ADDENDUM NO.1

April 3, 2018

PROJECT NAME: DPW 18 223 Idaho State University Liberal Arts Building Chiller Replacement

The data included hereinafter is issued by the Engineer (Engineered Systems Associates, Inc. 1355 East Center, Pocatello, ID 83201) as clarification, addition to, and/or deletion from the Drawings, Specifications, and Contract Documents relative to the above-named project.

Except as affected by data included hereinafter, all other parts of the Contract Documents shall remain in full force and effect as issued by the Engineer. It shall be the sole responsibility of the Bidder to appropriately disseminate this data to all concerned prior to the assigned bid time and date. Acknowledge Receipt of this addendum shall be recorded by the Bidder in the appropriate space on the Bid Form included in the Contract Documents. Failure to do so may subject the bidder to disqualification

Attached are the sign in sheets from the Pre-Bid Conference held on Tuesday, March 27, 2018 for your information only.

Bid Documents are available at these additional Plan Rooms:

1. The Blue Book, 800 E. Main St., Jefferson Valley, NY 10535, (800) 431-2584 Ext. 3179, Fax (914) 243-4936.
   www.thebluebook.com
2. Builders Exchange of Washington, Inc. (BXWA), 2607 Wetmore Avenue, Everett, WA 98201, (425) 258-1303, Fax (425) 259-3832.
   www.bxwa.com

Changes to the Specifications:

1. Delete Section 23 2114 from Indexes – Section not required.
2. Replace Section 23 6210 Scroll Water Chillers (Air Cooled) with the attached Section 23 6210 Air-Cooled Water Chillers.

Prior Approvals:

1. 23 0514 – Variable Frequency Drives, Yaskawa
2. 23 6210 – Air Cooled Water Chillers, Daikin Applied

END OF ADDENDUM

DPW 18 223

Idaho State University Liberal Arts Chiller Replacement

3-27-18 - Attendance Sheet

Name	Company Name	Phone	E-Mail
Fred Richards	DPW	208-269-0639	fred.richards@adm.idaho.gov
Mason Lewis	Lewis Corp.	208.238.1202 x105	mason@lcorp.com
Matt Gardner	B&B Plumbing	208-232-5632	mattgardner1406@gmail.com
Jason Coder	American Chiller Service	208-631-9264	Jason@acsofidaho.com
Eric Turner	Mechanical Solutions	208-760-7246	Eric@MechSolutions.co
Jade Johnson	Industrial Construction	208-522-9104	JLJOHNSON@ICI-IDAHO.COM
Andrew Wolford	Big-D Construction	208-709-9761	Andrew.Wolford@Big-D.com
Kyle Anderson	B&S Boiler Inc.	208-524-1737	kylebsboiler@qwestoffice.net
Jason Olsen	Bingham Mechanical Inc	208-522-4484	jasmolsen@binghammechanical.com
Mike Jensen	ESA		
Chris Clark	CR Clark	208 681-1251	Chris@CRClarkConstruction.com

DPW 18 223

Idaho State University Liberal Arts Chiller Replacement

3-27-18 - Attendance Sheet

Name	Company Name	Phone	E-Mail
Lewis Burnham	ISU HVAC	208-380-0288	Burnlewi@ISU.com
Wayne Archer	Sturm Corp	208-731-3918	wayne@sturmcorporation.com
Dwayne Sudweeks	ESA	208-233-0501	dcs@engsystems.com

SECTION 23 6210 - AIR-COOLED WATER CHILLERS

PART 1 GENERAL

1.1 SCOPE

A. Section includes design, performance criteria, controls and control connections, chilled water connections, electrical power connections and refrigerants of the chiller package.

1.2 REFERENCES

A. Products shall be designed, rated and certified in accordance with applicable sections of the following Standards and Codes:

1. To comply with the most recent versions of applicable Standards and Codes of Air-Conditioning, Heating & Refrigeration Institute (AHRI) 550 / 590.

2. AHRI 370 - Standard for Sound Rating of Large outdoor Refrigerating and Air-conditioning Equipment.

3. To comply with the most recent versions of applicable Standards and Codes of American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15.

4. Units shall meet the efficiency standards of ASHRAE 90.1.

5. To comply with seismic application in accordance with the most recent versions of the International Building Code (IBC).

1.3 QUALITY ASSURANCE

A. Underwriters' Laboratories (UL) 1995 -- Standard for Heating and Cooling Equipment.

B. Manufactured facility to be International Organization for Standardization (ISO) 9001.

C. Factory Functional Test: The chiller shall be pressure tested, evacuated and fully charged with HFC-410A refrigerant and oil. In addition, a factory functional test to verify correct operation by cycling condenser fans, closing compressor contacts and reading data points from temperature and pressure sensors.

D. Operational Test with Water: Chiller shall be functionally tested with power and water flowing through the chiller before shipment. A test report showing date and time of test shall be provided.

E. Chiller manufacturer shall have a factory trained and supported service organization that is within a 150 mile radius of the site.

F. Warranty: The manufacturer shall warrant all equipment and material of its manufacture against defects in workmanship and material for a period of one year from date of initial start-up or eighteen months from date of shipment; whichever occurs first.

1.4 SUBMITTALS

A. Submit shop drawings and product data in accordance with the specifications.

B. Submittals shall include the following:

1. Dimensioned plan and elevation view drawings, required clearances, and location of all field connections.

2. Product data indicating rated capacities, weights, specialties and accessories, electrical requirements and wiring diagrams.

1.5 OPERATION AND MAINTENANCE DATA

A. Include manufacturer's descriptive literature, installation checklist, start-up instructions and maintenance procedure.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Units shall be delivered to job site fully assembled and charged with refrigerant (unless selected with nitrogen charge) and oil by the manufacturer.

B. Unit shall be stored and handled per manufacturer's instructions.

C. During shipment, provide protective covering over vulnerable components. Fit nozzles and open pipe ends with enclosures.

D. Unit controls shall be capable of withstanding 158F (70C) storage temperature in the control compartment for an indefinite period of time.

1.7 WARRANTY

A. Provide a full parts warranty for one year from start-up or 18 months from shipment, whichever occurs first.

B. A 5-year motor/transmission/compressor warranty shall be provided based upon the RPM of the compressors as follows:

Compressor RPM	**Warranty Term**
0 - 5000	1 year from start-up
5001 - 10,000	5 years from start-up
10,001 and above	5 years plus annual oil analysis

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Trane Model CGAM [See drawings for capacity]

B. Or Approved Equal from Carrier, or York

C. Others require prior approval a minimum of 7 days prior to bid opening.

2.2 GENERAL UNIT DESCRIPTION

A. Factory assembled, single-piece chassis, air-cooled liquid chiller. Contained within the package shall be all factory wiring, piping, controls, and refrigerant charge (HFC-410A).

2.3 CABINET

A. Frame shall be heavy-gage, with a powder coated paint finish for both aesthetic appeal and to offer more resistance to corrosion.

B. Units shall be constructed of a galvanized steel frame with galvanized steel panels and access doors. Component surfaces shall be finished with a powder-coated paint. The coating or paint system shall withstand a 500-consecutive-hour salt spray application in accordance with standard ASTMB117.

2.4 COMPRESSORS

A. Fully hermetic scroll type compressors with R410A optimized and dedicated scroll profile.

B. Direct drive motor cooled by suction gas with only three major moving parts and a completely enclosed compression chamber which leads to increased efficiency.

C. Each compressor shall have overload protection internal to the compressor

D. Each compressor shall include: centrifugal oil pump, oil level sight glass and oil charging valve

E. Each compressor will have crankcase heaters installed and properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

2.5 EVAPORATOR

A. The evaporator shall be a high efficiency, brazed plate-to-plate type heat exchanger consisting of parallel plates. Braze plates shall be stainless steel with copper braze material.

B. The evaporator shall be protected with an etched foil heater and covered with insulation. This combination shall provide freeze protection down to -20F (-6.67C) ambient temperatures while the heater is powered. Contractor shall provide separate power to energize heater and protect evaporator while chiller is disconnected.

C. The water side working pressure shall be rated at 150 psig (10.3 bar) and tested at 1.5 times maximum allowable water side working pressure.

D. The refrigerant side working pressure shall be rated at 460 psig (29.6 bars) and tested at 1.1 maximum allowable refrigerant side working pressure.

2.6 CONDENSER

A. Construct condenser coils of microchannel all aluminum brazed fin construction. The condenser coils shall have an integral sub-cooling circuit and shall be designed for at least 650 psig (44.8 bar) working pressure. Leak tested at 715 psig (49.3 bar). Coils can be cleaned with high pressure water.

B. The maximum allowable working pressure of the condenser shall be 650 psig (44.8 bars). The condensers shall be factory proof and leak tested at 715 psig (49.3 bars).

C. Low Sound Fans shall be dynamically and statically balanced, direct drive, corrosion resistant glass fiber reinforced composite blades molded into a low noise fan blade.

D. Low speed fan motors shall be three-phase with permanently lubricated ball bearings and individually protected by circuit breakers.

E. Unit shall be capable of starting and running at outdoor ambient temperatures from 32F to 125F (0C to 52C).

F. Provide coil protection for shipping. Entire condenser coil shall be covered with heavy plastic to prevent inadvertent damage to coil during shipment or rigging.

2.7 ENCLOSURES

A. Mount starters in a UL1995 rated panel for outdoor use.

B. The starter shall be across-the-line configuration, factory-mounted and fully pre-wired to the compressor motor(s) and control panel.

C. Unit shall have a single point power connection.

D. A control power transformer shall be factory-installed and factory-wired to provide unit control power.

E. Control panel shall be dead front construction for enhanced service technician safety.

F. Power line connection type shall be standard with a terminal block.

2.8 REFRIGERATION COMPONENTS

A. Each refrigerant circuit shall include a filter drier, electronic expansion valve with site glass, liquid line service valves and a complete operating charge of both refrigerant HFC-410A and compressor oil.

B. Each refrigerant circuit shall include a discharge line service valve to allow the refrigerant to be isolated in the condenser.

2.9 CONTROLS, SAFETIES AND DIAGNOSTICS

A. The microprocessor-based unit controller shall be factory-installed and factory-tested.

B. Include Bacnet Gateway to communicate with the existing Johnson Controls Metasys ATC system.

C. The unit display shall provide the following data:

1.Water and air temperatures

2.Refrigerant levels and temperatures

3.Flow switch status

4.Compressor starts and run times

D. The unit controller shall provide chilled water reset based on return water as an energy saving option.

E. Chilled water temperature control shall be microprocessor-based, proportional and integral controller to show water and refrigerant temperature, refrigerant pressure, and diagnostics. This microprocessor-based controller is to be supplied with each chiller by the chiller manufacturer. Controls shall include the following readouts and diagnostics:

1.Low evaporator refrigerant temperature and/or pressure

2.High condenser refrigerant pressure

3.Motor current overload

4.High compressor discharge temperature

5.Electronic distribution faults: phase loss, phase imbalance, or phase reversal

F. Unit shall be shipped with factory control and power wiring installed.

G. On chiller, mount weatherproof control panel, containing starters, power and control wiring, factory wired with terminal block power connection. Provide primary and secondary fused control power transformer and a single 115 volt 60 Hz single phase connection for evaporator freeze protection heaters.

H. Provide single 115 volt 60 Hz single phase connection for evaporator freeze protection heaters.

I. The unit controller shall utilize a microprocessor that will automatically take action to prevent unit shutdown due to abnormal operating conditions associated with: evaporator refrigerant temperature, high condensing pressure and motor current overload.

J. Provide the following safety controls with indicating lights or diagnostic readouts.

1. Low chilled water temperature protection.

2. High refrigerant pressure.

3. Low oil flow protection.

4. Loss of chilled water flow.

5. Contact for remote emergency shutdown.

6. Motor current overload.

7. Phase reversal/unbalance/single phasing.

8. Over/under voltage.

9. Failure of water temperature sensor used by controller.

10. Compressor status (on or off).

K. Provide the following operating controls:

1. Chilled water pump output relay that closes when the chiller is given a signal to start.

2. High ambient pressure controller that shuts off a compressor to keep head pressure under control and help prevent high pressure nuisance trip outs on days when outside ambient is above design.

3. Compressor current sensing limit that shuts off a compressor to help prevent current overload nuisance trips.

4. Auto lead-lag functions that constantly even out run hours and compressor starts automatically. If contractor cannot provide this function then cycle counter and hour meter shall be provided for each compressor so owner can be instructed by the contractor on how to manually change lead-lag on compressors and even out compressor starts and running hours.

5. Low ambient lockout control with adjustable setpoint.

L. Provide user interface on the front of the panel. If display is on the inside of the panel, then a control display access door shall be provided to allow access to the display without removal of panels. Provide user interface with a minimum of the following features:

1. Leaving chilled water setpoint adjustment from LCD input

2. Entering and leaving chilled water temperature output

3. Percent RLA output for each compressor

4. Pressure output of condenser for circuits one and two

5. Pressure output of evaporator for circuits one and two

6. Ambient temperature output

7. Voltage output

8. Current limit setpoint adjustment from LCD input.

2.10 CHILLED FLUID CIRCUIT

A. Chilled fluid circuit shall be rated for 150 psig (1034 kPa) working pressure.

B. Proof of flow switch shall be provided by the equipment manufacturer and installed the

correct number of pipe diameters from any elbow and in the correct orientation.

C. Flow switch shall be IFM flow monitor type.

D. Units with brazed plate evaporators shall have a 16 mesh water strainer that is factory provided. It shall be installed with a blowdown valve to facilitate periodic cleaning of the strainer to prevent it from becoming clogged.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Align chiller package on steel or concrete foundations.

C. Install units on isolators.

D. Connect to electrical service.

E. Connect to chilled water piping.

3.2 SCHEDULE

3.3 MANUFACTURER'S FIELD SERVICES

A. OEM Startup is performed by factory trained and authorized servicing technicians confirming equipment has been correctly installed and passes specification checklist prior to equipment becoming operational and covered under OEM warranty.

1. Included OEM Factory Startup:

a. Centrifugal, Rotary Screw, and Scroll Chillers

B. Applied Chiller manufacturers shall maintain service capabilities no more than 150 miles from the jobsite.

C. The manufacturer shall furnish complete submittal wiring diagrams of the package unit as applicable for field maintenance and service.

END OF SECTION 23 6210

END OF DIVISION 23