

INVITATION FOR BID
July 26, 2023

INVITATION FOR BID NUMBER	IFB 23-040
NAME OF BID	Purchase & Installation of Two Replacement Agitator Pumps
BIDS WILL BE RECEIVED AT	MAWSS Bid Box Donaghey Business Entrance 4725A Moffett Road or PO Box 180249 Mobile, AL 36618
BID OPENING DATE	August 15, 2023
BID CLOSING TIME	10:30 am Central Time
AWARD WILL BE MADE BY	Total Cost & Lead Time
MATERIAL DELIVERED TO	H.E. Myers WTP. 1475 Hubert Pierce Road Mobile, AL 36608
ADDITIONAL INFORMATION CONTACT	Randy Sullivan (251) 378-3483 Email: rsullivan@mawss.com John Jordan (251) 378-3492 Email: jjordan@mawss.com Markus Moore (251) 721-0828 Email: mamoore@mawss.com
APPLICABLE SDP POLICY	None

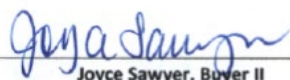
Sealed bids must be in the Purchasing Department no later than the time specified in order to be considered. Submissions received after the deadline will not be considered. Envelopes must bear the name of the supplier, company address and the words “IFB 23-040 Replacement Agitator Pumps” or “IFB 23-040 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 Commissioners

IFB 23-040 REPLACEMENT AGITATOR PUMPS CONDITIONS

The Board of Water and Sewer Commissioners of the City of Mobile will accept bids for **Replacement Agitator Pumps** in our Purchasing Department Bid Box located at 4725 Moffett Road Suite A, Mobile, AL 36618 **no later than 10:30 a.m.** local time on **August 15, 2023**. 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.

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 23-040 REPLACEMENT AGITATOR PUMPS SPECIFICATIONS

PUMPING EQUIPMENT: VERTICAL TURBINE PUMP

PART 1 - GENERAL

1.1 DESCRIPTION

A. This bid is for the replacement of two (2) vertical turbine 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. The pump shall be installed with the existing motor. Reuse existing 365TPA, 75 HP, 1800 RPM, 3 Phase, 460 V, 60 Hz, High Thrust U.S Motor. Photographs depicting the existing pump installation as well as existing pump cut sheet are provided in Attachment A.

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.
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)

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 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 and motor are 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 1 to 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.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Coordinate pump requirements with existing electric motor.
- 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 compliant.

2.2 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 1. Pumps
 - a. Layne Bowler
 - b. Or Equivalent.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

- A. Performance Parameters:
 1. Provide pumps with the minimum flow within the acceptable operating region.
 - a. Rated Design: 650 gpm at 276 ft TDH with NPSHr < 16 feet, minimum Bowl Efficiency of 81%, and speed of 1760 rpm
 - b. Number of stages: 4

2.4 ACCESSORIES

- A. Thrust lugs: 316 SST
- B. Flange bolts: 316 SST
- C. Gaskets: EPDM

2.5 COMPONENTS

- A. General:
 1. Furnish units consisting of a vertical shaft turbine, direct connected to a vertical solid shaft motor. Design unit with non-reversing ratchets.
 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 ASTM A53 Grade B steel and supply with flanged connections.
 2. The column pipe shall be flanged having interchangeable sections not exceeding 10 feet and/or sized to avoid critical speeds by a safe operational margin.
 3. The flanged pipe ends shall have a female register machined for drop-in bearing retainers of ASTM A743 CF8 stainless steel.
 4. The column flanges shall be of ASTM A36 HR steel.
 5. Sandblast column and coat with a minimum 15 mils dry film thickness epoxy system at the factory.
 6. Column and coat shall be NSF certified.
 7. See exterior coating requirements below.

C. Open Line Shaft:

1. The line-shaft bearings shall be replaceable fluted neoprene to allow for product lubrication of the line-shaft.
2. The line-shafts shall be of ASTM A582 Grade 416 HT stainless steel and shall have pump shaft quality dimensional tolerances of $+.000''/-0.002''$. and shall be straightened within $.005''$ total indicator reading per 10-foot section.
3. The line-shafts shall be of sufficient diameter to transmit the pump horsepower with a safety factor consistent with AWWA pump shaft standards and/or sized to avoid critical speeds by a safe operational margin.
4. The shaft threads shall be lathe cut and shall be left hand to prevent loosening during pump operation.
5. The shaft couplings shall be threaded from ASTM A276 Grade 304 stainless steel.
6. The intermediate line-shaft sections shall be interchangeable and shall not exceed 10 feet in length.
7. The butting ends of the line-shafts shall be machined square to axis of the shaft with a receded center to ensure proper alignment.
8. Furnish renewable shaft sleeves constructed from 416 stainless steel at each bearing location.
9. Undercutting of shafting at sleeve locations is not permitted.
10. Provide rubber bearings at each column connection supported by retainers butted between machined faces of discharge column.
11. 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, suction bell, and discharge case constructed of close-grained ASTM A48 Class 30 cast iron, free from imperfections and accurately machined and fitted.
2. The intermediate bowls shall be fitted with fluted nitrile and /or ASTM B505 C89835 bronze bearing as required to support the bowl shaft.
3. The suction case shall be fitted with an ASTM B505 C8935 bronze bearing and sand collar to protect the suction case bearing from abrasives and be permanently greased lubricated.
4. Design to ensure easy removal of bearings and impeller.
5. Furnish suction bell with flared end to reduce entrance losses and with a sufficient number of vanes to support lower guide bearings and weight of impeller and pump shaft when dismantling pump.
6. Bowls to be flanged.
7. See exterior coating requirements below.

E. Bearings:

1. Provide units with sleeve bearings nitrile rubber in each diffuser.
2. Provide for lubrication of bowl bearings with pumped liquid.

F. Pump Shaft and Impeller:

1. Provide pump unit shaft constructed of ASTM A582 Grade 416 HT stainless steel.
2. Bowl shaft shall have pump shaft quality dimensional tolerances of $+.000''/-0.002''$ and shall be straightened to within $.0005''$ total indicator reading per foot of length.
3. The bowl-shaft shall be of sufficient diameter to transmit the pump horsepower with a safety factor consistent with AWWA pump shaft standards.
4. The internal bowl surfaces and impeller coated with Belzona 1341 (NSF/ANSI 61)
5. Furnish impeller constructed of nickel-aluminum-bronze (ASTM B148).
6. Impeller to be securely attached to the bowl shaft with tapered collets of ASTM A519 Grade 1018 carbon steel for bowl shafts $2\ 3/16''$ nominal diameter and smaller or with keyed connections for bowl-shafts larger than $2\ 3/16''$ nominal diameter.
7. Ensure impeller is accurately fitted and statically and dynamically balanced.

G. Discharge Head Assemblies:

1. Discharge head shall be of fabricated of ASTM A53 Grade B carbon steel pipe and ASTM A36 HR carbon steel plate.
2. The discharge head shall be for above ground discharge with sufficient strength and rigidity to support the attached vertical motor or driver and carry the suspended weight of the attached column and bowl assembly.
3. As required to reduce internal friction losses, a radius or three-piece mitered type elbow shall be used for a smooth transition.
4. The discharge flange shall match a Class 150 ANSI flange size, bolt pattern, and rating.
5. The discharge size shall be the same as the column pipe.

6. The discharge head shall permit a two-piece head-shaft to be coupled above the seal assembly.
7. The base of the discharge head shall be circular and fully finished on bottom.
8. If the discharge head is to be mounted on a booster can, the base diameter and bolt pattern shall match a Class 150 ANSI flange.
9. Discharge Head must match color of existing units.
10. Design discharge head assembly for 150 psi working pressure and 250 psi test pressure.

H. Packing Gland Seal Assembly:

1. The packaging housing shall be of ASTM A48 Class 30 cast iron.
2. The packaging housing shall have a deep bore with a minimum of give rings or packing and a lantern ring rated for 450 PSI and 210° F.
3. Connections for lubrication and bypass shall be provided.
4. Lubrication shall be product water.
5. The packing gland shall be of ASTM B584 C89833 bronze or ASTM A743 CF8 stainless steel and secured in place with stainless steel hardware.
6. A packing housing bearing of ASTM B505 C89835 bronze shall be installed directly below the packing for stability.
7. Provide 416 stainless steel shaft sleeve at top section of line shaft where it passes through stuffing box.
8. A nitrile o-ring shall be used to seal the packing housing to the discharge head.
9. The OD of the seal box shall be coated with Belzona 1341 to prevent erosion.

I. Foundation Plate:

1. The foundation plate shall be of ASTM A36 HR carbon steel.
2. The foundation plate shall be square with the radius corners, equal to or greater than the size of the base of the discharge head.
3. The foundation plate shall be uniformly faced on one side, with four drilled holes provided, one at each corner to accommodate anchor bolts.
4. Supply foundation plate with lifting lugs capable of supporting weight of entire unit.

J. Booster Can:

1. The booster can shall be fabricated of ASTM A53 Grade B carbon steel pipe and ASTM A36 HR carbon steel plate.
2. The booster can shall have a Class 150 ANSI flange raised face inlet.
3. The head-mounting flange shall match the discharge head base Class 150 ANSI diameter and bolt pattern.
4. The booster can shall be sized per Hydraulic Institute Pump Intake Design.

K. Motor Coupling:

1. The motor coupling, when driven with a solid shaft motor, shall be a flanged adjustable three-piece or spacer type four-piece rigid coupling.
2. The coupling shall be of steel, designed to transmit the required torque and horsepower of the attached pump and other rotating elements.
3. The pump side of the coupling shall be keyed to the head-shaft.
4. The motor side shall have a radial key to support down thrust and an axial key to transmit torque.
5. A threaded adjusting nut shall be located above the pump side coupling component.
6. The coupling shall be designed to prevent movement due to up thrust and held concentric by means of machined registers.

L. 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.

M. Coating: (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	2.0 to 3.0 mil Macropoxy 5500 (red oxide)		20.0 to 25.0 mil Duraplate UHS
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 the Owner:

1. Two-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 before final assembly.
2. Limits:
 - a. 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. Test shall be performed on each pump produced or a scaled model per ANSI.HI 14.6. Notification of such test and a list of test equipment and procedures shall be furnished to the Engineer at least 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. A minimum speed curve shall be plotted on the performance curve basis the affinity laws and the test data.
 - c. All gauges and other test instruments shall be calibrated within 30 days of the scheduled test and certified calibration data shall be provided.
 - d. Perform under simulated operating conditions.
 - e. Test for a continuous one (1) hour period without malfunction.

2.8 MANUFACTURER'S SERVICES

A. Manufacturer's Representative: Present at site.

1. One (1) person for one half (1/2) of a day for installation, assistance, and inspection.

END OF SPECIFICATIONS

ATTACHMENT A:

H.E. MYERS WATER TREATMENT PLANT


ADDITIONAL VERTICAL TURBINE PUMP INFORMATION

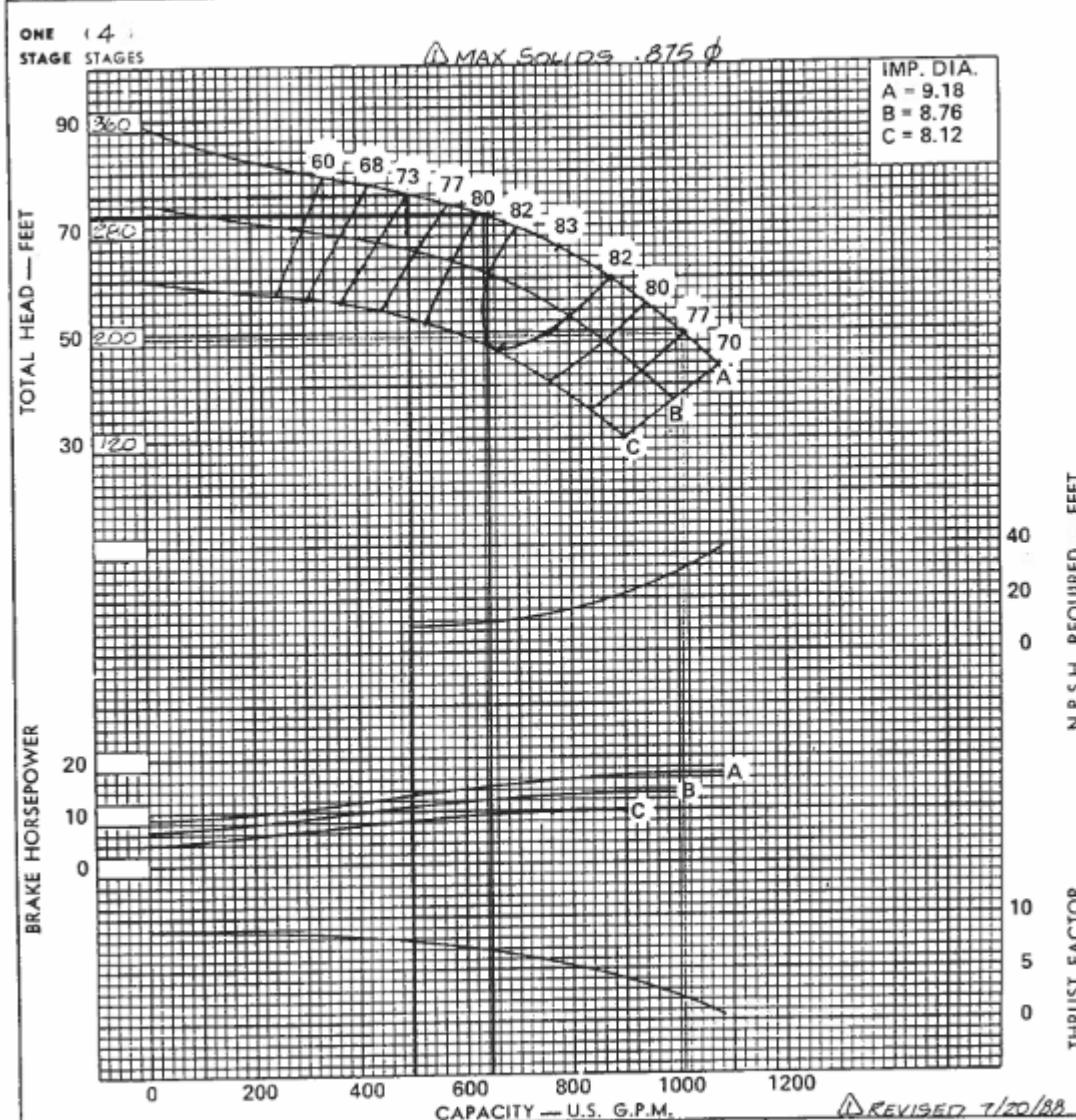


PHOTOGRAPH 1: EXISTING VERTICAL TURBINE PUMP AND DISCHARGE HEAD INSTALLATION



PHOTOGRAPH 2: VERTICAL TURBINE PUMP AND DISCHARGE HEAD (PUMP REMOVED)

LAYNE & BOWLER, INC. MEMPHIS, TENN.  <small>A MORGAN COMPANY</small>	BOWL <u>12RKB</u>
	STAGES <u>4</u>
	RPM <u>1760</u>



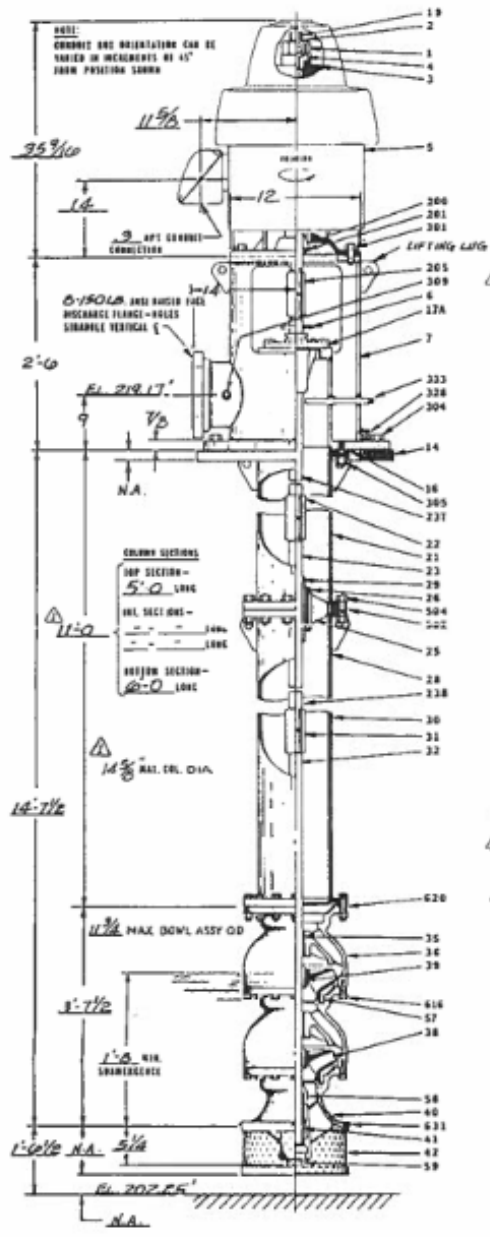
CUSTOMER: <u>BRASEFIELD GORRIE, INC.</u>	CUSTOMER NO:	LIQUID: <u>WATER</u>
JOB NAME: <u>Harsh P. Myers WFF</u>	REF JOB NO: <u>05-0004-60</u>	GPM: <u>650</u>
LOCATION: <u>Mobile, AL</u>	REF QUOTE NO: <u>LCP88-518</u>	TDH: <u>276'</u>
APPLICATION: <u>AGITATION PUMPS</u>	SALES ORDER NO: <u>ABH-2023</u>	EFF: <u>81%</u>
CONSULTING ENGRY: <u>BCM CONVERSE, INC.</u>	PUMP SERIAL NO: <u>108299, 300</u>	BHP: <u>56</u>
FOR APPROVAL: <u>[Signature]</u>	4/9/88 TAG NO'S <u>P-221 & P-222</u>	SP. GR.: <u>1.0</u>
		CURVE NO <u>1/88H2023</u>

EXISTING VERTICAL TURBINE PUMP CURVE



INSTALLATION PLAN & SECTIONAL DRAWING - SHORT COUPLED PUMP FSC HEAD, 2 THRU 12 - FLANGED OPEN LINE SHAFT COLUMN - 3 x 1 THRU 12 x 2-11/16 7C, 9B, 11B, 12RKB, 13C, 14T, 15C, DR, 16G, 18G BOWLS

USE DIMENSIONS SHOWN ONLY WHEN CERTIFIED BY FACTORY



ITEM NO	MOTOR DATA	
5	MOTOR VOLT WGR	115
	PH	30
	TE MP	120
	MAX VOLTS	3
	CONVERTER	NONE

NOT APPLICABLE
SEE DRAWING
NO

ALTERNATE
CONSTRUCTION

ITEM NO	PART NAME	STD	SPECIAL
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15a	DRIVE SHAFT ASSY		
1	ADAPTING KIT		
2	LOCKWASHER	STEEL	
3	CLUTCH (W/ MOTOR)	STEEL	
4	CLUTCH KEY	STEEL	
5	DRIVE SHAFT	STEEL	4140 SS

NOT APPLICABLE
SEE DRAWING
NO

20	HEAD COMPL. KIT		
12a	STIFFING BOX ASSY PER BOWL		
2	WATER WASH		

NOT APPLICABLE
SEE DRAWING
NO

NOT APPLICABLE
SEE DRAWING
NO

16	DISCHARGE HEAD ASSY		
7	DISCHARGE HEAD	STEEL	A53 A 36
16	BASE PLATE	STEEL	
30	CAPSCREW DRIVE SHAFT	STEEL	
30	CAPSCREW COL STD		
30	PLUG CLAMP DOWN STA	STEEL	16-8 SS
32	DRAIN COUPLER ASSE		

NOT APPLICABLE
SEE DRAWING
NO

50	COMPLETE COL ASSY		
22	TOP PC COLUMN PIPE	STEEL	A53 A 36
22	LINE SHAFT COUPLING		4140 SS
22	LINE SHAFT	STEEL	
22	BOT PC LINE SHAFT		4140 SS
22	TOP PC LINE SHAFT		4140 SS
25	SOLID	BRONZE	
25	BEARING LINE SHAFT		
27	COLUMN PIPE	STEEL	
27	SHAFT SLEEVE	304 SS	
27	BOT PC COLUMN PIPE	STEEL	A53 A 36
27	WASHER		
27	NUT		

NOT APPLICABLE
SEE DRAWING
NO

60	BOWL ASSY		
37	IMP SHAFT COUPLING		
67	IMPELLER SHAFT		
25	BEARING KIT		
25	IMPELLER PLATE	C114 W	
25	IMPELLER	BRONZE	ASTM A 113
29	COLLET	SIN STL	
40	SUCTON BELL	C114 W	
41	BEARING SECTION	BRONZE	ASTM A 113
42	WASHER		
42	NUT		
57	WEAR RING	BRONZE	ASTM A 113
58	SAWD COLLAR	WOODRUFF	
59	SUCTON PLUG	PVC	
61	WASH BOLTS COLUMN		
61	CAPSCREW BOWL		
62	DISCHARGE COUPLING		
62	NUT		
62	WASHER		

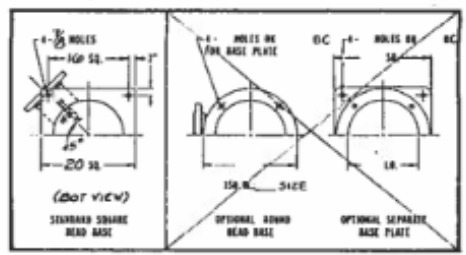
NOT APPLICABLE
SEE DRAWING
NO

WEIGHTS:
MOTOR - 927 LBS
PUMP ASSY - 1265
TOTAL - 2212 LBS

DESIGN THRUST: 2044 LBS

PUMP ASSEMBLED COMPLETE (LESS DRIVER) W/ 10 FLT

COATING PER PS NO 23:
HEAD AND COLUMN I.D. 6.0 D. & BOWL O.D. PRIMED W/
INDURALL EPOXY SHOP COAT M9-1006 - 1 COAT TO
2 MILS MDT FOLLOVED BY 2 COATS OF INDURALL
RUFF STUFF 3300111W EPOXY (GRAY OVER BEIGE) TO
8 MILS MDT.



CUSTOMER:	BRASSFIELD & GORRIE, INC.	READ NO.:	BFSC12-200 W/ 150 IN. DISCH & W/ 6 BASE PL.
JOB NAME:	HAGGLE WOODS WATER FILTRATION FACILITY	COLUMN SIZE:	3 x 1 1/2
LOCATION:	MOBILE, ALABAMA	BOWL SIZE & MODEL:	12RKB1
APPLICATION:	AGITATION PUMPS P-1, P-2 & P-3	NO. OF STG'S:	A
CONSULTING ENGR.:	BOCM CONVERSE INC.	TEMP. AMBIENT	
FOR APPROVAL:	ALLISON J. RAY	LIQUID:	WATER
CERTIFIED:	ALLISON J. RAY	SP. GR.:	1.0
	DATE: 7-20-88	CPM:	650
	DATE: 7-20-88	BPM:	1700
		TUN:	270
		RSP:	80
		PUMP SERIAL NO.:	108299-300
		DRAWING NO.:	BAH2029 REV. 1
		CUSTOMER NO.:	AS91-11228-01
		RET. JOB NO.:	06-0008-000
		NET QUOTE NO.:	LC04A-510
		SALES ORDER NO.:	ASH-2029

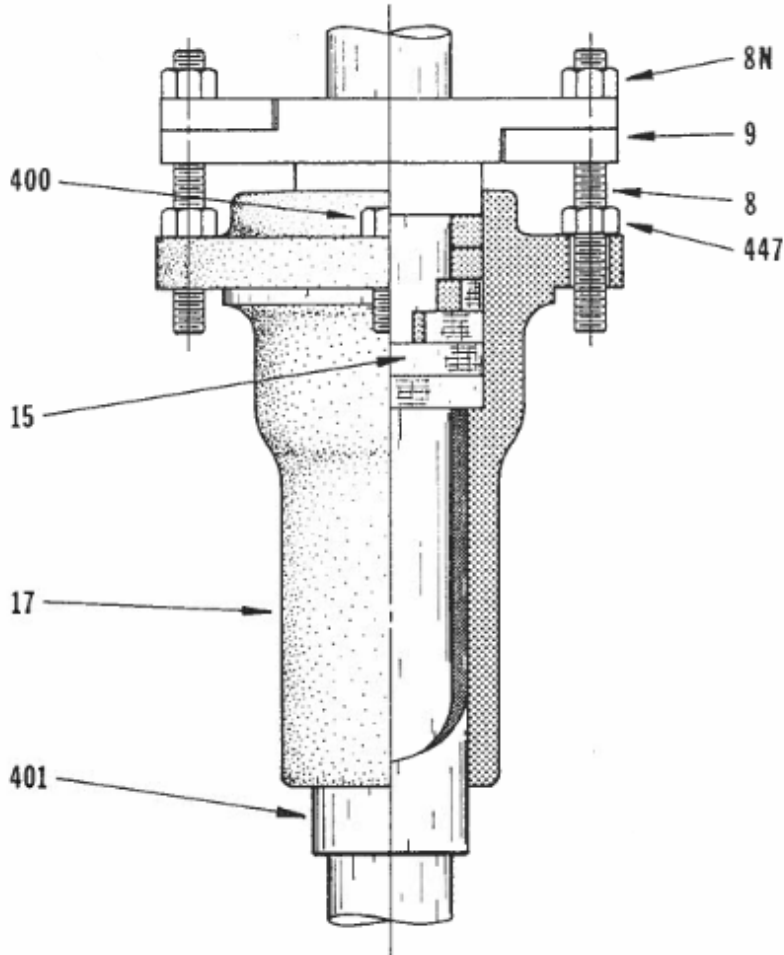
EXISTING VERTICAL TURBINE PUMP CUT SHEET



LAYNE & BOWLER, INC.
MEMPHIS, TENN. 38108

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

SECTION: 4500
DWG. NO.: 8511-S04A
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. CI. 30	
⚠ 400	CAPSCREW (STUFF. BOX/HEAD)	STEEL	18-8 SS
401	BEARING, STUFF. BOX	BRONZE	
⚠ 447	HEX NUT (STUFF. BOX/HEAD)	STEEL	18-8 SS

PRINTED IN U.S.A.

⚠ REVISED 7/20/88

EXISTING VERTICAL TURBINE PUMP CUT SHEET

**IFB 23-040 REPLACEMENT AGITATOR 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	Employees as Additional Insureds
Non-owned Watercraft Liability	Incidental Medical Malpractice
Worldwide Products	Extended Bodily Injury (Assault and Battery)
Fire Legal Liability	
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 23-040 REPLACEMENT AGITATOR PUMPS
BID SHEET**

One Vertical Turbine Pump				
Qty	Desc.	Mfr/Model	Pump Curve	Unit Cost
2 ea	Pump			
Total Cost				
Pump Lead Time				

Payment Terms _____

Company Name _____

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** _____