ADDENDUM NO. 1
September 13, 2023

PART 1 - GENERAL

1.1 PROJECT – H59-6213-ML

A. H0RRY-GEORGETOWN TECHNICAL COLLEGE

UPGRADE AND REPLACE MULTIPLE HVAC UNITS – CONWAY CAMPUS

1.2 ENGINEER

A. DWG Consulting Engineers, Inc.
1009 Anna Knapp Blvd, Mt. Pleasant, SC 29464
(843) 849-1141

1.3 RELATED DOCUMENTS

A. This Addendum consists of 29 page(s) including attachments.

B. To Prime Bidders of Record:

1. This addendum forms a part of the Contract Documents and modifies the original Project Manual and Drawings. Acknowledge receipt of this addendum on the Bid Form. Failure to do so may cause a bid to be rejected as unresponsive as outlined in the Instructions to Bidders.

PART 2 - ADDENDUM ITEMS

2.1 GENERAL

A. The pre-bid conference held September 6th was not mandatory.

B. The following changes/clarifications shall be made to the drawings. Revised drawings are attached.

1. E101
   a. Grounding Detail Added
   b. General Fire Alarm System Notes added.

2. E102
   a. Electrical Requirements for DLSS-1,2 Outdoor Units modified.
   b. Electrical Requirements for DLSS-1,2 Indoor Units modified.
   c. Note 3 on the Equipment Connection Schedule was added.

3. M002
   a. Detail 6 was revised – use copper for condensate drains piping.
   b. Detail 2 was revised – smoke detector not required on supply duct.
   c. Detail 9 was revised – use copper for condensate drain piping.

d. Detail 3 was revised – smoke detector not required on supply duct. Clarification of curb requirements.
e. Detail 4 moved to drawing M102.
f. Detail 8 was revised.
g. Mechanical pipe support detail added.

4. M101
   a. Mechanical schedule revised – added supply air, static pressure, and outside air requirements along with additional unit specifications.
5. M102
   a. Detail 7 was revised – added smoke detector when CFM is 2000 or greater and clarified curb requirements.
   b. Mechanical Rooftop Unit Schedule modified – added supply air, static pressure, and outside air requirements along with additional unit specifications.
   c. Exhaust Fan Schedule modified – added speed controllers.
6. M102A
   a. Mechanical Split System Unit Schedule modified – added supply air and static pressure requirements along with additional unit specifications.
   b. Details 3, 4, and 5 have been modified to eliminate platforms. See new detail for mounting outdoor units on rails.
   c. Detail added for roof piping support.
7. M103
   a. Mechanical Split System Unit Schedule modified – added supply air and static pressure requirements along with additional unit specifications.
   b. Mechanical Rooftop Unit Schedule modified – added supply air, static pressure, and outside air requirements along with additional unit specifications.
   c. Exhaust fan schedule modified.
8. M104
   a. Mechanical Rooftop Unit Schedule modified – added supply air, static pressure, and outside air requirements along with additional unit specifications.
   b. Exhaust fan schedule modified.
9. M105
   a. Mechanical Split System Unit Schedule modified – added supply air and static pressure requirements along with additional unit specifications.
   b. Exhaust fan schedule modified.
10. M107
    a. Mechanical Split System Unit Schedule modified – added supply air and static pressure requirements along with additional unit specifications.

C. The following changes/clarifications shall be made to the Project Manual. Revised sheets are attached.

1. 230593 Testing, Adjusting, and Balancing for HVAC
2. Omit specification section 237313 – Modular Indoor Central Station Air Handling Units.

D. Questions:

1. Q: I am unclear whether you are requiring Outside Air Damper and Economizers on the RTU's for the project. The pictures show dampers. I think code does require economizers on 5 ton or greater, but I need clarification of your selections. Also, this size units usually only have manual dampers as a selection, so keep that in mind.

   A: Add OA dampers and economizers to RTUs greater than 54,000 BTUH.

2. Q: I am under the assumption that we will only be coating to condenser coils on the units whether RTU or condensers?

   A: All condenser coils shall be coated on RTUs, condensing units, makeup air units.

3. Q: The specs call for inverter compressors with 30%-100% modulation and these are not available for this size units.

   A: No inverter compressors required except for minisplit units.

4. Q: The specs (237433 Packaged Heat Pumps, page 4) call for supply fan modulation with 30%-100% of scheduled design air flow.

   A: Supply fan modulation is not required for packaged heat pump units.

5. Q: Modulating Hot Gas Reheat is requested in specs and does not apply to the equipment at facility.

   A: No hot gas reheat required.

6. Q: The fan will only have the option for two speeds with this type of equipment not variable speeds.

   A: No variable speed fans required for 5 tons or less AHUs or RTUs.

7. Q: Per specification section 237433 Package Heat Pumps, page 3 – are double wall panels required for cabinet?

   A: RTU cabinets shall be fully insulated with non-fibrous foil faced cleanable insulation that is mechanically secured and encapsulated inside the unit.

8. Q: Hinged Panels – we only provide screw in type panels that are fitted to the air handler, RTU, and condensing unit. I don't think this will be an option available with any manufacturer on this type of equipment.

   A: No requirement for hinged panels.

9. Q: Clarify filter requirements.

   A: Filters shall be 2-inch minimum MERV 13 pleated filters.

10. Q: I need clarity in regard to any fire system protection. Do you want a sensor in the return duct or supply duct? Please clarify position.

    A: Sensors in return ducts only.

11. Q; Alan had mentioned that controls would be handled CMI, so the only thing we need to supply is sensors for the space and BACnet connections on the unit? CMI will handle the wiring and connections? Can you please clarify?

    A: For RTUs and split systems, CMI will provide a Seimens thermostat/controller that is compatible with the Seimens system installed in the building which could be either BAC-net or Siemens P1.

    Coordinate work with Eric Scales with CMI.

    Note that CMI does not monitor Building 3000, so the controls for those units will be stand-alone.

12. Q: Building 900 – This building is mostly single phase, and most of the equipment selections with options are not available. Can we make alternative selections for these units?

    A: Alternate selections can be made for these units.

13. Q: There is no reference or clarity to Low Ambient Kits factory installed. We normally do not install these for the size of equipment at this site. Please clarify.

    A: No low ambient kit required.

14. Q: Phase monitoring required?

    A: Phase monitoring is not required for single phase and small 3 phase motors / compressors.

15. Q: Are stainless steel drain pans required?

    A: Non-corrosive drain pans are acceptable inside the air handling unit or RTU.

16. Q: Is air flow measurement/monitoring required?

A: Provide air flow measurement/monitoring device equal to Ebtron Gold for outside air monitoring of package heat pump units.

Installation Questions and Concerns:

17. Q: There are several horizontal rooftop units that will require factory installed curbs. We do not know if the roof is able to support the new units and meet building codes because it's hard to determine this from field observation. Carrier is okay cutting the old curbs out and installing a new factory provided curb, but we have concerns about the units having proper support and engineering approval from the county and state inspectors. Are you okay with paying a 3rd party engineering firm to evaluate the support for those units and adding costs to make those supports as needed as an addendum or adder? We feel this will be necessary to get the proper sign off from the state and county.

    A: The existing horizontal discharge units are sitting on timbers, so we want to remove the old units and those timbers, cut the roof as needed, and provide a new seismic curb connected to the structure.

    See detail 3 on drawing M002 for auxiliary steel support requirement between bar joists around perimeter of new curb. Size of auxiliary steel support will be part of the seismic curb submittal.

    There will be no State or County oversight.

18. Q: In regard to line sets, since the line-sets run throughout the brick and walls an will be very difficult to totally remove and replace, we would like to suggest that line sets be cut and replaced from the roof opening to the new units and new insulation be added for proper protection. The line sets of course will be flushed out and sized properly for the equipment. Please clarify your position on this matter.

    A: If at all possible, existing refrigerant lines are to be replaced. Refrigerant lines under sidewalks are to be encased in 6 inch schedule 40 PVC conduit. Contractor is responsible for cutting and patching concrete and patching and repairing interior wall. Paint wall to match adjacent surfaces.

19. Q: Speaking further on roof curbs, we would like to suggest that we have the flexibility to provide curb (Not Factory Provided) adaptors on the RTU's that have current curbs on them. This would allow the proper connections into the existing duct work and provide the best installation practice.

    A: For existing vertical discharge RTUs, the existing curbs can be reused with a new seismic curb adapter attached to the existing curb in a method specified by the seismic curb provider.

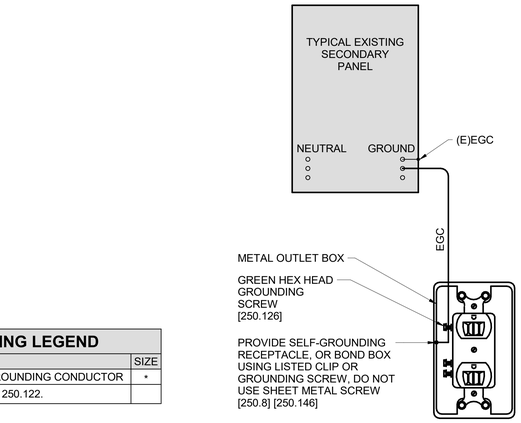
20. Q: Seismic curbs and wind protection, we would suggest the clip or bolt down protection to prevent any high wind problems. Will this be an acceptable method?

    A: It is my understanding that bolt down/knock down curbs do not meet seismic requirements. New curbs and method of attachment to the structure or to the existing curb will need to be seismically certified by the curb provider.

21. Q: Sprinkler protection – I would assume we have not responsibility to connect to the BAS or alert system?

    A: New smoke detectors, where required (units 2000 CFM or greater), will need to be wired to the air handling unit or RTU for automatic shutdown.

END OF ADDENDUM NO. 1



GROUNDING LEGEND		
ABBR.	DESCRIPTION	SIZE
EGC	EQUIPMENT GROUNDING CONDUCTOR	*
*	SIZE PER TABLE 250.122.	

GROUNDING NOTES:

1. NUMBERS IN BRACKETS REFER TO SPECIFIC SECTIONS OF THE NATIONAL ELECTRICAL CODE.
2. ALL UNDERGROUND OR OTHERWISE INACCESSIBLE GROUND CONNECTIONS AND SPLICES SHALL BE EXOTHERMICALLY WELDED [250.68].
3. GROUND ELECTRODE FOR SEPARATELY DERIVED SYSTEMS SHALL BE THE NEAREST METAL WATER PIPE OR STRUCTURAL METAL. IF EITHER IS NOT AVAILABLE, PROVIDE GROUNDING CONDUCTOR BACK TO MAIN GROUND BUS AT SERVICE ENTRANCE.
4. PROVIDE A GROUND WIRE IN ALL CONDUITS.
5. EARTH SHALL NOT BE USED AS THE SOLE GROUND RETURN PATH FOR ANY EQUIPMENT POWERED UNDER THIS PROJECT. OTHERWISE OVERCURRENT PROTECTION MIGHT NOT WORK, OR IT MIGHT CAUSE POWER QUALITY PROBLEMS.
6. NO ALUMINUM SHALL BE USED FOR GROUNDING WORK WITHOUT THE SPECIFIC WRITTEN PERMISSION OF THE ENGINEER. EXCEPTION: ALUMINUM BUILDING STRUCTURAL MATERIALS SHALL BE BONDED WITH LISTED ALUMINUM EQUIPMENT WITH ALUMINUM TO COPPER CONNECTORS FOR ROUTING COPPER EGC'S.
7. ALL METAL ENCLOSURES AND RACEWAYS SHALL BE BONDED TO GROUND [250.86]. FOR CIRCUITS OVER 250V PROVIDE BOND PER [250.97], STANDARD LOCKNUTS ARE NOT ACCEPTABLE.
8. PROVIDE EGC CONNECTED TO ANY JUNCTION BOX WHERE SPLICE IS MADE [250.148].
9. PROVIDE BOND TO EXPOSED METAL ON ALL MOTORS, PUMPS, AND LIGHTING FIXTURES PER [250.112].

3 E101 GROUNDING DETAIL
NOT TO SCALE

1 E101 BUILDING 100 CONWAY ELECTRICAL PLAN
NOT TO SCALE

ELECTRICAL CODES AND STANDARDS (WITH ALL SOUTH CAROLINA MODIFICATIONS)	
CODE	DESCRIPTION
IBC (2021)	INTERNATIONAL BUILDING CODE
IECC (2009)	INTERNATIONAL ENERGY CONSERVATION CODE
IFC (2021)	INTERNATIONAL FIRE CODE
NFPA 70 (2020)	NATIONAL ELECTRICAL CODE
NFPA 72 (2019)	NATIONAL FIRE ALARM AND SIGNALING CODE

GENERAL ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE MOST CURRENT EDITION OF THE NATIONAL ELECTRIC CODE, ALL LOCAL ORDINANCES, AND HGTC STANDARDS.
2. A FIRESTOP SYSTEM SHALL BE USED TO SEAL ALL PENETRATIONS OF ELECTRICAL CONDUITS AND CABLES THROUGH FIRE-RATED PARTITIONS. THE FIRESTOP SYSTEM SHALL CONSIST OF A FIRE-RATED CAULK TYPE SUBSTANCE AND HIGH TEMPERATURE FIBER INSULATION BY STI OR APPROVED EQUAL. ONLY METAL CONDUIT SHALL BE USED TO PENETRATE FIRE-RATED PARTITIONS. SEE ARCHITECTURAL DRAWINGS FOR ALL LOCATIONS OF FIRE-RATED WALLS.
3. THE USE OF MC CABLE IS NOT ALLOWED, UNLESS NOTED OTHERWISE.
4. PROVIDE A LISTED EXPANSION/DEFLECTION FITTING FOR ALL CONDUIT CROSSING EXPANSION JOINTS PER NEC 300.4.H. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS.
5. WHEREVER THE WORD "PROVIDE" IS USED ON THE ELECTRICAL DRAWINGS, IT SHALL BE INFERRED TO MEAN "FURNISH AND INSTALL", UNLESS NOTED OTHERWISE.
6. THE ARRANGEMENT, GROUPING, AND ROUTING OF BRANCH CIRCUITS SHALL BE PROVIDED AT THE CONTRACTOR'S DISCRETION IN ACCORDANCE WITH GENERALLY ACCEPTED PRACTICE FOR ELECTRICAL WORK, THE NATIONAL ELECTRICAL CODE REQUIREMENTS, AND LOCAL ORDINANCES.

GENERAL EXISTING CONDITION NOTES

1. AREAS OF WORK EXIST FOR THIS PROJECT WHICH WERE NOT ACCESSIBLE OR HAD LIMITED ACCESS DURING DESIGN. AS SUCH, CONTRACTOR SHALL VERIFY ALL UTILITIES IN AREA OF WORK BEFORE DEMOLITION OF ANY SERVICE. ANY ELECTRICAL COMPONENTS NOT SHOWN SHALL BE IDENTIFIED AND THE ENGINEER SHALL BE NOTIFIED AS SOON AS POSSIBLE. NO ELECTRICAL REWORK SHALL BE COMMENCED WITHOUT COORDINATION OF ENGINEER. WHERE INFORMATION SHOWN ON THESE DRAWINGS CONFLICTS WITH VERIFIED FIELD CONDITIONS, IT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER.
2. IN AREAS WHERE THE EXISTING CEILINGS ARE NOT SLATED TO BE REPLACED, THE CONTRACTOR SHALL WORK THROUGH THE EXISTING CEILINGS (SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR AREA OF WORK). THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ANY DAMAGED TILE OR GRID THAT IS A RESULT OF THEIR WORK. ALL WORK PERFORMED ABOVE EXISTING CEILINGS SHALL BE PERFORMED AFTER HOURS AND SCHEDULED WITH THE OWNER IN ADVANCE
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING A FIRESTOP SYSTEM IN ALL PENETRATIONS OF FIRE-RATED FLOORS AND WALLS CREATED BY THE REMOVAL OF EXISTING ELECTRICAL CONDUIT OR CABLES, AS WELL AS THOSE CREATED BY NEWLY INSTALLED CONDUITS AND SLEEVES.
4. WHERE INSTALLATION REQUIRES CUTTING OR DRILLING OF THE EXISTING FLOOR SLAB, THE CONTRACTOR SHALL X-RAY THE EXISTING SLAB PRIOR TO WORK TO ENSURE THAT NO EXISTING UTILITIES OR STRUCTURAL ELEMENTS IN THE SLAB WILL BE COMPROMISED BY THE WORK. NOTIFY THE A/E OF ANY CONFLICTS THAT WILL REQUIRE RELOCATING THE PROPOSED SLAB WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGED UTILITIES OR STRUCTURAL ELEMENTS CAUSED BY THE SLAB DEMOLITION.
5. SUPPORT ALL EXISTING CONDUITS AND JUNCTION BOXES ABOVE THE CEILING IN THE CONSTRUCTION AREA PER NEC.
6. REMOVE ALL ABANDONED CONDUIT, WIRE AND CABLES ABOVE THE CEILING IN THE CONSTRUCTION AREA.
7. PROVIDE JUNCTION BOX COVERS ON ALL EXISTING JUNCTION BOXES ABOVE THE CEILING IN THE CONSTRUCTION AREA.
8. SUPPORT ALL EXISTING CABLES ABOVE THE CEILING IN THE CONSTRUCTION AREA.

EQUIPMENT CONNECTION SCHEDULE

MARK	VOLTAGE	PHASE	WIRE	BRANCH CIRCUIT WIRING	DISCONNECT (AMPS/FUSE/POLES/ENCLOSURE)	LOAD / MOCP (BREAKER)	PANEL	NOTES
ROOF TOP UNITS (RTU)								
RTU-1	208	3	4	3#4 & 1#8G IN 3/4" CONDUIT	FUSED 100/70/3/3R	63.0 MCA / 70A	2-BH	2
RTU-3	208	3	4	3#6 & 1#10G IN 3/4" CONDUIT	FUSED 60/50/3/3R	43.0 MCA / 50A	2-AH	2
RTU-4	208	3	4	3#8 & 1#8G IN 3/4" CONDUIT	FUSED 100/70/3/3R	63.0 MCA / 70A	2-BH	2
RTU-5	208	3	4	3#8 & 1#8G IN 3/4" CONDUIT	FUSED 100/70/3/3R	63.0 MCA / 70A	2-BH	2
RTU-6	208	3	4	3#6 & 1#10G IN 3/4" CONDUIT	FUSED 60/50/3/3R	43.0 MCA / 50A	2-AH	1

NOTES:
1. EQUIPMENT IS COMPATIBLE WITH EXISTING BRANCH CIRCUIT WIRING AND SUITABLE FOR USE WITH EXISTING BREAKER IN PANEL. PROVIDE NEW FUSIBLE DISCONNECT AND RE-WORK CIRCUIT TO FEED NEW UNIT.
2. EXISTING CIRCUIT SHALL BE DEMOLISHED BACK TO PANEL AND BE INSTALLED/CONFIGURED WITH BRANCH CIRCUIT AND BREAKER SPECIFIED. EQUIPMENT SHALL BE WORKED INTO EXISTING SPACE ON PANEL AS PREVIOUSLY INSTALLED. PROVIDE NEW FUSIBLE DISCONNECT WITH FUSE SIZE SPECIFIED TO FEED NEW UNIT.

KEYNOTES

1. EXISTING EQUIPMENT TO REMAIN.
2. EXISTING EQUIPMENT TO BE DEMOLISHED.

GENERAL HVAC CONTROLS CONDUIT NOTES

1. PROVIDE CONDUIT FOR HVAC CONTROL CIRCUITS AS REQUIRED TO INTERCONNECT HVAC UNIT TO CONTROL CIRCUITS. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR AND CONTROLS PROVIDER TO DETERMINE SCOPE OF CONDUITS REQUIRED FOR HVAC CONTROLS. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED CONDUIT. COORDINATE POINTS OF CONNECTION WITH DIVISION 23. PROVIDE PULL CORD IN ALL EMPTY CONDUITS. SEE MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL HVAC EQUIPMENT (AHU, HP, CU, RTU, DUCT SMOKE DETECTORS, VAV, FCU, THERMOSTATS, ETC).

GENERAL FIRE ALARM SYSTEM NOTES

1. ALL HVAC UNITS ARE BEING REPLACED IN KIND AND IT IS ASSUMED EXISTING DUCT MOUNTED SMOKE DETECTORS ARE CURRENTLY INSTALLED IN ALL DUCTWORK WHERE REQUIRED. ALL DUCT MOUNTED SMOKE DETECTORS ASSOCIATED WITH HVAC UNITS BEING REPLACED SHALL BE DEMOLISHED AND REPLACED.
2. EXISTING FIRE ALARM SYSTEM SHALL BE RECERTIFIED UPON COMPLETION OF WORK.
3. ALL FIRE ALARM WORK SHALL BE PERFORMED BY THE LOCAL FIRE ALARM VENDOR CURRENTLY HOLDING THE MAINTENANCE SERVICE AGREEMENT WITH THE OWNER.

N

GRAPHIC SCALE
0 4' 8' 16' 32'
Scale: 1/8"= 1'-0"

PLOT DATE: 08/9/23

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
DWG, INC. CONSULTING ENGINEERS No.C03649

SOUTH CAROLINA REGISTERED No. 20695 PROFESSIONAL ENGINEER WARREN R. LANE
8/9/2023

DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
BUILDING 100 CONWAY ELECTRICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: EMB
CHECKED BY: WRL
SHEET NUMBER
E101

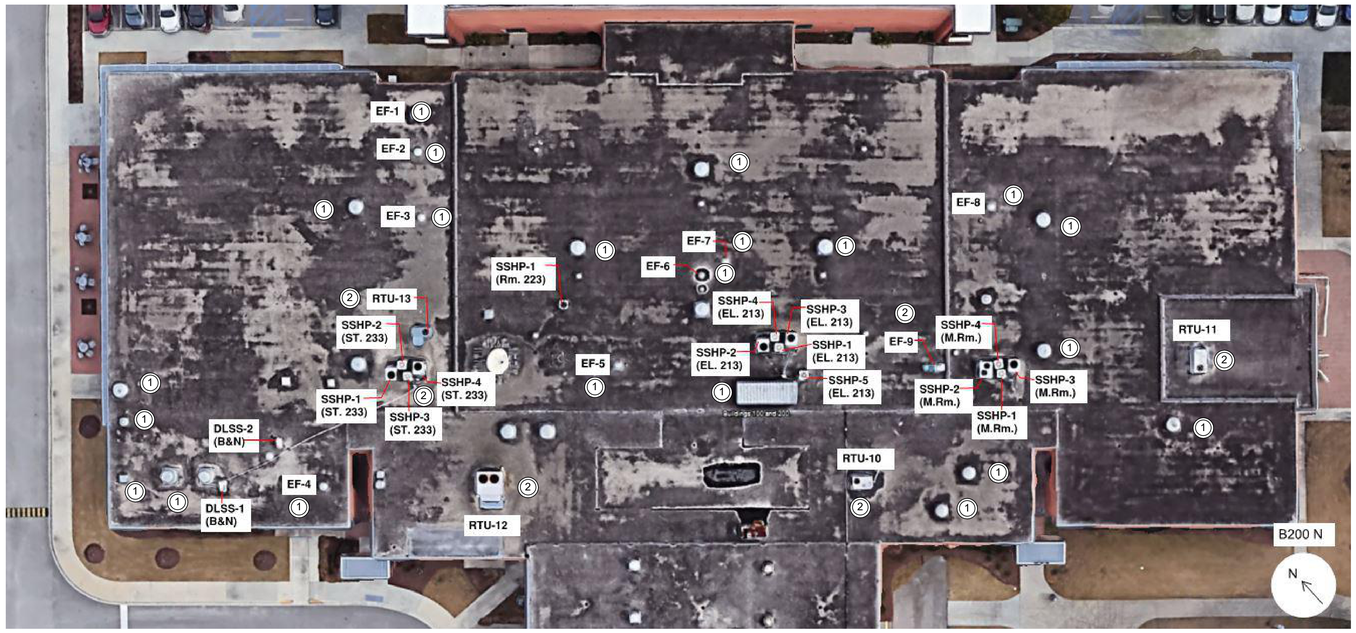
EQUIPMENT CONNECTION SCHEDULE - BUILDING 200 SOUTH

MARK	VOLTAGE	PHASE	WIRE	BRANCH CIRCUIT WIRING	DISCONNECT (AMPS/FUSE/POLES/ENCLOSURE)	LOAD / MOCP (BREAKER)	PANEL	NOTES
ROOF TOP UNITS (RTU)								
RTU-1	208	3	4	3#4 & 1#10G IN 1" CONDUIT	FUSED 60/60/3/3R	60.0 MCA / 60A	BCP - RM. 253	2
RTU-3	208	3	4	3#4 & 1#8G IN 1" CONDUIT	FUSED 100/70/3/3R	63.0 MCA / 70A	H - RM. 234	2
RTU-4	208	3	4	3#6 & 1#10G IN 3/4" CONDUIT	FUSED 60/50/3/3R	42.0 MCA / 50A	B - RM. 230	2
RTU-5	208	3	4	3#6 & 1#8G IN 3/4" CONDUIT	FUSED 100/80/3/3R	54.0 MCA / 80A	B - RM. 230	2
RTU-6	208	1	3	2#6 & 1#10G IN 3/4" CONDUIT	FUSED 60/40/2/3R	40.0 MCA / 40A	BUSBAR - RM. 249	2
RTU-7	208	1	3	2#6 & 1#10G IN 3/4" CONDUIT	FUSED 60/45/2/3R	45.0 MCA / 45A	BUSBAR - RM. 249	2
RTU-8	208	3	4	3#4 & 1#8G IN 1" CONDUIT	FUSED 60/60/3/3R	58.0 MCA / 60A	D - RM. 228	2
RTU-10	208	3	4	3#4 & 1#8G IN 1" CONDUIT	FUSED 100/70/3/3R	63.0 MCA / 70A	BA - RM. 213	2
RTU-11	208	3	4	3#4 & 1#8G IN 1" CONDUIT	FUSED 100/70/3/3R	63.0 MCA / 70A	--	2
RTU-12	208	3	4	3#1 & 1#6G IN 1 1/4" CONDUIT	FUSED 200/150/3/3R	106.0 MCA / 150A	BA - RM. 213	2
RTU-13	208	1	3	2#8 & 1#10G IN 3/4" CONDUIT	FUSED 60/40/2/3R	40.0 MCA / 40A	A - MAIL RM.	2
EXHAUST FANS (EF)								
EF-11A	120	1	3	2#12 & 1#12G IN 3/4" CONDUIT	TOGGLE SWITCH	1/10 HP / 15A	A	1
EF-11B	120	1	3	2#12 & 1#12G IN 3/4" CONDUIT	TOGGLE SWITCH	1/10 HP / 15A	A	1
EF-11C	120	1	3	2#12 & 1#12G IN 3/4" CONDUIT	TOGGLE SWITCH	1/10 HP / 15A	A	1

NOTES:
1. EQUIPMENT IS COMPATIBLE WITH EXISTING BRANCH CIRCUIT WIRING AND SUITABLE FOR USE WITH EXISTING BREAKER IN PANEL. PROVIDE NEW FUSIBLE DISCONNECT WITH FUSE SIZE SPECIFIED AND RE-WORK CIRCUIT TO FEED NEW UNIT.
2. EXISTING CIRCUIT SHALL BE DEMOLISHED BACK TO PANEL AND BE INSTALLED/CONFIGURED WITH BRANCH CIRCUIT AND BREAKER SPECIFIED. EQUIPMENT SHALL BE WORKED INTO EXISTING SPACE ON PANEL AS PREVIOUSLY INSTALLED. PROVIDE NEW FUSIBLE DISCONNECT WITH FUSE SIZE SPECIFIED TO FEED NEW UNIT.

KEYNOTES

1. EXISTING EQUIPMENT TO REMAIN.
2. EXISTING EQUIPMENT TO BE DEMOLISHED.



1 E102 BUILDING 200 NORTH CONWAY ELECTRICAL PLAN
NOT TO SCALE

3 E102 BUILDING 200 SOUTH CONWAY ELECTRICAL PLAN
SCALE: 12" = 1'-0"

EQUIPMENT CONNECTION SCHEDULE - BUILDING 200 NORTH

MARK	VOLTAGE	PHASE	WIRE	BRANCH CIRCUIT WIRING	DISCONNECT (AMPS/FUSE/POLES/ENCLOSURE)	LOAD / MOCP (BREAKER)	NOTES
SPLIT-SYSTEM (OUTDOOR UNITS)							
HP-1 (WEST)	208	3	4	3#8 & 1#10G IN 1" CONDUIT	FUSED 60/45/3/3R	34.0 MCA / 45A	2
HP-2 (WEST)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
HP-3 (WEST)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
HP-4 (WEST)	208	3	4	3#8 & 1#10G IN 1" CONDUIT	FUSED 60/45/3/3R	34.0 MCA / 45A	2
HP-1 (CENTER)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
HP-2 (CENTER)	208	3	4	3#8 & 1#10G IN 1" CONDUIT	FUSED 60/45/3/3R	34.0 MCA / 45A	2
HP-3 (CENTER)	208	3	4	3#8 & 1#10G IN 1" CONDUIT	FUSED 60/45/3/3R	34.0 MCA / 45A	2
HP-4 (CENTER)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
HP-5 (CENTER)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 30/30/3/3R	18.0 MCA / 30A	2
HP-6 (CENTER)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
HP-1 (EAST)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
HP-1 (EAST)	208	3	4	3#8 & 1#10G IN 1" CONDUIT	FUSED 60/45/3/3R	34.0 MCA / 45A	2
HP-1 (EAST)	208	3	4	3#8 & 1#10G IN 1" CONDUIT	FUSED 60/45/3/3R	34.0 MCA / 45A	2
HP-1 (EAST)	208	3	4	3#10 & 1#10G IN 1" CONDUIT	FUSED 60/35/3/3R	21.0 MCA / 35A	2
DLSS-1	208	1	3	2#12 & 1#10G IN 3/4" CONDUIT	FUSED 30/30/2/3R	25.0 MCA / 30A	2
DLSS-2	208	1	3	2#12 & 1#10G IN 3/4" CONDUIT	FUSED 30/15/2/3R	11.0 MCA / 15A	2
SPLIT SYSTEM (INDOOR UNITS)							
AHU-1 (WEST)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	6.6 MCA / 15A	1
AHU-2 (WEST)	208	1	3	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
AHU-3 (WEST)	208	1	3	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
AHU-4 (WEST)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	6.6 MCA / 15A	1
AHU-1 (CENTER)	208	1	3	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
AHU-2 (CENTER)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	6.6 MCA / 15A	1
AHU-3 (CENTER)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	6.6 MCA / 15A	1
AHU-4 (CENTER)	208	1	3	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
AHU-5 (CENTER)	208	1	3	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
AHU-6 (CENTER)	208	1	3	2#6 & 1#10G IN 3/4" CONDUIT	FUSED 30/15/2/1	52.0 MCA / 60A	1
AHU-1 (EAST)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
AHU-2 (EAST)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	6.6 MCA / 15A	1
AHU-3 (EAST)	208	3	4	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	6.6 MCA / 15A	1
AHU-4 (EAST)	208	1	3	2#12 & 1#12G IN 3/4" CONDUIT	FUSED 30/15/2/1	9.0 MCA / 15A	1
DLSS-1	208	1	3	---	NON FUSED TOGGLESWITCH 30/3/1	--	3
DLSS-2	208	1	3	---	NON FUSED TOGGLESWITCH 30/3/1	--	3

NOTES:
1. EQUIPMENT IS COMPATIBLE WITH EXISTING BRANCH CIRCUIT WIRING AND SUITABLE FOR USE WITH EXISTING BREAKER IN PANEL. PROVIDE NEW FUSIBLE DISCONNECT WITH FUSE SIZE SPECIFIED AND RE-WORK CIRCUIT TO FEED NEW UNIT.
2. EXISTING CIRCUIT SHALL BE DEMOLISHED BACK TO PANEL AND BE INSTALLED/CONFIGURED WITH BRANCH CIRCUIT AND BREAKER SPECIFIED.EQUIPMENT SHALL BE WORKED INTO EXISTING SPACE ON PANEL AS PREVIOUSLY INSTALLED PROVIDE NEW FUSIBLE DISCONNECT WITH PUSE SIZE SPECIFIED TO FEED NEW UNIT.
3. THE INDOOR UNIT IS POWERED BY THE OUTDOOR UNIT. DIVISION 26 CONTRACTOR SHALL MAKE ALL CONNECTIONS AS RECOMMENDED BY UNIT MANUFACTURER WITH UNIT PROVIDED WIRING. PROVIDE TOGGLE SWITCH ON THE LINE SIDE OF THE INDOOR UNIT.

KEYNOTES

1. EXISTING EQUIPMENT TO REMAIN.
2. EXISTING EQUIPMENT TO BE DEMOLISHED.

N

GRAPHIC SCALE
0 4' 8' 16' 32'
Scale: 1/8"= 1'-0"

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
DWG, INC. CONSULTING ENGINEERS No.C03649

SOUTH CAROLINA REGISTERED No. 20698 PROFESSIONAL ENGINEER WARREN R. LANE
8/9/2023

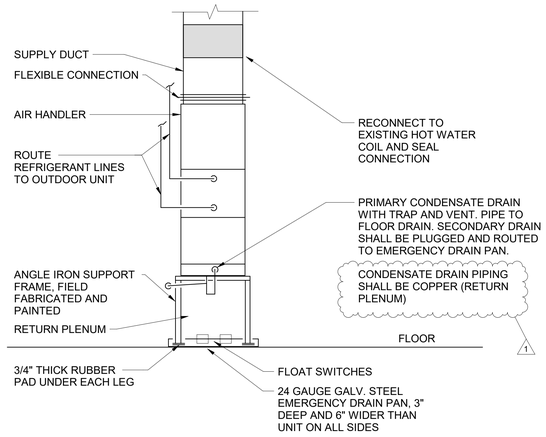
DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
BUILDING 200 CONWAY ELECTRICAL PLAN

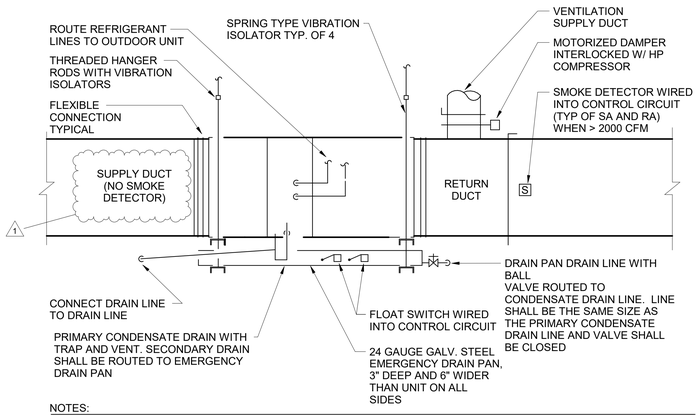
#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: EMB
CHECKED BY: WRL
SHEET NUMBER
E102

PLOT DATE: 08/9/23



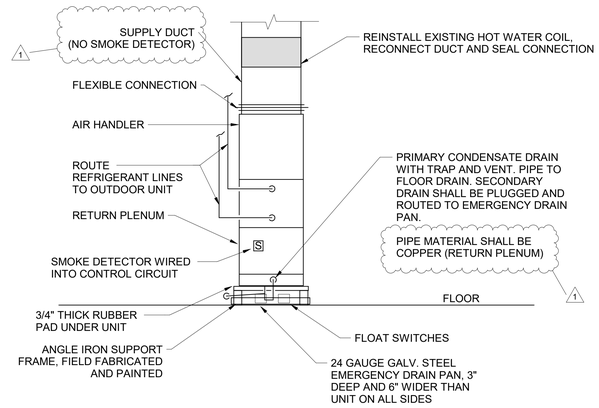
6 M002 VERTICAL AIR HANDLER INSTALLATION DETAIL
SCALE: NOT TO SCALE



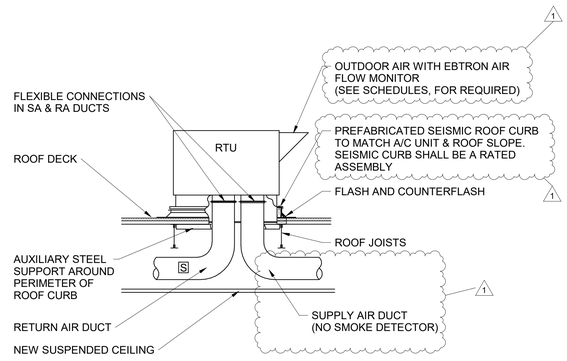
NOTES:

1. ROUTE DRAIN LINES AS INDICATED ON DRAWINGS. ALL DRAIN LINES SHALL SLOPE AT LEAST 1" PER 10 FT. CONTINUOUSLY. LINES SHALL NOT BE ALLOWED TO RUN ALONG THE CEILING STRUCTURE AND RISE UP AGAIN.
2. PROVIDE HANGING RODS FOR UNITS SUSPENDED FROM STRUCTURE AND SUSPEND EMERGENCY DRAIN PAN FROM UNIT.
3. SUPPORT EMERGENCY DRAIN PAN ON ANGLES OR STRUTS; PAN TO BE EASILY REMOVABLE FOR MAINTENANCE ACCESS

2 M002 HORIZONTAL AHU INSTALLATION DETAIL
NOT TO SCALE



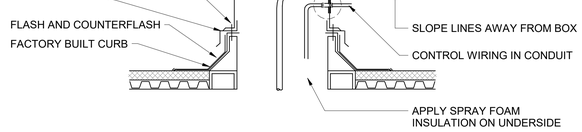
9 M002 VERTICAL AIR HANDLER INSTALLATION DETAIL - 7.5 TON UNIT
SCALE: NOT TO SCALE



NOTES:

1. PROVIDE EQUIPMENT ROOF CURBS W/ INTEGRAL VIBRATION ISOLATION SPRINGS.
2. CURB SHALL BE FURNISHED BY SEISMIC VENDOR AND SHALL BE INSTALLED AND FLASHED BY THE ROOFING CONTRACTOR.
3. WHERE OPENINGS IN ROOF ARE CUT LARGER THAN REQUIRED FOR DUCT PENETRATION THE CONTRACTOR SHALL PROVIDE 16 OZ. ACOUSTIBLOK BETWEEN OPENING AND BOTTOM OF UNIT FOR SOUND REDUCTION.
4. PROVIDE AND INSTALL 1/2" THICK DUCT LINER IN THE FIRST 10 FEET FROM UNIT ON SUPPLY AND RETURN DUCT. LINER SHALL BE FLEXIBLE ELASTOMERIC.

3 M002 ROOF TOP UNIT INSTALLATION DETAIL
SCALE: NOT TO SCALE

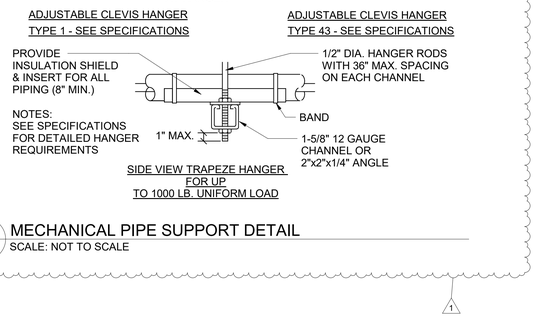


NOTE:

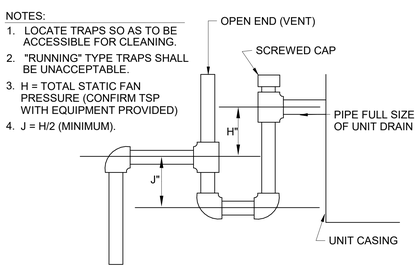
1. SIZE BOX TO ACCOMMODATE MULTIPLE LINE SETS TO MINIMIZE ROOF PENETRATIONS. PROVIDE SEPARATE BOX PENETRATIONS FOR LIQUID AND SUCTION LINES.

5 M002 REFRIGERANT LINE/ROOF PENETRATION DETAIL
NOT TO SCALE

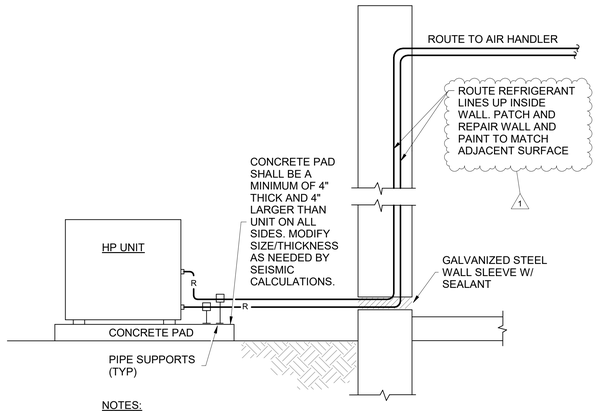
MAXIMUM PIPE/TUBING SUPPORT SPACING											
NOM. SIZE	IN.	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8
PIPE	FT.	7	7	7	9	10	11	12	14	16	17	19
TUBING	FT.	5 FT	6	7	8	8	9	10	12	13	14	16
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.												



4 M002 MECHANICAL PIPE SUPPORT DETAIL
SCALE: NOT TO SCALE



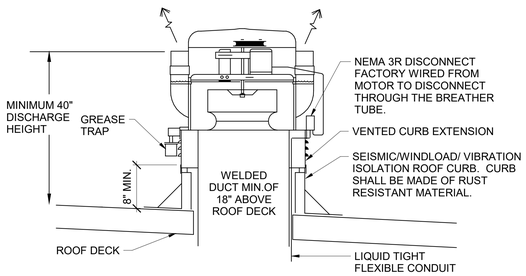
7 M002 CONDENSATE DRAIN TRAP INSTALLATION DETAIL
NOT TO SCALE



NOTES:

1. ALL PIPING SHALL BE HARD DRAWN COPPER TUBING WITH SOLDERED JOINTS.
2. SUCTION LINE INSULATION OUTDOORS SHALL BE PAINTED WITH METAL JACKET.

8 M002 OUTDOOR UNIT INSTALLATION DETAIL
SCALE: NOT TO SCALE



NOTE:

1. PROVIDE FAN WITH HINGE FOR MAINTENANCE AND CLEANING.

1 M002 KITCHEN EXHAUST FAN DETAIL
SCALE: NOT TO SCALE

PLOT DATE: 08/9/23

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION DWG, INC. CONSULTING ENGINEERS No.C03649

REGISTERED PROFESSIONAL ENGINEER 10640 ALAN DAVID LAWRENCE 8/9/2023

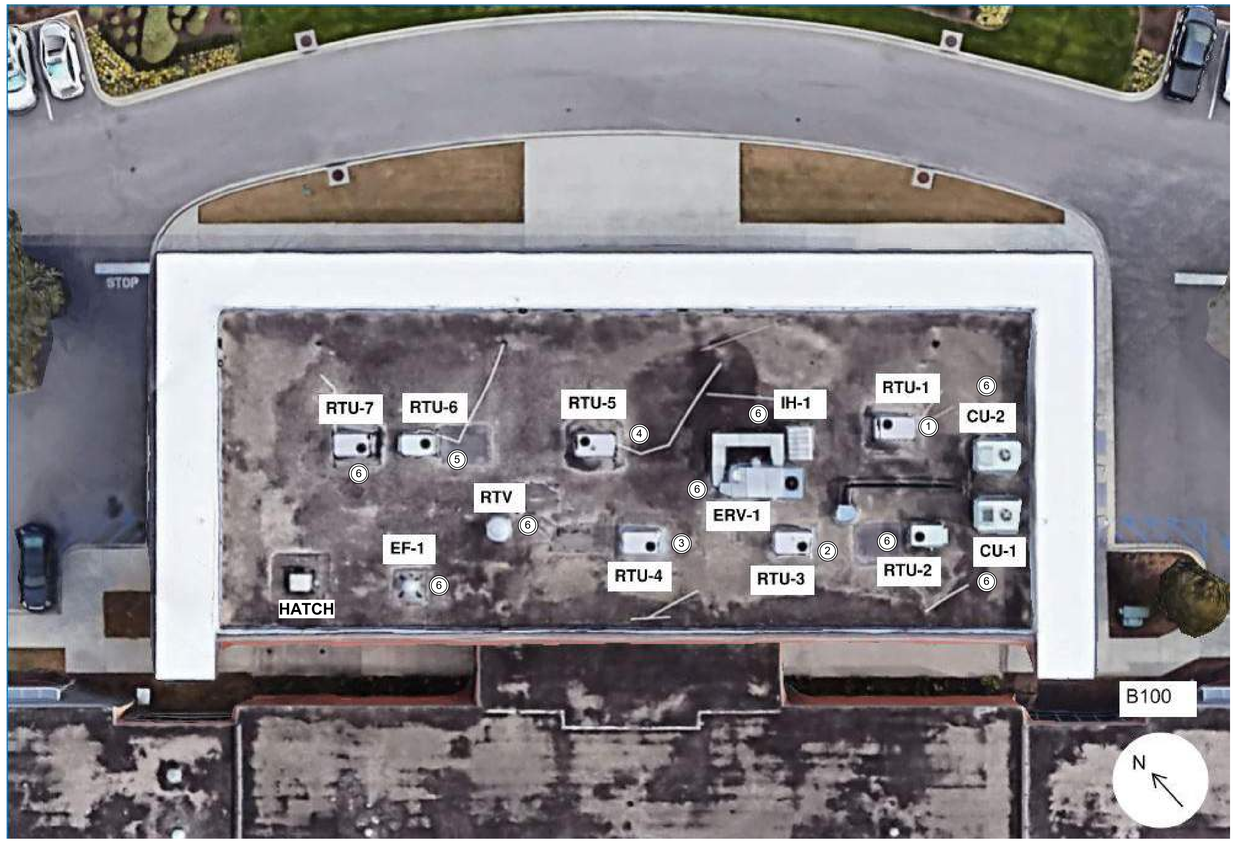
DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
MECHANICAL DETAILS

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER

M002



1 / M101 BUILDING 100 CONWAY MECHANICAL PLAN
NOT TO SCALE

ROOFTOP HEAT PUMP SCHEDULE - CW BUILDING 100 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	EXISTING MANUFACTURER	EXISTING MODEL	NEW MANUFACTURER	NEW MODEL	TOTAL COOLING (BTUH)	SENSIBLE COOLING (BTUH)	SUPPLY (CFM)	EXT STATIC PRESSURE	OUTSIDE AIR (CFM)	HEATING @ 47F (BTUH)	ELECTRIC HEAT (KW)	VOLTAGE	MCA/MOCP	KEY NOTES
RTU-1	PACKAGED HP	ROOF	BRYANT	548FPX060000AB	TRANE	WSC060	60,000	48,000	2000	0.5	0	59,000	9 KW	208 V / 3 PHASE	63 / 70	1
RTU-3	PACKAGED HP	ROOF	CARRIER	50TFQ005-501GA	TRANE	WSC048	49,000	37,700	1600	0.5	0	47,500	4.5 KW	208 V / 3 PHASE	43 / 50	2
RTU-4	PACKAGED HP	ROOF	BRYANT	548FPX060000AB	TRANE	WSC060	60,000	48,000	2000	0.5	0	59,000	9 KW	208 V / 3 PHASE	63 / 70	3
RTU-5	PACKAGED HP	ROOF	BRYANT	548FPX060000AB	TRANE	WSC060	60,000	48,000	2000	0.5	0	59,000	9 KW	208 V / 3 PHASE	63 / 70	4
RTU-6	PACKAGED HP	ROOF	TRANE	WSC048E3REAOHUD	TRANE	WSC048	49,000	37,700	1600	0.5	0	47,500	4.5 KW	208 V / 3 PHASE	43 / 50	5

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
3. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER.
4. BUILDING OUTSIDE AIR PROVIDED BY EXISTING MAKEUP AIR UNIT.

1

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KEYNOTES

1 – 5 REMOVE EXISTING AND PROVIDE NEW ROOFTOP UNIT

6 EXISTING EQUIPMENT TO REMAIN

GENERAL NOTES

1. REMOVE EXISTING ROOF CURB/CURB ADAPTER AND PROVIDE NEW CURB ADAPTER MATCHED TO ORIGINAL CURB.
2. PROVIDE NEW ELECTRICAL DISCONNECT FOR ALL UNITS.
3. PROVIDE NEW LABEL TO IDENTIFY UNIT.
4. PROVIDE OUTDOOR UNITS WITH ECOAT / SEACOAST PROTECTION.
5. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
6. COORDINATE WITH CONTROL MANAGEMENT INC (CMI) AND RECONNECT NEW UNITS TO EXISTING CONTROL NETWORK.

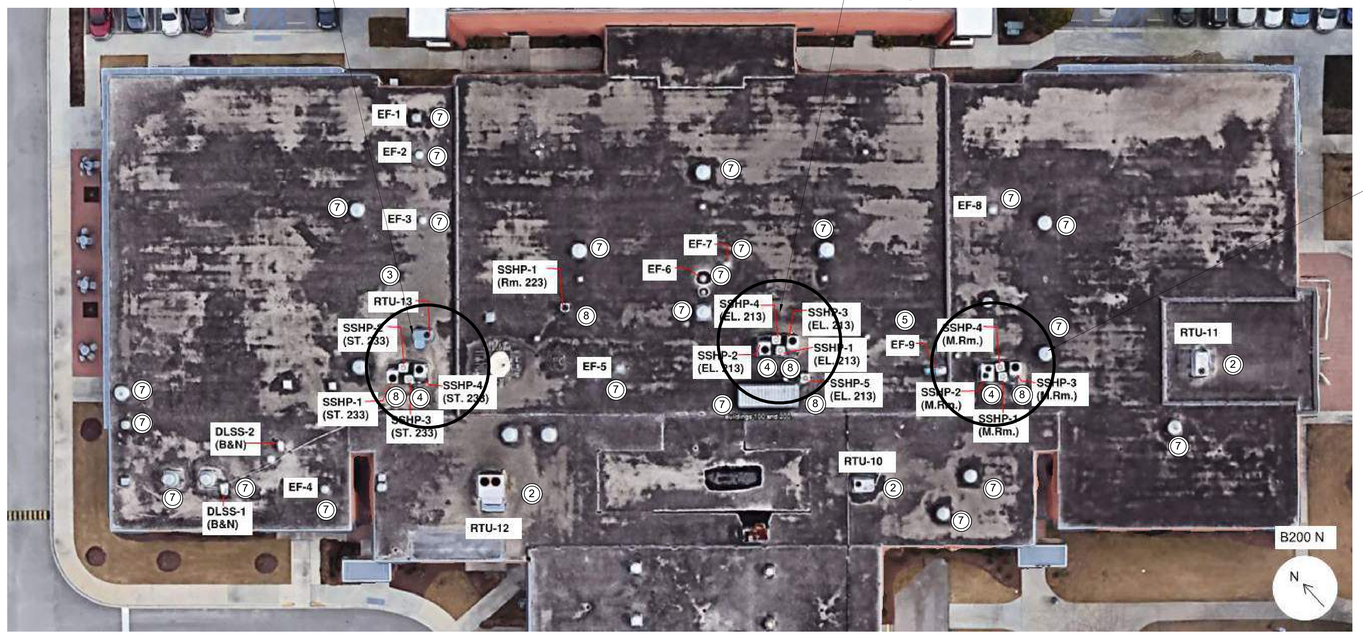
DWG, INC. CONSULTING ENGINEERS No.C03649 — SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
ALAN DAVID LAWRENCE 10640 REGISTERED PROFESSIONAL ENGINEER SOUTH CAROLINA
8/9/2023
DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
B100 CONWAY MECHANICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

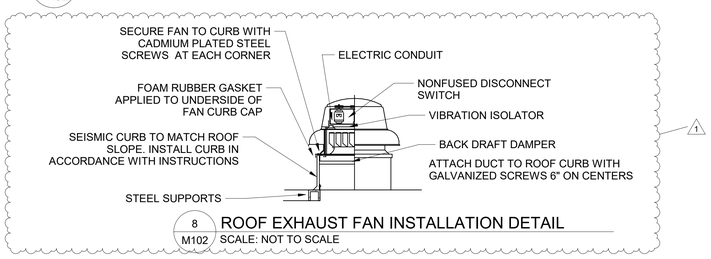
JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M101

PLOT DATE: 08/9/23



1 M102 BUILDING 200 NORTH CONWAY MECHANICAL PLAN
NOT TO SCALE

2 M102 BUILDING 200 SOUTH CONWAY MECHANICAL PLAN
NOT TO SCALE



8 M102 ROOF EXHAUST FAN INSTALLATION DETAIL
SCALE: NOT TO SCALE

FOR RTU-1 AND RTU-3, REMOVE WOOD FRAMING AND EXISTING DUCTWORK AND PROVIDE NEW CONCENTRIC SUPPLY AND RETURN DROPPING DOWN BETWEEN BAR JOISTS

3 M102 BUILDING 200 CONCENTRIC SUPPLY/RETURN - RTU-1 AND RTU-3
SCALE: NTS

FOR RTU-6 AND RTU-7, REMOVE EXISTING DUCTWORK AND PROVIDE NEW CONCENTRIC SUPPLY AND RETURN DROPPING DOWN BETWEEN BAR JOISTS

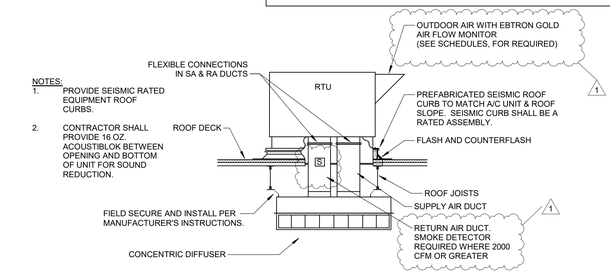
6 M102 BUILDING 200 CONCENTRIC SUPPLY/RETURN - RTU-6 AND RTU-7
SCALE: NTS

KEY NOTES

1. REMOVE EXISTING AND PROVIDE NEW EXHAUST FAN WITH 14 INCH CURB AND NEW WALL MOUNTED CARBON MONOXIDE SENSOR CONTROL
2. REMOVE EXISTING RTU AND PROVIDE NEW RTU WITH 14 INCH CURB FOR VERTICAL DISCHARGE. FOR RTU-1, 3, 6 AND 7, REMOVE EXISITNG DUCTWORK INSIDE SPACE AND PROVIDE NEW CONCENTRIC SUPPLY AND RETURN DUCT
3. REMOVE EXISTING RTU AND PROVIDE NEW RTU ON 14 INCH CURB WITH HORIZONTAL DISCHARGE. SEE DRAWING M102A FOR TYPICAL UNIT
4. EXISTING PLATFORM FOR OUTDOOR UNITS. SEE DRAWING M102B
5. REMOVE EXISTING EF-9, ASSOCIATED DUCTWORK AND SUPPORT FRAME. REPAIR ROOF TO MATCH EXISTING/ SEE DRAWING M102A
6. REMOVE EXISTING EF-13, ASSOCIATED DUCTWORK AND SUPPORT FRAME. REPAIR ROOF TO MATCH EXISTING/ SEE DRAWING M102A
7. EXISTING TO REMAIN
8. SEE SPLIT SYSTEM SCHEDULE DRAWING M102A

GENERAL NOTES

1. PROVIDE NEW ELECTRICAL DISCONNECT FOR ALL UNITS.
2. PROVIDE NEW LABEL TO IDENTIFY UNIT.
3. PROVIDE UNITS WITH ECOAT / SEACOAST PROTECTION.
4. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
5. RECONNECT NEW UNITS TO EXISTING CONTROLS.



NOTES:
1. PROVIDE SEISMIC RATED EQUIPMENT ROOF CURBS.
2. CONTRACTOR SHALL PROVIDE 16 OZ. ACOUSTIBLOK BETWEEN OPENING AND BOTTOM OF UNIT FOR SOUND REDUCTION.

7 M102 ROOF TOP UNIT INSTALLATION DETAIL-CONCENTRIC DIFFUSER
SCALE: NOT TO SCALE

EXHAUST FAN SCHEDULE - CW BUILDING 200 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	MANUFACTURER	MODEL	AIR FLOW (CFM)	STATIC PRESSURE (IN WG)	HP	VOLTAGE	NOTES
EF-11A	ROOFTOP EXHAUST FAN	SOUTH ROOF	GREENHECK	G-090-VG	500	0.25	1/10	120V / 1 PH	1
EF-11B	ROOFTOP EXHAUST FAN	SOUTH ROOF	GREENHECK	G-090-VG	500	0.25	1/10	120V / 1 PH	1
EF-11C	ROOFTOP EXHAUST FAN	SOUTH ROOF	GREENHECK	G-090-VG	500	0.25	1/10	120V / 1 PH	1

1. PROVIDE WALL MOUNTED CARBON MONOXIDE SENSOR CONTROL FOR ALL EXHAUST FANS.
2. PROVIDE FANS WITH SPEED CONTROLLER.
3. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION

ROOFTOP UNIT SCHEDULE - CW BUILDING 200 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	EXISTING MANUFACTURER	EXISTING MODEL	NEW MANUFACTURER	NEW MODEL	COOLING CAPACITY (BTUH)	SUPPLY AIR (CFM)	EXT STATIC PRESS	OUTSIDE AIR (CFM)	ELECTRIC HEAT (KW)	VOLTAGE	MCA / MOCP	UNIT	KEY NOTES
RTU-1	PACKAGED HP	ROOF	GOODMAN	GPC1360H41BC	TRANE	4WCC4060	57,000	1800	0.5	180	--	208 V / 1 PHASE	60 / 60	RTU-1	2
RTU-3	PACKAGED HP	ROOF	GOODMAN	GPC1360H43BA	TRANE	WSC060	60,000	2000	0.5	200	9 KW	208 V / 3 PHASE	63 / 70	RTU-3	2
RTU-4	PACKAGED HP	ROOF	TRANE	TCD036C300BC	TRANE	WSC036	36,000	1200	0.5	120	4.5 KW	208 V / 3 PHASE	42 / 50	RTU-4	3
RTU-5	PACKAGED HP	ROOF	TRANE	TCD120C30AA	TRANE	WSC120	120,000	4000	0.5	400	--	208 V / 3 PHASE	54 / 80	RTU-5	3
RTU-6	PACKAGED HP	ROOF	GOODMAN	GPH1436M41AC	TRANE	4WCC4036	36,000	1200	0.5	120	--	208 V / 1 PHASE	40 / 40	RTU-6	2
RTU-7	PACKAGED HP	ROOF	BRYANT	601ANX0420000AG	TRANE	4WCC4042	42,000	1400	0.5	140	--	208 V / 1 PHASE	45 / 45	RTU-7	2
RTU-8	PACKAGED HP	ROOF	TRANE	WCC048F300BG	TRANE	WSC048	48,000	1600	0.5	160	9 KW	208 V / 3 PHASE	58 / 60	RTU-8	3
RTU-10	PACKAGED HP	ROOF	BRYANT	548DPX060000AAA	TRANE	WSC060	60,000	2000	0.5	200	9 KW	208 V / 3 PHASE	63 / 70	RTU-10	3
RTU-11	PACKAGED HP	ROOF	TRANE	BYC060	TRANE	WSC060	60,000	2000	0.5	200	9 KW	208 V / 3 PHASE	63 / 70	RTU-11	3
RTU-12	PACKAGED HP	ROOF	BRYANT	559FPX240000AFHB	TRANE	WSJ240	240,000	7600	0.5	760	--	208 V / 3 PHASE	108 / 150	RTU-12	2
RTU-13	PACKAGED HP	ROOF IT ROOM	GOODMAN	GPH1336H41AA	TRANE	4WCC4036	36,000	1200	0.5	120	6 KW	208 V / 1 PHASE	40 / 40	RTU-13	2

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
3. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER. COORDINATE WITH CMI

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
DWG, INC. CONSULTING ENGINEERS No.C03649
SOUTH CAROLINA PROFESSIONAL ENGINEER 10840 JEFFERY A. DEWITT
8/9/2023
DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
B200 CONWAY MECHANICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M102

PLOT DATE: 08/9/23

SPLIT SYSTEM SCHEDULE - CW BUILDING 200 - BASE BID

UNIT	EQUIPMENT TYPE	OUTDOOR UNIT LOCATION	INDOOR UNIT LOCATION	EXISTING MANUFACTURER	EXISTING MODEL		NEW MANUFACTURER	NEW MODEL		COOLING CAPACITY (BTUH)	CFM	EXT STATIC PRESS	AHU VOLTAGE	AHU MCA / MOCP	CONDENSING UNIT VOLTAGE	CONDENSING UNIT MCA/MOCP		KEY NOTES
					INDOOR UNIT	OUTDOOR UNIT		INDOOR UNIT	OUTDOOR UNIT									
SS AH / HP-1	SPLIT SYSTEM	WEST ROOF	ROOM 233	BRYANT	524AEH090090AAHC	569CPX090	TRANE	TWE090	TTA090	90,000	3000	0.5	208 V / 3 PHASE	6.6 / 15	208 V / 3 PHASE	34 / 45	HW COIL (E)	6
SS AH / HP-2	SPLIT SYSTEM	WEST ROOF	ROOM 233	BRYANT	FA4ANF060	561CPX060	TRANE	TEM6B0C60H51	4TTA4060A3	60,000	1800	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	21 / 35	HW COIL (E)	6
SS AH / HP-3	SPLIT SYSTEM	WEST ROOF	ROOM 233	BRYANT	FA4ANF060	561CPX060	TRANE	TEM6B0C60H51	4TTA4060A3	60,000	1800	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	21 / 35	HW COIL (E)	6
SS AH / HP-4	SPLIT SYSTEM	WEST ROOF	ROOM 233	BRYANT	524AEH090090AAHC	569CPX090	TRANE	TWE090	TTA090	90,000	3000	0.5	208 V / 3 PHASE	6.6 / 15	208 V / 3 PHASE	34 / 45	HW COIL (E)	6
SS AH / HP-1	SPLIT SYSTEM	CENTER ROOF	ELECT RM 213	BRYANT	FA4ANF060	561CPX060	TRANE	TEM6B0C60H51	4TTA4060A3	60,000	1800	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	21 / 35	HW COIL (E)	7
SS AH / HP-2	SPLIT SYSTEM	CENTER ROOF	ELECT RM 213	BRYANT	524AEH090090AAHC	569CPX090	TRANE	TWE090	TTA090	90,000	3000	0.5	208 V / 3 PHASE	6.6 / 15	208 V / 3 PHASE	34 / 45	HW COIL (E)	7
SS AH / HP-3	SPLIT SYSTEM	CENTER ROOF	ELECT RM 213	BRYANT	524AEH090090AAHC	569CPX090	TRANE	TWE090	TTA090	90,000	3000	0.5	208 V / 3 PHASE	6.6 / 15	208 V / 3 PHASE	34 / 45	HW COIL (E)	7
SS AH / HP-4	SPLIT SYSTEM	CENTER ROOF	ELECT RM 213	BRYANT	FA4ANF060	661CPX060	TRANE	TEM6B0C60H51	4TTA4060A3	60,000	1800	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	21 / 35	HW COIL (E)	7
SS AH / HP-5 (IT)	SPLIT SYSTEM	CENTER ROOF	ELECT RM 213	BRYANT	FA4ANF048	661CPX060	TRANE	TEM6B0C48H41	4TWA4048A3	48,000	1600	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	18 / 30	7.2 KW ELECT HEAT	
SS AH / HP-1	SPLIT SYSTEM	EAST ROOF	FRONT MECH RM	BRYANT	FA4ANF060	561CPX060	TRANE	TEM6B0C60H51	4TTA4060A3	60,000	1800	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	21 / 35	HW COIL (E)	8
SS AH / HP-2	SPLIT SYSTEM	EAST ROOF	FRONT MECH RM	CARRIER / BRYANT	524AEH090090AAHC	38ARZ008	TRANE	TWE090	TTA090	90,000	3000	0.5	208 V / 3 PHASE	6.6 / 15	208 V / 3 PHASE	34 / 45	HW COIL (E)	8
SS AH / HP-3	SPLIT SYSTEM	EAST ROOF	FRONT MECH RM	BRYANT	524AEH090090AAHC	569CPX090	TRANE	TWE090	TTA090	90,000	3000	0.5	208 V / 3 PHASE	6.6 / 15	208 V / 3 PHASE	34 / 45	HW COIL (E)	8
SS AH / HP-4	SPLIT SYSTEM	EAST ROOF	FRONT MECH RM	CARRIER	FA4ANF060	561CPX060	TRANE	TEM6B0C60H51	4TTA4060A3	60,000	1800	0.5	208 V / 1 PHASE	9 / 15	208 V / 3 PHASE	21 / 35	HW COIL (E)	8
DLSS-1 Indoor/Outdoor	DUCTLESS SPLIT SYSTEM	WEST ROOF	BARNES & NOBLE	SEABREEEZE/HEAT CONTROLLER	B-VM36SC-1	A-VM36SC-1	MITSUBISHI	PKA-A36KA7	PUZ-A36NKA7	36,000	1000	0.5	208 V / 1 PHASE	--	208 V / 1 PHASE	25 / 31	WALL MOUNT AT 8'-0"	3
DLSS-2 Indoor/Outdoor	DUCTLESS SPLIT SYSTEM	WEST ROOF	BARNES & NOBLE	SEABREEEZE	SMZCA12HAZIGX (CASSETTE)	SMZ18H46Z0GX	MITSUBISHI	PLA-A12AA (CASSETTE)	PUZ-A12NHA	12,000	350	0.5	208 V / 1 PHASE	--	208 V / 1 PHASE	11 / 28	CASSETTE	
SS AH / HP-1	SPLIT SYSTEM	CENTER ROOF	RM 223	CARRIER	FA4ANF060	38YCC060	TRANE	TEM6B0C60H51	4TWA4060A3	60,000	1800	0.5	208 V / 1 PHASE	52 / 60	208 V / 3 PHASE	21 / 35	7.2 KW ELECT HEAT	

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. PROVIDE UNITS WITH NEW REFRIGERATION LINE SETS.
3. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
4. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER.

KEYNOTES

1. REMOVE EXISTING OUTDOOR UNITS, ASSOCIATED DISCONNECTS, AND LUMBER PLATFORM
2. PROVIDE NEW TREATED LUMBER PLATFORM WITH APPROXIMATE DIMENSIONS SHOWN
3. PROVIDE NEW AND LOCATE FAN COIL UNIT 1 FOOT FROM CEILING
4. CUT OFF RUSTED PORTION OF METAL PLATFORM AND UTILIZE EXISTING LEGS. COAT METAL WITH GALVANIZED PAINT
5. TYPICAL HORIZONTAL DISCHARGE RTU TO BE REPLACED. REMOVE EXISTING HORIZONTAL DISCHARGE DUCT AND UTILIZE OPENING FOR NEW VERTICAL DISCHARGE DUCT. WIDEN OPENING IN ROOF AS NEEDED AND PROVIDE NEW 14" CURB
6. WEST PLATFORM
7. CENTER PLATFORM
8. EAST PLATFORM
9. REMOVE EF-9, ASSOCIATED DUCTWORK AND SUPPORT FRAME. REPAIR ROOF TO MATCH EXISTING
10. REMOVE EF-13, ASSOCIATED DUCTWORK AND SUPPORT FRAME. REPAIR ROOF TO MATCH EXISTING

GENERAL NOTES

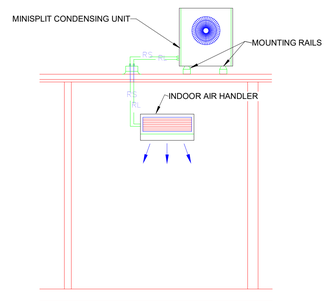
1. PROVIDE SHOP DRAWINGS FOR PROPOSED NEW SUPPORT PLATFORM.
2. SEE ELECTRICAL PLANS FOR DISCONNECT AND CONDUIT REQUIREMENTS.
3. PROVIDE IDENTIFYING LABELS FOR NEW EQUIPMENT.
4. PROVIDE OUTDOOR UNITS WITH ECOAT / SEACOAST PROTECTION.
5. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
6. PROVIDE NEW CONTROLS AND COORDINATE WORK WITH CMI.

7 M102A BUILDING 200 EXHAUST FAN EF-9
SCALE: NTS

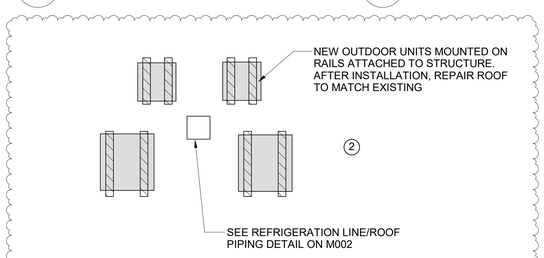
8 M102A BUILDING 200 EXHAUST FAN EF-13
SCALE: NTS

2 M102A BUILDING 200 RTU - HORIZONTAL DISCHARGE
SCALE: NTS

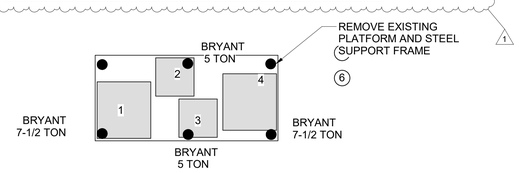
6 M102A BUILDING 200 MINISPLIT FAN COIL-DLSS-2
SCALE: NTS



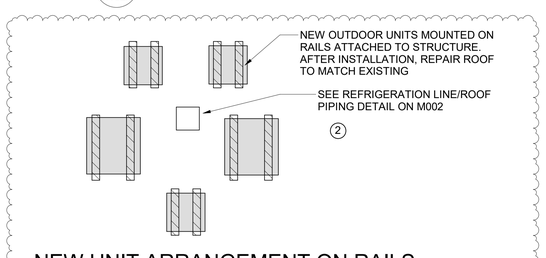
9 M102A MINISPLIT INSTALLATION DETAIL
SCALE: NOT TO SCALE



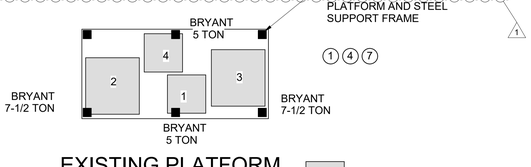
NEW UNIT ARRANGEMENT ON RAILS



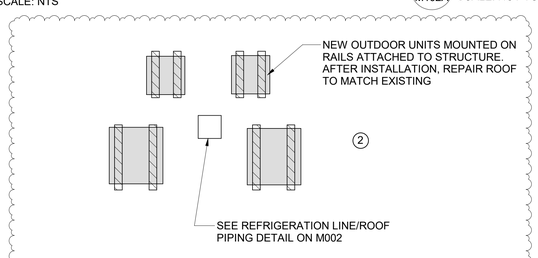
EXISTING PLATFORM



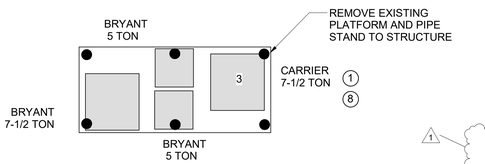
NEW UNIT ARRANGEMENT ON RAILS



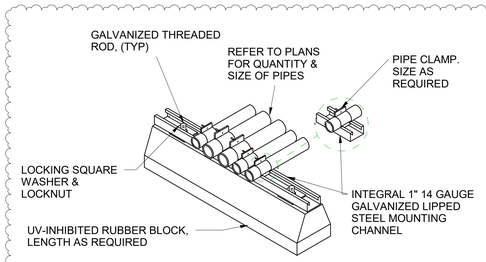
EXISTING PLATFORM



NEW UNIT ARRANGEMENT ON RAILS



EXISTING PLATFORM



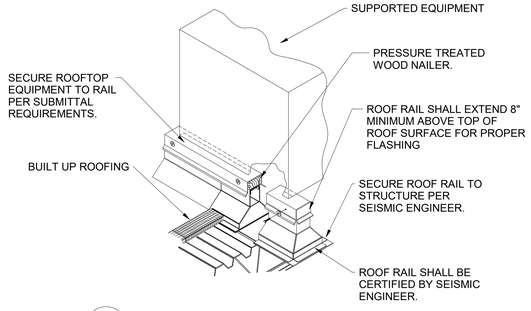
NOTE:
1. NO ROOFING PENETRATIONS SHALL BE REQUIRED.
2. ADHERE TO ROOF USING SEISMICALLY APPROVED ADHESIVE. DESIGN PER SEISMIC ENGINEER.

11 M102A ROOF PIPING SUPPORT DETAIL
SCALE: NOT TO SCALE

5 M102A BUILDING 200 WEST ROOF OUTDOOR UNITS
SCALE: NTS

3 M102A BUILDING 200 CENTER ROOF OUTDOOR UNITS
SCALE: NTS

4 M102A BUILDING 200 EAST ROOF OUTDOOR UNITS
SCALE: NTS



10 M102A ROOF RAIL DETAIL
SCALE: NOT TO SCALE

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
DWG, INC. CONSULTING ENGINEERS No.C03649

REGISTERED PROFESSIONAL ENGINEER 10640 ALVIN DAVID LAWRENCE
8/9/2023

DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
BUILDING 200 EQUIPMENT PHOTOS

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M102A

PLOT DATE: 08/9/23

1 M103 BUILDING 500 CONWAY MECHANICAL PLAN
NOT TO SCALE

KEY NOTES

1. REMOVE EXISTING SPLIT SYSTEM UNITS AND PROVIDE NEW. AIR HANDLING UNIT LOCATED ABOVE CEILING IN THE VINCINTY OF THE OUTDOOR UNIT
2. ALT ERNATE BID ITEM - REMOVE EXISTING ROOFTOP UNITS AND PROVIDE NEW WITH 14 INCH CURB
3. ALTERNATE BID ITEM - REMOVE EXISTING EXHAUST FANS AND PROVIDE NEW WITH 14 INCH CURB
4. EXISTING EQUIPMENT TO REMAIN

GENERAL NOTES

1. PROVIDE NEW ELECTRICAL DISCONNECT FOR ALL UNITS.
2. PROVIDE NEW LABEL TO IDENTIFY UNIT.
3. PROVIDE ROOFTOP UNITS AND OUTDOOR UNITS WITH ECOAT / SEACOAST PROTECTION.
4. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
5. RECONNECT NEW UNITS TO EXISTING CONTROLS.
6. RECONNECT GAS PIPING TO GAS FIRED UNITS IN ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE.

SPLIT SYSTEM HEAT PUMP SCHEDULE - CW BUILDING 500 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	MANUFACTURER	MODEL		COOLING CAPACITY (BTUH)	CFM	EXT STATIC PRESSURE	VOLTAGE		ELECT HEAT	MCA / MOCP		KEY NOTES
				INDOOR UNIT	OUTDOOR UNIT				INDOOR UNIT	OUTDOOR UNIT		INDOOR UNIT	OUTDOOR UNIT	
AH / HP-1	SPLIT SYSTEM	SALON / ROOF	TRANE	TEM6B0C60H51	4TWA4060A3	60,000	1800	0.5	208 V / 1 PHASE	208 V / 3 PHASE	7.2 kW	52 / 60	21 / 35	(1)

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. PROVIDE UNITS WITH NEW REFRIGERATION LINE SETS.
3. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
4. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER.

2 M103 BUILDING 600 CONWAY MECHANICAL PLAN
NOT TO SCALE

ROOFTOP UNIT SCHEDULE - CW BUILDING 600 - ALTERNATE BID ITEM

UNIT	EQUIPMENT TYPE	LOCATION	MANUFACTURER	MODEL	COOLING CAPACITY (BTUH)	HEATING (BTUH) INPUT / OUTPUT	CFM	OUTSIDE AIR	VOLTAGE	MCA / MOCP	KEY NOTES
RTU-2	PACKAGED AC W/ GAS HEAT	ROOF	TRANE	YSJ240A3SOL	242,000	250,000 / 203,000	8,000	800	208 V / 3 PHASE	108 / 125	(2)
RTU-3	PACKAGED AC W/ GAS HEAT	ROOF	TRANE	YSJ210A3S0L	210,000	250,000 / 203,000	7,000	700	208 V / 3 PHASE	93 / 110	(2)

1. RECONNECT GAS PIPING TO NEW UNITS IN ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE
3. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
3. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
4. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER.

EXHAUST FAN SCHEDULE - CW BUILDING 600 - ALTERNATE BID ITEM

UNIT	EQUIPMENT TYPE	LOCATION	EXISTING MANUFACTURER	EXISTING MODEL	NEW MODEL	AIR FLOW (CFM)	STATIC PRESSURE (IN WG)	HP	VOLTAGE	KEY NOTES
EF-1	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	G-95-DEGX-OD	GREENHECK G-095-VG	300	0.5	1/10	120 / 1 PHASE	(3)
EF-2	ROOFTOP EXHAUST FAN	ROOF	FAN TECH	5ADE121A	GREENHECK G-095-VG	340	0.5	1/10	120 / 1 PHASE	(3)
EF-3	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	CUBE-14-7	CAPTIVEAIRE DU180HFA	2259	1.5	1.5	208 / 3 PHASE	(3)
EF-4	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	CUBE-FP-36-20	CAPTIVEAIRE DU300HFA	7028	1.5	5	208 / 3 PHASE	(3)
EF-5	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	CUBE-18-7	CAPTIVEAIRE DU180HFA	2496	1.5	2	208 / 3 PHASE	(3)
EF-6	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	CUBE 18-7	CAPTIVEAIRE DU180HFA	2496	1.5	2	208 / 3 PHASE	(3)
EF-7	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	G-95-DEGX-OD	GREENHECK G-095-VG	300	0.5	1/10	120 / 1 PHASE	(3)

1. PROVIDE OCCUPANCY SENSOR CONTROL FOR RESTROOM EXHAUST FANS 1, 2, AND 7.
2. PROVIDE FANS WITH SPEED CONTROLLER.
3. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION

SOUTH CAROLINA DWG, INC. CONSULTING ENGINEERS No.C03649 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER 10840 ALAN DAVID LAWRENCE REGISTERED 8/9/2023

DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
B500 & B600 CONWAY MECHANICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M103

PLOT DATE: 08/9/23

1 M104 BUILDING 700 CONWAY MECHANICAL PLAN
NOT TO SCALE

5 M104 BUILDING 700 CONWAY - RTU-1
NOT TO SCALE

MECHANICAL EQUIPMENT SCHEDULE - CW BUILDING 700 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	EXISTING MANUFACTURER	EXISTING MODEL	NEW MANUFACTURER	NEW MODEL NUMBER	COOLING CAPACITY (BTUH)	SUPPLY AIR (CFM)	EXT STATIC PRESSURE	OUTSIDE AIR (CFM)	ELECTRIC HEAT	VOLTAGE	MCA / MOCP	NOTES
RTU-1	PACKAGED HP	ROOF	PAYNE	PA1ZNA0360000BAA	TRANE	4WCC4036	36,000	1200	0.5	120	3.76 KW	208 V / 1 PHASE	25 / 30	1

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
3. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER. COORDINATE WITH CMI

1

2 M104 BUILDING 800 CONWAY MECHANICAL PLAN
NOT TO SCALE

MECHANICAL EQUIPMENT SCHEDULE - CW BUILDING 800 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	MANUFACTURER	MODEL	AIR FLOW (CFM)	STATIC PRESSURE (IN WC)	VOLTAGE	MOTOR
EF-2	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	G-090-VG	400	0.375	120 / 1 PH	1/10 HP

1. PROVIDE FANS WITH SPEED CONTROLLER.
2. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION

1

KEYNOTES

1. REMOVE EXISTING ROOFTOP UNIT AND EXISTING HORIZONTAL DISCHARGE DUCT AND UTILIZE OPENING FOR NEW VERTICAL DISCHARGE DUCT. WIDEN OPENING IN ROOF AS NEEDED AND PROVIDE NEW 14" CURB
2. REMOVE EXISTING EXHAUST FANS AND PROVIDE NEW WITH 14 INCH CURB
3. EXISTING EQUPMENT TO REMAIN

GENERAL NOTES

1. PROVIDE NEW ELECTRICAL DISCONNECT FOR ALL UNITS.
2. PROVIDE NEW LABEL TO IDENTIFY UNIT.
3. PROVIDE NEW OUTDOOR UNIT WITH ECOAT / SEACOST PROTECTION.
4. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
5. RECONNECT NEW UNITS TO EXISTING CONTROLS.

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
DWG, INC. CONSULTING ENGINEERS No.C03649

SOUTH CAROLINA PROFESSIONAL ENGINEER 10640 ALAN DAVID LEWIS
8/9/2023

DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526

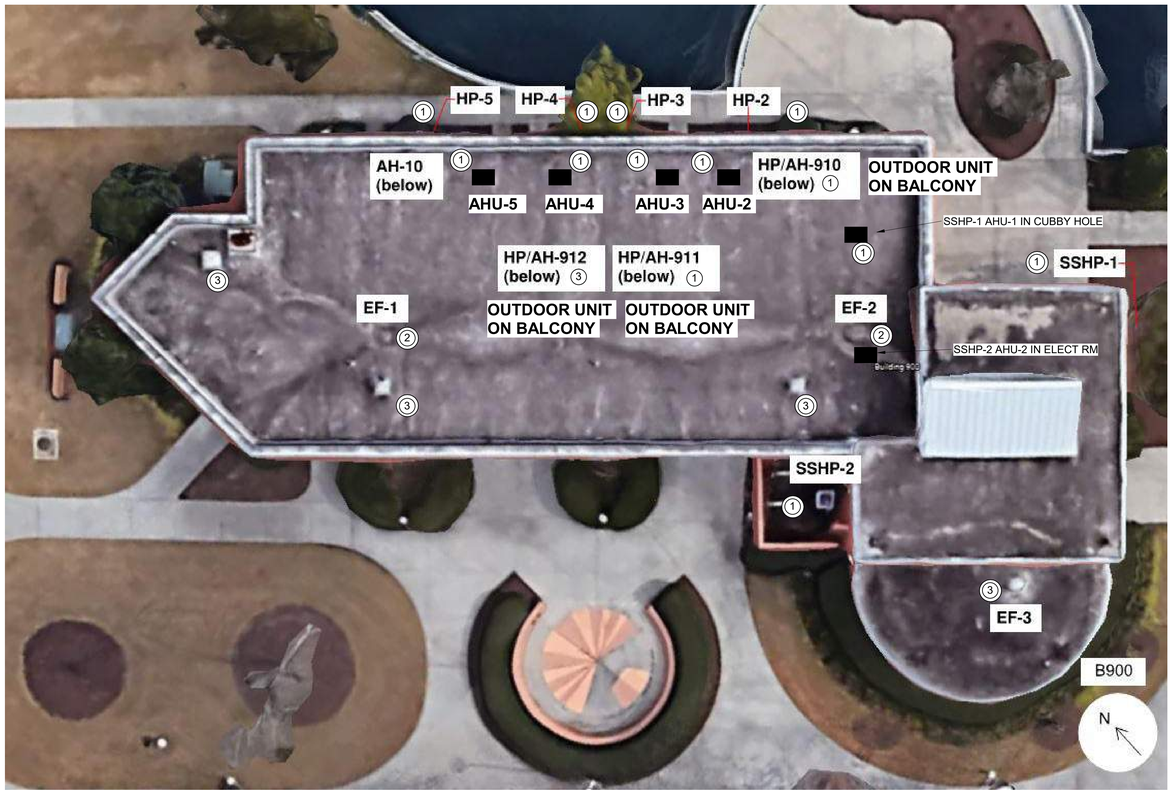
B700 & B800 CONWAY MECHANICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M104

PLOT DATE: 08/9/23

3 M105 BUILDING 900 BALCONY OUTDOOR UNITS
SCALE: NTS



1 M105 BUILDING 900 CONWAY MECHANICAL PLAN
NOT TO SCALE

4 M105 BUILDING 900 TYPICAL INDOOR UNIT
SCALE: NTS

SPLIT SYSYEM UNIT SCHEDULE - CW BUILDING 900 - BASE BID

UNIT	EQUIPMENT TYPE	EXISTING INDOOR UNIT	EXISTING OUTDOOR UNIT	NEW MANUFACTURER	NEW MODEL		COOLING CAPACITY (BTUH)	AIRFLOW (CFM)	EXT STATIC PRESS	ELECTRIC HEAT	VOLTAGE		MCA / MOCP		KEY NOTE
					INDOOR UNIT	OUTDOOR UNIT					INDOOR UNIT	OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT	
SS AH / HP-1	SPLIT SYSTEM	ICP FCP4200D2	ICP CHC042HAA	TRANE	TEM60C42H41	4TWA4042	42,000	1400	0.5"	5.76 KW	208 V / 1 PHASE	208 V / 3 PHASE	40 / 40	18 / 30	1
SS AH / HP-2	SPLIT SYSTEM	ICP FCP4200D	ICP CHC042HAA	TRANE	TEM60C42H41	4TWA4042	42,000	1400	0.5"	5.76 KW	208 V / 1 PHASE	208 V / 3 PHASE	40 / 40	18 / 30	1
HP / AH-910	SPLIT SYSTEM	ICP NFCP4200D2	ICP NHP036AKB1	TRANE	TEM60C36H31	4TWR4036	36,000	1200	0.5"	3.6 KW	208 V / 1 PHASE	208 V / 1 PHASE	27 / 30	18 / 30	1
HP / AH-911	SPLIT SYSTEM	PAYNE PF1MN024	PAYNE PH10JA018-E	TRANE	TEM60C24H21	4TWR4018	18,000	600	0.5"	2.88 KW	208 V / 1 PHASE	208 V / 1 PHASE	20 / 20	15 / 25	1
AH / HP-2	SPLIT SYSTEM	PAYNE PF1MN024	PAYNE PH10JA024-C	TRANE	TEM60C24H21	4TWR4024	24,000	800	0.5"	2.88 KW	208 V / 1 PHASE	208 V / 1 PHASE	20 / 20	15 / 25	1
AH / HP-3	SPLIT SYSTEM	PAYNE PF1MN024	PAYNE PH10JA018-E	TRANE	TEM60C24H21	4TWR4018	18,000	600	0.5"	2.88 KW	208 V / 1 PHASE	208 V / 1 PHASE	20 / 20	15 / 25	1
AH / HP-4	SPLIT SYSTEM	PAYNE PF1MN024	PAYNE PH10JA018-E	TRANE	TEM60C24H21	4TWR4018	18,000	600	0.5"	2.88 KW	208 V / 1 PHASE	208 V / 1 PHASE	20 / 20	15 / 25	1
AH / HP-5	SPLIT SYSTEM	PAYNE TBD	PAYNE PH10JA030	TRANE	TEM60C30H21	4TWR4030	30,000	1000	0.5"	3.6 KW	208 V / 1 PHASE	208 V / 1 PHASE	27 / 30	15 / 25	1

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. PROVIDE UNITS WITH NEW REFRIGERATION LINE SETS.
3. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
4. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER.

EXHAUST FAN SCHEDULE - CW BUILDING 900 - BASE BID

UNIT	EQUIPMENT TYPE	LOCATION	MANUFACTURER	MODEL	AIR FLOW (CFM)	STATIC PRESSURE	VOLTAGE	KEY NOTE
EF-1	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	G-060	75	0.375	120 / 1 PH	2
EF-2	ROOFTOP EXHAUST FAN	ROOF	GREENHECK	G-060	75	0.375	120 / 1 PH	2

1. PROVIDE FANS WITH SPEED CONTROLLER.
2. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION

KEYNOTES

1. REMOVE EXISTING SPLIT SYSTEM UNITS AND PROVIDE NEW. RECONNECT TO EXISTING DUCTWORK
2. REMOVE EXISTING EXHAUST FANS AND PROVIDE NEW WITH 14 INCH CURB
3. EXISTING EQUIPMENT TO REMAIN

GENERAL NOTES

1. PROVIDE NEW ELECTRICAL DISCONNECT FOR ALL UNITS.
2. PROVIDE NEW REFRIGERANT PIPING.
3. PROVIDE NEW LABEL TO IDENTIFY UNIT.
4. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
5. RECONNECT NEW UNITS TO EXISTING CONTROLS.

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
DWG, INC. CONSULTING ENGINEERS No.C03649
SOUTH CAROLINA REGISTERED 10840 ENGINEER ALAN DAVIS LATTA
8/9/2023
DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
B900 CONWAY MECHANICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

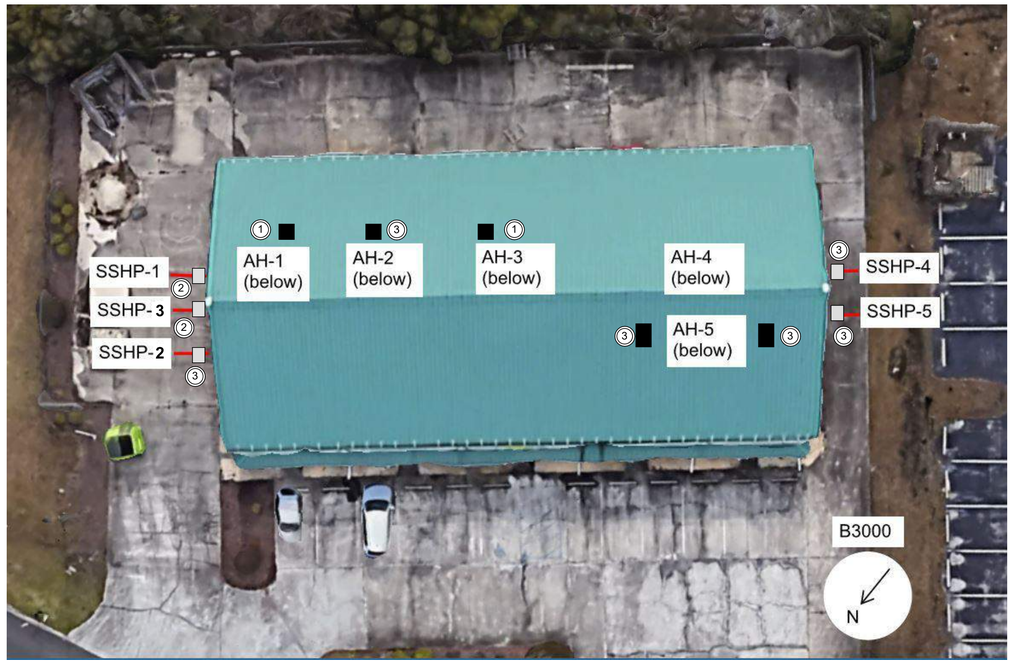
JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M105

PLOT DATE: 08/9/23

3 M107 BUILDING 3000 TYPICAL OUTDOOR UNIT
SCALE: NTS

4 M107 BUILDING 3000 AH-1
SCALE: NTS

5 M107 BUILDING 3000 AH-3
SCALE: NTS



1 M107 BUILDING 3000 CONWAY MECHANICAL PLAN
NOT TO SCALE

SPLIT SYSTEM SCHEDULE - CW BUILDING 3000 - BASE BID

UNIT	EQUIPMENT TYPE	OUTDOOR UNIT LOCATION	INDOOR UNIT LOCATION	EXISTING MANUFACTURER	EXISTING MODEL		NEW MANUFACTURER	NEW MODEL		COOLING CAPACITY (BTUH)	SUPPLY AIR (CFM)	EXT STATIC PRESS	HEATING CAPACITY (BTUH)	VOLTAGE	AUX HEAT	INDOOR	OUTDOOR
					INDOOR UNIT	OUTDOOR UNIT		INDOOR UNIT	OUTDOOR UNIT								
SS HP/ AH-1	SPLIT SYSTEM	EXTERIOR	INTERIOR PLATFORM	HAIER	HB4800VA1M25	HR48C1VAR	TRANE	TEM6B0C48H41	4TWR4048N1	48,000	1600	0.5"	45,800	208 V / 1 PHASE	5.76 KW	43 / 45	26 / 40
SS HP/ AH-3	SPLIT SYSTEM	EXTERIOR	INTERIOR PLATFORM	HAIER	HB4800VA1M25	HR48C1VAR	TRANE	TEM6B0C48H41	4TWR4048N1	48,000	1600	0.5"	45,800	208 V / 1 PHASE	5.76 KW	43 / 45	26 / 40

NOTES:
1. REFER TO ELECTRICAL FOR VOLTAGE INFORMATION.
2. PROVIDE UNITS WITH NEW REFRIGERATION LINE SETS.
3. CONDENSER COILS SHALL BE FACTORY COATED WITH ELECTROFIN PROTECTIVE E-COATING.
4. PROVIDE THERMOSTAT CAPABLE OF CONNECTING TO EXTERNAL CONTROLLER.

KEYNOTES

1. REMOVE EXISTING AIR HANDLING UNIT ON PLATFORM. PROVIDE NEW AND RECONNECT TO EXISTING DUCTWORK
2. REMOVE EXISTING HEAT PUMP UNIT AND PROVIDE NEW ALONG WITH NEW CONCRETE PAD
3. EXISTING EQUIPMENT TO REMAIN

GENERAL NOTES

1. PROVIDE NEW CONDENSATE PIPING TO EXISTING DRAIN.
2. PROVIDE NEW ELECTRICAL DISCONNECTS AND CONDUIT.
3. RUN NEW REFRIGERANT PIPING TO OUTDOOR UNITS .
4. PROVIDE IDENTIFYING LABELS FOR NEW EQUIPMENT.
5. FIELD VERIFY EQUIPMENT SIZES, ELECTRICAL REQUIREMENTS, AND INSTALLATION CONDITIONS PRIOR TO ORDERING EQUIPMENT.
6. RECONNECT NEW UNITS TO EXISTING CONTROLS.

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION DWG, INC. CONSULTING ENGINEERS No.C03649

REGISTERED PROFESSIONAL ENGINEER 10640 ALAN DAVID LAWRENCE 8/9/2023

DWG CONSULTING ENGINEERS EMPLOYEE OWNED

UPGRADE AND REPLACE MULTIPLE HVAC UNITS - CONWAY CAMPUS
2050 HWY 501 E
CONWAY, SC 29526
B3000 CONWAY MECHANICAL PLAN

#	Description	DATE
1	ADDENDUM 1	09/13/23

JOB No. H59-6213-ML
DATE: 08/9/23
DRAWN BY: ADL
CHECKED BY: WDB
SHEET NUMBER
M107

PLOT DATE: 08/9/23

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

a. Constant-volume air systems.
b. Variable-air-volume systems.

1.3 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. NEBB: National Environmental Balancing Bureau.

C. TAB: Testing, adjusting, and balancing.

D. TABB: Testing, Adjusting, and Balancing Bureau.

E. TAB Specialist: An entity engaged to perform TAB Work.

1.4 ACTION SUBMITTALS

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB contractor and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.

B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.

C. Strategies and Procedures Plan: Within 60 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

D. Certified TAB reports.

E. Sample report forms.

F. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.
4. Dates of use.
5. Dates of calibration.

1.6 QUALITY ASSURANCE

A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC, NEBB, or TABB..

1. TAB Field Supervisor: Employee of the TAB contractor and certified by AABC, NEBB, or TABB.
2. TAB Technician: Employee of the TAB contractor and who is certified by AABC, NEBB, or TABB as a TAB technician.

B. Certify TAB field data reports and perform the following:

1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.

C. TAB Report Forms: Use standard TAB contractor's forms approved by Architect or Engineer.

D. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

E. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."

F. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."

1.7 PROJECT CONDITIONS

A. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

1.8 COORDINATION

A. Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.

B. Perform TAB after leakage and pressure tests on air distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TAB SPECIALISTS

A. Subject to compliance with requirements, available TAB contractors that may be engaged include, but are not limited to, the following:

1. Airflow Services

2. Carolina Air & Water Balancing

3. Palmetto Air & Water Balance

3.2 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.

B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.

E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Section 233113 "Metal Ducts" and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

F. Examine equipment performance data including fan curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

H. Examine test reports specified in individual system and equipment Sections.

I. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.

K. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations.

L. Examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.

M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

N. Examine operating safety interlocks and controls on HVAC equipment.

O. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.3 PREPARATION

A. Prepare a TAB plan that includes strategies and step-by-step procedures.

B. Complete system-readiness checks and prepare reports. Verify the following:

1. Permanent electrical-power wiring is complete.
2. Automatic temperature-control systems are operational.
3. Equipment and duct access doors are securely closed.
4. Balance, smoke, and fire dampers are open.
5. Isolating and balancing valves are open and control valves are operational.
6. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
7. Windows and doors can be closed so indicated conditions for system operations can be met.

3.4 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance", ASHRAE 111, NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems", SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.

1. Comply with requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
2. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 233300 "Air Duct Accessories."
3. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation," Section 230716 "HVAC Equipment Insulation," and Section 230719 "HVAC Piping Insulation."

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.5 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.

B. Determine the best locations in main ducts for accurate duct-airflow measurements.

C. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

D. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

E. Verify that motor starters are equipped with properly sized thermal protection.

F. Check dampers for proper position to achieve desired airflow path.

G. Check for airflow blockages.

H. Check condensate drains for proper connections and functioning.

I. Check for proper sealing of air-handling-unit components.

J. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."

3.6 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

a. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.

2. Measure fan static pressures as follows to determine actual static pressure:

a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
b. Measure static pressure directly at the fan outlet or through the flexible connection.
c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.
d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.

3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.

a. Report the cleanliness status of filters and the time static pressures are measured.

4. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.
5. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
6. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct to indicated airflows within specified tolerances.

C. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.

1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.7 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

A. Use same procedure used for constant volume systems.

B. Measure air flows only in supply main, return main, and outdoor air to schedules amounts.

3.8 PROCEDURES FOR MOTORS

A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:

1. Manufacturer's name, model number, and serial number.
2. Motor horsepower rating.
3. Motor rpm.
4. Efficiency rating.
5. Nameplate and measured voltage, each phase.
6. Nameplate and measured amperage, each phase.
7. Starter thermal-protection-element rating.

B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

3.9 PROCEDURES FOR CONDENSING UNITS

A. Verify proper rotation of fans.

B. Measure entering- and leaving-air temperatures.

C. Record compressor data.

3.10 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.

1. Measure and record the operating speed, airflow, and static pressure of each fan.
2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
3. Check the refrigerant charge.
4. Check the condition of filters.
5. Check the condition of coils.
6. Check the operation of the drain pan and condensate-drain trap.
7. Check bearings and other lubricated parts for proper lubrication.
8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.

B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:

1. New filters are installed.
2. Coils are clean and fins combed.
3. Drain pans are clean.
4. Fans are clean.
5. Bearings and other parts are properly lubricated.

6. Deficiencies noted in the preconstruction report are corrected.

C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.

1. Compare the indicated airflow of the renovated work to the measured fan airflows and determine the new fan speed and the face velocity of filters and coils.
2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the air flow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

3.11 TOLERANCES

A. Set HVAC system's air flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
2. Air Outlets and Inlets: Plus or minus 10 percent.

3.12 REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

3.13 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.

B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
2. Manufacturers' test data.
3. Field test reports prepared by system and equipment installers.
4. Other information relative to equipment performance; do not include Shop Drawings and product data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB contractor.
3. Project name.
4. Project location.
5. Engineer's name and address.
6. Contractor's name and address.
7. Report date.
8. Signature of TAB supervisor who certifies the report.
9. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
10. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

11. Nomenclature sheets for each item of equipment.
12. Data for terminal units, including manufacturer's name, type, size, and fittings.
13. Notes to explain why certain final data in the body of reports vary from indicated values.
14. Test conditions for fans performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.
    b. Conditions of filters.
    c. Cooling coil, wet- and dry-bulb conditions.
    d. Face and bypass damper settings at coils.
    e. Fan drive settings including settings and percentage of maximum pitch diameter.
    f. Settings for supply-air, static-pressure controller.
    g. Other system operating conditions that affect performance.

D. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:

    a. Unit identification.
    b. Location.
    c. Make and type.
    d. Model number and unit size.
    e. Manufacturer's serial number.
    f. Unit arrangement and class.
    g. Discharge arrangement.
    h. Sheave make, size in inches, and bore.
    i. Center-to-center dimensions of sheave, and amount of adjustments in inches.
    j. Number, make, and size of belts.
    k. Number, type, and size of filters.

2. Motor Data:

    a. Motor make, and frame type and size.
    b. Horsepower and rpm.
    c. Volts, phase, and hertz.

d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave, and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

a. Total air flow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Filter static-pressure differential in inches wg.
f. Preheat-coil static-pressure differential in inches wg.
g. Cooling-coil static-pressure differential in inches wg.
h. Heating-coil static-pressure differential in inches wg.
i. Outdoor airflow in cfm.
j. Return airflow in cfm.
k. Outdoor-air damper position.
l. Return-air damper position.

E. Apparatus-Coil Test Reports:

1. Coil Data:

a. System identification.
b. Location.
c. Coil type.
d. Number of rows.
e. Fin spacing in fins per inch o.c.
f. Make and model number.
g. Face area in sq. ft..
h. Tube size in NPS.
i. Tube and fin materials.
j. Circuiting arrangement.

2. Test Data (Indicated and Actual Values):

a. Air flow rate in cfm.
b. Average face velocity in fpm.
c. Air pressure drop in inches wg.
d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
e. Return-air, wet- and dry-bulb temperatures in deg F.
f. Entering-air, wet- and dry-bulb temperatures in deg F.
g. Leaving-air, wet- and dry-bulb temperatures in deg F.
h. Refrigerant expansion valve and refrigerant types.
i. Refrigerant suction pressure in psig.
j. Refrigerant suction temperature in deg F.

F. Electric-Coil Test Reports: For electric furnaces, duct coils, and electric coils installed in central-station air-handling units, include the following:

1. Unit Data:

a. System identification.
b. Location.
c. Coil identification.
d. Capacity in Btu/h.
e. Number of stages.
f. Connected volts, phase, and hertz.
g. Rated amperage.
h. Air flow rate in cfm.
i. Face area in sq. ft..
j. Minimum face velocity in fpm.

2. Test Data (Indicated and Actual Values):

a. Heat output in Btu/h.
b. Air flow rate in cfm.
c. Air velocity in fpm.
d. Entering-air temperature in deg F.
e. Leaving-air temperature in deg F.
f. Voltage at each connection.
g. Amperage for each phase.

G. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

a. System identification.
b. Location.
c. Make and type.
d. Model number and size.
e. Manufacturer's serial number.
f. Arrangement and class.
g. Sheave make, size in inches, and bore.
h. Center-to-center dimensions of sheave, and amount of adjustments in inches.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
g. Number, make, and size of belts.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Suction static pressure in inches wg.

H. Round and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

a. System and air-handling-unit number.
b. Location and zone.
c. Traverse air temperature in deg F.
d. Duct static pressure in inches wg.
e. Duct size in inches.
f. Duct area in sq. ft..
g. Indicated air flow rate in cfm.
h. Indicated velocity in fpm.
i. Actual air flow rate in cfm.
j. Actual average velocity in fpm.
k. Barometric pressure in psig.

I. Instrument Calibration Reports:

1. Report Data:

a. Instrument type and make.
b. Serial number.
c. Application.
d. Dates of use.
e. Dates of calibration.

3.14 INSPECTIONS

A. Initial Inspection:

1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the final report.
2. Check the following for each system:

a. Measure airflow of at least 10 percent of air outlets.
b. Measure room temperature at each thermostat/temperature sensor. Compare the reading to the set point.
c. Verify that balancing devices are marked with final balance position.
d. Note deviations from the Contract Documents in the final report.

B. Final Inspection:

1. After initial inspection is complete and documentation by random checks verifies that testing and balancing are complete and accurately documented in the final report, request that a final inspection be made by Architect or Engineer.
2. The TAB contractor's test and balance engineer shall conduct the inspection in the presence of Architect or Engineer.

3. Architect or Engineer shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
4. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
5. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.

C. TAB Work will be considered defective if it does not pass final inspections. If TAB Work fails, proceed as follows:

1. Recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
2. If the second final inspection also fails, Owner may contract the services of another TAB contractor to complete TAB Work according to the Contract Documents and deduct the cost of the services from the original TAB contractor's final payment.

D. Prepare test and inspection reports.

3.15 ADDITIONAL TESTS

A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 230593