



# COLLIN COUNTY

Office of the Purchasing Agent  
2300 Bloomdale Road  
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McKinney, Texas 75071  
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COLLIN COUNTY, TEXAS

ADDENDUM No. Two (2)

IFB No. 2018-162

INVITATION FOR BID

FOR

CONSTRUCTION, COLLIN COUNTY JUSTICE CENTER, UPGRADE PNEUMATIC TO ELECTRONIC ACTUATORS

DATE: APRIL 19, 2018

NOTICE TO ALL PROSPECTIVE BIDDERS:

PLEASE MAKE THE FOLLOWING CHANGES TO THE INVITATION FOR BID:

ADD DOCUMENT: SECTION 01 25 00  
DELETE DOCUMENT: SECTION 23 09 00  
ADD DOCUMENT: REVISED SECTION 23 09 00  
DELETE DOCUMENT: SECTION 23 09 93  
ADD DOCUMENT: REVISED SECTION 23 09 93  
ADD ATTRIBUTE: #19-ADDENDUM 2 ACKNOWLEDGEMENT  
DELETE DOCUMENT: SECTION 004100-BID FORM ADDENDUM 1  
REPLACE WITH: SECTION 004100-BID FORM ADDENDUM 2

ALL OTHER TERMS AND CONDITIONS OF THE BID AND SPECIFICATIONS REMAIN THE SAME.

SINCERELY,  
MICHALYN RAINS, CPPO, CPPB  
PURCHASING AGENT

JDG

**SECTION 01 25 00 - PRODUCT SUBSTITUTION PROCEDURES**

PART 1 - GENERAL

1.1 PRODUCT PERFORMANCE/SUBSTITUTIONS

- A. Intention of these requirements is to establish equality of any proposed substitute product or method with standard product/method specified. When a product is specified by using a proprietary name or the particular manufacturer or vendor, specific item mentioned shall be understood as establishing type, function, dimension, appearance and quality desired. Other manufacturer's products are encouraged, provided sufficient information is submitted that allows Owner to determine products proposed are approved substitutes to those named.
- B. **Prior to Bid Date:** Owner will consider only written requests from prime bidders for acceptance, received at least ten (10) calendar days prior to bid date; requests received after that time will not be considered. When a product is accepted, bidders shall be notified of acceptable alternate within five (5) days prior to bid opening.
- C. **After Bid Date:** Requests for substitution will not be accepted after bid date unless:
1. Approved product or system is discontinued from Manufacturer.
  2. Owner requests substitution.
- D. Proposed Substitutions will not be considered if:
1. Any discrepancies in test data, or if tests or submittals are incomplete.
  2. Acceptance will require substantial revision of Contract Documents.
  3. Product in opinion of Owner does not meet standards or performance of product originally specified.

1.2 SUBMITTALS

- A. Submit three (3) copies of "Substitution Request Form", located at end of Section. Include three (3) copies of all requested information.

PART 2 - PRODUCTS – (Not Used)

PART 3 - EXECUTION – (Not Used)

END OF SECTION

**SUBSTITUTION  
REQUEST  
(During Bidding Phase)**

Project: \_\_\_\_\_ From: \_\_\_\_\_  
To: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_  
Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
Trade Name: \_\_\_\_\_ Model No: \_\_\_\_\_

Attached data includes product description, specifications, drawings, photographs and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Pay for changes to building design and special inspection costs caused by use of product.

Submitted by: \_\_\_\_\_  
Signed by: \_\_\_\_\_  
Firm: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_

Similar Installation:  
Project: \_\_\_\_\_ Architect: \_\_\_\_\_  
Address: \_\_\_\_\_ Owner: \_\_\_\_\_  
Date Installed: \_\_\_\_\_

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

**SUBSTITUTION  
REQUEST  
(Continued)**

**OWNER'S REVIEW AND ACTION**

- Substitution approved – Provide required submittals in accordance with Specifications.
- Substitution approved as noted – Provide required submittals in accordance with Specifications
- Substitution rejected – Use specified materials. Comments:

Signed by:

Date:

**SUBSTITUTION  
REQUEST  
(After the Bidding Phase)**

Project: \_\_\_\_\_ From: \_\_\_\_\_  
To: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_  
Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution \_\_\_\_\_  
Manufacturer \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
Trade Name: \_\_\_\_\_ Model No: \_\_\_\_\_  
Installer \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_

History:  New Product  2-5 years old  5-10 years old  More than 10 years old

Differences between proposed substitution and specified product: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Point-by-point comparative data attached – REQUIRED BY A/E

Reason for not providing specified item: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Project: \_\_\_\_\_ Architect: \_\_\_\_\_  
Address: \_\_\_\_\_ Owner: \_\_\_\_\_  
\_\_\_\_\_ Date Installed: \_\_\_\_\_

Proposed substitution affects other parts of Work:  No  Yes, explain \_\_\_\_\_  
\_\_\_\_\_

Savings to Owner for accepting substitution: \_\_\_\_\_ (\$ \_\_\_\_\_ )  
\_\_\_\_\_ )  
 No  Yes; [Add] [Deduct]

Proposed substitution changes Contract Time: \_\_\_\_\_ days

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

**SUBSTITUTION  
REQUEST  
(Continued)**

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: \_\_\_\_\_  
Signed by: \_\_\_\_\_  
Firm: \_\_\_\_\_  
Address: \_\_\_\_\_  
  
Telephone: \_\_\_\_\_  
Attachments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**OWNER'S REVIEW AND ACTION**

- Substitution approved – Provide required submittals in accordance with Specifications.
- Substitution approved as noted – Provide required submittals in accordance with Specifications.
- Substitution rejected – Use specified materials. Comments:

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

Additional Comments:  Contractor  Subcontractor  Supplier  Manufacturer  A/E  \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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**SECTION 23 09 00 - INSTRUMENTATION AND CONTROL FOR HVAC**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to the Work in this Section.

1.2 SUMMARY

- A. This Section includes control equipment for HVAC systems, components and other systems shown to be controlled by the existing ~~Barber Colman (Lon Works)~~ Building Automation System (BAS), including, but not limited to, revised computer software, controllers, transmission equipment, local panels, installation, engineering, supervision, commissioning, acceptance testing, training and warranty service necessary for a complete and working system, revising all of the pneumatic to electronic actuators, revising all of the pneumatic to electronic actuators.
- B. The Contractor shall furnish and install the controls including all necessary hardware and all revised operating and applications software necessary to perform the existing control sequences of operation as specified.
- C. All components of the system – local controllers, unitary controllers, etc. shall communicate using the ~~BACnet-LonWorks~~ protocol, as defined by the most current edition of ASHRAE Standard 135 and as specified herein or equal. Proprietary communications shall not be acceptable.
- D. The BAS contractor shall review and study all drawings and the entire specification to become familiar with the equipment and system operation and to verify the quantities and types of controllers and devices to be provided.
- E. All interlock, control and power wiring and installation of control devices associated with the equipment described in this specification, and maintain the existing sequence of operations, shall be provided under this Contract. All power wiring shall conform to the methods and materials described in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables".
- F. Provide services and manpower necessary for commissioning of the revised control system.
- G. All work performed under this section of the specifications will comply with all codes, laws and governing bodies. If the drawings and/or specifications are in conflict with governing codes, the Contractor shall submit a proposal with appropriate modifications to the project to meet code restrictions. If this specification and associated drawings exceed governing code requirements, the specification will govern. The Controls Contractor shall obtain and pay for all necessary construction permits and licenses associated with this scope of work.

1.3 QUALITY ASSURANCE

- A. Additions and revisions to existing Building Automation System (BAS) shall be manufactured, tested and installed in accordance with the following standards:
  - 1. National Electrical Manufacturers Association (NEMA).
  - 2. Underwriters Laboratories (UL).



3. ~~BACnet Testing Laboratories (BTL) LonWorks~~
  4. National Fire Protection Association (NFPA).
- B. Installer Qualifications: Automatic control system manufacturer's authorized representative who is trained and approved for installation of system components required for this Project.
- C. Upon completion of the installation, the Contractor shall thoroughly inspect, check, adjust, calibrate, and make ready for use all devices/sensors comprising the control system and certify that they are installed in accordance with "Record" Drawings.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Data Communications Protocol: Certify that each proposed Controls system component complies with ASHRAE Standard 135 for each protocol.
- F. Controls system component testing: Comply with ASHRAE 135.1 and all addenda for all controllers.
- G. All controllers used to control or monitor equipment and/or field devices shall be tested, compliant with and carry the mark of ~~the BACnet Testing Laboratories (BTL) LonWorks~~:
1. Building Controllers.
  2. Advanced Application Controllers.
  3. Application Specific Controllers.
- H. Quality Management Program
1. Designate a competent and experienced employee to provide BAS Project Management. The designated Project Manger shall be full time on this project and be empowered to make financial, technical, scheduling and related decisions on behalf of the BMS Contractor. At minimum, the Project Manager shall:
    - a. Serve as the point of contact for the Construction Team.
    - b. Manage the scheduling of the work to ensure that adequate materials, labor and other resources are available when needed.
    - c. Lead and be involved in the coordination efforts with other trades.
    - d. Be responsible for the work and actions of the BAS workforce on site.
- I. As evidence and assurance of the Contractor's ability to support the project's Commissioning efforts, the Contractor must have successfully completed three commissioned projects totaling at least the value of this contract, as a minimum.

#### 1.4 SUBMITTALS

- A. Provide submittals as required in Section 23 00 10, "Submittal Process".**
- B. Product Data: For all products listed in Part 2 below provide detailed manufacturer product data, technical literature indicating dimensions, finishes, material, weights, performance characteristics, electrical characteristics, capacities, loads, required clearances, method of field assembly, components, and location and size of each field connection. Include manufacturer's technical literature for each control device. Indicate finishes for materials, and installation and startup instructions for each type of product indicated.
1. Existing Control System Software: Include technical data for operating the revised system software and other third-party applications including all software licensing agreements.
  2. Revised Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data. Include schematic control diagram.

- C. Shop Drawings:
  - 1. Bill of materials of equipment indicating quantity, manufacturer, and model number.
  - 2. Schematic flow/control diagrams showing fans, pumps, coils, dampers, valves, and control devices.
  - 3. Wiring Diagrams: Power, signal, and control wiring.
  - 4. Conductor numbering or color code schedules.
  - 5. Details of control panel faces, including controls, instruments, and labeling.
  - 6. Schedule of identification labels for controllers and devices.
  - 7. Floor plans indicating control panel locations.
  - 8. Schedule of dampers including size, leakage, and airflow characteristics.
  - 9. Revised Control System Hardware:
    - a. Wiring diagrams for control units with termination numbers.
    - b. Schematic diagrams and floor plans for control hardware.
    - c. Schematic diagrams for control, communication, and power wiring.
  - 10. Revised Control System Software (as required): Graphics outline and "Print Page" examples of final product indicating monitored systems, data (connected and calculated) point addresses, output schedule, and operator notations.
  - 11. Controlled Systems:
    - a. Schematic diagrams of each controlled system with control points labeled and control elements graphically shown, with wiring.
    - b. Scaled drawings showing mounting, routing, and wiring of elements including bases and special construction.
    - c. Points list.
  - 12. Submit hard and soft copies in file format compatible with AutoCAD 2012.
- D. Data Communications Protocol Certificates: Certify that each proposed control system component complies with ASHRAE Standard 135 for each protocol.
- E. Software Update and Firmware Operational Documentation: Include the following:
  - 1. Revised Software operating and upgrade manuals.
  - 2. Program Software Backup required to reinstall and configure system in the event of a catastrophic failure: On CD, complete with data files.
- F. Field quality-control test report forms.
- G. Contract Closeout Documentation:
  - 1. Revisions to Operation and Maintenance Data: Include emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
    - a. Maintenance instructions and lists of spare parts for each type of control device.
    - b. Interconnection wiring diagrams with identified and numbered system components and devices.
    - c. Inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
    - d. Calibration records and list of set points.

**1.5 WARRANTY**

- A. Controls Contractor shall guarantee all system components and installations to be free from defects for one (1) year from the date of acceptance as determined by the Owner. Any defects found during this period shall be repaired and/or replaced at no cost to the Owner. The Controls Contractor shall provide maximum of 24-hour response time for trouble calls or maintenance.
- B. Controls Contractor shall provide all corrective software modifications or updates available from the software manufacturer during warranty service periods. All user documentation shall be updated on user and manufacturer backup software disks.

1.6 WORK BY OTHERS

- A. The installation of motor starters that are not factory installed, thermal overload switches, and power wiring to motors, starters, and thermal overload switches, is specified in another section. This section includes the furnishing and installing of all controls, devices, interlocks, and wiring to provide a complete operating system as outlined in the existing building sequence of operation.
- B. The following general work scope of Contractors requiring coordination by the Controls Contractor includes, but is not limited to:
  - 1. Electrical Contractor shall:
    - a. Provide dedicated 120VAC circuits in J-boxes throughout all building areas for control panel and terminal box control power.

PART 2 - PRODUCTS

2.1 ACTUATORS

- A. Electric Motors: Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
  - 1. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
  - 2. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.
- B. Electronic Actuators shall be of 0 10 VDC type. Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque. The minimum actuator impedance shall be 800 ohms even when more than one actuator is connected in parallel. Spring return shall be required for two-position (NO/NC) control sequence or for steam valve control. Non-spring return actuators shall be used for all modulating sequence of control. They shall conform to all requirements of sequence descriptions specified or scheduled. Main mechanical equipment actuators shall have a manual position dial to allow manual positioning of valve in absence of control power.
  - 1. Dampers: Size for running torque calculated as follows:
    - a. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
    - b. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.
    - c. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
    - d. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft. of damper.
    - e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
    - f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.
    - g. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
    - h. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.
  - 2. Coupling: V-bolt and V-shaped, toothed cradle.
  - 3. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
  - 4. Fail-Safe Operation: Mechanical, spring-return mechanism. Provide external, manual gear release on nonspring-return actuators.
  - 5. Power Requirements (Two-Position Spring Return): 24-Vac.
  - 6. Power Requirements (Modulating): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
  - 7. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal with damper position indicator indicating percent of travel.
  - 8. Temperature Rating: Minus 0 degrees to plus 122 deg F.
  - 9. Actuator Housing: Molded or die-cast zinc or aluminum.

10. Comply with NEMA designation.
11. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
  - a. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

C. Actuators for smoke dampers shall be 24V floating point, 0-10Vdc, modulating and their position shall be readable as open or closed via end switch at the OWS.

~~C-D.~~ Actuators shall be Belimo or pre-approved equal manufacturer.

## 2.2 CONTROL CABLE

- A. Electronic and fiber-optic cables for control wiring are specified in Division 27 Section "Communications Horizontal Cabling".

## PART 3 - EXECUTION

### 3.1 DELIVERY, STORAGE, AND HANDLING

- A. Factory-Mounted Components: Where control devices specified in this Section are indicated to be factory mounted on equipment in other Sections, arrange for shipping of control devices to equipment manufacturer. Upon delivery the equipment manufacturer shall inspect shipment for visual damages. The Controls Contractor shall replace any damaged control equipment at no cost to the Owner.
- B. Provide factory shipping containers for each piece of equipment. Provide factory applied plastic end caps on each length of pipe and tube. Maintain cartons and end caps through shipping, storage and handling as required to prevent equipment and pipe-end damage, and to eliminate dirt and moisture from equipment and inside of pipe and tube. Where possible store equipment and materials inside and protected from weather. When necessary, to store outside, elevate well above grade and enclose with durable water-proof wrapping.

### 3.2 EXAMINATION

- A. Verify that power supply is available to all controllers, and electric actuators.

### 3.3 COORDINATION

- A. Coordinate equipment with Division 28 Section "Fire Detection and Alarm" to achieve compatibility with equipment that interfaces with that system.
- B. Coordinate supply of conditioned electrical branch circuits for control units with Division 26 contractor. BAS contractor responsible for work associated with installation of power supply from electrical panelboard to all powered controllers and devices.
- C. Coordinate equipment with Division 26 Section "Electrical Power Monitoring and Control" to achieve compatibility of communication interfaces.
- D. Coordinate equipment with Division 26 Section "Panelboards" to achieve compatibility with starter coils and annunciation devices.

**3.4 INSTALLATION**

- A. Install software in control units. Implement all features of programs to specified requirements and as appropriate to achieve the existing sequence of operations.
- B. Connect and configure equipment and software to achieve the existing sequence of operations.
- C. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.
- D. Install labels and nameplates to identify control components according to existing Base Building Division 23 standards.

**3.5 ELECTRICAL WIRING AND CONNECTION INSTALLATION**

- A. Install systems and materials in accordance with manufacturer's instructions, rough-in drawings and equipment details. Install electrical components and use electrical products complying with requirements of applicable Division 26 Sections of these Specifications except where specifically stated in this Section.
- B. The term "control wiring" is defined to include providing of wire, conduit, and miscellaneous material as required for mounting and connecting electric or electronic control devices.
- C. Install all control wiring in conduit for electric/electronic control systems. Conceal wiring, except in mechanical rooms and areas where other conduit and piping are exposed. UL plenum rated cable shall be allowed above accessible lift out ceilings, in air plenums and in other areas as approved by Engineer and local and NEC codes.
- D. Stub conduit to above lift out ceilings. Plastic bushing shall be installed where the wiring exits the conduit to prevent damage.
- E. Properly support and run in a neat workmanlike manner all wiring and conduit. Run parallel to or at a right angle to building structure.
- F. Number-code or color-code conductors, excluding those used for individual zone controls, appropriately for future identification and servicing of control system.
- G. This section shall provide all line voltage power wiring required because of substitution of equipment specified in this section.
- H. Install raceways, boxes, and cabinets according to Division 26 Section "Raceway and Boxes for Electrical Systems".
- I. Install line voltage wiring in rigid conduit.
- J. Install wire and cable according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables".
- K. Install signal and communication cable according to Division 27 Section "Communications Horizontal Cabling".
  - 1. Bundle and harness multi-conductor instrument cable in place of single cables where several cables follow a common path.
  - 2. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.

3. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
4. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.

### 3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including connections. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
  1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.
  2. Test and adjust controls and safeties.
  3. Test each point through its full operating range to verify that safety and operating control set points are as required.
  4. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
  5. Test each system for compliance with the existing sequences of operation.
  6. Test software and hardware interlocks.
- C. Controls Verification:
  1. Check dampers. Verify that proper blade alignment, either parallel or opposed, has been provided.
  2. Check control system as follows:
    - a. Verify that controller power supply is from emergency power supply.
    - b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
    - c. Verify that spare I/O capacity has been provided.
    - d. Verify that controllers are protected from power supply surges.
- D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

### 3.7 ADJUSTING

- A. Calibrating and Adjusting:
  1. Calibrate instruments.
  2. Make three-point calibration test for both linearity and accuracy for each analog instrument.
  3. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
  4. Control System Inputs and Outputs:
    - a. Check digital inputs using jumper wire.
    - b. Check digital outputs using ohmmeter to test for contact making or breaking.
    - c. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.
  5. Stroke and adjust control valves and dampers without positioners, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
  6. Stroke and adjust control valves and dampers with positioners, following manufacturer's recommended procedure, so that valve and damper is 0, 50, and 100 percent closed.
  7. Provide diagnostic and test instruments for calibration and adjustment of system.
  8. Provide written description of procedures and equipment for calibrating each type of instrument. Submit procedures review and approval before initiating startup procedures.

END OF SECTION

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**SECTION 23 09 93 - SEQUENCE OF OPERATIONS FOR HVAC CONTROLS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. The Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to the Work in this Section.

**1.2 SUMMARY**

- A. Control sequence is hereby defined to mean the manner in which, and methods by which, the controls function. The requirements for each type of operation are specified in this section.

**1.3 QUALITY ASSURANCE**

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

**PART 2 – PRODUCTS (Not Used)**

**PART 3 - SEQUENCE OF OPERATIONS**

**2.1 GENERAL**

- A. All HVAC systems shall be controlled with by the existing control system as provided by each equipment manufacturer. Additional points or software programming not listed in the following sequence of operation but are documented on the Drawings shall be provided.

**2.2 CONTROL DAMPERS**

- A. Contractor shall verify operation of existing damper prior to starting any work.
- B. Record the following:
  - 1. Damper Name and Location – identify/confirm on floor plan.
  - 2. Damper Position - Temperature: Open or Closed or Modulating Control Damper.
  - 3. Damper Position – Fire/Smoke Damper – Open or Closed.
  - 4. Damper Condition (Good, Average, Poor)
    - a. Blades
    - b. Blade Seals
    - c. Housing
    - d. Shaft



- e. Shaft Seal Grommet
- 5. Fire Smoke Damper – Automatic / Manual Reset
- C. Contractor shall replace pneumatic operator with electrical actuator as specified and indicated on construction documents.
- D. Contractor shall verify operation of damper is consistent with verified information prior to starting work. Report any deficiencies to Engineer and Owner.

**2.3 ELECTRICAL INTERLOCKS**

- A. Provide electrical interlocks as listed herein, in other sections of these specifications and as noted in the equipment schedules.
- B. Electrical interlocks shall be made by means of auxiliary contacts on motor starters or shall be accomplished with separate relays unless indicated otherwise. No motor power lead shall be utilized in an interlock circuit, unless indicated otherwise. Each separate control power lead serving a starter shall be provided with a disconnecting switch suitably identified and housed, which may be a toggle switch or other suitable disconnecting device, or proper capacity and number of poles.

**END OF SECTION**

Section 004100-Bid Form Addendum 2

Collin County, Texas

**Bid Information**

Bid Owner JD Griffin, CPPB Buyer II  
 Email jgriffin@co.collin.tx.us  
 Phone (972) 548-4116  
 Fax (972) 548-4694

Bid Number 2018-162 Addendum 2  
 Title Construction, Collin County  
 Justice Center, Upgrade  
 Pneumatic to Electronic Actuators

Bid Type IFB  
 Issue Date 03/20/2018  
 Close Date 5/10/2018 02:00:00 PM (CT)

**Contact Information**

Address 2300 Bloomdale Rd.  
 Ste. 3160  
 McKinney, TX 75071

Contact JD Griffin, CPPB Buyer II  
 Department Purchasing  
 Building Admin. Building  
 Floor/Room Ste.3160  
 Telephone (972) 548-4116  
 Fax (972) 548-4694  
 Email jgriffin@co.collin.tx.us

**Ship to Information**

Address 4300 Community Ave.  
 McKinney, TX 75071

Contact  
 Department  
 Building Justice Center  
 Floor/Room  
 Telephone  
 Fax  
 Email

**Supplier Information**

Company Name \_\_\_\_\_  
 Contact Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 Email \_\_\_\_\_

**Supplier Notes**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

The undersigned hereby certifies the foregoing bid submitted by the company listed below hereinafter called "bidder" is the duly authorized agent of said company and the person signing said bid has been duly authorized to execute same. Bidder affirms that they are duly authorized to execute this contract; this company; corporation, firm, partnership or individual has not prepared this bid in collusion with any other bidder or other person or persons engaged in the same line of business; and that the contents of this bid as to prices, terms and conditions of said bid have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this bid.

Signature \_\_\_\_\_ Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**Bid Notes**

Please log in to view bid documents.  
 Collin County exclusively uses IonWave Technologies, Inc. (Collin County eBid) for the notification and dissemination of all solicitations. The receipt of solicitations through any other means may result in your receipt of incomplete specifications and/or addendums which could ultimately render your bid/proposal non-compliant. Collin County accepts no responsibility for the receipt and/or notification of solicitations through any other means.

**Bid Activities**

Date	Name	Description
4/3/2018 02:00 PM (CT)	Mandatory Pre-Bid Conference	A MANDATORY PRE-BID CONFERENCE will be held by Collin County in the Collin County Justice Center Jail Lobby located at 4300 Community Ave, McKinney, TX 75071 on Tuesday, April 3, 2018, at 2:00 PM in order for bidders to ask questions regarding the proposed work. All bidders desiring to bid the work should have a representative at the pre-bid conference; bidders that do not attend the pre-bid conference shall not be considered in the evaluation for award of a contract per Texas Local Government Code 262.0256. Attendance shall be mandatory at the pre-bid conference.

4/24/2018 10:00 AM (CT)	Mandatory Pre-Bid Conference (Attendance at one pre-bid is required)	A MANDATORY PRE-BID CONFERENCE will be held by Collin County in the Collin County Justice Center Jail Lobby located at 4300 Community Ave, McKinney, TX 75071 on Tuesday, April 24, 2018, at 10:00 AM in order for bidders to ask questions regarding the proposed work. All bidders desiring to bid the work should have a representative at one pre-bid conference; bidders that do not attend one pre-bid conference shall not be considered in the evaluation for award of a contract per Texas Local Government Code 262.0256. ATTENDANCE AT BOTH PRE-BID CONFERENCES IS NOT REQUIRED.
5/4/2018 05:00 PM (CT)	Intent to Bid	Do you intend to submit a bid?

## Bid Messages

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## Bid Attachments

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The following attachments are associated with this opportunity and will need to be retrieved separately

#	Filename	Description
Header	Addendum 2_2018-162.doc	Addendum 2
Header	012500 Product substitution Procedures.pdf	Section 01 25 00
Header	23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC.pdf	Revised Section 23 09 00
Header	23 09 93-SEQUENCE OF OPERATIONS FOR HVAC CONTROLS.PDF	Revised Section 23 09 93
Header	Addendum 1_2018-162.doc	Addendum 1
Header	Pre-Bid Sign-In Sheet_4-3-18.pdf	April 3, 2018 Pre-Bid Sign-In Sheet
Header	LEGAL NOTICE-2018-162.doc	Legal Notice
Header	Collin County Justice Center Upgrade.pdf	Specifications
Header	Collin ADC DDC Upgrade CD's.pdf	Drawings

## Bid Attachments Requested

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The following attachments are requested with this opportunity

#	Required	Specified Attachment
1	YES	Bid Bond : BID SECURITY: All Bidders must submit, prior to the bid opening time, a Cashier's Check or acceptable Bid Bond payable without recourse to Collin County in the amount of not less than five percent (5%) of the total bid plus alternates as submitted.

1. Bid Bond or Cashier's Check may be mailed or hand delivered to the Office of the Collin County Purchasing Agent, Collin County Administration Building, 2300 Bloomdale Road, Ste 3160, McKinney, TX 75071 and shall be delivered in an envelope, marked plainly on the outside with the Bid Name and Number.
2. Bidders submitting a bid via Collin County eBid shall upload a Bid Bond at <https://collincountytx.ionwave.net>

Regardless of delivery method, all Bid Bonds shall be received prior to the bid opening time to be considered.

The original Bid Bond shall be received in the Collin County Purchasing Department no later than close of business on the third working day after the bid opening. Late receipt of original Bid Bond shall be cause for rejection of bid.

2	NO	Conflict of Interest Questionnaire
3	YES	W-9

### Bid Attributes

Please review the following and respond where necessary

#	Name	Note	Response
1	Calendar Days Bid	Please state the consecutive calendar days bid.	_____ (Required)
2	Exceptions	Do you take exceptions to the specifications. If so, by separate attachment, please state your exceptions. Valid Responses: [Please Select], Yes, No	_____ (Required)
3	Insurance	I understand that the insurance requirements of this solicitation are required and a certificate of insurance shall be submitted to the Purchasing department if I am awarded all or a portion of the resulting contract.  Please initial.	_____ (Required)
4	Subcontractors	State the business name of all subcontractors and the type of work they will be performing under this contract.  If you are fully qualified to self-perform the entire contract, please respond with "Not Applicable-Self Perform".	_____ (Required)
5	Reference No. 1	List a company or governmental agency where these same/like products /services, as stated herein, have been provided.  Include the following: Company/Entity, Contact, Address, City/State/Zip, Phone, and E-Mail.	_____ (Required)
6	Reference No. 2	List a company or governmental agency where these same/like products /services, as stated herein, have been provided.  Include the following: Company/Entity, Contact, Address, City/State/Zip, Phone, and E-Mail.	_____ (Required)
7	Reference No. 3	List a company or governmental agency where these same/like products /services, as stated herein, have been provided.  Include the following: Company/Entity, Contact, Address, City/State/Zip, Phone, and E-Mail.	_____ (Required)
8	Cooperative Contracts	As permitted under Title 8, Chapter 271, Subchapter F, Section 271.101 and 271.102 V.T.C.A. and Title 7, Chapter 791, Subchapter C, Section 791.025, V.T.C.A., other local governmental entities may wish to also participate under the same terms and conditions contained in this contract. Each entity wishing to participate must enter into an inter-local agreement with Collin County and have prior authorization from vendor. If such participation is authorized, all purchase orders will be issued directly from and shipped directly to the local governmental entity requiring supplies/services. Collin County shall not be held responsible for any orders placed, deliveries made or payment for supplies/services ordered by these entities. Each entity reserves the right to determine their participation in this contract.	_____ (Required)

Would bidder be willing to allow other local governmental entities to participate in this contract, if awarded, under the same terms and conditions?

Valid Responses: [Please Select], Yes, No

9 Preferential Treatment

The County of Collin, as a governmental agency of the State of Texas, may not award a contract to a nonresident bidder unless the nonresident's bid is lower than the lowest bid submitted by a responsible Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located (Government Code, Title 10, V.T.C.A., Chapter 2252, Subchapter A). \_\_\_\_\_ (Required)

1. Is your principal place of business in the State of Texas?

2. If your principal place of business is not in Texas, in which State is your principal place of business?

3. If your principal place of business is not in Texas, does your state favor resident bidders (bidders in your state) by some dollar increment or percentage?

4. If your state favors resident bidders, state by what dollar amount or percentage.

10 Debarment Certification

I certify that neither my company nor an owner or principal of my company has been debarred, suspended or otherwise made ineligible for participation in Federal Assistance programs under Executive Order 12549, "Debarment and Suspension," as described in the Federal Register and Rules and Regulations. \_\_\_\_\_ (Required)

Please initial.

11 Immigration and Reform Act

I declare and affirm that my company is in compliance with the Immigration and Reform Act of 1986 and all employees are legally eligible to work in the United States of America. \_\_\_\_\_ (Required)

I further understand and acknowledge that any non-compliance with the Immigration and Reform Act of 1986 at any time during the term of this contract will render the contract voidable by Collin County.

Please initial.

12 Disclosure of Certain Relationships

Chapter 176 of the Texas Local Government Code requires that any vendor considering doing business with a local government entity disclose the vendor's affiliation or business relationship that might cause a conflict of interest with a local government entity. Subchapter 6 of the code requires a vendor to file a conflict of interest questionnaire (CIQ) if a conflict exists. By law this questionnaire must be filed with the records administrator of Collin County no later than the 7th business day after the date the vendor becomes aware of an event that requires the statement to be filed. A vendor commits an offense if the vendor knowingly violates the code. An offense under this section is a misdemeanor. \_\_\_\_\_ (Required)

By submitting a response to this request, the vendor represents that it is in compliance with the requirements of Chapter 176 of the Texas Local Government Code.

Please send completed forms to the Collin County County Clerk's Office located at 2300 Bloomdale Rd., Suite 2104, McKinney, TX 75071.

Please initial.

- 13 Anti-Collusion Statement Bidder certifies that its Bid/Proposal is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting a Bid/Proposal for the same materials, services, supplies, or equipment and is in all respects fair and without collusion or fraud. \_\_\_\_\_ (Required)

No premiums, rebates or gratuities permitted; either with, prior to, or after any delivery of material or provision of services. Any such violation may result in Agreement cancellation, return of materials or discontinuation of services and the possible removal from bidders list.

Please initial.

- 14 Disclosure of Interested Parties Section 2252.908 of the Texas Government Code requires a business entity entering into certain contracts with a governmental entity to file with the governmental entity a disclosure of interested parties at the time the business entity submits the signed contract to the governmental entity. Section 2252.908 requires the disclosure form (Form 1295) to be signed by the authorized agent of the contracting business entity, acknowledging that the disclosure is made under oath and under penalty of perjury. Section 2252.908 applies only to a contract that requires an action or vote by the governing body of the governmental entity before the contract may be signed or has a value of at least \$1 million. Section 2252.908 provides definitions of certain terms occurring in the section. \_\_\_\_\_ (Required)

Section 2252.908 applies only to a contract entered into on or after January 1, 2016.

Please initial.

- 15 Notification Survey In order to better serve our offerors, the Collin County Purchasing Department is conducting the following survey. We appreciate your time and effort expended to submit your bid. Should you have any questions or require more information please call (972) 548-4165. \_\_\_\_\_ (Required)

How did you receive notice of this request?

Valid Responses: [Please Select], Plano Star Courier, Plan Room, Collin County eBid Notification, Collin County Website, Other

- 16 Bid Bond Acknowledgement Accompanying this bid, is a certified check, cashier's check or Bid Bond in the amount of five percent (5%) of the total amount bid. Also accompanying this bid, all the information required in Section 00200 – Instructions to Bidders. \_\_\_\_\_ (Required)

Please initial.

- 17 Construction Acknowledgement Bidder, declares that the only person or parties interested in this bid are those principals named herein, that his/her bid is made without collusion with any other person, firm or corporation, that he/she has carefully examined the Contract Documents including the Advertisement for Bids, Instruction to Bidders, Construction Agreement, Specifications and the Drawings, therein referred to and has carefully examined the locations, conditions and \_\_\_\_\_ (Required)

classes of materials for the proposed work, and agrees that he/she will provide all the necessary labor, machinery, tools, equipment, apparatus and other items incidental to construction and will do all the work and furnish all the materials called for in the Contract Documents in the manner prescribed therein.

Bidder hereby declares that he/she has visited the site of the Work and has carefully examined the Contract Documents pertaining to the Work covered by the above Bid, and he/she further agrees to commence work within ten (10) consecutive calendar days after date of written Notice to Proceed and to substantially complete the work on which he/she has bid within the number of days specified subject to such extensions of time allowed by Specifications.

Bidder certifies that the bid prices contained in this bid have been carefully checked and are submitted as correct and final. The prices have been shown in words and figures for each item listed in this bid and it is understood that in the event of a discrepancy, the words shall govern.

Please initial.

18 Addendum 1 Acknowledgement

Bidder acknowledges receipt of Addendum 1.  
Please initial.

\_\_\_\_\_ (Required)

19 Addendum 2 Acknowledgement

Bidder acknowledges receipt of Addendum 1. Please initial.

\_\_\_\_\_ (Required)

Line Items

#	Qty	UOM	Description	Response
1	1	lump sum	Bid Grand Total	\$ _____ (Required) Price

Supplier Notes: \_\_\_\_\_  
\_\_\_\_\_

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Bid Grand Total- Written in Words	The contract award will be based on the total bid price.	_____ (Required)
2	Total Material Cost Incorporated in Project		\$ _____ (Required)
3	Total Material Cost Incorporated in Project- Written in Words		_____ (Required)
4	Total Labor Cost Incorporated in Project		\$ _____ (Required)
5	Total Labor Cost Incorporated in Project- Written in Words		_____ (Required)