

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

1. CONTRACT ID CODE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_ PAGES

2. AMENDMENT/MODIFICATION NO. _____		3. EFFECTIVE DATE _____	4. REQUISITION/PURCHASE REQ. NO. _____	5. PROJECT NO. <i>(If applicable)</i> _____
6. ISSUED BY _____ CODE _____		7. ADMINISTERED BY <i>(If other than Item 6)</i> _____ CODE _____		

8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i>           CODE _____ FACILITY CODE _____	(X)	9A. AMENDMENT OF SOLICIATION NO. _____
		9B. DATED <i>(SEE ITEM 11)</i> _____
		10A. MODIFICATION OF CONTRACT/ORDER NO. _____
		10B. DATED <i>(SEE ITEM 11)</i> _____

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:  
 (a) By completing items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)* \_\_\_\_\_

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

**E. IMPORTANT:** Contractor  is not,  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>		<i>(Signature of Contracting Officer)</i>	

**SECTION 01000**

**Specifications for Replacement of Generator Piping and Twin Strainers  
at Sam Rayburn Power Plant, Sam Rayburn Reservoir, Jasper Texas**

**1.0. Scope of Work-** Furnish all labor, tools, equipment, materials, and transportation to install new steel piping, fittings, gaskets, replace all bolts, nuts and fasteners with stainless steel fasteners and provide and install two new stainless steel “twin strainer” water strainers as replacements for the deteriorated piping system existing in the Sam Rayburn Power Plant Piping Gallery. All equipment installed by this contract is to be new and unused. Due to the potential for errors in the attached drawings and in order to verify layout and dimensions of the work, all bidders are encouraged to visit the Sam Rayburn Power Plant prior to submitting bids (see paragraph 5.7. “Site Visits”).

This contract consists of three bid items, a basic requirement bid item and two optional bid work items. In addition to the basic contract requirements, the Government may elect either, both or none of the options to be performed, at the Governments discretion.

**A. Basic Contract Requirement-** The basic contract requirement bid item is for replacement of all piping, valves and fittings, nominal size 1 1/2” and larger, with “same style” equipment and materials to those originally installed and currently in place, with the exceptions that both “twin strainers” and the three 12” valves and the short sections of piping and flanges which connect the valves to SL1, SL2 and SL3 (annotated only on drawing SRPR1) are to be replaced with Type **304 (AM#1)** stainless steel, or better, corrosion resistant steel gate valves and piping. **(AM#1) The Contractor shall remove all fasteners and replace with stainless steel nuts, bolts and other fasteners. All fasteners shall be assembled using an "anti-sieze" compound on the fasteners to prevent galling of threads.** Any variance in design or type of equipment from that which is currently installed must be approved by the Government prior to purchase or fabrication. Variances, or changes in original design or equipment shall be submitted as a requested “change” by the Contractor with reasons stated for the change in the “Generator Piping Installation Plan” detailed below in paragraph 2.0. Replacement of the remaining piping system, valves, couplings, flanges and fittings shall consist of direct replacement with **painted (AM#1)** schedule 40 black pipe and standard pipe fitting materials. The piping system has numerous complex pipe reducers installed in the system which may or may not be commercially available without custom fabrication.

**(AM#1) All black pipe shall be painted to the maximum extent practical "off-site" to reduce the amount of painting required "on-site". All black pipe to be installed shall be sandblasted prior to application of paint coatings, to both inside and outside surfaces of the piping, to assure maximum surface preparation. The Contractor shall apply an approved rust-inhibitive primer to all surfaces to obtain a dry film thickness of 8 to 10 mils. The Contractor shall then apply two coats of an approved gray enamel paint to obtain a dry film thickness of 12-15 mils per coat for a total**

**dry film thickness of 32- 40mils for the finished paint coating. Upon completion of all leak testing, for the assembled and piping, the Contractor shall apply "touch-up" paint coating to any damaged or unpainted surfaces in order to repair the paint coating and to complete the painting of the black pipe.**

The Contractor shall remove and replace the existing strainers and piping in phases necessary to keep cooling water available for one operating generator available to the maximum extent practical. The Contractor shall perform all work, adaptation, adjustments necessary for the complete installation of new piping system with strainers. The piping to be replaced shall include all piping in the piping gallery which is 1.5 inches nominal inside diameter and larger, and includes all piping, twin strainers, fasteners, all fittings, flanges, connectors and couplings as depicted on the attached drawings. All piping shall be replaced with "like connections" replicating the type of connection currently existing, i.e. welded flanges shall be replaced with welded flanges, threaded fittings shall be replaced with threaded fittings in those locations. Some changes to the existing piping layout are required as noted within this specification in paragraph 2.2. Note that, to the maximum extent practical, only one generator unit may be out of service at a time and the Contractor's on-site work is restricted to performance only during the seasonal "off-peak" months as stated in paragraph 3.3. of this specification. **All piping and fittings currently covered by the work of this contract are coated with lead based paint and will require special handling and disposal by the Contractor.** All materials removed from the job shall become the property of the Contractor for his disposal off-site.

**B. Option 1-** Provide COMPLETE replacement of all piping , all valves, fittings and welding of the entire system of piping for all piping of nominal pipe sizes 1 ½" and larger, with stainless steel, type **304(AM#1)** or better corrosion resistant steel. The replacement shall be limited to the non-embedded piping system shown on drawing SRPR3, SRPRU1, SRPRU2 and SRPR4.

**C. Option 2-** Provide and install motor operators for each of the stainless steel 12" valves (three total) installed in the basic contract requirement on "SL1, SL2 and SL3". The motor operators must be capable of full operation of the valves during high differential pressures such as operation when full operating pressure exists on the upstream side of the valve and no pressure exists on the downstream of the valve. The motor operators must also be capable of full closure during periods of maximum opening and flow of water through the valves. The motor operators shall be equipped and installed with mounting supports anchored appropriately to provide anchorage and support for the motor mechanism and will be provide necessary shaft couplings or adapters to provide the mechanical drive to each of the three 12" valves.

The motor operators shall be equipped with adjustable "torque limiters" which can be adjusted to stop the motor to prevent damage in the event of mechanical binding or other failures. The Contractor must provide motor operators capable of operating on 480 volt, three phase AC power. Each motor operator shall be equipped with a local control panel which is capable of being "locked" in the "power off" or "stopped" position. Each motor operator shall be equipped with a "red" indicating light

to indicate when the valve is fully closed, a “green” indicating light to indicate when the valve is fully open. In addition to indicating lights for status indication, each motor operator shall be equipped with a position indicator to show the valve position when in an intermediate position.

The Contractor shall be required to provide and install a single wall mounted “weather tight” breaker box equipped with three appropriately sized circuit breakers, and to connect sufficient lengths of liquid-tight flexible metal conduit to each motor operator from the breaker box, along with associated wiring. Upon request by the Contractor, the Government will provide the required electrical power to the breakers within the breaker box by connecting to the furnished breakers. The Government will then coordinate for the Contractor to “make up” the connections to the circuit breakers and await the Contractor’s notification to energize the circuit for motor rotation direction testing of the provided motor operators. All installed electrical wiring, supplying the motor operators, shall be marked with permanent and legible wire markers to identify both ends of each wire, and all terminal strips provided shall be legibly and permanently marked to correspond to the electrical schematics and connection diagrams provided with the motor operators.

The Contractor shall be required to provide manufacturers cut-sheets and product data sheets for Government review to be submitted as the “Motor Operator Installation Plan”. This plan must be submitted to the Government for review within 45 days after the date of contract award if this option is exercised by the Government.

The Contractor shall provide schematic diagrams and connection drawings “as-built” upon final installation of the motor operators, but not later than 10 days following installation of the motor operators.

**1.1. Reference Drawings-** The reference drawings attached are provided to indicate to the Contractor the layout of the existing water supply system for the generators and the materials list for piping and fittings currently installed. Shown on the far left of drawing SRPR 1 is the area of work ( marked with large X marks)where piping work will not be performed by this contract.

**The Contractor shall verify the existing piping layout and all dimensions provided in the drawings provided prior to procuring or constructing the strainers or piping systems.** The Government will not pay for any equipment which does not fit and the Government will not pay any additional costs required for modifications or remanufacture of Contractor provided equipment due to use of incorrect measurements or on-site adjustments. The Government provides the reference drawings and dimensions stated herein for reference only and does not assure the accuracy of any dimensions provided, materials listed or the accuracy of the piping layout to be exactly as depicted. The Contractor is to be aware that the attached drawings are of the existing system which is to be replaced and does not reflect any modifications or changes which may be needed for replacement per this contract. Potential Bidders on this contract are advised to visit the site to verify layout and dimensions and to annotate any variations from the drawings provided. The Contractor will not be allowed to ream or otherwise modify flanges or equipment in the water header system in order to cause the equipment required by this

contract to “match up” or “mate to” the installed equipment. This will require “fitting” on-site by qualified personnel.

**NOTE: The quantities of individual items shown on the "Bill of Materials" in the attached reference drawings do not reflect the quantities of materials required in the performance of this Contract. The quantities shown are from original construction of the entire Power Plant. This specification is for replacement of only a small portion of the originally installed piping and fittings shown on the Bill of Materials lists. (AM#1)**

**1.2. Submittals Required before On-site Work is Permitted-** The Contractor will be required to submit the following submittals and obtain necessary approvals from the Government prior to beginning on-site work;

**BASIC CONTRACT REQUIREMENT SUBMITTALS-**

Generator Piping Installation Plan (reference paragraph 2.0)

Quality Control Plan, (reference paragraph 1.3.)

Ventilation Plan (reference paragraph 4.1.2.)

Raw Water Strainer Installation Plan (reference paragraph 2.3.) and flow calculations (reference paragraph 2.5.).

Raw Water Strainer Operation and Maintenance Manuals (Six copies shall be provided within 14 days of installation)

Safety Requirements (reference 4.1.1.)

Closed Waste Manifest for disposal of lead based paint coated piping and fittings which are removed from the job site. (reference paragraph 2.5)

Certification of Leak Test (reference paragraph 2.10.)

Welder Experience and Certifications (reference paragraph 1.5)

**Rust Inhibitive Primer submittal (reference 1.A.) (AM#1)**

**Gray Enamel Paint (reference 1.A.) (AM#1)**

Other Submittals which will be required if the Government elects to exercise options;

**OPTION 1 REQUIRED SUBMITTALS-**

All Basic Contract Requirement submittals plus the following;

Manufacturers product information sheets and specifications for all valves, and piping to be replaced with stainless steel.

**OPTION 2 REQUIRED SUBMITTALS-**

All Basic Contract Requirement submittals plus the following;

Motor Operator Installation Plan (paragraph 1.c) Submittal and Government approval required prior to purchase of equipment and not later than 45 days after date of contract award

Motor Operator Connection Diagrams and Schematic Drawings (as-built) NLT 10 days after installation of the motor operators.

Motor Operator Operation and Maintenance Manual or Instructions- The Contractor shall provide the Government six copies of the manufacturers operation and maintenance manuals for the motor operator equipment installed. This shall be provided upon

installation of the motor operators, but not later than 14 days following installation of the motor operators.

**1.3. Quality Control Plan:** The Contractor will submit a Quality Control Plan for approval by the Government prior to beginning on-site work. This plan shall be for all “on-site” work. The quality control plan shall designate the Contractor’s Quality Control Representative(CQCR) and shall provide a background history to demonstrate the qualifications of the CQCR for the work required by this contract. The CQCR will submit daily reports demonstrating quality control for compliance with contract specifications. The Government Quality Assurance Representative (GQAR) will inspect the work site and ongoing work, at his discretion, to provide the assurance to the Government that the CQC Plan is working effectively. In the event that the GQAR determines that the CQC Plan is not providing adequate quality control, the Government may require the Contractor to resubmit the CQC Plan to correct the any problem areas noted.

**1.4. Pre-work Conference-** The Contractor will meet with Government representatives at the Sam Rayburn Powerhouse within 15 calendar days from the award date of this contract for a Pre-work Conference. The Contractor shall coordinate with the Contracting Officer’s Representative to determine a date for the pre-work conference. The Contractor’s Project Manager, Contractor Quality Control Representative and Superintendent will attend this meeting. The purpose of this pre-work conference is to enable the Authorized Representative for the Contracting Officer (ARCO) to outline the procedures that will be followed by the Government in its administration of the contract and to discuss the performance that will be expected from the Contractor.

**1.5 Welder Certifications and Experience-** All welding operations are to be performed only by welders with a minimum of two years pipeline welding experience and possessing current welding certifications for pipeline welding to include all types of welding which will be required by this contract. Welders shall be certified in welding of the types of steel piping and fittings which are to be installed in this contract. Certifications shall include welding of Type 404 Stainless Steel Piping and fittings. These records of experience and welding certifications will be required for review by the Government to be contained within the Generator Piping Installation Plan, specified in the following paragraph. Specific approvals of welder’s certifications by the Government will be required before any on-site work will be permitted by that individual. Each welder shall provide and use dye penetrants to test the integrity of every welded joint before the Contractor certifies that the welds are complete. The Government reserves the right to witness all dye penetrant tests and to require reworking of welds as determined necessary by the Government inspector on-site.

**2.0. Generator Piping Installation Plan-** The Contractor shall submit, for Government approval, a “Generator Piping Installation Plan” within 45 days after the

award date of this contract. The Government will be allowed 15 calendar days to review the submittal and return the submittal to the Contractor with comments. The “Generator Piping Installation Plan” shall provide detailed illustrations to show the dimensions obtained on-site and shall accurately depict the layout that will be used to replace the existing piping, twin strainers, valves and electrical control valves. The plan shall incorporate and demonstrate, as installed, the modifications to system as required by this specifications paragraph 2.2. The plan shall include a bill of materials for proposed installation and shall provide data sheets for all valves, piping, strainers, gasket materials, **and paint and primer (AM#1)** to be used and other equipment to be used in the fabrication of the piping system. The Contractor shall fabricate the piping system, **and paint the piping assemblies to the maximum degree possible, in a fabrication shop or other "off-site" facility, to minimize "on-site" welding and painting requirements. (AM#1)** As stated in paragraph 1.5, Welders Experience and Certifications are to be included for review.

**2.1. Replacement of Piping and Valves on Supply Lines from the Lake-** Upon request by the Contractor, the Government will place the necessary head-gates or bulkheads into position and drain the corresponding generator fore-bay to “dewater and depressurize” the main lake supply lines which feed water to the Generator Piping System. These supply lines are annotated on the drawings SRPR1 by the letters “SL1, SL2 and SL3”. Coordination must be performed in order for the Contractor to replace the short section of 12” piping between the wall and the 12” gate valves to be installed into the system. The Contractor shall request removal of one generator from service at a time by giving a written request a minimum of 72 hours prior to the need for depressurizing that portion of the system. The system will be depressurized on that portion approved for work, and the Contractor shall be a safe clearance to initiate work on that portion of piping which is dewatered and depressurized. Immediately upon notification, the Contractor shall perform replacement of the line and valve between the main supply line valves on the supply lines SL1 or both SL2 and SL3 as made accessible by the Government. Supply lines SL2 and SL3 may be replaced upon safe clearance on Generator #2 while SL1 will be made available only by a separate safe clearance of Generator #1. The Contractor shall accomplish the work on each clearance in the shortest time possible and notify the Government immediately upon completion of that portion of the work. At that time, the Government will remove the clearance and re-pressurize the system. The ability of the Government to make a section of generator piping available to the Contractor will be dependent upon system load requirements of the Customer . In no case will the Government compensate the Contractor for delays which are beyond the control of the local Power Plant personnel.

**2.2. Modifications to the Piping Layout-** The new installation shall include the addition of the following items:

A. Another set of flanges and gate valves at two locations on the 6 inch piping which Tees off from the 12” lines on each generators side of the water system (total of two 6” gate valves and four new flanges). The location of the newly installed valves shall be at the point annotated on the drawing SRPR1 as “2.2.A”.

B. A change in location of two of the 2" taps into the 6" pipe. The existing 1 1/2" welded taps into the 6" line (near point annotated as 2.2.a) shall be removed from the 6" lines and shall be connected at the points annotated on the drawing SRPR1 as "2.2.B". This shall be accomplished by installing a new Tee fitting into the 1 1/2" line at the location approximately 6 ft. from the floor and then installing a gate valve and new piping and fittings to make connections to replace the 1 1/2" pipe which provides water to the two turbine shaft seal pumps. The Contractor shall install sufficient length of pipe to run the length of the piping gallery all the way back to a point at which the centerline of the entrance to the Piping Gallery intersects the two 1 1/2" water supply lines. At that point, the Contractor shall cut the two existing 1 1/2" pump supply lines and install a pipe union to connect the new stainless steel piping to the ferrous pump supply lines.

C. Any Contractor requested deviation from the existing layout of piping or of type of valves or materials shall be annotated by the Contractor as a "Change" on the "Generator Piping Installation Plan" which must be reviewed and approved by the Government prior to any procurements or fabrication.

**2.3. Raw Water Strainer Replacement-** The Contractor shall provide the Government a "Raw Water Strainer Installation Plan" prior to installation, which will show any modifications to the existing layout which the Contractor will perform during installation. The plan shall provide manufacturers product information sheets or specific product catalog sheets which demonstrate that the strainers to be installed comply with contract requirements. The layout of the strainers must be coordinated with necessary changes in the layout of piping to be installed and must be approved by the Government prior to piping modifications. The finished system must provide equal or greater flow of cooling water as that which would be provided by direct replacement of existing piping configurations at a minimum working pressure of 125 p.s.i. **(AM#1) The Contractor shall provide insulating gasket materials and bolt insulators where the strainer is installed adjacent to "mild steel piping" to either side of the twin strainers in order to eliminate electrolysis.**

**2.4. Strainer Requirements-** The design for new strainers shall be for "twin strainers" consisting of one housing which contains valves to isolate each strainer chamber and two symmetrical and hydraulically separated chambers which contain removable water strainer baskets capable of full flow volume of the attached piping system. The replacement water strainer's housing and valves shall be of stainless steel construction and be equipped for 12 inch, 12 bolt pattern flanges on both the inlet and outlet sides of the water strainer. The removable strainer baskets shall be constructed of stainless steel and will be provided with openings which will entrap any particles one quarter inch in diameter and larger. The strainer unit shall provide valves for isolating one strainer chamber while the other strainer chamber remains in use. The water strainers shall be designed for a minimum working pressure of 125 p.s.i. . The water strainers shall be provided with petcocks at the highest point of each strainer chamber for air purging. The strainers installation shall also be provided with external piping and

brass gate valves installed in each strainer chamber drain opening. Piping will be arranged to drain the water from each side or to equalize pressures between hydraulic chambers when ready to pressurize each strainer chamber. All fasteners, nuts, bolts and washers provided with the new strainers shall be of stainless steel.

**2.5. Flow Calculations-** The Contractor shall provide calculations in a “Raw Water Strainer Installation Plan” which demonstrate that the new water strainers will provide greater than or equal flow to that of the existing water strainers. The Contractor shall show comparison calculations for the existing water strainers, based upon the Contractor’s on-site measurements, and the calculations for the same factors for the proposed water strainers to demonstrate that the flow allowed by the new strainers will equal or exceed that provided by the existing water strainers.

**2.6. Pedestals-** The existing raw water strainers are mounted atop concrete pedestals which are 1 ½” tall with the floor area approximately the same size of the existing twin strainers. These concrete pedestals may contain rebar steel reinforcing rod which enters the floor. The Contractor will determine what modifications to the pedestal are required to accommodate the new twin strainers and will be required to provide concrete support for the newly installed strainers. The Contractor may either remove the existing pedestal or build upon the existing base. In any case, any new concrete work will be required to be reinforced with #4 rebar and anchored to the floor or existing pedestal. Newly placed concrete shall be finished and provided with a minimum one inch (1”) chamfer on all exposed edges and corners. The Contractor shall perform all work necessary to leave a uniform and smooth finish on all sides of the concrete pedestal as modified or removed. In the event that the pedestal is removed, the Contractor shall fill and smooth any areas of the concrete floor damaged by the removal process before placing the new twin water strainers into position. The Contractor shall provide all tools and equipment necessary to remove or modify the existing pedestals. New concrete shall be 3,000 p.s.i. strength. And forms used for concrete placement shall be left undisturbed for 48 hours after the concrete is placed.

**2.7. Installation of Electrically Actuated Control Valves-** The Contractor shall furnish and install stainless steel water passage replacement control valves which have equal or greater flow capacity as those currently in place. The Contractor shall submit for approval the manufacturers data sheets, mechanical diagrams, electrical schematics and control scheme of the water flow control valves to be used along with all supplemental equipment which will be installed to make the system control water flow to the various locations. This information shall be submitted as part of the “Generator Piping Installation Plan” submittal..

The Contractor shall provide electrically actuated water flow control valves in all currently installed locations which operate from 125 Volt DC power. All of these valves, except the Modulating valves installed on the 10” piping will be on/off controlled by the energizing of the electrical solenoid mounted on the unit. The Modulating valves,

annotated on the drawings and bill of materials as “40” will be replaced using a similar valve and control configuration to that already installed. The Modulating valve must be installed with full function thermostat controls to adjust the positioning of the Modulating valve’s opening in order to regulate the water flow to the generator air coolers inside of the generating units for the adjustment of the discharge air cooler air temperature. The temperature controller mounted inside of the generator air housings utilize a regulated air pressure to adjust the Modulating valve position to maintain optimum water flow, based on temperature feedback from within the generator air housings. The Contractor shall be required to furnish complete controls for each modulating valve, to include mounting and installation of new temperature sensors at the air discharge of the generator air coolers. The new thermostatic controller for the Modulating valves shall have the capability of regulating the Modulating valve water flow to maintain adjustable air housing set-points in the range of 50°F to 200°F.

The Control Valves shall be equipped with 125Volt DC solenoids, actuators or motors and all control valves shall be configured for “fail-safe” operation that will allow full water flow through the valves in the event that the control power is de-energized. During installation, Government personnel will disconnect the existing electrical connections to the control valves upon request by the Contractor and shall “make-up” the electrical connections for the replacement control valves when the Contractor notifies the Power Plant Superintendent that he is ready for electrical connections to be made. The existing control valves consist of two each 3”, 125 volt DC actuated, regulated air pressure operated modulating valves mounted on 10” Flanges, four each 3” 125 volt DC actuated, on/off flow control valves and two each 1 ½” 125 volt DC actuated, on/off flow control valves. Air pressure is available up to 100 p.s.i. in the Piping Gallery. Unless otherwise specified, the Contractor shall furnish new liquid tight flexible metal conduit to the junction box where electrical terminations are provided. Only Government personnel are to make and break electrical connections to these boxes or panels.

**2.8. Replacement of Flow Switches and Gauges-** The existing installation has two paddle type flow switches at one location on each generators cooling supply lines. The Contractor shall provide and replace the old flow switches with “state of the art” paddle-less design flow switches rated for 125VDC service. The flow switches shall have dual contacts, a set of normally open and a set of normally closed contacts. The Contractor shall request that the Government personnel disconnect the existing electrical connections from the switches before proceeding with replacement and upon replacement shall notify the Government that reconnections can be made to the new switches. The Contractor shall install the new switches in the same locations in the new piping system in order that the Government can re-connect to the new switches utilizing the existing liquid tight flexible metal conduit and wiring.

There are three existing pressure gauges installed at taps provided in the piping. The Contractor is to provide and install new ½” stainless steel ball valves at the pressure taps provided with attached 4”face pressure gauges in the same locations on the new piping and make necessary provisions for the ½” pressure taps to be provided in the piping during fabrication.

**2.9. Floor and Wall Embedded Flanges and Bolts and Piping-** The piping system has several locations in which the piping, flanges or couplings to the piping connections are embedded slightly into the concrete floor or wall into which they pass. In any event where the Contractor must reach flanges or the flange fasteners for replacement, the Contractor shall provide chipping hammers or small impact tools for the limited removal of concrete in areas adjacent to those flanges. In areas where piping penetrates into the floor, the Contractor shall chip sufficient floor area to gain access to embedded couplings, unions or flanges in order that pipe may be replaced to remove corrosion and that the existing fasteners may be removed and new stainless steel fasteners installed. After the replacements are made, and after leak testing has been performed, the Contractor shall re-fill the chipped concrete with a grout repair patch, suitable for the type of repair, to the original floor or wall level.

**2.10. Leak Testing of Piping System-** In addition to the use of dye penetrant tests for the welded joints, the Contractor shall perform leak testing of the piping system as installed. The Contractor may arrange for pressurization of various sections of piping for leak testing by the installation of “blanks” as desired. A leak test must also be performed and inspection completed by the Government inspector during the final inspection phase of this contract.

### **3.0. Environmental and Other Considerations**

**3.1. Lead Based Paint on Existing Piping-** The Contractor is informed that the piping and raw water strainers which will be removed are coated with lead based primer and /or paint. No lead removal processes or abatement is to be performed on-site by this contract. The Contractor shall disconnect and remove all piping and dispose of the lead based coatings off-site in a manner consistent with EPA and other environmental laws and State regulations. The Contractor shall take into consideration the extra precautions that should be observed during the disturbing of such lead based coatings and incorporate all increased costs for handling, personal protective equipment, and final disposal in the total cost of the contract. The Contractor shall be required to provide the Government with a closed waste disposal manifest certifying proper disposal of the paint coatings after final disposition. During the performance of this contract and in the disposal of all materials removed from the job site, all applicable OSHA and TNRCC regulations must be followed.

**3.2. Welding Operations-** On-site welding will be permitted only in properly ventilated areas designated and under the controls of an approved Ventilation plan (paragraph 4.1.2

**3.3. Available Months to Perform On-site Work-** The Contractor shall complete work required by this contract within 180 days of award of the contract. The Contractor shall provide a work schedule in the “Generator Piping Installation Plan” for the performance of all contract work. The on-site work required by this contract must be performed in its entirety during one of two seasonal “off-peak” generating periods. The “off-peak” periods are during two seasons, the Spring off-peak and the Fall off-peak. The Spring off-peak period is the months of February, March and April and the fall off-peak period is the months of September, October and November. No materials for this contract shall be purchased without prior approval by the Government and no on-site will be permitted outside of these peak periods. The Contractors work schedule must demonstrate that work will begin early in the appropriate seasonal “off-peak period” to assure completion before the end of 180 days after the date of contract award. The work schedule shall specify anticipated beginning dates for fabrication at the Contractor’s shop, date of arrival on-site, dates planned for pre-installation fabrication on-site and show specific dates that the Contractor plans to remove old piping, install new piping and strainers. The work schedule shall indicate any anticipated work to be performed outside of normal Government work hours. Work outside of normal Government work hours ( 7:30 a.m. to 5:00 p.m. weekdays except for Government Holidays), will have to be approved by the Authorized Representative for the Contracting Officer. No additional costs will be paid to the Contractor by the Government if the work cannot be completely performed within the specified “off-peak” periods and work has to be interrupted in order to returned to service for generating purposes at the end of the “off-peak” period.

#### **4.0. Safety and Health Provisions:**

**4.1.1. Safety and Health Requirements:** During the performance of this contract all work will be performed in accordance with the Corps of Engineers Safety Manual, EM385-1-1 dated 1996. A copy of this manual is available from the Fort Worth District Safety office or can be downloaded from the Internet at <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/toc.htm>.

The Contractor is directed review the entire EM 385-1-1 for pertinent provisions which will apply to the work of this contract. The Contractor shall place emphasis on review of Section 01.A.07 and Appendix A for a listing of specific submittals and safety management which will be required in this contract. The following is a listing of Safety and Health submittal items required by this contract. The submittals shall be provided to the Government and be approved by the Government prior to beginning on-site work;

- a. Accident Prevention Plan, to include, as a minimum all of the 13 items listed in the basic outline provided in Appendix A of EM 385-1-1, pages A1 through A5.

- b. Activity Hazard Analysis
- c. Material Safety Data Sheets.
- d. Worker Hazard Communication Program. (01.B.04)
- e. Other Safety and Health Submittal Items as applicable to the work to be performed during performance of this contract.
- f. Written certification that all Contractor's employees working on-site have attended the "2 hour Lead Based Coatings Awareness" training course as required by EPA for maintenance and custodial staff training (40 CFR 763.92 (a) (1) ) within the last 12 months.

**4.1.2. Ventilation Plan-** The Contractor will be required to provide ventilation which will provide a safe atmosphere for workers. The location of the piping gallery provides no convenient ventilation means. The Contractor will be required to provide approximately 300 feet of exhaust duct and exhaust blowers to the nearest doorway of the Power Plant and provide sufficient air movement to remove welding gases immediately from the area of the welder. The welding exhaust gases must be exhausted a minimum of 30 feet outside of the Power Plant doors. The Contractor shall "tack weld" piping in position for fitting purposes, but complete welding operations shall be performed outside of the Power Plant main entrance in an area designated by the Power Plant Superintendent. The Contractor will be allowed to use an oxy-acetylene torch for the cutting apart of the existing piping into sections, however, special attention shall be paid to containment and control of sparks and slag from the cutting operations and to provide protection of the floor surfaces at all times that cutting or welding operations are performed. The plan will provide for air flow across the welding area at all times welding or cutting operations are being performed. The layout of air supply lines, equipment for ventilation, and other equipment shall not prevent daily lockup of the Power Plant doors and shall not compromise security of the Power Plant.

**4.1.3. Safe Clearance Procedures-** The Government will make available to the Contractor a copy of the local safe clearance procedures. The work of this contract will involve safe clearance of pressure systems and the establishment of "safe work zones". Coordination and communication between the Government inspectors and Contract workers will be critical in establishing safe access to the work area, particularly during specific phases of the work. The Contractor will be permitted to perform work on specific areas only after the Government has assured that the piping is safe for work and that a clearance is issued to the Contractor.

## **5.0. Site Specific General Requirements and Provisions-**

**5.1. Use of Powerhouse Bridge Crane-** The Powerhouse bridge crane will be available upon request for moving materials and equipment down through the access hatch to the turbine floor elev. 100 msl., then the Contractor will have to provide transport of equipment up a ramp to floor level 103 msl. and down a corridor to the entrance to the Piping Gallery area. Only Government personnel will be authorized to operate the crane. Contractor shall be responsible for all rigging of loads and for transporting the materials and equipment the remaining distance to work area in the Piping Gallery. All requests for use of the crane shall be coordinated through the Power Plant Superintendent, who will make a Government Operator available for the specific lift operations required.

**5.2. Electricity-** Required amounts of electrical power are available without charge from outlets in the powerhouse. The Contractor shall furnish all temporary connections required for his work including any 480V or 120 connectors and plugs required to connect to existing Power Plant receptacles. Physical bypassing of receptacles for hard wiring purposes is strictly prohibited. 480V AC three phase and 120V AC single phase electrical power are available. The Contractor shall furnish ground-fault circuit protection for use with hand tools required for the work.

**5.3. Assembly Area-** The Contractor may assemble materials and equipment required for performance of this contract on the main floor of the Power Plant in areas designated by the Government. Large quantities of materials and piping will be stored out of doors in a location designated on the parking area of the Power Plant. The floor of assembly areas and storage locations located inside the Power Plant shall be protected from damage by placement of protective floor coverings of sufficient thickness to protect the floors. Approved welding operations may be performed only in Government designated areas.

**5.4. Existing Sanitation Facilities-** Restroom facilities will be designated at the Powerhouse for use by Contract personnel concurrent with use by Government personnel. Janitorial service for the restroom areas will be provided by the Government, but Contractor personnel will be expected to keep them neat and orderly. Failure of contract personnel to properly use sanitation facilities may result in termination of privileges to use.

**5.5 Parking of Private Vehicles-** Parking of all vehicles not directly required for performance of work will be in the large parking lot outside of the Power Plant. This is the same parking lot which is used by plant personnel's personal vehicles. The Contractor's personnel will be designated an area for parking of all vehicles.

**5.6. Lunch and Break Areas-** The Government will designate areas for lunch and breaks located inside the Powerhouse for use on inclement weather days. NO SMOKING will be permitted within the Powerhouse at any time.

**5.7. Site Visit-** All Contractors interested in bidding on this contract are advised and encouraged to schedule a site visit to inspect the work areas. Site visits are not required,

but would provide invaluable information for potential bidders. This contract requires that the successful bidder visit the site for the purpose of verifying layout and dimensions which are provided on the drawings. The Government will not pay any additional costs incurred by the successful bidder which are attributable to the Contractor's failure, prior to bidding, to obtain accurate information by visiting the job site. Arrangements for site visit may be made by contacting Mike Carver or Jimmy Folsom at (409) 384-5292, or Mark Shaw at (409)384-5716 between 8:00 a.m. and 4:30 p.m. weekdays.

**SEE REFERENCE DRAWINGS ATTACHED ON THE FOLLOWING PAGES**





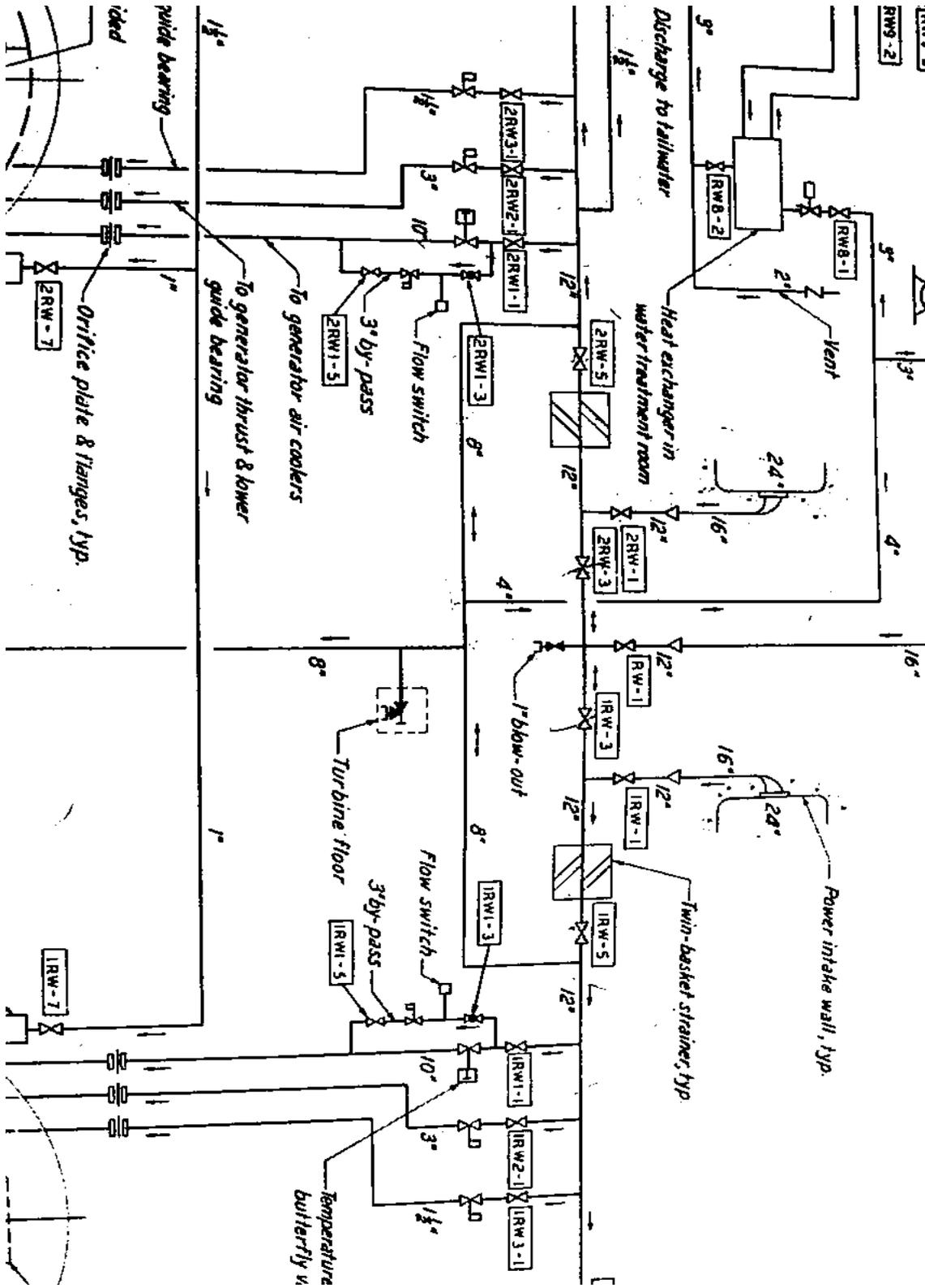












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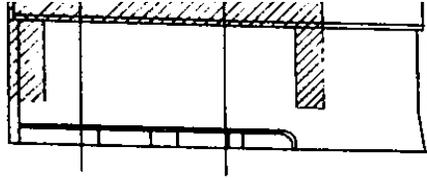
BILL OF MATERIAL				
NO	DESCRIPTION	MAT'L	QUAN	REMARKS
1	16" pipe	Steel	50 ft.	Black, Ex. Hy.
2	12" do	do	20 ft	Black, std. wt.
3	10" do	do	30 ft.	do
4	8" do	do	5 ft	do
5	6" do	do	20 ft	do
6	4" do	do	280 ft	do
7	3" do	do	300 ft	do
8	2 1/2" do	do	100 ft.	do
9	2" do	do	60 ft.	do
10	1 1/2" do	do	300 ft	do
11	1" do	do	230 ft.	do
12	3/4" do	do	200 ft.	do
13	1/2" do	do	5 ft.	do
14	10" do	C.I.	245 ft.	Bell & spigot
15	8" do	do	90 ft.	do
16	6" do	do	210 ft.	do
17	4" do	do	100 ft.	do
18	24" welding neck flange, 150-lb.	Steel	1	Flat faced & drilled
19	24" slip-on flange, 150-lb.	do	3	do
20	24" x 16" welding reducer	do	1	Black, beveled
21	24" x 16" 90° ell. 150-lb. flat faced	do	2	Crane No. 545 D
22	16" x 12" do	do	2	do 551 D
23	16" x 12" welding reducer	Steel	1	Black, beveled
24	16" quarter bend B & S	C.I.	1	Clow F-402
25	16" welding neck flange, 150-lb.	Steel	5	Flat faced & drilled
26	12" do	do	9	do
27	12" slip-on flange, 150-lb.	do	9	do
28	12" gate valve, flanged	C.I.	7	Crane No. 467
29	12" welding tee	Steel	3	Black, beveled
30	12" x 12" x 8" welding tee	do	2	do
31	12" x 12" x 6" do	do	2	do
32	12" x 10" welding reducer	do	2	do
33	12" sleeve coupling	do	3	Dresser Style 38
34	10" do	do	2	do
35	10" welding neck flange, 150-lb.	do	6	Flat faced & drilled
36	10" 90° ell. 150-lb. flat faced	do	2	Crane No. 551 D
37	10" connecting piece F & S	C.I.	2	Clow Fig. F-1300
38	10" do F & B	do	2	F-1320
39	10" quarter bend, B & S	do	13	F-402
40	10" diaph. butterfly valve with positioner	do	2	See Specs.
41	10" gate valve, flanged	C.I.	4	Crane No. 465
42	1" male thread coupler	Bronze	1	See Specs.
43	10" x 8" welding reducer	Steel	4	Black, beveled
44	8" slip-on flange, 150-lb.	do	4	Flat faced & drilled
45	16" pipe	C.I.	70 ft	Bell & spigot
46	8" quarter bend, B & S	do	3	F-402
47	8" tee all bell ends	do	1	F-506
48	8" x 6" Y branch, all bell ends	do	1	F-540
49	8" x 6" reducer S & S	do	1	F-574
50	6" 90° welding ell. L.R.	Steel	4	Black, beveled
51	6" x 6" x 3" welding tee	do	2	do
52	6" x 3" welding reducer	do	2	do

1/2" pipe sleeve for thermometer capillary tubing, typ. (182), see dwg. M436

NO	
53	6"
54	6"
55	6"
56	6"
57	6"
58	6"
59	6"
60	6"
61	6"
62	6"
63	6"
64	2 1/2"
65	6"
66	6"
67	6"
68	4"
69	4"
70	4"
71	4"
72	4"
73	4"
74	4"
75	4"
77	4"
78	4"

NOTE  
1. Proc

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KEY PLAN

NO.	DESCRIPTION	MAT'L.	QUAN.	REMARKS
53	6" 45° welding ell.	Steel	4	Black, beveled
54	6" welding tee	do	1	do
55	6"x4" welding reducer	do	2	do
56	6" welding neck flange, 150-lb.	do	16	Flat faced & drilled
57	6" gate valve with monitor switch, flanged	C.I.	2	See Specs.
58	6" quarter bend B & S	do	8	Clow Fig. F-402
59	6" eight bend do	do	1	F-417
60	6" connecting piece F & B	do	3	F-1320
61	6" do F & S	do	2	F-1300
62	6" tee, B, S & B	do	1	F-502
63	6"x4" reducer, small end bell	do	1	F-576
64	2 1/2"x9" red. screwed flange	do	1	Crane No. 557
65	6"x4" eccentric reducer	do	1	Crane No. 548
66	6" check valve flanged, Fig. 329	Steel	1	Williams-Hager
67	6" multicontrol deluge valve		1	Grinnell
68	4" pipe sleeve 1'-2" long	Steel	5	Schd. 80, galv.
69	4" welding tee	do	4	Black-beveled
70	4" 90° welding ell. L.R.	do	12	do
71	4" connecting piece F & S	C.I.	1	Clow Fig. F-1300
72	4" do F & B	do	1	F-1320
73	4" quarter bend B & S	do	5	F-402
74	4" welding neck flange, 150-lb.	Steel	20	Flat facet & drilled
75	4" gate valve, flanged	C.I.	4	Crane No. 465
77	4" combination pressure red. & solenoid control valve, range 10-40 psi, 120v. A.C	do	2	Clayton 93D-1
78	4" sleeve coupling	Steel	4	Dresser Style 38

CONTINUED ON DWG. NO. M 422

**NOTES:**

1. Products of firms other than those specified in the Bill of Material will be accepted if they are similar and equal to the products specified.
2. Size, location and elevation of the transformer fire protection ring headers and nozzles, shall be designed and installed to conform

SRPR BM2

KEY PLAN

BILL OF MATERIAL				
NO	DESCRIPTION	MAT'L	QUAN.	REMARKS
79	3" 90° elbow	M.I.	30	150-lb. scrd.
80	3" union	do	15	do
81	3" coupling	do	12	do
82	3"x1½" reducer	do	4	do
83	3"x2"x3" tee	do	2	do
84	3"x2" red. bushing	do	2	do
85	3" tee	do	3	do
86	3" 45° elbow	do	1	do
87	3"x2" reducer	do	3	do
88	3"x2½" red. elbow	do	1	do
89	4"x3" 45° Y-bend	do	1	do
90	1½" orifice plate & flange, 125-lb.	C.I.	2	See Note 4
91	3" gate valve, screwed	Steel	7	Crane No. 490
92	3" solenoid control valve	do	3	Clayton 136-D
93	10" 90° welding ell. S.R.	do	6	Black, beveled
94	3" solenoid valve 125 V. D.C.	Bronze	2	ASCO No. 8210A71
95	2½" 90° elbow	M.I.	17	150-lb. scrd.
96	2" 45° elbow	do	1	do
97	2½" union	do	6	do
98	2½" gate valve, screwed	C.I.	4	Crane No. 490
99	2"x1½" red. elbow	M.I.	1	150-lb. scrd.
100	2" coupling	do	1	do
101	2" 90° elbow	do	5	do
102	2" return bend	do	1	do
103	2" union	do	6	do
104	2" check valve, screwed	Bronze	1	Crane No. 24
105	2" do	do	1	No. 36
106	2" gate valve, screwed	C.I.	6	No. 490
107	1½" 90° elbow	M.I.	24	150-lb. scrd.
108	1½" coupling	do	10	do
109	1½" union	do	13	do
110	1½"x1"x1" tee	do	2	do
111	2" x 2"x1" tee	do	1	do
112	1½" tee	do	4	do
113	1½" 45° elbow	do	3	do
114	1½" gate valve, screwed	C.I.	13	Crane No. 490
115	1½" check valve	Bronze	4	No. 36
116	1½" solenoid valve, 125 V. D.C.	do	2	ASCO No. 8210A63
117	2½"x7" screwed flange	C.I.	1	125-lb.
118	1" 90° elbow	M.I.	16	150-lb. scrd.
119	1" coupling	do	4	do
120	1" union	do	4	do
121	1" tee	do	2	do
122	1"x1"x2" tee	do	1	do
123	1"x½"x½" tee	do	2	do
124	1"x1"x½" tee	do	1	do

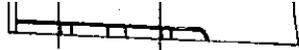
CONTINUED ON DWG. NO. M 423

NOTES:

1. For payment items see dwg. M 421.
2. Contractor to install flow switches furnished by transformer

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4	0-130°F
3	See dwg. M464
1	See Specs.



KEY PLAN

BILL OF MATERIAL				
NO.	DESCRIPTION	MAT'L	QUAN.	REMARKS
125	1" x 3/4" red elbow	M.I.	1	150-lb. scrd.
126	1" x 3/4" reducer	do	1	do
127	1" gate valve, screwed	C.I.	8	Crane No. 490
128	1" strainer do	do	1	No. 988 1/2
129	3/4" 90° elbow	M.I.	24	150-lb. scrd.
130		do		do
131	3/4" x 1/2" x 1" tee	do	1	do
132	3/4" union	do	4	do
133	3/4" coupling	do	5	do
134	3/4" angle valve	C.I.	5	Crane No. 117
135	3/4" male thread coupler	Bronze	9	See Specs.
136	3/4" gate valve, screwed	C.I.	7	Crane No. 490
137	3/4" solenoid valve 120 V. A.C.	Brass	2	ASCO B210 A3
138	Pressure gauge, 0 to 160 psi	Bronze	5	Crosby Style AA
139	3/4" pressure switch 120 V. A.C.	do	1	Mercoild No. DA-21
140	3/4" half coupling	Steel	4	Black, threaded
141	3/4" gate valve	Brass	4	Crane No. 431
142	Flow switch Type FS4 125V. D.C.		2	McDonnell & Miller
143	Filter		2	See Specs.
144	2" pipe sleeve 6'-0" long	Steel	2	Schd. 80, galv.
145	8" x 10" Demco expanded Duramesh	Alum.	1	10" x 10"
146	1 1/2" x 7/8" bar stock, 10' long	do	4	Akoo 6063-T3
147	2" x 1 1/2" x 1/2" angle, 10' long	do	4	6844
148	4" globe valve, flanged	C.I.	2	Crane No. 351 1/2
149	6" sleeve coupling	Steel	1	Dresser Style 38
150	3/4" support type B		2	Dwg. M464
151	3/4" do B		16	do
152	1" do B		4	do
153	1" do G		8	do
154	1 1/2" do E		7	do
155	2" do E		2	do
156	2 1/2" do E		4	do
157	3" do E		10	do
158	4" do R		2	do
159	Support type C		2	do
160	do J		2	do
161	do Q		2	do
162	4" pipe sleeve 8'-0" long	Steel	4	Schd. 80, galv.
163	3" do 6'-0" long	do	4	do
164	8" x 4" tee, Bell & Bell	C.I.	1	Clow Fig. 506
165	6" do 2" tap	do	1	Clow Fig. 1340
166	6" do 3/4" tap	do	1	do
167	8" do 3/4" tap	do	1	do
168	3/4" tee	M.I.	1	150-lb. scrd.
169	3/4" sight funnel, screwed	Bronze	2	Bowser Fig. 53
170	16" flange & bell conn. piece	C.I.	1	Clow Fig. 1320
171	4" x 3" tee B & S	do	1	do 502
172	4" x 3" reducer B & S	do	1	do 586
173	3" quarter bend B & B	do	1	do 406
174	3" pipe	do	5 ft.	Bell & Spigot
175	3" adapter	do	2	Zurn Z-1040
176	3" threadolet	Steel	4	Bonny thread-O-let
177	1 1/2" x 1 1/2" x 1/2" tee	M.I.	1	150-lb. scrd.
178	3" globe valve	C.I.	2	Crane No. 350 1/2

THIS DRAWING HAS BEEN REDUCED TO ONE-HALF THE ORIGINAL SIZE

See dwg. M421.

SRPR BM4

BILL OF MATERIAL

NO	DESCRIPTION	MAT'L	QUAN.	REMARKS
179	Flow switch, Mc Donnell Miller		2	FSAR, 125V D.C.
180	4" 90° ell.	M.I.	3	150-lb. scrd.
181	2" globe valve	C.I.	1	Crane No. 350 1/4
182	1 1/2" pipe sleeve	Steel	15 ft.	Galk. schd. 80
183	8" welding neck flange, 150-lb.	do	1	Flat faced & drilled
184	3" x 3" x 1" tee	M.I.	2	150-lb. scrd.
185	4" x 3" reducer	do	1	do
186				
187				
188				
189				
190				
191				
192				
193				
194	2" tee, screwed	do	6	do
195	2" x 1" reducer, screwed	do	4	do
196	2" Y-strainer, screwed, 125-lb.	C.I.	2	Crane No. 988 1/2
197	2" sight funnel, screwed	Bronze	2	Bowser Fig. 55
198				
199	3" x 2" x 2" tee, screwed	M.I.	1	150-lb.
200	Thermometer, vert bulb dial		4	0-130°F
201	Support type T		3	See dwg. M464
202	Pressure switch		1	See Specs.



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