

DOCUMENT 00491  
ADDENDUM NO. 1

DATE: August 6, 2010

PROJECT NAME: Mechanical Renovations  
Indianola Public Library, Indianola, Iowa

This Addendum forms a part of the bidding and contract documents. This Addendum supersedes and supplements all portions of the original bidding and contract documents dated July 20, 2010, with which it conflicts.

BID DATE: August 10, 2010 2:00 p.m.

ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE SPACE PROVIDED ON THE BID FORM.  
FAILURE TO DO SO MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

**CLARIFICATION: Bid date is August 10, 2010, 2:00 p.m. The Library Board meeting is August 10, 2010 at 5:30 p.m. The City Council will meet on August 16, 2010 for final approval of the bids.**

A. BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT – NO CHANGES

B. SPECIFICATIONS

1. Section 26 2923 – VARIABLE SPEED MOTOR CONTROLLERS
  - a) **ADD** Section 26 2923 in its entirety as attached.

B. DRAWINGS –

1. DRAWING SHEET M2.01 – MECHANICAL HVAC AND PIPING PLANS
  - a) **CHANGE** Mechanical Keynote 10 to read “Contractor shall provide new metal stud wall in areaway to split space into two separate areas. Wall height shall match existing areaway walls and shall be constructed as to allow removal in the future if access is needed to mechanical space through louver opening. Replace and secure areaway grating once construction is complete.”

D. APPROVED MANUFACTURERS

The following manufacturers are approved for this project, provided the materials and systems meet the requirements of these Contract Documents. This approval does not waive any requirements or conditions of the Contract Documents for any material, system or manufacturer.

<u>SECTION</u>	<u>ITEM</u>	<u>MANUFACTURER</u>
23 0516	Expansion Joints	Twin City Hose
23 0516	Pipe Loops	Twin City Hose
23 0516	Flexible Piping Connectors	Twin City Hose
23 0519	Thermometers	Trerice
23 0519	Pressure Gauges	Trerice
23 0900 1.2 A	Instrumentation & Control for HVAC	Automated Logic Corporation (ALC)
23 0900 1.2	DDC Control	Andover Controls
23 0900	Controls	Johnson Controls
23 0900 & “M” Dwgs	Temperature Control	Honeywell
23 2113	Suction Diffusers	Paco

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23 2113	Expansion Tanks	John Wood Company
23 2113	Air Separators	John Wood Company
23 2500	Glycol Feed System	General Treatment Products
23 3300 2.1	Vol Dampers	United Enertech
23 3300 2.1	Vol Dampers	Safe Air
23 3300-2.2	Fire Dampers	Pottorff
23 3300 2.2	Fire Dampers	United Enertech
23 3300 2.2	fire Dampers	Safe Air
23 3713-2.1	Diffusers, Registers, Grilles	Price Industries
23 3713	Diffusers, Registers, Grilles	Nailor Industries
23 3713	Diffusers, Registers, Grilles	Tuttle & Bailey
23 8126-2.1	Electric Duct Heaters	Markel
23 8146	Ground source Heat Pumps	Johnson Controls, Inc.
23 8148	Outdoor Air heat Pumps	Dectron, Inc.
23 8333-2.1	Electric Finned Tube Radiation	Markel
23 8333-1.2A	Electric Finned Tube Radiation	Raywall
Dwg M4.01	Electric Unit Heater	Outlet
Dwg M4.01	Electric Unit Heater	Berko
Dwg M4.01	Humidifiers	Neptronics
Dwg M4.01	Electric Duct Heaters	Neptronics
Dwg M4.01	Electric Fintube	Berko

Prepared by:

SHIVE-HATTERY, INC.



Douglas A. Sullivan, P.E.

Mechanical Engineer

END OF DOCUMENT 00491

SECTION 26 2923  
VARIABLE SPEED MOTOR CONTROLLERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Variable speed motor controllers.

1.2 REFERENCES

- A. Institute of Electrical and Electronic Engineers (IEEE).
- B. National Electrical Manufacturers Association (NEMA).
- C. Underwriters' Laboratories, Inc. (UL).

1.3 SYSTEM DESCRIPTION

- A. Variable speed controllers provide speed control of electric motors.
- B. This project shall include the furnishing and installation of the following variable speed motor controllers:

- 1. VFD-1 P-1 Geothermal Loop Pump 7.5 hp 208V/3
- 2. VFD-2 P-2 Geothermal Loop Pump 7.5 hp 208V/3

1.4 SUBMITTALS

- A. Submit the following information in accordance with Division 01:

- 1. Wiring diagrams.
- 2. Electrical ratings.
  - a. NEMA size.
  - b. Voltage.
  - c. Current.
  - d. Carrier frequency under normal conditions.
  - e. Drive derating guidelines.
- 3. Number of poles.
- 4. Coil voltage.
- 5. Physical characteristics including enclosure size.
- 6. Listing of settable parameters.
- 7. Warranty.

- B. Operation and Maintenance Manuals: Submit in accordance with Division 26.

- 1. Operations and maintenance manuals shall be forwarded two weeks before shipment of the equipment and copies shall be included with the equipment.

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2. The operation and maintenance manuals shall include installation and handling requirements, initial start-up tests and adjustments, maintenance requirements, troubleshooting procedures and renewal parts lists.

1.5 QUALIFICATIONS

- A. Variable speed motor controllers shall be as manufactured by ABB Corp., Allen-Bradley Co., General Electric, Graham Co., or Square D Co..
- B. Variable speed motor controllers shall be by the same manufacturer.
- C. Variable speed motor controllers shall be furnished with equipment, features, and functions as specified herein and as shown on the drawings. In addition, all controllers shall be furnished with any additional equipment required or recommended by the manufacturer to meet the requirements of these specifications such as input filters or power factor correction capacitors.
- D. Variable Speed motor controllers shall comply with IEEE Standard 519.

PART 2 PRODUCTS

2.1 REQUIREMENTS

- A. Motor rated voltage 208V, 3 phase.  
Door interlocked disconnect switch.
- B. NEMA 1 filtered ventilated enclosure.
- C. Input fused internally with standard or current limiting fuses.
- D. Three (3) contactor manual bypass circuitry for direct line motor operation with a door mounted inverter/line selector switch.
- E. Start, stop, and speed selection for control of motors.
- F. Frequency range of **6 to 60 Hertz**.
- G. Electronic overload relays on output for motor protection (down to approximately one-half motor base speed.)
- H. Short circuit protection, under/over voltage protection, and automatic restarting after a power outage.
- I. Resonance frequency null field adjustable to lock out any resonant speed.
- J. Transducer input for **4 to 20mA and 0 to 10 VDC** ungrounded signal.
- K. Adjustable offset voltages for increasing starting torque.
- L. Adjustable acceleration and deceleration control.

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- M. Adjustable maximum frequency and minimum frequency control.
- N. Power ON light.
- O. Manual-off-automatic selector switch, to select the speed control source, and a manual speed selection through the key pad.
- P. Liquid crystal display (LCD) speed indicator, volt meter, ammeter, and related drive parameters.
- Q. Digital operator keypad and display.
- R. Operating ambient temperature shall be 0°C to 40°C.

2.2 INVERTER TYPE

- A. Variable speed controllers shall be of the Insulated Gate Bi-Polar Transistor (IGBT) type using pulse width modulated technology shall be the basis of design.
- B. Controllers with an input power factor of less than 85% (0.85) at maximum rated speed and power output shall be corrected to 95% (0.95) minimum at maximum output.
- C. Select each variable speed motor controller to agree with the specific motor and motor application it is to control. Prior to submitting shop drawings, obtain information on the exact motor(s) to be supplied and shall select the controller(s) per the manufacturer's recommended procedure.
- D. Inverter carrier frequency shall be set at no higher than 6.0 KHZ to minimize induced bearing currents. The "silent" mode shall be disabled.
- E. Terminals of the proper size for wire as shown on the drawings for line, load and ground shall be supplied by the motor starter manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Controllers shall be mounted securely to walls, columns, or machine frames, and provided with brackets, mounting devices, structural pieces, and expansion type anchor inserts necessary for this purpose. Controllers shall not be mounted directly to metal surfaces or to concrete or masonry walls. Structural channels such as Kindorf or 3/4" plywood shall be used to mount starters at least 3/4 inch away from the mounting surface.
- B. Top of each controller shall be mounted 60 inches above the finished floor unless otherwise noted.
- C. Free-standing controllers shall be mounted on housekeeping pads. See Division 26 regarding equipment concrete pad.
- D. Variable speed motor controller and control system supplier shall provide factory and field labor for complete calibration testing, and adjustment of the adjustable frequency drives and control components, and be responsible for setting control set points, operating sequences, and alarming systems within the specified control systems to produce the overall system performance as specified.

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3.2 WARRANTY

- A. Manufacturer shall warrant equipment to be free from defects in materials and workmanship for the lesser of one (1) year from date of installation or eighteen (18) months from date of delivery.

END OF SECTION 26 2923