**TECHNICAL SPECIFICATION** NO. \_\_\_\_\_ FS-SP-1407 ES-1 SHAFT SINKING DECK TITLE: DIVISION 5 - METALS SUBDIVISION - STRUCTURAL STEEL APPROVED BY I. ME Kewon B. Amuth DATE 4126 188 DATE \_\_\_\_\_ APPROVED BY \_\_ DATE \_\_\_\_\_ APPROVED BY \_\_\_\_ SECT. OR APPR. BY DATE REV. BY REV. NO. REVISION DESCRIPTION PAGES WBS NUMBER DOCUMENT NO. REV. SHEET OF FENIX & SCISSON, INC. 1.2.6.4.1 8806010309 880527 PDR WASTE WM-11 PDI PDR

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### PART ONE - GENERAL

# 1.1 WORK INCLUDED

The work under this specification includes furnishing all materials, tools, equipment, and labor necessary to fabricate, paint and deliver a shaft sinking deck.

### 1.2 REFERENCED PUBLICATIONS

The publications listed below form a part of this specification.

- 1.2.1 American Institute of Steel Construction (AISC)
  - o Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings
  - o Code of Standard Practice
  - o Detailing for Steel Construction

## 1.2.2 American Society for Testing and Materials (ASTM)

- o A6 Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use
- o A36 Standard Specification for Structural Steel
- o A53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
- o A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- 1.2.3 American Welding Society (AWS)
  - o D1.1 Structural Welding Code Steel
  - o A2.4 Symbols for Welding and Non-Destructive Testing
- 1.2.4 Military Specification (MIL SPEC)
  - o MIL-M-17194D, Metal, Expanded, Steel

#### 1.3 SYSTEM DESCRIPTION

This work deck is to provide space for workmen, equipment and tools during the construction of a vertical concrete lined shaft 12 ft finished diameter. It will also be used for conducting scientific tests in the shaft.

It consists of three levels at 10 feet spacing and is 10 feet in diameter. The lower deck must accommodate test, survey, and camera equipment for the shaft and shaft bottom mapping.

## 1.4 QUALITY ASSURANCE

- 1.4.1 The Quality Assurance Level Assignment for fabrication of the ES-1 Shaft Sinking Deck is II.
- 1.4.2 The vendor shall furnish for the Contracting Officer's approval, a quality assurance program describing specified work, including descriptions which identifies management controls relative to the fabrication process, quality control and inspection requirements, material procurements and test procedures, and documentation.

# PART TWO - PRODUCTS

### 2.1 MATERIALS

- 2.1.1 Structural steel plates, shapes and bars shall conform to ASTM A36 Specification.
- 2.1.2 Structural tubing shall conform to ASTM A500 Grade B Specification.
- 2.1.3 Steel pipe shall conform to ASTM A53 Specification. Pipe shall be black Grade B.
- 2.1.4 Expanded Metal. Shall conform to MIL: Spec MIL M 17194D

- 2.1.5 Weld materials to conform to AWS Standards.
- 2.1.6 Corrosion protection in accordance with applicable SSPC or NACE standards.
- 2.1.7 All material shall be new and clean.

#### 2.2 EQUIPMENT

2.2.1 All welding equipment shall be in good condition and subject to inspection and approval by the QAR.

# 2.3 FABRICATION

- 2.3.1 Fabrication shall be in accordance with approved shop drawings, AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", AISC Code of Standard Practice, AWS Structural Welding Code - Steel, and these Specifications.
  - Shapes to be formed by rolling shall be cold rolled to the proper shape.
  - The edges of all parts to be joined by welding shall be prepared by machining, grinding, flame cutting or combinations of these methods.
  - All weld joints and the immediate area shall be mechanically or chemically cleaned.
  - Kerosene or other petroleum products are not acceptable for use as a cleaner for any surfaces to be welded.
  - o Close fitup is required at points where fillet welds are applied.
  - o No welding will be permitted until the QAR has approved the fitup.
  - o Welding shall be performed with 70 Ksi low hydrogen electrodes.
  - All welding shall conform to AWS D1.1. Welded joints shall be constructed by qualified welders.
  - All weld defects as specified herein and in the AWS D1.1
    Structural Welding Code Steel, Section 8.15 shall be repaired as specified in Section 3.7 of the Code.

- 2.3.2 Inspection and testing of welds shall be in accordance with Chapter 6 of the AWS D1.1 Code.
  - o Inspection and testing shall be performed by the vendor and witnessed by the QAR.
  - All welds shall be 100% visual and dimensionally inspected. Up to 50% of the welds shall also be magnetic particle or dye penetrant inspected as requested by the QAR.
  - o The weld inspector shall certify that the welds were inspected, repaired where required and reinspected and are free of specified defects.
- 2.3.3 Dimensional Inspection
  - The Vendor shall give proper notice and furnish all facilities necessary for inspection. This shall include personnel and equipment. All inspection may be witnessed by the QAR.
  - o Acceptable tolerances are as follows:
    - a. Maximum diameter at any point shall not exceed 10'-1". The minimum diameter shall not be less than 9'-11".
    - b. Tolerance for lineal dimension shall be + 1/4".
    - c. Between the top level and the lower level the difference between the diagonal measurements between any two columns shall not exceed 1 1/2".
- 2.3.4 Shop paint in accordance with AISC Specifications.

## PART THREE - EXECUTION

Not Used