Document 00910

ADDENDUM NO. Five

Date of Addendum: 9 SEPT 2005

PROJECT NAME: Jesse H. Jones Central Library Renovation-
Carnegie Regional Branch Library Renovation-
Library Resource Center Renovation-

PROJECT NO: E-0011-01-3
E-0142-01-3
E-0076-01-3

PROPOSAL SUBMITTAL DATE: September 15, 2005

FROM: City of Houston, Building Services Department
900 Bagby, 2nd Floor
Houston, Texas 77002
Attn: Jack Welker, Project Manager

REGISTERED ARCHITECT
ALBERT L. WONG
6681
STATE OF TEXAS
9.09.05

TO: Prospective Proposers

This Addendum forms a part of the Request For Competitive Sealed Proposals and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Reissued Drawing Sheets show the Addendum number above the title block and changes in the Drawing are typically noted by a revision mark and enclosed in a revision cloud.

CHANGES TO PROJECT MANUAL & DRAWINGS

Item # 1. Delete previously issued specification sections 15950 DDC Controls and 15975 Temperature Control System and replace with the new attached specification section 15975 Temperature Control System.

CLARIFICATIONS

Item # 2. New and existing CCTV cameras:
There are no written specifications for these cameras. The requirements are the following for the manufacturer and installation of any new required cameras as identified on the construction documents:

1. They must match and interface with the existing CCTV equipment and controls.
2. The signal and data from these new cameras are to be routed to

the existing equipment in the Security Office.

3. If required to receive these new signals and/or data, the Security Office existing CCTV equipment shall be properly modified to receive and record these new signals and/or data.
4. The brand and model number of the new cameras must match or be newer models that will interface and work properly with the existing security equipment.

Item # 3. Revise previously issued Addendum No. 4 reference to revised Specification Section 09680 Carpet. Refer to the attachment for performance specifications of the carpet products specified for the Jones Central Library and note the following:

Any proposed substitution must be an approved match to the specified carpets in terms of tufting and density, color match with stain resistant treatment and running line pattern. These must be features that will be deemed acceptable and approved by the HPL staff and Director and any proposed "Equal" product must match these characteristics of the specified carpet and carpet tiles.

Item # 4. Sign types "S3" through "S27" (not including "S9") shall be produced from photopolymer sheet, laminated to raised, cast acrylic panels, with colors, paint finishes, fonts and mounting construction similar in detail to other similar types of signage (wayfinding) in the project. Refer to specification section 10431.2.2E for general requirements. Elevator call buttons are indicated as stainless steel plates.

END OF ADDENDUM NO. Five

William D. Reesby 9 SEPT 2005

William D. Reesby, P.E. Assistant Director
Design & Construction Division
Building Services Department

DATE

END OF DOCUMENT

SECTION 15975 - TEMPERATURE CONTROL SYSTEM

PART 1 - GENERAL

1. 1 These general requirements apply to all work covered in the various sections of Division 15 – Mechanical.

A. The General Contractor shall accept all bids for controls directly from Johnson Controls, Inc. The General Contractor shall not accept any controls pricing from Mechanical Contractors. Additionally the General Contractor shall contact directly with Johnson Controls, Inc. for these services and shall not reassign this work to the mechanical contractor.

1. 2 CONTRACTOR QUALIFICATIONS

A. Qualified Bidders: System shall be as manufactured, installed and serviced by Johnson Controls, Inc. branch office. Contact Mason Dutton for details 713-332-3182.

1.3 SCOPE OF WORK

A. Modify exiting Johnson Controls System consisting of a Building Automation System and an Automatic Temperature Control System. The system shall be complete in all respects including labor, materials, equipment, and services necessary, and shall be installed by personnel regularly employed by the manufacturer. The system consists of field Standalone Direct Digital Controllers (DDC) and an the existing Johnson Controls workstation. Controls must connect to the existing Johnson Controls System

1.4 WORK BY OTHERS

A. Sheet Metal Subcontractor:

1. Setting of automatic control dampers, smoke control dampers, and necessary blank off plates.

2. Access doors where and as required.

B. Mechanical Contractor:

1. Installation of immersion wells and pressure tappings.
2. Installation of flow switches.
3. Setting of automatic control valves.
4. Installation of pressure tappings and associated shut-off cocks.

C. Electrical Subcontractor: (Division 16)

1. All power wiring and line voltage interlock wiring shown on the electric plans. This includes all interlock wiring associated with smoke detectors. Contactors for external lighting. Interlock wiring from fire alarm relays to starters and speed drives.
2. Lighting control panels to be provided under Division16. Lighting control panel manufacturer is responsible for all components necessary to integrate into Johnson Controls, Inc.

1.5 REFERENCE STANDARDS

A. The latest edition of the following standards and codes in effect and amended as of supplier's proposal date, and any applicable subsections there of, shall govern design and selection of equipment and material supplied:

1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).
2. Applicable ANSI/ASHRAE Standard.
3. Uniform Building Code (UBC), including local amendments.
4. UL 864 and UL 916 Underwriters Laboratories Standard for Energy Management Equipment. Canada and the US.
5. National Electrical Code (NEC).
6. FCC Part 15, Subpart J
6. EMC Directive 89/336/EEC
7. ISO-9000 certified manufacturer

B. City, county, state, and federal regulations and codes in effect as of contract date.

C. Except as otherwise indicated the system supplier shall secure and pay for all permits, inspections, and certifications required for his work and arrange for necessary approvals by the governing authorities.

1.6 SUBMITTALS

A. Drawings

1. The system supplier shall submit engineered drawings, control sequence, and bill of materials for approval.
2. Drawings shall be submitted in the following standard sizes: 11" x 17" (ANSI B).
3. Eight complete sets (copies) of submittal drawings shall be provided.
4. Drawings shall be submitted with an electronic version available on floppy disk or CD-ROM, as specified.

B. System Documentation

System documentation by the vendor shall include the following as a minimum:

1. System configuration diagrams in simplified block format.

2. All input/output object listings and an alarm point summary listing.
3. Electrical drawings that show all system internal and external connection points, terminal block layouts, and terminal identification.
4. Manufacturer's instructions and drawings for installation, maintenance, and operation of all purchased items.
5. Overall system operation and maintenance instructions—including preventive maintenance and troubleshooting instructions.
6. For all system elements—operator's terminal(s), network controller(s), local digital logic controllers, routers, repeaters, and converters etc.
7. Provide complete description and documentation of any proprietary services and/or objects used in the system.

1.7 SCHEDULING AND COORDINATION

A. The vendor shall provide a detailed project design and installation schedule with time markings and details for hardware items and software development phases.

B. The schedule shall show all the target dates for transmission of project information and documents and shall indicate timing and dates for system installation, debugging, and commissioning.

1.8 WARRANTY

A. Warranty shall cover all costs for parts, labor, associated travel, and expenses for a period of one year from completion of system acceptance.

B. Hardware and software personnel supporting this warranty agreement shall provide on-site or off-site service in a timely manner after failure notification to the vendor. The maximum acceptable response time to provide this service at the site shall be 24 hours.

C. This warranty shall apply equally to both hardware and software.

1.9 OPERATING AND MAINTENANCE MANUALS

A. Prepare two sets of 8 ½" inch x 11" three-ring binder containing the following items in "as-built" form:

1. "As-Built" Drawings indicating detailed schematics.
2. Technical data sheets on all system components with part number and supplier information.
3. Software documentation including application code and Sequence of Operation.
4. Listing of all connected points including physical address, location and all neomonics.
5. Operating instructions.
6. Maintenance instructions.
7. Color-coded floor plans indicating location of major system components

and zones of control.

8. Complete trouble shooting procedures, diagrams and guidelines.

1.11 ELECTRICAL WORK FOR CONTROLS:

A. Complying with the principle of "unit responsibility" all electrical work for automatic controls, except as otherwise specified, or shown on the Electrical Drawings as Division 16 responsibility shall be included in Division 15.

B. Electrical work shall, in general, comply with the following:

1. All low voltage wiring in finished rooms shall be concealed below working heights and exposed above.
2. Electrical work may include both line voltage and low voltage wiring, as required.
3. Conduit network for power systems may be used for running control high voltage wiring.
4. All electrical work shall comply with the N.E.C. and local electrical codes.
5. All safety devices shall be wired through both hand and auto positions of motor starting device to insure 100% safety shut-off.
6. All magnetic starters furnished by Electrical Contractor for mechanical equipment shall be furnished with integral 120 volt control transformers, sized to handle the additional VA needed for the controls - pilots, EP valves, etc.
7. The motor starter supplier shall provide auxiliary contacts as required for interlock by FMS Contractor; the supplier shall estimate an allowance of at least 1 auxiliary contract per starter. All interlock and control wiring shown on the electrical prints is by the Electrical Subcontractor.
8. Low voltage plenum rated wiring can be run exposed above working heights in equipment rooms and above accessible ceiling. Wiring shall be neatly tied to pipes, EMT or other devices and not laid on ceiling tile.

1.12 DRAWINGS AND LAYOUTS

A. The FMS Manufacturer shall submit description of Operation and Schematic Drawings of the System to the Engineer for approval before starting work. At least 6 sets of submittals shall be sent through channels. At least 4 sets of Operator and Maintenance Manuals with "As-Built" Drawings, parts lists, etc. shall be provided at job completion.

1.13 CONTROL EQUIPMENT AND DEVICES

A. The Control System shall include all necessary and specified control equipment properly installed in accordance with Specifications and Drawings, and shall include the automatic control of the following:

1. Control Dampers: Dampers required in the temperature and smoke control functions of the automatic Control System shall be factory fabricated and

shall be manufactured by the FMS Systems Manufacturer. All dampers shall be sized as shown on Drawings or as specified. All damper frames shall be constructed of 13-gauge galvanized sheet metal or extruded aluminum of 12-gauge thickness, and shall have a flange or duct mounting. The blades shall be parallel or opposed, as required, and suitable for the air velocities to be encountered in the system. Replaceable Butyl rubber seals are to be provided on damper blades and installed along with the top and bottom of the frame. Stainless steel damper blades and seals shall be installed inside the frame sides. Seals and bearings shall be able to withstand temperatures ranging from minus 40° F to plus 200° F. Dampers shall be leak rated for 3 CFM/foot squared at 1" WG and 20 CFM/foot squared at 4" WG or less in full closed position at 4" WG pressure differential across damper. All smoke control dampers must conform to UL5555 and be Ruskin SD-60 or Johnson Control SD-1300. Damper blades shall not exceed 6" in width. All blades shall not exceed 6" in width. All blades are to be corrugated type construction, fabricated from 2 sheets of #22-gauge galvanized sheet steel, spot welded together. Blades are to be suitable for high velocity performance. Damper blades shall be a maximum of 48" long. Longer units shall be fabricated in sections. Dampers shall be Ruskin CD-60 or Johnson Controls D-1300.

2. Control Valves:

   a. Characterized Control Ball Valves shall be used for hydronic heating or cooling applications and small to medium AHU water coil applications to 100GPM. Actuators are non-spring return for terminal unit coil control unless otherwise noted. If the coil is exposed to the outside air stream then see plans for spring return requirement.
   b. 2-1/2" and larger:
      i. Flanged
      ii. Bodies: Cast Iron or cast steel
      iii. Seats and parts exposed to fluid: Bronze, stainless steel or other approved corrosion-resistant metal.

3. Operators: A damper or valve operator shall be **electric** and be provided for each automatic damper or valve and shall be of sufficient capacity to operate the damper or valve under all conditions and to guarantee tight close-off of valves, as specified, against system pressure encountered. Each shall be provided with spring-return for normally closed or normally open position for fail safe operation to account for fire, low temperatures, or power interruption as indicated. Damper and valve operators are to be made out of diecast metal; no plastic or sheet metal bodies will be allowed.

4. Sensors and Controllers:

   a. Low Limit Thermostats shall be of manual reset type, with setpoint adjustment. The sensing element shall be 20' minimum and shall be installed completely across the coil. When any 1' of the element senses a temperature as low as the setpoint, the thermostat contacts

shall open. These shall contain double pole switches for simultaneous remote alarms or as desired. Thermostat shall be Johnson Controls A70 or equal.

b. Duct Type Temperature Transmitter shall be a general purpose RTD sensing element, moisture resistant transmitter for mounting into a duct. The operating range shall be as indicated with an accuracy of ± 1% over the full range. The output shall be compatible with the panel it serves.

c. Duct Averaging Type Temperature Transmitter shall be a general purpose RTD sensing element, moisture resistant transmitter for mounting into a duct. The operating range shall be as indicated with an accuracy of ± 1% over the full range. The output shall be compatible with the panel it serves. Transmitter shall be with 17' of sensor capillary.

d. Space Temperature Transmitter shall contain an RTD sensing element to monitor room air temperatures in the range of 30° F to 90° F, unless indicated otherwise. The transmitter shall be factory calibrated to an accuracy of ± 1%. The assembly shall be installed within a metal ventilated enclosure suitable for wall mounting. The output shall be an compatible with the panel it serves. Transmitter shall be factory calibrated to an accuracy of ± 1% over the full range. Include a warmer/cooler slider on each room thermostat.

e. Pipe Temperature Transmitter shall contain an RTD sensing element to monitor water temperature. The Contractor shall provide brass wells of sufficient size for the pipe to be installed. The output shall be compatible with the panel it serves. Transmitter shall be factory calibrated to an accuracy of ± 1% over the full range.

f. Outdoor Air Temperature Transmitter shall contain an RTD sensing element mounting in an enclosure rated for outdoor use. The output shall be compatible with the panel it serves. Transmitter shall be factory calibrated to an accuracy of ± 1% over the full range.

PART 2 – PRODUCTS

2.01 GENERAL FMS DESCRIPTION

A. The FMS shall be a complete system designed to connect to the existing Johnson Controls System for the Houston Public Libraries.

B. The FMS work shall consist of the provision of all labor, materials, tools, equipment, software, software licenses, software configurations and database entries, interfaces, wiring, tubing, installation, labeling, engineering, calibration, documentation, samples, submittals, testing, verification, training services, permits and licenses, transportation, shipping, handling, administration, supervision,

management, insurance, temporary protection, cleaning, cutting and patching, warranties, services, and items as Specified in these Division documents which are required for the complete, fully functional and commissioned FMS.

2.02 FMS ARCHITECTURE

A. General

1. The FMS shall consist of a number of Nodes and associated equipment connected by industry standard network practices. All communication between Nodes shall be by digital means only.

2. The FMS network shall at minimum comprise of the following:

   a. UTILIZE EXISTING WORKSTATION.
   b. Network processing, data storage and communication equipment including file servers as specified below.
   c. Routers, bridges, switches, hubs, modems and like communications equipment.
   d. Active processing Nodes including field panels.
   e. Intelligent and addressable elements and end devices.
   f. Other components required for a complete and working FMS.

3. All FMS features shall be accessible via Enterprise Intranet and Internet browser with equivalent FMS access control for user access.

4. The FMS shall support auto-dial/auto-answer communications to allow FMS Nodes to communicate with other remote FMS Nodes via standard telephone lines. Refer to drawings for type of line to be used, DSL or voice grade. Where no preference is indicated, voice grade is the preferred grade.

5. The PC Workstations, File servers and principal network equipment shall be standard products of recognized major manufacturers available through normal PC vendor channels. "Clones" are not acceptable.

6. Provide licenses for all software residing in the FMS system and transfer these licenses to the Owner prior to completion.

B. Network

1. The FMS shall incorporate a primary Tier 1 network. At the Contractor's option, the FMS may also incorporate integrated secondary Tier 2 and tertiary Tier 3 networks.

2. The FMS Network shall utilize an open architecture capable of all of the following:

a. Utilizing standard Ethernet communications and operate at a minimum speed of 10/100 Mb/sec.
b. Connecting via BACnet at the Tier 1 level in accordance with as per ANSI/ASHRAE Standard 135-2001
c. Connecting via the N1 Protocol at the Tier 2 level.

C. Power Fail / Auto Restart

1. Provide for the automatic orderly and predefined shutdown of parts or all of the FMS following total loss of power to parts or all of the FMS.

2. Provide for the automatic orderly and predefined startup of parts or all of the FMS following total loss of power to those parts or all of the FMS. Archive and annunciate time and details of restoration.

3. Provide for the orderly and predefined scheduling of controlled return to normal, automatically time scheduled, operation of controlled equipment as a result of the auto restart processes.

4. Maintain the FMS real-time clock operation during periods of power outage for a minimum of 72 hours

2.03 COMMISSIONING

A. Control System shall be set up and checked by factory trained competent technicians skilled in the setting and adjustment of the FMS equipment used in this project. This technician is to be experienced in the type of HVAC systems associated with this project.

B. At the completion of the commissioning, this Contractor will demonstrate the sequence of operations for each system to the Architect or his representative.

2.04 WARRANTY

A. Provide one-year labor and material warranty on the FMS.

PART 3 - SEQUENCE OF OPERATIONS

A. SEQUENCES

1. *Chilled Water Fan Coil Unit:*

<u>OCCUPIED MODE</u>: During this mode the fan will run continuously. When

the room temperature is below the cooling set-point, the cooling valve will be closed. On a rise in room temperature above the cooling set-point, the cooling valve will modulate open.

UNOCCUPIED MODE: During the mode the fan will cycle off. On a rise in room temperature above the unoccupied cooling set-point, the fan will cycle on, the cooling valve will modulate open.

2. **Computer Room Unit**:

BAS will monitor status, temperature and humidity of unit. BAS will monitor unit status alarm. BAS will provide an enable/disable to unit.

3. Exhaust Fans:

BAS will monitor status of exhaust fans via current sensing relay.

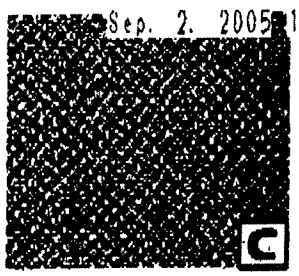
4. External Lighting Control:

Enable/disable external lighting through contactors provided by Division 16, based on schedule determined by Building Services.

3.2 INTERLOCK AND SAFETY CIRCUITS

A. Provide interlocks as recommended by the equipment manufacturers. Coordinate with Division 16 for the installation of unit/plenum mounted smoke detectors, for all units and as indicated on the electrical plans.

END OF SECTION 15975



Constantine = Carpet Tile

CONSTANTINE

Sketch Tile Specification

Style	Gesture & Sketch Tile
Gesture Pattern Repeat	18" x 18"
Sketch Pattern Repeat	1/2" x 9"
Tile Size	18" x 18"
Construction	Patterned Loop produced with patented, high density process Multiple Yarn Infusion
Face Yarn	100% Ultron Nylon 6.6 with Permanent Static Control, Commercial Carpet Protector & Stainguard Protection
Yarn Spec	Twisted and Superba Heatset with a Minimum of 5.0 Turns per Inch
Treatment	Constantine's SPF 40. — Applied treatment to yarn. Gives product attributes of a solution dyed yarn.
Tufted Yarn Weight	36 oz.
***Tufts per Square Inch**	170 (Gauge x Stitch Rate x Tufts/Stitch)
Pile Height	0.2
Primary Backing	5.5 oz. Multi layered woven and non woven composite for enhanced straightness, tuftbind and edge ravel.
Tile Backing	100% Closed Cell Vinyl Composite Backing with Fiberglass Inter-liner for dimensional stability.
Post Installation Protection	Constantine Commercial Carpet Guard #71160R, 23 mm thickness should be specified. DO NOT USE PLASTIC. Plastic can permanently discolor carpet and cause accelerated soiling.
LEED	All products are available with varying percentages of post-industrial recycled fiber for a minimum of 2,500 sy. Recycled content percentages are determined by the total weight of the product and will be affected by the backing selection. We offer backings and SPF 40 stain resistant finish with post-industrial and post-consumer recycled content that can increase your total recycled content percentage. All recycled content contributes to the NC and CI LEED rating systems under Materials & Resources, Credit 4.1 Recycled Content, and Credit 4.2 Recycled Content.
Adhesive Recommended	Constantine's Carpet Tile Adhesive #320
Flammability	Passes Class 1 (ASTM E-648) Radiant Panel Critical Radiant Flux > .50 W/cm^2 Smoke Density (ASTM E-662) < 450
Warranty	10 Year Wear
Dye Lot Size	Unlimited
Custom Colors & Wt.	Available at Minimum Yardages
Optional Tile Sizes	24" x 24", 36" x 36", 18" x 36" 381 yd² minimum
Broadloom	Available at Minimum Yardages
Origin	U.S.A.

*Constantine incorporates a patented, high density tufting process called multiple yarn infusion. Conventional measurements of gauge and stitch rate are inadequate and misleading. Therefore, tufts per square inch are used to provide accurate specifications.

P. O. Box 2399 Dalton, GA 30722
tel: 706 277.0886
fax: 706 278.6892
800 308.4344

9/2/2005

Constantine = Broadloom

CONSTANTINE

Crossbar Specification

Style	Crossbar
Pattern Repeat	18" x 18"
Construction	Patterned Loop produced with patented, high density process Multiple Yarn Infusion
Face Yarn	100% Ultron Nylon 6.6 with Permanent Static Control & Commercial Carpet Protector
Yarn Spec	Twisted and Superba Heatset with a Minimum of 5.0 Turns per Inch
Treatment	Constantine's SPF 40. Applied treatment to yarn. Gives product attributes of a solution dyed yarn.
Tufted Yarn Weight	39 oz.
***Tufts per Square Inch**	173 (Gauge x Stitch Rate x Tufts/Stitch)
Pile Height	0.2
Primary Backing	5.5 oz. Multi layered woven and non woven composite for enhanced straightness, tuftbind and edge ravel.
Secondary Backing	EPA 1 High Performance Unitary
Width	12'
Post Installation Protection	Constantine Commercial Carpet Guard #71160R, 23 mm thickness should be specified. DO NOT USE PLASTIC. Plastic can permenantly discolor carpet and cause accelerated soiling.
LEED	All products are available with varying percentages of post-industrial recycled fiber for a minimum of 2,500 sy. Recycled content percentages are determined by the total weight of the product and will be affected by the backing selection. We offer backings and SPF 40 stain resistant finish with post-industrial and post-consumer recycled content that can increase the total recycled content percentage. All recycled content contributes to the NC and CI LEED rating systems under Materials & Resources, Credit 4.1 Recycled Content, and Credit 4.2 Recycled Content.
Adhesive Recommended	Constantine's Premium, Standard Tack Adhesive #27 for Patterned Carpet
Flammability	Passes Class 1 (ASTM E-648) Radiant Panel Critical Radiant Flux > .50 W/cm^2 Smoke Density (ASTM E-662) < 450
Warranty	10 Year Wear
Dye Lot Size	Unlimited
Custom Colors & Wt.	Available at Minimum Yardages
Origin	U.S.A.

*Constantine incorporates a patented, high density tufting process called multiple yarn infusion. Conventional measurements of gauge and stitch rate are inadequate and misleading. Therefore, tufts per square inch are used to provide accurate specifications.

P.O. Box 2399 Dalton, GA 30722
tel: 706 277.0836
fax: 706 278.6892
800 308.4344

9/2/2005