SECTION 31 50 00

TRENCH SAFETY

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work specified under this section requires the Contractor to provide for the safety of the workmen in strict compliance with 29 CFR Part 1926 1993 (Revised as of July 1, 1996 of latest Edition or Revision to) Excavations and Applicable Subparts. The submission of a "TRENCH SAFETY PLAN" which shall fully satisfy the requirements of this specification is required prior to a notice to proceed to start the project.

1.2 MEASUREMENT

A. MEASUREMENT

Measure "Trench Safety" as shown on the bid proposal. Shoring of trench at manholes and other unusual structures to be included in this cost.

B. PAYMENT

Pay for "Trench Safety" as shown on the bid proposal. Payment to be full compensation for all work described herein. There will be no increase in the Contract price because of the incorporation of CONTRACTOR's Trench Safety Plan or CONTRACTOR's detailed plans and specifications for the trench safety system into the bid documents and the Construction Contract. There will be no increase in the Contract price because of modifications to CONTRACTOR's plan and/or the CONTRACTOR's detail plans and specifications for the trench safety system, whether or not the result of unforeseen or differing site or soil conditions.

"Trench Safety Plan" shall be included as part of the "Trench Safety" bid item and shall not be paid for as a separate pay item.

1.3 SUBMITTALS

A. CERTIFICATES

Submit manufacturer's "Certificate of Compliance," stating that the devices (trench boxes, speed shoring, etc.) to be used for trench safety comply with the requirements of this specification. The certificate should show the design assumptions and limitations of the device and should be sealed by an engineer registered and licensed to practice in the state of Texas.

B. TRENCH SAFETY PLAN

Submit a detailed TRENCH SAFETY PLAN for all work areas. Calculations shall be provided for any areas beyond the capacity of the trench box or speed shoring and sealed by an engineer registered and licensed to practice in the state of Texas. This plan shall include evacuation routes for personnel.

C. COMPETENT PERSON

Contractor shall have a "Competent Person" with regard to OSHA standards, on site at all times. Competent person is generally defined as an individual who, by training and experience, is knowledgeable of applicable standards, capable of identifying hazards, is designated by the employer, and has the authority to take actions as needed. Contractor shall provide written proof showing the competent person(s) for the work being performed.

PART 2 – PRODUCTS

2.2 MATERIALS

A. MATERIALS

1. Timber

Trench sheeting materials shall be full size, a minimum of 2 inches in thickness, solid and sound, free from weakening defects such as loose knots and splits.

2. Sheet Piling

Steel sheet piling shall conform to one or more of ASTM A328/328M, ASTM A572/A572M/ ASTM A690/A690M material requirements.

3. Structural Steel

Steel for stringers (wales) and cross braces shall conform to ASTM A588.

4. Trench Boxes

i. Steel trench Boxes to be constructed of steel conforming to ASTM A36/A36M. Connecting bolts used to conform to ASTM A307. Welds shall conform to the requirements of AWS D1.1.

5. Miscellaneous

Miscellaneous materials to be utilized shall conform to applicable ASTM standards.

B. REFERENCED SPECIFICATIONS

The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

American Society of Testing and Materials (ASTM)

ASTM A36/A36M	1997 Standard Specification for Carbon Structural Steel
ASTM A307	1997 Revision A-Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi tensile length
ASTM A328/A328M	1996 (REV) Standard Specification for Steel Sheet Piling
ASTM A572/A572M	1997 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality
ASTM A588/A588M	1997 Standard Specification for High-Strength Low-Alloy Structural Steel With 50 ksi (345 MPa) Minimum Yield Point to 4 inch (100 mm) thick
ASTM A690/A690M	1994 Standard Specification for High-Strength Low-Alloy Steel H-Pipes and Sheet Piling for Use in Marine Environments

American Welding Society, Inc. (AWS)

AWS D1.1	1998 Structural Welding Code-Steel

Occupation Safety and Health Administration (OSHA)

29 CFR Part 1926	1993 (Revised as of July 1, 1996 of latest Edition or Revision to) Excavations and Applicable Subparts

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. GENERAL:
The trench safety system shall be constructed, installed and maintained in accordance with the Trench Safety Plan as outlined in 131.03. Bed and backfill pipe to a point at least one (1) foot above top of pipe or other embedded items prior to removal of any portion of trench safety system. Bedding and backfill shall be in accordance to other applicable Specification Sections. Backfllling and removal of trench supports shall be in accordance with Contractor's Trench Safety Plan. Removal of trench safety system to be accomplished in such a manner to cause no damage to pipe or other embedded items. Remove no braces or trench supports until all personnel have evacuated the trench. The trench shall be backfilled to within 5 feet of natural ground prior to removal of entire trench safety system.

B. SUPERVISION:
Provide competent supervisory personnel at each trench while work is in progress to ensure Contractor's methods, procedures, equipment and materials pertaining to the safety systems in this Section are sufficient to meet requirements of OSHA Standards.

C. INSPECTION:
The CONTRACTOR shall make daily inspection of trench safety system to ensure that the system meets OSHA requirements. Daily inspection shall be made by competent personnel. If evidence of possible cave-ins or slides is apparent, all work in the trench is to cease until necessary precautions have been taken to safeguard personnel entering trench. The CONTRACTOR shall maintain permanent record of daily inspections.

D. TIMBER SHEETING
Timber sheeting and size of uprights, stringers (wales,) and cross bracing to be installed in accordance with the TRENCH SAFETY PLAN. Place cross braces in true horizontal position, spaced vertically, and secure to prevent sliding, falling or kick outs. Cross braces to be placed at each end of stringers (wales) in addition to other locations required. Cross braces and stringers (wales) to be placed at splices of uprights, in addition to other locations required.

E. STEEL SHEET PILING
Steel sheet piling of equal or greater strength may be used in lieu of timber trench shoring shown in the OSHA tables (proposed standards). Drive steel sheet piling to a least minimum depth below trench bottom as recommended by CONTRACTOR's Registered Licensed Professional Engineer providing design. Place cross braces in true horizontal position and spaced vertically. Secure to prevent sliding, falling, or kick outs. Cross braces to be placed at each end of stringers (wales), in addition to other locations required.

F. MAINTENANCE OF SAFETY SYSTEM
The safety system to be maintained in the condition as shown on the Trench Excavation and Shoring Safety Plan as designed by the CONTRACTOR's Registered Licensed Professional ENGINEER. The CONTRACTOR shall take all necessary precaution to ensure the safety systems are not damaged during their use. If at any time during its use a safety system is damaged, personnel to be immediately removed from the trench excavation area and the safety system repaired. The CONTRACTOR is to take all necessary precautions to ensure no loads, except those provided for in the plan, are imposed upon the trench safety system.

END OF SECTION