

**STATEMENT OF WORK
FOR
4 Jun 2024
FTFA 23-LT03 - RPR - HVAC VAV, Controls and Instrumentations 96 FSS
DFAC, BLDG 862**

STATEMENT OF WORK: The contractor shall remove and replace the existing Air Terminal Units (ATU) and Hot Water Coil (HWC) reheat and replace it with a new Variable Air Volume (VAV) system with hot water coil reheat. This work in part shall include all associated direct digital control (DDC) for the VAV's, Air Handling Units (AHU's), boilers, Chiller, and associated pumps. This project is on "Eglin AFB FL, BLDG 862, Dining Facility". The work shall include demolition, structural, electrical, plumbing, and DDC/mechanical. The specifications for each discipline shall be discussed below. The contractor is responsible for providing all services, equipment and tools, material, labor, supervision, transportation, and any other professional services necessary to accomplish this project with a complete and useable product.

1. DEMOLITION

1.1 The contractor shall remove existing ATU's. There are 23 ATU's serving the 25,000 square feet facility. There are two air handling unit's serving these ATU's, AHU-1 with 3 ATU's and AHU-2 with 20 ATU's.

1.2 The contractor shall remove existing hot water coils (HWC). The HWC's are downstream from the ATU's and are near it. Majority have been removed and the duct repaired and reinsulated. The existing hot water line serving the removed HWC have been pro-pressed capped. For the purpose of estimating, expect at most 11 HWC remaining.

1.3 The contractor shall flush the existing hot water piping to remove fouling. The entire HWC piping must be flushed from HWC supply and return line starting from the mechanical room. No new installs shall be done until this system flushing is completed.

1.4 The contractor shall remove existing field controllers for the ATU's. The controls for AHU-1, AHU-2 and Chiller shall also be replaced. It is the intent of the Government to consolidate all the DDC controls for the buildings environmental control. Removed field controllers shall be turned over to the Government.

1.5 The contractor shall remove all existing plumbing accessories for the HWC. No control valves, isolation valves, etc. shall be reused. The Hot Water line shall be taken back to existing bare piping. Existing valves and accessories have been confirmed to be non-operational from fouling.

1.6 The contractor shall collect and maintain control of all construction debris to include demolished items. All demolished material will be removed from Eglin AFB at a reasonable time or as requested by Government. The laydown plan shall be included in this RFP.

1.7 The contractor shall remove the VFD's for AHU-1 and AHU-2. This shall be replaced with a new VFD that matches specification and a VFD that works within the new DDC environment.

2. STRUCTURAL

2.1 The contractor shall remove ONLY the required ceiling grid and acoustic ceiling to access the area of work. It is the intent of the Government to re-use existing ceiling grids and acoustic ceilings. Light fixtures, conduits, fire protection systems, and diffusers shall be suspended if required to be temporarily repositioned and supported with an appropriate supporting structure as needed.

2.2 The contractor shall provide structural support for the VAV's. This shall be a combination of hanger rod, hanger bracket, and/or hanger straps. Hanging equipment uses the support method in the job specifications prescribed for rectangular ducts. The support structures shall not interfere with access panels or working components. The VAV shall be free of any movement or excessive vibration.

2.3 The contractor shall repair, patch, modify existing ducts to install the VAV's and create an airtight system. Test and Balancing shall be part of commissioning and close out of this project. Re-insulation of exposed ducting is required. No flexible duct shall be used for the installation of the VAV's.

3. ELECTRICAL/COMM

3.1 The contractor shall field verify the condition of the existing ATU's electrical to be utilized for the new VAV's to be installed.

3.2 The contractor shall use the existing electrical from the removed ATU's to the newly installed VAV's. There are minor repairs and modification expected, for estimating purposes, assume that a 6 feet flex "whip" to be connected to the VAV's. This shall be typical for all 23 VAV's.

3.3 The contractor shall secure the installed CAT-6 or DDC communication wiring as dictated by the UFC, IBC, Eglin Specific Criteria, local and federal code, and/or as stated by manufacturer recommendation.

4. PLUMBING

4.1 The contractor shall use the existing plumbing piping from the removed hot water coil to the installed VAV's. The existing piping requires modification to extend or reroute hot water to match the installed VAV's.

4.2 The contractor shall at minimum install inlet and outlet isolation valves, check valve with strainer and blow off valve, circuit setter and/or balancing valves, three-way actuator valve (to work with DDC environment), bypass valve and any manufacturer recommended item. This shall be typical for all 23 VAV's.

4.3 Any installed hot water lines shall be level and plumb. Install piping support braces and/or straps as required.

4.4 Hydrostatic test of the Hot Water Piping shall be at least 150 PSI for a minimum of 4 hours with no fluctuation in pressure. This test shall be witnessed by the Government. The contractor shall perform all phases of testing. The contractor shall provide supervision, pumps, calibrated gauges (1-Year), instruments, test equipment, temporary piping and personnel required for tests. Contractor should perform preliminary pressure test prior to witnessed record test to verify system will pass record test on first attempt. This test at minimum shall include all

the hot water coil of all newly installed VAV's. This shall be accomplished when all 23 VAV's have been installed.

4.5 Pipe identification shall be wrap around PVC markings. Markings shall indicate "Heating Water Supply" and "Heating Water Return". Additionally, provide wrap around markings that indicate the direction of flow. Markings shall be placed at least every 25 feet. Follow ANSI pipe marking guideline.

5. DIRECT DIGITAL CONTROLS

5.1 The contractor shall follow Eglin specific criteria "*Eglin DDC System and Network with Lockable enclosure and Cybersecurity requirements*" which shall be included with this package. Any deviation or alteration to this guideline shall be reviewed and approved by the Government.

5.2 The contractor shall integrate and program the AHU's, Chiller, Boiler, and all the associated pumps to the Building DDC.

5.3 The graphics and identified points required for VAV's, Chillers, Boilers, AHU's, and pumps shall be dictated by "*Eglin DDC System and Network with Lockable enclosure and Cybersecurity requirements*". The graphics on the JACE and Niagara Workbench must be updated as part of this project.

5.4 Field controllers shall be from the same manufacturer, no mismatching of VAV controllers is allowed. The DDC requirement for this project shall include the controls for 23 VAV's, 2 AHU's, Chiller, Boiler, and associated pumps. The identified systems must be integrated with the Niagara Workbench Platform for remote monitoring, control, troubleshooting, and adjustment by 796 CES DDC Shop. 3- hour training shall be provided by the contractor as part of final close out.

5.5 All Field controllers must be programmable through the Niagara Workbench Platform.

5.6 The contractor shall coordinate with the Civil Engineer DDC Shop to ensure that all required points have been properly integrated to the building controls and Niagara Workbench Platform.

5.7 The contractor shall provide sufficient manpower to work with Civil Engineer DDC Shop to do a point-to-point test of alarms, trends, setpoints, overrides, etc.

5.8 The contractor shall provide the field devices and wiring including DDC controllers, relays, sensors, transducers, control devices, control panels, controller programming, controller programming software, controller input/output and power wiring and controller network wiring to provide a complete working system of the mechanical equipment.

5.9 The contractor shall provide programing required to execute the operations identified on the criteria "*Eglin DDC System and Network with Lockable enclosure and Cybersecurity requirements*".

6. MECHANICAL

6.1 The contractor shall install 23 VAV's to work as a fit in replacement of the existing ATU's. The VAV's shall be from the same manufacturer and the same product line with the appropriate model number. No mismatching VAV's allowed.

6.2 The VAV's shall have hot water reheat coil and an appropriate VAV controller with hot water reheat. This at minimum shall include the damper and HWC valve.

6.3 The schedule for the ATU's shall be included in this package, this will also include AHU-1 and AHU-2. The VAV's installed shall match specifications provided by the schedule mentioned. Any deviation or upsizing shall be reviewed and approved by the government.

6.4 VAV's naming convention shall follow ATU's naming convention, example, ATU-2-13 shall be VAV-2-13. The VAV's shall have equipment nameplate. This nameplate shall be made of metal or plastic with at least 1.5" lettering, black background with white lettering. This nameplate shall be located on the exterior of the control panel cover of the VAV's. This shall be typical for all 23 VAV's.

6.5 The contractor shall remove existing transition duct, inlet and discharge. The VAV's shall be in-line with the duct and shall have rigid ducting. Transition pieces shall be sealed with silver/foil tape and ductwork mastic. Transitions should be rigid ducts. All points of connection shall be leak free.

6.6 The contractor shall install new zone temperature sensors to work with the new VAV controls. Existing location shall be used. Existing conduit shall be used. Patch and match existing wall texture and color. Removed temperature sensors shall be turned in to the Government.

7. TESTING/COMMISSIONING

7.1 The contractor shall use government issued laptop for pre-final and final inspection of the installed DDC controls. This laptop will be turned in to the Government at project close out.

7.2 The contractor shall be responsible in verifying that existing AHU's and pumps will provide expected output (CFM, GPM, etc.). The Government shall expect the specification as reflected on the original as built provided.

7.3 An independent Test, Adjustment, and Balance (TAB) and Performance Verification Test (PVT) Engineer/technician shall be hired as part of the commissioning and close out procedure. The DDC and HVAC contractor/subcontractor shall assist the TAB and PVT engineer/technician and will be in capacity to support to deliver a properly operational system. The TAB and PVT engineer/technician shall produce a TAB and PVT plan to include parameters of failure. This plan shall be sent to the Government no later than 14-calendar days prior to the scheduled TAB and PVT test. The Government reserves the right to add/remove/modify this TAB and PVT test plan. Once approved, the test shall be witnessed by the government and the TAB and PVT technician shall produce a report. This report shall be turned in to the Government. Any failure in TAB or PVT criteria shall require for the TAB and PVT test to be redone.

7.4 TAB and PVT test to include hydronics and air. As part of Quality inspection, the Government may select 20% of the VAV's, supply and return diffusers, registers, grilles. The contractor, in the presence of the Government will produce a TAB and PVT report of the findings. If any items selected fall outside of plus or minus 10% of the expected value, the Government shall request the contractor to perform another TAB and PVT procedure and test and inspect 100% of the of the VAV's, supply and return diffusers, registers, grilles.

8. SCHEDULING

8.1 As part of this contract, the contractor is to provide a schedule of the construction workflow to including total project time in calendar days. This schedule shall span from start to close out of this project and include lead times for parts and materials.

8.2 Regular working hours will be observed and followed, and be established by the contracting office excluding federal holidays and weekends. Working days will be Monday to

Friday from 0730-1630. It is the intention of the Government for this construction to be uninterrupted by the user.

8.3 Laydown Area to be provided after contract award.

9. REQUIRED AS BUILT DRAWINGS as marked:

- Cover Sheet with title and approval block
- Existing Site Plan
- Final Site Plan
- Grading Plan
- Utilities Site Plan
- Phasing Plan
- Floor Plan
- Elevations
- Finish Schedule
- Window and Door Schedules
- Wall and Ceiling Sections
- Ceiling Plan
- Mechanical Plan with HVAC Duct Layout
- Mechanical and HVAC Schedule
- Mechanical and HVAC Details
- Plumbing Plan with Riser Diagrams
- Plumbing Schedule
- Plumbing Details
- Power Plan and Panel Schedule
- Electrical and Lighting Plan and Schedule
- Fire Protection Plan
- Communications/Data Plan

9. GUIDELINES

10.1 Prime contractor and subcontractor to have at least one previous project/experience with installing VAV's and DDC for VAV's with hot water reheat. Provide information such as project, date, location, installation name and quantity of VAV's within the past five years.

10.2 The DDC subcontractor to have previous experience with Niagara Workbench Platform and licensed with at least one of the preferred DDC manufacturers; Trane, Johnson Controls, Automated Logic, Seimens, and Schneider or similar.

10.3 Comply with current applicable state, local, & federal building codes as well as codes from other recognized authoritative bodies; including, but not limited to American National Standards Institute (ANSI), American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), International Building Code (IBC), NEC, NFPA, National Standard

Plumbing Code (NSPC), OSHA (Occupational Safety and Health Administration), and Sheet Metal and Air Conditioning Contractors' National Association (SMACNA). If there is a conflict in regulation, the more stringent shall apply.

10.4 All items mentioned in this statement of work shall be inspected and up to the standard of the Government.

10.5 Contractor shall be responsible to repair any damage to the curbing, road, grounds, or Eglin facility if it's the result of their action. The repair shall be equal to or better than before.

10.6 Upon completion of work, the site must be in clean, neat, and orderly condition. This will be inspected and up to the standard of the Government.

10.7 The contractor to submit a 50-division cost estimate. A template may be requested from contracting as needed. The Government requires the most current 50-division cost estimate.

10.8 The count, dimensions, and measurements provided are an approximation for scoping purposes. The contractor shall field verify for exact count, dimensions, and measurements.

11. ATTACHMENTS

11.1 Eglin DDC System and Network with Lockable enclosure and Cybersecurity requirements

11.2 M-101 Existing ATU and Duct Layout

11.3 M-102 Existing ATU Plumbing Layout

11.4 M-105 Existing Equipment Schedule

15 Nov 2021

Energy Management Control System (EMCS) and/or Direct Digital Control (DDC) System Requirements for Existing Facility Remodels

1. Modifications to an existing facility's Control System (CS) **must** be compatible with the current CS in that facility if the new controls are connecting to existing JACE. Whenever possible, the same brand controls should be used. If a new JACE is to be installed, the requirements for New Facilities will apply.
2. All graphics (including floor plans) must be updated in the existing ENS (Enterprise Network Server) located in building 696 which shall serve as the Web Server for the system, as well as in the JACE.
3. The system shall allow Civil Engineer (CE) technicians to connect to all controllers with all available software in all modes available by the manufacturer from building 696 via the local area network (LAN) to program, backup, download, configure and perform all functions necessary to maintain the system as if onsite and direct connected to the device.
4. Provide all Controls software necessary for project; to be loaded onto an AF provided Laptop with current SDC. Provide latest software and USB adapters for each type of DDC field controllers, to include factory installed DDC controllers. (This laptop will be used/verified during the training).
5. All hardware and software administrator level passwords shall be provided to the government to access all levels of all controllers including the new Niagara Framework controllers as well as copies of the system's topology, hardware/software inventory, and configuration. The password shall allow complete access to everything the manufacturer has access to.
6. All field controllers shall use Building Automation and Control network (BACnet) IP protocol.
7. The BACnet communication buss shall be daisy chained to the JACE. No additional switches or routers shall be used. Ensure not to damage/cut existing Buss Line for the remainder of the facility.

15 Nov 2021

Energy Management Control System (**EMCS**) and/or **Direct Digital Control (DDC) System Graphics Requirements**

1. Graphics shall be in the existing ENS (Enterprise Network Server) located in building 696 which shall serve as the Web Server for the system, as well as in the JACE.
2. Include date and time on all graphic screens.
3. **Main Map Graphic**- This screen will have a list and link to all the buildings on the entire Eglin AFB complex.
4. **Building Graphic**- This screen will have a third graphic of the front of the building and a building number. The following links are required on this page: Back to Main Map, Floor Plans, Alarms, Reports, Schedules, History, and User Service.
5. **Floor Plan Graphic** The floor plan will be 3D with color coded zones, room numbers, and as-built sensor and equipment locations. The following points are required on this page: room temp, room humidity, occupancy status. The following links are required on this page: Back to Building Graphic, All Equipment (Click on sensor or equipment shown on the floor plan and the link will go to the corresponding equipment).
6. **Typical VAV Table Graphic** The VAV table should include the following info: Box #, Zone Temp, Set Points (Heat & Cool), SP Source, Flow SP, Flow, Damper position, Heating %, SAT
7. **Typical Equipment Graphic** Include a header with equipment type and number, room numbers and area(s) served. Include all points on the equipment graphic. The following points will be animated: fans, dampers, coils, pumps, boilers. All set points will have the capability of being changed from the graphic. The following links are required on this page: Back to Floor Plan, provide a hidden link over each point to show an hourly third day trend, provide a hidden link over each point to override all outputs. Provide a link to a spreadsheet with manufacturer and part numbers and warranty dates for all parts on the equipment graphic.
8. **Communication Bus Graphic** Include an as-built wiring diagram of the communication buss between all controllers.
9. Provide a printed copy of the graphics prior to project training.

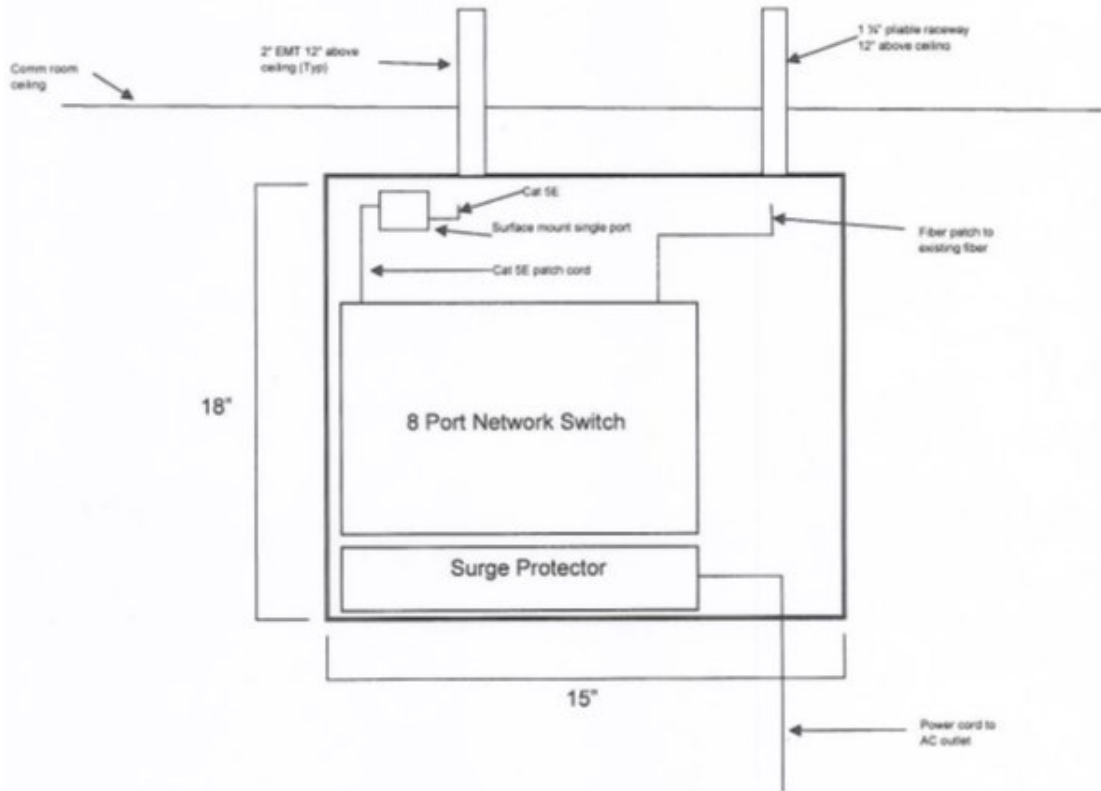
Eglin AFB
Energy Management Control System (EMCS) Network Requirements for New Facilities

1. Comm Squadron shall Install/Identify 2 fiber strands dedicated for DDC connectivity.
2. **Contractor shall install and program a Cisco 8-port switch compatible with the Jace and DDC (ENS). 796 CES will provide the IP address, VLAN, username and password to the contractor. Contractor will install a fiber patch cord from the 8-port switch to the fiber ports designated by the Communications Squadron.**
3. Contractor installs a wall mounted lockable network enclosure (LNE) with surge protector for a Cisco 8 port switch-- (see attached LNE Detail)] in the main Communications room mounted on the fire rated backer board.
4. Contractor installs a 20A/125V duplex receptacle within 3' of the LNE for connection of the surge protector. This receptacle shall be connected to the emergency power panel if the building is, or will be, equipped with an emergency generator.
5. Contractor installs a single port LAN connection inside the LNE and inside each building level supervisory controller.
6. Contractor installs a 2" EMT conduit from the LNE to each building level supervisory controller in the building.
7. Contractor installs a 1 ¼" pliable raceway, w/pull string, from the LNE to a height approximately 12" above the Communications room rack. [DDC shop personnel shall install a fiber jumper from the LNE to the installed fiber patch panel].
8. Contractor installs purple Cat 5E cable from the LNE to each building level supervisory controller. **Note:** If the distance exceeds 100 meters between the LNE and the building level supervisory controller, the building level supervisory controller shall be moved, or fiber w/media converters must be used.

Preferred DDC Manufacturers installed on Eglin.

Trane
Johnson
Automated Logic
Siemens
Schneider

Typical Drawing of Lockable Network Enclosures

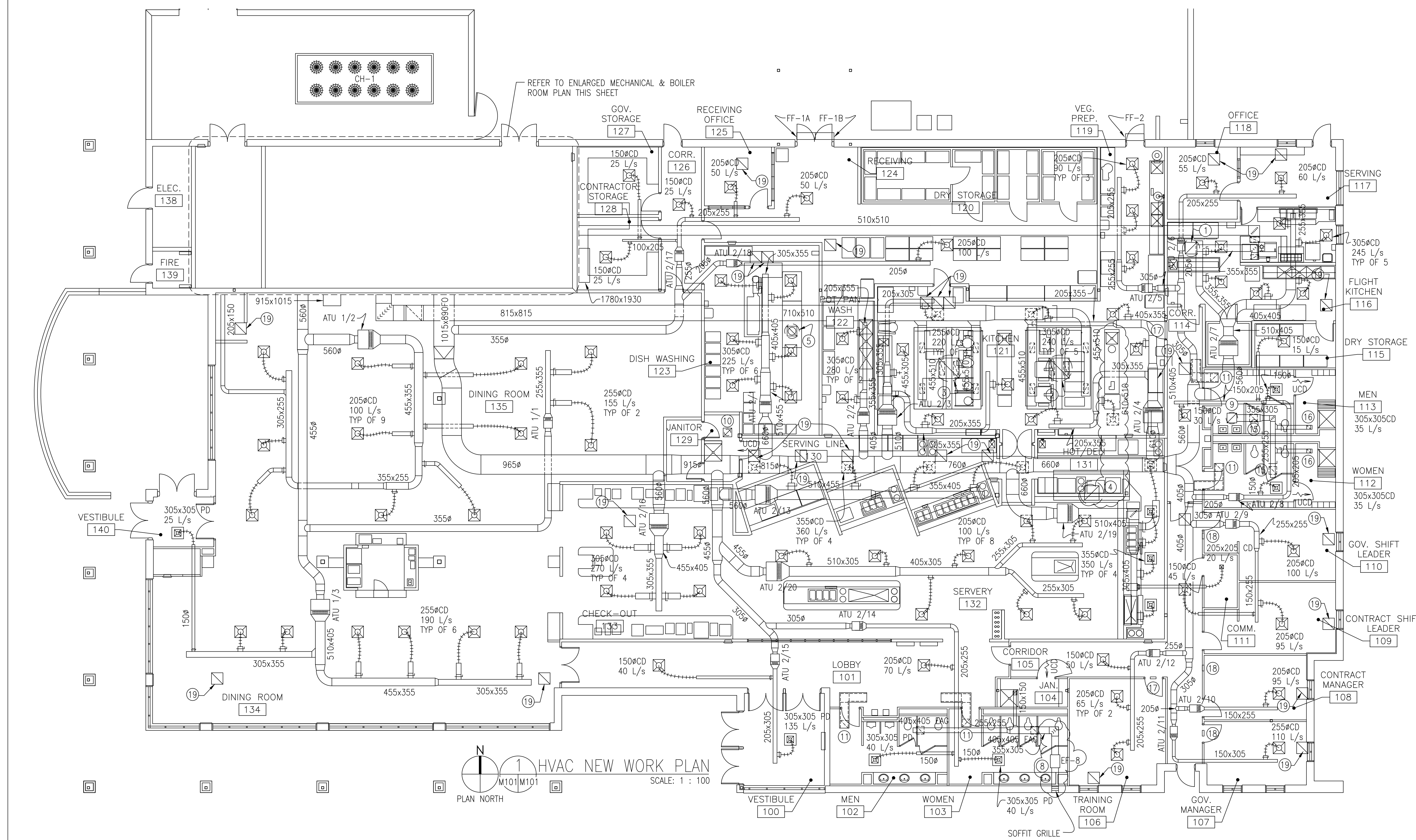


REVISIONS					
REVISION SYMBOL	NO. SYMS.	AMD. C.O.R.	DESCRIPTION	DATE	APPROVED

SHEET NOTES

- ① 610x610 EXHAUST DUCTWORK UP TO EF-1 ON ROOF.
- ② 1067x1067 EXHAUST DUCTWORK UP TO EF-2 ON ROOF.
- ③ 1067x1067 EXHAUST DUCTWORK UP TO EF-3 ON ROOF.
- ④ MOVE EF-4 TO EAST END OF HIP ROOF, ABOVE HOOD. REMOVE EXISTING DUCT AND REWORK EXHAUST DUCTWORK.
- ⑤ 510x510 EXHAUST DUCTWORK UP TO EF-5 ON ROOF.
- ⑥ 610x610 EXHAUST DUCTWORK UP TO EF-6 ON ROOF.
- ⑦ 510x510 EXHAUST DUCTWORK UP TO EF-7 ON ROOF.
- ⑧ 510x510 EXHAUST DUCTWORK TO INLINE EF-8 IN CEILING DISCHARGE DUCT INTO SOFFIT GRILLE.
- ⑨ 510x510 EXHAUST DUCTWORK UP TO EF-9 ON ROOF.
- ⑩ 205x205 EAG CONNECTED TO 455x455 EXHAUST DUCTWORK UP TO EF-10 ON ROOF.
- ⑪ 405x405 TG CONNECTED TO 455x255 TRANSFER DUCTWORK.
- ⑫ 5 KW ELECTRIC UNIT HEATER, 277/1/60 HZ, INTEGRAL ADJUSTABLE T'STAT AND SURFACE MOUNT WALL SLEEVE.
- ⑬ 355x355 GREENHECK FABRA GRAVITY INTAKE HOOD OR EQUAL.
- ⑭ 610x510 GREENHECK FABRA GRAVITY INTAKE HOOD OR EQUAL.
- ⑮ 405x405 EAG AT 205 L/s.
- ⑯ 205x205 EAG AT 35 L/s CONNECTED TO 205x205 EXHAUST DUCTWORK.
- ⑰ 915x865 AIR TRANSFER OPENING IN WALL ABOVE CEILING.
- ⑱ 305x205 AIR TRANSFER OPENING IN WALL ABOVE CEILING.
- ⑲ 600x600 PERFORATED TRANSFER GRILLE. PRICE MODEL PD0RE OR EQUAL.

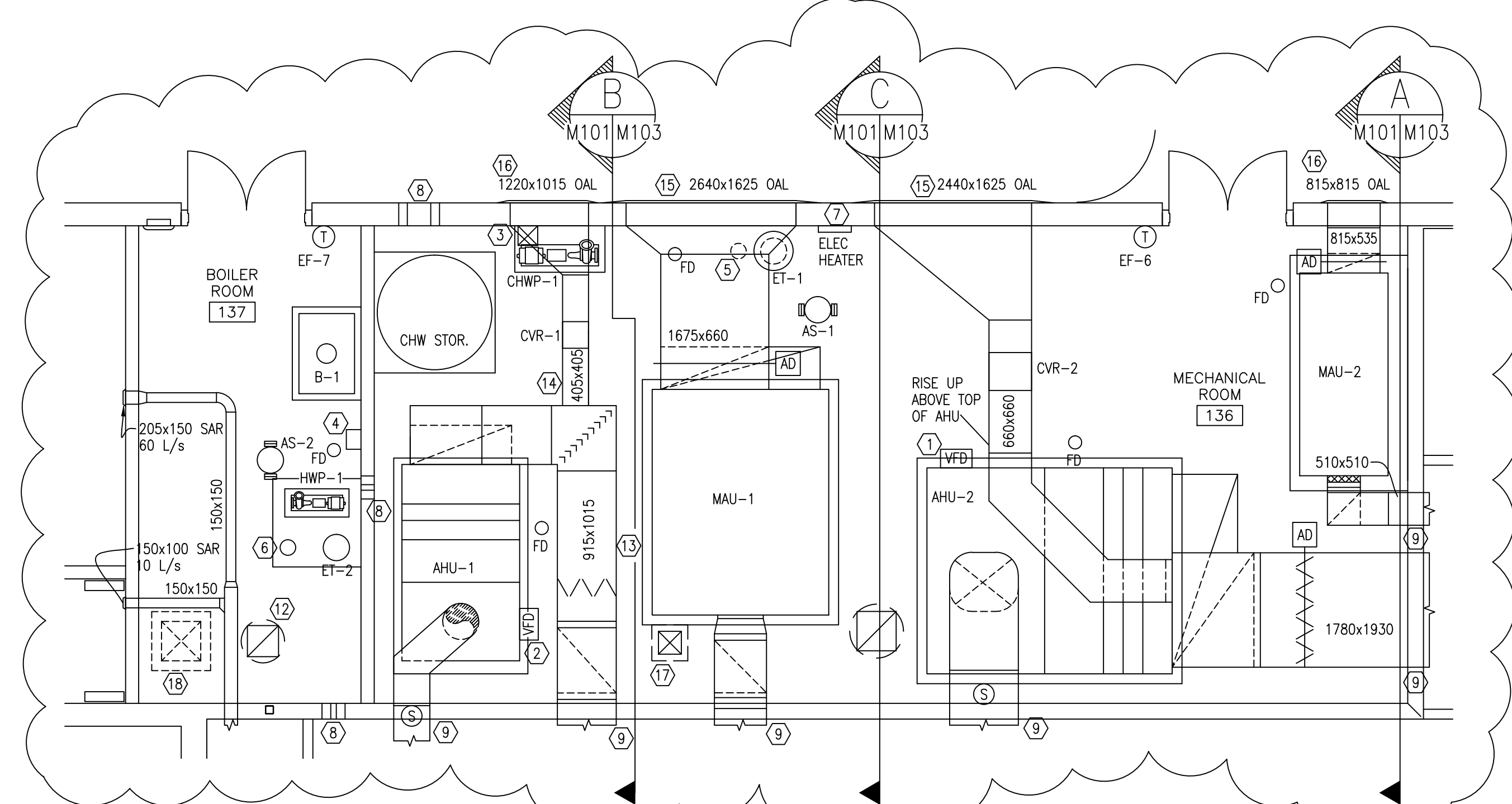
REVISION: FEBRUARY 19, 2002



1 HVAC NEW WORK PLAN
SCALE: 1 : 100
PLAN NORTH

ENLARGED MECH ROOM NOTES

- ① VFD FOR AHU-2, UNIT MOUNTED.
- ② VFD FOR AHU-1, UNIT MOUNTED.
- ③ MOTOR STARTER FOR CHILLED WATER PUMP, CHWP-1.
- ④ MOTOR STARTER FOR HOT WATER PUMP, HWP-1.
- ⑤ CHEMICAL SHOT FEEDER, CHILLED WATER SYSTEM.
- ⑥ CHEMICAL SHOT FEEDER, HOT WATER SYSTEM.
- ⑦ 5KW ELECTRIC UNIT HEATER 277/1/60, INTEGRAL ADJUSTABLE THERMOSTAT AND SURFACE MOUNTED WALL SLEEVE.
- ⑧ PIPE SLEEVE, PACK WITH SAFING AND FIRE CAULK.
- ⑨ DUCT SLEEVE, PACK WITH SAFING AIRTIGHT AND FLASH WITH SHEET METAL ON BOTH SIDES.
- ⑩ HEAT TRACE ALL OUTSIDE CHILLED WATER PIPING AT 4 WATTS/FT. SELF LIMITING CABLE W/THERMOSTATS.
- ⑪ 610x610 EXHAUST DUCTWORK UP TO EF-6 ON ROOF.
- ⑫ 510x510 EXHAUST DUCTWORK UP TO EF-7 ON ROOF.
- ⑬ BOTTOM OF DUCT IS 2135 CM; TOP 3150 CM A.F.F.
- ⑭ BOTTOM OF DUCT IS 2440 CM; TOP 2745 CM A.F.F.
- ⑮ MECHANICAL LOUVER - BOTTOM AT 1220 CM A.F.F. (TOP OF SILL BLOCK)
- ⑯ MECHANICAL LOUVER - TOP AT 2745 CM A.F.F.
- ⑰ 360x360 GRAVITY INTAKE HOOD.
- ⑱ 610x610 GRAVITY INTAKE HOOD.



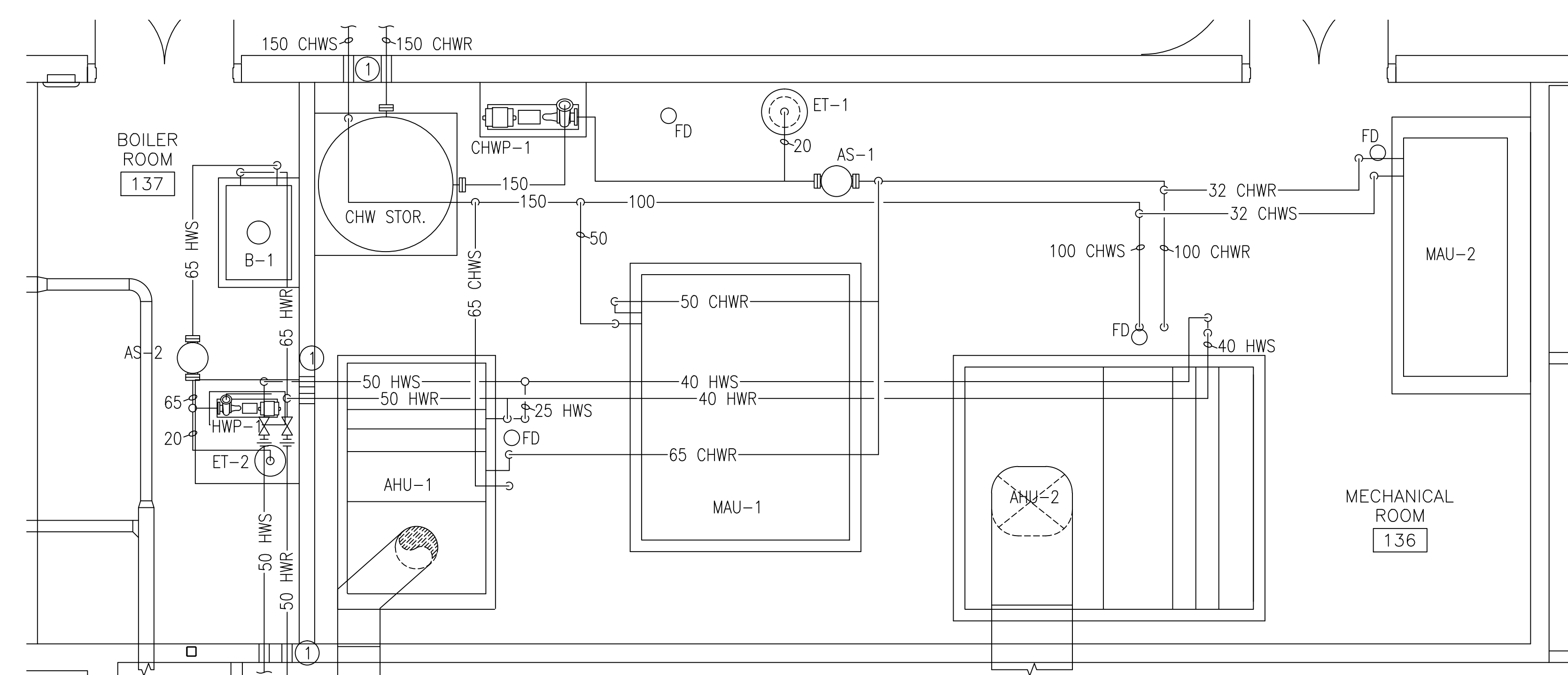
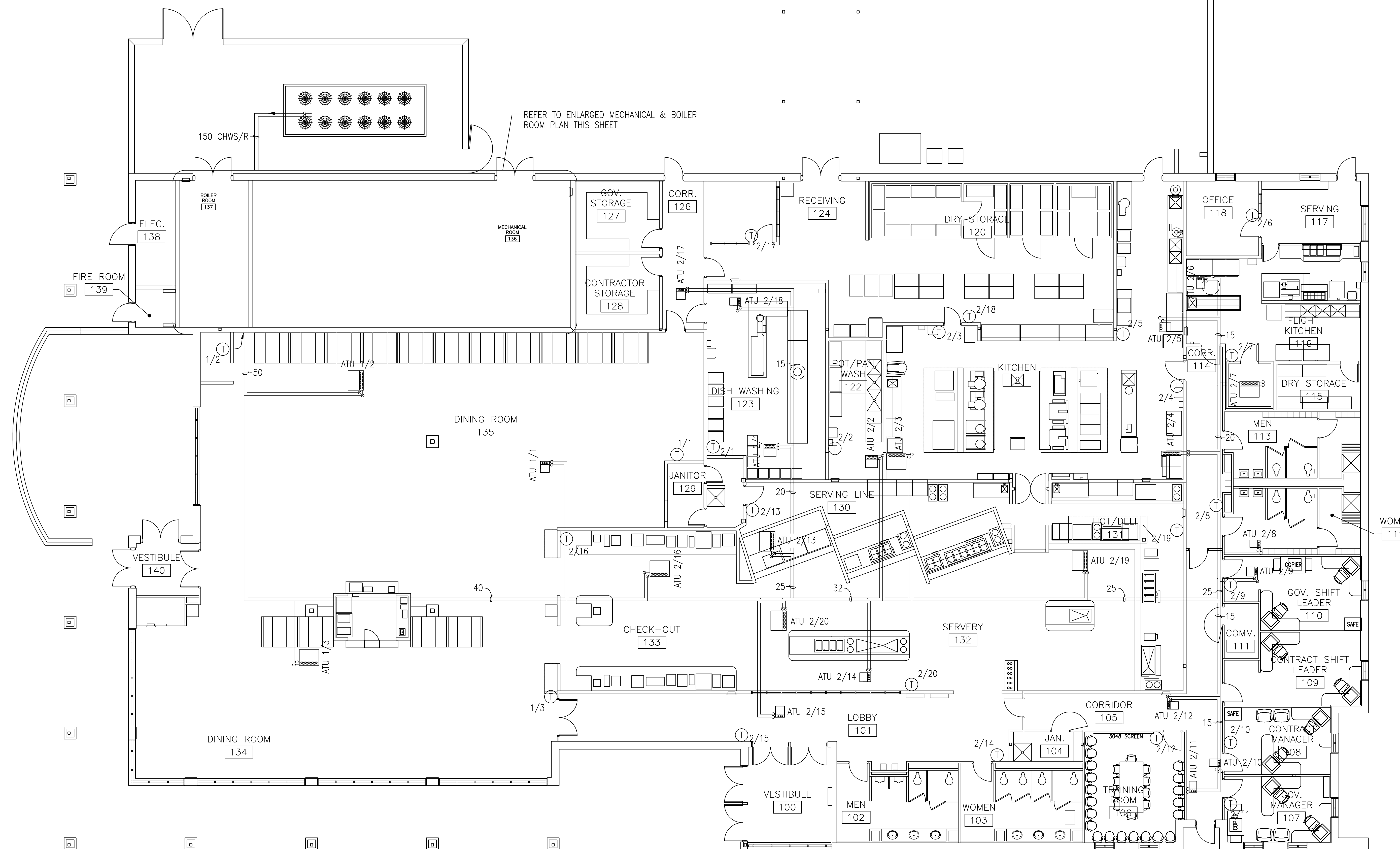
2 HVAC ENLARGED MECHANICAL & BOILER ROOM
SCALE: 1 : 50
PLAN NORTH

'AS-BUILT'
JANUARY, 2003

NOTE: ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

DESIGNED BY: R. CANEKERATNE	BULLOCK TICE ASSOCIATES 909 E. CERVANTES ST., SUITE B PENSACOLA, FL. 32501	U.S. ARMY ENGINEER DISTRICT, MOBILE CORPS OF ENGINEERS MOBILE, ALABAMA
DRAWN BY: A. REMSKI	EGLIN AIR FORCE BASE, FLORIDA FY-00 EGLIN DINING FACILITY	
CHECKED BY: R. CANEKERATNE	HVAC PLAN	
SUPERVISED BY: G. PETERSON	SH REF NO M-101	CADD FILE NAME 277M101F.DWG
	FILE NO.: EGL-229-62 CONTRACT NO.: DCA01-00-C-0042 DATE: APRIL 11, 2001	

REVISIONS					
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'AS-BUILT'
JANUARY, 2003

DESIGNED BY: R. CANEKERATNE	BULLOCK TICE ASSOCIATES 909 E. CERVANTES ST., SUITE B PENSACOLA, FL. 32501	U.S. ARMY ENGINEER DISTRICT, MOBILE CORPS OF ENGINEERS MOBILE, ALABAMA
DRAWN BY: A. REMSKI	EGLIN AIR FORCE BASE, FLORIDA FY-00 EGLIN DINING FACILITY	
CHECKED BY: R. CANEKERATNE	HVAC PIPING PLAN	
SUPERVISED BY: G. PETERSON	SH REF NO M-102	CADD FILE NAME 277M102F.DWG
	FILE NO.:	EGL-229-63 CONTRACT NO.: DACAO1-00-C-0042 DATE: APRIL 11, 2001

AIR HANDLING UNIT SCHEDULE

Table with columns for MARK, TYPE, FAN DATA, ELECTRICAL DATA, CHILLED WATER COOLING DATA, HOT WATER PREHEAT COIL DATA, and FILTER DATA. Rows include AHU-1 and AHU-2.

AHU NOTES:

Vertical and horizontal draw through notes. ADJUST LOCATION OF UNITS IN MECHANICAL ROOMS AS REQUIRED FOR SERVICE AS RECOMMENDED BY MANUFACTURER. PROVIDE A MINIMUM 150MM THICK CONCRETE PAD & 150 M BASE RAILS FOR EACH UNIT.

REVISIONS table with columns for REVISION SYMBOL, NO. SYMS., AMD. C.O.R., DESCRIPTION, DATE, and APPROVED.

FAN SCHEDULE

Table with columns for MARK, LOCATION, TYPE, DRIVE, PERFORMANCE DATA, ELECTRICAL, CONTROL, and NOTES. Rows include EF-1 through EF-10.

FAN SCHEDULE LEGEND

DD - DIRECT DRIVE
BD - BELT DRIVE
EF - EXHAUST FAN
BS - BIRD SCREEN
CB - CENTRIFUGAL BLOWER
ILC - INLINE CENTRIFUGAL FAN
ESP - EXTERNAL STATIC PRESSURE
CEF - CEILING EXHAUST FAN (CENTRIFUGAL)
UB - UPRAST ROOFTOP CENTRIFUGAL EXHAUST FAN
BDD - BACKDRAFT DAMPER
FF - FLY FAN (AIR CURTAIN)
CRV - CENTRIFUGAL ROOF VENTILATOR

FAN NOTES

1. ALL EXHAUST FANS SHALL BE INSTALLED WITH FLEXIBLE DUCT CONNECTION, VIBRATION ISOLATORS, AND FLEXIBLE CONDUIT.
2. FANS SHALL BE PROVIDED WITH BACKDRAFT DAMPERS.
3. THE ROOF MOUNTED FANS SHALL BE PROVIDED WITH PREFABRICATED ROOF CURBS AND BACKDRAFT DAMPER.
4. ALL DIRECT DRIVE FANS WITH MOTORS LESS THEN 375 WATTS SHALL BE PROVIDED WITH AN ADJUSTABLE ELECTRONIC SPEED CONTROLLER.
5. COLOR SHALL MATCH ROOF COLOR.

EXPANSION TANK SCHEDULE

Table with columns for MARK, VOLUME (LITERS), CHARGE PRESSURE, and NOTES. Rows include ET-1 and ET-2.

AIR SEPARATOR SCHEDULE

Table with columns for MARK, FLOW, WORKING PRESSURE, INLET SIZE, and OUTLET SIZE. Rows include AS-1 and AS-2.

CONSTANT VOLUME REGULATOR SCHEDULE

Table with columns for MARK, MAXIMUM PRIMARY AIR, MINIMUM PRIMARY AIR, INLET SIZE, and NOTES. Rows include CVR-1 and CVR-2.

CONSTANT VOLUME REGULATOR SCHEDULE NOTES:

- 1 INLET DUCT CONNECTION SHALL NOT BE SMALLER THAN DUCT SIZES INDICATED ON DRAWINGS.
2 AIR TERMINAL UNIT OR FLOW MEASURING AND METERING STATION MANUFACTURED SPECIFICALLY FOR MEASURING AND METERING OF OUTSIDE AIR.
3 FLOW MEASURING AND METERING STATION MANUFACTURED SPECIFICALLY FOR MEASURING AND METERING OF OUTSIDE AIR.
4 CVR AND CONTROLLER SHALL BE CAPABLE OF CONTROLLING AIRFLOW AT ANY SETPOINT BETWEEN MAXIMUM AND MINIMUM PRIMARY FLOW INDICATED WITHOUT REQUIRING RECALIBRATION AT THE FACTORY.

AIR TERMINAL UNIT SCHEDULE (VAV)

Table with columns for MARK, MAXIMUM PRIMARY AIR, MINIMUM PRIMARY AIR, ROUND INLET SIZE, HEATING DATA, and FILTER DATA. Rows include ATU-1/1 through ATU-2/20.

AIR TERMINAL UNIT NOTES

- 1 ROUND INLET DUCT CONNECTION SHALL NOT BE SMALLER THAN SIZE INDICATED.
2 MINIMUM PRIMARY AIR.
MAXIMUM INTERNAL RESISTANCE OF AIR TERMINAL UNIT (INLET TO DISCHARGE STATIC PRESSURE DIFFERENTIAL) WITH PRIMARY AIR DAMPER FULL OPEN AT MAXIMUM PRIMARY AIR FLOW INDICATED SHALL BE 13 MM H2O.
MAXIMUM END DISCHARGE SOUND POWER LEVEL SHALL BE 25 NC. (NOISE EMITTED FROM UNIT DISCHARGE INTO DOWNSTREAM DUCTWORK) AT REFERENCE AIRFLOW INDICATED AND WITH 25 MM WATER GAGE DIFFERENTIAL STATIC PRESSURE ACROSS AIR TERMINAL UNIT.
MAXIMUM RADIATED SOUND POWER LEVEL SHALL BE 25 NC (NOISE TRANSMITTED THRU CASING WALLS) AT REFERENCE AIR FLOW INDICATED. FOR VAV UNITS MAXIMUM RADIATED SOUND POWER LEVEL IS WITH 25 MM WATER GAGE DIFFERENTIAL STATIC PRESSURE ACROSS AIR TERMINAL UNIT.
ACOUSTIC PERFORMANCE OF AIR TERMINAL UNITS SHALL BE BASED UPON TESTS CONDUCTED IN ACCORDANCE WITH ARI STANDARD 880. MAXIMUM SOUND POWER LEVELS INDICATED ARE EXPRESSED IN DECIBELS REFERENCE TO 10^-12 WATTS AT OCTAVE BANDS AND MID FREQUENCIES INDICATED, AND INCLUDES 10 db ALLOWANCE FOR CEILING ABSORPTION.
3 ALL ATU CONTROLS SHALL BE PRESSURE INDEPENDENT.

DIRECT FIRED MAKE-UP AIR UNIT SCHEDULE

Table with columns for MARK, TYPE, FAN DATA, ELECTRICAL DATA, CHILLED WATER COOLING DATA, HEATING DATA, and FILTER DATA. Rows include MAU-1 and MAU-2.

MAKE-UP AIR UNIT NOTES:

H&V - HEATING AND VENTILATING WITH CHW COOLING COIL. RUN GAS VENT PIPES OUT THROUGH MECHANICAL ROOM WALL A MINIMUM DISTANCE OF 3050 MM AWAY FROM OUTSIDE AIR INTAKES. PROVIDE 150 MM THICK CONCRETE PAD FOR EACH UNIT. GAS TRAIN CONTROLS SHALL INCLUDE ELECTRONIC MODULATING VALVE, DUAL GAS SOLENOID VALVES, MAIN PRESSURE REGULATOR, PILOT PRESSURE REGULATOR, PILOT SOLENOID VALVE, PILOT NEEDLE VALVE, MAIN SHUTOFF, PILOT SHUTOFF, MANUAL SHUTOFF LEAK TEST VALVES, AND SHALL MEET ANSI STANDARDS. PROVIDE MANUFACTURERS CONTROL PANEL CAPABLE OF COMMUNICATING WITH THE CENTRAL DDC SYSTEM. SAFETY CONTROLS SHALL INCLUDE ULTRAVIOLET FLAME SUPERVISOR, HIGH AND LOW AIRFLOW PROVING SWITCHES, AUTOMATIC AND MANUAL HIGH TEMPERATURE LIMITS, AND A PRE-PURGE TIME DELAY RELAY. CONTROL PANEL SHALL INCLUDE REMOTE CONTROL AND MONITORING CONSOLE, MOTOR CONTACTOR, INTERMITTENT SPARK PILOT WITH SPARK TRANSFORMER, LOW FIRE START CONTACTOR, AND CONTROL POWER TRANSFORMER.

GAS HOT WATER BOILER SCHEDULE

Table with columns for MARK, TYPE UNIT, BOILER RATINGS, BURNER DATA, WATER DATA, and ELECTRICAL DATA. Row includes B-1.

BOILER NOTES:

BOILERS AND BURNERS SHALL BE UL LISTED, AND FACTORY TESTED. BOILERS SHALL BE APPROVED BY AGA, ASME INPECTED AND STAMPED FOR WORKING PRESSURE, COMPLETE WITH MANUFACTURERS DATA REPORT. BOILERS SHALL BE PROVIDED WITH RELIEF VALVES AS REQUIRED BY ASME CODE. THE EFFICIENCY IS STEADY STATE AT HIGH FIRE. PROVIDE IRI GAS TRAIN

'AS-BUILT' JANUARY, 2003

NOTE: ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

Table with columns for DESIGNED BY, DRAWN BY, CHECKED BY, SUPERVISED BY, BULLOCK TICE ASSOCIATES, EGLIN AIR FORCE BASE, FLORIDA, and FILE NO.