

SECTION GS10300

UNDERGROUND TRENCHING AND EXCAVATION CONSIDERATIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings, general provisions of the contract, including General and Supplementary Conditions and Division 1 apply to work in this section.

1.2 SUMMARY

- A. This section includes the following:
 - B. Trenching and excavation notification procedure
 - C. Utility marking requirements and responsibilities
 - D. Trencher/Excavator's requirements and responsibilities

1.3 SECTION INTENT

- A. This standard has two main goals; one, to establish the procedure for utility location and temporary marking on Texas Tech University property and two, to establish the depth of installation of all types of utilities by trenching, ditching, or boring to maximize the protection of existing utilities and to protect new installations from being disturbed or causing service disruptions because of unexpected physical disturbance.

PART 2 –NOTIFICATION PROCEDURE

2.1 TRENCHING AND EXCAVATION NOTIFICATION PROCEDURE

- A. The contractor shall call the following offices at least 48 hours prior to start of work.
 - 1. Non-Tech-owned Utilities (Commercial or City-owned utilities such as water, gas, sewer, telephone, TV cable and electric):
 - a. Texas Excavation Safety System (DigTESS) 1-800-344-8377
 - 2. Tech-owned Utilities (water, gas, sewer, electric):
 - a. Texas Excavation Safety System (DigTESS) 1-800-344-8377
 - 3. Communications & Telecommunications:
 - a. Texas Tech University Communication Services (806) 742-2000
 - b. For emergencies call the above number and dial "0" to have the operator contact a Communication Services representative.

PART 3 – TRENCHING AND EXCAVATION REQUIREMENTS AND RESPONSIBILITIES

3.1 UTILITY MARKING REQUIREMENTS AND RESPONSIBILITIES

- A. Proposed excavation shall be marked using white marks to clearly indicate the location, route or boundary. Surface marks on roadways should not exceed 1.5" by 18" (40 mm by 450mm).
- B. Temporary color-coded surface markings (i.e. chalk) shall be used to indicate the location or route of active and out-of-service buried lines. Paint shall not be used for temporary markings. To increase visibility, color-coded vertical markers (i.e. stakes or flags) should supplement surface marks. Marks and markers indicate the name, initials, or logo of the company or organization that owns or operates the line. Marks placed by anyone other than line owner/operator or its agent indicate the identity of the designating firm. Multiple lines in a joint trench are marked in tandem. If the surface over the buried line is to be removed, supplementary offset markings shall be used. Offset markings are on a uniform alignment and clearly indicate that the actual facility is a specific distance away.
- C. The Uniform Color Code of the American Public Works Association, using the ANSI Z535.1 "Safety Colors for Temporary Marking and Facility Identification" standard, shall be the official color scheme of Texas Tech University. It designates the colors as follows:
 - 1. white - proposed excavation
 - 2. pink - temporary surveying marks
 - 3. red - electrical power, lighting, and traffic lights
 - 4. yellow - gas, steam and gaseous materials
 - 5. orange – fiber optic, telephone, and alarm
 - 6. blue - potable water
 - 7. purple - reclaimed water, irrigation and slurry lines
 - 8. green - sewer and drain lines
 - 9. silver – tunnel, vault, and underground structure

See Attachment **Figure 1--"Utility Marking Guide for Texas Tech University"** for more information.

3.2 TRENCHER/EXCAVATOR'S REQUIREMENTS AND RESPONSIBILITIES

- A. The excavator shall observe a tolerance zone of 24". Tolerances shall be measured horizontally from the temporary surface marking. Any excavation within the tolerance zone shall be performed with non-powered hand tools and/or non-invasive method(s) until the facility is exposed.
- B. Minimum cover requirements to top of pipe or insulation for utilities:
 - 1. Low pressure gas ounces--36 inches
 - 2. High pressure gas pounds--46 inches
 - 3. Alarm systems--42 inches
 - 4. Security systems--42 inches
 - 5. Domestic water--36 inches
 - 6. Irrigation mains--24 inches
 - 7. Irrigation laterals--18 inches
 - 8. Communication--42 inches
 - 9. Electrical primary voltage--42 inches including concrete cap
 - 10. Electrical secondary voltage--36 inches (less than 600 volts)
 - 11. Direct bury steam/condensate return--36 inches
 - 12. Air--36 inches
 - 13. Chilled water--36 inches
 - 14. Reverse osmosis (R-O) water--36 inches

- C. Warning tape for the following utilities should be 12" to 16" below grade in ditch lines: gas, alarm systems, security systems, communication, and all electric, direct bury steam, air, chilled water, reverse osmosis water, and electric.
- D. Piping that is non-metallic must have a continuous, coated (protected from ground) wire installed for locating purposes (i.e. natural gas, R-O water, domestic water). Metallic warning tape shall not be considered equivalent.
- E. Modifications or changes of utility installation depths from the indicated depths of installation, due to other utilities and/or underground obstacles, should be approved through the Grounds Maintenance Department and the Building Maintenance and Construction Department.
- F. A concrete "t-cap" of no less than 12" either side of a trench and no less 4" thick than shall be installed where pavement is disturbed. See Attachment **Figure 2--"T-Cap"** for more information.

ATTACHMENT

GUIDELINES FOR UNIFORM TEMPORARY MARKING OF UNDERGROUND FACILITIES

This marking guide provides for use and understanding of the temporary marking of subsurface facilities on the Texas Tech University campus to prevent accidents and damage or service interruption by contractors, excavators, utility companies, municipalities or any others working on or near underground facilities.

ONE-CALL SYSTEM

The One-Call damage prevention systems, the Texas Excavation Safety Society (DigTESS 1-800-344-8377), shall be contacted at least 48 hours prior to the start of excavation by the excavating parties.

PROPOSED EXCAVATION

Use white marks to clearly indicate the location, route or boundary of proposed excavation. Surface marks on roadways should not exceed 1.5" by 18" (40 mm by 450mm).

USE OF TEMPORARY MARKING

Use color-coded surface marks (i.e. paint or chalk) to indicate the location or route of active and out-of-service buried lines. To increase visibility, color-coded vertical markers (i.e. stakes or flags) should supplement surface marks. Marks and markers indicate the name, initials, or logo of the company or organization that owns or operates the line, and width of the facility is greater than 2" (50mm). Marks placed by other than line owner/operator or its agent indicate the identity of the designating firm. Multiple lines in a joint trench are marked in tandem. If the surface over the buried line is to be removed, supplementary offset markings are used. Offset markings are on a uniform alignment and clearly indicate that the actual facility is a specific distance away.

TOLERANCE ZONE

Any excavation within the tolerance zone is performed with non-powered hand tools or non-invasive method(s) until the facility is exposed. The width of the tolerance zone on the Texas Tech University campus is 24" either side of the facility location mark.

UNIFORM COLOR CODE

The Uniform Color Code of the American Public Works Association, using the ANSI Z535.1 "Safety Colors for Temporary Marking and Facility Identification" standard, is the official color scheme of Texas Tech University. Please see the back of this card and TTU OP 61.11 for more information.

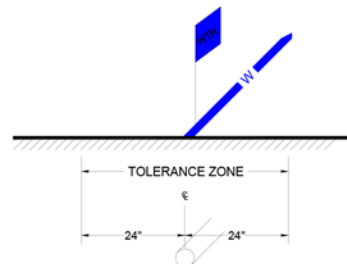
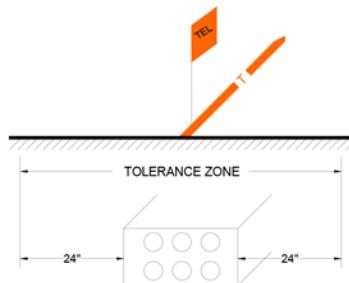
Figure 1 – Utility Marking Guide for Texas Tech University



UTILITY MARKING GUIDE for Texas Tech University

	WHITE - Proposed Excavation
	PINK - Temp. Survey Markings
	RED - Electrical Power, Lighting, and Traffic Lights
	YELLOW - Gas, Steam, and Gaseous Materials
	ORANGE - Fiber Optic, Telephone, Alarm
	BLUE - Potable Water
	PURPLE - Reclaimed Water, Irrigation, and Slurry Lines
	GREEN - Sanitary Sewer, Storm Drain
	SILVER - Tunnel, Vault, and Underground Structure

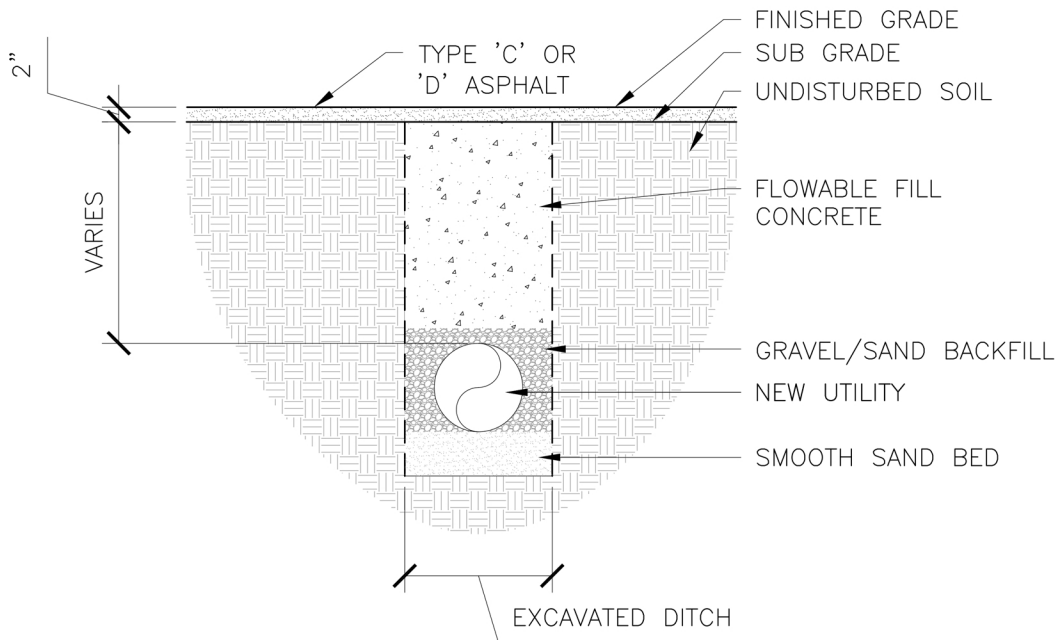
TYPICAL MARKING



Prepared By:
Texas Tech University
Operations Division Engineering services
Physical Plant Building Rm. 3J
(806)742-2761

This guide was produced in accordance with the Uniform Color Code of the American Public Works Association. Refer to TTU OP 61.11 for more information.

Section Thru Utility Ditch In Paved Areas



Prepared By:
Texas Tech University
Operations Division Engineering services
 Physical Plant Building Rm. 3J
 (806)742-2761

This guide was produced in accordance with the Uniform Color Code of the American Public Works Association. Refer to TTU OP 61.11 for more information.