MOBILE AREA WATER & SEWER SYSTEM
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Mobile Area Water and Sewer System
4725 Moffett Rd Suite A
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PO Box 180249
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INVITATION FOR BID
May 15, 2024

INVITATION FOR BID NUMBER	**IFB 24-017**
NAME OF BID	**Purchase & Installation of Two Backwash Pumps for Myers WTP**
BIDS WILL BE RECEIVED AT	**MAWSS Bid Box** **Donaghey Business Entrance** **4725A Moffett Road or PO Box 180249** **Mobile, AL 36618**
BID OPENING DATE	**June 5, 2024**
BID CLOSIING TIME	**10:30 am Central Time**
AWARD WILL BE MADE BY	**Total Cost & Lead Time**
MANDATORY PRE-BID SITE VISIT	**Mandatory site visit is required prior to submitting bids. See contact info below to schedule a time.**
MATERIAL DELIVERED TO	**H.E. Myers WTP. 1475 Hubert Pierce Road Mobile, AL 36608**
ADDITIONAL INFORMATION CONTACT	**Randy Sullivan (251) 378-3483 Email: lsullivan@mawss.com** **John Jordan (251) 378-3492 Email: jjordan@mawss.com** **Markus Moore (251) 721-0828 Email: mamoore@mawss.com**
APPLICABLE SDP POLICY	**None**

Sealed bids must be in the Purchasing Department no later than the time specified in order to be considered. Submissions received after the deadline will not be considered. Envelopes must bear the name of the supplier, company address and the words "**IFB 24-017 Backwash Pumps**" or "**IFB 24-017 NO QUOTE**." Facsimile or email bids will not be accepted.

All bids must be submitted on the attached forms or your bid will be disqualified. Bidder shall furnish all the information required by the solicitation. The bidder's name must be typed or printed on the bid sheet, and signed by the bidder or appropriate authorized executive officer of the bidder's company. Bidders must initial any changes or erasures. Bidders should retain a copy of bids for their records.

Bidders shall acknowledge receipt of all addenda to this solicitation by signing and returning each addendum or by identifying the addendum number and the date on the bid form. Failure to acknowledge receipt of any addendum by a bidder will result in rejection of the bid if MAWSS determines that the addendum contains information that materially changes the requirements.

All bids shall be quoted FOB Destination, freight prepaid with no additional charges. Unless otherwise specified in the bid, all prices will be on a firm-fixed price basis and are not subject to adjustments based on costs incurred. MAWSS reserves the right to reject any or all bids submitted, to waive any informality in any bid or in the bid process, or to terminate the bid process at any time, if deemed by MAWSS to be in MAWSS's best interest.

A Purchase Order and this "Invitation for Bid" with "Specifications," "Conditions," "Bid Form," signed by the successful bidder's authorized representative, and all attached drawings and other documents furnished by MAWSS to the bidders with the Invitation for Bid in order to illustrate the contract requirements, will constitute a contract for the goods and/or services to be purchased.

Joyce Sawyer, Buyer II
Board of Water and Sewer Commisioners

IFB 24-017 REPLACEMENT BACKWASH PUMPS
CONDITIONS

The Board of Water and Sewer Commissioners of the City of Mobile will accept bids for **Replacement Backwash Pumps** in our Purchasing Department Bid Box located in the Business Entrance at 4725 Moffett Road, Mobile, AL 36618 **no later than 10:30 a.m**. local time on **June 5, 2024**. Bids will be opened immediately after bid closing time in the Operations Center Board room located at the Customer Service entrance. Award will be by **Total Cost & Lead Time**. The bidder offers and agrees, if this bid is accepted, to furnish the items as defined in the specifications for the unit price set opposite each item. Pricing shall be FOB Mobile, Alabama. All items shall be delivered to **H.E. Myers WTP, 1475 Hubert Pierce Road Mobile, AL 36608** or to the job site as needed. The bidder shall state the expected length of delivery time on the Bid Form.

A **mandatory pre-bid site visit is required** before bids are due. Please contact Randy Sullivan at 251-378-3483 or John Jordan at 251-378-3492 to schedule a date and time before the bid due date.

Bidder understands and agrees that manufacturer and part numbers are provided for descriptive purposes only. Items of equal or better quality will be considered but must be approved by MAWSS in writing. Upon delivery, if the quality, durability or performance of any product represented as equal or better is determined by MAWSS to be unsatisfactory, MAWSS will require a suitable substitute or will require that the originally specified item be delivered, at the unit price originally offered by bidder. No substitution for items to be provided pursuant to this contract shall be permitted during the contract period without the express written consent of MAWSS. All items provided shall be for commercial use and for the purposes reflected in the contract documents.

No bid on closed out or discontinued item(s) will be accepted. Item(s) that have a determinable shelf life must be disclosed at the time of bid submittal. Bidder understands that his/her bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Bidder understands and agrees that quantities will be purchased by MAWSS on an "as needed" basis to replenish inventory. MAWSS shall not be committed to the purchase of a pre-established minimum quantity for any one item.

A bidder may not modify its bid after bid opening. Errors in the extension of unit prices stated in a bid or in multiplication, division, addition or subtraction in a bid may be corrected by the MAWSS Purchasing Buyer prior to award. In such cases, unit prices shall not be changed.

It is the responsibility of the bidder to determine prior to the bid opening whether any amendment, additions, deletions or changes of any type have been made to this Invitation for Bid, Conditions, Specifications, Bid Form or any of the other bid documents. Bid documents and any amendments made to this bid will be posted on our website at www.mawss.com.

Invoicing Requirements: MAWSS is requiring additional information for all work performed and services provided. On the vendor's invoice for payment should be a detailed listing of work performed, services provided, dates completed, locations involved and any other pertinent information needed to verify the work and/or services were completed in accordance to the bid specs. This additional information can be supplied in the form of detailed invoices, work orders, checklists or any other documents used to track the work performed or services provided but details must be included on the actual invoice. A copy of the invoice and these additional details must be sent to the "ADDITIONAL INFORMATION CONTACT" found on Page 1 of the bid documents and a copy emailed to Accounts Payable at AcctsPayable@mawss.com.

END OF CONDITIONS

IFB 24-017 REPLACEMENT VERTICAL COLUMN DISCHARGE LINE SHAFT BACKWASH PUMPS SPECIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This bid is for furnishing, installing, and start-up services of two (2) open line shaft mixed flow backwash pumps at the H.E. Myers Water Treatment Plant. The bowl assembly, flanged column assembly, discharge head and driver dimensions and flange orientation shall be compatible with the existing piping configurations and flange diameters so that MAWSS does not have to reconfigure the existing piping and the unit will fit on the existing pump mounting pad. Replacement pumps shall be compatible with the existing motors, existing electrical and control wiring, cabinet, and control/operating system. The existing four-inch (4-inch) air release valves on each pump discharge shall be replaced in-kind for a total of two (2). Shop drawings with the existing pump information, motor information, pump curve, and air release valve are provided in Attachment A. Photographs of the existing pump and motor configuration are provided in Attachment B.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Society of Mechanical Engineers (ASME):
      a. B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.B. Unit Responsibility
   2. American Bearing Manufacturer's Association (ABMA)
   3. ANSI/Hydraulic Institute (ANSI/HI):
      a. 9.6.3, Rotodynamic (Centrifugal and Vertical) Pumps – Guideline for Allowable Operating Region.
      b. 9.6.4, Rotodynamic Pumps for Vibration Measurements and Allowable Values.
      c. 14.6, Rotodynamic Pumps for Hydraulic Performance Acceptance Tests.
   4. National Electrical Manufacturer's Association (NEMA)
   5. InterNational Electrical Testing Association (NETA):
      a. ATS, Standard for Acceptance Testing Specifications for Electric Power Equipment and Systems.
   6. Nationally Recognized Testing Laboratory (NRTL).

1.3 SUBMITTALS

A. Shop Drawings:
   1. Make, model, weight, and horsepower.
   2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
   3. Performance data curves showing head, capacity, horsepower demand, and pump hydraulic efficiency over entire operating range of pump from shutoff to maximum capacity.
   4. Detailed drawings showing equipment dimensions, size and locations of connections and weights.
   5. Power and control wiring diagrams, including terminals and numbers. Include all signal references with note for connecting to existing control system on the Drawings.
   6. Factory finish (coating) system data sheets.
   7. Lead time for delivery to facility

B. Operation and Maintenance Manual (electronic copy: PDF and hard copy: 3-ring binder, 8.5x11-inch with 11x17 folded).
   1. Include pump and existing electric drive information with wiring diagrams and schematics for pump.
   2. Items noted in 1.3.C.

C. Informational Submittals (also to be included in Operation and Maintenance Manual)
   1. Factory functional test reports.
   2. Manufacturer's Certification of Compliance indicating pump is compliant with Common Product Requirements and factory finish system complies with requirements noted herein.
   3. Special shipping, storage and protection, and handling instructions.

4. Manufacturer's installation instructions.
5. Suggested spare parts list to maintain the equipment in service for a period of 5 years. Include a list of special tools required for checking, testing, parts replacement, and maintenance with current price information.
6. List special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance.

1.4 PRE-BID MEETING

A. Bidders are **required** to attend a pre-bid meeting at the H.E. Meyers Water Treatment Plant, 1475 Hubert Pierce Road, Mobile, AL 36608. Please contact Randy Sullivan or John Jordan to schedule a date and time.

PART 2 - PRODUCTS

2.1 GENERAL

A. Coordinate pump requirements with the existing electric motor drive requirements and be responsible for pump and motor requirements.

B. The pump manufacturer shall supply the pump and necessary accessories for proper pump and motor installation.

C. All components that come into contact with potable water shall be NSF/ANSI 61 certified.

2.2 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Pumps
      a. Goulds
      b. Morrison
      c. Flowserve
      d. Peerless
      e. Floway
      f. Cascade
      g. Or approved equal.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

A. Performance Parameters:
   1. Provide pumps with the minimum flow within the acceptable operating region. Provide pumps with net positive suction head requirements (NPSHR) less than the net positive suction head available (NPSHA) at all operating conditions.
      a. Primary Design Point: 14,000 gpm at 28 ft TDH; Minimum Pump Efficiency of 85%. Primary design flow shall be between 115% and 125% of the best efficiency flow.
      b. Secondary Design Condition: 13,000 gpm at 29 ft TDH; Minimum Pump Efficiency of 80%. Secondary design condition shall be between 75% and 85% of the best efficiency flow.
      c. Low-Head Design Condition: Pump shall be able to operate at full speed and a TDH less than 15 feet within the acceptable operating region.
      d. Shuftoff: 0 gpm at 32 ft TDH
      e. Submergence: Minimum required submergence to be less than or equal to 5 feet-4 inches from bottom of suction bell to required water level.

2.4 ACCESSORIES

A. Thrust lugs: 316SST

B. Flange bolts: 316 SST

C. Gaskets: EPDM

2.5 COMPONENTS

A. General:
1. Furnish units consisting of a vertical shaft turbine connected and motor.
2. Weight of revolving parts of pump including unbalanced hydraulic thrust of impeller is carried by thrust bearing in driver.
3. Provide adjustable coupling at driver shaft for adjusting impeller with reference to bowls.
4. Pump components that come in contact with potable water must be NSF/ANSI 61 certified.

B. Column:
1. Construct discharge column pipe of steel and supply with flanged connections.
2. See interior and exterior coating requirements below.
3. Existing dimensions listed are approximate, Manufacturer/Bidder to confirm:
   a. Existing column length: 129 inches ± (Two sections)
   b. Existing column diameter: 30 inches ± (Maximum), flanged
   c. Existing total pump length (Column and Bowl Assembly): 172 inches ±

C. Open Line Shaft:
1. Duplex Stainless Steel, S31803 or 416 SST.
2. Undercutting of shafting at sleeve locations is not permitted.
3. Provide rubber bearings at each column connection supported by retainers butted between machined faces of discharge column.
4. Open line shaft coupling: 416 SST
5. Provide line shaft pre-lubrication system to water lubricate line shaft bearings prior to pump startup.

D. Pump Bowl and Suction Bell:
1. Provide bowl and suction bell constructed of cast iron with 316 stainless steel wear ring, free from imperfections and accurately machined and fitted.
2. Design to ensure easy removal of bearings and impeller.
3. Furnish suction bell with flared end to reduce entrance losses and with a sufficient number of vanes to support weight of impeller and pump shaft when dismantling pump.
4. Bowls to be flanged.
5. See exterior coating requirements below.
6. Existing bowl assembly length: 43 ± inches

E. Bearings:
1. Provide units with sleeve bearings nitrile rubber.

F. Pump Shaft and Impeller:
1. Provide pump unit shaft constructed of rolled and ground duplex stainless steel.
2. Furnish impeller constructed of nickel-aluminum-bronze (ASTM B148).
3. Ensure impeller is accurately fitted and statically and dynamically balanced.

G. Discharge Head Assemblies:
1. Design discharge head assembly for 150 psi working pressure and 250 psi test pressure.
2. Provide discharge head for above ground mounting constructed of fabricated steel with integral discharge flange. See below for interior and exterior coating requirements.
3. Furnish ASME B16.1, 125/150 LB flange.
4. Mount pump head base flange on existing mounting pad and connect discharge flange to existing 24-inch diameter flanged discharge piping; distance from existing slab to centerline of 24-inch diameter discharge shall be field verified by the manufacturer/bidder. Discharge head base and discharge flanged bolt hole configuration to match existing configuration. Discharge head horizontal outlet angled 45 degrees from center of pump head base; see Appendix A for top view of existing base head diagram and Appendix B for photographs depicting the existing pump and piping configuration.
5. Supply lifting lugs capable of supporting weight of entire unit.
6. Furnish stuffing box constructed of cast iron. Lubrication to be with water. Provide 416 stainless steel shaft sleeve at top section of line shaft where it passes through stuffing box. Provide bronze upper shaft bearing directly below stuffing box, in the head, to eliminate any shaft whip which could damage the seal. Hard pipe stuffing box bleed-off to edge of slab, under kickplate.
7. Furnish and install 4-inch air and vacuum release valve (ARV).

a. Air and vacuum release valves shall be automatic float operated, GA Industries fig-930 for water, or an approved equal, with inlet size and working pressure ratings as required.
b. Valve bodies shall be ductile iron per ASTM A 126, Class B. The orifice, float and linkage shall be stainless steel (Type 316). The seat shall be (Buna N) nitrile elastomer. External fasteners to be type 316 stainless steel.

8. Existing discharge head dimensions:
    1) Discharge, Horizontal: 24-inch, 125 lb discharge flange
    2) Height to Motor Connection: 50-inch
    3) Height to Discharge Centerline: 1.67 feet approximately, field verify

H. Data Plates:
1. Provide stainless steel data plate securely attached to pump.
2. Pump: Include manufacturer's name, pump size and type, serial number, speed, impeller diameter, capacity and head rating, and other pertinent data.
3. Motor: If existing motor name plate(s) is(are) missing or in need of replacement furnish and install new name plate. Include manufacturer's name, horse power, RPM, Voltage, Phase, Hertz, serial number, and other pertinent data.

I. Coating: (bowl assembly, column, discharge head)
1. Provide coating by Tnemec, Sherwin Williams, or Koppers approved for use with potable water and to be dark blue (potable water). Generic description along with name brand per Sherwin Williams noted below; Tnemec and/or Koopers equal products also acceptable.
2. High Performance Industrial Coatings:

GENERIC DESCRIPTION	PRODUCT NAME (SHERWIN WILLIANS)
Modified Polyamine Epoxy (NSF 61)	Duraplate UHS
Polyamidoamine Epoxy	Macropoxy 646 (available in 100 g/L)
Zinc-Rich Urethane	Corothane I Galvapac 1k, 2k, 100 2k
Modified Polyamidoamine Epoxy	Macropoxy 646 (available in 100 g/l)
Polyamidoamine Epoxy (NSF 61)	Macropoxy 5500
Polyfunctional Hybrid Urethane (Gloss)	Acrolon Ultra or Acrolon WB Urethane
Polyfunctional Hybrid Urethane (Semi-Gloss)	Acrolon Ultra or Acrolon WB Urethane

3. Coating Systems and Surface Preparation per Environment:

Environment	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Ferrous Metals (Structural & Miscellaneous Metals)				
Exterior atmospheric	SSPC SP-6/ NACE No. 3	3.0 to 4.0 mil Galvapac	3.0 to 4.0 mil Macropoxy 646	2.0 to 3.0 mil Acrolon Ultra
Ductile Iron Piping				
Immersion – NSF 61	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	15.0 to 20.0 mil Duraplate 5900		15.0 to 20.0 mil Duraplate 5900
Exterior atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil Macropoxy 646	3.0 to 4.0 mil Macropoxy 646	2.5 to 3.5 mil Acrolon Ultra
Cast Iron Piping				
Exterior atmospheric	SSPC SP-1	3.0 to 5.0 mil Macropoxy 646	3.0 to 4.0 mil Macropoxy 646	2.0 to 3.0 mil Acrolon Ultra

2.6 WARRANTY

A. The manufacturer shall furnish the following to MAWSS:
   1. One-year parts and labor warranty issued by the manufacturer for the pump.

2.7 QUALITY CONTROL

A. Functional Test: Perform manufacturer's standard, motor test on equipment. Include vibration test as follows:
   1. Dynamically balance rotating parts of each pump and existing electric motor drive before final assembly.
   2. Limits:
      a. Electric Motor Drive Alone: Less than 80% of NEMA MG1 limits.
      b. Complete rotating assembly including coupling and electric drive motor: Less than 90% of limits established in the HI standards.

B. Shop Tests
   1. The Engineer shall have the right to witness the factory tests and inspect any equipment to be furnished under this Section prior to their shipment from place of manufacture.
      a. A complete test report for each pump, including certified characteristic curves of the pump, consisting of at least all information required above, except for NPSHR, and certified copies of the hydrostatic test report, shall be submitted to and approved by the Engineer before the pumps are shipped.
   2. Each pump specified herein shall be factory tested in accordance with the latest edition of the Hydraulic Institute Standards. Notification of such test and a list of test equipment and procedures shall be furnished to the Engineer at least ten (10) working days before the schedule test date.
      a. Each pump shall be tested and data recorded at its operating conditions of service. Sufficient test point readings shall be made to establish complete head flow capacity, efficiency and brake horsepower curves for each pump.
      b. Tests may be conducted with shop column and discharge head. Testing of complete package shall be performed utilizing the "job" motor not a "factory" motor.
      c. A minimum speed curve shall be plotted on the performance curve basis the affinity laws and the test data.
      d. All gauges and other test instruments shall be calibrated within 30 days of the scheduled test and certified calibration data shall be provided.
      e. Perform under simulated operating conditions.
      f. Test for a continuous one (1) hour period without malfunction.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install equipment in accordance with manufacturer's written instructions.

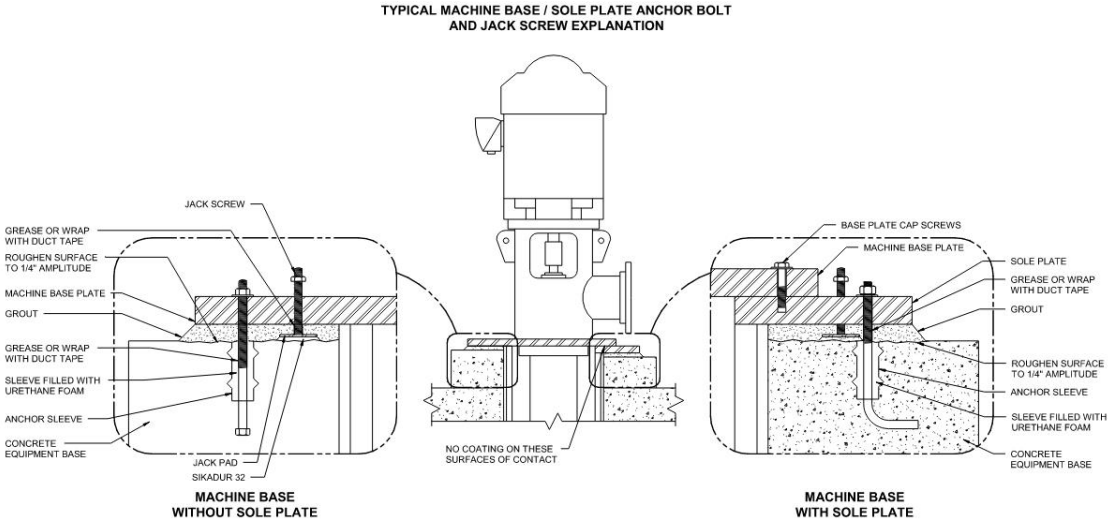
B. Existing sole plates may be reused as an option; manufacturer/bidder shall determine if the existing sole plates are suitable for reuse and is responsible for providing new plates if required for the installation of the new pumps. Verify existing dimensions and configuration so the sole plates in the field prior to bidding.

C. Utilize appropriate templates for anchorage placement for equipment installed on concrete.

D. Pump Drainage Discharges:
   1. Provide 3/4-inch PVC or clear plastic tubing from seal drainage discharge at discharge hear to nearest floor drain or equipment drain.

E. Machine Bases / Sole Plates:
   1. Grease or tape anchorages and jack screws to inhibit grout from adhering to bolts and other anchors.
      a. Jack screws number and size by equipment manufacturer.
         1) Jack screw
            a) 304 Stainless Steel minimum
            b) 0.5 inches diameter minimum
         2) Jack Screw Pad
            a) 2-inch diameter minimum
            b) Anchored in place with a structural epoxy adhesive.

2. Level in both directions using jack screws, with a machinist level, according to machined surfaces on base. Base shall be level within vertical tolerance of the lesser of (a) 0.005 inch per foot with no more than 0.0005 inches difference between any two points, or (b) equipment manufacturer's written instructions.
3. Level machine base on equipment base and align couplings between driver and driven equipment.



F. Motor/Pump Couplings:
1. Align in annular and parallel positions.
   a. Tolerance for both annular and parallel positions shall be 0.00025 inch (or less) per inch of coupling diameter.
2. If equipment is furnished by manufacturer as mounted unit, verify factory alignment after installation at the plant. Realign, if necessary, in accordance with equipment manufacturers' written instructions, to provide required factory tolerance.
3. Inspect surfaces for runout before attempting to trim or align units.

G. Grouting (as needed if providing replacement sole plate):
1. Level onto equipment base with jack screws in accordance with the Contract Documents, provide a dam or formwork around base to contain grout between equipment base and equipment support pad.
2. Preparation:
   a. Extend dam or formwork to cover leveling shims and blocks.
   b. Anchor sleeves:
      1) Required for equipment Pumps greater than 50 hp.
      2) If anchor sleeves were used, fill voids in anchor sleeves with foam or room temperature vulcanizing (RTV) silicone to keep grout from filling sleeves.
   c. Do not use nuts below the machine base to level the unit.
   d. Saturate top of roughened concrete surface with water before grouting.
3. Grout Installation:
   a. Install grout until entire space under machine base is completely filled to underside of base. Voids are unacceptable.
   b. Puddle grout by working a stiff wire through the grout and vent holes, to ensure grout is installed properly and to release air entrained in grout or base cavity.
4. After Grout Installation:
   a. When grout is sufficiently hardened, remove dam or formwork, and finish exposed grout surface to fine, smooth surface.
   b. Completely cover exposed grout surfaces with wet burlap and keep covering sufficiently wet to prevent too-rapid evaporation of water from grout.
   c. Check for voids by tapping along the top deck of the mounting plate. A solid thud indicates grout-filled areas while a drum-like hollow sound indicates a void requiring filling.
      1) Void areas are to be filled by drilling 1/8 inches NPT holes in opposite corners of each void area. Grout to be pumped into one void with a grout gun until grout emerges from the other vent hole.

d. When grout is fully hardened (after not less than seven days), remove jack screws, and tighten nuts on anchor bolts and similar anchors to required torque.
e. Inspect and verify levelness of machine base and, if not in accordance with requirements, remedy by removing base and reinstalling in accordance with the Contract Documents.
f. Inspect equipment for proper alignment. When not in accordance with requirements, remedy so that the Work is not defective.

3.2 INSTALLATION CHECKS

A. Secure services of experienced, competent, and authorized representative(s) of equipment manufacturer to visit site of work and inspect, check, adjust and approve pump installation and existing pump re-installation.
1. In each case, representative(s) shall be present during placement and start-up and as often as necessary to resolve any operational issues which may arise.

B. Secure from manufacturer's representative(s) a written report certifying that equipment:
1. Has been properly installed and lubricated.
2. Is in accurate alignment.
3. Is free from any undue stress imposed by connecting piping or anchor bolts.
4. Has been operated under full load conditions and that it operated satisfactorily.
a. Secure and deliver a field written report to MAWSS immediately prior to leaving jobsite.

C. Pump/Motor Field Vibration Monitoring and Testing:
1. Perform field vibration testing on each pump and motor unit.
2. Acceptability of pumping equipment to be based on current ANSI/HI criteria:
a. ANSI/HI 9.6.4-latest edition.
3. Pump and motor structural natural frequency shall be greater than 115% of the design pump rotating speed.
4. Utilize a MASS and/or Engineer approved 3rd party testing agency to perform vibration monitoring and testing on equipment.
5. Provide machinery condition diagnosis based on an acceptable machinery vibration severity guide or machinery fault guide analysis provided by the testing agency.
6. Tolerances for pumping equipment shall be per HI published standards.
7. Repair or replace equipment shown to be out of range of the specified tolerance until the equipment meets the specified normal operation range required in the machinery fault guide analysis.
8. Document testing with written report.
a. Report to include initial testing results, acceptance criteria, corrective action taken to meet acceptance, verification of corrective action and acceptance report and baseline.
b. Natural frequency of installed equipment utilizing an impact hammer.
c. Report to include graphical plots of vibration signature for each test point at a scale which illustrates all measured vibration levels greater than 0.025 ips RMS.

D. Electrical and Connections Testing Program:
1. Ground Fault Protection:
a. Perform inspections and tests per NETA ATS 7.14.
b. Components: Test all components per NETA ATS.
2. Existing Motors:
a. Perform inspections and tests per NETA ATS 7.15.
b. Testing of motors:
1) After re-installation and prior to energizing the motor, perform inspections and tests per NETA ATS 7.15 for motors.
2) Ensure motor has been lubricated.
3) Bump motor to check for correct rotation.

3.3 STARTUP:

A. Comply with requirements for manufacturer’s startup procedure.

B. Prepare the pump and motor so it will operate properly and safely and be ready to demonstrate functional integrity.

C. Procedures include but are not necessarily limited to the following:
1. Test or check and correct deficiencies of:
a. Power, control, and monitoring circuits for continuity prior to connection to power source.

b. Voltage of all circuits.
c. Phase sequence.
d. Cleanliness of connecting piping systems.
e. Alignment.
f. Pressure of all closed systems.
g. Lubrication.
h. Pumping equipment.
i. Instrumentation and control signal generation, transmission, reception, and response.
    1) To match existing equipment.
j. Tagging and identification systems.
k. Proper connections, alignment, calibration, and adjustment.

2. Manually rotate or move moving parts to assure freedom of movement.
3. "Bump-start" electric motors to verify proper rotation.
4. Perform other tests, checks, and activities required to make the pump and motors ready for operation.
5. Startup Log:
    a. Prepare a log showing each equipment item and system requiring startup. Indicate in the log activities to be accomplished during startup.
    b. Contractor to record date and person performing required startup. Indicate associated date(s), personnel, and employer of each day(s) and discipline.
    c. Submit completed startup log to MAWSS and obtain MAWSS and Engineer's acceptance.

D. Obtain Suppliers' certifications of the installed and operational equipment, without restrictions, and submit to Engineer:
    1. Manufacturer's installation check letters (sometimes referred to as Manufacturer's Field Services Report).

E. Letter verifying completion of all pre-demonstration startup activities including receipt of all specified items from Suppliers as final item prior to initiation of Startup.

F. Provide services of manufacturer's field service representative(s) for minimum of two (2) half days for startup, support, and personnel training.

END OF SPECIFICATIONS

ATTACHMENT A:

H.E. MEYERS WATER TREATMENT PLANT

EXISTING BACKWASH

PUMP AND MOTOR INFORMATION

MW 9/18/89

Back wash

INSTALLATION REPORT

INSTALLED FOR Peoples Gas CONTRACT NO 78-3527

Mobile COUNTY Mobile STATE Ala.

LOCATION Off Hwy 1 Beene Rd WELL NUMBER Backwash Pump #1

DATE INSTALLATION COMPLETED Aug. 25 (MONTH) (DAY) 1989 ☒ NEW INSTALLATION ☐ REPAIR ☐ TEST ☐ INSPECTION

PUMP MAKE Layne SERIAL No 10[illegible] TYPE HEAD P0202

TOTAL LENGTH COLUMN 10'9" SIZE 2½ X ___ X ___ WATER LUBRICATED—IN ___ LENGTHS Shipping 12 Spacing impeller

BOWL: SIZE 2½" TYPE 2621111 No. OF STAGES 1 BRONZE IMPELLERS CAST IRON BOWL.

CLOSED PORTS SUCTION ___ INCH. LENGTH ___ SUCTION STRAINER NO. BASE PLATE YES

IS PUMP SEALED YES NO IF SO. HOW? ___ WHERE? ___

LUBRICATOR: TYPE ___ CAPACITY ___ QUARTS. VOLTAGE ___

LENGTH OF AIR LINE ___ SIZE ___ PLASTIC TUBING COPPER TUBING: OR PIPE

AIR RELEASE VALVE TYPE 4" GA Industrial SURFACE DISCHARGE SIZE 2½ SCREWED FLANGED

DAYTON COUPLING NO YES. PRESSURE GUAGE ___ INCH. SPEED ___ SIZE PULLEY ___ FLAT V BELT

WATER BE PUMPED OUTSIDE? NO TOTAL SETTING 14' 4" IS COLUMN FLANGED?

MOTOR MAKE US Elec. H.P. 10 FRAME No. 5008PH

SERIAL No 6100571/5018106042 STYLE ___ SPEED ___

3 PHASE 60 CYCLES 460 VOLTS. DOES MOTOR HAVE NON-REVERSE RATCHET REVERSE PHASE RELAY

MAKE OF STARTER ___ SIZE ___ TYPE ___

GEAR DRIVE MAKE ___ MODEL ___ RATIO ___ TO ___

SERIAL No ___ STANDARD COMBINATION MODEL WITH A ___ MOTOR STAND

ENGINE MAKE ___ H.P. ___ STYLE ___ SERIAL No. ___

SPEED ___ TYPE FUEL ___ STANDARD UNDERGROUND FUEL TANK: SIZE PULLEY ___

MAGNETO MAKE ___ No. ___ STARTER MAKE ___

STARTER No ___ FLEXIBLE SHAFT MAKE ___ LENGTH ___

BELT LENGTH ___ OTHER EQUIPMENT ___

REMARKS: ___

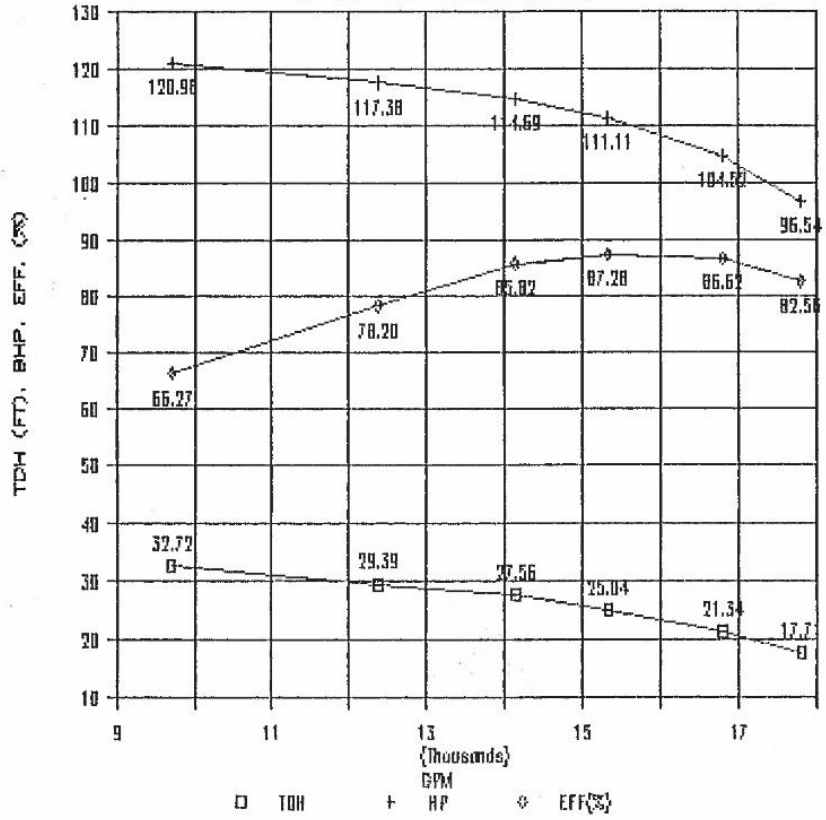
STATIC LEVEL Unknown FEET ___

CAPACITY OF PUMP ___ GPM AT ___ POUNDS SIGNED [illegible]

BACK WASH

HARRY E. MYERS W.F.F.

PUMP NO. 108297 T-200-89 590 RPM



CERTIFIED TESTS RESULTS
LAYNE & BOWLER, INC.
PER [signature] DATE 5-19-89

THIS FILE IS WATTST USED TO CALCULATE RESULTS OF WATTMETER TYPE TEST

ORDER NO.88H-2022 PUMP NO. 108297 TEST NO 200-89

CUSTOMER HARRY E MYERS M.F.F. SUBSIDIAR LAYNE CENTRAL CO.-PENSACOLA

RPM 590 GPM 14000 TDH 28 MOTOR LAB 700HP-590

TYPE PUMP LM SIZE 26 STAGES 1 IMP PAT. 26LM4A BLD. DIA. TIPS

INT/MAT. CI SIZE COL. 24 X 1 11/16 LUBE WATER SUCTION BELLED DATE 5-19-89

GAUGE HT.?	3.25 FT						
PIPE DIAMETER?	30.00 IN						
RATED SPEED?	590.00 RPM						
WATTMETER CON.?	800.00 N/A						
HEAD CON.?	1.13 N/A						
VENTURI CON.?	10993.00 N/A						

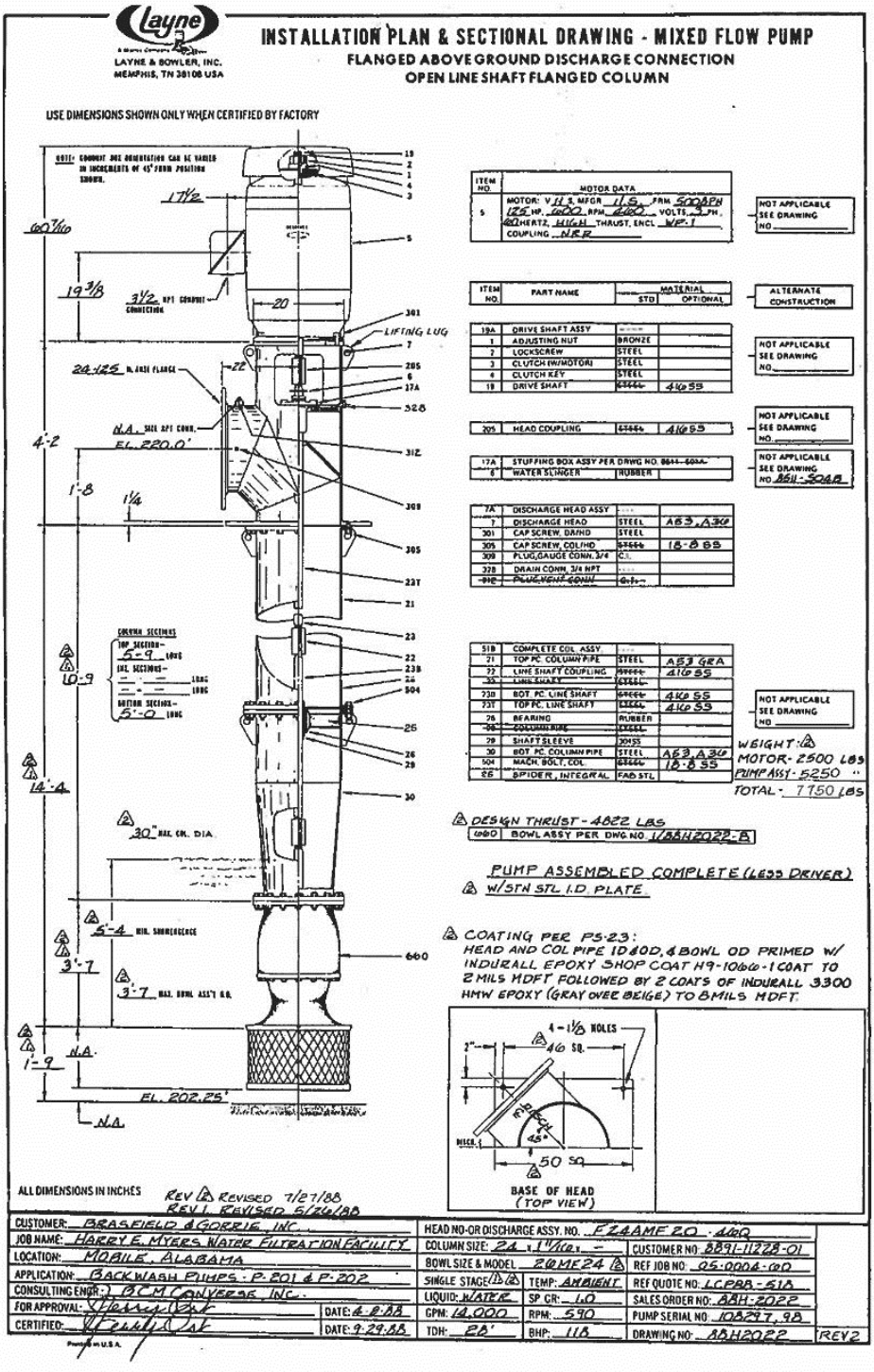
POINT NO.	1.00	RESULTS AT RATED RPM:		POINT NO.	2.00	RESULTS AT RATED RPM:	
WATTMETER	0.11	TDH	17.71	WATTMETER	0.12	TDH	21.34
TEST RPM	598.00	GPM	17821.69	TEST RPM	598.00	GPM	16802.45
HEAD IN.HG.	12.30	HP	96.54	HEAD IN.HG.	15.70	HP	104.52
FLOW IN. HG.	2.70	EFF	0.83	FLOW IN. HG.	2.40	EFF	0.87
MOTOR EFF.	0.86			MOTOR EFF.	0.86		

POINT NO.	3.00	RESULTS AT RATED RPM:		POINT NO.	4.00	RESULTS AT RATED RPM:	
WATTMETER	0.12	TDH	25.04	WATTMETER	0.13	TDH	27.56
TEST RPM	598.00	GPM	15338.47	TEST RPM	598.00	GPM	14141.37
HEAD IN.HG.	19.20	HP	111.11	HEAD IN.HG.	21.60	HP	114.69
FLOW IN. HG.	2.00	EFF	0.87	FLOW IN. HG.	1.70	EFF	0.86
MOTOR EFF.	0.87			MOTOR EFF.	0.87		

POINT NO.	5.00	RESULTS AT RATED RPM:		POINT NO.	6.00	RESULTS AT RATED RPM:	
WATTMETER	0.13	TDH	29.39	WATTMETER	0.14	TDH	32.72
TEST RPM	598.00	GPM	12366.27	TEST RPM	598.00	GPM	9700.90
HEAD IN.HG.	23.40	HP	117.38	HEAD IN.HG.	26.60	HP	120.96
FLOW IN. HG.	1.30	EFF	0.78	FLOW IN. HG.	0.80	EFF	0.66
MOTOR EFF.	0.87			MOTOR EFF.	0.87		

POINT NO.	7.00	RESULTS AT RATED RPM:		POINT NO.	8.00	RESULTS AT RATED RPM:	
WATTMETER		TDH	ERR	WATTMETER		TDH	ERR
TEST RPM		GPM	ERR	TEST RPM		GPM	ERR
HEAD IN.HG.		HP	ERR	HEAD IN.HG.		HP	ERR
FLOW IN. HG.		EFF	ERR	FLOW IN. HG.		EFF	ERR
MOTOR EFF.				MOTOR EFF.			

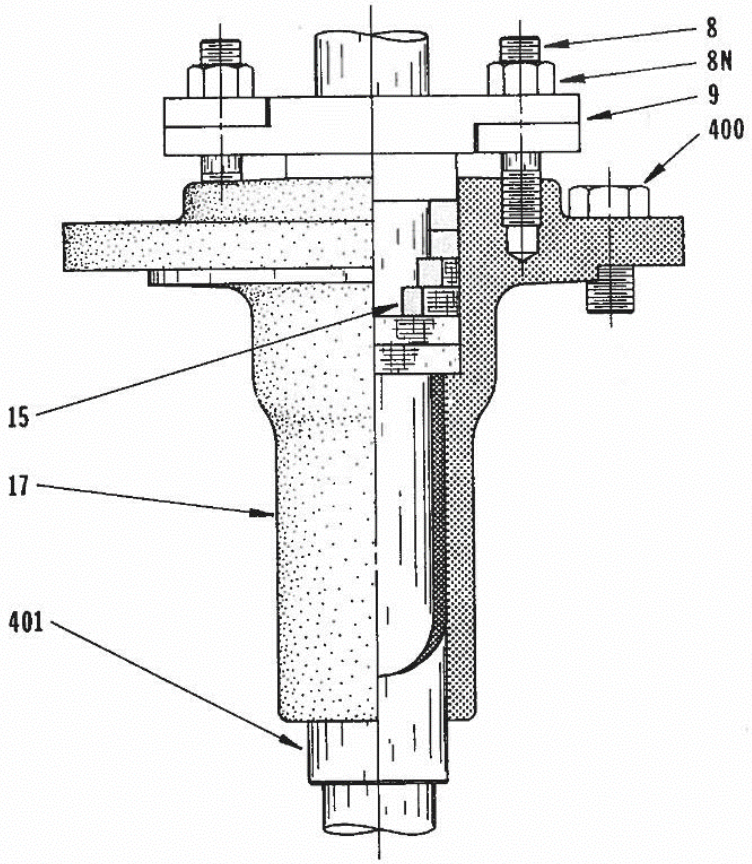
TDH	GPM	BHP	EFF
17.71	17821.69	96.54	82.56
21.34	16802.45	104.52	86.62
25.04	15338.47	111.11	87.28
27.56	14141.37	114.69	85.82
29.39	12366.27	117.38	78.20
32.72	9700.90	120.96	66.27


Layne
LAYNE & BOWLER, INC.
MEMPHIS, TN 38108 USA
INSTALLATION PLAN & SECTIONAL DRAWING - MIXED FLOW PUMP
FLANGED ABOVE GROUND DISCHARGE CONNECTION
OPEN LINE SHAFT FLANGED COLUMN
USE DIMENSIONS SHOWN ONLY WHEN CERTIFIED BY FACTORY
NOTE: COLUMN PIPE ORIENTATION CAN BE VARIED IN INCREMENTS OF 45° FROM POSITION SHOWN.
17 1/2
60 7/16
19 3/8
3 1/2 NPT CONDUIT CONNECTION
24.125 DIA. BASE FLANGE
N.A. SEE NPT CONN.
EL. 220.0'
4'-2
1'-8
1 1/4
COLUMN SECTIONS
TOP SECTION- 5'-9 LONG
INT. SECTIONS- LONG
MOTOR SECTION- 5'-0 LONG
10'-9
14'-4
30" MAX. DIA.
5'-4 MIN. SUBMERGENCE
3'-7
3'-7 MAX. BOWL ASS'Y O.D.
1'-9
N.A.
EL. 202.25'
N.A.
ALL DIMENSIONS IN INCHES
REV Δ REVISED 7/27/88
REV 1 REVISED 5/26/88
LIFTING LUG
ITEM NO. | MOTOR DATA
5 | MOTOR: V 11.5 MFGR U.S. FRM 500APH 125 HP, 1200 RPM, 4160 VOLTS, 3 PH, 60 HERTZ, HIGH THRUST, ENCL WP-1 COUPLING NRR
NOT APPLICABLE SEE DRAWING NO
ITEM NO. | PART NAME | MATERIAL STD | MATERIAL OPTIONAL
ALTERNATE CONSTRUCTION
19A | DRIVE SHAFT ASSY
1 | ADJUSTING NUT | BRONZE
2 | LOCKSCREW | STEEL
3 | CLUTCH (W/MOTOR) | STEEL
4 | CLUTCH KEY | STEEL
19 | DRIVE SHAFT | 416SS
NOT APPLICABLE SEE DRAWING NO
205 | HEAD COUPLING | 416SS
NOT APPLICABLE SEE DRAWING NO
17A | STUFFING BOX ASSY PER DRWG NO. 8641-503A
6 | WATER SLINGER | RUBBER
NOT APPLICABLE SEE DRAWING NO 8641-504B
7A | DISCHARGE HEAD ASSY
7 | DISCHARGE HEAD | STEEL | A53, A36
301 | CAP SCREW, DA/HD | STEEL
305 | CAP SCREW, COL/HD | 18-8 SS
309 | PLUG, GAUGE CONN. 3/4 | CS
328 | DRAIN CONN. 3/4 NPT
312 | PLUG, VENT CONN
518 | COMPLETE COL. ASSY
71 | TOP PC. COLUMN PIPE | STEEL | A53 GR A
72 | LINE SHAFT COUPLING | 416SS
32 | LINE SHAFT | 416SS
238 | BOT. PC. LINE SHAFT | 416SS
237 | TOP PC. LINE SHAFT | 416SS
NOT APPLICABLE SEE DRAWING NO
26 | BEARING | RUBBER
25 | COLUMN RING | STEEL
29 | SHAFT SLEEVE | 304SS
30 | BOT. PC. COLUMN PIPE | STEEL | A53, A36
504 | MACH. BOLT, COL. | 18-8 SS
22 | SPIDER, INTEGRAL | CAST STL
WEIGHT: Δ
MOTOR- 2500 LBS
PUMP ASSY- 5250 "
TOTAL- 7750 LBS
Δ DESIGN THRUST - 4822 LBS
660 BOWL ASSY PER DWG NO. 1188H2022-B
PUMP ASSEMBLED COMPLETE (LESS DRIVER)
Δ W/STN STL I.D. PLATE
Δ COATING PER P5-23:
HEAD AND COL PIPE ID & OD, & BOWL OD PRIMED W/ INDURALL EPOXY SHOP COAT H9-1060-1 COAT TO 2 MILS MDFT FOLLOWED BY 2 COATS OF INDURALL 3300 HMW EPOXY (GRAY OVER BEIGE) TO 8 MILS MDFT.
4 - 1 1/8 HOLES
46 SQ.
2"
FIT PATCH
45°
DISCH.
50 SQ
BASE OF HEAD (TOP VIEW)
CUSTOMER: BRASEFIELD & GORRIE, INC.
JOB NAME: HARRY E. MYERS WATER FILTRATION FACILITY
LOCATION: MOBILE, ALABAMA
APPLICATION: BACKWASH PUMPS - P-201 & P-202
CONSULTING ENGR.: BCM CONVERSE, INC.
FOR APPROVAL: DATE: 6-8-88
CERTIFIED: DATE: 9-29-88
HEAD NO-OR DISCHARGE ASSY. NO. F24AME20 - 660
COLUMN SIZE: 24 x 1" WALL -
BOWL SIZE & MODEL 20ME24 Δ
SINGLE STAGE Δ Δ TEMP: AMBIENT
LIQUID: WATER SP GR: 1.0
GPM: 12,000 RPM: 590
TDH: 28' BHP: 118
CUSTOMER NO: 8891-11228-01
REF JOB NO: 25-0004-00
REF QUOTE NO: LCPBB-618
SALES ORDER NO: ABH-2022
PUMP SERIAL NO: 108297, 98
DRAWING NO: ABH2022
REV 2

LAYNE & BOWLER, INC.
MEMPHIS, TENN. 38108

SECTIONAL DRAWING
6" 'SBX' STUFFING BOX
7/8 THRU 1-11/16 SHAFTS

SECTION: 4500
DWG. NO.: 8511-S04B
DATE: Oct. 1, 1984
SUPERSEDES:



ITEM NO.	PART NAME	MATERIAL	
		STD.	OPTIONAL
17A	STUFFING BOX ASSEMBLY	———	
8	STUD, PACKING GLAND	STN. STL.	
8N	HEX NUT, PACKING GLAND	BRASS	
9	PACKING GLAND, INTERLOCK.	BRONZE	
⚠ 15	PACKING (6 RINGS)	~~ASBESTOS~~	ACRYLIC
17	STUFFING BOX	C. I. Cl. 30	
⚠ 400	CAPSCREW (STUFF. BOX/ HEAD)	~~STEEL~~	18-8 SS
401	BEARING, STUFF. BOX	BRONZE	

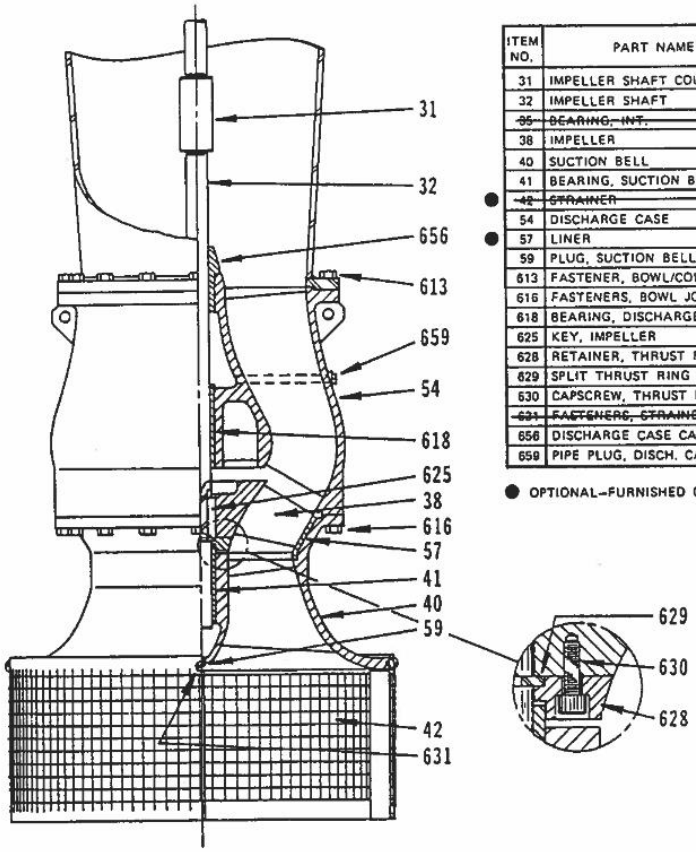
PRINTED IN U.S.A.

⚠ REVISED 7/27/88

LAYNE & BOWLER, INC.
MEMPHIS, TENN. 38108

SECTIONAL DRAWING
26MF
SINGLE-STAGE MIXED FLOW BOWL
OPEN LINESHAFT

DWG. NO.: 1/88H2022-B
DATE: 7/27/88
SUPERSEDES: 1/88H2022-A



ITEM NO.	PART NAME	MATERIAL STD	MATERIAL OPTIONAL
31	IMPELLER SHAFT COUPLING	~~STEEL~~	416SS
32	IMPELLER SHAFT	416SS	
~~35~~	~~BEARING, INT.~~	~~BRONZE~~	~~B584, AL 836~~
38	IMPELLER	BRONZE	B584, AL 875
40	SUCTION BELL	C. I., Cl. 30	
41	BEARING, SUCTION BELL	BRONZE	B584, AL 836
● ~~42~~	~~STRAINER~~	~~GALV. STL.~~	
54	DISCHARGE CASE	C. I., Cl. 30	
● 57	LINER	BRONZE	B584, AL 875
59	PLUG, SUCTION BELL	CAST IRON	
613	FASTENER, BOWL/COLUMN	~~STEEL~~	18-8 SS
616	FASTENERS, BOWL JOINTS	~~STEEL~~	18-8 SS
618	BEARING, DISCHARGE CASE	BRONZE	B584, AL 836
625	KEY, IMPELLER	STN. STL.	
628	RETAINER, THRUST RING	BRONZE	B584, AL 875
629	SPLIT THRUST RING	STN. STL.	
630	CAPSCREW, THRUST RING RET.	STN. STL.	18-8
~~631~~	~~FASTENERS, STRAINER/BOWL~~	~~STN. STL.~~	
656	DISCHARGE CASE CAP	CAST IRON	
659	PIPE PLUG, DISCH. CASE PORTS	CAST IRON	

● OPTIONAL—FURNISHED ONLY WHEN SPECIFIED.

PRINTED IN U.S.A.

MEMPHIS, TENN.

DATE 7/2[illegible]/88

CUST: [illegible] FIELD & GORRIE, INC.
JOB: HARRY E. MYERS W.F.F., MOBILE, ALA
APPLICATION: BACK WASH PUMPS P201 & P202
ENGR: BCM CONVERSE, INC.
CUST. NO: 8891-11228-01; QUOTE NO. LCP88-618
JOB NO: 05-0004-60; SALES ORDER BBH-2022
PUMP SERIAL NO'S: 108297, 98
GPM: 14,000; TDH: 28'; NOM. EFF 85%; BHP 116

THESE CURVES SHO[illegible] GENERAL SHAPE OF THE PUMP BOWL CH[illegible]R.STICS UNDER SHOP TESTS AT THE CONS[illegible] SPEED INDICATED. A TOLERANCE OF PLUS OR MINUS 2% MUST BE ALLOWED IN THE GUARANTEED CAPACITY, HEAD, AND EFFICIENCY AT THE RATED POINT WHEN PUMPING NON GASEOUS WATER, FREE FROM DETRITUS, AT A TEMPERATURE NOT OVER 86° FAHR., AND WITH THE LOWEST IMPELLER SUBMERGED.

FOR SUPERSEDES [illegible]H2022-A

ADDRESS

TYPE OF PUMP FIG. 26MF R.P.M. 590

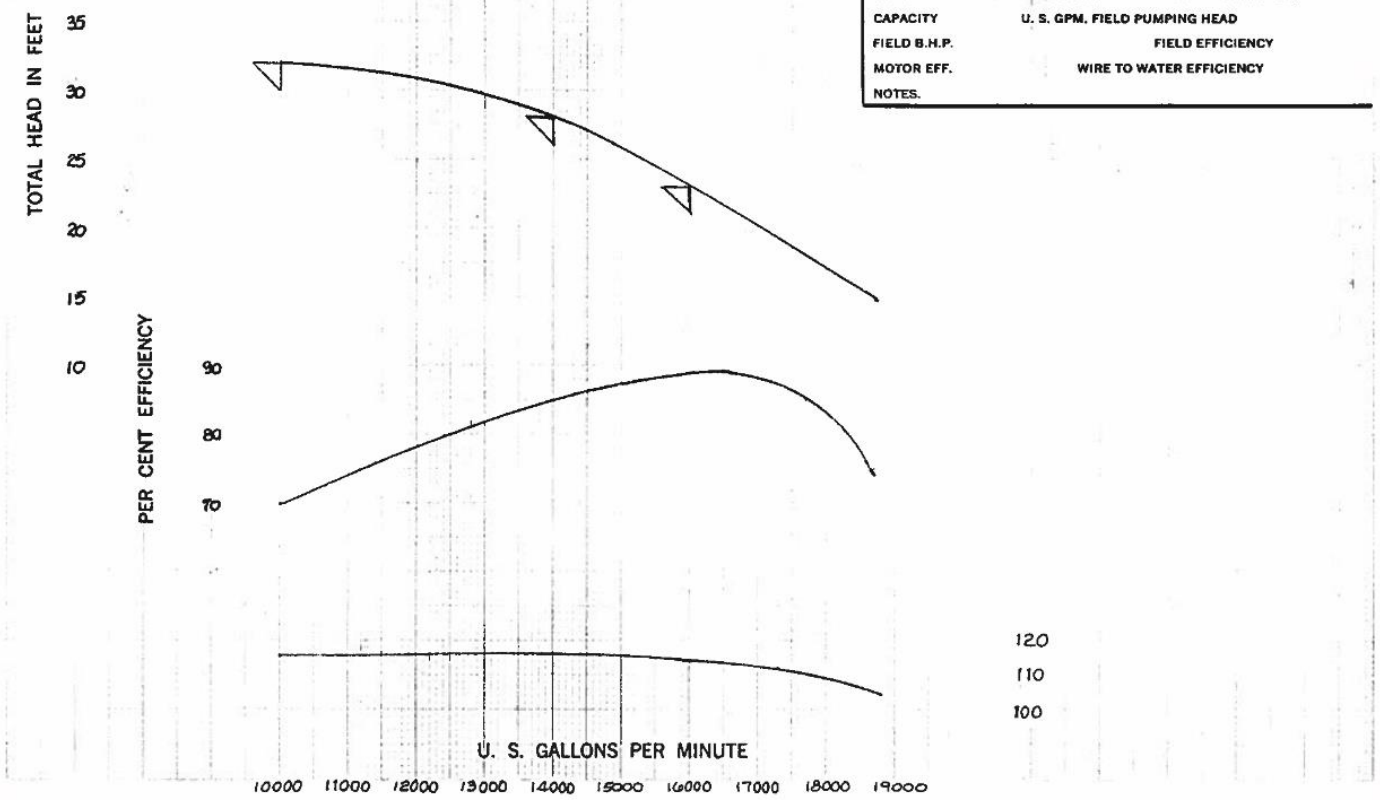
SIZE OF PUMP 26 INS. STAGES 1 IMPELLER 4A 35°

"K" FACTOR-159 MAX SPHERES=2.0 DIA

THE FIELD PERFORMANCE AS SHOWN BELOW, MAKES ALLOWANCE FOR ALL THE HYDRAULIC AND MECHANICAL LOSSES IN THE COLUMN AND SHAFT OF THE INSTALLATION ACCORDING TO THE STANDARDS OF THE HYDRAULIC INSTITUTE. THE FIELD PUMPING HEAD IS THE LIFT FROM THE WELL PLUS THE DISCHARGE HEAD MEASURED AT THE DISCHARGE CONNECTION AT THE SURFACE.

COLUMN	INS.	LENGTH	FT.	SHAFT DIA.
CAPACITY		U. S. GPM. FIELD PUMPING HEAD		
FIELD B.H.P.			FIELD EFFICIENCY	
MOTOR EFF.			WIRE TO WATER EFFICIENCY	

NOTES.



ATTACHMENT B:

H.E. MEYERS WATER TREATMENT PLANT

EXISTING BACKWASH

PUMP AND MOTOR PHOTOGRAPHS


CAUTION
THIS EQUIPMENT
STARTS AND STOPS
AUTOMATICALLY


CAUTION
THIS EQUIPMENT
STARTS AND STOPS
AUTOMATICALLY


CAUTION
CAUTION

IFB 24-017 REPLACEMENT BACKWASH PUMPS
INSURANCE REQUIREMENTS

A. **General**: The Supplier shall provide insurance in accordance with the required specifications. A current certificate of insurance must be provided with your bid. MAWSS does not need to be named as an additional insured on this certificate.

B. **Supplier Coverage**: The Supplier shall not commence work under this Contract until he has obtained all insurance required under the following paragraphs and until such insurance has been approved by the Owner, nor shall the Supplier allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been obtained and approved. If the subcontractor does not take out insurance in his own name, the Supplier shall provide such insurance protection for the subcontractor and such subcontractor's employees.

C. **Casualty Insurance**: The following insurance coverages (with limits not less than specified herein) shall be maintained by the Supplier for the duration of the Contract, affording coverage for any claim arising out of Supplier's operations herein, whether by the Supplier or by any subcontractor or by any Employee or Agent of either:

1. Claims of employees under Worker's Compensation and other similar employee benefit acts, including claims because of bodily injury, occupational sickness or disease, or death.

2. Claims arising out of bodily injury, sickness, disease, or death of any person other than employee.

3. Claims for damages arising out of libel, slander, false arrest, detention or imprisonment, malicious prosecution, defamation or violation of right of privacy, wrongful entry or eviction or other right of private occupancy, including claims as a result of an offense related to the employment of a claimant by Contractor (so-called "Personal Injury").

4. Claims arising out of damage to or destruction of tangible property, including loss of use.

5. The Supplier shall furnish certification of insurance and policies verifying that the above coverages are in effect before commencing any work, and that each policy is endorsed to give the Owner 30 days notice in writing in the event of cancellation or material change therein.

   Policies of Insurance shall state that the Owner and the Owner’s employees be named as additional insureds on the Supplier's Automobile Liability and Commercial General Liability policies. In respect to Worker's Compensation, a Waiver of Subrogation shall be issued in favor of the Owner. Where applicable, the U.S. Longshore and Harborworkers Compensation Act Endorsement shall be attached to the policy. Where applicable, the Maritime Coverage Endorsement (to include coverage under Jones Act) shall be attached to the policy. Both the U. S. Longshore and Harborworkers and the Maritime Coverage shall have limits equal to or greater than the employer’s liability coverage.

6. Rated by AM Best – A- or better. For non-admitted companies, a rating of A or better by AM Best.

   a. At the discretion of the Board, worker’s compensation insurance may be placed through a qualified worker’s compensation self-insurance fund.

b. **Limits of Liability:**

Worker's Compensation	Statutory
Employers' Liability	$500,000 Each Accident $500,000 by Disease, Policy Limit $500,000 by Disease, Each Employee
Commercial Automobile	$1,000,000 Each Accident Bodily Injury and Property Damage Combined Business Auto Includes All Owned, Leased, Hired and Non-Owned Automobiles
Commercial General Liability	$1,000,000 per Occurrence $1,000,000 Personal &Advertising Injury $2,000,000 General Aggregate per Project $2,000,000 Products &Completed Operations Aggregate $100,000 Fire Damage Liability

Umbrella Liability: In addition to the basic limits previously set out for Commercial General Liability, Products and Completed Operations, Automobile Liability and Worker's Compensation, coverage shall be issued with a "pay on behalf of" wording, including Personal Injury and other extensions, and provide coverage at least as broad as that afforded by the primary insurance policies.

Extensions (only if applicable):

Blanket Contractual Liability	Blanket Collapse and Underground Coverage
Personal Injury	Broad Form Property (including Completed Operations)
Host Liquor Liability	
Non-owned Watercraft Liability	Employees as Additional Insureds
Worldwide Products	Incidental Medical Malpractice
Fire Legal Liability	Extended Bodily Injury (Assault and Battery)
Newly Acquired Organizations	

When and if the use of explosives for blasting purposes appears necessary or desirable, such methods shall not be undertaken without written authorization of the Owner, and then only provided that acceptable extensions of liability coverage have been obtained specifically to include the explosion ("X") hazard and the collapse ("C") hazard. The policy of general liability shall include the special underground property damage coverage (providing the so-called "U" hazard) on a blanket basis.

D. **Owner's Protective Liability**: The Supplier shall furnish from a carrier acceptable to the Owner, a policy of liability insurance, commonly called "Owner's Protective Liability" in the name of the Board of Water and Sewer Commissioners of the City of Mobile, d/b/a MAWSS, providing "Independent Contractor's Coverage" for the operations embraced by this Contract with limits of $1,000,000 bodily injury and $1,000,000 property damage. Policy shall be endorsed that the premium is to be paid by the named Supplier.

END OF INSURANCE

IFB 24-017 REPLACEMENT BACKWASH PUMPS
BID SHEET

REPLACEMENT VERTICAL COLUMN DISCHARGE LINE SHAFT BACKWASH PUMPS				
Qty	**Desc.**	**Mfr/Model**	**Pump Curve**	**Unit Cost**
2 ea	**Backwash Pumps**			
			Total Cost	
Pump Lead Time				

Company Name_____ **Payment Terms**_____

Address_____

City, State, Zip_____

Submitted By_____ **Title**_____
Please Print

Phone_____ **Email Address**_____
Please Print

The signer declares under penalty of perjury that she/he is authorized to sign this document and bind the company or organization to the all of the terms and conditions of this agreement.

Signature_____ **Date** _____