

## **EXHIBIT B – Scope of Work**

### **INTENT:**

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a courtesy and must be used in conjunction with **all** Project Documents. Scope of Work detail listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

### **I. SCOPE OF WORK SUMMARY:**

The Scope of Work shall include the furnishing and installation, complete, of the **HVAC Controls Work** as outlined in **The Contract Bidding Requirements** and in accordance with the **Contract Documents**. This shall include, but is not limited to all required, engineering, submittals (samples or mock-ups and shop drawings), materials, fabrication, labor, equipment and tools, supervision, hoisting, scaffolding, and transportation, burden and taxes as required for a complete installation.

### **II. GENERAL REQUIREMENTS**

- A. Subcontractor has included all material, labor, supervision and administration for requirements outlined in the Exhibit C - Special Provisions. These are the standard expectations for all Balfour Beatty Construction projects.
- B. This Subcontractor shall obtain and pay for any additional permits, bonds, or fees as required to complete scope of work under this agreement including any required re-inspection fees / costs are responsibility of Subcontractor.
- C. Subcontractor understands that all work is being done on an active university campus. As such the following apply:
  - 1. Due to the Emergency Declaration associated with this project the guidelines present in Section 5 – Special Provisions, specifically Item No. 4 shall be strictly adhered to without exception. Coordinate ALL weekend work with the Site Superintendent as there are restrictions and guidance from UNCW that must be adhered to on Campus.
  - 2. No noise making activities (including trucks backing or equipment prepping or music playing) prior to 7:00 AM or after 6:00 PM
  - 3. No work will be permitted to start early without 48 hour written notification to UNCW Project Manager outlining specific tasks to be performed prior to 7:00 AM.
  - 4. No afterhours work will be permitted without 48 hour written notification to UNCW Project Manager outlining specific tasks to be performed after 5:30 PM.
  - 5. All gates will be locked after 6:00 PM.

6. Streets are to be clean all the time. Subcontractor is responsible for cleaning the roads should their specific activities track dirt or mud onto university streets.
7. No trucks are to be left on university roads.
8. All deliveries are to be accompanied by flagmen at the entry gates.
9. No work shall be performed outside the site fencing without UNCW authorization.
10. At no point are any construction personnel to interact (talk or look) with the students.

D. Employee Conduct:

1. All construction personnel shall be respectful to all University of North Carolina Wilmington staff and students. Any disrespect, harassment, unwelcome comments or advances from any construction personnel toward any staff member or student shall constitute sufficient grounds for University of North Carolina Wilmington to request removal of any specific individuals from this project.
  - a. Such Owner action shall not constitute grounds for a delay claim.
  - b. Owner will not be responsible for any delays caused to the project due to any individual being removed from this project.
  - c. Construction superintendents shall be held accountable for any incident of this nature.
2. All after normal hours work shall be scheduled a minimum of 48 hours for Interior Work and 7 Days for Exterior Work.
3. Special attention is required for traffic control in and out of the Construction Site so as to avoid the Student population as they move around on Campus.
4. Use of tobacco products and other controlled substances on the Project Site is not permitted.
5. No Lottering on campus is allowed at any time.

III. **TRADE SPECIFIC SCOPE OF WORK ITEMS:**

- A. The following is a general outline of items included, but not limited to, under this agreement for all ***HVAC Instrumentation and Controls*** per all specification sections under Division 23, etc. All HVAC Controls related work identified on mechanical drawings as well as inclusion of those items indicated on civil, site utility, plumbing, mechanical, and electrical drawings identified to be completed by this Subcontractor:
  1. Subcontractor shall furnish and install all HVAC Instrumentation and Controls systems including, but not limited to, all piping, relays, controls, calibrations, testing, sensors, conductors, switches, air flow measuring stations, lighting controls, commissioning, etc in accordance with Specification **23 09 00**.

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2. Subcontractor shall furnish and install all complete Automatic Temperature Controls systems complete including, but not limited to, all conduit, boxes, wiring, thermostats, humidistat and other devices required for a complete operable system.
3. Subcontractor is responsible for all BMS / Control systems complete including, but not limited to, controls conduit, boxes, pull strings, relays, wiring, transformers, etc. All controls shall be 100% functional and available for Owner's monitoring prior Beneficial Occupancy of the building.
4. Subcontractor shall furnish and install all control valves, damper actuators, flow meters, temperature control devices, etc. All layout and field coordination with the respective trades is the responsibility of this subcontractor. It is the responsibility of this subcontractor to provide the MEP trades with restrictions of device placement and location during BIM coordination signoff process and then go into field and field locate all these devices to insure operation will meet manufacturer's recommendations and contract documents.
  - a. ~~All lab terminal exhaust unit are to be furnished by this subcontractor. All material is to be delivered to the jobsite and inventoried by this subcontractor.~~
  - b. ~~Installation of the lab terminal exhaust units will be by the others.~~
5. Subcontractor shall provide a complete installation of all control devices that are shipped and delivered separate from the equipment requiring the device. Any in-line devices such as valves, dampers, air flow measuring stations, etc. will be installed by the Mechanical Contractor.
6. All conduit and control wiring is included. All surfaced mounted control conduit in public areas shall be prefinished wire mold type conduit.
7. All rough-in work included in this Scope of Work is to be concealed within wall cavity unless approved otherwise by Owner and Architect.
8. If float switch is specified in secondary drain pan, this Subcontractor shall furnish and install all required control wiring.
9. Provide Surge Protection for controls system.
10. Included in this Agreement is all low voltage wiring related to any mechanical equipment including but not limited to duct detectors.
11. Monitoring of the water and electrical consumption is included in this Agreement.
12. Subcontractor to provide all mechanical equipment emergency shutoff equipment including push buttons, enclosures, wiring, etc.
13. Other unique systems to control, interface and/or monitor, include, but not limited to, the following:

- a. Monitoring of medical gases is included.
  - b. Subcontractor shall include provisions and provide complete monitoring all elevator sump pump pit alarm panels for status and alarm conditions through the BCS.
  - c. Basement storm sump pump system. Note, this needs to be monitored in a temporary condition as well (floats, backup, etc.) during construction prior to CMAR installing permanent equipment in the basement.
  - d. Basement sanitary sewer pump system Note, this needs to be monitored in a temporary condition as well (floats, backup, etc.) during construction prior to CMAR flushing mechanical and plumbing systems to start up HVAC conditioned air.
14. All reference to 'by Contractor', 'by General Contractor', or 'by Construction Manager' on the Plumbing and Mechanical Drawings shall be inferable assumed as 'By this Subcontractor'.
15. Subcontractor is responsible for total coordination of all HVAC Controls installations and for providing complete controls system. There will be no cost or time considerations given for adjustments of equipment or pipe runs due to conflicts arising from lack of coordination with adjacent other existing MEP installations, new or existing structures, or other Subcontractors. First installed does not constitute grounds for a change order for installation of uncoordinated work.
  - a. Subcontractor is responsible for reviewing Electrical documents for specified power requirements and conditions for mechanical equipment. Subcontractor shall not assume Division 26 Electrical Subcontractor has provided additional conduit or wiring to interface control and power circuiting required under this Agreement. This Subcontractor is responsible for completing all power and control wiring not indicated by Division 26 to provide a complete mechanical system.
  - b. Subcontractor shall coordinate and interface the Building Control System with the Fire Alarm, Electrical, Lighting Control, Plumbing and Mechanical to assure provision of adequate contacts and relays required for proper operation/interface between systems. Subcontractor is responsible for insuring specified sequence of building operations for other systems and riser diagrams.
  - c. Subcontractor shall coordinate and mutually perform test(s) and confirm correctness of all line voltages with the project Electrical subcontractor prior to energizing any control equipment and/or components. The details of these test events shall be recorded in each respective subcontractor Daily Report. Failure to perform and record these test activities may be considered cause to deny any related claims.
16. Subcontractor shall furnish and install all required supports for this Work including, but not limited to anchor bolts, hangers, isolators, channels, and angles, embeds. Should additional supports be required to distribute loads over more than one structural element per industry standards, same shall be included. All items hanging from steel trusses shall be hung within

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- design requirements. No point loading or overloading of truss system is permitted. Floor stands are included if existing structural elements will not support loads.
17. All T-Stat locations must be coordinated with other adjacent devices in the wall for uniformity. Confirm color of devices match electrical devices prior to submittal submission. Provide a separate T-stat location shop drawing with architectural drawings as a background, and overlaid with electrical lighting and power drawings to make sure no conflicts. No devices shall be installed in accent walls for painting, wall paper, stone, and wood walls.
  18. Variable frequency drives shall be provided by the mechanical and/or plumbing contractor and installed by the electrical contractor. This Controls Subcontractor shall make any conduit connections required for controls work.
- B. Coordinate all installations, testing, inspections, and punchlist with commissioning agent hired by the Owner for this Project at no additional cost to Contractor in accordance with specification section 23 0800.
1. This Subcontractor has included all cost for onsite participation in the Owner's Commissioning process which included verification of all control system devices and Owner Training.
  2. The Controls Contractor shall attend meetings with the Owner during the construction and prior to Beneficial Occupancy to coordinate and demonstrate the operations of the controls systems. This shall include three additional 6 hour meetings beyond the requirements on the Owner's commissioning system.
  3. All additional training as identified in Commissioning per specification section 23 0800 is included at no additional cost to the Construction Manager.
- C. Subcontractor shall layout, in coordination with other trades and shall install all required sleeves within elements of the structure for the installation of Subcontractor's Work. Subcontractor shall seal, pack, fire safe, water seal, weather caulk, aesthetic caulk, etc. all of its sleeves/penetrations as required by the Contract Documents and as to maintain required ratings. Formed openings in masonry and concrete walls are herein included.
- D. Core drilling, cutting, and sleeving new penetrations at existing Construction walls, foundations walls, and slabs locations is herein included. Subcontractor is responsible to clean-up all core drill slurry from walls and slabs as well as removing and patching all core drill machine anchors. Hammering of walls causing a blow-out or sprawling is not permitted and will be corrected at expense of Subcontractor.
- E. Concrete saw cuts, removal, and concrete replacement as required to install Work within this Scope is included. No saw cuts or core drilling is to be performed without written approval from Contractor and Architect/Engineer.
- F. Subcontractor shall be responsible for providing safe access for testing agency and Engineer of Record to the Work being fabricated, stored, or installed so that required inspection and testing

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may be accomplished. It is understood and agreed that any Work under this Scope found to be in non-compliance shall be corrected and re-tested at no cost to Contractor and/or Owner.

- G. This subcontract to furnish all non-security and security access panels required for access to valves, switches, etc. Subcontractor is responsible for coordinating the locations and size of required framed openings with respective trades during the construction of walls, ceilings, and floors. Rated panels are included to match ceiling and wall types.
- H. Subcontractor shall allow walls to be primed and finish painted prior to installation of surface mounted piping and setting of equipment. Subcontractor understands that existing wall and ceilings paints are to remain, and this Subcontractor will be responsible for repaint costs if damages occur during installing of work under this agreement.
- I. Subcontractor understands ceiling grid is to be protected by this Subcontractor and this Subcontractor shall be responsible for costs to make any repairs or portion thereof of unidentifiable damage caused jointly with other MEP trades.
- J. During TAB of systems, this subcontractor is expected to have a full crew onsite to manage the programming, and go out into the field and make the system is functioning mechanically as designed. Failure to do this, will result in 100% costs for commissioning agent to perform said duties during commissioning, and all costs for CMAR and our Subcontractors to stand around while repairs are made.
- K. Schedule: {Description of Critical Patch, requirements and crew logic}
  - 1. Subcontractor understands that multiple floors will be occurring simultaneously and said Subcontractor shall provide required supervision and manpower to maintain multiple work areas. Schedule is not constrained which allows the Masonry and Concrete trades to proceed ahead of schedule, or work floors than anticipated in the schedule. Subcontractor agrees to adjust manpower and supervision requirements to meet acceleration potential of the building structure at no additional cost to Contractor (i.e. electrical rough-ins shall not be constraint on masonry, concrete, installations). Subcontractors shall provide CMAR with a list of priority actions to phase construction to make controls complete 30 days after receiving a subcontract, and update this list every 30 days in writing (ie. Which rooms to building, power needs, equipment needs, etc.)
  - 2. Subcontractor agrees to expedite the permanent HVAC Control/BCS systems and final hook-ups necessary to operate the permanent heating and ventilating system for the purpose of temporary heating and ventilation. The Subcontractor will include any labor required to operate the mechanical controls portions of this system. The early start-up of the mechanical equipment shall in no way encroach upon any warranty requirements of the Specifications. Subcontractor shall advise and coordinate with Contractor all items that are or will be received in order to achieve early start-up of equipment.
  - 3. Subcontractor shall prioritize the controls devices, connections and testing for the metering and valves on the incoming Steam, condensate, domestic water, fire water, chilled water, and electrical power systems. These valves and meters must have the ability to be controlled by

OIT at regional plant so as to expedite “Conditioned Air” for the building. Pathway outside of the building for remote connection to OIT will be provided by others.

4. All rough-in/completion activities (i.e. wire pulling, etc) will be complete prior to ceiling grid installation (any rough-in/completion activities creating damage will be appropriately charged for any ceiling grid damage).
5. Subcontractor understands that multiple mobilizations are required and has included all cost.
6. Subcontractor understands that multiple crews, supervisors, and equipment are required to start and complete work in each of the buildings simultaneously in accordance with the schedule.

L. Addendum / Bid Clarifications:

1. Subcontractor shall furnish and install the conduit and control wiring of the remote Konvekta Flow Control Valves and temperature sensor (10 delivered loose - 4 are three-way valves). There are from the remote location (One at each of the two AHU coils and one at each ERU coil) back to the HEERS-1 Control Panel mounted on that equipment skid.
2. Terminal Units (TU#-#.#), Lab Terminal Units (LTU#-#.#) and Lab Terminal Exhaust Units (EV#-L#.#) will be furnished and installed by others.
3. Regarding Item III.A.4, inline devices will be furnished by this subcontractor, installed in the piping by the HVAC – Water Side Subcontractor and then wired and checked out by this subcontractor.
4. Regarding Item III.A.10, duct detectors will be furnished, wired and checked out by the Electrical Subcontractor, installed by the HVAC – Air Side or Lab Exhaust subcontractor.
5. Subcontractor shall furnish and install all variable frequency drives required for equipment furnished under this scope of work. All line and load side power wiring will be by the Electrical subcontractor.
6. Subcontractor shall furnish and install DPT sensors in all lab rooms as noted on Drawing M7.2. These shall be incorporated into the controls system maintain room air pressure requirements.

#### IV. SCOPE ALLOWANCES

- A. The subcontractor shall include the following allowance(s) in the base bid amount for work above and beyond the work outlined in the bid package scope of work sections.
  1. Subcontractor shall include 2% of the contract value for general clean-up. This will be deducted from the contract and managed by CMAR. Once credited, this Subcontractor shall continue to perform their daily clean-up as required by the Special Provisions.



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- B. These allowances are intended to cover the cost of work for the scope described. It is understood that all overhead, profit, insurance or other direct or indirect expense of the Subcontractor are included in the base bid amount and thus will not be accounted for when reconciling these allowances.
- C. Verification of any allowance usage must be signed off on by the Contractor to be validated for billing purposes.
- D. All unused portion(s) of these item(s) will be reconciled based on the unit prices provided on the bid form at the completion of the project via deductive change order.
- E. Any work in excess of the allowance amount(s) will be paid via change order based on the unit prices provided on the bid form.

#### V. TRADE SPECIFIC SCOPE EXCLUSIONS

The following is a list of specific exclusions normally related to this scope of work:

- A. Konvekta High Efficiency Energy Recovery Controls.

#### VI. RECAP OF CONTRACT AMOUNT

The Total Subcontract Amount is arrived at and recorded as follows:

BP-## – Bid Amount	\$ #,###,###
Additions / Deletions	\$ ###,###
<b>TOTAL SUBCONTRACT AMOUNT</b>	<b>\$ #,###,###</b>