ARCHITECTURAL ADDENDUM NO.9

2009.12.07

This addendum varies the Contract Documents, **THE GATHERING PLACE PHASE 1 and PHASE 2, VANCOUVER ISLAND UNIVERSITY** and amends the original Drawings and Specifications. The following revisions supersede the information contained in the original drawings and specifications issued to the extent referenced and shall become a part thereof. No adjustment to the Contract Price will be considered or allowed due to the Contractor, or to any subcontractor or Supplier not being familiar with this Addendum.

1.1 **ARCHITECTURAL ADDENDUM**

.1 Architectural Addendum No. 8, REVISE introductory paragraph to read..."This addendum varies the Contract Documents, THE GATHERING PLACE PHASE 1 and PHASE 2, VANCOUVER ISLAND UNIVERSITY"....

2.1 **ELECTRICAL ADDENDUM**

.1 Ref: Electrical Addendum #3 (see arch. Addendum No. 8), page 1,

REVISE title to say "VANCOUVER ISLAND UNIVERSITY GATHERING PLACE – PHASE 1 AND PHASE 2"

Section "1.Refer to Electrical Drawings"

Paragraph 4. REVISE first sentence to say..."Add: Electric door strikes to be provided and installed under Division 16 for the east and west exterior doors, Electro-magnetic lock to be provided and installed by door supplier for the north entrance door, all connected to the Kantech door access control panel. "

.2 Section 16708, Synchronous Clock System.

2.3 Clocks, DELETE "Finish shall be bruched aluminium " REVISE to say: "Acceptable trim finishes will be as selected by architect from the standard product line of trim finishes."

3.1 **MECHANICAL ADDENDUM**

.1 REFER TO THE ATTACHED "MECHANICAL ADDENDUM #3".

End of Addendum No. 9

The following addendum supersedes information contained in drawings and specifications issued for the project to the extent referenced. This Addendum forms part of the Tender Documents and is subject to all of the conditions set out in the contract conditions.

I. GENERAL

1. Separate Price: The contractor is to submit a separate price for the supply and install of a controls system head-end with operators workstation and web-based software (including graphical system interface) in conformance with the specifications as indicated in section SPECIFICATIONS, subsection .2 within this Addendum. Any Alternate Price proposals (for controls systems other than Delta) shall also included a Separate Price for this work.

2. INFORMATION TO BE SUBMITTED WITH TENDER: Note that ALL pricing for DDC Controls (as covered in section 15900, 15940, and related sections) including the base bid controls system (Delta Controls) and Alternate Price manufacturers shall comply with and submit necessary information as detailed below:

    a. Vendor Qualification Requirements: Provide detailed explanation on how the vendor complies with the following four requirements and include any supporting documentation:

        i. Vendor must have existing and operational and service capabilities in the local market (i.e. service personnel and fleet, offices etc.) within the Regional District of Nanaimo, with ability to provide ongoing service and support from this location.

        ii. Vendor must be a manufacturer-owned branch office, independent authorized branch office, or a manufacturer-authorized value-add reseller (i.e. installation and support) of the Building Automation System (BAS) product they intend to propose for the VIU Project.

        iii. Vendor must be manufacturer-trained on the BAS product they represent.

        iv. Vendor must identify the intent to utilze aub-contractors for any portion(s) of the proposed project. If not, indicate that no sub-contractors will be used, if yes, identify the potential project areas on which sub-contractors will be used.

    b. Vendor History: A brief history of vendor, including age of firm, organizational structure, length of time providing BAS services, and any other information that might be considered relevant for the project.

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c. Vendor Experience: Provide at least six customer references and project descriptions where vendor has performed similar projects. At least three of these must be energy efficiency projects, and all references must specifically relate to commercial renovations / retrofits.

d. Product Hardware Compliance: All vendor BAS hardware products must meet the following criteria. Submit supporting documentation (i.e. system description, architecture diagrams, data sheets etc.) to demonstrate compliance:

   i. Employ standardized open protocol (Native BACnet)at both the device and system levels.

   ii. All hardware products to be used in VIU facilities must be certified compliant by BACnet Testing Laboratories (http://www.bacnetinternational .org).

   iii. Use a distributed, peer-to-peer architecture, with no mater / slave hierarchical relationships between devices.

e. Product Software Compliance: All vendor BAS hardware products must meet the following criteria. Submit supporting documentation (i.e. system description, architecture diagrams, data sheets etc.) to demonstrate compliance:

   i. Ability to integrate standard open protocols (i.e. BACnet, LonTalk, Modbus, etc.).

   ii. Most be able to utilize IT protocols (i.e. XM, HTML, TCP/IP, etc).

   iii. Trended data must be stored in a SQL database.

   iv. VIU to own all software licenses (i.e. network configuration tools, programming tools, graphical user interfaces, etc.).

   v. All system files, databases, graphics, and programs must be owned by VIU and reside on campus servers.

3. Note that the basis of design for the in-floor heating system piping is 12mm dia. It is the contractor's responsibility to cover the design-build aspect of the in-floor heating system to produce the performance as indicated on the drawings.

II. SPECIFICATIONS – MECHANICAL (PHASE 1 AND PHASE 2)

The following addendum supersedes information contained in drawings and specifications issued for the project to the extent referenced. This Addendum forms part of the Tender Documents and is subject to all of the conditions set out in the contract conditions.

1. Section 15010 General Mechanical Provisions, Subsection 1.29.5 List of acceptable Manufacturers: REVISE the following item to the list.

ITEM	APPROVED MANUFACTURERS/SUPPLIERS
Coils	Trane, Aerofin, Engineered Air, Colmac, York / JCI

2. Section 15900 Controls General. ADD the following subsection 2.14.

2.14 DDC SYSTEM HEAD-END / SEPARATE PRICE

This contractor shall provide a fully functioning BACNet compliant DDC system with all hardware, software and programming required to run in stand-alone mode. The contractor is to submit a separate price to allow for the supply, installation, and training of VIU staff for a new head-end with operators workstation and web-based software (including graphical system interface) in conformance with this subsection (2.14.1). The new head-end is to be installed at VIU in Building 120.

2.14.1 PERSONAL COMPUTER OPERATOR WORKSTATION HARDWARE

A. Provide operator's terminal, desktop to be located in main maintenance office located in Building 120 (confirm final location with VIU maintenance staff). The system shall be capable of command entry, readout of system variables, override control, servicing, troubleshooting, information management and adjustment of control parameters. Each terminal shall be fully equipped to interface with all field panels including DDC controllers. Each terminal shall be fully equipped to interface with all necessary software and hardware to allow for backup and restoration of field panel database. The terminal shall be able to access the system through an integral plug-in type jack at temperature sensors. The terminals shall also be capable of accessing the system through each field interface device. The terminals shall also be capable of supporting other software packages for use by owner (i.e. a word processing package). The terminals shall be general purpose, commercially available (Compaq or equal) with sufficient memory and processor capacity to perform all functions described in this specification. Computers shall use latest Microsoft Windows-version (minimum Windows XP Professional. The terminal shall be provided with all necessary software and hardware required for interface to the DDC system control panels and devices. Operator's terminals shall include the following as a minimum:

DESKTOP SYSTEM

a. Intel Pentium 4 processor, 3.0 gigahertz (minimum)
b. 120 GB hard disk drive.
c. 2 GB of RAM.
d. One read / write DVD / CD burner, 48x speed.
e. Two serial ports.
f. Two parallel ports

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g. Two USB ports
h. Built-in real time clock and battery back up.
i. SVGA graphics.
j. 19" SVGA TFT color video display unit (1024x768 min).
k. 101-key keyboard and mouse.
l. Hewlett Packard (HP) LaserJet 3500N compatible color laser printer.
m. 48 X CDRW drive or DVD RW.
n. 10/100 Ethernet communication card for connection to campus network
o. UPS battery backup system suitable for 90 minute operation of all system components

B. The computer shall be equipped with applicable Ethernet communications interface(s) that allow connection to the remote devices via dedicated twisted pair wiring. The interface(s) shall be configurable as either COM1, COM2, or both, and be capable of supporting the required number of DDC controllers. See owner's representative for Network connection and IP address. Fully integrate the BAS computer into the owner's network with the assistance of the owner.
1. System operator interface shall consist of the screen and keyboard of the personal computer workstation.
2. The operator interface shall:
   a. Be menu-driven.
   b. Have a graphics display.
   c. Have user-designed graphic display screens.
   d. Have audible alarms, which are graphically enunciated.
   e. Log all operator control and configuration commands.
3. The workstation software shall consist of:
   a. Windows XP Professional.
   b. BAS manufacturers system software.

2.14.2 WORKSTATION OPERATOR INTERFACE

A. Basic Interface Description :
1. Operator workstation interface software shall minimize operator training through the use of English language prompting, English language point identification and industry-standard PC application software. The software shall provide, as a minimum, the following functionality:
   a. Scheduling and override of building operations.
   b. Collection and analysis of historical data and dynamic data (trend plot).
   c. Definition and construction of dynamic color graphic displays.
   d. Editing, programming, storage, and downloading of controller databases.
2. The software functions shall all be interfaced by a password-enabled web based interface. Ensure that installation of web-based software is compliant with security features in place at VIU. Not only shall controls vendors be able to trouble shoot all software related items via the web based interface, but VIU shall have the same capability. Provide full software support and licensing for the system and multiple users. Provide 4 full days of training for VIU staff.

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3. Provide for a full system graphical user interface including system diagrams and component animation, which shall minimize the use of keyboard through the use a mouse or similar pointing device and "point and click" approach to menu selection. Users shall be able to start and stop equipment or change set points from graphical displays through the use of a mouse or similar pointing device.
4. The contractor shall create or convert all graphical interface for existing building DDC system (Honeywell Custodian) components. This work shall be to the new EBI system standards, and shall be displayed on the new front-end computer. Include for checking the operation of all existing system components within this scope of work. Provide all interface components necessary to enable operation of existing components with new DDC system front end.
5. The software shall provide a multi-tasking type environment that allows the user to run several applications simultaneously. The mouse shall be used to quickly select and switch between multiple applications. This shall be accomplished through the use of a standard, current operating system, such as Windows XP Professional, that supports concurrent viewing and controlling of systems operations. The operator shall be able to work in Microsoft Word, Excel, and other Windows-based software packages while concurrently annunciating on-line BAS alarms and monitoring information.
    a. Provide functionality such that any of the following may be performed simultaneously on-line, and in any combination, via user-sized windows.
        1) Dynamic color graphics and graphic control.
        2) Alarm management routing to designated locations, and customized messages.
        3) Week-at-a-glance time-of-day scheduling.
        4) Trend data definition and presentation.
        5) Graphic definition and construction.
        6) Program and point database editing on-line.
    b. If the software is unable to display several different types of displays at the same time, the BAS controller shall provide at least two operator workstations.
6. Multiple-level password access protection shall be provided to allow the user/manager to limit workstation control, display and database manipulation capabilities as deemed appropriate for each user, based upon an assigned password. A minimum of three levels of access and ten passwords shall be supported.
7. Operator Activity Tracking: Provide an audit trail report for system changes allowing for accounting of operator-initiated actions, changes made by a particular person or changes made to a specific piece of equipment, and designated time frame. Report shall be archived for future use.
8. Reports shall be generated and directed to either CRT displays, printers or disk. As a minimum, the system shall allow the user to easily obtain the following types of reports:
    a. A general listing of all points in the network.
    b. List of all points currently in alarm.
    c. List of all points currently in override status.
    d. List of all disabled points.
    e. List of all points currently locked out.
    f. DDC controller trend overflow warning.
    g. List all weekly schedules.

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h. List of holiday programming.
i. List of limits and dead bands.
j. Excel reports.

9. Scheduling: Provide a graphical spreadsheet type format for simplification of time-of-day scheduling and overrides of building operations. Provide the following spreadsheet graphic types as a minimum:
   a. Weekly schedules.
   b. Zone schedules.
   c. Monthly calendars.
10. Collection and analysis of Historical Data:
   a. Provide trending capabilities that allow the user to easily monitor and preserve records of system activity over an extended period of time. Any such point may be trended automatically at time-based intervals or changes of value, both of which shall be user-definable. Trend data may be stored on hard disk for future diagnostics and reporting.
   b. Trend data reports shall be provided to allow the user to view all trended point data. Reports may be customized to include individual points or predefined groups of at least six points. Provide additional functionality to allow predefined groups of up to 250 trended points to be easily transferred on-line to Microsoft Excel or Lotus 123. DDC contractor shall provide custom-designed spreadsheet reports for use by the owner to track energy usage and cost, equipment run times, equipment efficiency, and/or building environmental conditions.
   c. Provide additional functionality that allows the user to view trended data on trend graph displays. Dynamic graphs shall represent real-time point data. Any point or group of points may be graphed, regardless of whether they have been predefined for trending. The graphs shall continuously update point values. At any time the user may redefine sampling times or range scales for any point. In addition, the user may pause the graph and take "snapshots" of screens to be stored on the workstation disk for future recall and analysis. Exact point values may be viewed and the graphs may be printed.

B. Dynamic Color Graphic Displays:
1. Create color graphic floor plan displays and system schematics for each piece of mechanical equipment, including air handling units, chilled water systems, and hot water boiler systems, shall be provided by the BAS contractor as indicated in the point I/O summary of this specification to optimize system performance analysis and speed alarm recognition.
   a. The operator interface shall allow users to access the various system schematics and floor plans via a graphical penetration scheme, menu selection, or text based commands. Graphics software shall permit the importing of AutoCAD drawings for use in the system.
   b. Dynamic temperature values, humidity values, flow values, and status indication shall be shown in their actual respective locations and shall automatically update to represent current conditions with operator intervention.
   c. The windowing environment of the PC operator workstation shall allow the user to simultaneously view several graphics at a time to analyze total building

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operation or to allow the display of a graphic associated with an alarm to be viewed without interrupting work in progress.

d. Off-the-shelf graphic software, Micrografx Designer, or Corel Draw software shall be provide to allow the user to add, modify, or delete system graphic displays.

C. System Configuration and Definition:

1. Network-wide control strategies shall not be restricted to a single DDC controller but shall be able to include data from any and all other network panels to allow the development of global control strategies.
2. Provide automatic back up and restore of all system databases on the workstation hard disk. In addition, all database changes shall be performed while the workstation is on-line without disrupting other system operations. Changes shall be automatically recorded and downloaded to the appropriate DDC controller. Changes make at the DDC controllers shall be automatically uploaded to the workstation, ensuring system continuity.
3. System configuration, programming, and graphics generation shall be performed on-line. If programming and system back up shall be done with the PC workstation off-line, the BAS contractor shall provide at least two operator workstations.

D. DDC Controller Communications:

1. Provide automatic dial-up communications for buildings as specified. Automatic dial-up communications shall include the following features as a minimum:
   a. Dial-out: Manual dial-out from the workstation to remote networks shall be accomplished using only a mouse to select and request the desired remote connection.
   b. Dial-in:
      1) Alarms shall automatically dial into the workstation for display at the terminal and for hard copy printout at the associated event printer.
      2) Alarms shall, at the operator's option, dial into a stand-alone modem-printer to provide for real-time alarm printouts even when the workstation is off-line (such as when it is being used to run operator-selected third party software).
      3) Trend data shall be scheduled for automatic updating to the workstation at operator-selected times. The operator shall also have the option of manually collecting trend data at any time.

III. DRAWINGS – MECHANICAL

1. No Items