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Mobile Area Water and Sewer System
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**INVITATION FOR BID
 December 11, 2023**

INVITATION FOR BID NUMBER	IFB 23-058
NAME OF BID	VFD & Soft Starter Replacement
BIDS WILL BE RECEIVED AT	MAWSS Bid Box Donaghey Business Entrance 4725A Moffett Road or PO Box 180249 Mobile, AL 36618
BID OPENING DATE	December 21, 2023
BID CLOSING TIME	10:30 am Central Time
AWARD WILL BE MADE BY	Total Cost & Lead Time
MATERIAL DELIVERED TO	MAWSS – Lift Station Department 1610 Shelton Beach Road Ext Mobile, AL 36618
ADDITIONAL INFORMATION CONTACT	Terry Herman (251) 378-3509 Email: therman@mawss.com
APPLICABLE DBE 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 23-058 VFD & Soft Starter Replacement” or “IFB 23-058 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 23-058 VFD & SOFT STARTER REPLACEMENT CONDITIONS

The Board of Water and Sewer Commissioners of the City of Mobile will accept bids to purchase **VFD & Soft Starter Replacements** 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 **December 21, 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 our **Lift Station Dept.** located at **1610 Shelton Beach Rd. Ext., Mobile, AL 36618**, 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 or bid documents. Bid documents and any amendments made to this bid will be posted on our website at www.mawss.com.

Invoices are to be emailed to Accounts Payable at AcctsPayable@mawss.com.

END OF CONDITIONS

**IFB 23-058 VFD & SOFT STARTER REPLACEMENT
DESCRIPTION**

Center St LS 209 Variable Frequency Drive (VFD) and Soft Starter Replacement

This bid is for:

- Two (2) Danfoss VFDs FC-202N132T4E20H2XGC7 XXSXXXXXAXBXCXRXXDX, 200 HP, 380-480 VAC, Three Phase.
- Class C3C conformal coating shall be applied to the PCBs to protect against corrosion and H2S.
- Two (2) Danfoss Soft Starters MCD60287BT5S2X00CV2, 150 HP, 200-525 VAC, Three Phase with internal Bypass Contactor, 110 vac & 220 VAC control voltage, frame size #2. All soft starters shall be equipped with 3 SCR's
- The equipment shall mount into the existing panels.
- There shall be a 6-year on-site warranty on the VFD's and a 6-year on-site warranty on the soft starters. Startup, programing and commissioning of equipment shall be included in the pricing.
- Because Center St LS 209 will be online when the equipment is installed, only one installation shall be completed at a time. Startup, programing and commissioning will be completed after each installation.

END OF DESCRIPTION

IFB 23-058 VFD & SOFT STARTER REPLACEMENT SPECIFICATIONS

13.4.10 MOTOR STARTERS AND CONTROLLERS

- A. Full-voltage motor starters shall be UL listed and NEMA rated for the associated motor.
- B. Reduced voltage motor starters shall be "soft-start" type manufactured in accordance with UL 508 with the following aspects:
 - 1. 24-volt DC internal control voltage
 - 2. Either internal or external power supply
 - 3. Internal by-pass contactor to prevent control component overheating
 - 4. Dry type discrete input and output control circuits
 - 5. Electrical overcurrent protection with alarm indicator
 - 6. Starting failure with alarm indicator
 - 7. Phase rotation protection with alarm indicator.
 - 8. Phase failure protection with alarm indicator
 - 9. Voltage unbalance protection with alarm indicator
 - 10. All soft starters shall be equipped with 3 SCR's
- C. Operational and Performance Ratings:
 - 1. Voltage, phase, and frequency of the associated motor.
 - 2. Horsepower rating adequate for the associated motor.
 - 3. Ampere capacity adequate for the associated motor.
 - 4. 0.5 to 180 second adjustable time ramp for motor acceleration and deceleration.
 - 5. Adjustable 30 to 100 % overload range.
- D. Due to on-going refinements/improvements of variable frequency drives, the operational performance ratings shall be selected to suit the unique requirements of the associated specific pumping units to be controlled and approved by a MAWSS Engineer.

13.4.11 VARIABLE FREQUENCY DRIVES

- A. Scope of Work
 - 1. General: This specification defines the minimum requirements for Variable Frequency Drives (VFD) and accessories for speed control of either constant or variable torque loads.
 - 2. Related Work: None.
 - 3. References:
 - a. UL 508C
 - b. CE
 - c. NEC
 - d. Canadian Underwrites Laboratory (CUL)
 - e. ISO 9001
 - f. IEEE519-1992

B. Products

1. Acceptable Manufacturers:

a. Danfoss VLT® AQUA Series

C. General:

1. Furnish complete VFD as specified herein or in the equipment schedule for loads designated to be variable speed. VFD's shall be user-selectable for either constant or variable torque loads.

2. The VFD shall convert incoming fixed frequency three-phase AC power into a variable frequency and voltage for controlling the speed of three-phase AC induction motors. The VFD shall be a six-pulse input design, and the input voltage rectifier shall employ a full wave diode bridge; VFD's utilizing controlled SCR rectifiers shall not be acceptable. The output waveform shall closely approximate a sine wave. The VFD shall be of a PWM output design utilizing current IGBT inverter technology and voltage vector control of the output PWM waveform.

3. The VFD shall include a full-wave diode bridge rectifier and maintain a displacement power factor of near unity regardless of speed and load.

4. The VFD shall utilize an output voltage-vector switching algorithm, or equivalent, in both variable and constant torque modes. Shall provide rated RMS fundamental voltage from the VFD. This allows the motor to operate at a lower temperature rise, extending its thermal life. VFD's that cannot produce rated RMS fundamental output voltage or require the input voltage to be increased above motor nameplate value to achieve rated RMS fundamental output voltage are not acceptable. VFD's that utilize Sine-Coded PWM or Look-up tables shall not be acceptable.

5. The VFD selected must be able to source the motor's full load nameplate amperage (fundamental RMS) on a continuous basis, and be capable of running the motor at its nameplate RPM, voltage, current, and slip without having to utilize the service factor of the motor.

6. The VFD shall offer a programmable motor parameter that allows the total number of poles of a motor to be programmed to optimize motor performance.

7. VFD shall automatically boost power factor at lower speeds.

8. An automatic energy optimization selection feature shall be provided in the VFD to minimize energy consumption in variable torque applications. This feature shall optimize motor magnetization voltage and shall dynamically adjust output voltage in response to load, independent of speed. Output voltage adjustment based on frequency alone is not acceptable for single motor variable torque configurations.

9. An initial ramp function shall be available to provide a user-selectable ramp, up to 60 seconds, for applications requiring a faster or slower ramp than the normal ramp.

10. An Autotuning PI controller output feature shall provide automated PI controller settings. Once the user accepts the settings, the VFD will save the settings to memory.

11. VFD shall offer a motor spinning test that will run the motor at 5 Hz until the OK button is pressed. This feature will allow the user to determine if the motor is running in the correct direction.

12. Switching of the input power to the VFD shall be possible without interlocks or damage to the

VFD at a minimum interval of 2 minutes.

13. Switching of power on the output side between the VFD and the motor shall be possible with no limitation or damage to the VFD and shall require no additional interlocks.

14. It shall not be necessary to spin the motor shaft or de-couple the motor from the load to accomplish this optimization. Additionally, the parameters for motor resistance and motor reactance shall be user programmable.

15. The VFD shall have temperature-controlled cooling fans for quiet operation, minimized internal losses, and greatly increased fan life.

16. VFD shall provide full torque to the motor, given input voltage fluctuations of up to +10% to -10% of the rated input voltage (525 to 690VAC, 380 to 480VAC, or 200 to 240VAC). Line frequency variation of $\pm 2\%$ shall be acceptable.

D. Harmonics

1. The VFD shall provide internal DC link reactors to minimize power line harmonics and to provide near unity power factor. DC Link reactor shall be installed so that power fluctuations to the DC Capacitors shall be reduced to increase Capacitor life. VFD's without a DC link reactor shall provide a 5% impedance line side reactor and provide spare capacitors.

E. Protective Features:

1. VFD shall include circuitry to detect phase imbalance and phase loss on the input side of the VFD.
2. VFD shall auto-derate the output voltage and frequency to the motor if an input phase is lost. This result will maintain operation without decreasing the life expectancy of the VFD. The use of this feature shall be user selectable and export a warning during the event.
3. Printed Circuit boards shall be conformal coated to reduce the corrosion effect from environmental gases and other conditions. The conformal coating must meet IEC 61721-3-3, Class 3C2 as standard and the VFD shall have an optional 61721-3-3, Class 3C3 coating available.
4. VFD shall auto-derate the output voltage and frequency to the motor in the presence of sustained ambient temperatures higher than the normal operating range, so as not to trip on an inverter temperature fault. The use of this feature shall be user-selectable, and a warning will be exported during the event. Function shall reduce switching frequency before reducing motor speed.
5. VFD shall auto-derate the output frequency by limiting the output current before allowing the VFD to trip on overload. The speed of the load can be reduced, but not stopped.
6. The VFD shall have the option of an integral RFI filter. VFD enclosures shall be made of metal to minimize RFI and provide immunity.

F. Interface Features:

1. VFD shall provide an alphanumeric backlit display keypad (LCP) which may be remotely mounted using a standard 9-pin cable. VFD may be operated with keypad disconnected or removed entirely. Keypad may be disconnected during normal operation without the need to stop the motor or disconnect power to the VFD.

2. VFD Keypad shall feature a key that, when pressed, shall display the contents of the programming manual for the parameter that is currently viewed on the display. The description shall explain the feature and how the settings can be made by the operator.
3. VFD shall display all faults in plain text; VFD's which can display only fault codes are not acceptable.
4. The keypad shall feature a 6-line graphical display and be capable of digitally displaying up to five separate operational parameters or status values simultaneously (including process values with the appropriate engineering unit) in addition to Hand/Off/Auto, Local/Remote, and operating status.
5. Two lines of the display shall allow "free text programming" so that a site description or the actual name of the equipment being controlled by the VFD can be entered into the display.
6. Keypad shall provide an integral H-O-A (Hand-Off-Auto) and Local-Remote selection capability, and manual control of speed locally without the need for adding selector switches, potentiometers, or other devices.
7. All VFD's shall be of the same series and shall utilize a common control card and LCP (keypad/display unit) throughout the rating range. The control cards and keypads shall be interchangeable through the entire range of drives used on the project.
8. VFD keypad shall be capable of storing drive parameter values in non-volatile RAM uploaded to it from the VFD, and shall be capable of downloading stored values to the VFD to facilitate programming of multiple drives in similar applications, or as a means of backing up the programmed parameters.
9. VFD Display shall have the ability to display 5 different parameters pertaining to the VFD or the load including: current, speed, DC bus voltage, output voltage, input signal in mA, or other values from a list of 92 different user-selectable parameters.
10. VFD display shall indicate which digital inputs are active and the status of each relay.
11. It shall be possible to toggle between three status read-out screens by pressing the [Status] key. Various operating variables, even with different formatting, can be shown in each status screen.
12. VFD display shall indicate the value of any voltage or current signal, including the engineering units of measurement, connected to the analog input terminals.
13. VFD display shall indicate the value of the current at the analog output terminals, including the engineering units of measurement.
14. A red FAULT light, a yellow WARNING light and a green POWER-ON light shall be provided. These indications shall be visible both on the keypad and on the VFD when the keypad is removed.
15. Two-level password protection shall be provided to prevent unauthorized changes to the programming of the VFD. The parameters can be locked via a digital input and/or the unit can be programmed not to allow an unauthorized user to change the parameter settings.
16. A quick setup menu with factory preset typical parameters shall be provided on the VFD to facilitate commissioning. Use of macros shall not be required.
17. A digital elapsed time meter and kilowatt hour meter shall be provided in the display.

18. VFD shall offer as standard an internal clock. The internal clock can be used for: Timed Actions, Energy Meter, Trend Analysis, date/time stamps on alarms, Logged data, Preventive maintenance, or other uses. It shall be possible to program the clock for Daylight Saving Time / summertime, weekly working days or non-working days including 20 exceptions (holidays, etc.). It shall be possible to program a Warning in case the clock has not been reset after a power loss.
19. A battery back-up option shall be provided to maintain internal clock operation during power interruptions. Battery life shall be no less than 10 years of normal operation.
20. VFD shall provide full galvanic isolation with suitable potential separation from the power sources (control, signal, and power circuitry within the drive) to ensure compliance with PELV requirements and to protect PLC's and other connected equipment from power surges and spikes.
21. All inputs and outputs shall be optically isolated. Isolation boards between the VFD and external control devices shall not be required.
22. There shall be six fully programmable digital inputs for interfacing with the systems external control and safety interlock circuitry. Two of these inputs shall be programmable as inputs or outputs.
23. The VFD shall have two analog signal inputs. Inputs shall be programmable for either 0 -10V or 0/4-20 mA.
24. One programmable analog output shall be provided for indication of the drive status. This output shall be programmable for output speed, voltage, frequency, motor current and output power. The analog output signal shall be 0/4-20 mA.
25. The VFD shall provide two user programmable relays with 75 selectable functions. Two form 'C' 230VAC/2A rated dry contact relay outputs shall be provided.
26. Floating point control interface shall be provided to increase/decrease frequency in response to external switch closures.
27. The VFD shall accept a N.C. motor temperature over-temperature switch input, as well as possess the capability to accept a motor thermistor input.
28. The VFD shall store in memory the last 10 faults with time stamp and recorded data.
29. Run permissive circuit shall be provided to accept a "system ready" signal to ensure that the VFD does not start until isolation valves, seal water pumps or other types of auxiliary equipment are in the proper state for VFD operation. The run permissive circuit shall also be capable of sending an output signal as a start command to actuate external equipment before allowing the VFD to start.
30. The VFD shall be equipped with a standard RS-485 serial communications port and front-of-drive accessible USB port. Danfoss FC or ModBus RTU communications shall be integrally mounted.
31. A Windows® compatible software program to display all monitoring, fault, alarm, and status signals shall be available. This software program shall allow parameter changes, storage of all VFD operating and setup parameters, and remote operation of the VFD.

G. Adjustments:

1. The VFD shall have an adjustable output switching frequency.
2. Four complete programming parameter setups shall be provided, which can be locally selected through the keypad or remotely selected via digital input(s), allowing the VFD to be programmed for up to four alternate control scenarios without requiring parameter changes.
3. In each programming set up, independent acceleration and deceleration ramps shall be provided. Acceleration and deceleration time shall be adjustable over the range from 0 to 3,600 seconds to base speed.
4. The VFD shall have four programmable “Bypass frequencies” with adjustable bandwidths to prevent the driven equipment from running at a mechanically resonant frequency. The feature shall offer a Semi-Automatic program to simplify the set-up.
5. VFD shall include an automatic acceleration and deceleration ramp-time function to prevent nuisance tripping and simplify start-up.
6. In each programming setup, independent current limit settings, programmable between 50% and 110% of the drives output current rating, shall be provided.
7. PID parameter settings shall be adjustable while the VFD is operating, to aid in tuning the control loop at start up. The VFD will also be capable of simultaneously displaying set-point reference and feedback values with appropriate engineering units, as well as output frequency, output current, and run status while programming the PID function.
8. The VFD will include a “loss of follower” function to detect the loss of process feedback or reference signals with a live-zero value and a user-selectable choice of responses (go to set speed, min speed, max speed, stop, stop, and trip).
9. An integral motor alternation function shall be provided to enable the output of the drive to alternate between two motors. The alternation interval shall be user-programmable in hours. This function shall operate external relays as required to control the motor alternation sequence. A dwell time shall be integral to the function and can prevent damage to the motor contactors.
10. The VFD will include a user-selectable Reset function, which enables the selection of between zero and twenty restart attempts after any self-clearing fault condition (under-voltage, over-voltage, current limit, inverter overload, and motor overload), or the selection of an infinite number of restart attempts. The time between restart attempts shall be adjustable from 0 through 600 seconds.
11. An automatic “on-delay” function may be selected from 0 to 120 seconds.
12. The VFD will include a user-selectable Auto-Restart function that enables the VFD to power up in a running condition after a power loss, to prevent the need to manually reset and restart the VFD.
13. VFD shall catch a rotating motor operating either in forward or reverse at up to full speed.

H. Service Conditions:

1. The ambient operating temperature of the VFD shall be -10°C to 50°C (14 to 122°F), with a 24-hour average not to exceed 45°C. Storage temperatures shall be -13° F (-25° C) to 149/158° F (65/70° C).

2. 0 to 95% relative humidity, non-condensing.
3. Elevation to 3,300 feet (1000 meters) without derating.
4. VFD's shall be rated for line voltage of 525 to 690VAC, 380 to 480VAC, or 200 to 240VAC; with +10% to -10% variations. Line frequency variation of $\pm 2\%$ shall be acceptable.
5. No side clearance shall be required for cooling of the units.

I. Submittals:

1. Submit manufacturer's performance data including dimensional drawings, power circuit diagrams, installation and maintenance manuals, warranty description, VFD's FLA rating, certification agency file numbers, catalog information and catalog cut-sheets for all major components.
2. All drawings shall be in an 8.5 X 11" reproducible format, and incorporate the manufacturer's title block on the drawing.
3. This specification lists the minimum VFD performance requirements for this project. Each supplier shall list any exceptions to the specification. If no departures from the specification are identified, the supplier shall be bound by the specification.
4. Copies of all submittals shall be provided as indicated in Section 13.1.05.
5. Submit a computer-generated Harmonic Distortion Analysis for the jobsite location.

J. Quality Assurance:

1. The manufacturer shall be both ISO-9001 and ISO-14001 certified.
2. All products shall be CE marked; UL labeled, and meet the requirements of UL-508C and maintain ULc.
3. To ensure quality and minimize infant-mortality failures on the jobsite, each VFD shall be completely tested by the manufacturer. The VFD shall operate a dynamometer at full load and speed under elevated temperature conditions.
4. All optional features shall be functionally tested at the factory for proper operation.
5. Factory test documentation shall be available upon request.

K. Examination:

1. Contractor to verify that job site conditions for installation meet factory recommended and code-required conditions for VFD installation prior to start-up, including clearance spacing, temperature, contamination, dust, and moisture of the environment. Separate EMT conduit installation of the motor wiring, power wiring, and control wiring, and installation per the manufacturer's recommendations shall be verified.
2. The VFD is to be covered and protected from installation dust and contamination until the environment is cleaned and ready for operation. The VFD shall not be operated while the unit is covered.

L. Start-up and Warranty

1. A factory-authorized service technician shall perform start-up on each drive. ("Startup" shall not include installation or termination of either power or control wiring.) The service technician shall perform start-up on up to 8 drives per day. Start-up costs provided with the bid shall include time and travel for the estimated number of visits required, but shall not be less than at least one half-day with travel. Additional labor or return trips to the site shall be billed at manufactures published straight-time rates. Upon completion, a startup service report shall be provided.

2. A 6-year On-site factory warranty shall be provided such that the owner is not responsible for any warranty costs including travel, labor, parts, or other costs for a full 6 years from the date of manufacture of the Drive. Special one-off and depot warranty is not allowed. Warranty shall cover line anomalies including electrical issues, load anomalies, accidental exposure to elements or other acts of nature. The cost of the warranty shall be included in the bid along with documentation of the warranty program.

M. In harsh environments the lifetime of electronic equipment is reduced due to the corrosiveness of the atmospheric environment. To increase the lifetime of the PCB's, we have elected to utilize conformal coated according to IEC 61721-3-3. There are not many US standards available on the levels of conformal coating so we choose to comply with the more difficult IEC standards from the European Union.

- *Class 3C1*: Applies to rural and urban areas with low industrial activities and moderate traffic. Be aware of that salt mist may be present in sheltered locations of coastal areas
- *Class 3C2*: Applies to locations with normal levels of contaminants, experienced in urban areas with industrial activities scattered over the whole area, or with heavy traffic.
- *Class 3C3*: Applies to locations in the immediate neighborhood of industrial sources with chemical emissions.

END OF SPECIFICATIONS

**IFB 23-058 VFD & SOFT STARTER REPLACEMENT
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 23-058 VFD & SOFT STARTER REPLACEMENT
BID SHEET**

2 ea Variable Frequency Drives (VFD's) Danfoss Unit Cost \$ _____ Extended Cost \$ _____

Manufacturer & Model of VFD: _____

2 ea Danfoss Soft Starters Unit Cost \$ _____ Extended Cost \$ _____

Manufacturer & Model of Soft Starter: _____

Grand Total \$ _____

Delivery (ARO): _____ **Payment Terms** _____
(After receipt of order)

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** _____