



**SAN ANTONIO WATER SYSTEM
BASIN PUMP STATION IMPROVEMENTS PROJECT
PHASE 1
SAWS Job No. 12-6001
Solicitation No. B-13-017-DD**

ADDENDUM NO. 3

April 25, 2013

PROPOSAL DATE: May 6, 2013

2:00 p.m. Central Standard Time

Consulting Engineer: CP&Y, Inc.

TBPE Registration No. F-1741

To: All Document Holders of Record

This addendum, applicable to work referenced above, forms a part of the Contract Documents and modifies the original Contract Documents dated April 2013. Acknowledge receipt of this addendum by entering the addendum number and issue date in the spaces provided on submitted copies of the proposals. Failure to do so may subject Bidder to disqualification.

Addendum No. 3 consists of 51 items outlined in 13 pages. In addition to these 13 pages, Addendum No. 3 includes the Proposal Checklist, 1 re-issued specification Section 16406, and 1 additional supplemental piece of information, the TWDB SMWB FAQs and includes 0 re-issued sheets.



M. Treviño Vergara
4-25-13

ADDENDUM NO. 3

A. GENERAL QUESTIONS/CLARIFICATIONS

1. Question: The RFCSP is asking the contractor to submit control subcontractor qualifications. This will make it difficult for the contractor to acquire the best prices for SAWS. Would it be possible to remove those qualifications from this RFCSP since we would be using your approved vendors anyway.

Response: Though price is a component of the RFCSP, we will select the Contractor with the experience and qualifications that provide the best value to SAWS as outlined in the Supplementary Instructions to Respondents. The qualifications for the control subcontractor will remain. The list indicated within the specifications is not an approved vendors list, but rather a list of recommended vendors. Reference Item No. 15 on page 5 of Addendum #1 for modifications made as it relates to the PCSI and ASP vendors.

2. Question: The RFCSP states that the CD contain the entire Original proposal package. Including the price proposal on the CD would make it difficult to acquire the best prices for SAWS. Can the CD contain the entire original package except the price proposal?

Response: Yes. A revised Proposal Checklist is attached to this Addendum. The CD must include all items indicated on the Proposal Checklist sans the Price Proposal and the Financial Statement.

3. Question: There are various requests for documentation of safety certification in the Required Information. Would it be permissible to add an Appendix for these additional documents and have the appendix not be counted in the page count?

Response: Yes, this is allowable and will not count towards the page limit. This Addendum has modified this requirement, as well as includes a revised Proposal Checklist.

4. Question: The RFCSP indicates that complete financial statements be provided in the Construction Team Experience section in addition to the Original Submittal's Good Faith Effort section. Are both required?

Response: Yes, the financial statement and the Good Faith Effort Plan are required documents that must be included within the Original Proposal submitted to SAWS. These documents are not required as part of the seven (7) copies. Utilizing the revised Proposal Checklist attached to this Addendum will assist Respondent's in preparing their proposal packets.

5. Question: In 4. Construction Team Experience, it asks for an example Site Health and Safety Plan that addresses all phases of asbestos abatement work and personnel protective equipment that will be used. Our Health and Safety Plan is

voluminous. Would a table of contents listing of that plan be permissible and could it be placed in the Appendix.

Response: Yes, a Table of Contents would be permissible and may be placed in the Appendix.

6. Question: Would you be able to supply TWDB Form 0459; we cannot locate it on the TWDB website.

Response: The TWDB-0459, titled 'Vendor Compliance with Reciprocity on Non-Resident Bidders', is included within the specifications. Specifically, it may be found at the end of the TWDB Supplemental conditions, or page 276 of the specifications pdf.

7. Question: Please see below comments to Section 16406 – AC Induction Motors – 500HP to 900HP and the corresponding plans. **Section 16406, 1.01 B.** Replace this paragraph with “The CONTRACTOR shall install the motor supports and motors supplied by and under the supervision of an experienced Pump Company with a PUMP TECHNICIAN regularly engaged in the business of commissioning horizontal split-case water pumps. The Motor Manufacturer shall confirm the Pump Company as an authorized provider of motor commissioning services, or shall supply their own field technician to supervise installation and startup of the motors. The Pump Company shall supply the coupling, motor support, and align the new motors with the existing pumps. Concrete base extensions, if needed, to be done by CONTRACTOR. The pump distributor shall also conduct the startup and field testing for each unit.”

Response: SAWS has modified Section 16046, which is attached to the Addendum.

8. Question: Section 16406, 1.01 B. Replace this paragraph with “The CONTRACTOR shall install the motor supports and motors supplied by and under the supervision of an experienced Pump Company with a PUMP TECHNICIAN regularly engaged in the business of commissioning horizontal split-case water pumps. The Motor Manufacturer shall confirm the Pump Company as an authorized provider of motor commissioning services, or shall supply their own field technician to supervise installation and startup of the motors. The Pump Company shall supply the coupling, motor support, and align the new motors with the existing pumps. Concrete base extensions, if needed, to be done by CONTRACTOR. The pump distributor shall also conduct the startup and field testing for each unit.”

Response: SAWS has modified Section 16046, which is attached to the Addendum.

9. Question: Section 16406, 1.01 C. Replace this paragraph with “The Pump Company shall provide a structural analysis of the existing pump/motor base.

Response: SAWS has modified Section 16046, which is attached to the Addendum.

10. Question: Section 16406, 1.01 Add the following: "F. Work shall include pre-removal field inspection and performance test, installation inspection milestones, startup services, post start-up field inspection and performance test, training, and warranty services."

Response: Paragraph 1.01 will remain the same.

11. Question: Section 16406, 1.05 A. Add "3. f. Shaft speed in rpm at expected load from pump."

Response: SAWS has modified Section 16046, which is attached to the Addendum.

12. Question: Section 16406, 1.06 A. 1. Add to the end of this paragraph "The motor technician can be an employee of Smith Pump Company that is trained to install, align, and start-up horizontal motors on horizontal split-case pumps pumping high service water."

Response: SAWS has modified Section 16046, which is attached to the Addendum.

13. Question: Section 16406, 2.16 B. Add to the end of this paragraph "Vibration measured on the new motors shall not exceed the Hydraulic Institute 2009 standard, which is 0.19 in/sec RMS above 268bhp. Pump vibration shall not exceed the vibration levels recorded during the pre-test prior to removing the old motors."

Response: SAWS has modified Section 16046, which is attached to the Addendum.

14. Question: Section 16406, 2.18 D. 1. The OWNER to specify what type of coupling is needed so that all bidders are quoting the same type of coupling and it is fair. Do you want a gear coupling or a grid coupling? Is there a brand preference?

Response: SAWS has modified Section 16046, which is attached to the Addendum.

15. Question: Section 16406, 2.20 A. In the 1st sentence replace "CONTRACTOR" with "Pump Company". Concrete base extensions, if needed, to be done by CONTRACTOR.

Response: SAWS has modified Section 16046, which is attached to the Addendum.

16. Question: Section 16406, 2.20 B. In the 1st sentence replace "CONTRACTOR" with "Pump Company".

Response: SAWS has modified Section 16046, which is attached to the Addendum.

17. Question: Section 16406, 2.20 C. Replace existing wording with: "Pump Company will perform a field performance test of the existing pump and motor prior to motor replacements. Measure flow, head, shaft speed, voltage, current, power factor, and

kilowatts at five different flow points including shut-off to build the field pump head vs capacity, efficiency, and power curves. Measure pump and motor vibration amplitudes at the bearing housings for all the above flow conditions. Take vibration readings in the horizontal (x), vertical (y), and axial (z) directions at each pump and motor bearing. Vibration limits to be set by Hydraulic Institute 2009 standards. Measure pump and motor noise measurements six places with the measuring device 1 meter from the machine being measured. Prepare a report that provides all of the above measurements in a neat and clear fashion. Include digital photos of the installation, and of the test set-ups. Analyze vibration and report any problems observed. After installation and start-up of the new motors, repeat the above field test.”

Response: SAWS has modified Section 16046, which is attached to the Addendum.

18. Question: Section 16406, 3.03 A. Add to the end of this paragraph “Smith Pump Company to act as motor manufacturer’s representative.”

Response: Paragraph 3.03 A will remain the same.

19. Question: Plan sheet S-6: Can motor support riser be manufactured from carbon steel plate that is epoxy coated with Tnemec N69 paint 10-12 mils? On top of motor support riser (motor box), (where motor feet mount), there needs to be two plates that get machined flat and parallel to each other. These machined surfaces cannot be galvanized.

Response: Contractor to retain the services of Engineer licensed in the State of Texas, who with input and assistance from motor manufacturer and pump representative is to provide design of motor support riser, at no additional cost to OWNER. Material of construction can be discussed in Submittal process and shall be of sufficient quality so as to have a life expectancy equal to or greater than motor with adequate strength and stiffness to support the motor weight and not exceed limitations on motor vibrations. Refer to Sheet S-6 for additional requirements.

20. Question: Plan sheet E-13: I assume power factor correction capacitors and their mounting box to be covered by electrical contractor?

Response: Power factor correction capacitors for the high service pumps shall be provided and installed by the electrical contractor based on recommended sizing by the motor manufacturer per SPECIFICATION 16406 – AC INDUCTION MOTORS – 500HP TO 900HP.

21. Question: Specification Section 15120 PIPING SPECIALTIES 2.18 A. calls for 316SS bolts and nuts for submerged, buried or splashed applications and HDG for all others Plan Sheet M-1 details (3) Flexible Couplings will require restraint for buried installations & above ground installations Plan Sheet M-7 detail B indicates Grade B & C Carbon Steel (Plain) restraint rods for submerged, buried or inside vaults. What type of bolting

should be used for the restraint rods and nuts for above ground (Plain Grade B Studs w/Plain Grade C Nuts or HDG)? ...below ground (Plain Grade B Studs w/Plain Grade C Nuts or 316SS)?

Response: 316SS bolts and nuts are to be used for all submerged, buried or splashed applications and structural element connections to include handrails, monorail beam, and pipe supports. Carbon steel bolts, nuts and restraint rods are to be used for all mechanical fittings, flanges, valves, etc. above and below grade application, unless otherwise specified. Carbon steel bolts, nuts and washers shall conform to Detail B on Drawing No. M-7. Per Drawing No. M-7, Note 10 all carbon steel components shall be surface prepared and coated in compliance with Section 09900.

22. Question: Specification Section 15120 PIPING SPECIALTIES 2.14 G. states "Gear operators shall indicate valve position and have adjustable stops."

Does this mean that the buried BFV's will require a position indicator at grade inside the valve boxes (often called a "diviner" – see attachment)?

Response: No, a diviner or any other form of position indicator for buried BFV's will not be required. Valves for below ground applications shall be provided with an AWWA wrench nut, which shall have an arrow cast thereon, indicating the direction of opening in compliance with the Contract Documents and SAWS Standard Specifications for Construction.

23. Question: This is with regards to the Steel Pipe and Fittings for the above referred project. Project specifications section 02510 and 15072 call for manufacture of all fittings and pipe under one umbrella and with minimum 10,000LF of pipe produced by Manufacturer of the same. Based on our understanding of the same, this is derived from the ASR specifications.

Basin Pump station is a fitting intensive project with very limited pipe quantity. Hallmark Industrial (S. P. F. A. and ASME {U} {S} {R} Stamp Certified) has fabricated and supplied piping for several SAWS projects. We would like request a waiver from the above stipulations in specification section 02510 and 15072. Kindly consider our request for approving Hallmark Industrial as a preapproved fabricator for SAWS projects.

Response: SAWS has modified Section 2510, which is attached to the Addendum.

24. Question: Will SAWS approve General Electric as an acceptable manufacturer for the AC Induction Motors per specification section 16406 paragraph 2.01? Please advise if you require any additional information. Thank you very much for your consideration.

Response: CONTRACTORS can propose the use of alternative MANUFACTURERS in accordance with Section 01600.

25. Question: KST Electric is submitting our qualifications so we can bid the PCSI scope of work for the above mentioned project. Please find our qualifications attached. Note that we are currently performing controls work for SAWS on the Buckhorn Wellfield project.

Response: Refer to Item No. 15 on page 5 of Addendum No. 1.

26. Question: System Controls & Instrumentation (SCI) respectfully requests to be added to the approved Process Control System Integrator (PCIS) list for the SAWS Basin Pump Station Improvements project. Please see the attached letter and pre-qualifications, if you have any questions please don't hesitate to contact me.

Response: Refer to Item No. 15 on page 5 of Addendum No. 1.

27. Question: Can the appropriate Allen Bradley Controller be substituted for the Modicon M340?

Response: Page 17500-4, Paragraph 2.01 A., the Schneider Electric Modicon M340 controller is the preferred PLC for this project.

28. Question: I would like to see if our product could be accepted as an alternate equal on the sump pumps for the project.

Response: Proposed product was an in-kind replacement of an existing piece of equipment. Alternative products will be considered provided they are proposed as a complete, fully operational package, without additional power requirements and so long as all modifications necessary for mounting and installation are provided at no additional cost to the OWNER.

29. Question: Is it possible for me to go out to the site one more time to look at the project. Need to figure out how to get temporary power to the equipment that needs to stay on. I found out after reviewing the drawings.

Response: Temporary power is currently being provided to the site through an existing temporary MCC and switchgear facility located on-site. Refer to Note 6, Drawing No. E-1 which indicates that the equipment currently in service on the temporary MCC 'B' cannot be de-energized and moved until Side 'A' is permanently installed. Provided the Contractor coordinates properly with his subcontractors, there should not be a need for further temporary power to be provided at the site.

Refer to Addendum No. 2 for site visit details.

30. Clarification: TWDB Forms 0216, 0217 and 0373

As discussed at the mandatory pre-proposal meeting, TWDB forms 0216, 0217 and 0373 must be submitted with the proposal. For assistance in completing the forms please reference the Frequently Asked Questions handout attached to this Addendum

and the DBE-0210 Guidance Manual within the specifications. If you need assistance, contact Marisol Robles, SMWB Program Manager, at 210-233-3420 or by email at Marisol.Robles@saws.org.

B. ADDENDUM NO. 1

31. ITEM NO. 13 a

- a. Page 09900-1, Paragraph 1.01, A 3., after the words “Exposed structural steel” add the words “and handrails”.

C. SPECIFICATIONS

32. PROPOSAL CHECKLIST

- a. Page CH-1, Proposal Checklist, remove in its entirety and replace with the revised version attached to this Addendum.

33. SUPPLEMENTARY INSTRUCTIONS TO RESPONDENTS

- a. Page SIR-6, Supplementary Instructions to Respondents, E., III. Good Faith Effort Plan (GFEP) Non-Compliance, the last paragraph that reads:

Proof of SMWB certification i.e., a valid Certification Affidavit from the South Central Texas Regional Certification Agency (SCTRCA) or equivalent for both prime and sub contractors must be submitted.

Is modified to read:

Proof of SMWB certification i.e., a valid Certification Affidavit from the South Central Texas Regional Certification Agency (SCTRCA) or the Texas Historically Underutilized Business Program (HUB) or federal SMWB recognition for both prime and sub contractors must be submitted.

- b. Page SIR-7, Supplementary Instructions to Respondents, D.2 that reads:

Proposals shall be a MAXIMUM OF FIFTY (50) PRINTED PAGES. The cover, table of contents, divider sheets, and Price Proposal do not count as printed pages.

Is modified to read:

Proposals shall be a MAXIMUM OF FIFTY (50) PRINTED PAGES. The cover, table of contents, divider sheets, financial statement, Good Faith Effort Plan, Price Proposal, and all other required documents do not count as printed pages.

- c. Page SIR-7, Supplementary Instructions to Respondents, F. i. that reads:

Proposals shall include one copy on compact disc (CD) in .pdf format in addition to the required number of hard copies. The CD shall contain the entire ORIGINAL proposal package as submitted, and be encased in a paper CD envelope, clearly marked with the RFCSP information.

Is modified to read:

Proposals shall include one copy on compact disc (CD) in .pdf format in addition to the required number of hard copies. The CD shall contain the entire ORIGINAL proposal package as submitted, sans the financial statement and Price Proposal, and be encased in a paper CD envelope, clearly marked with the RFCSP information.

34. SPECIAL CONDITIONS

- a. Page SC-1, Add SC-4 as follows:

“Use of Station Bridge Crane - CONTRACTOR, at his option, can use the existing crane in the pump station to remove existing pipes, motors and equipment and for installation of new pipe, motors and equipment. If CONTRACTOR elects to use the crane, prior to work beginning and upon completion of the project, CONTRACTOR shall retain inspection services of a crane supplier to evaluate the crane, make necessary repairs and have the crane certified by the crane inspection service provider that the crane has been restored to full working order for intended use during construction and prior to completion of the project. All cost related to inspection, repairs and certification shall be borne by the CONTRACTOR.

OWNER shall not be liable for contractor injury or damages caused by use of station bridge crane.”

35. SECTION 02503: LEAD PAINT REMOVAL

- a. Page 02503-10, Paragraph 3.01, A., delete the word “shall” in the second sentence and replace with the word “may”.

36. SECTION 02510: BURIED STEEL PIPE AND FITTINGS EPOXY LINED AND POLYURETHANE COATED

- b. Page 02510-5, Paragraph 1.05, A.1.c., delete the words “of at least 10,000 linear feet of same diameter and thickness as specified herein or larger pipe sizes,”.

37. SECTION 14320: MONORAIL SYSTEMS

- a. Page 14320-2, Paragraph 1.04, F., delete the words “No “or equal” will be accepted.”
- b. Page 14320-2, Paragraph 1.04, F., after the word “ACE/Gaffey” insert the words “or OWNER approved equal”

38. SECTION 15100: MISCELLANEOUS VALVES

- a. Page 15100-2, Paragraph 2.02, B., following the words “worm gear” in the first and fourth sentences, insert the words “ or traveling nut gear”
- b. Page 15100-7, Paragraph 2.11, D., Items 1-7, add the following to the end of each item: “or as allowed by SAWS Standard Specifications for Construction.”
- c. Page 15100-7, Paragraph 2.11, D., Item 8, delete in its entirety and replace with “For exterior paint requirements, refer to Paragraph 3.02, this Section.”
- d. Page 15100-8, Paragraph 3.02, delete in its entirety and replace with the following: “All interior non-working ferrous surfaces (other than stainless steel), and interior waterway passages shall be given shop applied coatings. Coatings shall either be two-part liquid epoxy coating in compliance with Section 09900 or fusion bonded epoxy coating. Exterior surfaces shall either be provided with a shop applied fusion bonded epoxy coating, or shall be provided with a shop applied epoxy primer and field applied finish coat in compliance with Section 09900.”

39. SECTION 16010: BASIC ELECTRICAL REQUIREMENTS

- a. Page 16010-2, Paragraph 1.03, B.2., add the following: “Installation of keyed interlock in existing Cutler Hammer outdoor switchgear shall require shutdown by CPS Energy. Electrical contractor shall coordinate shutdown with CPS Energy and with general contractor such that shutdown will occur simultaneously with tank suction header partial replacement.”
- b. Page 16010-3, Paragraph 1.03, B. 20. through 27, change to B. 21 through 28, respectively. Add new item no. 20 as follows: “Switchgear side ‘A’ and all loads served by MCC ‘A’ shall be connected first while temporary MCC ‘B’ is in service. After MCC ‘A’ terminations are complete, MCC ‘A’ shall be tested per Section 16950 Electrical Testing and energized before loads are transferred from temporary MCC ‘B’ to proposed MCC ‘B’.”

40. Section 16406: AC INDUCTION MOTORS – 500 HP TO 900 HP

- a. Remove Section 16406 in its entirety and replace with the attached Section 16406.

41. Section 16411: POWER SYSTEM STUDY

- a. Remove this specification in entirety. Power system study will be completed by Consultant.

42. SECTION 17300: MONORAIL SYSTEMS

- a. Page 17300-7, Paragraph 1.05, A., delete the word "pre-approved" from the sentence.

43. SECTION 17500: PROGRAMMABLE LOGIC CONTROLLER

- a. Page 17500-4, Paragraph 2.01, B., delete the words "Approved Products - NO SUBSTITUTIONS" and replace with the words "Recommended Products".

D. DRAWINGS

44. DRAWING NO. G-2

- a. Remove the sheet numbers and sheet titles associated with sequence number E-55 and below E-55. Insert the following sheet number and sheet title for E-55:
"111 WELL PUMP OPERATING PROCEDURE – STOP SEQUENCE"

45. DRAWING NO. D-M-1

- a. Add the following to existing call out to CHEMICAL INJECTION VAULT ENLARGED PLAN:

"EXISTING FLOW TRANSMITTER PRESSURE LINES SHALL BE REMOVED IN THE YARD BACK TO THE PUMP STATION AND FROM THE INTERIOR OF THE PUMP STATION."

46. DRAWING NO. M-1

- a. Add the following Note No. 6:

"6. THE CONTRACTOR SHALL INSTALL ALL ABOVE GRADE FITTINGS AND PIPING WITH ADEQUATE SPACING TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION OF THE ABOVE GRADE PIPING. CONTRACTOR SHALL SUBMIT CALCULATION, SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE OF TEXAS, TO CONSULTING ENGINEER FOR REVIEW PRIOR TO INSTALLATION."

- b. Delete note number 23 in the Notes By Symbol and replace with the following:

"INSTALL ASSOCIATED CONDUIT FOR FUTURE FLOW TRANSMITTER, REFER TO ELECTRICAL SHEETS FOR ADDITIONAL INFORMATION"

47. DRAWING NO. M-4

- a. Add the following sentence after the last sentence of Note No. 8

"CONTRACTOR SHALL SUBMIT STEEL TO PVC TRANSITION ADAPTOR TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION OF THE TRANSITION."

48. DRAWING NO. M-5

- a. Delete the word "INSTALLATION" in the last sentence of Note No. 5 and replace with the following:

"INSULATION"

- b. Add the following sentence after the last sentence of Note No. 5:

"CONTRACTOR SHALL COORDINATE WITH OWNER PRIOR TO THE SELECTION AND INSTALLATION OF THE INSULATION."

49. DRAWING NO. M-6

- b. Add Note No. 12:

"CONTRACTOR, AT HIS OPTION, CAN USE THE EXISTING CRANE IN THE PUMP STATION TO REMOVE EXISTING PIPES, MOTORS AND EQUIPMENT AND FOR INSTALLATION OF NEW PIPE, MOTORS AND EQUIPMENT. IF CONTRACTOR ELECTS TO USE THE CRANE, PRIOR TO WORK BEGINNING AND UPON COMPLETION OF THE PROJECT, CONTRACTOR SHALL RETAIN INSPECTION SERVICES OF A CRANE SUPPLIER TO EVALUATE THE CRANE, MAKE NECESSARY REPAIRS AND HAVE THE CRANE CERTIFIED BY THE CRANE INSPECTION SERVICE PROVIDER THAT THE CRANE HAS BEEN RESTORED TO FULL WORKING ORDER FOR INTENDED USE DURING CONSTRUCTION AND PRIOR TO COMPLETION OF THE PROJECT. ALL COST RELATED TO INSPECTION, REPAIRS AND CERTIFICATION SHALL BE BORNE BY THE CONTRACTOR.

OWNER SHALL NOT BE LIABLE FOR CONTRACTOR INJURY OR DAMAGES CAUSED BY USE OF STATION BRIDGE CRANE."

50. DRAWING NO. M-7

- a. Delete Note Nos. 5 and 6 on Detail B in their entirety and replace with the following:

"5. STUD MATERIAL SHALL CONFORM TO ASTM A193, GRADE B7.

6. NUTS AND WASHERS SHALL CONFORM TO ASTM A194, GRADE 2H."

51. DRAWING NO. E-1

- a. Add the following to note 1 before the last sentence: "FUTURE FLOWMETER TO POWER PANEL 'C' 1-1" CONDUIT, FUTURE FLOWMETER TO EXISTING SCADA PANEL 2-1" CONDUITS"

ACKNOWLEDGEMENT BY RESPONDENT

Each respondent is requested to acknowledge receipt of this Addendum No. 3 by his/her signature affixed hereto and to file same with and attached to his/her proposal.

The Undersigned acknowledges receipt of this Addendum No. 3 and the proposal submitted herewith is in accordance with the information and stipulation set forth.

Date

Signature of Respondent

END OF ADDENDUM

Project Name: **Basin Pump Station Improvements Project -Phase I**

Solicitation Number: **B-13-015-DD**

ORIGINAL PROPOSAL PACKET-1 (sealed envelope or box)

- Proposal Checklist
- Price Proposal (*DO NOT INCLUDE THE PRICE PROPOSAL WITHIN THE 7 REQUIRED COPIES*)
- Good Faith Effort Plan (*Reference SIR-5 and SIR -6*)
- Financial Statement
- Conflict of Interest Questionnaire
- Bid Bond/Cashier's Check
- W-9
- Proof of Insurability (Letter from Insurer or Sample Certificate of Insurance)
- Respondent Questionnaire
- Background, Experience, and Qualifications narrative (*Reference page SIR-1, SIR-2, SIR-3 and SIR-4*)
 - Five (5) projects to include past experience MOST SIMILAR to this project
 - Three (3) References (including valid contact information)
 - Organizational Chart
- Project Plan, Safety and Quality Program narrative (*Reference page SIR-4*)
 - Safety Appendix
- Acknowledgement of Pollution Abatement Compliance
- Acknowledgement of Addendum(s)
- TWDB -0216 (*Reference DB-0210 and FAQ of Addendum #2*)
- TWDB -0217 (*Reference DB-0210 and FAQ of Addendum #2*)
- TWDB -0373 (*Reference DB-0210 and FAQ of Addendum #2*)
- TWDB-0255
- TWDB Form 0459
- TWDB Form SRF-404
- One (1) CD of Original Proposal Packet (*excluding the Price Proposal and Financial Statement*)

PROPOSAL PACKET COPIES -7 (separate sealed envelope or box for all 7 copies)

- Proposal Checklist
- Respondent Questionnaire
- Background, Experience, and Qualifications narrative (*Reference page SIR-1, SIR-2, SIR-3 and SIR-4*)
 - Five (5) projects to include past experience MOST SIMILAR to this project
 - Three (3) References (including valid contact information)
 - Organizational Chart
- Project Plan, Safety and Quality Program narrative (*Reference page SIR-4*)
 - Safety Appendix
- Acknowledgement of Pollution Abatement Compliance
- Acknowledgement of Addendum(s)

I certify that the proposal packet submitted includes the items as indicated above.

Signature

Date

Printed Name/Title

Company Name



SECTION 16406

AC INDUCTION MOTORS – 500 HP TO 900 HP

PART 1 GENERAL

1.01 SCOPE

- A. This specification covers the requirements for squirrel cage induction motors with ratings between 500 HP and 900 HP.
- B. The CONTRACTOR shall install the motor supports and motors supplied by and under the supervision and guidance of the motor MANUFACTURER and Pump Company's experienced representative. The Pump Company shall supply the coupling, oversee the modification to the existing baseplates and alignment of the new motors with the existing pumps. Concrete base extensions, if required, shall be completed by the CONTRACTOR, at no additional cost to the OWNER. Refer to Paragraph 1.06 of this Section for additional requirements.
- C. The Pump Company shall retain an experienced structural engineer licensed in the State of Texas to perform a structural analysis of the existing pump, new motor and base.
- D. If a motor horsepower rating larger than indicated is offered as a substitute and accepted, the CONTRACTOR shall provide required changes in conductors, motor controllers, overload relays, fuses, breakers, switches, and other related items with no change in the contract price.
- E. Submersible motors are not included in this specification.

1.02 RELATED SECTIONS

- A. Section 16410, Power Factor Correction Capacitors, requires the motor MANUFACTURER to recommend kVAR rating for the power factor correction capacitors.

1.03 REFERENCES

- A. The following documents of the exact issue indicated, or of the issue in effect on the date of invitation for bids where no issue is indicated, shall apply to this procurement to the extent specified herein. In the event of any conflict between the requirements of this Specification and the requirements of the following documents, the requirements of the Specification shall govern.
 - 1. Anti-Friction Bearing Manufacturer's Association (AFBMA):
 - a. 9, Load Ratings and Fatigue Life for Ball Bearings.
 - b. 11, Load Rating and Fatigue Life for Roller Bearings.
 - 2. American National Standards Institute (ANSI): C50.41, Polyphase Induction Motors for Power Generating Stations.
 - 3. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - a. 85, Test Procedure for Airborne Sound Measurements on Rotating Machines.
 - b. 112, Standard Test Procedures for Polyphase Induction Motors and Generators.
 - c. 620, Guide for Construction and Interpretation of Thermal Limit Curves for Squirrel-Cage Motors Over 500 Horsepower.

4. National Electrical Manufacturers Association (NEMA):
 - a. MG 1, Motors and Generators.
 - b. MG 2, Safety Standard and Guide for Selection, Installation, and Use of Electric Motors and Generators.
 - c. MG 13, Frame Assignments for Alternating Current Integral Horsepower Induction Motors.
5. National Fire Protection Association (NFPA): 70, National Electrical Code. (NEC)

1.04 WARRANTY

- A. MANUFACTURER warrants equipment to be free from defects in materials and workmanship for 2 years from the date of final acceptance. Warranty shall comply with Division 1.

1.05 SUBMITTALS

- A. Shop Drawings:
 1. Descriptive information, including materials and features.
 2. Nameplate data in accordance with NEMA MG 1.
 3. Additional Rating Information:
 - a. Service factor.
 - b. Locked rotor current.
 - c. No load current.
 - d. NEMA insulation system classification.
 - e. Temperature rise at full load by resistance temperature detector (RTD) and resistance.
 - f. Shaft speed in rpm at expected load from pump.
 4. Maximum ambient temperature for which motor is designed.
 5. Enclosure type and mounting.
 6. Dimensions and total weight.
 7. Conduit box dimensions and usable volume as defined in NEMA MG 1 and NFPA 70.
 8. Bearing type.
 9. Bearing lubrication.
 10. Bearing life.
 11. Space heater voltage and watts.
 12. Motor sound power level in accordance with NEMA MG 1.
 13. Maximum brake horsepower required by the equipment driven by the motor.
 14. RTD type and mounting.
 15. RTD alarm and trip set points.
 16. Motor power factor at full load.
 17. Date and place of manufacture.
 18. Description of any sub base or modifications contemplated to mount motor on the existing base.
 19. Stator and rotor thermal damage curves for motor located in a 40° C ambient.
 20. Maximum kVAR allowed for power factor correction. Maximum kVAR shall be included on motor nameplate as well.
 21. Allowable time periods between starts.
 22. Efficiency at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full load.

Note: All documentation listed above shall be supplied with the motor's initial submittal. Incomplete submittals will be returned "NOT APPROVED, REVISE AND RESUBMIT".

1.06 QUALITY ASSURANCE

A. Service of MANUFACTURER's representative

1. The motor MANUFACTURER shall furnish the services of a competent factory trained technician, who shall have had a minimum of five (5) years' experience in the installation, adjustment, and operation of the equipment which is being furnished under this contract. This service is to ensure proper installation and adjustment of the motor, instruct personnel in proper operation, maintenance, and care of the equipment, for performing operation tests of equipment, and recommendations for obtaining the most efficient use thereof. The motor technician shall be an employee of the motor MANUFACTURER unless otherwise accepted by the ENGINEER in which case the CONTRACTOR shall submit qualifications of the employee a minimum of 7 calendar days before the bid date.
2. The Pump Company shall provide the services of a competent factory trained technician, regularly engaged in the commissioning of horizontal split case water pumps, who shall have had a minimum of five (5) years' experience in the installation, adjustment, start-up and operation of horizontal split case water pumps and motors conveying high service water.
3. The Motor MANUFACTURER and Pump Company representatives shall verify the proper installation, alignment, wiring, lubrication, and connection of all appurtenances prior to start-up. Representatives shall be present during testing outlined in item B within this Section and Paragraph and shall be present for installation milestones, start-up services and training and shall certify to the OWNER in writing that the motor has been properly installed and operates satisfactorily.

B. Certified Test Reports

1. Submit the following certified test reports for pump and motor:
 - a. Provide CTR for motor factory performance tests.
 - b. Provide CTR (with EIR) for pump field tests before and after motors are replaced, to be overseen by the Pump Company representative.
 - c. Provide CTS (with EIR) for motor field tests, to be overseen by the Pump Company representative.

C. Equipment Installation Report

1. Submit Equipment Installation Reports from the motor MANUFACTURER field service representative indicating the equipment was installed in accordance with the MANUFACTURER's instructions and that the equipment was adjusted and aligned to be in the best operating condition. The report shall also indicate that the equipment is operating satisfactorily in accordance with the project specifications.

1.07 OPERATION AND MAINTENANCE MANUAL

A. Organization: The following information shall be provided by the Motor MANUFACTURER and incorporated in the Motor Operation and Maintenance Manual:

1. Project record drawings clearly indicating operating features and including as-built shop drawings, outline drawings, and schematic and wiring diagrams.
2. Instructions for erection, alignment (including tolerances), and preparation for use.
3. Normal maintenance, inspection, and lubrication procedures.
4. Recommended spare parts list.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. U.S. Electrical Motors
- B. TECO-Westinghouse Motor Co.
- C. Toshiba
- D. Reliance (Baldor)
- E. Siemens

2.02 GENERAL

- A. The motors shall be designed to fit in the space shown on the drawings. Motor weight for Motor Nos. 1, 4, 5 and 6 shall not exceed 15,900 lbs and motor weight for Motor Nos. 2 and 3 shall not exceed 9,300 lbs.
- B. Replacement parts must be readily available through USA distributors.
- C. The brake horsepower required at any point along the drive curve including tolerance allowed by Hydraulic Institute standards and during shop and field testing of driving units shall not exceed the rated motor horsepower.
- D. For multiple units of the same type of equipment, furnish identical motors and accessories of a single MANUFACTURER.
- E. Meet requirements of NEMA MG 1.
- F. Frame assignments in accordance with NEMA MG 13.
- G. Motors shall be specifically designed for the use and conditions intended, with a NEMA design letter classification to fit the application.
- H. Lifting lugs on all motors.
- I. Operating Conditions:
 - 1. Indoor, high humidity, dusty.
 - 2. Maximum ambient temperature not greater than 50 degrees C.
 - 3. Standard altitude (Below 3300 feet).
 - 4. Motors shall be suitable for operating conditions without any reduction being required in the nameplate rated horsepower or exceeding the rated temperature rise.
 - 5. Overspeed in either direction in accordance with NEMA MG 1.

2.03 HORSEPOWER RATING AND FULL LOAD RPM

- A. As designated in motor-driven pump specifications for well pump motors. Refer to electrical plan sheets for high service pump motors HP and RPM.
- B. The motor nameplate horsepower shall be equal to or greater than the maximum load which will be imposed on it by the pump when operating at any point in the operating head range.

2.04 SERVICE FACTOR

- A. 1.15 minimum at 50 degrees C temperature, unless otherwise indicated.

2.05 VOLTAGE AND FREQUENCY RATING

- A. Motor shall be 3-phase, 60Hz.
- B. Motor voltage shall be as indicated on the Contract Drawings.
- C. Suitable for full voltage direct-on-line starting.
- D. Suitable for accelerating the connected load with supply voltage at motor starter supply terminals dipping to 90 percent of motor rated voltage.

2.06 EFFICIENCY AND POWER FACTOR

- A. Efficiency:
 - 1. The motor shall be rated NEMA Premium in accordance with NEMA MG1 9.21.4.1.
 - 2. Tested in accordance with NEMA MG 1.
 - 3. Guaranteed minimum at full load.
- B. Power Factor:
 - 1. Power factor for each motor shall have the capability to be corrected to 95% or better without overexciting the motor.

2.07 LOCKED ROTOR RATINGS

- A. Safe stall time 15 seconds or greater.
- B. Locked Rotor Code shall be "G".

2.08 INSULATION SYSTEMS

- A. Sealed windings in accordance with NEMA MG 1 - 1.27.2.
- B. Class H insulation system.
- C. Two cycles of vacuum impregnation of 100% solid epoxy resins.
- D. Insulation system materials shall be moisture and mildew resistant, and shall include a resilient outer covering, which will not erode when the motor is operated in sand laden air.

2.09 TEMPERATURE RISE

- A. Motors shall have a maximum temperature rise, by resistance, of 90°C @ SF 1.15 (Class B) for continuous operation at rated load.

2.10 ENCLOSURE

- A. Enclosure to conform to NEMA MG 1.
- B. Totally Enclosed Fan Cooled (TEFC)

- C. Bolts shall be stainless steel.
- D. Drain shall be provided to prevent accumulation of liquids.
- E. There shall be a metal arrow on each end of the motor to indicate direction of rotation.

2.11 ROTOR

- A. Rotor cage shall be constructed of copper or copper alloy bars. Aluminum bar rotors are not acceptable.

2.12 LEADS

- A. Shall be made of ASTM B 173, class G stranded copper.
- B. Provide permanent identification numbers on leads as per NEMA MG 1.
- C. Motor leads shall have same class of insulation as the motor stator windings.

2.13 TERMINAL (CONDUIT) BOXES

- A. Oversize main terminal box.
- B. Diagonally split, rotatable to each of four 90-degree position. Threaded hubs for conduit attachment.
- C. Furnish gaskets between box halves and between box and motor frame.
- D. Minimum usable volume in percentage of that specified in NEMA MG1-11.06 and 20.62 and NFPA 70, Article 43, shall be 200 percent.
- E. The cables associated with both the motor and the power factor correction capacitors (PFCC's) will terminate in the main motor terminal box.

2.14 BEARINGS AND LUBRICATION

- A. Horizontal Motors:
 - 1. Minimum 100,000 hours L-10 bearing life as defined in AFBMA 9 and 11.
 - 2. Motor bearing shall be ring oiled, split-sleeve type.
 - 3. Oil lubricated.
 - a. Oil reservoir with oil level sight glass. Sight glass shall be marked with the proper static and operating oil levels.
 - b. Oil fill and drain openings with opening plugs.
 - c. Provisions for necessary oil circulation and cooling.

2.15 NOISE

- A. Measured in accordance with IEEE 85 and NEMA MG 1.
- B. The average sound pressure level shall not exceed 105 dBA at 1 meter at no load.

2.16 BALANCE AND VIBRATION CONTROL

- A. In accordance with NEMA MG 1.

- B. Rotors shall be dynamically balanced. Vibration displacement shall not exceed the Hydraulic Institute 2009 standard, which is 0.19 in/sec RMS above 268bhp. Pump vibration shall not exceed the vibration levels recorded during the pre-test performed prior to removing the existing motors.

2.17 EQUIPMENT FINISH

- A. Field painting in accordance with project requirements.

2.18 SPECIAL FEATURES AND ACCESSORIES

A. Space Heater:

1. Motors shall be furnished with a space heater.
2. Heater shall be rated at 240Vac and operated at 120Vac. Shall be low-density type for long life.
3. Heater leads shall be wired to a terminal box separate from motor terminal box.
4. Controlled by remote motor starter contact.
5. MANUFACTURERS standard construction, designed for long life.

B. Winding Thermal Protection:

1. Resistance Temperature Detectors:
 - a. All motors shall be provided with 120-ohm nickel stator RTD's.
 - b. Six (two each phase) positioned to detect highest winding temperature and located between coil sides in stator slots.
 - c. RTD leads brought to conduit box separate from motor terminal box, together with bearing RTD leads.

C. Bearing Temperature Protection:

1. Replaceable 120 ohm nickel RTD on each bearing of motor.
 - a. RTD leads brought to conduit box separate from motor terminal box, together with winding RTD leads.

D. Motor Couplings

1. Flexible limited slip couplings shall be the heavy duty type, designed so that the pump shaft may be removed without disturbing the position or adjustment of the driving unit. Coupling shall be all carbon steel. Minimum factor of safety of 1.5 times shaft strength shall be used. Horizontal surface of the coupling shall be machined parallel to the axis of the shaft, and faces shall be machined perpendicular to the axis of the shaft. Provide grid coupling manufactured by Faulk Company.
2. A fabricated steel coupling guard (similar to existing) shall be provided.

E. Surge Protection

1. Lightning arrester (4.5 Kv) to limit the magnitude of the transient voltage spike.
2. Surge capacitor (0.5 microfarad) to limit the rate of rise of voltage.
3. Both shall be located in an oversized conduit box mounted on the motor.
4. The surge capacitor shall be connected between the motor and lightning arrester and the capacitor lead length shall be less than 3 feet.

F. Nameplates:

1. Raised or stamped letters on stainless steel. Attached with stainless steel fasteners.
2. Display all motor data required by NEMA MG 1-10.37 and NEMA MG 1-10.38 in addition to bearing numbers for both bearings.

3. Provide temperature nameplate with alarm and trip temperature set points for winding and bearing temperatures.
4. Bearings nameplate: Display bearing MANUFACTURER's name and identifications and recommended lubricant.

2.19 FACTORY TESTING

A. Tests:

1. Test each motor in accordance with IEEE 112 for polyphase motors.
2. Routine (production) tests on all motors in accordance with NEMA MG 1, plus no load power at rated voltage and measurement of locked rotor current.
3. Power factor.
 - a. Speed.
 - b. Current at rated horsepower.
 - c. KW input at rated horsepower.

B. Test Report Forms:

1. Routine Tests: IEEE 112, Form A-1.
2. Efficiency and power factor by Test Method B, IEEE 112, Form A-2, and NEMA MG 1, paragraph (table) 12.57.

C. MANUFACTURER shall provide certified test report.

2.20 ADDITIONAL REQUIREMENTS FOR HIGH SERVICE PUMP MOTORS

- A. CONTRACTOR shall reconfigure existing motor support bases as necessary to align new motor with existing pump drive shaft with the recommendation and assistance of the Pump Company representative.
- B. CONTRACTOR to perform final motor and pump alignment with a laser and with the recommendation and assistance of the Pump Company representative. Report of alignment must be submitted to OWNER.
 1. CONTRACTOR shall coordinate with Motor Manufacturer and/or Pump Company Representative to provide a laser alignment between the motor shaft and pump shaft. The alignment of the motor shaft and pump shaft shall be accurate within 0.001 inch.
- C. CONTRACTOR to retain the services of a Testing Laboratory to perform a vibration test on existing motors prior to removal and on proposed motors after installation and submit test reports to the OWNER. Prepare a report that provides all of the above measurements in a neat and clear fashion. Include digital photos of the installation, and of the test set-ups. Analyze vibration and report any problems observed.

Measure flow, head, shaft speed, voltage, current, power factor, and kilowatts at five different flow points including shut-off to build the field pump head versus capacity, efficiency, and power curves. Measure pump and motor noise measurements six places, with the measuring device 1 meter from the machine being measured. Measure pump and motor vibration amplitudes at the bearing housings for all the above flow conditions. Take vibration readings in the horizontal (x), vertical (y), and axial (z) directions as each pump and motor bearing. CONTRACTOR, with the assistance of the Pump Company representative, shall make adjustments as necessary until vibration levels are acceptable to the OWNER, as set by Hydraulic Institute 2009 standards. The RMS value of vibration shall not exceed the value

recorded for the existing pump and motor. Vibration reading shall be taken as per Hydraulic Institute Standards..

PART 3 EXECUTION

3.01 INSTALLATION

- A. In accordance with MANUFACTURER's instructions and recommendations.
- B. Align motor carefully and properly with driven equipment. Motor pad shall be retrofitted in order to correctly align motor shaft with existing pump.
- C. Secure equipment to mounting surface with anchor bolts. Provide anchor bolts meeting MANUFACTURER's recommendations and of sufficient size and number for the specified load conditions.

3.02 FIELD QUALITY CONTROL

- A. Refer to Section 16950, Electrical Testing.

3.03 MANUFACTURER'S FIELD SERVICES

- A. Furnish MANUFACTURER's representative at site in accordance with Section 01650, MANUFACTURERS' Field Services, for installation assistance, inspection, equipment testing, and startup assistance.
- B. MANUFACTURER's Certificate of Proper Installation.

END OF SECTION

FREQUENTLY ASKED QUESTIONS RE: MINORITY AND WOMAN-OWNED BUSINESS PARTICIPATION ON TWDB PROJECTS

- Please ensure that you are registered on our website, and “Subscribe” to this particular solicitation, as all firms (potential proposers) that download through the site will be listed, and any updates to the project will be posted there as well:
http://www.saws.org/business_center/Vendor/
- **Forms TWDB-0216, TWDB-0217, and TWDB-0373 must be submitted at the time the proposal is due.**
- Please submit TWDB-0216 with Section I left blank.
- Please submit TWDB-0373 with the executed contract dates left blank.
- **Form TWDB-0215 is not required.**
- **Can you please clarify what are the SMWB goals for this solicitation? There are some percentages listed in a table under TWDB and then there is a SAWS percentage listed at 17%.**
 - TWDB’s goals and the 17% SAWS goals are non-mandatory; i.e., you are not required to meet them exactly. What is important is that you conduct an outreach effort to find minority-owned and woman-owned subcontractors through any **two** of the following methods, and show documented proof of your efforts:
 - Newspaper Advertisements
 - Direct Contact by Phone, Fax, USPS Mail, Email
 - Meetings or Conferences
 - Minority Media
 - Internet & Web Postings
 - Trade Association Publications
 - Other Government Publications
- **Per the Submittal Response Checklist, we are required to provide a Good Faith Effort Plan and TWBD forms 0216, 0217, and 0373. However, we do not have all of the information necessary to complete these forms, including TWBD Project Number and Total TWDB Funding Request. Will you make this information available, or should this information be left blank?**
 - Please leave those information fields blank.
- **Form TWDB-0373 – Can columns 4 and 5 be left blank at this time?**
 - Yes.

- **If we meet the State's current fair share goals for MBE and WBE participation, are we required to meet the TWBD minimum methods of solicitation for Good Faith Effort outlined in form TWDB-0216?**
 - Yes, all firms who will be submitting a proposal are required to conduct two documented methods of outreach to minority and woman-owned subcontractors. Proposing firms may choose any two methods listed below:
 - Newspaper Advertisements
 - Direct Contact by Phone, Fax, USPS Mail, Email
 - Meetings or Conferences
 - Minority Media
 - Internet & Web Postings
 - Trade Association Publications
 - Other Government Publications

- **Has a TWDB # been assigned to the RFCSP or do we leave that blank?**
 - Leave it blank.

- **Form TWDB-0216 under Instructions Column 7- Please verify if backup documentation is required at this time?**
 - Yes, documentation of the two solicitation methods that your firm used to perform the Good Faith Effort outreach (Column 7) is required at the time the proposal is due.