



Ontario Emergency Medical Services Section 21 Sub Committee

Emergency Medical Services Guidance Note # 12

Trenches and Excavations

PREAMBLE

Paramedics are exposed to hazards while responding to calls at a variety of scenes. On occasion, paramedics are required to respond to events that have occurred in or around excavations and trenches.

The intent of this guidance note is to provide general awareness to assist in the EMS responses to injuries in or around a trench or excavation. It is NOT intended to provide guidance for a rescue operation because of the collapse of an excavation or trench, or atmospheric hazard.

Excavation: means a hole that is left in the ground, as a result of removing material.

Trench: means an excavation where the excavation depth is greater than the excavation width.

EXCAVATIONS

For all excavations, including trenches, the risk of collapse or cave-in of an exposed wall is one of the biggest hazards. An unstable excavation can cave-in along the excavated edge, resulting in harm. A number of factors can affect stability of excavations:

- soil type and moisture content
- weather
- vibration near the edge of the excavation
- depth of the excavation
- previous excavations or soil disturbances.

TRENCHES

For trenches, additional considerations may be a factor:

- improper use or installation of support system (shoring) or trench box
- depth of the trench
- length of time the trench is left open



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- material removed from trench (excessive weight near the trench)
- adjacent buildings and structures
- existing foundations, and
- previous excavations or soil disturbances.
- Storage of equipment or materials on the ground close to the opening of the trench that may compromise the structural integrity of the trench wall
- Unstripped loose rock or other material (such as ice) on the walls of an excavation that may slide, roll or fall upon a worker.

Due to the number of hazards associated with trenches, exercise caution in all work around trenches.

Information available indicates that the majority of emergency calls related to excavations and trenches are a result of injuries and medical issues that are not related to excavation or trench collapse. Other hazards include:

- flooding/water hazards.
- falls into trenches or excavations
- tripping over equipment or debris
- excavated material or other objects falling on workers in the trench
- exposure to energized underground services (hydro or gas) which may result in fire, explosion, arc flash or electrocution
- vehicle / equipment contacts with overhead electrical power lines while digging
- unstable adjacent structures
- mishandled or poorly placed materials
- stored materials near the trench opening falling onto workers in the trench
- inadequate means of safe access to or egress from a trench
- hazardous atmosphere (noxious gases/lack of oxygen)
- toxic, irritating or flammable and explosive gases
- incidents involving vehicles and other mobile equipment

HEALTH AND SAFETY GUIDANCE FOR EMS WORKERS

The EMS Section 21 Sub-Committee recommends that all paramedics be provided awareness training regarding excavations and trenches as required under clause 25 (2)(a) of the Occupational Health and Safety Act and the regulations. The publication,



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Excavation Safety Handbook for Emergency Responders, published by the Greater Toronto Sewer & Watermain Contractors Association (referenced below) provides relevant information regarding safety of paramedics related to excavations and trenches.

The greatest concern for workers is when working in excavations and trenches 1.2 metres or greater in depth or near excavations and trenches 2.4 metres deep or greater that do not have a barrier around the perimeter to prevent a worker or member of the public from falling in.

On construction projects, depending on soil type and condition, some trenches may be constructed safely using appropriate sloped sides. Some trenches are constructed with built in place supports, engineered to support the trench walls and others may be outfitted with pre-fabricated support structures.

Specific guidelines, standards and regulations, (specifically sections 226 to 242 of O. Reg. 231/91 – *Construction Projects*), exist regarding excavation and trench safety; however, paramedics are not trained in recognition of proper trench construction and safety. Therefore, it is the recommendation of the sub-committee that paramedics avoid entry into trenches if possible.

Non-collapse incidents:

In accordance O. Reg 213/91 Section 17 – constructors on a construction project are required to have written procedures to follow in an emergency.

The majority of EMS responses to excavation sites involve falling objects, equipment mishaps, illness, medical conditions or slips, trips and falls.

Following a risk assessment and consultation with the site supervisor and when entry into an excavation or trench is deemed safe and necessary; follow the instructions of the site supervisor or incident commander at the construction project.

Collapse incidents:

If there are any indications of a partial or full collapse, or if there is an indication of any other hazards, including suspicions that the excavation or trench is not stable (e.g. no visible support structure) paramedics should require the injured person be removed from the excavation or trench prior to providing care.

Paramedics should also exercise caution if responding to incidents where the construction regulation does not apply, such as a homeowner digging a foundation on their private residence or the owner of a family farm digging a trench.

Operation of vehicles:

When entering an area where an excavation or trench is present it is important to recognize that the weight of a vehicle, or the vibration created from a vehicle can cause the wall of the excavation or trench to collapse. Therefore, caution is needed with



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respect to placement of vehicle and route of travel near the excavation. Vehicles and equipment should be kept at least 1 metre away from the edge of an excavation. Paramedics must follow the instructions of on-site personnel (supervisor, fire service, police) for guidance regarding safe vehicle movement.

Where there is no guidance, keep the vehicle as far away as possible from the excavation or trench or the material removed from the excavation or trench.

SOME RELEVANT OCCUPATIONAL HEALTH AND SAFETY ACT REQUIREMENTS

Employers are required by the Occupational Health and Safety Act (OHSA) to:

- Acquaint a worker or person in authority over a worker with any hazard in the work – OHSA clause 25 (2)(d)
- Provide information, instruction and supervision to a worker to protect the health or safety of the worker – OHSA clause 25(2)(a)
- Take every precaution reasonable in the circumstances for the protection of a worker – OHSA clause 25(2)(h).

Supervisors are required under the OHSA to:

- Advise a worker of the existence of any potential or actual danger to the health and safety of the worker of which the supervisor is aware – OHSA clause 27(2)(a).
- Take every precaution reasonable in the circumstances for the protection of a worker – OHSA clause 27(2)(c).

Workers are required under the OHSA to:

- Work in compliance with the provisions of the Act and the regulations – OHSA clause 28(1)(a).
- Use or wear the equipment, protective devices or clothing that the worker's employer requires – OHSA clause 28(1)(b).
- Report to an employer or supervisor the absence of, or defect in any equipment or protective devices of which the worker is aware and which may endanger the health or safety of a worker – OHSA clause 28(1)(c).
- Report to a supervisor or employer any contraventions of the Act or regulations or the existence of any hazard of which he or she is aware – OHSA clause 28(1)(d).

REFERENCES AND RESOURCE INFORMATION

Greater Toronto Sewer & Watermain Contractors Association, [Excavation Safety Handbook for Emergency Responders.](#)

Ministry of Labour – [Construction Safety, Excavation Hazards](#)



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Infrastructure Health and Safety Association (IHSA) – [Trenching and Excavation](#)

[Ontario Regulation 213/91 – Construction Projects](#)

This document should be shared with the workplace Joint Health and Safety Committee or Health and Safety Representative, incorporated into the workplace occupational health and safety policy and program where appropriate, and posted on the Public Services Health & Safety Association website and the websites of other interested stakeholders.

This Guidance Note has been prepared to assist the workplace parties in understanding some of their obligations under the Occupational Health and Safety Act (OHSA) and the regulations. It is not intended to replace the OHSA or the regulations and reference should always be made to the official version of the legislation.

It is the responsibility of the workplace parties to ensure compliance with the legislation. This Guidance note does not constitute legal advice. If you require assistance with respect to the interpretation of the legislation and its potential application in specific circumstances, please contact your legal counsel.

While this Guidance Note will also be available to Ministry of Labour inspectors, they will apply and enforce the OHSA and its regulations based on the facts as they may find them in the workplace. This Guidance Note does not affect their enforcement discretion in any way.