

Procedure Title:	Trenching & Excavation	SOP Number:	SOP-100-03-PR-016
Procedure Owner:	Corporate HSE	Issuing Authority:	Chief Safety Officer

TRENCHING & EXCAVATION

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1.0 PURPOSE

The purpose of this procedure is to establish the minimum requirements for Trenching & Excavation for STIS DBA Southeast Texas Industrial Services.

2.0 SCOPE

This procedure applies to all HenSu Holdings employees, contractors, subcontractors and visitors associated with an HenSu Holdings site.

3.0 RESPONSIBILITIES

The following personnel have responsibilities defined in this procedure:

- HenSu Holdings Managers
- HenSu Holdings Supervisors
- HenSu Holdings Employees
- HenSu Holdings Contractors
- HenSu Holdings Subcontractors
- HenSu Holdings Visitors

4.0 PROCEDURE

Each site shall make every attempt to prevent the possibility of incidents and accidents to employees while performing work activities in and around trenching and excavation operations, through compliance with safety regulations, the training of employees to properly perform their job activities, and through employee involvement in safe work activities.

4.1 General

- 4.1.1 A designated Trenching and Excavation Competent Person shall be onsite at all times when excavation activities are conducted.
- 4.1.2 Before any excavation can be started, an SOP-100-03-FM-016-1 – Excavation Permit / Inspection Report shall be completed by HenSu Holdings supervision with input from the Trenching and Excavation Competent Person.
 - 4.1.2.1 Appropriate client approval may be required by client regulations.
 - 4.1.2.2 Client and/or utility company representatives shall be notified 48 hours prior to beginning excavations. (Dial 811 Call before you dig)
 - 4.1.2.3 All utilities exposed during an excavation shall be protected from accidental damage.
 - 4.1.2.4 Prior to excavation form SOP-100-03-FM-016-2 Pre-Excavation Line Sweep Report should be completed.
- 4.1.3 Soil classification shall be made by the Competent Person or a registered Professional Engineer trained in soil classification.
 - 4.1.3.1 Unclassified soil shall be assumed to be Class “C” and shall be sloped 1½:1 or shored when the excavation exceeds four (4) feet in depth.
- 4.1.4 Excavations over five (5) feet deep shall be shored, sloped, or benched as required.
 - 4.1.4.1 Excavations and the work scheduled to be performed in the excavation shall be evaluated by the Competent Person to determine if the shoring, sloping, or benching needs to begin at a depth less than five (5) feet.
- 4.1.5 Shoring for excavations over twenty (20) feet deep shall be designed by a registered professional engineer and shoring installed shall be approved and signed off by a registered professional engineer.

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- 4.1.6 Excavations adjacent to building walls or footings, pipe bridges or other load carrying structure shall not be permitted without prior approval from a registered professional engineer.
- 4.1.7 Spoil piles shall be placed a minimum of two (2) feet from the edge of the excavation. Loose soil or rocks shall be removed from the sides of excavation walls.
- 4.1.8 Excavations four (4) feet in depth or greater, shall have a stairway, ladder, ramp, or other safe means of egress within a lateral distance of 25 feet away from any employee.
- 4.1.9 Excavations that are less than four (4) feet in depth shall have safe access and egress for all employees with a maximum break in elevation of 19 inches.
- 4.1.10 Excavations shall be inspected by a Competent Person and the results recorded on an SOP-100-03-FM-016-1 – Excavation Permit / Inspection Report:
 - 4.1.10.1 At the start of each shift
 - 4.1.10.2 After rain or snowfall
 - 4.1.10.3 After freezing and/or thawing temperatures occur
 - 4.1.10.4 After any condition that can change the integrity of the soil
- 4.1.11 During rainy weather, work in excavations shall cease until the Competent Person has evaluated the excavation and the effect of the rain on the excavation.
 - 4.1.11.1 The Competent Person shall maintain a regular inspection schedule to ensure the excavation stability and condition during rain events if employees continue to work in the excavation.
 - 4.1.11.2 Depending on the amount of rainfall, the duration of the rainfall and the soil type, the Competent Person may need to maintain continuous observation of the excavation conditions.
- 4.1.12 Atmospheric testing shall be performed for excavations that are four (4) feet in depth or greater, or have the potential for oxygen deficiency or to contain a hazardous atmosphere.
 - 4.1.12.1 Indications of the potential for a hazardous atmosphere include, but are not limited to: gas lines, sewer lines, areas with hydrocarbons, proximity to emissions sources for H₂S, SO₂, CO, CO₂ and other gases that are heavier than air.
 - 4.1.12.2 Confined Space procedures shall also be in place for excavations four (4) feet in depth or greater. Refer to SOP-100-03-PR-002 – Confined Space for more information.
- 4.1.13 Excavations shall be evaluated for hazards in addition to cave-in potential and atmospheric hazards. Some items to consider are as follows:
 - 4.1.13.1 Electrical sources, energized (pressurized) pipes, underground tanks, etc. may also present a hazard to employees who are required to enter an excavation.
- 4.1.14 The Competent Person responsible for the crew working in the excavation shall inspect the excavation throughout the work period, record the observations on an SOP-100-03-FM-016-1 – Excavation Permit / Inspection Report, and stop operations when unsafe conditions exist.
- 4.1.15 Water shall not be allowed to accumulate in excavations at any time.
 - 4.1.15.1 Pumps, drains, or other means shall be used to remove water constantly.

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- 4.1.16 Stability of adjacent structures shall be evaluated before starting an excavation and monitored daily thereafter.
- 4.1.17 Emergency rescue equipment shall be readily available.
- 4.1.18 Each employee in an excavation shall be protected from cave-ins.
- 4.1.19 Employees shall not be permitted to work under loads or near digging equipment.
- 4.1.20 Employees exposed to falls by working near excavations shall be provided with fall protection in accordance with SOP-100-03-PR-003 – Fall Protection.
- 4.1.21 Guardrails shall be installed on crossing and walkways to protect workers against falls.
- 4.1.22 Employees exposed to public traffic shall be required to wear reflective vests.

4.2 Training

4.2.1 Employee Training

- 4.2.1.1 Each employee who works in or around an excavation shall be trained to recognize potential hazards associated with excavations:
 - Cave-in potential,
 - Fall hazards,
 - Safe entry and exit,
 - Proximity to excavating equipment,
 - Air quality,
 - Back-filling and compacting activities,
 - Protective systems, etc.
- 4.2.1.2 This training shall be documented and records maintained in the HenSu One Database.
- 4.2.1.3 Each individual assigned as a Trenching and Excavation Competent Person shall have documented training or shall have documentation of their experience and qualifications in excavation activities.

5.0 REFERENCES

OSHA 1926 Subpart P	Excavations
SOP-100-03-PR-003	Fall Protection
SOP-100-03-PR-002	Confined Space

6.0 TERMINOLOGY

Benching	A method of protecting employees from cave-ins by excavating the sides of an excavation to form one (1) or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
Excavation	Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.
Excavation Competent Person	A person capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them with regards to excavations.
Hazardous Atmosphere	An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic,

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	or otherwise harmful, may cause death, illness, or injury.
Shoring	A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
Site	Any location where HenSu Holdings personnel are involved in work activities.
Sloping	A method of protecting employees from cave-ins by excavating to form sides of an excavation which are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
Trench	A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

7.0 EXHIBITS

None