Revels MT

GAS PACK SCHEDULE

GAS PACK UNIT #1 (GPU-1)	
GPU #1 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT	* CARRIER MODEL #48HCEA06A2A5-0A0A0 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT; 12.5 EER; 57,500 BTUH NET COOLING; 2000 CFM; 208 VOLT, 3 PHASE; COMP 15.9 RLA; OFM 1.4 FLA; IFM 6.9 FLA; 29 MCA, 40A MOCP; 5 TONS. PROVIDE PROGRAMMABLE THERMOSTAT/HUMIDISTAT, "HUMIDIMIZER" HOT GAS REHEAT, ACCESS PANELS, FILTER RACK, AND COIL GUARDS. 115,000 BTUH INPUT NATURAL GAS. PROVIDE WITH MOTORIZED DAMPER TO CLOSE OUTSIDE AIR INTAKE WHEN UNIT IS NOT IS USE PER 2018 NC ENERGY CODE.
GAS PACK UNIT #2 (GPU-2)	
GPU #2 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT	* CARRIER MODEL #48HCEA06A2A5-0A0A0 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT; 12.5 EER; 57,500 BTUH NET COOLING; 2000 CFM; 208 VOLT, 3 PHASE; COMP 15.9 RLA; OFM 1.4 FLA; IFM 6.9 FLA; 29 MCA, 40A MOCP; 5 TONS. PROVIDE PROGRAMMABLE THERMOSTAT/HUMIDISTAT, "HUMIDIMIZER" HOT GAS REHEAT, ACCESS PANELS, FILTER RACK, AND COIL GUARDS. 115,000 BTUH INPUT NATURAL GAS. PROVIDE WITH MOTORIZED DAMPER TO CLOSE OUTSIDE AIR INTAKE WHEN UNIT IS NOT IS USE PER 2018 NC ENERGY CODE.
GAS PACK UNIT #3 (GPU-3)	
GPU #3 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT	* CARRIER MODEL #48HCED07A2A5-0A0A0 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT; 12 EER; 73,000 BTUH NET COOLING; 2400 CFM; 208 VOLT, 3 PHASE; COMP ❷ 19.6 RLA EA; OFM 2 ❷ 1.5 FLA EA.; IFM 5.2 FLA; 33 MCA, 50A MOCP; 6 TONS. PROVIDE PROGRAMMABLE THERMOSTAT/HUMIDISTAT. ENTHALPY BASED ECONOMIZER WITH BAROMETRIC RELIEF DAMPER, "HUMIDIMIZER" HOT GAS REHEAT, ACCESS PANELS, FILTER RACK, AND COIL GUARDS. 125,000 BTUH INPUT NATURAL GAS. PROVIDE MOTORIZED DAMPER TO CLOSE OUTSIDE AIR INTAKE WHEN UNIT IS NOT IS USE PER 2018 NC ENERGY CODE.
GAS PACK UNIT #4 (GPU-4)	
GPU #4 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT	* CARRIER MODEL #48HCEA06A2A5-0A0A0 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT; 12.5 EER; 57,500 BTUH NET COOLING; 2000 CFM; 208 VOLT, 3 PHASE; COMP 15.9 RLA; OFM 1.4 FLA; IFM 6.9 FLA; 29 MCA, 40A MOCP; 5 TONS. PROVIDE PROGRAMMABLE THERMOSTAT/HUMIDISTAT, "HUMIDIMIZER" HOT GAS REHEAT, ACCESS PANELS, FILTER RACK, AND COIL GUARDS. 115,000 BTUH INPUT NATURAL GAS. PROVIDE WITH MOTORIZED DAMPER TO CLOSE OUTSIDE AIR INTAKE WHEN UNIT IS NOT IS USE PER 2018 NC ENERGY CODE.
GAS PACK UNIT #5 (GPU-5)	
GPU #5 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT	* CARRIER MODEL #48HCED08A2A5-0A0A0 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT; 12 EER; 89,000 BTUH NET COOLING; 3000 CFM; 208 VOLT, 3 PHASE; COMP (2) ❷ 13.6 RLA EA; OFM (2) ❷ 1.5 FLA EA.; IFM 5.8 FLA; 39 MCA, 50A MOCP; 7.5 TONS. PROVIDE PROGRAMMABLE THERMOSTAT/HUMIDISTAT. ENTHALPY BASED ECONOMIZER WITH BAROMETRIC RELIEF DAMPER, "HUMIDIMIZER" HOT GAS REHEAT, 2-SPEED FAN, MEDIUM STATIC DRIVE, ACCESS PANELS, FILTER RACK, HAIL COIL GUARDS. 180,000 BTUH INPUT NATURAL GAS. PROVIDE MOTORIZED DAMPER TO CLOSE OUTSIDE AIR INTAKE WHEN UNIT IS NOT IS USE PER 2018 NC ENERGY CODE.
GAS PACK UNIT #6 (GPU-6)	
GPU #6 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT	* CARRIER MODEL #48HCED08A2A5-0A0A0 GAS HEAT ELECTRIC COOLING SINGLE PACKAGE UNIT; 12 EER; 89,000 BTUH NET COOLING; 3000 CFM; 208 VOLT, 3 PHASE; COMP (2) ❷ 13.6 RLA EA; OFM (2) ❷ 1.5 FLA EA.; IFM 5.8 FLA; 39 MCA, 50A MOCP; 7.5 TONS. PROVIDE PROGRAMMABLE THERMOSTAT/HUMIDISTAT. ENTHALPY BASED ECONOMIZER WITH BAROMETRIC RELIEF DAMPER, "HUMIDIMIZER" HOT GAS REHEAT, 2-SPEED FAN, MEDIUM STATIC DRIVE, ACCESS PANELS, FILTER RACK, HAIL COIL GUARDS. 180,000 BTUH INPUT NATURAL GAS. PROVIDE MOTORIZED DAMPER TO CLOSE OUTSIDE AIR INTAKE WHEN UNIT IS NOT IS USE PER 2018 NC ENERGY CODE.

* OR APPROVED EQUAL

Revels MT

DUCTLESS SPLIT SYSTEM HEAT PUMP SCHEDULE

DHP-1 OUTDOOR HEAT PUMP UNIT	* MITSUBISHI MODEL #MUZ-GL12NA, 1 TON OUTDOOR HEAT PUMP UNIT, 23.1 SEER. 208 VOLT, 1 PHASE, CONDENSING UNIT 9A MCA, 15A MOCP. FAN COIL UNIT IS POWERED VIA FIELD PROVIDED WIRING FROM OUTDOOR UNIT. SERVES (1) INDOOR FAN-COIL UNIT (DFC-1).
DFC-1 DIRECT EXPANSION FAN COIL UNIT	* MITSUBISHI MODEL #MSZ-GL12NA FAN COIL UNIT. NET COOLING CAPACITY = 12,000 BTUH, 145 CFM LO TO 399 CFM HI. 1 TON NOMINAL. PROVIDE WIRED PROGRAMMABLE THERMOSTAT, AND CONDENSATE PUMP. FAN MOTOR 0.76, FLA 208 VOLT. SINGLE PH.

Revels MT

EXHAUST FAN SCHEDULE

EXHAUST FAN #1 (EF-1)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES. PROVIDE WALL MOUNTED THERMOSTAT TO CONTROL FAN.
EXHAUST FAN #2 (EF-2)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES. FAN IS FOR HEAT REMOVAL. PROVIDE WALL MOUNTED THEROSTAT TO CONTROL FAN.
EXHAUST FAN #3 (EF-3)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.
EXHAUST FAN #4 (EF-8)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO **WADE CAP.** LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.
EXHAUST FAN #5 (EF-5)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.
EXHAUST FAN #6 (EF-6)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.
EXHAUST FAN #7 (EF-7)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.
EXHAUST FAN #8 (EF-8)	* CARNES MODEL# VCDD010C EXHAUST FAN, 93 CFM @ 1/4" SP, 640 RPM, 1.1 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 6" RIGID DUCT TO ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.

* OR APPROVED EQUAL

NOTE: RUN EXHAUST DUCTS HORIZONTALLY AS REQUIRED TO MAINTAIN 10'-0" MINIMUM SEPARATION FROM ANY INTAKES.

GENERAL NOTES – MECHANICAL

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE AND ALL LOCAL AND OTHER APPLICABLE CODES.
2. ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR (MC).
3. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMEN. THE MC SHALL COORDINATE ALL OF HIS WORK WITH THE GENERAL CONTRACTOR (GC) AND OTHER TRADES.
4. THE LOCATION OF ALL DUCT, PIPING AND EQUIPMENT SHALL BE ADJUSTED TO ACCOMMODATE ANTICIPATED OR ENCOUNTERED INTERFERENCES.
5. THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS REFER TO THE ARCHITECTURAL PLANS.
6. THE MC SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS INTERLOCKS, CONTROL WIRING CONDUIT AND POWER WIRING FROM DISCONNECTS TO HIS EQUIPMENT, USING A LICENSED ELECTRICIAN.
7. THE MC SHALL USE FIRE DAMPERS FOR PROTECTION OF THE OPENING IN ACCORDANCE WITH STATE AND LOCAL CODES IN ALL LOCATIONS WHERE PENETRATIONS OF RATED WALLS AND FLOORS OCCUR. SEE ARCHITECTURAL PLANS FOR RATED WALL AND FLOOR LOCATIONS. PROVIDE ACCESS DOORS AT ALL DAMPER LOCATIONS. LOCATE DOORS FOR EASY ACCESS.
8. INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AHU. ALL MECHANICAL EQUIPMENT SHALL OPERATE FREE OF OBJECTIONAL NOISE AND VIBRATION.
9. INSTALL TURNING VANES IN SUPPLY DUCTS AT ALL ELBOWS AND SPLITTER DAMPERS. PROVIDE BALANCING DAMPERS IN ALL DUCTS WHERE SHOWN OR REQUIRED FOR SYSTEM BALANCING.
10. DUCT DIMENSIONS ARE SHOWN INSIDE CLEAR.
11. THE MC SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF HIS WORK. HE SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN HIS CONTRACT.
12. PROVIDE ALL REQUIRED ROOF PENETRATIONS FOR THE INSTALLATION OF THE NEW EQUIPMENT. ALL FLASHINGS ARE BY THE MECHANICAL CONTRACTOR. ALL ROOFING WORK SHALL BE DONE BY A LICENSED ROOFING CONTRACTOR SO AS TO MAINTAIN ORIGINAL WARRANTY.
13. THE M.C. SHALL COORDINATE WITH AND PROVIDE EQUIPMENT SPEC. SHEETS TO THE GENERAL AND ELECTRICAL CONTRACTORS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
14. PROPERLY SUPPORT ALL DUCT WORK, AND EQUIP FROM STRUCTURE. PROVIDE ALL STRUCTURAL SUPPORTS FOR THE LOADS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

AIR DISTRIBUTION SCHEDULE

MARK	* MANUFACTURER	MODEL NO.	NECK SIZE	FACE SIZE	MATERIAL	SERVICE	NOTES
A	CARNES	SPAB224	SEE FLEXIBLE DUCT SCHEDULE	24" X 24"	STEEL	SUPPLY	LAY-IN CEILING, WHITE 4-WAY BLOW
B	CARNES	RTDBH	12" X 4"	14" X 6"	STEEL	SUPPLY	DUCT MOUNTED, WHITE
C	CARNES	RTDBH	18" X 6"	20" X 8"	STEEL	SUPPLY	DUCT MOUNTED, WHITE
RA	CARNES	SPRB22	SEE FLEXIBLE DUCT SCHEDULE	24" X 24"	STEEL	RETURN	LAY-IN CEILING, WHITE
RB	CARNES	RSABH	8" X 6"	10" X 8"	STEEL	RETURN	WHITE, DUCT MOUNTED
RC	CARNES	RSHAH	24" X 36"	26" X 38"	STEEL	RETURN	WHITE, SIDEWALL MOUNTED HEAVY DUTY
RD	CARNES	RSABH	36" X 24"	38" X 26"	STEEL	RETURN	WHITE, DUCT MOUNTED,
RF	CARNES	RSABH	12" X 8"	14" X 10"	STEEL	RETURN	WHITE, DUCT MOUNTED,
RF	CARNES	RSABH	12" X 8"	14" X 10"	STEEL	RETURN	WHITE, SIDE WALL OR DUCT MOUNTED,
TA	CARNES	RSABH	24" X 12"	26" X 14"	STEEL	TRANSFER	WHITE, SIDE WALL MOUNTED

* OR APPROVED EQUAL

OUTDOOR AIR CALCULATIONS

(SERVICE BAY AREA ONLY)

OUTSIDE AIR PROVIDED BY NATURAL VENTILATION PER NCSBC: MECHANICAL CODE, SECTION 402. 14430 SQ.FT. TOTAL X 0.04 = 577 SQ.FT. REQUIRED FREE AREA. OPERABLE DOORS TO EXTERIOR PROVIDE 1728 SQ.FT. OF FREE AREA.

FOR ADDITIONAL VENTILATION PROVIDE 450 CFM EACH IN GPU-5 & GPU-6

LEGEND – MECHANICAL

- 12 X 8 — RECTANGULAR DUCTWORK. INSIDE CLEAR DIMENSION INDICATED (WIDTH X HEIGHT)
- FLEXIBLE DUCTWORK
- 12" DIA. — ROUND GALVANIZED STEEL DUCT INSIDE CLEAR DIMENSION INDICATED.
- EX 6" DIA. — ROUND GALVANIZED STEEL EXHAUST DUCT INSIDE CLEAR DIMENSION INDICATED.
- MD — MANUAL BALANCING DAMPER
- DUCT MOUNTED SUPPLY AIR DIFFUSER
- SUPPLY DIFFUSER
- RETURN GRILLE
- T AHU-1 — WALL MOUNTED THERMOSTAT/HUMIDISTAT. MOUNT AT 48" AFF. (UNIT SERVED IS INDICATED)
- X / XXX — GRILLE TYPE / MIN. CFM
- SD — DUCT TYPE SMOKE DETECTOR
- RAID — REMOTE INITATING DEVICE WITH AUDIBLE AND VISUAL LOCAL ALARM
- FD — FIRE DAMPER
- 2 HOUR FIRE BARRIER
- 3 HOUR FIRE BARRIER

APPENDIX B

2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)
MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEM AND EQUIPMENT

Thermal Zone 4A

winter dry bulb 16F
summer dry bulb 93F

Interior Design Conditions

winter dry bulb 72F
summer dry bulb 75F
relative humidity 50%

Building Heating Load 375,900 BTU/hr

Building Cooling Load 374,200 BTU/hr

Mechanical Spacing Conditioning System

Unitary – The tenant space is served the following systems:

(1) 6 Ton gas package units with dx cooling.
(3) 5 Ton gas package unit with dx cooling.
(2) 7.5 Ton gas package units with dx cooling.

Boiler – Not applicable to this project.

Chiller – Not applicable to this project.

Equipment efficiencies

Efficiencies and outputs are listed on equipment schedules – See drawings.

OA SCHEDULE

OUTDOOR VENTILATION AIR PROVIDED PER TABLE 403.3 NCSBC MECHANICAL CODE. (OFFICE AREA ONLY)

APPLICATION	SQUARE FOOTAGE (SF)	AREA OUTDOOR AIR FLOW RATE (CFM/SF)	PEOPLE OUTDOOR AIR FLOW RATE (CFM/PERSON)	OCCUPANCY DENSITY RATE (# PEOPLE/ 1000SF)	OCCUPANCY (# PEOPLE)	AREA OUTDOOR AIR FLOW (CFM)	PEOPLE OUTDOOR AIR FLOW (CFM)	TOTAL (CFM)
OFFICE	5877	0.06	5	5	29	145	353	498
CONFERENCE	408	0.06	5	50	20	25	100	125
CORRIDOR	3217	0.06	–	–	–	237	–	193
STORAGE	2116	0.12	–	–	–	266	–	254
WAREHOUSE	2540	0.06	–	–	–	152	–	152
WORKOUT ROOM	1243	0.06	20	10	13	77	260	337
TOTAL REQUIRED								1559

OUTDOOR AIR PROVIDED FROM EACH HVAC UNIT *

HVAC UNIT	OUTDOOR AIR (CFM)
GPU-1	400
GPU-2	400
GPU-3	360
GPU-4	400
TOTAL PROVIDED	1560

APPLICATION	CFM
TOILETS	70 CFM/FLUSHING FIXTURE

8 FLUSHING FIXTURE X 70 CFM = 560 CFM

EXHAUST PROVIDED BY FOUR EXHAUST FANS, MAKE UP AIR BY TRANSFER AIR

* SET OUTDOOR AIR DAMPER CONTROLS TO PROVIDE OUTDOOR AIR AS INDICATED IN THIS SCHEDULE.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22038 BENJAMIN E. BURKE
11/30/23

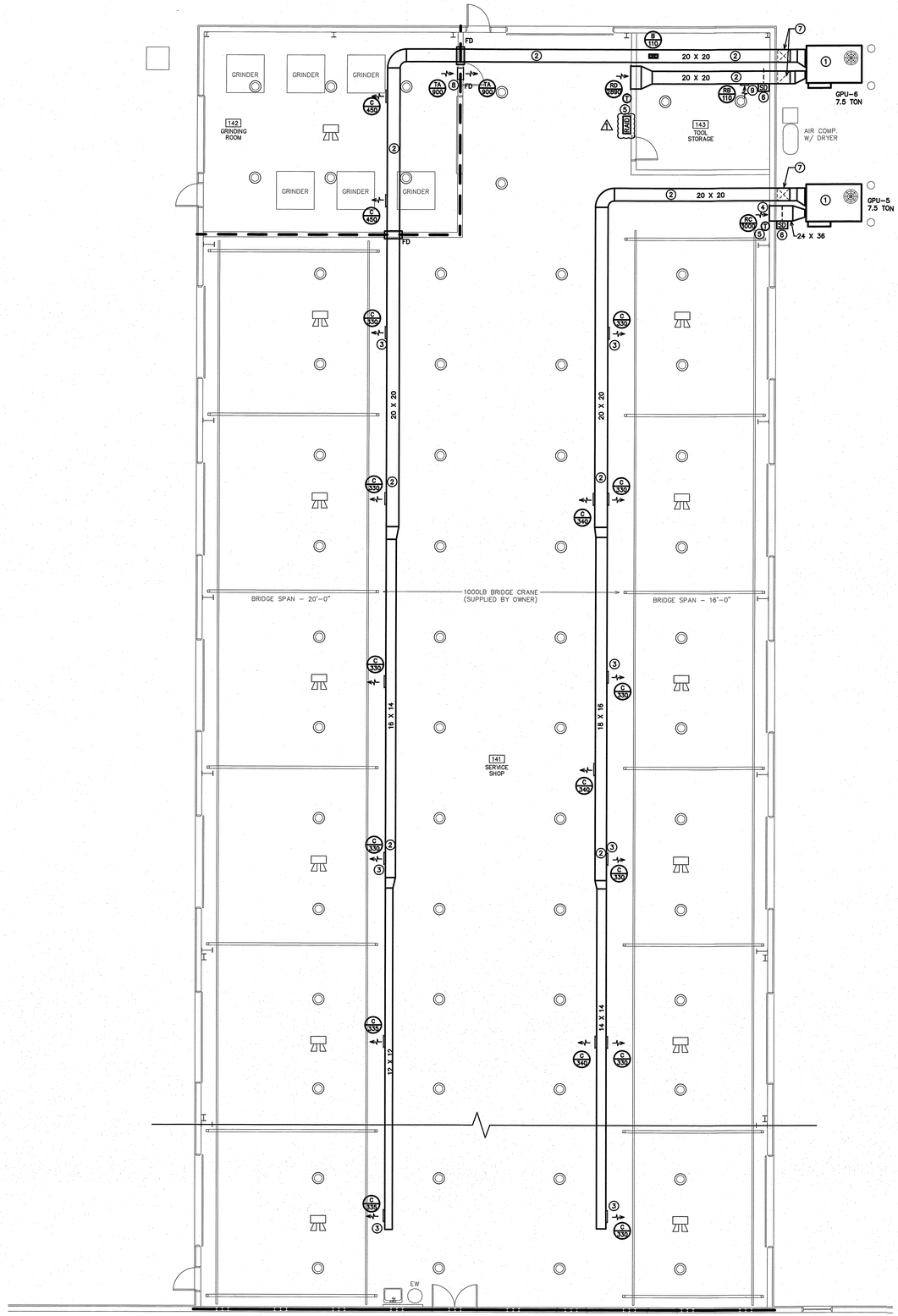
PROJECT TITLE
REVELS TURF & TRACTOR
RAWLS CHURCH RD.
FUQUAY-VARINA, NORTH CAROLINA

PROJECT NO.
2232

DRAWING TITLE
LIGHTING PLAN

M1

PLOT DATE 12/01/23
⚠ AHJ COMMENTS 11/30/23



1 NORTH HVAC PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES FOR M2.1

1. GAS PACKAGE UNIT MOUNTED ON 4" THICK CONCRETE PAD. SEE DETAIL 1/M3. PROVIDE ALL MANUFACTURER'S REQUIRED CLEARANCES AROUND UNIT.
2. RUN DUCTWORK EXPOSED OVERHEAD IN THIS ROOM. SEE DETAIL 2/M3. ALL EXPOSED DUCTWORK SHALL HAVE INTERNAL DUCT LINER INSULATION AND HAVE "PAINT-GRIP" GALVANIZED FINISH. FINAL PAINTING BY GENERAL CONTRACTOR.
3. DUCT MOUNTED SUPPLY AIR REGISTER. SEE DETAIL 2/M3. (TYPICAL).
4. LOW SIDE WALL RETURN AIR GRILLE. MOUNT WITH BOTTOM AT 8" AFF.
5. MOUNT THERMOSTAT AT 48" AFF.
6. INSTALL DUCT TYPE SMOKE DETECTOR IN RETURN AIR DUCT FOR UNIT SHUTDOWN. PROVIDE ACCESS DOOR IN DUCT. SEE DETAIL 1/M3 AND SPECIFICATIONS CONCERNING THE SMOKE DETECTOR.
7. RUN DUCTWORK UP EXPOSED, TIGHT AGAINST WALL ON EXTERIOR OF BUILDING TO HIGH OVERHEAD IN THE SPACE. ALL EXPOSED DUCTWORK SHALL HAVE INTERNAL DUCT LINER INSULATION, AND BE SEALED WATERTIGHT.
8. HIGH SIDE WALL MOUNTED RETURN AIR TRANSFER GRILLE ON BOTH SIDES OF WALL. PROVIDE FIRE DAMPER IN WALL BETWEEN TRANSFER GRILLES.
9. DUCT MOUNTED RETURN AIR GRILLE.

NOTE:

MOTOR VEHICLES IN THE SERVICE SHOP AREA WILL HAVE THEIR ENGINES RUNNING ONLY FOR THE DURATION REQUIRED TO MOVE THE MOTOR VEHICLE IN AND OUT OF THE BUILDING. THEREFORE MECHANICAL VENTILATION AND SOURCE CAPTURE EXHAUST ARE NOT REQUIRED PER NCSBC: MECHANICAL CODE SECTION 502.14, EXCEPTION NO. 3.

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NORTH CAROLINA BOARD OF EXAMINERS FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS SEAL 22030 ENGINEER BENJAMIN E. BURKE

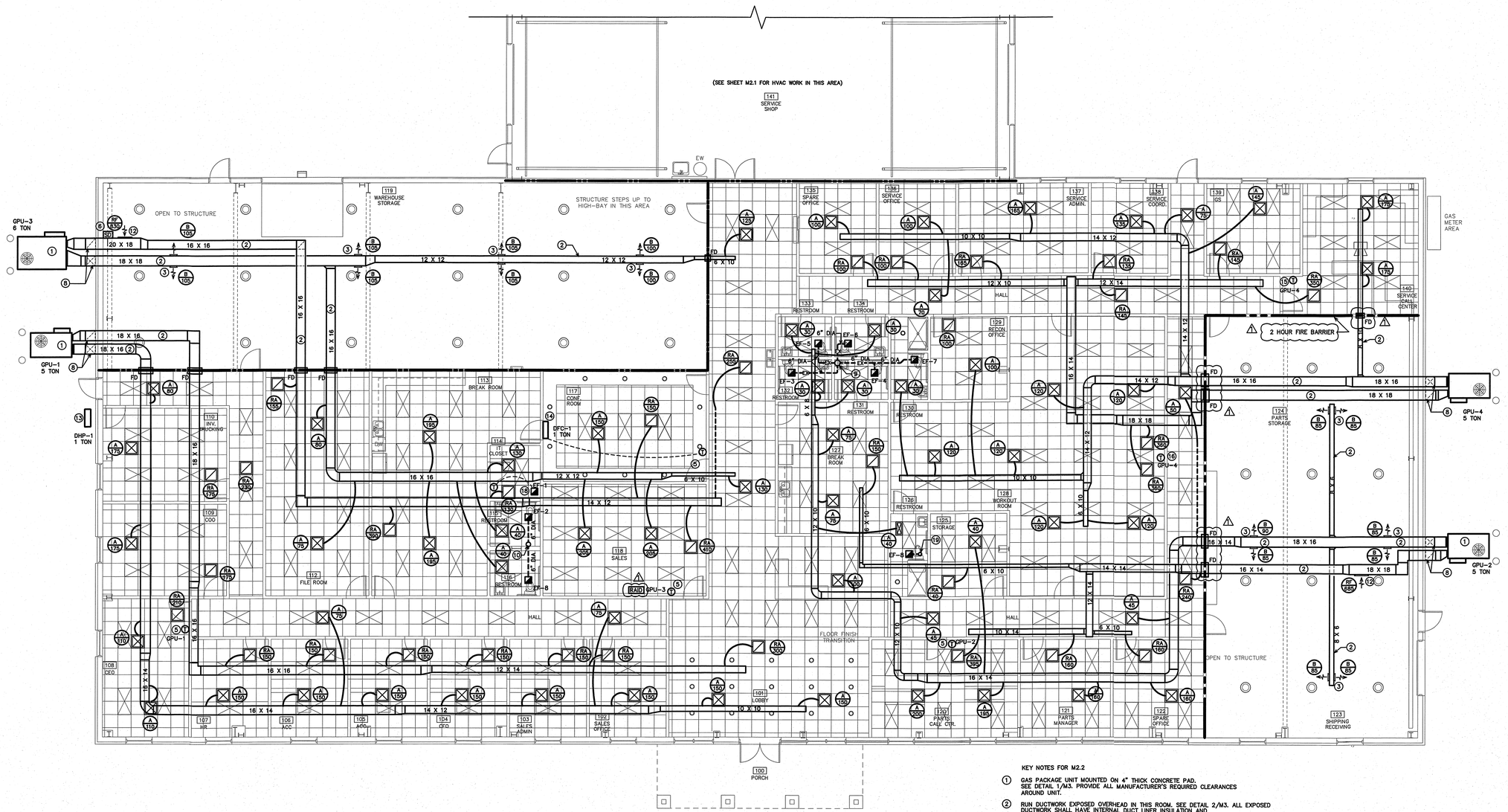
PROJECT TITLE
REVELS TURF & TRACTOR
RAWLS CHURCH RD.
FUQUAY-VARINA, NORTH CAROLINA

PROJECT NO.
2232

DRAWING TITLE
NORTH HVAC PLAN

M2.1

PLOT DATE 12/01/23



1 SOUTH HVAC PLAN
SCALE: 1/8" = 1'-0"

FLEXIBLE DUCTWORK SIZES
MAXIMUM CFM'S

SIZES	SUPPLY	RETURN
6"	100	100
8"	115	115
10"	250	250
12"	400	350
14"	550	500
16"	NA	900

(CHANGE OUT EXISTING FLEX DUCTS AND COLLARS AS REQUIRED TO GET NEW CFM'S SHOWN)

FLEXIBLE DUCTWORK NOTES

1) INSTALL FLEXIBLE DUCTWORK RUNS AS STRAIGHT AS POSSIBLE.
2) DO NOT ALLOW FLEXIBLE DUCT TO SAG BETWEEN SUPPORTS.
3) DO NOT STRETCH A SHORT SECTION TO FIT A SLIGHTLY LONGER SECTION. THIS DISTORTS THE DUCT SHAPE AND IMPEDES AIR FLOW.
4) DO NOT CRUSH DUCTWORK TO FIT IN A SPACE SMALLER THAN ITS ORIGINAL OUTSIDE DIAMETER. MAXIMUM ALLOWABLE DEFORMATION IS 15% OF ORIGINAL VOLUME.
5) USE RIGID 90 DEGREE ELBOWS AT ANY LOCATION WHERE THE DUCTWORK BECOMES DISTORTED.
6) EXTREME CARE SHALL BE TAKEN TO ELIMINATE ANY REDUCTION IN FLOW WITHIN THE FLEXIBLE DUCTS. THE MECH. CONTRACTOR WILL BE REQUIRED TO REPLACE THE FLEXIBLE DUCT WITH RIGID IF PROPER FLOW IS NOT OBTAINED.
7) SIZE ALL FLEXIBLE DUCT SO AS NOT TO EXCEED MAXIMUM CFM'S GIVEN IN TABLE.

KEY NOTES FOR M2.2

1. GAS PACKAGE UNIT MOUNTED ON 4" THICK CONCRETE PAD. SEE DETAIL 1/M3. PROVIDE ALL MANUFACTURER'S REQUIRED CLEARANCES AROUND UNIT.
2. RUN DUCTWORK EXPOSED OVERHEAD IN THIS ROOM. SEE DETAIL 2/M3. ALL EXPOSED DUCTWORK SHALL HAVE INTERNAL DUCT LINER INSULATION AND HAVE "PAINT-GRIP" GALVANIZED FINISH. FINAL PAINTING BY GENERAL CONTRACTOR.
3. DUCT MOUNTED SUPPLY AIR REGISTER. SEE DETAIL 2/M3. (TYPICAL).
4. DUCT MOUNTED RETURN AIR GRILLE.
5. MOUNT THERMOSTAT AT 48" AFF.
6. INSTALL DUCT TYPE SMOKE DETECTOR IN RETURN AIR DUCT FOR UNIT SHUTDOWN. PROVIDE ACCESS DOOR IN DUCT. SEE DETAIL 1/M3 AND SPECIFICATIONS CONCERNING THE SMOKE DETECTOR.
7. NOT USED.
8. RUN DUCTWORK UP EXPOSED, TIGHT AGAINST WALL ON EXTERIOR OF BUILDING TO HIGH OVERHEAD IN THE SPACE. ALL EXPOSED DUCTWORK SHALL HAVE INTERNAL DUCT LINER INSULATION, AND BE SEALED WATERTIGHT.
9. 12" DIA. RIGID EXHAUST DUCT UP TO ROOF MOUNTED EXHAUST HOOD. EXHAUST DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
10. 8" DIA. RIGID EXHAUST DUCT UP TO ROOF MOUNTED EXHAUST HOOD. EXHAUST DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
11. NOT USED.
12. DUCT MOUNTED RETURN AIR GRILLE.
13. DUCTLESS SPLIT SYSTEM OUTDOOR HEAT PUMP UNIT MOUNTED ON 4" THICK CONCRETE PAD. PROVIDE ALL MANUFACTURER'S REQUIRED CLEARANCES AROUND UNIT.
14. WALL MOUNTED DUCTLESS SPLIT SYSTEM FAN-COIL UNIT MOUNT WITH BOTTOM AT 7'-0" AFF. COORDINATE FINAL LOCATION WITH ARCHITECT AND OWNER TO ACCOMMODATE THE ARRANGEMENT OF THE CONFERENCE ROOM. RUN PUMPED CONDENSATE CONCEALED IN WALL AND ABOVE CEILING TO ROOF. RUN REFRIGERANT PIPING CONCEALED IN WALL AND ABOVE CEILING TO OUTDOOR HEAT PUMP UNIT.
15. PRIMARY THERMOSTAT FOR GPU-4. MOUNT AT 48" AFF.
16. SECONDARY (SLAVE) THERMOSTAT FOR GPU-4. MOUNT AT 48" AFF.
17. HIGH SIDE WALL MOUNTED RETURN AIR GRILLE.
18. EXHAUST FAN FOR HEAT REMOVAL. FAN SHALL DISCHARGE ABOVE CEILING. FAN SHALL BE CONTROLLED BY WALL MOUNTED THERMOSTAT.
19. 6" DIA. RIGID EXHAUST DUCT UP TO ROOF MOUNTED EXHAUST HOOD. EXHAUST

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2232

DRAWING TITLE
SOUTH HVAC PLAN

M2.2

PLOT DATE	12/01/23
⚠ AHJ COMMENTS	11/30/23

This original sheet is 24" x 36"; other dimensions indicate it has been altered.

DIVISION 15 B – HEATING, VENTILATING AND AIR CONDITIONING

1.1 DESCRIPTION OF THE WORK

A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:

1. Heating, ventilation, and air conditioning equipment.
2. Ductwork.
3. Grilles and diffusers.
4. Controls and control wiring.
5. Condensate piping.

B. All work under this contract shall be installed in compliance with the latest edition of the following codes and standards insofar as they apply:

1. ASHRAE Guide
2. National Electric Code.
3. 2018 NC State Building Code: Mech Code.
4. The Electrical Specifications for this project.
5. SMACNA HVAC Duct Construction Standards.
6. All local codes and ordinances.
7. ARI rating.
8. 2018 NC State Building Code: Energy Conservation Code.

C. These codes are minimum standards. If codes require a more stringent method of construction than the specifications require, the codes shall govern.

D. The HVAC Contractor shall be licensed in North Carolina and have all local licenses required for the work.

1.2 INTENT

A. The intent of these specification and the accompanying drawing is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The HVAC Contractor shall take this into consideration and include in his bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner.

1.3 COORDINATION

A. Coordinate work with other contractors. Notify Owner of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Owner for a decision before resuming operations.

B. Locations shown are approximate. The HVAC Contractor shall verify with owner, the placement of equipment, fixtures, outlets, etc. The drawings do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required.

C. Changes in duct or piping design caused by obstructions shall be submitted to Engineer in sketch form for study and comment prior to execution. Additional cost will not be allowed for this type of work.

1.4 SHOP DRAWINGS

A. Shop drawings shall be submitted for all major items of equipment, These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified. Shop drawings shall include but are not limited to the following:

1. All equipment and accessories.
2. Grilles and diffusers.
3. Unit sizes and requirements.

PART 2 –PRODUCTS

2.1 EQUIPMENT

A. All air handling devices must have the manufacturer's recommended filter rack, for 1" thick filters.

2.2 PIPING

A. Condensate drain piping shall be PVC pipe. Provide tee and plug at changes in direction. Route pipe to proper termination point. All condensate piping shall be insulated with flexible elastomeric insulation. Provide copper piping in plenum areas.

2.3 DUCTWORK

A. Ductwork shall be built in accordance with SMACNA HVAC Duct construction standards. Furnish and install all supply, return, and ventilation ductwork shown, together with splitters, deflectors, dampers, etc. This work shall be constructed of new galvanized prime grade steel sheets. The gauges of metal to be used and the construction and bracing of joints shall be in accordance with the SMACNA recommendations.

B. Seal all sheet metal joints with fiber impregnated mastic.

C. Support from building structure on strap hangers not over 8 feet apart.

D. Use manufactured turning vanes in each elbow where required or where indicated on drawings.

E. Flexible connectors shall be 3 inches wide, of fireproof material and used to isolate noise between equipment and ductwork on supply and return side of all units.

F. Round runouts, where used, shall be built in accordance with the above standards, and each runout shall also have manufactured side take off, adjustable quadrant damper at all accessible locations and shall be of Owens Corning INL-25 flexible duct with UL label. Flex duct lengths allowed up to 14 feet. Duct must be supported with sufficient hangers in order to prevent sags. Serpentine routing will not be permitted. Quadrant damper to be 22 gauge easily adjustable manually with exterior handle (similar to H&C Kwik-set) and is not to be mounted in side take-off.

2.4 DUCT INSULATION (LOW PRESSURE)

A. All insulation, linings, coverings and adhesives shall have a flame spread classification of 25 or less and a smoke developed rating of not more than 50, exposed exterior piping.

B. All duct insulation shall comply with Section 604, of the N. C. Building Code: Mechanical Code

C. All supply and return ductwork shall be completely insulated, either internally or externally.

D. Rectangular ductwork shall be lined with two-inch thick, 1.5 lb. per cubic foot density, duct liner, Armstrong, CSG Ultraliner, Johns Manville or approved equal.

E. As an alternative to duct liner rectangular duct may be wrapped with Class 1 – 2", 3/4 lb. density (R-6.5) thick reinforced foil back fiberglass insulation, Owens-corning Series ED or equal. Tape shall be Kraft reinforced foil tape or equal.

F. Exhaust air duct does not require insulation, unless otherwise noted on the plans.

G. Insulation shall be held inplace with adhesive and welding pins 16" on center.

H. Duct dimensions shown on the drawings are Net Inside Dimensions

2.5 THERMOSTATS

A. Provide programmable electronic thermostats.
B. Submit proposed thermostats for approval.

2.6 ROOF PENETRATIONS

A. Provide pre-manufactured roof flashings compatible with equipment served.
B. Coordinate roof work with roof system used. Provide proper flashing as required.
C. Provide 1 year warranty on all roof work performed.

2.7 DUCT SMOKE DETECTORS

A. Install duct mounted smoke detectors in GPU-5, & GPU-6 only. The duct smoke detectors shall be supplied and wired by the Fire Alarm Contractor. Provide access doors and wire to unit for unit shut-down. Install per code.

B. Duct detectors are not required in GPU-1, GPU-2, GPU-3, GPU-4 & GPU-7 since air flows are 2000 cfm or less per NCSBC: Mechanical Code, Section 606.2.

PART 3 – EXECUTION

3.1 PIPING

A. The HVAC Contractor shall coordinate such routing with others, to line his work true to adjacent spaces and in a workmanlike manner and to use only short radius 90 degree elbows. Where required, piping to be sturdily supported and separated in a manner satisfactory to the Engineer.

B. The HVAC Contractor shall paint all exterior refrigerant piping. with UV resistant paint as recommended by the closed cell insulation manufacturer.

C. Insulate all condensate lines for their entire length with 1/2" closed cell insulation. Install insulation per the manufacturers recommendations.

3.2 ELECTRICAL WORK

A. The electrical contractor shall provide all switches, starters, wire conduit for the air conditioning, heating and ventilation equipment. Control wiring shall be by the heating and air conditioning contractor.

B. HVAC Contractor is responsible for verifying that power terminals have been properly grounded prior to operating equipment and must find connections to all equipment including control wiring.

C. All materials and workmanship shall be in accordance with the electrical specifications for the project. All wiring shall be color coded, and as-built wiring diagram prepared showing all connections and colors of wiring and delivered to the Owner.

D. Furnish certification for acceptance of control wiring from local electrical inspector prior to acceptance.

3.3 CLEAN UP

A. During construction, keep the site clean of debris. Upon completion, and before final inspection, clean up the premises to remove all evidence of work. In addition upon completion of construction leave equipment clean.

B. Furnish one box of clean filters, for each size required, at the time of final inspection to the owner.

3.4 OPERATOR'S MANUAL AND DIAGRAM

A. The HVAC Contractor shall prepare in one copy a manual describing the proper maintenance and operation of the systems. This manual shall not consist of standard factory instructions (although these may be included) but shall be prepared to describe this particular job.

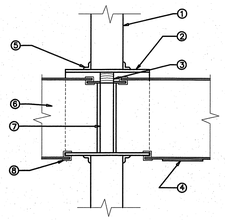
B. The manual shall be bound, indexed, dated and signed by the HVAC Contractor.

C. Qualified representative of the HVAC contractor shall meet with the designated representatives of the Owner and the Owner's representative shall be instructed in the proper operation and maintenance of the control system and other systems.

3.5 GUARANTEE

A. Guarantee all materials and labor included in the HVAC work for a period of one year from date of final acceptance by the owner. In addition, motor compressors shall be a nonprorated five year warranty. Any part or parts of the work or equipment which prove to be defective during the guarantee period shall be replaced at no additional cost to the owner or tenant.

B. All air flows must be measured and balanced to within 10% of design airflows. All equipment used must have a current certification. Provide two copies of the balance report to the owner at closeout. The HVAC contractor shall return and re-balance to occupant comfort after 90 days from close-out. Provide all balance dampers needed for satisfactory operation regardless if shown on the drawings or not, and shift location of thermostats thermostats if required for occupancy comfort.



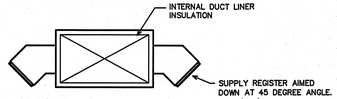
KEY NOTES FOR 3/M3

1. 2-HOUR OR 3-HOUR RATED GYPSUM BOARD WALL. SEE PLANS FOR WALL TYPES AND LOCATIONS.
2. 14 GALVANIZED STEEL SLEEVE. FASTEN TO FIRE DAMPER FRAME.
3. CURTAIN
4. ACCESS DOOR. TYPICAL AT ALL FIRE DAMPERS.
5. 1-1/2" X 1-1/2" X 1/8" STEEL ANGLE. FASTEN TO SLEEVE.
6. DUCTWORK SIZE VARIES.
7. DYNAMIC FIRE DAMPER.
8. PROVIDE BREAK-AWAY JOINTS AT DUCT CONNECTIONS TO FIRE DAMPER AND SLEEVE.

RATED GYPSUM WALL PENETRATION

NOTE: THIS DETAIL IS FOR GENERAL DESIGN INTENT ONLY. INSTALL FIRE DAMPER PER MANUFACTURERS INSTRUCTIONS.

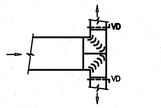
3 FIRE DAMPER DETAIL
SCALE: NOT TO SCALE



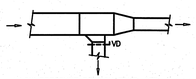
NOTE:

ALL EXPOSED DUCT SHALL HAVE DUCT LINER INSULATION.

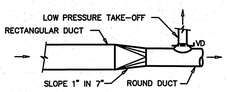
2 DUCT MOUNTED REGISTER DETAIL
SCALE: NOT TO SCALE



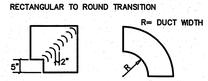
LOW PRESSURE TEE



LOW PRESSURE BRANCH TAKE-OFF



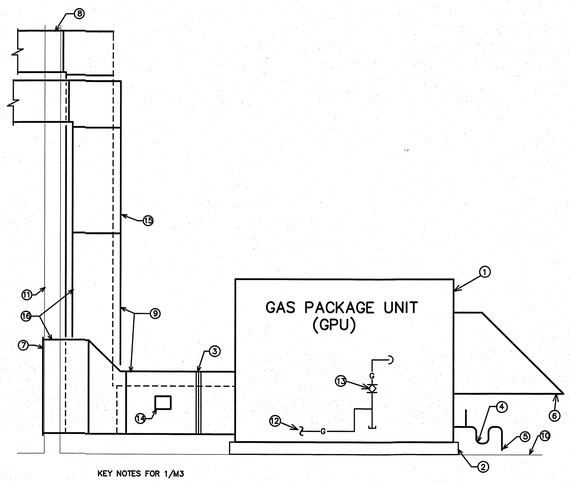
RECTANGULAR TO ROUND TRANSITION



SQUARE THROAT ELBOW FULL RADIUS ELBOW

LOW PRESSURE DUCT ELBOWS

4 DUCT CONSTRUCTION DETAIL
SCALE: NOT TO SCALE



KEY NOTES FOR 1/M3

1. GAS PACKAGE UNIT MOUNTED AT GRADE.
2. 4" THICK CONCRETE PAD.
3. FLEXIBLE CONNECTIONS (TYPICAL).
4. PROVIDE CONDENSATE DRAIN TRAP. SIZE PER MANUFACTURERS RECOMMENDATIONS.
5. CONDENSATE DRAIN. RUN TO GRADE
6. OUTSIDE AIR DAMPER AND HOOD. SET UNIT CONTROLS TO PROVIDE FOR SCHEDULED OUTDOOR AIR AS THE MINIMUM.
7. SIDEWALL MOUNTED RETURN AIR GRILLE. MOUNT WITH BOTTOM AT 8" AFF
8. SUPPLY DUCT TO ABOVE
9. OUTDOOR DUCTWORK SHALL BE SEALED WATERTIGHT AND HAVE INTERNAL INSULATION.
10. GRADE.
11. EXTERIOR WALL.
12. GAS LINE TO UNIT PROVIDED BY PLUMBING CONTRACTOR. FINAL CONNECTION AND START UP BY MECH. CONTRACTOR.
13. GAS SHUT-OFF VALVE, UNION AND FLEXIBLE HOSE.
14. DUCT TYPE SMOKE DETECTOR IN RETURN AIR DUCT. SMOKE DETECTOR FURNISHED BY MC. PROVIDE RAIL, (REMOTE ALARM INTIATING DEVICE) LOCATE ADJACENT TO TSTAT. PROVIDE FOR FAN SHUT-DOWN PROVIDE ACCESS DOOR IN DUCT. INSTALL PER CODE. SMOKE DETECTORS ONLY REQUIRED ON GPU-5 AND GPU-6.
15. RETURN DUCT.
16. SEE PLANS FOR UNITS THAT HAVE LOW SIDEWALL RETURNS AND ONES WHERE RETURN DUCTS GO ABOVE THE CEILING.

1 TYPICAL HORIZONTAL GAS PACKAGE UNIT DETAIL
SCALE: NOT TO SCALE

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11/23/23

PROJECT TITLE
REVELS TURF & TRACTOR
RAWLS CHURCH RD.
FUQUAY–VARINA, NORTH CAROLINA

PROJECT NO.
2232

DRAWING TITLE
HVAC SPECIFICATION & DETAILS

M3

PLOT DATE	12/01/23
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