>	<ul style="list-style-type: none"> • The excavation has approximately XX ft² of surface area open to the atmosphere which is known to provide natural ventilation. Explain how the openings are known to provide natural ventilation. <p>For example, if you have a trench that has a large opening, but it is located next to an area where people will be exhausting their vehicles during work, is that an opening to the atmosphere that is known to provide natural ventilation (and access to clean respirable air)?</p>

<p>4. There must not be a need to mechanically ventilate, clean, purge, or inert the space prior to entry for any reason.</p>	<p>Based on the criteria discussed below there is no requirement to mechanically ventilate as the excavation will have clean respirable air.</p> <p>Fill this in with all the reasons supporting why there is no need to mechanically ventilate, clean, purge or inert the space prior to entry for any reason. This statement should be based on the requirements, any testing or modeling undertaken and your professional expertise. If you determine that you must ventilate, clean, purge or inert the space, then state that. The space must then be treated as a confined space.</p> <p>Here is an example that was prepared for an excavation that may be of assistance:</p> <p>In order to illustrate the expected ventilation of the workspace during welding in an excavation, OSHA CFR 1910.252 standard of 2000 cubic feet per minute (CFM) of ventilation per welder in this workplace (4000 CFM total based on the planned scope of work) is used as a criteria.</p> <p>Based on a minimum cross sectional area in the excavation of 360 square feet, natural air draft velocity of 11.1 feet per minute travelling longitudinally through the space would be required. In other terms, this means a wind velocity of 0.13 mph or 0.21 Km/h would be sufficient to meet the general accepted standard for adequate ventilation when SMAW at normal rate. Cross sectional area of the excavation perpendicular to the length is three times as much (1800 square feet) therefore the wind velocity listed above is the minimum required to meet the objective of 2000 CFM per welder (4000 CFM).</p> <p>Natural and prevailing winds in the area are expected to generate winds speeds in the excavation that are well above 0.13 mph or 0.21 Km/h.</p> <p>Furthermore, this work place volume is 32,400 cubic feet below grade, with 4500 square feet of area open to atmosphere at grade. This volume of space is well above the minimum 10,000 cubic feet per welder recommended by OSHA where general ventilation is not in place.</p>
<p>5. There must be no potential for a hazardous substance to migrate through any media (e.g., air, soil, conveyance, piping, or structure) to infiltrate the space.</p>	<ul style="list-style-type: none"> • Contaminants are not able to migrate from the pipeline into the excavation because: • There are no nearby sources of hazardous substances that could migrate through air into the excavation because... • There are no sources of hazardous materials that could migrate through the soil into the excavation during the work because... <p>If you cannot say why there is NO potential for a hazardous substance to migrate through any media to infiltrate the space, the excavation must be treated as a confined space.</p>

<p>6. The space must be free of residual material (e.g., waste, sludge, debris) that if disturbed could generate air contaminants that could immediately and acutely affect a worker's health.</p>	<ul style="list-style-type: none"> • An example might be: there are no residual materials in or near the excavation that, if disturbed, could generate air contaminants that could immediately and acutely affect a worker's health. • Note that this must be a true statement and is given as an example.
<p>7. There must not be any risk of entrapment or engulfment to workers entering the space.</p>	<ul style="list-style-type: none"> • Describe how this is met: For example: • The excavation is less than XX metres (XX ft) deep, existing Type B soils (previously disturbed) are suitable for sloping. Trench walls have been sloped back to a safe angle, no steeper than three horizontal to four vertical. • Daily inspections are to be conducted to identify any changes in conditions that may affect worker safety. • High water table in area to be managed using water pumps to eliminate ground water accumulation • Spoil piles are placed at least XX m from the edge of the excavation. • The only vehicles and mobile equipment that may operate in the immediate area is the excavator while digging the trench. The excavator is positioned on solid ground and does not surcharge trench
<p>8. The space must not contain, have introduced, or be adjacent to tools, equipment, or involve processes that could generate air contaminants that could immediately and acutely affect a worker's health.</p>	<ul style="list-style-type: none"> • Will the proposed work in the excavation include any of the criteria in item 8? • Discuss the work that will be undertaken. Explain why the equipment, tools, processes will not generate air contaminants that could immediately and acutely affect a worker's health.
<p>Signatures</p>	
<p>Excavation / Trench Hazard Assessor who performed this assessment.</p> <p>(Qualified Person - H&S Specialist, P. Eng., CRSP, CSP, ROH, or CIH)</p> <p>Name: (Insert Name)</p> <p>Date: (Insert Date)</p> <p>Title: (Insert Job Title)</p>	<p>Comments:</p>



<p>Has this excavation met the exclusion criteria as defined above?</p> <p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p>	<p>Assessment Discussed With a Worker, Worker Health and Safety Representative, or Joint Committee:</p> <p>Name: <input type="text" value="(Insert Name)"/></p> <p>Date: <input type="text" value="(Insert Date)"/></p>	<p>Assessment Prepared By:</p> <p><input type="text" value="(Insert Signature)"/></p> <hr/> <p>Assessment Discussed & Confirmed By:</p> <p><input type="text" value="(Insert Signature)"/></p> <hr/>
<p>Disclaimer. This assessment was undertaken for the purposes of determining whether the excavation meets all of the exclusion criteria for confined spaces. The assessment is based on known and planned work activities conducted by Enbridge Employees and approved Contractors. Should there be ANY change in the space conditions, potential hazards and /or work activities, a Qualified Person must reevaluate and document changes on the initial assessment. Refer to Enbridge Standards for required controls, equipment, and tasks for safe entry and work.</p>		