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JEFFERSON COUNTY DEPARTMENT OF HEALTH
401 14TH STREET SOUTH, BIRMINGHAM, ALABAMA 35233
205-930-1032/ 205-930-1060 fax

Hazel Collins
Purchasing Agent

March 14, 2019
BID #19-03-13
INVITATION TO BID

Sealed bids for **COOLING TOWERS FOR GUY M. TATE (GMT) BUILDING** will be received by the Purchasing Agent, Jefferson County Department of Health, General Service Annex, 401 14th Street South, Birmingham, AL 35233, until 10:00 a.m., Thursday, April 4, 2019, at which time and place they will be publicly opened and read.

Bidders wishing to bid can download the complete solicitation including the specifications and bid forms via the internet at www.jcdh.org (go to the **ABOUT** header and click on **BIDS**), or by visiting the Purchasing Office at the address shown above, or by calling (205) 930-1961, fax (205) 930-1060 and requesting a copy be mailed to you. Any addenda will be available on the internet. Bidder is responsible for checking for addenda until bid opening date. Addenda will be mailed only to those vendors who were provided a copy in person or by mail.

All bids must be submitted on Bid Form in a sealed envelope indicating **“SEALED BID – Bid #19-03-13 Cooling Towers for GMT Building”** with opening date and bid number printed on outside of envelope.

All bidders **must** complete and return the notarized State of Alabama disclosure form included in the bid package and the Addendum to Bid Agreement Contract; and **must** provide their E-verify number and a copy of their E-verify certificate and all other documents listed in the enclosure.

It is required for any contract/purchase exceeding \$10,000.00 that the bidder submits with their bid either certified check, a cashier’s check or a bid bond payable to the Jefferson County Department of Health in the amount of \$500.00. In order for any bid award to be considered that exceeds \$10,000, it must be accompanied by an acceptable bid bond or check. Bid bonds will be returned to all unsuccessful bidders after the formal award is made and to the successful bidder after acceptance of the award. Should the successful bidder fail to accept the award, the bid bond or check shall be forfeited.

No bid may be withdrawn for a period of sixty (60) days after the date of the bid opening. Jefferson County Department of Health is exempt from all tax. This statement in no way is to be construed as relieving a seller or contractor from paying any tax assessed to him as a seller or contractor.

Jefferson County Department of Health (JCDH) expressly reserves the right to reject any or all bids, or parts of bids and to make the award all or none or per line item on the merit and/or feature of method and quality, delivery, and service availability as the best interest of the Jefferson County Department of Health appears.

Jefferson County Department of Health reserves the right to require documentation that each bidder is an established business and is abiding by the ordinances, regulations, and laws of their community and the State of Alabama. If you are required by any regulatory agency to maintain professional license or certification to provide any product and/or service solicited under this Invitation To Bid (ITB), the JCDH reserves the right to require documentation of current license and/or certification before considering and awarding the bid.

COMMUNICATION DURING BID EVALUATION

There shall be no communication during the evaluation period between any vendor and JCDH agency requisitioning the good or service to be procured. Any communications, written, oral, or electronic between the vendor and the requisition agency must come through the Division of Purchasing Buyer administering the ITB.

QUESTION/INQUIRY

Telephone inquiries with questions regarding clarification of all specifications of the ITB will not be accepted. All questions concerning the bid product and/or service specifications must be e-mailed to Glenda Smith at glenda.smith@jcdh.org. Please reference the ITB number and Question/Inquiry in the e-mail subject.

LETTER OF NOTIFICATION

All bidders of this ITB are request to reply via email to Notification of Intent indicating that they intend to submit a proposal. Only those bidders submitting the Notification of Intent will be advised of any clarifications, addendum, and answers to inquiries and/or questions pertaining to this ITB. The email of Notification of Intent can be emailed to glenda.smith@jcdh.org. Please reference the ITB number and Notification of Intent in the e-mail subject.

SITE-VISIT

All potential bidders may attend the site visit to enhance the bidder's knowledge of a thorough understanding of the scope of work to be performed. **Contact Trent Hammons, Chief of Building Maintenance (205) 930-1033** to schedule the site visit only. Bidder will be responsible to thoroughly examine the site and to familiarize themselves with the existing conditions. By submitting, bidder agrees that it has examined the site, specifications, plans and contract and accepts without recourse, all site conditions.

Hazel Collins, Purchasing Agent

HC/gs

BN: 03-20-19

Enclosures

SPECIFICATIONS

GENERAL

The Jefferson County Department of Health (JCDH) is to establish a professional service contract with firm pricing for the purchase and replacement of the **Cooling Towers for GMT Building**. To include, but not limited to; cooling towers, condenser water pumps, primary chilled water and associated variable frequency drives, modifications to the building automation system, associated demolition, electrical work, piping, etc. The successful bidder will be working with Midsouth on the implementation and support of the control(s) portion of the said project. Midsouth has the current contract for maintenance and support of the existing cooling towers. Successful bidder will be notified of bid award via Jefferson County Department of Health's Notice of Award letter and the approved Standard Addendum to Bid Agreement Contract.

GUARANTEE

Bidder certifies by bidding that he is fully aware of the conditions of service and purpose for which item(s) included in this bid are to be purchased, and that their offering will meet these requirements of service and purpose to the satisfaction of the Jefferson County Department of Health and its Agent.

INCURRING COSTS

The Jefferson County Department of Health will not be liable for any costs incurred in preparing bid responses.

TERMS

The bid will be effective from **April 15, 2019 until March 16, 2020**.

TERMINATION

The bid may be terminated by JCDH with a thirty (30) day written notice of cancelation to the other party regardless of reason. Any violation of this agreement shall constitute a breach and default of this agreement. Such termination shall not relieve the contractor of any liability to JCDH for damages sustained by virtue of a breach by the contractor.

PRICE

Price will remain firm for the entire duration of the bid period. Price is to include **all** related fees. Invoice(s) must be itemized.

FREIGHT

Price includes transportation, fuel, handling, service, freight charges and deliveries/pick-up as specified and JCDH will pay no additional fees.

PRE-PAY

No pre-payments will be made prior to shipment.

COMMUNICATION DURING BID EVALUATION

There shall be no communication during the evaluation period between any vendor and JCDH agency requisitioning the good or service to be procured. Any communications, written, oral, or electronic between the vendor and the requisition agency must come through the Division of Purchasing Buyer administering the ITB.

AWARD

Award will be made in whole to the lowest responsible bidder provided the vendor meets all requirements and specifications required by the JCDH.

ADDITIONS TO CONTRACT

The Jefferson County Department of Health has attempted to list the locations for the replacement of the “Cooling Towers for GMT Building” that will be required during the term of the contract. However, JCDH reserves the right to purchase additional and/or delete the locations as needed from the successful bidder.

WARRANTY

The successful bidder must provide JCDH with Standard Manufacturer’s Warranty to cover service, materials and workmanship.

LAWS

The contractor shall comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work including those of the Board of Fire Underwriters, and of Federal, State and local agencies having jurisdiction.

INSURANCE

Bidder shall furnish to the Board upon execution of this Agreement, a certificate of insurance as evidence of adequate professional and public liability insurance insuring vendor, the Board and Board’s agents, servants and employees as additional insured. The insurance required shall be written for not less than the following limits, or greater if required by law:

a) **Worker's Compensation**

State	Statutory	
Applicable Federal	Statutory	
Employer's Liability	\$1,000,000.00	Per Accident
	\$1,000,000.00	Policy Limit
	\$1,000,000.00	Aggregate
-		
<u>Bodily Injury</u>	\$1,000,000.00	Each Occurrence
	\$2,000,000.00	Aggregate
<u>Property Damage</u>	\$1,000,000.00	Each Occurrence
	\$2,000,000.00	Aggregate

a) Commercial General Liability on an ISO Occurrence Form or equivalent (including Bodily Injury; Property Damage; Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):

<u>Bodily Injury</u>	\$1,000,000.00	Each Occurrence
	\$1,000,000.00	Aggregate
<u>Property Damage</u>	\$1,000,000.00	Each Occurrence
	\$2,000,000.00	Aggregate

Additional named insured: Jefferson County Department of Health.
Broad Form Property Damage shall include Completed Operations.

b) Contractual Liability

<u>Bodily Injury</u>	\$1,000,000.00 \$2,000,000.00	Each Occurrence Aggregate
<u>Property Damage</u>	\$1,000,000.00 \$2,000,000.00	Each Occurrence Aggregate

c) Personal Injury, with Employment Exclusion deleted

	\$1,000,000.00 \$2,000,000.00	Each Occurrence Aggregate
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d) Business Auto Liability (including owned, non-owned and hired vehicles)

<u>Bodily Injury</u>	\$1,000,000.00	Each Occurrence
<u>Property Damage</u>	\$1,000,000.00	Each Occurrence

e) If the General Liability coverages are provided by a Commercial Liability policy, the:

General Aggregate shall not be less than \$2,000,000.00

Fire Liability Limit shall be not less than \$100,000.00 on any one fire.

Medical Expense Limit shall not be less than \$10,000.00 on any one person.

Furnish one copy of Certificates herein required for each copy of the Agreement, specifically set forth evidence of all coverage required. If this insurance is written on a Commercial General Liability policy form, ACORD forms 25S will be accepted. Furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.

UTILITIES

The Jefferson County Department of Health will provide contractor with all normal utilities such as electricity, lights, water, etc. necessary for performing this contract.

Bid proposals will be rejected if there is reason to believe that collusion exists among the bidders. No participants in such collusion will be considered in future proposals for the same work.

Bidder must have all necessary business licenses as required by the State of Alabama and Jefferson County. All items must conform strictly to the specifications and shall be subjected to evaluation upon acceptance. In the event that any item is deemed unacceptable or not in conformity with the specifications, items will be rejected and items of proper quality as set forth in these specifications shall be furnished in place thereof at the expense of the successful bidder.

LOCATION

Central Health Center/Guy M. Tate Building
1400 Sixth Avenue South
Birmingham, AL 35233

Failure to comply in accordance with the bid submitted, including promised delivery, will constitute sufficient grounds for cancelation of the order and contract at the option of JCDH.

Use of specific names and numbers is not intended to restrict the bidding of any seller and/or manufacturer, but is solely for the purpose of indicating the type, size and quality, material, service, or equipment considered best adapted to the JCDH's intended use.

No bidder shall be allowed to offer more than one price on each line item. If said bidder should submit more than one price per line item then ALL prices for that line item shall be rejected.

SPECIFICATIONS - SMALL TOWER

JCHD REPLACE NC2211, Marley NC Steel Cooling Tower or approve equal:

Options:

Stainless Steel Cold Water Basin
Extended Lube Line
Flow Control Valves
Basin Equalizers
Basin Heaters
Fan Cylinder Extension (1 foot)
Ladder and Guardrail
Ladder Extension
Ladder Safety Cage
Plenum Walkway
Vibration Switch

1.0 Base:

1.1 Provide an induced draft, crossflow type, factory assembled, film fill, industrial duty, galvanized steel cooling tower situated as shown on the plans. The limiting overall dimensions of the tower shall be 14.17 ft wide, 8.4 ft long, and 10.25 ft high. Total operating power of all fans shall not exceed 10 BHp, consisting of 1 @ 10 Hp motor(s). Tower shall be similar and equal in all respects to Marley Model NC8402NAN1.

1.2 The cooling tower shall be designed for quiet operation, and shall produce an overall level of sound not higher than 61 dB(A) measured at 5 ft from the location: Cased Face Sound levels shall be independently verified by a CTI-licensed sound test agency to ensure validity and reliability of the manufacturers published values. Measurement and analysis of the sound levels shall be conducted by a certified Professional Engineer in Acoustical Engineering. Sound pressure levels shall be measured and recorded in the acoustic near-field and far-field locations using ANSI S1.4 Type 1 precision instrumentation and in full conformance with CTI ATC-128 test code published by the Cooling Technology Institute (CTI). All low sound options shall be CTI certified for thermal performance.

2.0 Thermal Performance:

2.1 The tower shall be capable of cooling 600 gpm of water from 95 °F to 85 °F at a design entering air wet-bulb temperature of 78 °F, and its thermal rating shall be certified by the Cooling Technology Institute.

2.2 The tower shall be capable of a minimum 87.021 gpm/Hp efficiency per ASHRAE Standard 90.1.

3.0 Performance Warranty:

3.1 CTI Certification notwithstanding, the cooling tower manufacturer shall guarantee that the tower supplied will meet the specified performance conditions when the tower is installed according to plan.

If, because of a suspected thermal performance deficiency, the owner chooses to conduct an on-site thermal performance test under the supervision of a qualified, disinterested third party in accordance with CTI or ASME standards during the first year of operation; and if the tower fails to perform within the limits of test tolerance; then the cooling tower manufacturer will pay for the cost of the test and will make such corrections as are appropriate and agreeable to the owner to compensate for the performance deficiency.

4.0 Design Loading:

4.1 The tower structure, anchorage and all its components shall be designed by licensed professional engineers, employed by the manufacturer, per the International Building Code to withstand a wind load of 30 psf, as well as a .3g seismic load. The fan deck, hot-water basin covers and, where specified, maintenance platforms shall be designed for 60 psf live load or a 200 lb concentrated load. Guardrails, where specified, shall be capable of withstanding a 200 lb concentrated live load in any direction, and shall be designed in accordance with OSHA guidelines.

4.2 The tower shall be structurally capable of being supported at the four outer corners of the tower cell. Alternatively, the tower manufacturer shall provide supporting steel to adapt tower to be supported at four outer corners.

5.0 Construction:

5.1 Except where otherwise specified, all components of the cooling tower shall be fabricated of steel, protected against corrosion by G-235 galvanizing. The tower shall be capable of withstanding water having a pH of 6.5 to 8.0; a chloride content (NaCl) up to 300 ppm; a sulfate content (SO₄) up to 250 ppm; a calcium content (CaCO₃) up to 500 ppm; and silica (SiO₂) up to 150 ppm. The circulating water shall contain no oil, grease, fatty acids or organic solvents. Fiberglass casing, polyurethane barriers, and thermosetting hybrids and the components they are adhered to shall be considered non-recyclable and not allowed.

5.2 The specifications, as written, are intended to indicate those materials that will be capable of withstanding the above water quality in continuing service, as well as the loads described in paragraph 4.1. They are to be regarded as minimum requirements. Where component materials peculiar to individual tower designs are not specified, the manufacturers shall take the above water quality and load carrying capabilities into account in the selection of their materials of manufacture.

6.0 Mechanical Equipment:

6.1 Fan(s) shall be propeller-type, incorporating aluminum alloy blades attached to galvanized hubs with U-bolts. Blades shall be individually adjustable. Maximum fan tip speed shall be 13,000 ft/min. Fan(s) shall be driven through a right angle, industrial duty, oil lubricated, geared speed reducer that requires no oil changes for the first five (5) years of operation. All gearbox bearings shall be rated at an L10A service life of 100,000 hours or greater and the gear sets shall have AGMA Quality Class of 9 or greater. The gearbox shall include any modifications to enable operation down to 10% of full speed. An external oil level dipstick shall be located adjacent to the motor at the fan deck surface and shall be accessible from a portable maintenance ladder.

6.2 Single-speed motor(s) shall be 10 Hp maximum, NEMA Premium Efficiency, TEFC, 1.15 service factor, inverter duty, variable torque, and specially insulated for cooling tower duty (Class F). Speed and electrical characteristics shall be 1800 rpm, single-winding, 3-phase, 60 Hz, ____ volts. Motor shall operate in the shaft-horizontal position for geardrive towers and shaft-down position for belt drive towers. Nameplate horsepower shall not be exceeded at design operation.

6.3 The motor to gearbox close coupling shall be a tire-type, single piece, flexible element design to accommodate frequent speed changes that are inherent with VFD applications.

6.4 The complete mechanical equipment assembly for each cell shall be supported by two horizontal steel beams that resist misalignment between the motor and the gear reducer/belt drive system. The mechanical equipment assembly shall be warranted against any failure caused by defects in materials and workmanship for no less than five (5) years following the date of tower shipment. This warranty shall cover the fan, speed reducer, drive shaft and couplings, and the mechanical equipment support. The electric motor shall carry a manufacturer's warranty of at least one year. A vibration limit switch in a NEMA 4X housing shall be installed on the mechanical equipment support and wired to the shutdown circuit of the fan motor starter or VFD. The purpose of this switch will be to interrupt control power voltage to a safety circuit in the event of excessive vibration causing the starter or VFD equipment to de-energize the motor. It shall be adjustable for sensitivity, and include a means to reset the switch.

7.0 Fill, Louvers and Drift Eliminators:

7.1 Fill shall be film type, thermoformed of PVC, with louvers and eliminators formed as part of each fill sheet. Fill shall be suspended from hot dip galvanized structural tubing supported from the tower structure, and shall be elevated above the floor of the cold-water basin to facilitate cleaning. Air inlet faces of the tower shall be free of water splash out.

7.2 Drift eliminators shall be PVC, triple-pass, and shall limit drift losses to 0.005% or less of the design water flow rate.

8.0 Hot Water Distribution System:

8.1 Two open galvanized steel basins (one above each bank of fill) shall receive hot water piped to each cell of the tower. These basin components shall be installed and sealed at the factory and assembled with bolted connections. Tap screws shall not be allowed due to their potential to develop leaks. The basins shall be equipped with removable, galvanized steel covers capable of withstanding the loads described in paragraph 4.1. The water distribution system shall be accessible and maintainable during tower fan and water operation. Heavy-duty flow-regulator valves shall be provided at the hot-water inlet connections. These valves shall be disc-type, with cast iron bodies and stainless steel operating stems. There shall be a locking handle to maintain the valve setting in any position. Valves shall be right-angle configuration, precluding the need for inlet elbows.

8.3 The water distribution system shall be accessible and maintainable while tower is operating.

9.0 Casing, Fan Deck and Fan Cylinder:

9.1 The casing and fan deck shall be galvanized steel, and shall be capable of withstanding the loads described in paragraph 4.1. The top of the fan opening shall be equipped with a conical, non-sagging, removable fan guard, fabricated of welded 5/16" and 7 gauge rods, and hot dip galvanized after fabrication. Fan cylinder extensions shall be provided to elevate the fan discharge to a height of ft above the fan deck level. Fan cylinders 5'-0" in height and over shall not be required to have a fan guard.

10.0 Access:

10.1 A large galvanized, rectangular access door shall be located on both cased faces for entry into the cold-water basin. Doors shall provide convenient access to the fan plenum area to facilitate inspection and allow maintenance to the fan drive system. The access doors shall be at least 30" wide by 33" high.

10.2 A large stainless steel, rectangular access door shall be located on both cased faces for entry into the cold-water basin. Doors shall provide convenient access to the fan plenum area to facilitate inspection and allow maintenance to the fan drive system. The access doors shall be at least 30" wide by 33" high. The top of the tower shall be equipped with a guardrail complete with kneerail and toeboard, designed according to OSHA guidelines and factory welded into subassemblies for ease of field installation. Posts, toprails and kneerails shall be 1.5" square tubing. The guardrail assembly shall be hot dipped galvanized after welding and capable of withstanding a 200 pound concentrated live load in any direction. Posts shall be spaced on centers of 8'-0" or less. A 1'-6" wide aluminum ladder with 3" I-beam side rails and 1.25" diameter rungs shall be permanently attached to the endwall casing of the tower, rising from the base of the tower to the top of the guardrail. Provide a ladder extension for connection to the foot of the ladder attached to the tower casing. This extension shall be long enough to rise from the roof (grade) level to the base of the tower.

10.3 The installing contractor shall be responsible for cutting the ladder to length; attaching it to the foot of the tower ladder; and anchoring it at its base. A heavy gauge aluminum safety cage, welded into subassemblies for ease of field installation, shall surround the ladder, extending from a point approximately 7'-0" above the foot of the ladder to the top of the guardrail. Maximum weight of welded subassemblies shall not exceed 20 lb for ease of installation. Provide a factory-installed, walkway extending from one cased-face access door to the other cased face. A steel framework shall support the walkway and the top of the walkway shall be at or above the cold-water basin overflow level. The walkway and framework to be equivalent material as the tower basin and have a minimum width of 36."

11.0 Cold Water Collection Basin:

11.1 The collection basin shall be welded 301L stainless steel construction. Only low-carbon stainless steel alloys will be accepted in order to minimize the risk of intergranular corrosion in the weld zones. The basin shall include the number and type of suction connections required to accommodate the outflow piping system shown on the plans. Suction connections shall be equipped with stainless steel debris screens. A factory-installed, float-operated, mechanical make-up valve shall be included. An overflow and drain connection shall be provided in each cell of the cooling tower. The basin floor shall slope toward the drain to allow complete flush out of debris and silt that may accumulate. Towers of more than one cell shall include a method for flow and equalization between cells. The basin shall be

accessible and maintainable while water is circulating. All steel items that project into the basin shall also be made of stainless steel. A hole and bolt circle shall be provided in the depressed section of the basin for equalizer piping between cells. A full-face, .25" thick, 50 durometer gasket shall be provided at each equalizer location.

11.2 Provide a system of electric immersion heaters and controls for each cell of the tower to prevent freezing of water in the collection basin during periods of shutdown. The system shall consist of one or more stainless steel electric immersion heaters installed in threaded couplings provided in the side of the basin. A NEMA 4 control panel and associated temperature probe shall include circuitry to monitor cold water temperature and low water level, providing ON OFF thermostatic like control. The temperature probe shall be located in the cold-water basin.

TOWER MODEL	PERFORMANCE CONDITIONS	MOTOR DATA	TOWER DIMENSIONS	WEIGHTS
Quantity of (1) Marley NC Class model NC8402NAN factory assembled 1- Cell crossflow cooling tower	Per 1-cell tower: 600 gpm 95.0 °F Hot Water 85.0 °F Cold Water 78.0 °F Entering WB	NEMA10HP 1speed/ 1 wind 3 phase / 60 Hz / 230/460v 1.15sf / TEFC 1800 RPM Premium Efficiency Inverter duty nameplated	Each cell: (without options) Length Width Height Per 1-cell tower: (with options) Length Width Height 11' - 7 3/8" 14' - 2" 13' - 4 5/8" 8' - 4 3/4" 14' - 2" 10' - 3"	Per cell: Shipping: Operating: Per 1-cell tower: Shipping: Operating: 5,565 lb 10,996 lb 5,565 lb 10,996 lb

SPECIFICATIONS - LARGE TOWER

JCHD REPLACE MODEL NC5201, Marley NC Steel Cooling Tower or approve equal:

Options:

Stainless Steel Cold Water Basin
Extended Lube Line
Flow Control Valves
Basin Equalizers
Basin Heaters
Fan Cylinder Extension (1 foot)
Ladder and Guardrail
Ladder Extension
Ladder Safety Cage
Plenum Walkway
Vibration Switch

1.0 Base:

1.1 Provide an induced draft, crossflow type, factory assembled, film fill, industrial duty, galvanized steel cooling tower situated as shown on the plans. The limiting overall dimensions of the tower shall be 19.92 ft wide, 9.9 ft long, and 11.98 ft high. Total operating power of all fans shall not exceed 15 BHp, consisting of 1 @ 15 Hp motor(s). Tower shall be similar and equal in all respects to Marley Model NC8405PAN1.

1.2 The cooling tower shall be designed for quiet operation, and shall produce an overall level of sound not higher than 67 dB(A) measured at 5.00 ft from the location: Cased face Sound levels shall be independently verified by a CTI-licensed sound test agency to ensure validity and reliability of the manufacturers published values. Measurement and analysis of the sound levels shall be conducted by a certified Professional Engineer in Acoustical Engineering. Sound pressure levels shall be measured and recorded in the acoustic near-field and far-field locations using ANSI S1.4 Type 1 precision instrumentation and in full conformance with CTI ATC-128 test code published by the Cooling Technology Institute (CTI). All low sound options shall be CTI certified for thermal performance.

2.0 Thermal Performance:

2.1 The tower shall be capable of cooling 1200 gpm of water from 95 °F to 85 °F at a design entering air wet-bulb temperature of 78 °F, and its thermal rating shall be certified by the Cooling Technology Institute.

2.2 The tower shall be capable of a minimum 98.833 gpm/Hp efficiency per ASHRAE Standard 90.1.

3.0 Performance Warranty:

3.1 CTI Certification notwithstanding, the cooling tower manufacturer shall guarantee that the tower supplied will meet the specified performance conditions when the tower is installed according to plan.

If, because of a suspected thermal performance deficiency, the owner chooses to conduct an on-site thermal performance test under the supervision of a qualified, disinterested third party in accordance with CTI or ASME standards during the first year of operation; and if the tower fails to perform within the limits of test tolerance; then the cooling tower manufacturer will pay for the cost of the test and will make such corrections as are appropriate and agreeable to the owner to compensate for the performance deficiency.

4.0 Design Loading:

4.1 The tower structure, anchorage and all its components shall be designed by licensed professional engineers, employed by the manufacturer, per the International Building Code to withstand a wind load of 30 psf, as well as a .3g seismic load. The fan deck, hot-water basin covers and, where specified, maintenance platforms shall be designed for 60 psf live load or a 200 lb concentrated load. Guardrails, where specified, shall be capable of withstanding a 200 lb concentrated live load in any direction, and shall be designed in accordance with OSHA guidelines.

4.2 The tower shall be structurally capable of being supported at the four outer corners of the tower cell. Alternatively, the tower manufacturer shall provide supporting steel to adapt tower to be supported at four outer corners.

5.0 Construction:

5.1 Except where otherwise specified, all components of the cooling tower shall be fabricated of steel, protected against corrosion by G-235 galvanizing. The tower shall be capable of withstanding water having a pH of 6.5 to 8.0; a chloride content (NaCl) up to 300 ppm; a sulfate content (SO₄) up to 250 ppm; a calcium content (CaCO₃) up to 500 ppm; and silica (SiO₂) up to 150 ppm. The circulating water shall contain no oil, grease, fatty acids or organic solvents. Fiberglass casing, polyurethane barriers, and thermosetting hybrids and the components they are adhered to shall be considered non-recyclable and not allowed.

5.2 The specifications, as written, are intended to indicate those materials that will be capable of withstanding the above water quality in continuing service, as well as the loads described in paragraph 4.1. They are to be regarded as minimum requirements. Where component materials peculiar to individual tower designs are not specified, the manufacturers shall take the above water quality and load carrying capabilities into account in the selection of their materials of manufacture.

6.0 Mechanical Equipment:

6.1 Fan(s) shall be propeller-type, incorporating aluminum alloy blades attached to galvanized hubs with U-bolts. Blades shall be individually adjustable. Maximum fan tip speed shall be 13,000 ft/min. Fan(s) shall be driven through a right angle, industrial duty, oil lubricated, geared speed reducer that requires no oil changes for the first five (5) years of operation. All gearbox bearings shall be rated at an L10A service life of 100,000 hours or greater and the gear sets shall have AGMA Quality Class of 9 or greater. The gearbox shall include any modifications to enable operation down to 10% of full speed. An external oil level dipstick shall be located adjacent to the motor at the fan deck surface and shall be accessible from a portable maintenance ladder.

6.2 Single-speed motor(s) shall be 15 Hp maximum, NEMA Premium Efficiency, TEFC, 1.15 service factor, inverter duty, variable torque, and specially insulated for cooling tower duty (Class F). Speed and electrical characteristics shall be 1800 rpm, single-winding, 3-phase, 60 Hz. Motor shall operate in the shaft-horizontal position for gear drive towers and shaft-down position for belt drive towers. Nameplate horsepower shall not be exceeded at design operation.

6.3 The motor to gearbox close coupling shall be a tire-type, single piece, flexible element design to accommodate frequent speed changes that are inherent with VFD applications.

6.4 The complete mechanical equipment assembly for each cell shall be supported by two horizontal steel beams that resist misalignment between the motor and the gear reducer/belt drive system. The mechanical equipment assembly shall be warranted against any failure caused by defects in materials and workmanship for no less than five (5) years following the date of tower shipment. This warranty shall cover the fan, speed reducer, drive shaft and couplings, and the mechanical equipment support. The electric motor shall carry a manufacturer's warranty of at least one year. A vibration limit switch in a NEMA 4X housing shall be installed on the mechanical equipment support and wired to the shutdown circuit of the fan motor starter or VFD. The purpose of this switch will be to interrupt control power voltage to a safety circuit in the event of excessive vibration causing the starter or VFD equipment to de-energize the motor. It shall be adjustable for sensitivity, and include a means to reset the switch.

7.0 Fill, Louvers and Drift Eliminators:

7.1 Fill shall be film type, thermoformed of PVC, with louvers and eliminators formed as part of each fill sheet. Fill shall be suspended from hot dip galvanized structural tubing supported from the tower structure, and shall be elevated above the floor of the cold-water basin to facilitate cleaning. Air inlet faces of the tower shall be free of water splash out.

7.2 Drift eliminators shall be PVC, triple-pass, and shall limit drift losses to 0.005% or less of the design water flow rate.

8.0 Hot Water Distribution System:

8.1 Two open galvanized steel basins (one above each bank of fill) shall receive hot water piped to each cell of the tower. These basin components shall be installed and sealed at the factory and assembled with bolted connections. Tap screws shall not be allowed due to their potential to develop leaks. The basins shall be equipped with removable, galvanized steel covers capable of withstanding the loads described in paragraph 4.1. The water distribution system shall be accessible and maintainable during tower fan and water operation. Heavy-duty flow-regulator valves shall be provided at the hot-water inlet connections. These valves shall be disc-type, with cast iron bodies and stainless steel operating stems. There shall be a locking handle to maintain the valve setting in any position. Valves shall be right-angle configuration, precluding the need for inlet elbows.

8.2 The water distribution system shall be accessible and maintainable while tower is operating.

9.0 Casing, Fan Deck and Fan Cylinder:

9.1 The casing and fan deck shall be galvanized steel, and shall be capable of withstanding the loads described in paragraph 4.1. The top of the fan opening shall be equipped with a conical, non-sagging, removable fan guard, fabricated of welded 5/16" and 7 gauge rods, and hot dip galvanized after fabrication. Fan cylinder extensions shall be provided to elevate the fan discharge to a height above the fan deck level. Fan cylinders 5'-0" in height and over shall not be required to have a fan guard.

10.0 Access:

10.1 A large galvanized, rectangular access door shall be located on both cased faces for entry into the cold-water basin. Doors shall provide convenient access to the fan plenum area to facilitate inspection and allow maintenance to the fan drive system. The access doors shall be at least 30" wide by 48" high.

10.2 A large stainless steel, rectangular access door shall be located on both cased faces for entry into the cold-water basin. Doors shall provide convenient access to the fan plenum area to facilitate inspection and allow maintenance to the fan drive system. The access doors shall be at least 30" wide by 48" high. The top of the tower shall be equipped with a guardrail complete with kneerail and toeboard, designed according to OSHA guidelines and factory welded into subassemblies for ease of field installation. Posts, toprails and kneerails shall be 1.5" square tubing. The guardrail assembly shall be hot dipped galvanized after welding and capable of withstanding a 200 pound concentrated live load in any direction. Posts shall be spaced on centers of 8'-0" or less. A 1'-6" wide aluminum ladder with 3" I-beam side rails and 1.25" diameter rungs shall be permanently attached to the endwall casing of the tower, rising from the base of the tower to the top of the guardrail. Provide a ladder extension for connection to the foot of the ladder attached to the tower casing. This extension shall be long enough to rise from the roof (grade) level to the base of the tower. The installing contractor shall be responsible for cutting the ladder to length; attaching it to the foot of the tower ladder; and anchoring it at its base.

10.3 A heavy gauge aluminum safety cage, welded into subassemblies for ease of field installation, shall surround the ladder, extending from a point approximately 7'-0" above the foot of the ladder to the top of the guardrail. Maximum weight of welded subassemblies shall not exceed 20 lb for ease of installation. Provide a factory-installed, walkway extending from one cased-face access door to the other cased face. A steel framework shall support the walkway and the top of the walkway shall be at or above the cold-water basin overflow level. The walkway and framework to be equivalent material as the tower basin and have a minimum width of 36".

11.0 Cold Water Collection Basin:

11.1 The collection basin shall be welded 301L stainless steel construction. Only low-carbon stainless steel alloys will be accepted in order to minimize the risk of intergranular corrosion in the weld zones. The basin shall include the number and type of suction connections required to accommodate the outflow piping system shown on the plans. Suction connections shall be equipped with stainless steel debris screens. A factory-installed, float-operated, mechanical make-up valve shall be included. An overflow and drain connection shall be provided in each cell of the cooling tower. The basin floor shall slope toward the drain to allow complete flush out of debris and silt that may accumulate. Towers of more than one cell shall include a method for flow and equalization between cells. The basin shall be accessible and maintainable while water is circulating. All steel items that project into the basin shall

also be made of stainless steel. A hole and bolt circle shall be provided in the depressed section of the basin for equalizer piping between cells. A full-face, .25" thick, 50 durometer gasket shall be provided at each equalizer location.

11.2 Provide a system of electric immersion heaters and controls for each cell of the tower to prevent freezing of water in the collection basin during periods of shutdown. The system shall consist of one or more stainless steel electric immersion heaters installed in threaded couplings provided in the side of the basin. A NEMA 4 control panel and associated temperature probe shall include circuitry to monitor cold water temperature and low water level, providing ON OFF thermostatic like control. The temperature probe shall be located in the cold-water basin. The system shall be capable of maintaining 40°F water temperature at an ambient air temperature.

TOWER MODEL	PERFORMANCE CONDITIONS	MOTOR DATA	TOWER DIMENSIONS	WEIGHTS
Quantity of (1) Marley NC Class model NC8405PAN factory assembled 1-Cell crossflow cooling tower	Per 1-cell tower: 1,200 gpm 95.0 °F Hot Water 85.0 °F Cold Water 78.0 °F Entering WB	NEMA15HP 1speed/ 1 wind 3 phase / 60 Hz / 230/460v 1.15sf / TEFC 1800 RPM Premium Efficiency Inverter duty nameplated	Each cell: (without options) Length Width Height Per 1- cell tower: (with options) Length Width Height 13' - 1 3/8" 19' - 11" 15' - 0 7/8" 9' - 10 3/4" 19' - 11" 11' - 11 3/4"	Per cell: Shipping: Operating: Per 1-cell tower: Shipping: Operating: 9,013 lb 19,809 lb 9,013 lb 19,809 lb

REQUIREMENTS

The successful bidder meet certain requirements that will guarantee the Jefferson County Department of Health (JCDH) a successful properly replacement of the cooling towers.

- Bidder shall furnish and install new cooling towers of same brand and type as existing towers or approved equal.
- Bidder shall provide all materials and labor necessary to complete the project in a timely manner.
- Bidder towers foot print should be similar to existing; so that it would not extend into the driveway area.
- Bidder shall furnish and reconnect all piping valves as required for a fully operational system.
- Bidder shall co-ordinate with existing building controls contractor.
- Bidder shall include cost of controls.
- Bidder shall include cost of the current awarded controls contractor for implementation, support of the controls.
- Bidder to include all crane rigging and transportation fees.
- Bidder shall provide off-site disposal of existing towers
- Bidder's responsibility to determine if asbestos abatement is required and include in bid if necessary.
- Bidder to provide new heat trace tape and controls to all new piping to prevent freezing.
- Bidder to include new fiberglass insulation to all new piping. Any insulation located outdoors will require full metal jacket aluminum covering.
- Bidder to include all make-up water connections necessary to reconnect tower.
- Bidder must be capable of purchasing equipment "tax exempt" as the JCDH is a tax-exempt organization.
- Bidder must complete work that meets international, federal, state, local, and city codes.
- Bidder will work on the project on a continual basis from beginning until completion of the project.
- Bidder to provide workers compensation, per Alabama State Law, in the amount of 1 million dollars for each employee and subcontractor that will work on the property.
- Bidder to provide minimum of 1-million dollar general liability per occurrence, 2-million general aggregate insurance.
- Bidder to provide minimum 5-million dollar umbrella liability insurance.
- Bidder to provide minimum 1-million dollar umbrella liability insurance.
- Bidder to provide minimum 100,000.00 dollar "employee dishonesty" insurance
- Bidder to provide criminal background report of each employee that will work on the project Before work starts. An unfavorable report will disqualify employee from entering the property.

**BID FORM FOR BID #19-03-13
DUE: Thursday, April 4, 2019
TIME: 10:00 a.m.**

Hazel Collins
Purchasing Agent
Jefferson County Department of Health
General Services Annex Building
401 14th Street South
Birmingham, AL 35233

Submitted below is my firm bid for specified **Cooling Towers for GMT Building** in accordance with your ITB #19-03-13.

ITEM 1:

Replacement of SMALL Cooling Tower as specified or approved equal

1 EA @ \$ _____ TOTAL

ITEM 2:

Replacement of LARGE Cooling Tower as specified or approved equal

1 EA @ \$ _____ TOTAL

Attach letter stating detail price list and specification of offer.

Estimated time to complete implementation said project _____. (Completed by Vendor)

Complete and Return the original bid form(s) along with two (2) additional copies.

Name of Company _____

Please enclose your business card with your bid.

*Bidder acknowledges receipt of _____ addenda. This page must be returned with bid.
(addenda numbers)*

Date of Bid

Name (print legibly or type)

Company

Title

Street Address

Signature

City State Zip

Tax ID Number

Post Office Box (Zip if different from street address)

E-mail Address

Telephone Number

Fax Number

Terms of Payment

Delivery Date

Alabama Law (Section 41-4-116, Code of Alabama 1975) provides that every bid submitted and contract executed shall contain a certification that the vendor, contractor, and all of its affiliates that make sales for delivery into Alabama, or leases for use in Alabama, are registered, collecting, and remitting Alabama state and local sales, use, and/or lease tax on all taxable sales and leases into Alabama.

BY SUBMITTING THIS BID, THE BIDDER IS HEREBY CERTIFYING THAT THEY ARE IN FULL COMPLIANCE WITH ACT NO. 2006-557, THEY ARE NOT BARRED FROM BIDDING OR ENTERING INTO A CONTRACT PURSUANT TO 41-4-116, AND ACKNOWLEDGE THAT THE AWARDING AUTHORITY MAY DECLARE THE CONTRACT VOID IF THE CERTIFICATION IS FALSE.