United States Department of Agriculture
Agricultural Research Service

STATEMENT OF WORK

Replace Chilled Water Coils at AHU-1
Cereal Crops Research Unit (CCRU)
USDA-ARS, Madison, WI

DATE: February 15, 2023

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Scope of Work Description
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Scope of Work Description:

1. Project Location: USDA-ARS-CCRU
   502 Walnut Street
   Madison, WI 52726

2. Point of Contact at Location: David Lamar
   (608)-346-0736
   david.lamar@usda.gov

3. MWA EPM: Wayne Myers
   (309)-681-6124
   wayne.myers@usda.gov

4. The project shall include a Base Bid, Bid Option 01, Bid Option 02, and Bid Option 03.
   - Base Bid: Provide replacement of chilled water coils at AHU-1 of the CCRU facility along with associated piping modifications as described below and in accordance with this Statement of Work.
   - Bid Option 01: Provide piping / ductwork installation to vent drained coiling coils as described below and in accordance with this Statement of Work.
   - Bid Option 02: Provide replacement of control valve assembly, control valve bypass piping, calibrated balancing valve, pressure gauges, thermometers, and shutoff valves that are located in 6” chilled water piping header to AHU-1 as described below and in accordance with this Statement of Work.
   - Bid Option 03: Provide coils that are furnished / equipped with freeze relief plugs / caps as described below and in accordance with this Statement of Work.

5. Interested parties are strongly encouraged to visit the site of the proposed work and review the existing conditions relating to construction and labor, to be fully informed as to the facilities involved, and the difficulties and restrictions that may affect the performance of the Contract. Failure to visit the site will not disqualify those submitting a proposal. However, change order requests for items that could have been reasonably ascertainable from a site visit (and included in a proposal) will be reviewed by the CO and evaluated accordingly.

6. Scans of original construction drawings of the Cereal Crops Lab (dated February 2004) are provided in the project’s solicitation package. The Contractor shall use the existing drawings as reference / resource in developing their bid / proposal. The Contractor shall confirm all existing conditions, dimensions, etc. prior to proceeding with any project activities.

7. The scope of the project shall be, generally, replacing chilled water coils with new along with associated modifications to provide properly operating mechanical equipment as originally intended. The coil replacement and associated modifications shall be in accordance with this Statement of Work and the FAR Solicitation and Contract clauses that are identified in the complete Solicitation package. This Statement of Work (SOW) shall consist of this "Scope of Work Description", Project Specifications, Attachments, General Notes and Requirements, Photographs, and Existing Drawings.

   A. The replacement / repairs shall be performed in a neat, workmanlike manner to provide code-compliant, complete, properly functioning installation.

   B. Contractor shall be responsible for all project waste including hauling away, directing waste to recycle, and legally disposing of remaining waste. See Project Specifications for additional information on requirements for directing waste to recycle.

   C. The replacement of the chilled water coils and associated piping system modifications shall be sequenced and scheduled to minimize the time period of air handler AHU-1 shutdown and its impact to the facility. For bidding purposes, the Contractor shall assume that coil replacement and associated piping system modifications will occur over a weekend, starting at 3:00 pm on Friday and with restoration of a functional air handler completed by 5:00 pm on Sunday (i.e. air handler and cooling coils shall be functional and producing cooling – final trim out items such restoration of pipe insulation, balancing, etc. can occur during weekdays during normal working hours).
      - Base Bid work and Bid Option 02 work may occur on separate weekends as needed to comply with these time constraints.
      - Contractor shall assume Bid Option 01 work will be performed during normal working hours.

   D. Contractor shall provide all materials and components needed for the indicated replacement / repairs. All materials and components furnished for the repairs shall be 100% compatible with the existing air handler. Contractor shall provide product data sheets in their proposal on the materials that will be furnished for the indicated repairs. See Note 16 for additional information. Provide information on:
      - Chilled water coil(s) – Provide product data sheets
      - Piping materials – Provide product data sheets
      - Piping components / accessories (valves, gauges, thermometers, etc.) – Provide product data sheets
      - Pipe insulation – Provide product data sheets

8. **Existing Conditions**:
   Existing air handler AHU-1 has two chilled water coils (upper and lower). Mechanical drawings dated 2004 from original building construction indicate the following on the chilled water coil(s) (see "Existing Drawings" for additional information – Air Handler Schedule is shown on M-810):
   - Maximum face velocity: 450 ft / min
   - Entering air: 87.4 dB °F; 73.4 wB °F
   - Leaving air: 52.0 dB °F; 51.3 wB °F
   - Maximum SP Loss: 5 in H_2O
   - Waterside Flow: 420 gallons / min
   - Maximum Pressure Drop: 10 ft H_2O
   - Entering Water: 42° F
   - Leaving Water: 56° F
   - Minimum Sensible Cooling Capacity: 1630 MBTUH
   - Minimum Total Cooling Capacity: 2950 MBTUH

   Approximate dimensions of each existing coil are 133" W x 53" H x 12" D. Contractor shall confirm dimensions of each coil prior to ordering / purchasing of new coils.

   Chilled water is supplied to the CCRU facility from University of Wisconsin. For bidding purposes, Contractors shall assume that the chilled water does not contain glycol.

   Existing chilled water piping system to AHU-1 consists of 6" chilled water supply and return lines routed to the air handler with 3" branch runs /connections to each coil. See "Existing Drawings" for additional information and reference "Detail 1 – Multiple Coil Piping Detail". The piping system includes, but not limited to, the following piping components and accessories:
   - Shut off valves on main 6" supply and return lines to AHU-1.
   - Calibrated balancing valve with flow sensors on main 6" return line to AHU-1.
   - Pressure gauges and temperature thermometers on main 6" supply and return lines to AHU-1.
   - "Y" strainer with blowdown valve and hose bibb on main 6" supply line to AHU-1.
   - Control valve assembly on main 6" return line to AHU-1. Control valve assembly shall consist of automatic two-way control valve with shut-off valves; shut-off valves are provided on both inlet and outlet sides of control valve.
   - Bypass assembly around control valve assembly with globe valve. Bypass is full size of the control valve.
   - Shut-off valve at branch supply line to each coil.
   - Shut-off valve at branch return line to each coil.
   - Balancing valve at branch return line to each coil.
   - Pressure gauge and temperature thermometer on each branch supply and return line to each coil.
   - Automatic air vent on each coil.

- Drain assembly at each coil, connected to branch line. Drain assembly consists of 3/4” pipe with shut-off valve and hose bibb.

9. **Base Bid:** The scope of Base Bid shall include, but not limited to:
    - Contractor shall remove two (2) chilled water coils in their entirety and replace with new. See “Requirements for Chilled Water Coils” below for additional information.
    - Contractor shall disconnect and remove existing chiller water supply and return lines, along with associated pipe insulation to allow removal of coils. Remove existing 3” branch supply and return lines to each coil in their entirety. Remove existing 6” main supply and return lines to AHU-1 back to ceiling space of Mechanical Room (remove vertical risers of piping run).
    - Contractor shall provide chilled water connection (supply and return) to each new coil including the furnishing and installation of new chilled water piping, associated valves, piping components, and piping accessories. See “Requirements for Chilled Water Piping Installations” for additional information. Intercept and extend 6” piping to restore originally intended installation. Provide connections to coils with 3” piping. The renovated piping system shall include providing the following new components / accessories in the installation:
        - Shut-off valve at branch supply line to each coil.
        - Shut-off valve at branch return line to each coil.
        - Balancing valve at branch return line to each coil.
        - Pressure gauge and temperature thermometer on each branch supply and return line to each coil.
        - Automatic air vent on each coil.
        - 2” stub-out at one of branch lines to each coil. Each stub-out shall be nominal 12” in length and shall be located downstream of shut-off valve at coil. Stub-out installation shall include shut-off valve and shall be capped. New shut-off valve shall be full port type and equipped with quarter turn handles, PTFE seats and seals, chrome plated brass ball, and blowout proof valve stems. Stub-out shall be in branch line that does not have drain assembly. (Stub-out shall be used in venting of coil as described in Bid Option 01).
        - Drain assembly at each coil, connected to allow draining of coil. Drain assembly shall consist of 3/4” pipe with shut-off valve and hose bibb.
    - Removal and replacement of freeze-stat at AHU-1 that protects the chilled water coils. New freeze-stat shall be:
        - Compatible with facility’s building control system.
        - Serpentine, capillary type; providing full coverage across the new coils (additional elements shall be provided as needed for complete coverage across the new coils).
        - Manual reset type with auxiliary contacts. Contact arrangement shall be selected to maintain existing interlocks with AHU-1 control and building control system. A freezing condition at any 18” increment along the sensing element shall activate the auxiliary contacts. (Existing freeze-stat is interlocked with AHU-1 control through a normally closed contact and is providing digital input to facility’s building control system through a normally open contact.)

- Contractor shall modify and restore AHU casing / enclosure as needed for coil replacement.
- Contractor shall fill and vent the new coils and associated piping to provide properly filled system.
- Contractor shall furnish and install new pipe insulation to restore a fully insulated chilled piping system to AHU-1. Installation of new pipe insulation system shall include restoration of pipe insulation disturbed by the Contractor in performance of the project's scope for Base Bid and restoration of pipe insulation that has been removed by the Owner. See "Requirements for Pipe Insulation Systems" below for additional information.
- Contractor shall engage a testing, adjusting, and balancing (TAB) firm for this project. TAB firm shall be certified by either AABC or NEBB and shall perform TAB services for this project. See "Requirements for Testing, Adjusting, and Balancing" below for additional information.

10. **Bid Option 01:** The scope of Bid Option 01 shall be piping installation to allow air "cold weather" venting of coils. The installation shall include, but not limited to:
    - Contractor shall provide new 4" rigid PVC air duct from existing air supply line in Mechanical Room 157 to each new 2" stub out at branch line to each coil. (See Note 9 – Base Bid for more information on 2" stub-out).
    - Contractor shall all fittings and materials needed and make connection to existing 6" diameter supply air duct near north wall of Mechanical Room and direct a portion of the air flow into 4" PVC duct. Provide volume air damper / valve at point of connection to 6" duct. See "Existing Drawings – Sheet M-210" for additional information.
    - Contractor shall provide 4" rigid PVC air duct to vicinity of AHU-1 chilled water coils. Route 4" air duct in ceiling space of mechanical space in neat, workmanlike manner. For bidding purposes, assume 40 feet of 4" PVC duct along with associated fittings and components.
    - At vicinity of chilled water coils, provide 2" rigid branch duct to each 2" stub-out. Provide all fittings and components needed to transition to 2" duct. Provide volume air damper at each 2" duct run to balance air flow through coils. For bidding purposes, assume 20 feet of 2" PVC duct for each branch run along with associated fittings and components.
    - Contractor shall provide all fittings and materials needed and provide final connection to 2" stub-outs at supply line to each coil.

11. **Bid Option 02:** The scope of Bid Option 02 shall include, but not limited to: (see "Requirements for Chilled Water Piping Installations" below for additional information)
    - Contractor shall remove existing shut-off valves on existing 6" main supply and return lines routed to AHU-1 and replace with new.
    - Contractor shall remove existing balancing valve on main 6" return line to AHU-1 and replace with new.
    - Contractor shall remove existing pressure gauges and temperature thermometers on main 6" supply and return lines to AHU-1 and replace with new.
    - Contractor shall maintain and re-use existing "Y" strainer with blowdown valve and hose bibb on main 6" supply line to AHU-1.

- Contractor shall remove existing control valve assembly on main 6" return line to AHU-1 and replace with new. Control valve assembly shall consist of automatic two-way control valve with shut-off valves on both inlet and outlet sides of control valve. Removal and replacement shall include disconnecting / reconnected electrical interlock with facility's building control system.
- Contractor shall remove existing bypass assembly around control valve assembly and replace with new. Bypass shall consist of piping with shut-off valve, size of bypass assembly shall match the full size of the control valve
- Contractor shall fill and vent the new coils and associated piping to provide properly filled system.
- Contractor shall furnish and install new pipe insulation to restore pipe insulation disturbed by the Contractor in performance of the project's scope for Bid Option 02. See "Requirements for Pipe Insulation Systems" below for additional information.

12. **Bid Option 03:** Bid Option 03 shall be the cost increase to furnish new chilled water coil(s) with freeze relief plugs / caps for coil freeze protection and relief. Fittings and components needed for installation of the freeze relief plugs / caps at coil(s) shall be provided by the coil manufacturer. The freeze relief plugs / caps shall be screw-on, screw-off removable type and design to relieve pressure below the tubing burst pressure rating of the new coil. The freeze relief plugs / caps shall be 100% compatible with the new coil and shall incorporate copper membrane set in place by brass washer and crimped into seat. Freeze plugs shall be USA Coil "Sentry Guard" series or approved equal. Freeze plugs / caps shall be provided on all return bends on both sides of coil, on applicable headers, and tube ends as required to provide the intended freeze protection of the coil. Use of intermediate headers and pressure sensitive valves on one or both ends will not be an approved method of relief and freeze protection. Bid Option 03 shall also include the furnishing of twenty (20) plugs to the Owner (in addition to the plugs installed on the coil).

13. After project award, the Contractor shall inspect / confirm all existing conditions and dimensions prior to proceeding with any project activities and identify all existing conditions that may impact the work and alert the CO and EPM immediately if conditions are discovered that differ from the SOW. Contractor shall point out discrepancies between work identified in this SOW and actual field-verified conditions--if they exist, prior to performing work. Items not identified in SOW may be treated as unforeseen conditions and priced in accordance with standard FAR contract clauses. Coordinate with location for laydown and staging areas.

14. Period of performance shall be as indicated in the Contract Documents and begins after Notice to Proceed is issued by CO.

15. Basis-of-design products are indicated in this SOW to convey a specified standard of quality and salient characteristics desired but are not to be considered a single-source specification. Contractor-proposed equals will be considered.
    - The Contractor must compare and validate that quality and salient characteristics are equal and approve the proposed equal products prior to submission for Government review and approval. Additional work required to incorporate Contractor-proposed equals shall be at the Contractor's expense.
    - Owner will review all Contractor-proposed equal equipment, materials, manufacturers, or installation. It shall be the Contractor's burden to furnish all documentation and / or samples to show equality with specified items. Owner's decision on equality is final.

16. In their proposal, Contractor shall include product data sheets on the chilled water coils, chilled water piping, shut-off valves, control valve assembly, balancing valves, and associated components to be furnished in the indicated repairs.
    - Product data sheets shall indicate and shall be clearly marked to identify the specific model, size, dimensions, capacities, and performance characteristics of the material / component to be furnished.

17. The Contractor shall furnish all labor, materials, equipment, supplies, transportation, utilities, supervision, *safety equipment, and incidentals for all elements of the work to provide a complete and properly functioning installation in accordance with this Statement of Work. The installation shall be ready for use by Final Completion date. ** Note: Contractor is solely responsible for safety measures and conformance to applicable requirements in accordance with FAR clauses referenced in Solicitation package.*
    - Contractor shall provide all means and methods to protect the facility and its installations from all project activities, including protecting the facility from environmental elements as the improvements are completed.

18. Contractor shall coordinate all work activities with the Owner prior to beginning any work. All work shall be scheduled in a manner such that ongoing research is not jeopardized, and facility's ongoing day-to day operations are not affected negatively, including air quality.
    - Project shall be left clean at the end of each workday.
    - Contractor shall coordinate access to all areas with the designated USDA staff.
    - Contractor shall verify all parking, security, and health requirements with the USDA staff.
    - Coordinate with location for laydown and staging areas.

19. Applicable Codes and Standards:
    - Current State of Wisconsin Building Codes.
    - All current Madison, WI local codes.
    - Most recent International Building Codes

Requirements for Chilled Water Coils:

1. New chilled water coils shall be for direct replacement and shall match existing coils in type, physical size, and capacity.
2. New coils shall be constructed of copper tubes with aluminum fins mechanically bonded to the tubes and with galvanized steel end casings. Fin design shall be sine wave rippled, 10 fins per inch. Coils shall have row design and number of rows to provide the performance characteristics indicated. Minimum tube thickness shall be 0.035".
    - Coils shall be certified in accordance with ASHRAE Standard 410 and shall be hydrogen leak tested.
    - Coils shall be mechanically supported above drain pan to allow drain pan cleaning and coil removal.
    - Coil connections shall be labeled and extend beyond air handler unit casing.
    - Coil headers and return bends shall be fully contained within the end casing(s) of the coil.
3. New cooling coil(s) shall be installed in accordance with the written instructions and recommendations of the coil manufacturer. Additionally, the installation shall be in accordance with the recommendations of applicable ASHRAE standards and requirements of latest edition of ICC international codes.
    - Installation of the coil shall include furnishing and installation of metal fabrications to completely seal coils to the air handler casing to prevent leakage of air around cooling coil(s).
4. Existing drip / drain pan(s) may be re-used. Locate and arrange drain pans for proper capture and draining of condensate. Provide piping to route captured condensate to drain. Installation shall be as indicated in Detail 7 on Sheet M-611 of "Existing Drawings".

Requirements for Chilled Water Piping Installations:

1. New and renovated piping installations of chilled water supply (CWS) and chilled water return (CWR) lines shall meet or exceed the requirements of the latest edition of ICC International Plumbing / Mechanical Codes.
2. New piping for CWS and CWR lines shall be Schedule 40 steel pipe with wrought-cast or forged-steel flanges and flange fittings and with welded and flanged joints. Steel pipe shall conform to ASTM A 53/A 53M. Flange and flange fittings shall conform to ASME B16.5 and shall include bolts, nuts, and gaskets. Piping shall be routed parallel to and at right angles to structural elements in neat, level / plumb, workmanlike manner. Contractor shall provide all mounting hardware for proper support of piping system.
3. Pipe hangers shall be provided at change of directions and at maximum spacing of 6 feet for CWS and CWR piping. In addition, pipe hangers shall be located within 12" of joints at each change of direction and shall be located within 18" of joints for straight runs. Pipe hangers and supports shall include provisions such that piping system is completely insulated through hanger / support.

4. New thermometers shall be mercury-free, liquid-in-glass type complying with ASTME.1; shall have scale range of 1-120 deg F with 2-degreee scale divisions; shall have adjustable joint; shall have blue reading, organic-filled tube with magnifying lens; shall have white aluminum scale with black markings and stem of length to suit installation; Weksler Model A935AF2**AF2-AL series or approved equal. Contractor shall provide compatible stainless-steel thermometer well. Installation of new thermometers and associated wells shall be in accordance with manufacturer's written instructions and recommendations.
5. New pressure gauges shall be phosphor-bronze bourdon-tube type with bottom connect; dry tube type complying with ASME B40.1; shall have stainless-steel case with 4-1/2" diameter lens; shall have white-coated aluminum scale with black markings; shall have accuracy of ± 1% of full scale; and shall be provided with stainless-steel needle type valve; Weksler Model EA14E series or approved equal. Installation of new pressure gauges shall be in accordance with manufacturer's written instructions and recommendations.
6. New shut-off valves shall be butterfly type unless noted otherwise. New butterfly valves shall be 125 CWP, iron, single-flange type complying with MSS SP-67, Type 1; shall be lug type with EPDM seat, stainless-steel disc and stainless-steel stem; shall have throttling handles with a minimum of seven locking positions; and shall extended neck to accommodate insulation thickness. Size of shut-off valve shall match size of piping where valve is installed. Installation shall be in accordance with manufacturer's written instructions and recommendations.
7. New balancing valves shall be calibrated type so that flow can be determined when the temperature and pressure across valve is known Valves shall be constructed for working pressure of the application; shall have provisions for connecting a portable differential pressure meter; shall have built-in check valves for meter connections; shall have a integral pointer to register degree of valve opening; shall be constructed with internal seals to prevent leakage around rotating element; shall be Bell & Gossett or approved equal. Size of balancing valve shall match size of piping where valve is installed. Installation shall be in accordance with manufacturer's written instructions and recommendations.
8. New control valves shall be 100% compatible with the facility's building control system; shall match existing control valve in size and performance characteristics; and shall be selected based on medium to be controlled, maximum inlet temperature and pressure at the valve, the pressure differential that will exist across the valve under maximum load demand, the maximum capacity the valve must deliver, the maximum line pressure differential the valve actuator must close against, for actual expected conditions, and with actual pipe sizes where the valve will be installed; Siemens or approved equal. The new control valve shall be normally closed, two-way, electrically actuated (electronic) type that is powered from 24VAC supply, capable of operation from 0-10V or 4-20mA control signal (DIP switch selectable); shall have direct-coupled installation, visual and electronic stroke indication, manual override, spring return

to fail-safe position, automatic stroke calibration, and maintenance free operation. Installation of the new control valve shall be in accordance with the manufacturer's written instructions and recommendations. The new control valve shall provide proportional control of the valve across the entire control signal range.

9. New automatic air vents shall be ball-float type with brass/bronze or brass bodies, corrosion-resistant steel float, linkage, and removable seat. End connections of vents shall not be less than 1/8" threaded connection.
10. New and renovated CWS and CWR water piping system(s) shall be completely insulated piping system(s).
11. New and renovated new CWS and CWR piping systems shall be tested for leaks with corrective measures implemented when leaks are identified. Testing shall be performed prior to installing any pipe insulation.
12. New and renovated CWS and CWR piping systems shall be labeled to provide clear indication of use and direction of flow. Labeling shall be applied after pipe insulation has been installed and is complete.

Requirements for Pipe Insulation Systems:

1. Where pipe insulation is specified for a piping system, the new and renovated pipe insulation system shall be complete in every respect and ready for use.
2. Unless noted otherwise; new interior pipe insulation system shall be mineral fiber, Type 1 complying with ASTM C 547, 1.5" thick, performed pipe insulation with vapor barrier and all purpose, reinforced fire-retardant jacket with white surface unless noted otherwise.

Requirements for Testing, Adjusting, and Balancing (TAB)

1. Contractor shall provide TAB services to measure and adjust water flow at chilled water coils of AHU-1. See Photograph 1 for piping arrangement and location of balancing valves serving AHU-1. Adjust balancing valves to provide specified water flow rate to AHU-1 (420 gal/min) with associated control valve in a fully open position and to provide equal flow to each chilled water coil.
    - After above adjustment; measure and record flow rates of main piping to AHU-1 and flow rates to each chilled water coil with control valve at 10% open, 25% open, 50% open, 75% open, and fully open. Indicate flows recorded in the TAB report.
2. Contractor shall provide TAB services to measure heat-transfer at new cooling coils. Measure and record data on the following with the control valve in a fully open position:
    - Entering-water and leaving-water temperature.
    - Water pressure drop.
    - Dry-bulb temperature of entering and leaving air.
    - Wet-bulb temperature of entering and leaving air.
    - Air flow
    - Air pressure drop

3. All measurements shall be performed with instruments that have been calibrated at least every six months or more frequently if required by instrument manufacturer.
4. Contractor shall submit a TAB report, prepared and certified by the TAB firm, to the Owner indicating all recorded data and presented on forms certified by the TAB firm. Report shall also identify any irregularities and difficulties encountered during measurements.

Project Specifications
Replace Chilled Water Coils at AHU-1
Cereal Crops Research Unit (CCRU)
USDA-ARS, Madison, WI

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.2 USE CHARGES

A. Water Service from Existing System: Water from Government's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

B. Electric Power Service from Existing System: Electric power from Government's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Contractor to obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in ICC/ANSI A117.1 and OSHA regulations and standards.

1.4 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Contractor to assume responsibility for operation, maintenance, and protection of each permanent service during its use.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Connect to existing service.

1. Arrange with COR for time when service can be interrupted, if necessary, to make connections for temporary facilities.

B. Water Service: Connect to Government's existing water service facilities.

C. Sanitary Facilities: Facility’s toilets, wash facilities, and drinking fountains are available for use of construction personnel.

D. Telephone Service: Provide superintendent with cellular telephone for use.

E. Electric Power Service: Connect to Government's existing electric power service.

F. While Contractor is using existing installations for temporary facility purposes; Contractor shall maintain existing installations in condition acceptable to the Government. At Substantial Completion, Contractor shall restore existing installations used for temporary facilities to their original, properly operating condition prior to its initial use.

3.3 SUPPORT FACILITIES INSTALLATION

A. Maintain access for fire-fighting equipment and access to fire hydrants.

B. Parking: Use designated areas of Government's existing parking areas for construction personnel.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

D. Waste Disposal: Contractor shall divert project waste to recycle where practical. The Contractor shall track and document the amount of project waste diverted to recycle. The Contractor shall submit diversion documentation as part of project closeout. If no project waste is diverted to recycle, the Contractor shall submit a letter stating this and why diversion was not practical.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other installations and improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Barricades, Warning Signs, and Lights: Provide and maintain all safeguards in accordance with OSHA regulations and standards and to provide adequate protection to pedestrians and building occupants. Comply with OSHA requirements for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Egress: Maintain temporary egress from existing occupied facilities as required by OSHA.

E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses, comply with NFPA 241.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Termination and Removal: Remove each temporary facility when need for its service has ended or no later than Substantial Completion. Restore permanent construction that may have been disturbed due to the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

END OF SECTION 01 50 00

DIVISION 01 – GENERAL REQUIREMENTS
01 73 00 – EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Installation of the Work.
   2. Cutting and patching.
   3. Progress cleaning.
   4. Protection of installed construction.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.3 QUALITY ASSURANCE

A. Cutting and Patching: Cut and patch elements in a manner that will not change:

   1. Load-carrying capacity or increase deflection.
   2. Reduce their capacity to perform as intended.
   3. Increase maintenance.
   4. Decrease operational life or safety.
   5. Reduce building’s aesthetic qualities.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

C. All phases of the Work shall be executed while maintaining full compliance with applicable EPA regulations and OSHA standards including, but not limited to, 29 CFR 1926 Safety and Health Regulations for Construction and 29 CFR 1910 Occupational Safety and Health Standards.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections and Drawings.

B. In-Place Materials: Use materials for patching identical to in-place materials and that visually match in-place adjacent surfaces to the fullest extent possible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions for all other conditions affecting installation and performance. If conditions detrimental to that installation and performance are identified, submit report to CO/COR/COTR/EPM. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Verify dimensions of existing conditions and related Work elements before fabrication.

B. Space Requirements: Verify space requirements and dimensions of items.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to CO/COR/EPM according to requirements in Contract.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment, elevation, and as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading.

D. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels (85 db or greater) to the public or Government staff without prior approval by COR / COTR.

E. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned.

1. Allow for building movement, including thermal expansion and contraction.

F. Joints: Make joints of uniform width. Arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching.

B. Existing Warranties: Remove, replace, patch, and repair by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions.

E. Cutting: Cut in-place construction using methods least likely to damage elements retained or adjoining construction.

F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations. Patch with durable seams that are as invisible as practicable.

G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

A. General: Maintain clean Project site and work areas, free of waste materials and debris. Dispose of materials lawfully.

B. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

END OF SECTION 01 73 00

DIVISION 01 – GENERAL REQUIREMENTS
01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Final completion procedures.
   2. Submission of Documentation on Diverting Project Waste to Recycle
   3. Warranties.
   4. Final cleaning.

B. Related Requirements:

   1. Division 01 Section "Execution" for progress cleaning of Project site.

1.2 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion:
   1. Submit Documentation on Diverting Project Waste to recycle in accordance with Government's solicitation package and paragraph 1.3.
   2. Submit Project Warranties in accordance with Government's solicitation package and paragraph 1.5.

B. Final Site Inspection: Submit a written request for final inspection. On receipt of request, CO/COR/COTR/EPM will either proceed with site inspection or notify Contractor of unfulfilled requirements.

1.3 SUBMISSION OF DOCUMENTATION ON DIVERTING PROJECT WASTE TO RECYCLE

A. See Section 01 50 00 for additional information.

B. The Contractor shall submit documentation on the amount of project waste diverted to recycle as part of project closeout. Contractor shall submit the type and amount of waste that was diverted to recycle, present information in a clear, typewritten format. If no project waste is diverted to recycle, the Contractor shall submit a letter stating this and why diversion was not practical.

1.4 SUBMITTAL OF PROJECT WARRANTIES

A. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual. Submit electronic copy of the warranty manual along with three (3) hard copies of warranty manual to the CO/COR/EPM. Hard copy of the warranty manual shall be a bound and indexed three ring binder containing written warranties for equipment/products furnished under the contract with a complete listing of such equipment/products.
   1. The equipment/products warranty list shall:
      a. Identify the product / equipment.
      b. Include the duration of the warranty
      c. Indicate the start date of the warranty
      d. Indicate the ending date of the warranty
      e. List the point of contact and contact information (name, address and telephone number) for fulfillment of the warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 WARRANTIES

A. Verify that documents are in proper form, contain full information.

B. Retain warranties until time specified for submittal.

3.3 CLEANUP

A. Provide final cleaning in accordance with ASTM E 1971. Remove waste and surplus materials, rubbish, and construction facilities from the site.

END OF SECTION 01 77 00

Attachments
Replace Chilled Water Coils at AHU-1
Cereal Crops Research Unit (CCRU)
USDA-ARS, Madison, WI

Notes:

1. The following attachments follow:
    a. Recently Replaced Component form
    b. AD-107 form

2. Regarding “Recently Replaced Component Form”; Contractor shall complete (with Government assistance) this form and submit to the Government as part of project closeout.

3. Regarding “AD-107” form; Contractor shall complete (with Government assistance) this form and submit to the Government as part of project closeout.

USDA

Research, Education & Economics
Mission Area

BUILDER Facility Condition Assessments

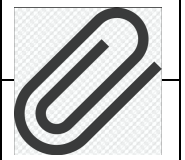
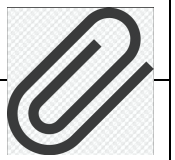
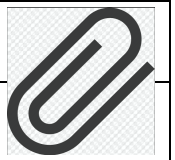
Recently Replaced Component Form (Not Repairs)

Location/Site name: _____

Building (CPAIS Asset ID): _____

Submitted by: _____ Date: _____

Contact information: _____

	System	Equipment	Year Installed	Location/Room	Quantity/Area	Serial Number	Model	Manufacturer	Comments	Attachments
Old item										
New item										
Old item										
New item										
Old item										
New item										

Notes:

1. If the equipment is not replacing another piece of equipment please use the new installation form
2. Please use this form for equipment replacements as well as building improvements (i.e. roofing, window, or facade replacement projects) greater then $75,000
3. Please provide a PDF of any documents associated with the new install
4. Some columns may not be applicable depending on what is being added
5. If you have suggestions on improvements/questions regarding this form email them to Joshua.Nye@USDA.GOV or call 301-504-1173

United States Department of Agriculture

Report of Transfer or Other Disposition or Construction of Property

Report No.

Date

1. Type of Transaction (Report each type separately)

☐ Transfer ☐ Sale ☐ Trade In ☐ Donation

☐ Construction ☐ Rehab ☐ As-Is

2. Authorization Reference

3. Proceeds Received

$

4. Reporting Agency		5. Receiving Agency (Or Name of Purchaser or Donee)	
A. Organizational Unit		A. Organizational Unit (Or Address of Purchaser)	
B. Location		B. Location	
C. Signature		C. Signature	
D. Title	E. Date	D. Title	E. Date

6. Property Items

Quantity (Or Prop. No.)	Item Description (Give Full Details Including Serial Numbers, If Any, and Condition Code)	Inventory Value

Certifications of Property and Fiscal Officers

7. Property Officer: This transaction is completed and the necessary entries have been made to adjust the property records proceeds, if any, are to be deposited to:

8. Fiscal Officer

A. ☐ The sum indicated below has been received in payment for the property disposed of.

B. ☐ The necessary entries have been made to adjust the accounting records.

Amount	Schedule No.
$	

Signature	Date	Signature	Date

This form was electronically produced by USDA/ARS/OCIO/EASB.

Form AD-107 (11/89)

General Notes and Requirements
Replace Chilled Water Coils at AHU-1
Cereal Crops Research Unit (CCRU)
USDA-ARS, Madison, WI

General Notes and Requirements

General Notes:

1. The furnishing and installation of all improvements indicated shall be complete in every respect, properly operating and ready for use. All work shall be coordinated and scheduled to avoid disrupting and jeopardizing ongoing research. Coordinate access to space with COR or Location Coordinator designated by CO.
2. The performance of renovations and improvements shall be coordinated and scheduled to avoid disrupting and jeopardizing ongoing research.
    a. Contractor shall coordinate with COR or Location Coordinator designated by CO any orderly shutdown of scientific equipment, machines and computer equipment as needed for the performance of the contracted work.
    b. Contractor shall coordinate with COR or Location Coordinator designated by CO any moving of scientific equipment, machines and computer equipment as needed for the performance of the contracted work.
3. When renovations and improvements are performed within an Owner-occupied space; adequate protection of sensitive equipment, machines and computers shall be implemented.
4. Contractor shall utilize appropriate personal protection equipment (PPE) during the performance of the Work.
5. New and renovated installations shall be labeled in accordance with ANSI standards.
6. Contractor shall provide final cleaning of project area, see specifications for additional information. Final cleaning shall be to a “broom swept” quality.

Standard Requirements – Miscellaneous Installations:

1. Where strut channel is installed, strut channel shall be galvanized type that is sized appropriately for the application. Protective cap on each end of strut channel run shall be included in the installation.
2. Where new penetration or opening of a wall, ceiling or floor occurs during the performance of renovation and/or improvement; the penetration/opening shall be closed and sealed using material and in manner to restore originally intended fire rating (i.e. opening shall be fire caulked).

Standard Requirements – Demolition:

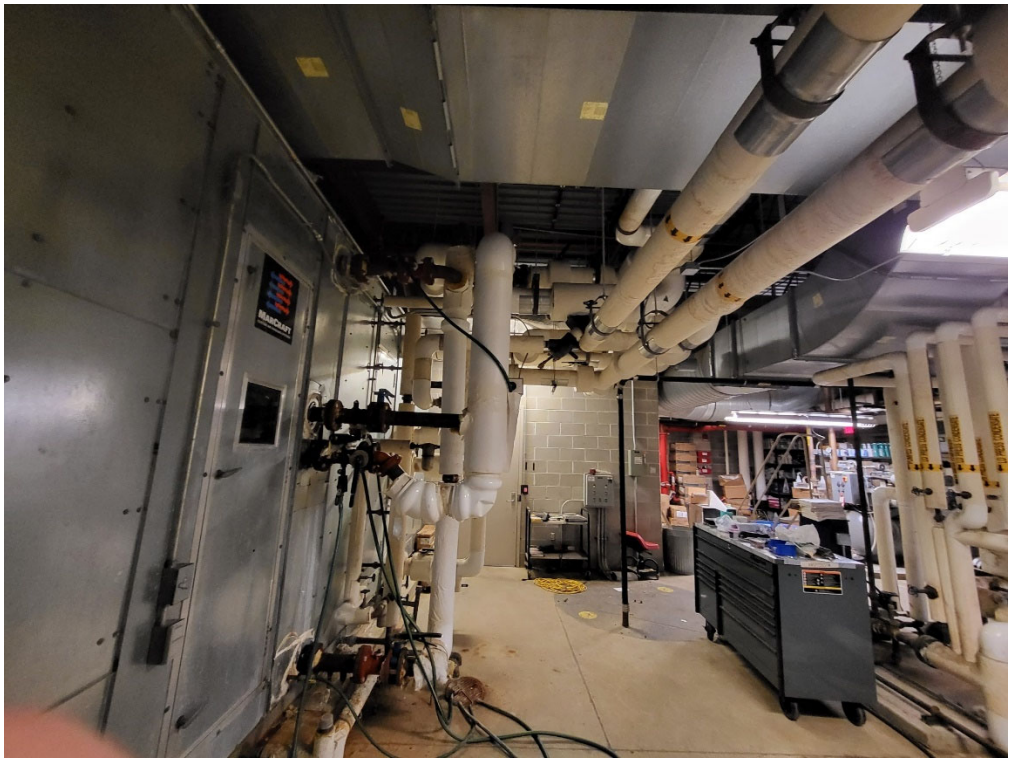
1. When demolished material is accumulated during the performance of renovations and improvements; demolished material shall be removed and legally disposed. See specifications for additional information regarding diverting project waste to recycle.
2. Where existing installation becomes abandoned (i.e. no longer used) during the performance of a renovation and/or improvement and this existing installation is readily accessible (i.e. exposed installation or above accessible suspended ceiling); the existing installation shall be removed.
3. Removal of existing installation(s) shall include the removal of associated mounting hardware and patching holes from hardware removal.

Photographs
Replace Chilled Water Coils at AHU-1
Cereal Crops Research Unit
USDA-ARS, Madison, WI

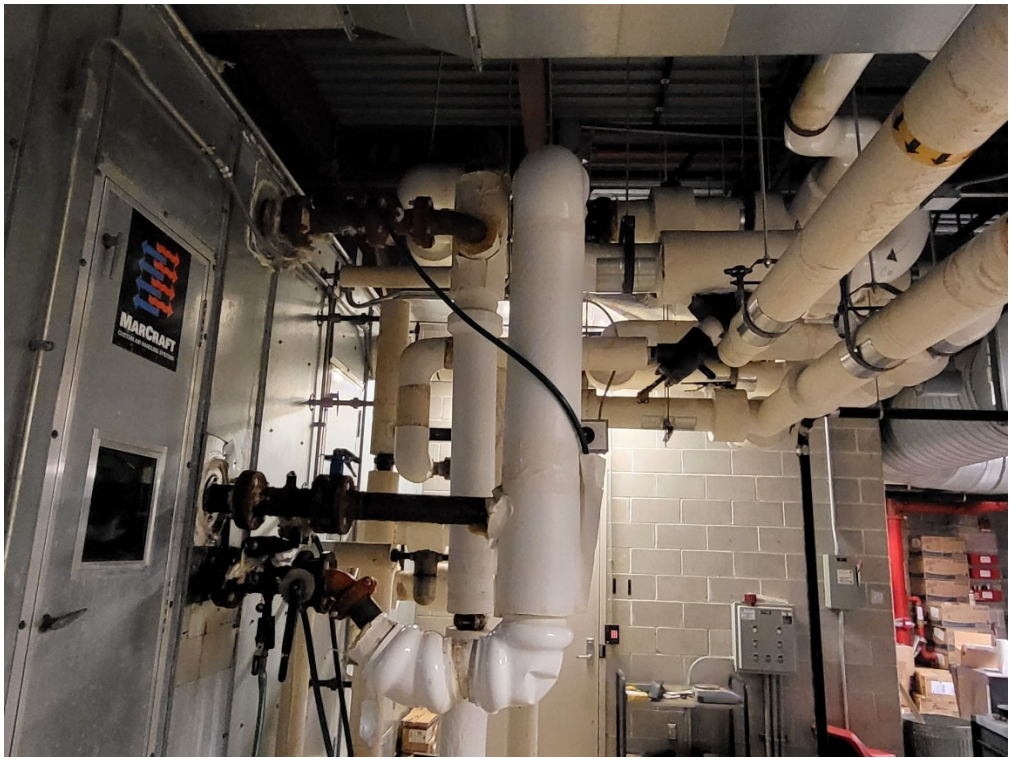
Photographs

General Notes:

1. Photographs shown below were taken in January of 2023. The Contactor may use the photographs as a reference / resource in developing their bid / proposal. The Contractor shall confirm all existing conditions prior to proceeding with any project activities.



Photograph 1: View of chilled water piping connections to coils at AHU-1.



Photograph 2: View of chilled water piping connections to coils at AHU-1.

Photograph 3: View of chilled water supply piping connections to upper and lower coils at AHU-1.

Photograph 4: View of chilled water return connection to upper coil at AHU-1.

Photograph 5: View of chilled water return connection to lower coil at AHU-1.

Photograph 6: View of control valve on 6” return line to AHU-1.

Photograph 7: View of upper coil at AHU-1.

Photograph 8: View of lower coil at AHU-1.