City of Prince Albert

Safety Administrative Procedure

Ground Disturbances

Prepared by: Gordon Hood, Coordinator Health Safety and Environment

Approved by: Jim Toye, City Manager

Signature: _____ **Procedure No**: 5.1

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For any ground disturbance less than or equal to 1.2 meters in depth or disturbances in which workers will not enter excavated areas further protection/documentation is not required beyond items listed in the pre ground disturbance activities procedure and ensuring that spoil piles and weight loaded parts of equipment and vehicles are not permitted within 1metre of any excavated area that staff will be allowed to enter.

For all ground disturbances that exceed 1.2 metres in depth additional protections, documentation and training is necessary to ensure the safety of staff, contractors, public and associated infrastructure. This section outlines those additional requirements and options.

Note: Temporary protective structures cannot be used as a protection unless it has been certified by a professional engineer.

- The soil composition must be assessed to determine the appropriate type of soil in the excavated area. In some cases previous soil sampling may provide this information but in most cases will require the area to be excavated to inspect soil conditions. This assessment will provide guidance on what protections are appropriate for staff entering the excavated areas
    - Naturally frozen ground cannot be considered in determining soil type. In order for freezing to be considered a **Professional Engineer** must certify the soil as stable.
    - When an excavation or trench contains more than one type of soil, the soil must be classified as the soil type with the highest number.

- **Type 1 and 2 Soils**:

  - Excavated areas must be protected by using at least one of the following methods prior to allowing any individual to enter:
    - Sloping with a 1.2 metres straight cut section and then at least 45 degree (1:1), measured form the horizontal side slopes above that point.
    - Using a temporary protective structure that extends at least 300 mm above the surface of the ground.
    - Using shoring that complies with the requirements of Table 17 of the *Occupational Health and Safety Regulations, 1996* (Appendix 1).
    - Using a combination of the methods listed above.

- **Type 3 Soils** (most common type encountered):

  - Excavated areas must be protected by using at least one of the following methods prior to allowing any individuals to enter:

    - Sloping with all sides a min. of 45 degrees measured from the horizontal (1:1) and no straight cut sections.

    - Using a temporary protective structure that extends at least 300 mm above the surface of the ground.

    - Using shoring that complies with the requirements of Table 17 of the *Occupational Health and Safety Regulations, 1996* (Appendix 1).

    - Using a combination of the methods listed above.

- **Type 4 Soils**:

  - Excavated areas must be protected by using at least one of the following methods prior to allowing any individuals to enter:

    - Sloping with all sides a min. of 19 degrees measured from the horizontal (3:1) and no straight cut sections.

    - Using a temporary protective structure that extends at least 300 mm above the surface of the ground.

- Using shoring that complies with the requirements of Table 17 of the *Occupational Health and Safety Regulations, 1996* (Appendix 1).

- Using a combination of the methods listed above.

- An Excavation/Trenching Hazard checklist must be completed for each site and for longer duration activities at least weekly during the project.

- Prior to allowing any individual access to the excavation or trench a competent "top man" must be assigned whose sole duty is to watch for any soil movement/concerns and warn those present of the issues noted. This person must remain in place at all times workers are present in the excavated/trenched area and cannot be assigned other duties unless replaced by another competent person or the excavated/trenched area has been evacuated by all individuals.

- Prior to allowing entry all loose material must be scaled or trimmed from the sides of the excavated or trenched area.

- All heavy equipment, vehicles and spoil piles must be kept at least 1 metre from the edge of any excavation or trench at all times. Spoil piles must be sloped at no more than a 45 degree side slope.

- Prior to entry by staff and while staff are present a ladder must be placed within 8 metres of the work area and it must extend from the bottom of the excavation to a point at least 1 metre above the surface. If a ladder is not feasible stairways or ramps may be installed, but must also be within 8 metres of workers.

- If water seeps or otherwise enters the excavated/trenched area a plan must be developed for its removal.

Appendix 1:

TABLE 17

[Sections 262 and 263]

Excavation and Trench Shoring

Trench or Excavation Depth	Soil Type	Braces					Wales
		Uprights	Width of Excavation or Trench at Brace Location		Brace Spacing		
			1.8 m to 3.6 m	Up to 1.8 m	Vertical	Horizontal	
3.0 m or less	1	50 mm x 200 mm at 1.2 m o/c	200 mm x 200 mm	150 mm x 150 mm	1.2 m	*2.4 m	*200 mm x 200 mm
	2	50 mm x 200 mm at 1.2 m o/c	200 mm x 200 mm	150 mm x 150 mm	1.2 m	*2.4 m	*200 mm x 200 mm
	3	50 mm x 200 mm at 10 mm gap	200 mm x 200 mm	200 mm x 200 mm	1.2 m	2.4 m	250 mm x 250 mm
	4	75 mm x 200 mm at 10 mm gap	250 mm x 250 mm	200 mm x 200 mm	1.2 m	2.4 m	300 mm x 300 mm
Over 3.0 m to 4.5 m	1	50 mm x 200 mm with 10 mm gap	200 mm x 200 mm	150 mm x 150 mm	1.2 m	2.4 m	200 mm x 200 mm
	2	50 mm x 200 mm with 10 mm gap	200 mm x 200 mm	200 mm x 200 mm	1.2 m	2.4 m	250 mm x 250 mm
	3	50 mm x 200 mm with 10 mm gap	250 mm x 250 mm	250 mm x 250 mm	1.2 m	2.4 m	300 mm x 300 mm
Over 3.0 m to 4.0 m	4	75 mm x 200 mm with 10 mm gap	300 mm x 300 mm	300 mm x 300 mm	1.2 m	2.4 m	300 mm x 300 mm
Over 4.5 m to 6.0 m	1	50 mm x 200 mm with 10 mm gap	200 mm x 200 mm	200 mm x 200 mm	1.2 m	2.4 m	200 mm x 200 mm
	2	50 mm x 200 mm with 10 mm gap	250 mm x 250 mm	250 mm x 250 mm	1.2 m	2.4 m	250 mm x 250 mm
	3	50 mm x 200 mm with 10 mm gap	300 mm x 300 mm	300 mm x 300 mm	1.2 m	2.4 m	300 mm x 300 mm

* Note: for excavations and trenches to 3 m deep in soil types 1 and 2, the wales can be omitted if the braces are used at 1.2 m horizontal spacings.