HSE PROCEDURE

EXCAVATION & TRENCHING SAFETY PROCEDURE

Construction & Civil

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Approval / Sign-off

Role	Name	Designation	Signature	Date
Prepared By	[Name]	HSE Officer	[Signature]	[Date]
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Note: *Name, Designation, Signature and Date fields are editable placeholders — complete prior to controlled issue.*

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1.0 PURPOSE

This procedure establishes the minimum requirements for planning, authorizing, supervising and safely executing excavation and trenching works, in order to prevent cave-ins, falls, striking of buried services, engulfment, and other hazards associated with below-ground works.

2.0 SCOPE

This procedure applies to all excavation and trenching activities performed by employees, contractors and subcontractors on any project or site under the organization's control, including trenching for pipelines/cables, foundation excavation, potholing, and any other below-grade earthworks, regardless of depth.

3.0 DEFINITIONS & ABBREVIATIONS

Term	Definition
Excavation	Any man-made cut, cavity, trench or depression formed by earth removal.
Trench	A narrow excavation, generally deeper than it is wide, and no wider than 4.5m at the bottom.
Competent Person	An individual capable of identifying existing and predictable excavation hazards, with authority to take prompt corrective action.
Shoring	A structure (e.g. hydraulic, timber) that supports the sides of an excavation to prevent soil movement or collapse.
Benching	A method of protecting workers from cave-ins by excavating the sides to form horizontal steps.
Sloping	Cutting back the trench wall at an angle inclined away from the excavation to prevent collapse.
Spoil	Excavated material (soil/rock) removed from the excavation.
Underground Services	Buried utilities including electrical cables, gas lines, water/sewer pipes, telecom ducts.
CAT Scan	Use of a Cable Avoidance Tool (or equivalent) to detect buried services before digging.

4.0 ROLES & RESPONSIBILITIES

Role	Responsibility
Project / Site Manager	Ensures excavation works are planned, resourced, and only proceed with a valid excavation permit; allocates competent personnel and equipment.
HSE Officer	Reviews and endorses excavation permits; conducts periodic inspections; verifies atmospheric testing and protective systems are in place.
Competent Person / Excavation Supervisor	Classifies soil type, selects the protective system (sloping/benching/shoring/shielding), inspects the excavation daily and after any event that could affect stability, and has authority to stop work.
Utility Locator / Surveyor	Identifies and marks the position of underground services prior to excavation using drawings and detection equipment.
Excavator / Machine Operator	Operates plant only within marked/authorized limits, maintains safe approach distances from services, and stops immediately if unmarked services or hazards are encountered.
Workers Entering the Excavation	Comply with the permit, use provided access/egress and protective systems, and report any signs of instability immediately.

5.0 REFERENCE STANDARDS & LEGISLATION

- ISO 45001:2018 — Occupational Health & Safety Management Systems
- ISO 14001:2015 — Environmental Management Systems (spoil and drainage management)
- OSHA 29 CFR 1926 Subpart P — Excavations (or equivalent applicable regulation)
- Local / national labor law, construction safety regulations, and utility-strike prevention legislation applicable to the country of operation

> *This procedure shall be adapted to reflect applicable local/national HSE legislation, as regulatory requirements vary by country and jurisdiction.*

6.0 PROCEDURE / METHODOLOGY

PRE-TASK

1. Obtain a valid Excavation Permit / Permit to Work prior to commencing any excavation, signed by the Competent Person and HSE Officer.
2. Identify and mark the location of all underground services using as-built drawings, utility company records, and a Cable Avoidance Tool (CAT) scan or equivalent; hand-dig trial holes (potholing) to confirm service depth/position before mechanical excavation within 1m of a marked service.
3. Classify the soil type (stable rock, Type A, B or C) to determine the maximum safe slope angle or the need for shoring/shielding.
4. Conduct a Job Safety Analysis (JSA) and toolbox talk covering the specific excavation, ground conditions, protective system, and emergency arrangements.
5. Establish barricading, signage, and safe pedestrian/vehicle routes around the excavation perimeter (minimum 2m exclusion unless otherwise engineered).
6. Plan safe means of access and egress — a ladder, ramp, or steps within 8m of travel for any worker inside the excavation, extending at least 1m above ground level.

DURING TASK

1. Excavate progressively; the Competent Person inspects the excavation at the start of each shift, after rainfall, after any ground movement, and following any event that could increase hazard.
2. Install and maintain the selected protective system (sloping, benching, shoring, or trench box/shield) for any excavation 1.2m (4ft) or deeper, or shallower where hazardous ground conditions exist.
3. Keep spoil, materials and equipment set back at least 0.6m (2ft) from the excavation edge to prevent surcharge loading and edge collapse.
4. Test the atmosphere within excavations deeper than 1.2m, or where there is potential for oxygen deficiency or hazardous gas accumulation, before entry and continuously if conditions warrant.
5. Keep mobile plant and vehicles at a safe distance from the excavation edge in line with the ground's angle of repose; use wheel stops/barriers where plant must approach the edge.
6. Immediately stop work and evacuate the excavation if unmarked services, groundwater ingress, cracking, bulging, or any sign of instability is observed; notify the Competent Person and HSE Officer.

POST-TASK

1. Backfill and compact in accordance with the engineering specification, or secure the open excavation with full perimeter barricading, edge protection and warning lighting if left open.
2. Remove or clearly re-instate all temporary protective systems, shoring, and access/egress equipment on completion.
3. Close out the Excavation Permit, file inspection records, and update utility drawings if any services were exposed or relocated.

7.0 RISK ASSESSMENT & CONTROL MEASURES

The following hazards are typical to excavation and trenching works and shall be assessed and controlled on a site- and task-specific basis:

Hazard / Risk	Potential Consequence	Existing Control	Residual Risk	Additional Action Required
Trench/excavation collapse (cave-in)	Burial, crush injury, fatality	Sloping, benching, shoring/shielding per soil classification; daily Competent Person inspection	Critical	Engineer-designed protective system for depths >6m or unstable ground
Strike of live underground service	Electrocution, explosion, gas release, fatality	Utility drawings review, CAT scan, hand-digging near marked services	High	Utility company standby / positive isolation confirmation before mechanical digging
Fall of person into excavation	Fracture, serious injury	Barricading, signage, edge protection, covers over unattended excavations	High	Physical barriers reviewed at every shift start
Fall of materials/plant into excavation	Struck-by injury, fatality	Spoil/material set back ≥0.6m from edge; wheel stops for plant	Medium	Toe boards / catch fencing at edge where public access nearby
Oxygen deficiency / hazardous atmosphere	Asphyxiation, poisoning	Gas testing prior to and during entry for excavations >1.2m	High	Continuous monitoring with alarm for deep/confined trenches
Water ingress / flooding	Drowning, destabilized walls	Dewatering pumps, drainage diversion, stop-work on ingress	Medium	Weather monitoring and pre-task rainfall forecast check
Falling/tripping over spoil or equipment at surface	Sprain, laceration	Housekeeping, defined walkways, spoil placement plan	Low	Daily housekeeping inspection

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

- Safety helmet, high-visibility vest/clothing, safety footwear (steel-toe) — mandatory for all persons at the excavation.
- Gloves appropriate to task (cut-resistant / general purpose).
- Safety glasses / goggles when using hand or power tools.
- Respiratory protection where atmospheric testing indicates a requirement, selected per the site Respiratory Protection Program.
- Fall-arrest / retrieval equipment where excavation depth and configuration require confined-space entry controls.

9.0 TRAINING & COMPETENCY REQUIREMENTS

- Competent Person: formal excavation/trenching competency training covering soil classification, protective systems design, and inspection requirements.

- Excavator/machine operators: valid plant operator certification plus site-specific induction on service-avoidance procedures.
- All workers entering or working near excavations: excavation hazard-awareness toolbox talk prior to task commencement.
- Gas testing personnel: certified in the use of atmospheric monitoring equipment relevant to the site.
- Records of training/competency retained per Section 11.0.

10.0 EMERGENCY ARRANGEMENTS

- A rescue plan specific to excavation collapse or entrapment shall be established before work begins, including access for emergency services and retrieval equipment where entry depth/configuration warrants it.
- Emergency contact numbers and the nearest muster point shall be communicated during the pre-task toolbox talk.
- Refer to the site Emergency Response Plan (ERP) for general emergency arrangements.

11.0 RECORDS & DOCUMENTATION

Record	Retention Period	Custodian
Excavation Permit / Permit to Work	3 years	HSE Department
Daily / shift Competent Person inspection log	3 years	Site HSE Officer
Utility locate / CAT scan records and marked drawings	Life of project + 3 years	Site Engineer
Atmospheric / gas testing records	3 years	HSE Department
Job Safety Analysis (JSA) and toolbox talk attendance	3 years	HSE Department

12.0 APPENDICES

- Appendix A — Excavation Permit Template
- Appendix B — Daily Excavation Inspection Checklist
- Appendix C — Soil Classification & Protective System Selection Guide

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