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Addendum

Delaware Army National Guard
Wilmington, Delaware
AASF Wash Rack
Army Aviation Support System

Tt Project No. 143-76984-12002

Addendum No. 02
to
Drawings and Project Manual

September 4, 2012

To: ALL BIDDERS

This ADDENDUM forms a part of the BIDDING AND CONTRACT DOCUMENTS and modifies the following documents:

Original DRAWINGS dated July 27, 2012
PROJECT MANUAL dated July 27, 2012, and
Addendum No. 01, dated August 21, 2012

Acknowledge receipt of the ADDENDUM in the space provided on the FORM OF PROPOSAL

This ADDENDUM consists of (2) pages and the following:

CLARIFICATIONS:

ITEM 2-C-1: Pre-Bid Meeting Record (Published 8/24/12): **REVISE** item 11.h to read as follows:

“Construction Testing and Inspection will be required for concrete and soils. Testing and inspection will be conducted by a 3rd Party, which will be hired and paid for directly by the Owner.”

REISSUED PROJECT MANUAL SECTIONS

ITEM 2-C-2: SECTION 26 05 26 Grounding and Bonding for Electrical Systems, **DELETE** original and replace with section attached to this addendum.

PROJECT MANUAL MODIFICATIONS

ITEM 2-C-3: Refer to Section 00 01 10 DEARNG Table of Contents

1. **DELETE** Section titled 33 46 00 Subdrainage from Division 33 – Utilities

DRAWING MODIFICATIONS

ITEM 2-C-4: Refer to Plan 2/C-001

1. **REVISE** note stating “REMOVE TOP OF EX. CONCRETE SLAB TO TIE IN GRADES AT JOINTS (3X GRID SECTIONS)” to read as follows:

“REMOVE CONCRETE SLAB ON GRADE SECTION AND REPLACE WITH NEW SLAB ON GRADE PER DETAIL 4/C302. MATCH ADJACENT GRADES AT CONTROL JOINTS (3X GRID SECTIONS)”

ITEM 2-C-5: Refer to Plan 1/E-101

1. **REVISE** note near Cold Storage Building stating “RUN 2” CONDUIT 15’-0” ABOVE EXISTING F.F.E.” to read as follows:

“RUN 2” CONDUIT FROM PANEL TO UNDERSIDE OF ROOF DECK ABOVE, CONTINUE OVER INTERIOR MASONRY WALL AND OVER ADJACENT ROOM. RUN CONDUIT DOWN EXTERIOR CMU WALL ABOVE LOCATION WHERE CONDUIT IS TO RUN OUTSIDE BUILDING.”

ITEM 2-C-6: Refer to Plan 1/P-101

1. **DELETE** plan in its entirety and replace plan with sketch SKP-101 Oil Separator Tank Riser, attached.

ITEM 2-C-7: Refer to Sheet C-001

1. **REVISE** first legend note stating “CONCRETE TO BE REMOVED: ENTIRE CROSS SECTION” to read as follows:

“CONCRETE AND SUB BASE MATERIAL TO BE REMOVED AS REQUIRED PER NEW SLAB SECTION REQUIREMENTS: ENTIRE CROSS SECTION”

BIDDER’S QUESTION AND RESPONSE

ITEM 2-C-8: **Bidders Question:** Sheet C-001 calls for removing existing concrete down to sub base. A section on sheet C-302 shows a geotextile, drainage layer, and sub base should be placed as a base for the concrete. Is the full section shown for reference only and just concrete needs to be removed or will existing sub base need to be replaced?

Question Response: The existing concrete slab on grade and sub base material below is to be removed as required to meet the full sections shown on sheet C-302, including geotextile, drainage layer, sub base materials and concrete slab on grade, and for new top of slab elevations.

END OF ADDENDUM 02

Attachments:

Section 26 05 26

Sketch SKP-101

SECTION 26 05 26 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Grounding systems and equipment.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:
 - 1. Ground rods.
 - 2. Ground rings.
 - 3. Grounding for sensitive electronic equipment.

1.4 QUALITY ASSURANCE

- A. Comply with UL 467 for grounding and bonding materials and equipment.
- B. The required grounding/bonding for the electrical system shall meet the elevator and ancillary system performance requirements.

PART 2 - PRODUCTS**2.1 CONDUCTORS**

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch- thick.

2.2 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-bar Connectors: Mechanical type, cast silicon bronze, solderless compression type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad 3/4 inch by 10 feet.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare tinned-copper conductor, No. 2/0 AWG minimum.
 - 1. Bury at least 24 inches below grade.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING OVERHEAD LINES

- A. Comply with IEEE C2 grounding requirements.
- B. Install two parallel ground rods if resistance to ground by a single, ground-rod electrode exceeds 25 ohms.
- C. Drive ground rods until tops are 12 inches below finished grade in undisturbed earth.

- D. Ground-Rod Connections: Install bolted connectors for underground connections and connections to rods.
- E. Lightning Arrester Grounding Conductors: Separate from other grounding conductors.
- F. Secondary Neutral and Transformer Enclosure: Interconnect and connect to grounding conductor.
- G. Protect grounding conductors running on surface of wood poles with molding extended from grade level up to and through communication service and transformer spaces.

3.3 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.
 - 7. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Signal and Communication Equipment: In addition to grounding and bonding required by NFPA 70, provide a separate grounding system complying with requirements in TIA/ATIS J-STD-607-A.
 - 1. For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
 - 2. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-4-by-12-inch grounding bus.
 - 3. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

3.4 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

- B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
- C. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
 - 2. For grounding electrode system, install at least three <Insert number> rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- D. Grounding and Bonding for Piping:
 - 1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
 - 2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
 - 3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
- E. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.
- F. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet apart.
- G. Ground Ring: Install a grounding conductor, electrically connected to each building structure ground rod and to each steel column, extending around the perimeter of building area or item indicated.
 - 1. Install tinned-copper conductor not less than No. 2/0 AWG for ground ring and for taps to building steel.
 - 2. Bury ground ring not less than 24 inches from building's foundation.

3.5 LABELING

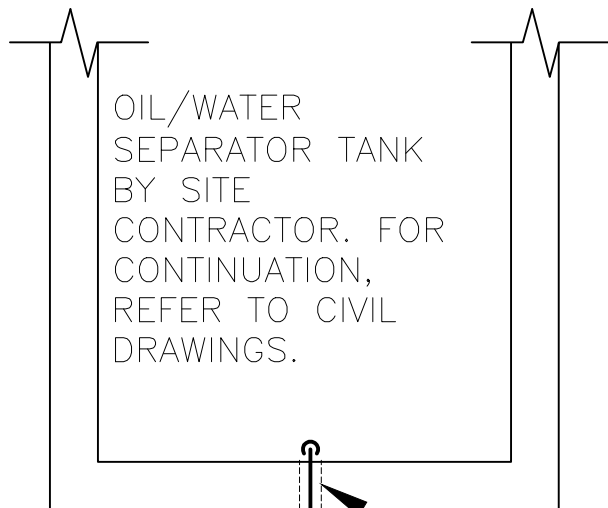
- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems" Article for instruction signs. The label or its text shall be green.

- B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.
 - 1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 - 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal and at individual ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
 - 4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- D. Grounding system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.
- F. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 5 ohms.
- G. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 26 05 26



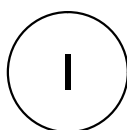
2"-A

WALL SLEEVE



3/4" BALL VALVE W/TEE HANDLE IN VALVE BOX W/YARD LID AND T-HANDLE WRENCH. PROVIDE CRUSHED STONE DRAIN BED AROUND VALVE BOX.

TO SUMP PUMP



Plan View Detail

1/2"=1'-0"

REFER TO SHT.: P-101 Detail



TETRA TECH
ARCHITECTS & ENGINEERS

Tetra Tech Engineers, Architects & Landscape Architects, P.C.

Rev.:

Date:

Proj. No.: 143-76984-12002

Date: 8-28-12

Drawn By: JS

DEARNG AASF Wash Rack

Oil Separator Tank Riser

Drawing No.:

SKP-01