CITY OF PRESCOTT
ARIZONA
Everybody's Hometown

Public Works Department

433 N. Virginia Street
Prescott, Arizona 86301
(928) 777-1130

ADDENDUM NUMBER FOUR

FOR THE

ZONE 56 1.5 MG WATER TANK AND PIPELINE AND ZONE 7 IMPROVEMENTS

DATE OF ADDENDUM: April 4, 2022

TO ALL BIDDERS BIDDING ON THE ABOVE PROJECT:

The following addendum shall be made part of the Project Specifications and Contract Documents. All other provisions of the Contract Documents remain unchanged. The Bidder shall acknowledge receipt of this Addendum on page 13 of the Bid Proposal form, in addition to signing below and returning this form with the bid package. The contents of this Addendum shall be given full consideration in the preparation of the Bid.

Changes to Project Specifications and Bid Documents

Special Provisions:

Division 13000 section 2.14:

Note 8 Exterior Ladder- remove "the ladder shall be made of Corten steel" and replace with ladder shall be made of unpainted mild steel.

Note 9 Handrail- remove "handrail shall be made from Corten steel" and replace with handrail shall be made from unpainted mild steel.

Electric Motors – Add Section 16040 "Electric Motors" (Attached) to the special provisions.

Requests for Information

Question: Plan Sheets M-1 and M-2 material schedules call out above grade mechanical piping to be mechanical joint. Should all above grade piping be flanged?

Response: All above grade piping will be flanged, all below grade piping will be mechanical joint.

Question: Drawing M-2 for the Yavapai Hills Lower Pump Station material notes 11, 12, 28. Note 11 calls for a butt-strap, note 12 calls for a mechanical joint spool of pipe and note 28 calls for a pipe penetration per detail 5 on drawing MD-2.

Response: Butt-strap not needed. Note 12 should be flanged by plain end DIP. Note 28 should be a pipe sleeve and link seal combination for all DIP floor penetrations.

Question: Zone 56 Specification, Item 29 'Export Excess Material' states: The Contractor shall contact the City to determine the haul location of the excess material prior to commencement of earthwork operations. Multiple uses for the dirt have been discussed during the design of this project. There is a possibility that The Arizona Department of Transportation will utilize the export material for the planned State Route 69 Improvements which will occur near the Zone 56 project limits.

Response: At this time, it is not known when the ADOT SR69 project will take place. It will be the Contractors responsibility to find appropriate locations to dispose of the excess material.

Question: What is the vapor barrier under the slab? Section 03300 subsection 2.6 "Subbase" requires a vapor barrier but there are no specs for it.

Response: No vapor barrier is required under the slab of the booster pump station.

Question: Zone 7 Electrical Drawings do not provide information for the mounting of the new antenna on the existing tower at the Antenna Station located at the existing Yavapai Hills Upper Pump Station. What is the height of the existing tower and what height should be included in the bid for the new antenna? How is the cable to be attached to the Tower?

Response: Sheet E-14 is showing an existing tower at the YHUPS. No work is to be done there. Install the antenna on the Tank with fiber going to it from the Zone 7 BPS. Sheet E-14 is showing routes of communication.

Question: Section 11211.2.1.B.7 – Double mechanical seals are not available for the model pump specified.

Response: Provide seal as specified in section 11175.2.2.G "Mechanical Seals".

- END -

City of Prescott Public Works Department

Gwen Rowitsch

Digitally signed by Gwen Rowitsch
DN: cn=Gwen Rowitsch, o, ou, email=gwen.rowitsch@prescott-az.gov, c=US
Date: 2022.04.04 10:28:34 -07'00'

4-4-22

Gwen Rowitsch, Deputy Public Works Director — Date

Acknowledgement: (must be signed and turned in with the bid documents)

Company Name

Signature of Company Official — Date

SECTION 16040 - ELECTRIC MOTORS

PART 1 - GENERAL

1.01 This design guidelines contained herein includes the requirements electric motors utilized for electric motor driven systems. It is the intention of this document to provide a standard for electric motors of the highest level of quality and standardization possible.

1.02 STANDARDS

A. Motors shall be designed, built, and tested in accordance with the latest revision of the following standard documents.

1. NEMA MG 1 - Motors and Generators.
2. ANSI/IEEE 112 - Test Procedures for Motors / Generators.
3. UL 1004 - Motors, Electric.
4. UL 674 - Motors, Generators, Electric, for Use in Hazardous Locations: Class I, Groups C and D; Class II, Groups E, F, and G.

1.03 SUBMITTALS

A. It will be required as a Standard to submit test results verifying guaranteed minimum efficiency and power factor at rated load and rated voltage for 3-phase motors larger than 1/2 hp. Report test results on Form A-1, IEEE Standard 112.

B. Submittal data on motors shall include, but not be limited to, the following information:

1. Manufacturer;
2. Rated horsepower;
3. Rated voltage(s);
4. Number of phases;
5. Frequency in hertz;
6. Motor no-load current at rated voltage.;
7. Full load amperes (FLA) at rated voltage.;
8. Full load current at 110 percent voltage.

9. Starting current at rated voltage.

10. Locked rotor amperes (LRA) or code letter;

11. Safe stall time (motors 30 horsepower and larger);

12. Nominal speed at full load;

13. Motor Performance Characteristics:

    a. Guaranteed minimum efficiency at rated load at rated voltage.

    b. Guaranteed minimum power factor at rated load at rated voltage.

    c. Expected efficiency at 1/2, 3/4, and full load at rated voltage.

    d. Expected power factor at 1/2, 3/4, and full load at rated voltage.

    e. Provide certified factory test and test reports for identical motor tested in accordance with the Procedures for Polyphase Induction Motors and Generators No. 112A, NEMA MG 1-12.53a and IEEE Standard 112, Test Method B, to confirm that the motor full load efficiency and power factor meets the specified values. Motors not as specified will be rejected.

        1) Measurements of no-load current and speed at normal voltage and frequency.

        2) Measurement of locked rotor current at rated frequency.

        3) Results of high-potential test.

        4) Determination of efficiency and power factor at 1/2, 3/4, full-load, and service factor load.

14. Maximum power factor correction capacitor "KVAR" recommended by motor manufacturer and expected new motor-capacitor power factor at rated full load (motors 30 horsepower and larger)

15. Winding insulation system as defined by IEEE;

16. NEMA design letter;

17. Temperature rise (reference NEMA MG-1, 12.41 and 12.42);

18. Bearing type and duty, including bearing life calculations.

19. Motor outline dimensions, weight and frame number

20. NEMA machine type classification (ODP, TEFC, etc.).

21. Manufacturer's descriptive information relative to specified features.

22. Vertical Motor Data:

a. Thrust bearing life.

b. Type of thrust bearing lubrication.

c. Type of guide bearing lubrication.

23. Operation and Maintenance Manuals, including:

a. Complete information for storage and installation.

b. Complete operating and maintenance instructions.

c. Bill of materials.

1.04 WARRANTIES

A. Vendor shall provide the standard form of written guarantee and warranty covering defects in materials and workmanship for the equipment. Said guarantee and warranty shall be for a period of one year from the date of final acceptance of the equipment by the Owner. Date of acceptance shall be defined as the date that the Owner assumes operation of the unit.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Baldor.

B. General Electric.

C. Gould

D. Siemens.

E. Toshiba

F. Westinghouse.

2.02 MOTORS LARGER THAN 1/2 HP through 250 HP

A. Motors shall be 3-phase, continuously rated, squirrel-cage, random-wound copper, induction motors designed for 460 volt, 60 Hz operation. Provide motors rated for continuous operation

with 1.15 service factor in accordance with the design (75 hp, 3 phase, 60 Hz, 230/460 volt, 3600 RPM, motor with 95% efficiency (premium rating), TEFC enclosure).

B. Provide motors with Class F insulation and a Class B temperature rise based on 40 degrees C ambient. When ambient temperatures exceed 40 degrees C, temperature rise shall be adjusted according to MG 1-12. Locked Rotor Current: Provide motors with locked rotor starting currents not exceeding Code L under 3 hp, Code K for 3 and 5 hp, Code H for 7-1/2 and 10 hp, and Code G for 15 hp and above.

C. Provide motors meeting the energy efficiency and power factor requirements in paragraph 3.01 of this section, when tested in accordance with NEMA MG 1-12.53a and IEEE Standard 112, Test Method B.

D. Provide motors rated for continuous operation with 1.15 service factor. For constant speed motors, the driven load shall not exceed the motor's brake horsepower nameplate rating, exclusive of any service factor, under any normal operating condition.

E. Provide all TEFC motors with anti-friction grease lubricated ball bearings, with a bearing AFBMA B-10 life of 100,000 hours and sealed from the environment. Provide factory lubrication of all motors prior to shipment. Provide all grease lubricated bearings with relief fittings.

F. Provide all ODP motors with sealed anti-friction grease lubricated ball bearings, with a bearing AFBMA B-10 life of 100,000 hours. Provide factory lubrication of all motors prior to shipment. Provide all grease lubricated bearings with relief fittings.

G. Motors which are located outside or wherever specified shall be provided with space heaters sized to prevent moisture condensation, rated 120 volts, with a separate conduit box for heater leads only.

H. For motors 5 horsepower and larger, provide a snap action normally closed klaxon embedded in the stator winding at the 12:00 position with tee leads wired out to the wiring compartment. The temperature of the klaxon shall be set for 25% of the insulation temperature rating.

I. Provide motors with conduit boxes that are fully rotatable, diagonally split, gasket between cover and box, and box and frame, with threaded hubs and a grounding lug located within the box for ground conductor connection.

J. Provide nameplates of stainless steel or other approved corrosion resistant material to provide a permanent legible marking, containing NEMA data plus guaranteed minimum efficiency. Attach nameplates and connection plates to the motor frame by rivets or screws.

K. Variable torque, inverter duty rated motors shall be provided for variable speed applications. Insulated bearings shall be used for motors driven by variable frequency drives.

2.03 MOTOR TYPES

A. The following Standard motor types shall conform to the following requirements:

1. Horizontal Drip-proof: Provide horizontal motors with an enclosure that meets NEMA Standard MG 1 for open, drip-proof construction. Provide screen over all air openings.

2. Horizontal Totally Enclosed Fan-Cooled: Provide totally enclosed fan-cooled (TEFC) motors with frame sizes 182 and larger with cast iron frames and end shields. Smaller frame sizes may be constructed of rolled steel with cast metal end shields. Provide motors with condensate drain holes. For frame size 286 and larger, provide automatic breather/drain device in drain hole.

3. Vertical Weather Protected Type I: Provide vertical motors with an enclosure that meets NEMA Standard MG 1 for weather protected Type I (WP-I) enclosure. Provide screens over all air openings.

4. Vertical Totally Enclosed Fan-Cooled: Provide vertical motor with an enclosure identical to the requirements for the horizontal TEFC motors.

5. Explosion proof: Provide all horizontal and vertical motors with TEFC explosion proof enclosures, UL listed for Class 1, Division 1, Group D hazardous atmosphere. Provide motors manufactured by Reliance Electric, or equal.

6. Submersible: Submersible motors UL listed for explosion proof atmospheres in accordance with subsequent sections of this specification. In addition, provide submersible motors with two mechanical seals; the lower one outside the motor and protecting the upper one, which is in an oil filled chamber. Provide moisture detector probes in the oil filled seal chamber to indicate the presence of moisture in the seal chamber. Provide a temperature detector and switch rated 3 amperes, 120 volts minimum, set to operate when the internal motor temperature exceeds a preset limit. Provide any relays or solid-state controls for separate mounting.

7. Horizontal, Totally Enclosed, Fan-Cooled, Severe Duty: Provide horizontal (TEFC), severe duty motors suitable for contaminated environments, including gasketed conduit box, stainless steel drains, double-shielded bearings, and corrosion resistant paint.

8. Vertical, Totally Enclosed, Fan-Cooled, Severe Duty: Provide vertical (TEFC), severe duty motors with the requirements identical to horizontal (TEFC), severe duty motors, above.

2.04 MOTORS FOR USE WITH VARIABLE FREQUENCY DRIVES

A. Motor Application Considerations:

1. NEMA Standard MG1 definite purpose inverter duty rated motors shall used for all IGBT Pulse Width Modulated drive installations. Inverter duty motors shall be designed and manufactured to meet NEMA Standard MG1 for definite purpose inverter duty motors. The inverter duty motors shall be able to withstand voltages greater than 1600 volts peak and rise times of 0.1 microsecond.

2. Applications where the motor specification does not meet NEMA MG1 Part 31 (1600V peak and 0.1 microsecond rise time), and the cable length between the inverter and motor exceeds the drive manufacturer recommended maximum cable length, load sideline reactors shall be used. The load sideline reactor shall be design and constructed to operate with pulse width modulated IGBT inverter drives with switching frequencies up to 20 Khz. Line reactor insulation dielectric strength shall be greater than or equal to 4000 volts and shall carry a UL506 & UL508 approval.

3. Insulated or isolated bearings shall be used for the inverter duty rated motors.

4. The inverter duty motor shall be constructed with triple film wire, increased winding slot insulation, increased insulation between phases, and increased first turn insulation. The inverter duty motor shall use slot fillers as required to avoid loose windings.

5. The inverter duty motor insulation class shall be class F insulation and a class B temperature rise based on 40 degrees C.

6. The inverter duty motor name plate shall indicate that the motor is an inverter duty motor.

PART 3 - EXECUTION

3.01 MINIMUM EFFICIENCY

A. Coordinate with electrical designs.

B. Motors and associated devices shall be installed as per NEC requirements.

3.02 TESTING

1. Test motors in accordance with ANSI/IEEE 112 - Test Procedures for Motors / Generators.

End of Section