



King Street Pump Station Improvements (Volume I) & ASR Lime System Improvements (Volume II) - RFCSP

Solicitation Number: CO-00670

Job No.: 20-6002

and 22-8603

ADDENDUM 6

November 7, 2023

To Respondent of Record:

This addendum, applicable to work referenced above, is an amendment to the price proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the Respondent Questionnaire.

CHANGES TO THE SPECIFICATIONS

1. BUILDING WAGE DECISION

- Due to updates in the General Wage Decisions for Building Construction Type, remove the wage decision documents from the solicitation in entirety and replace with the revised versions attached to this addendum (rev. 10.27.23 for General Decision Number TX20220231). This version should be utilized by the awarded contractor for this project.

2. SCHEDULE OF MANUFACTURERS AND SUPPLIERS FOR MAJOR EQUIPMENT – KING STREET PUMP STATION IMPROVEMENTS:

- Specification 15101 AWWA Butterfly Valves; DELETE “2. Henry Pratt” from manufacturer/supplier list and renumber the items accordingly.
- Specification 15103 AWWA Ball Valves; DELETE “1. Henry Pratt Company” from manufacturer/supplier list and renumber the items accordingly.

3. SECTION 15101 AWWA BUTTERFLY VALVES:

- Paragraph 1.03.B.2; DELETE item “2. Henry Pratt Company -HP-250”, item “3. Henry Pratt (above ground) – 2FII (3” through 20”) and XR-70 (24” through 72”)”, and item “4. Henry Pratt (below ground) – Ground hog (3” through 72”)” and renumber the items accordingly.

4. SECTION 15103 AWWA BALL VALVES:

- DELETE in its entirety and REPLACE with the attached SECTION 15103 AWWA BALL VALVES.

5. SECTION 405051 VALVES AND APPURTENANCES:

- Paragraph 2.03.D.1; DELETE item “a. Pratt” and renumber accordingly.

END OF ADDENDUM

This Addendum, including these two (2) pages, is seventeen (17) pages with attachments in its entirety.

Attachments:

1. GENERAL WAGE DECISION NUMBER TX20230231 - rev. 10/27/2023 (7 pages)
2. SPECIFICATION- SECTION 15103 AWWA BALL VALVES (8 pages)



MKS 11/07/2023

Mythri Krishnamoorthysujatha, P.E.
Tetra Tech

"General Decision Number: TX20230231 10/27/2023

Superseded General Decision Number: TX20220231

State: Texas

Construction Type: Building

County: Bexar County in Texas.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
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If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023

2 02/03/2023
 3 04/14/2023
 4 08/25/2023
 5 09/01/2023
 6 10/13/2023
 7 10/27/2023

ASBE0087-014 06/04/2023

Rates Fringes

ASBESTOS WORKER/HEAT & FROST
 INSULATOR (Duct, Pipe and
 Mechanical System Insulation)....\$ 28.95 8.39

BOIL0074-003 07/01/2023

Rates Fringes

BOILERMAKER.....\$ 37.00 24.64

* ELEC0060-003 06/05/2023

Rates Fringes

ELECTRICIAN (Communication
 Technician Only).....\$ 33.00 18%+5.45

* ELEC0060-004 06/05/2023

Rates Fringes

ELECTRICIAN (Excludes Low
 Voltage Wiring).....\$ 33.00 18%+5.45

ELEV0081-001 01/01/2023

Rates Fringes

ELEVATOR MECHANIC.....\$ 46.83 37.335+a+b

FOOTNOTES:

a. 6% under 5 years based on regular hourly rate for all
 hours worked. 8% over 5 years based on regular hourly rate
 for all hours worked.

b. Holidays: New Year's Day; Memorial Day; Independence Day;
 Labor Day; Thanksgiving Day; Friday after Thanksgiving Day;
 Christmas Day; and Veterans Day.

ENGI0450-002 04/01/2014

Rates Fringes

POWER EQUIPMENT OPERATOR
 Cranes.....\$ 34.85 9.85

IRON0066-013 06/01/2023

Rates Fringes

IRONWORKER, STRUCTURAL.....\$ 26.00 7.53

IRON0084-011 06/01/2023

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 27.51	8.13

PLUM0142-009 07/01/2023

	Rates	Fringes
HVAC MECHANIC (Electrical Temperature Control Installation & Unit Installation Only).....	\$ 35.95	11.25
PIPEFITTER (Including HVAC Pipe Installation).....	\$ 35.95	11.25
PLUMBER..... Including HVAC Pipe Installation Excludes HVAC Pipe Installation	\$ 35.95	11.25

SFTX0669-002 04/01/2023

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	\$ 34.60	23.30

SHEE0067-004 07/03/2023

	Rates	Fringes
Sheet metal worker Excludes HVAC Duct Installation.....	\$ 30.24	15.89
HVAC Duct Installation Only.	\$ 30.24	15.89

* SUTX2014-006 07/21/2014

	Rates	Fringes
BRICKLAYER.....	\$ 22.15	0.00
CARPENTER (Acoustical Ceiling Installation Only).....	\$ 17.83	0.00
CARPENTER (Form Work Only).....	\$ 13.63 **	0.00
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Hanging, Form Work, and Metal Stud Installation.....	\$ 16.86	4.17
CAULKER.....	\$ 15.00 **	0.00
CEMENT MASON/CONCRETE FINISHER...	\$ 22.27	5.30
DRYWALL FINISHER/TAPER.....	\$ 13.81 **	0.00
DRYWALL HANGER AND METAL STUD INSTALLER.....	\$ 15.18 **	0.00
ELECTRICIAN (Low Voltage Wiring Only).....	\$ 20.39	3.04
IRONWORKER, REINFORCING.....	\$ 12.27 **	0.00

LABORER: Common or General.....	\$ 10.75 **	0.00
LABORER: Mason Tender - Brick...	\$ 11.88 **	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 12.00 **	0.00
LABORER: Pipelayer.....	\$ 11.00 **	0.00
LABORER: Roof Tearoff.....	\$ 11.28 **	0.00
LABORER: Landscape and Irrigation.....	\$ 8.00 **	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 15.98 **	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 14.00 **	0.00
OPERATOR: Bulldozer.....	\$ 14.00 **	0.00
OPERATOR: Drill.....	\$ 14.50 **	0.00
OPERATOR: Forklift.....	\$ 12.50 **	0.00
OPERATOR: Grader/Blade.....	\$ 23.00	5.07
OPERATOR: Loader.....	\$ 12.79 **	0.00
OPERATOR: Mechanic.....	\$ 18.75	5.12
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 16.03 **	0.00
OPERATOR: Roller.....	\$ 12.00 **	0.00
PAINTER (Brush, Roller and Spray), Excludes Drywall Finishing/Taping.....	\$ 13.07 **	0.00
ROOFER.....	\$ 12.00 **	0.00
TILE FINISHER.....	\$ 11.32 **	0.00
TILE SETTER.....	\$ 14.94 **	0.00
TRUCK DRIVER: Dump Truck.....	\$ 12.39 **	1.18
TRUCK DRIVER: Flatbed Truck.....	\$ 19.65	8.57
TRUCK DRIVER: Semi-Trailer Truck.....	\$ 12.50 **	0.00
TRUCK DRIVER: Water Truck.....	\$ 12.00 **	4.11

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658

(\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year: Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average

rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an

interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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SECTION 15103

AWWA BALL VALVES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This section covers furnishing 6 inch and larger AWWA ball valves as required by the Work. Four inch and smaller ball valves and other non AWWA ball valves are covered in the Small Diameter Valves and Appurtenance section. AWWA ball valves shall be furnished complete with actuators and accessories as specified herein.
- B. The Contractor shall furnish all labor, materials, equipment and incidentals required to completely install and put into operation, ball valves and electric actuators as specified herein and shown on the plans.
- C. The Contractor shall coordinate the ball valve installation with the electric actuators to insure a complete functional operation.
- D. Unit Responsibility and Coordination: The Contractor shall cause all equipment specified under this section to be furnished by the valve and actuator manufacturers who shall be responsible for the adequacy and compatibility of their respective components. Any component of each complete unit not provided by the manufacturers shall be designed, fabricated, testing, and installed by factory-authorized representatives experienced in the design and manufacture of the valve and actuator equipment. This requirement, however, shall not be construed as relieving the Contractor of the overall responsibility for this portion of the work.

1.02 REFERENCES

- A. San Antonio Water System (SAWS) latest specifications.
- B. American Water Works Association (AWWA)
 - 1. AWWA C507 – Ball Valves, 6 in. Through 60-in. (150 mm Through 1,500 mm).
 - 2. AWWA C542 – Electric Motor Actuators for Valves and Slide Gates
- C. American Society for Testing and Materials (ASTM)
 - 1. ASTM A126 – Gray Iron Castings for Valves, Flanges, and Pipe Fittings
 - 2. ASTM A536 – Ductile Iron Castings.
- D. American National Standards Institute (ANSI) ANSI C50.41 – Polyphase Induction Motors for Power Generating Stations
- E. National Electrical Manufacturer’s Association (NEMA) NEMA MG1 – Motors and Generators.

1.03 SUBMITTALS

- A. Required Submittals:
1. Valve Drawings and Data
 1. Manufacturer
 2. Type, Model and Serial Number
 3. Design pressure.
 4. Shutoff pressure.
 5. Weight.
 6. Performance curves.
 7. Shop Coatings.
 8. Assembly drawings
 9. Materials list.
 2. Actuator Drawings and Data:
 1. Manufacturer
 2. Type and Model
 3. Type, size and bearing ratings.
 4. Lubrication requirements.
 5. Motor HP.
 6. Temperature rating.
 7. Motor Speed, Actuator speed.
 8. Weight.
 9. Torque and performance curves.
 10. Motor current, efficiency and power factor at full, $\frac{3}{4}$ and $\frac{1}{2}$ load.
 11. Shop coatings.
 12. Assembly drawings, wiring diagrams.
 13. Materials list.
 3. Operation and Maintenance Manuals
 1. Operating instructions.
 2. Maintenance procedures.
 3. Lubricants.
 4. Troubleshooting.
- B. Shop Drawings:
1. Product data sheets for make and model.
 2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 3. Separate detailed point-to-point internal wiring diagram for each pump control valve.
 4. Power and control wiring diagrams, including terminals and numbers.
 5. Complete motor nameplate data.
 6. Electric operator sizing calculations.
- C. Quality Control Submittals:

1. The manufacturer shall submit product data and manufacturer's installation instruction under provisions of Section 01330 - Submittals.
2. Three complete sets of certified assembly drawings showing the principal dimensions, construction details, and material used for all parts of the valve.
3. The Drawings shall include a specific comprehensive elementary control schematic.
4. The Drawings shall include a separate detailed point-to-point internal wiring diagram for each electrically operated or controlled valve and the associated electrical control equipment to include all external device connections.
5. Certified copy of the test record report including the Affidavit of Compliance.
6. Manufacturer's Certificate of Proper Installation.
7. Operation and Maintenance Manual.
8. Certificate of Compliance for:
 - a) Electric operators; full compliance with AWWA C540.
 - b) AWWA service butterfly valves; full compliance with AWWA C504

1.05 SPARE PARTS AND TOOLS

- A. Furnish one set of special tools required for the proper servicing of all equipment supplied under these Specifications, packed in a suitable steel tool chest with a lock.

1.06 SHIPPING INSTRUCTIONS

- A. Comply with recommendations of AWWA C507.
- B. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.
- C. All equipment and parts must be properly protected against any damage during a prolonged period at the site.
- D. The finished surfaces of all exposed flanges shall be protected by wooden blank flanges, strongly built and securely bolted thereto.
- E. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.
- F. Storage and Protection: Take special care to prevent plastic and similar brittle items from being directly exposed to the sun, or exposed to extremes in temperature, preventing any deformation.

1.06 WARRANTY

- A. The equipment shall be warranted to be free from defects in workmanship, design and materials. If any part of the equipment should fail during the warranty period, it shall be replaced and the unit(s) restored to service at no expense to the Owner. Warranty shall be for a period of two years and begin on achievement of substantial completion.

PART 2 – PRODUCTS

2.01 BALL VALVES

- A. Acceptable ball valve manufacturers (no approved equals):
 - 1. Val-Matic Valve & Manufacturing Corporation
 - 2. DeZurik, Inc.
 - 3. GA Industries, LLC
 - 4. No approved equals
- B. Acceptable actuator manufacturers (no approved equals):
 - 1. Beck
 - 2. Rotork (IQ Series)
 - 3. No approved equals
- C. Ball Valves shall be built and tested in accordance with the latest version of AWWA C507 and Institute of Electrical and Electronics Engineers, Inc. Standard Test Procedures for Polyphase Induction Motors and Generators (IEEE 112) or latest standard. The following tests are required:
 - 1. Hydrostatic Test
 - 2. Shop seat-leakage Test
 - 3. Performance Test
 - 4. Proof-of-Design Test
 - 5. Motor test per IEEE 112
- D. The main valve shall have a full, circular, unobstructed waterway and be shaft in complete conformance with the latest requirements of AWWA C507.
- E. Ball valves shall be rated for a working pressure as indicated in Table 1 of Section 15055 – Steel Process Pipe for the applicable area.
- F. Components
 - 1. Shaft Seals: O-Ring
 - 2. Manual Actuators: Ductile Iron Handwheel for exposed service.
 - 3. Electric Actuators: ANSI/AWWA C542
- G. Valve bodies shall be marked with the size, design pressure, and manufacturer's name. Single-seated valve shall also be marked with an arrow showing the direction of flow.
- H. Accessories
 - 1. Equipment Identification Plate: 16 – gauge stainless steel with $\frac{1}{4}$ -inch die stamped equipment tag securely mounted in a readily visible location with manufacturer name, model number, serial number, size of valve, design pressure, shutoff pressure, operational data, and date of manufacture.
 - 2. Lifting Lugs: Equipment weighing over 100 pounds.
 - 3. Anchor Bolts: Type 316 stainless steel, sized by equipment manufacturer, $\frac{1}{2}$ -inch minimum diameter.

- I. Flanges shall conform to ANSI/ASME B16.1, Class 300.
- J. All ball valves shall be coated with a fusion bonded epoxy coating, 25 mils minimum dry film thickness.

2.02 VALVE ACTUATOR

- A. Design: Valve actuators shall conform to the latest requirements of AWWA C507 and C542. The valve actuator shall be designed to hold the valve in any intermediate position between full open without creeping or fluttering. Valve actuators shall be of the worm gear design.
- B. Position Indicator: Valve actuators shall be equipped with a travel indicator for valve position between full open and full close. The indicator shall be raised, clearly showing the legends "Open" and "Closed" at the end of a 90 degree arc with a pointer to show the disc position (Closed at 0 degrees and Open at 90 degrees) and the arc graduated in increments of ten degrees.
- C. Direction of Operation: Clockwise direction shall close the valve and counter-clockwise direction shall open the valve. The valve actuator shall be located on the side of the valve, suitable for vault service or above ground service.

2.03 ELECTRIC MOTOR ACTUATOR (MODULATING CONTROL TYPE)

- A. General:
 - 1. Comply with AWWA C542.
 - 2. Size to 1-1/2 times required operating torque starting with valve wide open at maximum port velocity and ending with a differential equal to the specified maximum shutoff pressure. Motor stall torque not to exceed torque capacity of valve.
 - 3. Stem protection for rising stem valves.
 - 4. Complete with motor, gearing, handwheel, limit and torque switches, lubricants, space heaters, wiring, and terminals.
 - 5. Self-contained unit with cast iron weatherproof housing.
 - 6. Integrally assembled on valve by valve manufacturer.
- B. Open-Close Service:
 - 1. Size motors for two complete OPEN-CLOSE-OPEN cycles that occur in immediate succession without overheating at full differential pressure.
- C. Actuator Power Supply:
 - 1. 480-volt, three-phase unless otherwise indicated.
 - 2. Control power transformer, 120-volt secondary.
 - 3. Remotely located, externally operable power disconnect switch.
- D. Motors:

1. Totally enclosed, high torque.
2. In accordance with NEMA standards.
3. Operate at any voltage within 10 percent above or below rated voltage.
4. Permanently lubricated motor bearing.

E. Gearing:

1. Hardened steel spur or helical gears.
2. Alloy bronze or hardened steel worm gear.
3. Designed for 100 percent overload.
4. Hardened steel gears not less than 350 Brinell.
5. Sealed against entrance of foreign matter.
6. Self-locking so that actuation of a torque switch by a torque overload condition will not allow the operator to restart until the torque overload is eliminated.
7. Planetary or cycloidal gearing; aluminum, mild steel, or nonmetallic gearing will not be acceptable.
8. Contain continually energized space heaters rated for 480 volts and connected to 120 volts.

F. Handwheel Mechanism:

1. Prevent handwheel rotation during motor operation and prevent effect of motor rotation during handwheel operation.
2. Geared so that force required to operate does not exceed 80 pounds.

G. Torque Switches:

1. Provide for torque and thrust loads in both opening and closing directions.
2. Provide with micrometer adjustment and reference setting indicator.
3. Adjustment with approximately 40 percent torque setting variation.
4. Rated for not less than 6 amperes at 120 volts ac.

H. Limit Switches:

1. The design of each multi-turn electric operator shall be such that it is readily field adaptable for four limit switch assemblies.
2. Each switch assembly shall consist of two tandem 2-pole switches.
3. Each switch assembly shall be operated by the driving mechanism and shall be independently adjustable to trip at any point between the fully open and fully closed valve position.
4. All switches shall have silver contacts with an inductive contact rating of not less than 6 amperes at 120 volts ac, and 3 amperes at 240 volts ac.
5. Limit switches shall be furnished as indicated in valve and pump control schematics in the Plans.
6. Housed in actuator control enclosure.

I. Control Features: As specified in Section 17400 – Control Loop Descriptions.

J. Valve Control Cabinet:

1. Remote to valve actuator.
2. Provide complete with open and close three-phase reversing motor starter contactors, open and closed indicating lights, open and close pushbutton switches, "HAND-OFF-AUTO" selector switch, three-phase circuit breaker, motor overload protector, control power transformer, wiring and terminals, as indicated on the Contract Drawings.
3. Enclosure:
 - a. As defined in NEMA 250, Type 4.
 - b. Contain continually energized space heaters rated for 230-volts and connected to 120 volts.
 - c. Oversized to permit adequate and convenient clearance to all internally mounted devices.
4. Selector Switch, Pushbuttons, and Indicator Lights:
 - a. Heavy duty, oiltight/watertight construction for outdoor use with NEMA A600 modular contact blocks.
 - b. Four-stage, three-position maintenance contact selector switch.
 - c. Momentary spring return, nonilluminated, recessed type, pushbuttons.
 - d. Push-to-test indicating lights, both lamps shall illuminate in intermediate valve position.
 - e. Mount devices on interior swing panel.
5. Terminals:
 - a. Provided in motor starter enclosure for all external control connections.
 - b. Provide sufficient terminals so that no more than two conductors are connected to a single terminal.
 - c. Provide permanent designations which agree with wiring diagrams.
 - d. Heavy duty, phenolic strap-screw type, 300-volt, 30-amp rating.
6. Wiring:
 - a. Flame retardant switchboard type.
 - b. Minimum No. 14 AWG.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Valves and actuators shall be installed in accordance with instructions of the manufacturer and as shown on the plans.
- B. Installation and adjustment shall be checked and approved by a manufacturer's direct factory representative. After acceptance, the representative shall address a letter to the Consultant outlining all installation and start up procedures. The letter shall include a statement that the valves are installed per the manufacturer's recommendations. The manufacturer or his qualified representative shall conduct training session for the Owner's personnel in the operation and maintenance of the valves.
- C. Ball valves and actuators shall be field tested and all deficiencies shall be corrected.

END OF SECTION