

Scope of Work for Mechanical/Plumbing in B2943

DPW Project Number: 44533 Fort Moore Building Number: 2943 Period of Performance: 360 Job Walk: TBD Proposal Due: TBD Bid Process: TBD

Submissions by DPW

- 1. Scope of work
- 2. Conceptual design drawings
- 3. Construction specifications
- 4. As-built PDF/DWG/DGN

Submittals from Contractor

- 1. Project Schedule
- 2. Phase Plan
- 3. 65% Design, 95% Design, 100% Final Design
- 4. QC Plan
- 5. Accident Prevention Plan (APP)
- 6. Materials/Equipment
- 7. Design Drawings/As-Built Drawings
- 8. Specifications
- 9. Testing/Adjusting/Balancing/Commissioning Reports
- 10. CD with all Record Document Submittal Documentation
- 11. Warranty Management Plan

Summary of Work

The objective of this mechanical scope is to remove and install new HVAC equipment, including (3) Air Handling Units, (5) Make-Up Air Units, (2) pumps, and all hvac controls. The building will remain fully occupied and operational during construction; therefore, a phasing plan, any work containment plans, and temporary heating and cooling will be required.

Building 2943 is used as a dining facility for the 75th Ranger Rgt. The airside HVAC equipment in the building has reached the end of its lifespan and will need to be replaced. All controls are LonWorks and will need to be replaced with BACnet.

Scope of Work for Demo in B2943

- 1. Mechanical Demolition
 - a. Remove all three air handling units
 - b. Remove both chilled and hot water pumps
 - c. Remove all five make-up air units
 - d. Properly dispose of all removed equipment



- e. Remove all associated piping, supports, and accessories
- 2. Controls Demolition
 - a. Remove all existing Lon controls components
 - b. Remove all existing thermostats and sensors
 - c. Remove existing control panels
 - d. Remove all associated control wiring
- 3. Electrical Demolition
 - a. Disconnect existing HVAC equipment and pull wire back to J-Box.
 - b. Demo all existing whips connecting the HVAC equipment.
 - c. Demo wire and associated breaker on circuits that do not support the new equipment amperage.

Scope of Work for New Work in B2943

- 1. Mechanical New Work
 - a. Size for (0.4% ASHRAE design day, indoor 68° winter, 73°summer, RH50%, 25% glycol), provide and install the following:
 - i. New Air Handlers (MZ-1, AHU-1, AHU-2, as on sheet M-3 & M-7)
 - 1. Implement a demand control ventilation (DCV) strategy for outside air.
 - 2. Shall be equipped with direct drive blowers.
 - 3. Provide necessary structural support modifications.
 - 4. Install new supply and return ductwork as required.
 - 5. Install new flexible connections.
 - 6. Install new drain pans and condensate piping as required.
 - 7. Install new diffusers as required.
 - ii. New Heating/Chilled Water Pumps (CWP-1, HWP-1, as on sheet M-3)
 - b. Provide, install, and integrate into the UMCS, communicating thermostats for all new equipment, equipped with
 - i. Lockable Touch screen interface thermostats to be set and locked to a range of 68°F-76°F.
 - ii. On-board dehumidification control strategy enabled (set to 50%)
 - iii. CO2 Sensor
 - iv. PIR sensors w/occupancy functions enabled
 - v. Include all available control points, to include, but not limited to temp, room humidity points, CO2, etc. in UMCS graphics.
 - vi. BACnet MS/TP
 - c. Install new space temperature sensors, humidity sensors, pressure sensors, flow meters, CO2 sensors where required, and outdoor air sensors.
 - d. Size, provide and install new DOAS units. (MAU-1 MAU-5 as on sheet M-8)
 - i. Provide necessary roof curb modifications.
 - ii. Install new electrical connections.
 - e. Reprogram/interlock controls of the DOASs to shut off the supply fan/exhaust fan and alert UMCS in the event of any failure or condition that would introduce non-conditioned hot/humid air into the space.
 - f. Perform Re-Tab of all systems.



- g. Provide all necessary trade work in support of mechanical.
- h. All hard piping (domestic, heating, and chilled) and conduit shall be installed in a workmanlike manner at typical angles of 45° and 90°.
- i. All wiring, to include low voltage and control, shall be sealed in conduit.
- j. All gas piping shall be hard piped to equipment.
- k. Adjust airflow for each space to achieve ASHRAE recommendations for CFM by room type.
- I. All refrigerant connections shall be nitrogen purged brazed joints.
- m. All new equipment points, and existing control points shall be brought onto the UMCS and have their graphics designed per Fort Moore's programming and graphics standards. All Controls and Graphics integration shall be brought onto the building JACE, and finally at the Niagara 4 (N4) server. All Controls and Graphics must be made visible/controllable at Fort Moore's UMCS Building 497 through the N4 server. The final "master system integration" (From Bldg. JACE to N4 Server) will require a DoD 8570 IAT Level II credentialed person with access to the server. Coordinate with NEC for CAT5 drops, ports, IP/mac address, and switch installations.
- n. All controls shall be BACnet MS/TP (not over IP)
- o. Size provide and install non-proprietary open JACE 9000 series. Total number of used device/points shall not exceed 80% of installed JACE9000 series capacity.
- p. Any new JACE install shall be support by uninterrupted power supply (UPS) and be protected with (TSS).
- q. Provide temporary heating/cooling if building HVAC will be down longer than 8hrs.

2. Plumbing New Work (Plumbing Bid Option #1)

a. Install wall mounted hand wash station near west wing exit to match existing hand wash station near east wing exit.

**Removed from SOW

- 4. Electrical New Work
 - a. Pull wire and install new breakers for circuits that were demoed due to not supporting new equipment requirements. The new wire and breaker shall support the new equipment.

3. Testing and Commissioning in B2943

- a. Pressure test all new piping systems
- b. Test and Clean all ductwork
- c. Balance all air and water systems
- d. Verify proper operation of all equipment
- e. Check all safety controls
- f. Measure and document system performance
- g. Provide testing and balancing report include any ductwork deficiencies

4. Documentation Requirements

a. Submit all equipment submittal data



- b. Updated submittal registry with all submittals
- c. Provide O&M manuals for all equipment
- d. Submit controls system documentation
- e. Provide warranty information
- f. Submit testing and balancing reports
- g. Draft DD1354 at IFC interim at 75%, final at final

5. Liquidated Damages

a. In the event of delay (caused by contractor only) in project completion, Repair HVAC and Controls, B2943, the contractor shall pay liquidated damages to government in the amount of \$1,203.61 for the total LD Rate/Day.

CODES AND STANDARDS:

All work shall be completed in accordance with the most recent editions of all applicable codes and standards published at the time of contract award including, but not limited to:

United Facilities Criteria (UFC)

General

- 1. UFC 1-200-01 DoD Building Code, with Change 1
- 2. UFC 1-200-02 High Performance and Sustainable Building Requirements
- 3. UFC 1-300-01 Criteria Format Standard
- 4. UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard, with Change 3
- 5. UFC 1-300-07A Design Build Technical Requirements
- 6. UFC 1-300-08 Criteria for Transfer and Acceptance of DoD Real Property, with Change 2
- 7. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings

Mechanical

- 1. UFC 3-400-02 Design: Engineering Weather Data
- 2. UFC 3-401-01 Mechanical Engineering, with Change 1
- 3. UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems, with Change 8
- 4. UFC 3-410-02 Direct Digital Control for HVAC and Other Building Control Systems, with Change 2
- 5. UFC 3-410-04 Industrial Ventilation
- 6. UFC 3-420-01 Plumbing Systems
- 7. UFC 3-420-02FA Compressed Air, with Change 1
- 8. UFC 3-430-01FA Heating and Cooling Distribution Systems
- 9. UFC 3-430-02FA Central Steam Boiler Plants, with Change 1
- 10. UFC 3-430-05 Natural Gas and Liquefied Petroleum Gas (LPG) Distribution Pipelines
- 11. UFC 3-430-07 Operations and Maintenance: Inspection and Certification of Boilers and Unfired Pressure Vessels, with Change 5
- 12. UFC 3-430-08N Central Heating Plants
- 13. UFC 3-430-09 Exterior Mechanical Utility Distribution, with Change 1
- 14. UFC 3-430-11 Boiler Plant Instrumentation and Control Systems
- 15. UFC 3-440-01 Facility-Scale Renewable Energy Systems
- 16. UFC 3-450-01 Noise and Vibration Control
- 17. UFC 3-460-01 Design: Petroleum Fuel Facilities, with Change 1



- 18. UFC 3-460-03 O&M: Maintenance of Petroleum Systems, with Change 1
- 19. UFC 3-470-01 Utility Monitoring and Control System (UMCS) Front End and Integration
- 20. UFC 3-490-06 Elevators, with Change 1

United Facilities Guide Specifications (UFGS)

DIVISION 01 - GENERAL REQUIREMENTS

- 1. UFGS 01 42 00 SOURCES FOR REFERENCE PUBLICATIONS
- DIVISION 02 EXISTING CONDITIONS
 - 1. UFGS 02 41 00 DEMOLISION AND DECONSTRUCTION

DIVISION 22 - PLUMBING

- 1. UFGS 22 00 00 Plumbing, General Purpose
- 2. UFGS 22 05 48.00 20 Mechanical Sound, Vibration, and Seismic Control
- 3. UFGS 22 05 83.63 Cured-In Place Pipe (CIPP) Lining
- 4. UFGS 22 07 19.00 40 Plumbing Piping Insulation
- 5. UFGS 22 15 09.00 40 General Service Compressed-Air Systems Cleaning Procedures
- 6. UFGS 22 15 13.16 40 High-Pressure Compressed-Air Piping and Valves, Stainless
- 7. UFGS 22 15 14.00 40 General Service Compressed-Air Systems, Low Pressure
- 8. UFGS 22 15 19.13 20 Large Nonlubricated Reciprocating Air Compressors (Over 300 HP)
- 9. UFGS 22 15 19.19 20 Nonlubricated Rotary Screw Air Compressors (100 HP and Larger)
- 10. UFGS 22 15 26.00 20 High and Medium Pressure Compressed Air Piping

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING

- 1. UFGS 23 01 30.41 HVAC System Cleaning
- 2. UFGS 23 03 00.00 20 Basic Mechanical Materials and Methods
- 3. UFGS 23 05 15 Common Piping for HVAC
- 4. UFGS 23 05 48.00 40 Vibration and Seismic Controls for HVAC Piping and Equipment
- 5. UFGS 23 05 48.19 [Seismic] Bracing for HVAC
- 6. UFGS 23 05 93 Testing, Adjusting, and Balancing for HVAC
- 7. UFGS 23 07 00 Thermal Insulation for Mechanical Systems
- 8. UFGS 23 08 00.00 20 Commissioning of Mechanical [and Plumbing] Systems
- 9. UFGS 23 08 01.00 20 Testing Industrial Ventilation Systems
- 10. UFGS 23 09 00 Instrumentation and Control for HVAC
- 11. UFGS 23 09 13 Instrumentation and Control Devices for HVAC
- 12. UFGS 23 09 13.34 40 Control Valves, Self-Contained
- 13. UFGS 23 09 23.02 BACnet Direct Digital Control for HVAC and Other Building Control Systems
- 14. UFGS 23 09 33.00 40 Electric and Electronic Control System for HVAC
- 15. UFGS 23 09 53.00 20 Space Temperature Control Systems
- 16. UFGS 23 09 93 Sequences of Operation for HVAC Control
- 17. UFGS 23 11 20 Facility Gas Piping
- 18. UFGS 23 21 13.00 20 Low Temperature Water (LTW) Heating System
- 19. UFGS 23 21 13.23 20 [High] [Medium] Temperature Water System Within Buildings
- 20. UFGS 23 21 23 Hydronic Pumps
- 21. UFGS 23 22 13.35 40 Steam Traps
- 22. UFGS 23 22 23.00 40 Steam Condensate Pumps
- 23. UFGS 23 22 25.00 40 Steam Valves
- 24. UFGS 23 22 26.00 20 Steam System and Terminal Units
- 25. UFGS 23 23 00 Refrigerant Piping
- 26. UFGS 23 25 00 Chemical Treatment of Water for Mechanical Systems



- 27. UFGS 23 30 00 HVAC Air Distribution
- 28. UFGS 23 31 13.00 40 Metal Ducts
- 29. UFGS 23 33 56 Self-Acting Blast Valves
- 30. UFGS 23 34 23.00 40 HVAC Power Ventilators
- 31. UFGS 23 35 16.17 10 Mechanical Engine [and Welding Fume] Exhaust Systems
- 32. UFGS 23 35 19.00 20 Industrial Ventilation and Exhaust
- 33. UFGS 23 36 00.00 40 Air Terminal Units
- 34. UFGS 23 37 13.00 40 Diffusers, Registers, and Grills
- 35. UFGS 23 41 13.00 40 Panel Filters
- 36. UFGS 23 44 00.00 10 Chemical, Biological, and Radiological (CBR) Air Filtration System
- 37. UFGS 23 50 52.00 10 Central High Temperature Water (HTW) Generating Plant and Auxiliaries
- 38. UFGS 23 51 43.00 20 Dust and Gas Collector, Dry Scrubber and Fabric Filter Type
- 39. UFGS 23 51 43.01 20 Mechanical Cyclone Dust Collector of Flue Gas Particulates
- 40. UFGS 23 51 43.02 20 Electrostatic Dust Collector of Flue Gas Particulates
- 41. UFGS 23 51 43.03 20 Fabric Filter Dust Collector of Fly Ash Particles in Flue Gas
- 42. UFGS 23 52 00 Heating Boilers
- 43. UFGS 23 52 30.00 10 Heat Recovery Boilers
- 44. UFGS 23 52 30.01 10 Central Coal-Fired Steam-Generating System
- 45. UFGS 23 52 30.02 10 Central Steam Generating System Combination Gas and Oil Fired
- 46. UFGS 23 52 33.01 20 Steam Heating Plant Watertube (Shop Assembled) Coal/Oil or Coal
- 47. UFGS 23 52 33.02 20 Steam Heating Plant Watertube (Field Erected) Coal/Oil or Coal
- 48. UFGS 23 52 33.03 20 Water-Tube Boilers, Oil/Gas or Oil
- 49. UFGS 23 52 43.00 20 Low Pressure Water Heating Boilers (Under 800,000 BTU/HR Output)
- 50. UFGS 23 52 46.00 20 Low Pressure Water Heating Boilers (Over 800,000 BTU/HR Output)
- 51. UFGS 23 52 49.00 20 Steam Boilers and Equipment (500,000 18,000,000 BTU/HR)
- 52. UFGS 23 52 53.00 20 Steam Boilers and Equipment (18,000,000 60,000,000 BTU/HR)
- 53. UFGS 23 54 19 Building Heating Systems, Warm Air
- 54. UFGS 23 57 10.00 10 Forced Hot Water Heating Systems Using Water and Steam Heat Exchangers
- 55. UFGS 23 58 00.00 10 Central Steam Heating and Utilities Systems
- 56. UFGS 23 63 00.00 10 Cold Storage Refrigeration Systems
- 57. UFGS 23 64 00 Packaged Water Chillers, Absorption Type
- 58. UFGS 23 64 10 Water Chillers, Vapor Compression Type
- 59. UFGS 23 64 26 Chilled, Chilled-Hot, and Condenser Water Piping Systems
- 60. UFGS 23 65 00 Cooling Towers and Remote Evaporatively-Cooled Condensers
- 61. UFGS 23 69 00.00 20 Refrigeration Equipment for Cold Storage
- 62. UFGS 23 71 19 Thermal Energy Storage System: Ice-On-Coil
- 63. UFGS 23 72 00.00 10 Energy Recovery Systems
- 64. UFGS 23 73 13.00 40 Modular Indoor Central-Station Air-Handling Units
- 65. UFGS 23 74 33.00 40 Packaged, Outdoor Heating and Cooling Makeup Air-Conditioners
- 66. UFGS 23 75 15 Custom-Packaged, Aircraft Pre-Conditioned Air Units
- 67. UFGS 23 76 00.00 10 Evaporative Cooling Systems
- 68. UFGS 23 76 00.00 20 Evaporative Cooling System
- 69. UFGS 23 80 20.00 10 Gas-Fired Heating Equipment
- 70. UFGS 23 81 00 Decentralized Unitary HVAC Equipment
- 71. UFGS 23 81 23 Computer Room Air Conditioning Units



- 72. UFGS 23 81 29 Variable Refrigerant Flow HVAC Systems
- 73. UFGS 23 81 47 Water-Loop and Ground-Loop Heat Pump Systems
- 74. UFGS 23 82 00.00 20 Terminal Heating Units
- 75. UFGS 23 82 01.00 10 Warm Air Heating Systems
- 76. UFGS 23 82 16.00 40 Air Coils
- 77. UFGS 23 82 19.00 40 Fan Coil Units
- 78. UFGS 23 82 23.00 40 Unit Ventilators
- 79. UFGS 23 82 43.00 40 Electric Duct Heaters
- 80. UFGS 23 82 46.00 40 Electric Unit Heaters
- 81. UFGS 23 83 00.00 20 Electric Space Heating Equipment
- 82. UFGS 23 84 19.00 Desiccant Cooling Systems

International Code Council (ICC)

- 1. 2024 International Building Code (IBC)
- 2. 2024 International Existing Building Code (IEBC)
- 3. 2024 International Mechanical Code (IMC)
- 4. 2024 International Plumbing Code (IPC)
- 5. 2024 International Fire Code (IFC)
- 6. 2024 International Fuel Gas Code (IFGC)
- 7. 2024 International Energy Conservation Code (IECC)
- 8. 2024 International Swimming Pool and Spa Code (ISPSC)

National Fire Protection Association (NFPA)

Miscellaneous Codes and Requirements

- 1. American with Disabilities Act (ADA) Compliance Guide
- 2. Fort Moore Installation Design Guide
- 3. Fort Moore UMCS and N4 Control System (Graphics and Programming and Standard), most current.
- 4. Fort Moore BAS Design Guide, most current.
- 5. Fort Moore NEC Standards, ISP-OSP TTP, Dec 2022 v1.6
- 6. Fort Moore Installation Planning Standard, Feb 2016
- 7. Fort Moore Fire Protection Requirements, effective 11 May 2023
- 8. Fort Moore Environmental considerations as listed on the FB-144R.
- 9. Georgia Environmental Protection Division rules, laws, and codes.
- 10. Fort Moore Environmental Management Division (EMD) Standards. If there is a conflict with the EMD Standards, the more stringent standard shall be used.
- 11. Comply with all Local, State, and Federal National Pollutant Discharge Elimination System (NPDES) laws and guidelines.
- 12. United States Army Corps of Engineers, Safety and Health Requirements Manual EM 385-1. Applicable edition at award.
- 13. TM 111 Guidance provided in U.S. Army Training and Doctrine Command (TRADOC) Force Protection Program (FPP): Unified Facilities Criteria (UFC) for buildings.
- 14. Compliance with Buy American Act (BAA). Provide BAA letter/Mfrs. Certificate of Compliance with all required material submittals.
- 15. ANSI/ASME A13.1 (Pipe Identification Standard)
- 16. ASHRAE Standard 90.1-2022 Energy Standard for Buildings Except Low-Rise Residential Buildings
- 17. ASHRAE 62.1/62.2 2022



- 18. SMACNA HVAC Duct Construction Standards Metal and Flexible, 4th Edition (2021)
- 19. Local utility specifications
- 20. All state and local standards and environmental codes and regulations
- 21. Manufacturer's written instructions

Implied specifications: When specifications are not furnished the standards of work shall be in accordance with industry standards.