1. PURPOSE

This standard provides minimum requirements to safeguard against hazards associated with ground disturbance, excavations, and trenching.

2. SCOPE

This Standard is applicable to employees of Expand Energy (EXE), its affiliates or subsidiaries who are on EXE properties or on the company's behalf.

Contractors **shall** have their own Standards that meet or exceed regulatory requirements.

3. DEFINITIONS

Benching - A method of protecting employees from cave-ins by excavating the sides of a trench to form one or a series of horizontal levels, or steps, usually with vertical or near-vertical surfaces between levels.

Competent Person – One who is formally trained and capable of identifying existing and predictable hazards, soil types in the surroundings or working conditions that are unsanitary or hazardous to employees and who has authorization to take prompt corrective measures to eliminate them.

Designee – One who represents EXE during excavation activities, ensuring appropriate practices, personnel and controls are in place.

Ground Disturbance – Any displacement of earth or penetration of the ground by mechanical or manual means, including activities such as augering, boring, backfilling, drilling, grading, pile driving, plowing in, pulling in, trenching, tunneling and plowing, and driving ground rods.

Ground Disturbance Incident (GDI) – Any event that is associated with ground disturbance activities.

Excavation – Any man-made hole, cavity, or depression in an earth surface formed by earth removal.

Excavator – Entity who initiates a One Call request and intends to perform ground disturbance activities.

One Call System – Managed by individual states, One Call systems facilitate communication between owners/operators of underground utilities and entities intending to excavate.

Positive Response – Process for One Call member companies which allows utility owners/operators to communicate to the excavator the status of their notification request, thus closing the communication loop. It lets the excavator know if an underground utility is marked, unmarked, not in conflict, etc.

Shall – Denotes a minimum requirement to conform to the Standard. To aid the reader, "shall" requirements are identified in bold. Any deviation from a minimum requirement must be approved via the Standard Exception Form.

Should – Denotes a recommendation, or that which is advised, but not required to conform to the Standard.

Shoring – Engineered structure such as a metal, hydraulic, mechanical or timber shoring system that supports the sides of an excavation and is designed to prevent cave-ins.

Sloping – A method of protecting employees from cave-ins by excavating to form sides of an excavation that is inclined away from the excavation.

Soil Classification System – Denotes classification of soil types, with each type corresponding to specific requirements for proper sloping, shoring and shielding of the soil in an excavation.

Trench – A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, but the width of a trench (measured at the bottom) is not greater than 15 feet.

Trench Box – Fixed equipment that can be inserted into an excavation and protects entrants from cave-ins.

4. ROLES & RESPONSIBILITIES

4.1. SUPERVISORS

- Select and approve vendors to perform ground disturbance activities for EXE.
- Ensure each vendor is capable of safely performing ground disturbance activities and is on the Approved Vendor List (AVL) or subcontracted through a vendor on the AVL.
- Identify appropriate Designee to represent EXE during excavation activities. Designee **shall** be present during all third-party crossings of EXE utilities.
- Ensure employees are trained on the requirements of this standard.

4.2. COMPETENT PERSON

- Conduct inspections of excavations each day when personnel are anticipated to enter.

- Discuss and document safety precautions on Job Safety Analysis (JSA) with all employees prior to beginning work.
- Verify safety precautions are taken during trenching and excavation operations.

4.3. DESIGNEE

- Ensure an approved vendor performs the planned excavation and that the vendor is providing a Competent Person and equipment operators.
- Participate in a pre-job safety meeting with the vendor to discuss the scope of work.
- Prior to allowing any excavations to commence, the Designee **shall** verify all existing utilities have been marked and/or cleared and the site is safe to dig.
- Supervise line crossings when EXE is performing a crossing.
- Assist private utility owners or landowners in locating lines that are not a part of the one-call system.

4.4. EXCAVATOR

- Contact the state One Call Center according to state requirements to make a Locate Request prior to beginning an excavation.
- Ensure the boundary of the proposed excavation or dig site is marked with white paint, flags, stakes or a combination thereof.
- Obtain a Positive Response prior to beginning any non-emergency excavation.
- Ensure a copy of the One Call ticket is available.
- Immediately report any GDI involving a utility to an EXE supervisor.

4.5. LINE LOCATORS

- **Shall** be authorized to locate utilities on behalf of EXE.
- **Shall** have Operator Qualifications in accordance with the EXE Operator Qualification Program when locating DOT/State regulated pipelines owned or operated by EXE.
- Respond to all incoming Locate Requests by providing a Positive Response and mark utilities as applicable in accordance with state regulations and EXE requirements.

4.6. HSER

- Provide guidance and support to operations with the implementation of this Standard.
- Establish and maintain a system for processing Locate Requests (HSER corporate).

4.7. GIS SERVICES

- Create required buffers to be submitted to One Call Centers.
- Submit data to One Call Centers.
- Review and approve submissions/data with One Call Centers.

4.8. OPERATIONS SERVICES CENTER

- Respond to 24/7/365 emergency damage notifications from the state 811 agencies and notify Business Unit (BU) contacts.
- Receive emergency One Call tickets and elevate response if necessary, based on current BU status.

4.9. SPOTTER

- When the Person In Charge (PIC) determines that a spotter is required for mechanized ground disturbance activities, the Spotter(s) **shall** maintain a clear line of sight between the area being excavated and the equipment operator.
- Alert the operator during potentially unsafe conditions.

5. REQUIREMENTS

Ground disturbance activities **shall** be properly planned and safely executed, and comply with the Environmental Site Assessment Standard.

One Call requirements applicable in the state where work is being conducted **shall** be adhered to.

5.1 ONE CALL LOCATE REQUESTS

As an owner/operator of underground utilities, Expand Energy **shall** participate as a Member in applicable state One Call programs.

Locate Requests **shall** be responded to as early as possible and in accordance with state regulations.

When locating utilities, a Positive Response **shall** be provided to the Excavator, in accordance with state regulations, to advise if:

- utilities have been located and marked;
- abandoned pipeline exists in the proposed excavation area or dig site (certain states require abandoned pipeline to be marked); **or**
- there are no utilities in the vicinity of the proposed excavation.

5.1.1 Marking Requirements

Utilities **shall** be marked in accordance with state regulations.

Terrain and site conditions which may affect markings **shall** be considered in determining the most suitable means when marking utilities.

If a One Call Ticket has been renewed/updated, it **shall** be ensured that marks are still visible and valid, or the utility **shall** be re-marked as necessary.

The boundary of the proposed excavation or dig site is typically marked with white paint, flags, stakes or a combination thereof by the Excavator. If the boundary of the proposed excavation or dig site is not marked or unclear, then contact **shall** be made with the Excavator to verify the exact location of the excavation.

5.2 Soil Classification

Soils classifications are *Stable Rock*, and Types *A*, *B* and *C* Soils.

All soils **shall** be classified as Type C soils (least stable) unless a Competent Person deems the soil a different type by at least one visual and one manual soil analysis. The soil classification **shall** be documented as required on applicable excavation inspections.

The soil type **shall** be re-classified, if necessary, in the event of changing weather conditions, or any event that may affect the stability of the soil. When soils are configured in layers, they **shall** be classified by the weakest layer.

The thumb penetration test can be performed by a Competent Person to estimate the strength of cohesive soils. For additional details regarding Soil Classification refer to Appendix B.

5.3 General Safe Work Requirements

- Excavated soil and materials **shall** be stored and/or retained at least 2 ft. (0.61 m) from the edge of the excavation.
- Support systems **shall** be provided if excavations endanger the stability of adjacent structures (building, walls, or other structures).
- Soils can become unstable from heavy equipment operation in the vicinity of the excavation. Vehicles and other machinery **shall not** be driven or parked within 15 feet of the edge of an open excavation unless it is actively working an excavation.
- Personnel **shall not** be inside an excavation while moving equipment is present on the edge of the disturbance area unless adequate protective systems are in place.
- Persons **shall not** be directly underneath equipment while it is being lowered or raised in an excavation or trench.

- Special precautions **shall** be taken if precipitation or surface water affects the excavation. Personnel **shall not** enter any excavation where water has accumulated or is accumulating unless adequate precautions are taken to protect personnel.
- Barricade tape/flagging should be used to mark the limits of the work area. Any time an excavation is left unattended, guardrails, temporary fencing or fixed barricades sufficient in size to prevent unintentional entry **shall** be utilized.
- Employees exposed to public vehicular traffic **shall** wear reflective/high-visibility warning vests.

5.4 Excavation Practices

5.4.1 Utility Locating

Before beginning any excavations, personnel **shall**:

- Determine the location of utility installations, such as sewer, communication lines, fuel, power lines, water lines, pipelines or any other underground installations.
- Utilize the One Call system to submit a line Locate Request in accordance with state requirements before the start of excavating.
- *Emergency* Locate Requests **shall** be made by utilizing the One Call system, and also in accordance with state requirements before the start of excavating.
- Identify the proposed excavation location by marking with white paint / flags.
- Adhere to the tolerance/encroachment zones for digging around utility lines / markers.

All locate tickets **shall** have a Positive Response and **shall** be accessible on location for the duration of the excavation.

Work **shall not** begin until the proper approval has been granted from the applicable third-party utility owner, or as allowed by state One Call rules.

If required by the utility owner, excavation within their easement **shall not** begin until a utility owner representative is on location.

5.4.2 Inspections

For excavations that involve personnel entry and are greater than 4 feet in depth, inspections **shall** be performed by a Competent Person each day personnel entry is planned. Appendix A contains an example Excavation and Trenching Checklist.

5.4.3 Entry / Egress

Excavations that involve personnel entry and are greater than 4 feet in depth require ladders, steps or ramps located so that no more than 25 ft. (7.6 m) of lateral travel is required to exit the excavation.

5.4.4 Preventing Cave-Ins

The walls of excavations that are greater than 4 feet in depth are to be protected from caving-in by one of the following, unless the excavation is made entirely in stable rock:

- Shoring
- Sloping or benching (Note: Benching is only allowed on A and B Soil.)
- Trench boxes (shields) – If used, **shall** extend a minimum of 18 inches above the vertical side of any excavation.
- Some other equivalent means approved by a Registered Professional Engineer from the state where the excavation is located.

*Note: Sloping or benching for excavations greater than 20 ft. (6 m) deep **shall** be designed by a Registered Professional Engineer.

Maximum Allowable Slopes for Excavations

Soil or Rock Type	Horizontal : Vertical	Less than 20' Depth
Stable Rock	vertical	90 degrees
Type A	¾ : 1	53 degrees
Type B	1 : 1	45 degrees
Type C	1-½ : 1	34 degrees

5.4.5 Hazardous Atmospheres

Excavations greater than four feet in depth **shall** be atmospherically tested with a calibrated sampling device and documented on the Inspection Checklist before personnel enter the excavation. All personnel entering an excavation **shall** be wearing a four-gas monitor.

Acceptable parameters are:

- Oxygen 19.5 – 23.5%
- Flammable Gas < 10% LEL
- CO < 35 ppm
- H2S < 10 ppm

Due to the potential for causing a hazardous atmosphere from leaking fittings, compressed gas cylinders **shall not** be allowed inside excavations.

5.5 Line Crossings

5.5.1 Marking

Any planned line crossing locations **shall** be clearly marked to identify the zones where excavating by mechanical means is restricted.

5.5.2 Area Designation

The Red Zone is defined as the area within a three-foot radius of a buried pipeline or utility. Absolutely no mechanical digging **shall** be allowed inside the Red Zone; only non-destructive methods such as a hydro excavation or appropriate hand tools are allowed (refer to Figure 5.6.2 Line Crossing Critical Zone Diagram).

The Encroachment Zone is defined as the area outside of the Red Zone, but within a 10 foot radius of the buried pipeline or utility. A Designee **shall** be onsite for all mechanical excavation within the Encroachment Zone.

Known active lines that cannot be located, **shall not** be mechanically excavated and **shall** be de-energized and locked out prior to exposure if possible.

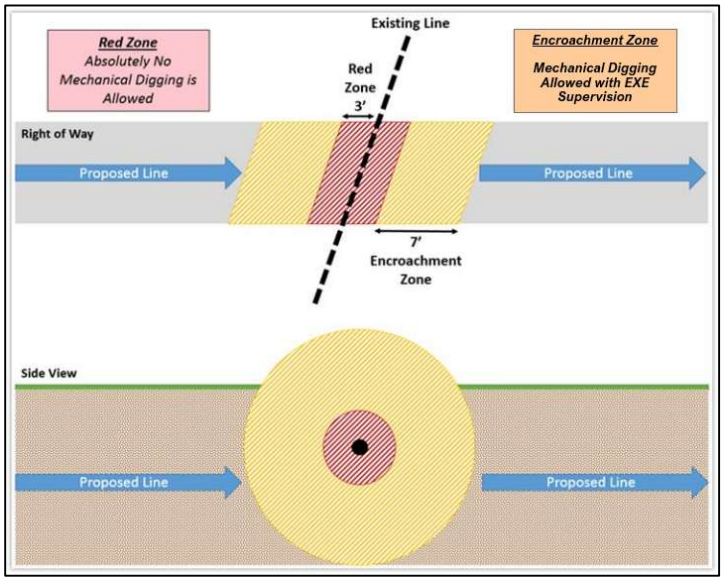

Figure 5.6.2 *Line Crossing Critical Zone Diagram*

5.5.3 Crossing EXE Lines

For non-electrical utilities, when installing new lines that cross existing utilities, lines **shall** be separated by at least 24 inches plus half the nominal diameter of the pipe away from the existing line.

For electrical installations, the minimum expectations outlined in Table 5.5.3 Electrical Line Crossing Minimum Requirements apply. If electrical installations are bored beneath EXE lines, the minimum distance requirements **shall** be adhered to.

Table 5.5.3 Electrical Line Crossing Minimum Requirements

Voltage	Minimum Distance Between Utilities	Minimum Ground Cover
120 VAC - 400 VAC	12”	24”
401 VAC - 600 VAC	24”	24”
601 VAC – 5,000 VAC	48”	36”
5,001 VAC – 14,000 VAC	72”	48”
>14,000 VAC	72”	72”

5.5.4 Trenchless Excavation Crossings

In the case of a bore or drill crossing an EXE buried line, the Excavator **shall** maintain a minimum vertical separation of 24 inches from EXE utilities.

An observation hole **shall** be created when possible, to expose EXE’s line on the upstream side of the bore to the bottom of EXE’s line.

An EXE Designee **shall** be on site to witness the bore staking, pilot hole sighting, observation hole and any other activity associated with the work.

5.5.5 Crossing Third Party Utilities

When crossing third party utilities, the utility owner **shall** specify the line crossing requirements. If requirements are not given, or if the requirements are less stringent than the EXE Crossing Requirements defined in Section 5.5, the EXE Crossing Requirements **shall** be adhered to.

5.6 Incident Reporting

If during excavation a utility has been exposed and/or damaged, it is the excavator's responsibility to promptly notify the utility owner/operator so the line may be inspected and repaired, if necessary, before being backfilled.

In the event of a damaged utility, the state One Call center **shall** be notified by the Excavator as required.

For additional details, refer to Appendix C - Examples of Ground Disturbance/Excavation Incident Classifications.

6. TRAINING

Ground Disturbance, Excavation and Trenching awareness training **shall** include at a minimum:

- The hazards of excavations and trenches
- Differences between trenches and excavations
- Methods used for protection in or around trenches or excavations
- Responsibilities of employee covered by this standard

Competent Person(s) **shall** receive additional training.

Line Locators **shall** be trained on:

- Types of locating equipment (hands-on training)
- Various types of underground utilities and installation practices
- Requirements of state One Call systems

7. AUDIT REQUIREMENTS

Audits **shall** be periodically conducted by HSER in order to confirm compliance with this Standard.

8. STANDARD EXCEPTIONS

Requirements outlined in this Standard **shall** be followed, unless a Standard Exception is filed on behalf of, and with the approval of the Operations Manager. The Company's Standard Exception Form is to be utilized to properly document any exceptions.

9. REFERENCES

- CFR 1926 Subpart P (OSHA excavation standards)
- EXE Energy Isolation Standard

10. DOCUMENT CONTROL TABLE

Title: GROUND DISTURBANCE, EXCAVATION & TRENCHING STANDARD	**Document Number**: HSER-SAF-EXE-STD-010
Next Review Date: 08/01/2028	
Originating Department: HSER	

Version History

Version	Issue Date	Description	Author(s)	Approved By
1.0	08/01/2025	Developed new standard for EXE.	Katie Rhoads, Dana Drury	OGB

11. APPENDICES

Appendix A – EXE Excavation and Trenching Checklist (HSER-SAF-EXE-FRM-014)

Appendix B – Soil Classification

Appendix C – Examples of Ground Disturbance/Excavation Incident Classifications

Appendix A –Example of an Excavation and Trenching Checklist

EXCAVATION and TRENCHING CHECKLIST

Document Number: HSER-SAF-EXE-FRM-014
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Effective Date: 08/01/25
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Instructions: All trenches and excavations designed for personnel entry which are four (4) feet in depth or greater require the completion of this checklist by a Competent Person at the location.

Date:	Start Time: ☐ AM ☐ PM	Expiration Time: ☐ AM ☐ PM

WORK DETAILS

Office/Area/BU:	Location:
Description of Work:	
Name of Competent Person:	Phone Number:

REQUIREMENTS

Answer all questions by checking the appropriate box. IF "NO", CONDITION MUST BE CORRECTED BEFORE WORK MAY BEGIN	
Have the locations of underground utilities or other installations been identified?	☐ Yes ☐ No ☐ N/A
Are all personnel involved equipped with proper PPE?	☐ Yes ☐ No ☐ N/A
Have all required permits been obtained? (Hot Work, Municipality)	☐ Yes ☐ No ☐ N/A
Has adequate water control/drainage been provided to prevent surface water from entering the excavation?	☐ Yes ☐ No ☐ N/A
If four (4) feet in depth or greater, has a protective system (shoring, sloping, benching, shielding) been provided?	☐ Yes ☐ No ☐ N/A
If traffic hazards are present, are appropriate safety measures in place? (high visibility vests, barricades)	☐ Yes ☐ No ☐ N/A
Have materials that could pose a hazard been located at least two (2) feet from the edge of the excavation?	☐ Yes ☐ No ☐ N/A
For trenches four (4) feet or deeper, has a means of egress (exit) such as ladders, stairs, or ramps been provided such that lateral travel distance for workers needing to exit the trench does not exceed 25 feet?	☐ Yes ☐ No ☐ N/A
Does the support or shield system used to protect vertical sided lower portions extend at least 18 inches above the top of the vertical side?	☐ Yes ☐ No ☐ N/A
If greater than 20 feet deep, has the protective system been designed by a Registered Professional Engineer and is the design information on site?	☐ Yes ☐ No ☐ N/A
Has the potential hazardous atmosphere been monitored? (Document air monitoring below.)	☐ Yes ☐ No ☐ N/A

SOIL TYPE

Stable Rock _____ Type A _____ Type B _____ Type C _____

SLOPE RATIO

½:1 _____ ¾:1 _____ 1:1 _____ 1½:1 _____ Other_____

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EXCAVATION and TRENCHING CHECKLIST

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AIR MONITORING					
Initials	Time	Oxygen (19.5-23.5%)	% LEL (<10%)	H2S (<10ppm)	CO (<35ppm)

ACCEPTABLE ATMOSPHERIC CONDITIONS MUST BE PRESENT AND MAINTAINED TO ALLOW ENTRY INTO TRENCHES AND EXCAVATIONS. IF THE ATMOSPHERE BECOMES HAZARDOUS, ALL PERSONNEL MUST EVACUATE THE TRENCH OR EXCAVATION. PRIOR TO RE-ENTRY, ATMOSPHERIC CONDITIONS MUST BE RENDERED SAFE

APPROVAL AND SIGNATURE	
Competent Person: (Print name) _____ (signature) _____	Date:

Copy to be filed and retained for one (1) year.

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Appendix B – Soil Classification and Thumb Penetration Test

Soils classifications are:

- Stable Rock – Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
- Type A Soil – A cohesive soil with an unconfined compressive strength of 1.5 tons/ ft (tsf) (14.6 Mg/m2) or greater. Examples: clay, silty clay, sandy clay, clay loam, silty clay loam, sandy clay loam, caliche and hardpan. (If a soil is fissured, subject to vibration or previously disturbed, it is considered Type B or C.)
- Type B Soil – A less cohesive soil with an unconfined compressive strength greater than 0.5 tsf (4.9 Mg/m2) but less than 1.5 tsf (14.6 Mg/m2). Examples: angular gravel or crushed rock, silt, silt loam, sandy loam and dry rock that is not stable.
- Type C Soil – The least cohesive soil with an unconfined compressive strength of 0.5 tsf (4.9 Mg/m2) or less. Examples: gravel, sand, loamy sand, submerged soils or freely seeping soils and submerged rock that is not stable.

Thumb Penetration Test:

- Type A soils can be readily indented by thumb only with great effort.
- Type B soils can be penetrated by thumb approximately halfway.
- Type C soils can be easily penetrated several inches by the thumb and can be molded by light finger pressure.

Appendix C – Examples of Ground Disturbance/Excavation Incident Classifications

LINE STRIKE – PREVENTABLE: Hitting an energized or unenergized line after all reasonable measures and precautions have not been taken. Examples include but are not limited to:

- Damaging a line because the Excavator/Company did not wait to obtain all responses to a One Call ticket, and wait for the Dig Area to be marked before Excavating
- Striking a line as a result of using mechanical equipment within the Tolerance Zone
- Hitting a utility because a Locator missed a utility or provided an improper locate when marking the dig area • causing damage to a line because a One Call ticket was not obtained
- Hitting a line because of failure to maintain Markings (due to traffic, rain, etc.)
- Causing damage to a utility due to using the wrong equipment, such as a sharp probe or pick-axe, when within the Tolerance Zone

LINE STRIKE: Hitting an energized or unenergized line after all reasonable measures and precautions have been taken. Examples include but are not limited to:

- Hitting a poly line with no tracer wire, or a low voltage communications line, because it was unable to be located
- Striking an abandoned utility that is not required to be submitted to One Call and/or marked, or other utilities, such as communications or electrical wires that are not charged and in use
- Damaging a line known to be in the area, but cannot be found after multiple attempts, and proceeding with excavation after conducting a risk assessment and mitigating all hazards (e.g., bleeding the line, removing energy, LOTO, etc.)
- Hitting a line because of an improper locate by a Third Party

NEAR MISS: Examples include but are not limited to:

- An Excavator discovers a buried utility that was not marked or not marked accurately
- An Excavator is found digging without having notified the state One Call Center