Date Revised:	March 2021	Overall Task Risk Rating:	Before Controls	A	After Controls	C
Description:	Activities that involve the excavation of material, working in excavations, and situations that potentially expose workers to hazards associated with excavations.					
Location(s):	Asphalt Plant & Construction Projects					
Associated Documents: Housekeeping WTS, Manual Material Handling WTS, Noise WTS, Overhead Hazards WTS, Underground Hazards and Locates WTS, Ladders WTS						

RED FLAGS (HOLD WORK UNTIL CORRECTED):

Note:
- If the soil type has not been determined, do not commence excavation work

PERSONAL PROTECTIVE EQUIPMENT (CSA APPROVED)

Head Protection	Foot Protection	High-Vis Protection	Hearing Protection	Hand Protection	Eye Protection	Respiratory Protection	Skin Protection	Face Protection	Fall Protection
									
☒	☒	☒	☐	☐	☐	☐	☐	☐	☐

Note:
- Depending on the environment and the situation, respiratory protection may be required as well (i.e. if there is airborn dust, etc…)

SAFE WORK PRACTICES (SWP)

General Trenching & Excavating Practices:

- Start the work only when you are certain that you understand the work, the hazards and you have implemented the appropriate controls
- Unsafe conditions and situations must be reported to Foreman/Superintendents immediately (and stop work until the hazard is controlled)
- Prior to excavating, workers must determine the soil type and document the findings
- The slope grade will vary depending on the identified soil type as assessed during the initial soil assessment

	Type 1	Type 2	Type 3	Type 4
Sloping Ratio: (Horizontal spread to vertical rise)	1:1*	1:1*	1:1**	3:1**

* Grade of sloping starts at 1.2 m (4 feet) or less above the bottom of the excavation ** Grade of sloping starts from the excavation floor

- Determine the appropriate controls to be implemented to protect the specific trench (i.e., sloping or shoring)
- Shoring shall be installed from the top down and removed from the bottom up
- Never enter a trench or excavation that is not adequately sloped, shored or secured as required
- Where the depth exceeds six metres or the width exceeds 3.6 metres, the support system shall consist of an engineered support system designed for the specific location
- Excavations must be protected from cave-ins or loss of ground prior to workers entering the trench
- The walls of the excavation shall be stripped of loose rock or other material that may slide, roll or fall upon a worker
- Precautions must be taken to ensure the safety of traffic and pedestrians around trenches (i.e. traffic barriers, signal persons, signs)
- Excavations must be secured at the end of the shift with protective coverings or appropriate barriers to prevent the public from falling into the open excavation
- A level area of at least 1.0 meter (3.2 feet) away from the edges of the excavation shall be kept clear
- A Notice of Trench work must be filed with the M.O.L. when a trench into which a person may enter is to be excavated at the project and the trench is more than 1.2 metres deep
- No worker is to work alone in a trench
- When two workers are present, one worker must be situated outside of the trench in a position to act as a rescuer

- When required structures and buildings nearby must be inspected by a qualified engineer to determine whether the structure or building will remain stable in the event of excavation

Underground Hazards & Locates:

- Contact all applicable local utilities and ensure that they locate and mark all underground utilities
- Locates must be maintained and kept current (remain aware of expiry dates)
- All service pipes, coils, conduits, and cables for gas, electrical and other devices must be adequately supported to avoid breakage

Overhead Powerlines:

- Ensure that any overhead power lines are identified and de-energized
- All over head hazards, such as power lines, shall be marked with danger signage

Access & Egress / Working at Heights & Fall Protection Considerations:

- All ladders must be tied down when being used for access / egress to excavations
- Three-point contact must be maintained at all times when using a ladder
- If the trench poses a falling hazard of more than 2.4 meters or 8 feet ensure that the trench is properly barricaded with a fence
- For more information, please refer to the Working at Heights WTS

Environmental Considerations:

- Every trench shall be kept reasonably clear of water

Inspections:

- All equipment operators must conduct and record pre-use inspections where required for specific pieces of equipment
- Regular inspections are required to ensure slopes, shores, egress & access measures and trench boxes are in good condition
- Trenches will be inspected daily by a competent person

Training:

- Employee Orientations (including roles, responsibilities, applicable workplace task standards, WHMIS, etc.)
- Competent workers must inspect the integrity of excavations and trenches
- Only trained, authorized personnel are allowed to operate machinery or equipment
- Ensure excavation equipment operators are competent and have applicable training
- Only trained, authorized personnel are allowed to perform maintenance / repairs

Personal Protective Equipment:

- Workers on construction projects must wear, at a minimum, head, foot and high visibility protection
- Eye protection is required when completing tasks that may cause debris / objects to dislodge or become airborne
- Seat belts must be worn at all times if the equipment / machine is equipped with them

JOB HAZARD AND RISK ANALYSIS

RISK RATING SYSTEM

A	High risk of injury or equipment / property damage.
B	Medium risk of injury or equipment / property damage.
C	Low risk of injury or equipment / property damage.

TASK HAZARDS	RATING BEFORE CONTROLS	TASK CONTROLS	RATING AFTER CONTROLS
• Improper Sloping	B	• If proper sloping cannot be maintained, ensure a trench box is used before workers enter	C
• Improper Excavation	B	• Ensure all excavated material is at least 1meter (3 feet) back from the edge of the trench or excavation	C
• Lack of Design and Inspection	B	• Ensure all trench boxes are designed by a professional engineer, properly sized and are inspected	C
• Inadequate Machinery	B	• Ensure there is an adequate means of moving the excavated material and later placement of spoil	C
• Water Build Up	C	• Ensure excavation is adequately dry	C

• Poor Access / Egress	B	• Use extension ladders to access large excavations • Ensure excavations are isolated by appropriate means (barriers, fencing) capable of restricting unauthorized access	C
• Utilities Not Located	A	• Request locates for all the underground utilities in the area where excavation will be taking place • If the utility may pose a hazard, the service shall be locked/tagged out • Ensure locates are up to date, and clearly marked onsite • Reference the Underground Hazards and Locates WTS	C
• Lack of Training	C	• Ensure excavation equipment operators are competent and have applicable training	C
• Undermining of Structures	B	• Inspect intended excavation area for adjacent structures, prior to commencing excavation activities • Do not excavate/remove material from under any adjacent structures	C
• Vehicle and Pedestrian Traffic	B	• Precautions must be taken to ensure the safety of traffic and pedestrians around trenches (i.e. traffic barriers, signal persons, signs)	C
• Lack of Sloping and/or Shoring	A	• Where the depth exceeds six metres or the width exceeds 3.6 metres, the support system shall consist of an engineered support system designed for the specific location • Ensure support system for excavations walls, provides continuous support	C
• Objects too close to Excavation Edges/Perimeter	B	• At least one metre from the upper edge of each wall shall be kept clear of equipment, excavated soil and material	C
• Hazardous Atmospheres	A	• Assess and determine if excavation is a confined space and implement 'Confined Space' WTS controls as required	C

SAFE JOB PROCEDURES (SJP)

Pre-Task Commencement:

1. Gather and wear the required PPE for the task - on construction sites, all must wear head, foot and high visibility protection. Eye protection when necessary
2. Ensure the site-specific workplace violence assessment is complete
3. Complete the Daily GAZZ Card and review with all workers the shift's tasks with any associated hazards and control strategies
4. Ensure all workers understand the GAZZ Card contents, and sign off in acknowledgement
5. Ensure controls are in place prior to commencing work so risks are mitigated / eliminated
6. Determine what equipment / machinery / tools and material, are required for the completion of the task
7. Inspect all equipment / machinery / tools prior to use and document the inspections on appropriate forms when required
8. Ensure preventative maintenance activities have been completed where required, prior to using equipment / machinery / tools
9. If equipment / machinery / tools are observed to be damaged, remove it from use and notify the Foreman / Superintendent
10. Install fencing and hoarding where needed
11. Locate utilities – Call "Ontario One Call" for locate services (when necessary)
12. Ensure excavation equipment operators are competent and have applicable training
13. Implement public way protection measures, where work is in close proximity to public ways (pedestrians)
14. Post "Danger" Signs
15. Assess area that requires excavation and trenching and determine the depth of the excavation required
16. Inspect intended excavation area for adjacent structures, prior to commencing excavation activities

17. Ensure adequate access / egress is in place (i.e. ladders, stairs, or ramps)

During Task:

1. Ensure excavation does not occur outside of the areas where locates were obtained, without obtaining further locates
2. Keep an area extending at least one metre from the upper edge of each wall of an excavation shall be kept clear of equipment, excavated soil, rock and construction material
3. Implement 'Confined Space' safe work procedures if necessary (Refer to the Confined Space WTS)
4. Commence excavation activities when it is safe to do so
5. While the excavation is open, underground utilities shall be protected, supported, or removed as necessary to protect employees
6. Remove and store excavation spoil in designated areas
7. Ensure trenches are kept free of water, snow and ice
8. Do not excavate/remove material from under any adjacent structures
9. Operate equipment machinery and/or tools as per manufacturer's instructions
10. When in operation, do not leave equipment, machinery and/or tools or controls unattended

Trenching, Sloping and Shoring:

1. Install shoring or other appropriate support systems, capable of protecting workers inside the excavation/trench, which are appropriate for the depth of the excavation/trench, and the soil type
2. Where the depth exceeds six metres or the width exceeds 3.6 metres, the support system shall consist of an engineered support system designed for the specific location
3. Progressively install support system for Type 1/2/3 Soil, install support system in advance for Type 4 Soil
4. Ensure support system for excavations walls, provides continuous support
5. Maintain design drawings and specifications for prefabricated, hydraulic or engineered support systems onsite, for the duration of the project

Task Completion:

1. Ensure all equipment / machinery / tools are maintained and stored appropriately in the designated locations
2. Implement any housekeeping or maintenance as required