MI Cancun Angler M1

HVAC EQUIPMENT SCHEDULE

HVAC SYSTEM #1	
AHU #1 DIRECT EXPANSION FAN COIL UNIT	* CARRIER MODEL #FX4DNB061, 4 WAY, MULTIPOISE FAN COIL UNIT. 10 KW HEATER. NOMINAL CAPACITY = 60,000 BTUH. 2000 CFM NOMINAL. PROVIDE HARD SHUT-OFF TXV VALVE. 5 TON NOMINAL. PROVIDE PROGRAMMABLE THERMOSTAT AND FILTER RACK WITH HINGED DOOR. 3/4HP 6.0A MOTOR FLA, 40A HEATER FLA, 240V, 1 PH, 58.5A MCA, 60A MOCP AHU & HEAT.
HP #1 OUTDOOR HEAT PUMP UNIT	* CARRIER MODEL #25HCC560A0030, 5 TON OUTDOOR HEAT PUMP UNIT, 15 SEER, PROVIDE CYCLE PROTECTOR, LOW PRESSURE SWITCH, CRANKCASE HEATER, 240 VOLT, 1 PHASE. COMP 26.4A RLA, FAN 1.2A FLA, OUTDOOR HEAT PUMP 34.2A MCA, 50A MOCP.

* OR APPROVED EQUAL

AHU CONTROL NOTE:

FOR EACH SYSTEM PROVIDE "SIMPLE ENGINEERED SOLUTIONS" MODEL #HPDM-XX HEAT PUMP DEHUMIDIFICATION CONTROL MODULE. PROVIDE PROGRAMMABLE ELECTRONIC THERMOSTAT WITH AUTO CHANGEOVER AND HUMIDISTAT FUNCTION. THERMOSTAT SHALL BE COMPATIBLE WITH DEHUMIDIFICATION CONTROL MODULE. PURPOSE OF DEHUMIDIFICATION CONTROL MODULE IS TO INITIATE COOLING MODE WHEN HUMIDISTAT SENSES HUMIDITY OVER SETPOINT AND ENERGIZE AND CONTROL ELECTRIC HEAT TO MAINTAIN SPACE TEMPERATURE. CONTACT ROB ARMSTRONG WITH BRADY TRANE FOR INFORMATION ON DEHUMIDIFICATION CONTROL MODULE: (919) 232-5714. email: Rob.Armstrong@trane.com.

MI Cancun Angler M1

ROOFTOP UNIT EQUIPMENT SCHEDULE

ROOFTOP UNIT #1 (RTU-1)	
RTU #1 HEAT PUMP SINGLE PACKAGE UNIT	* CARRIER MODEL #50VT-C24---31 ROOFTOP HEAT PUMP UNIT; 14.5 SEER; 23,000 BTUH NET COOLING; 800 CFM; 240 VOLT, 1 PHASE, COMP 13.5 RLA, IFM 3.8 FLA; 5 KW ELEC. HEAT, 20.8 FLA ELECTRIC HEAT; 47.3 MCA, 50A MOCP. 2 TON. PROVIDE PROGRAMMABLE THERMOSTAT AND FILTER RACK IN UNIT. PROVIDE 25% O.A DAMPER, LOW AMBIENT KIT COIL HAIL GUARDS. PROVIDE ROOF CURB COMPATIBLE WITH ROOF SYSTEM SERVED.

* OR APPROVED EQUAL

NOTE: 1. AHU HEATER KW RATINGS ARE AT 240 VOLTS.
2. PROVIDE OUTDOOR TSTAT TO PREVENT ELECTRIC HEAT OPERATION WHEN HEAT PUMP CAN MEET THE HEATING LOAD

RTU CONTROL NOTE:

FOR EACH ROOF-TOP UNIT PROVIDE "SIMPLE ENGINEERED SOLUTIONS" MODEL #HPDM-XX HEAT PUMP DEHUMIDIFICATION CONTROL MODULE. PROVIDE PROGRAMMABLE ELECTRONIC THERMOSTAT WITH AUTO CHANGEOVER AND HUMIDISTAT FUNCTION. THERMOSTAT SHALL BE COMPATIBLE WITH DEHUMIDIFICATION CONTROL MODULE. PURPOSE OF DEHUMIDIFICATION CONTROL MODULE IS TO INITIATE COOLING MODE WHEN HUMIDISTAT SENSES HUMIDITY OVER SETPOINT AND ENERGIZE AND CONTROL ELECTRIC HEAT TO MAINTAIN SPACE TEMPERATURE. CONTACT ROB ARMSTRONG WITH BRADY TRANE FOR INFORMATION ON DEHUMIDIFICATION CONTROL MODULE: (919) 232-5714. email: Rob.Armstrong@trane.com.

MI Cancun Angler M1

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 WALL CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.
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 WALL 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.

AIR DISTRIBUTION SCHEDULE

MARK	* MANUFACTURER	MODEL NO.	NECK SIZE	FACE SIZE	MATERIAL	SERVICE	NOTES
A	CARNES	SKSA40	6" DIA	9" X 9"	STEEL	SUPPLY	GYPSUM BOARD CEILING, WHITE 4-WAY BLOW
B	CARNES	RTDBH	12" X 8"	14" X 10"	STEEL	SUPPLY	DUCT MOUNTED, WHITE
C	CARNES	RTDBH	6" X 6"	8" X 8"	STEEL	SUPPLY	DUCT OR WALL MOUNTED, WHITE
D	CARNES	RTDBH	12" X 5"	14" X 7"	STEEL	SUPPLY	DUCT MOUNTED, WHITE
RA	CARNES	RSABH	24" X 24"	26" X 26"	STEEL	RETURN	WHITE, SIDEWALL MOUNTED

* OR APPROVED EQUAL

COORDINATE BORDER TYPE WITH THE CEILING TYPE. SEE ARCH SHEETS
PROVIDE CUT SHEETS TO OWNER/ARCH. PRIOR TO ORDERING.

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. ADJUST DIFFUSERS TO PROVIDE FOR PROPER OPERATION OF HOOD.
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. FANS AND CURBS. CURBS AND FLASHING ARE BY THE GENERAL CONTRACTOR. ALL ROOFING WORK SHALL BE DONE BY THE ORIGINAL ROOFING CONTRACTOR SO AS TO MAINTAIN ORIGINAL WARRANTY.
13. THE M.C. SHALL COORDINATE WITH AND PROVIDE EQUIPMENT SPEC. SHEETS TO THE GENERAL PROVIDE ALL REQUIRED ROOF AND FLOOR PENETRATIONS FOR THE INSTALLATION OF THE NEW EQUIPMENT, HOOD AND ELECTRICAL CONTRACTORS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
14. PROPERLY SUPPORT ALL DUCT WORK, HOOD AND FANS FROM STRUCTURE. PROVIDE ALL STRUCTURAL SUPPORTS FOR THE LOADS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
15. RELOCATE ANY EXISTING OBSTRUCTIONS IN THE PATH OF THE NEW HOOD, DUCTWORK AND FAN INSTALLATION. FIELD VERIFY PRIOR TO SUBMITTING BID.

OA SCHEDULE OUTDOOR VENTILATION AIR PROVIDED PER TABLE 403.3 NCSBC MECHANICAL CODE.

APPLICATION	SQUARE FOOTAGE (SF)	AREA OUTDOOR AIR FLOW RATE (CFM/SF)	PEOPLE OUTDOOR AIR FLOW RATE (CFM/PERSON)	OCCUPANCY DENISTY RATE (# PEOPLE/ 1000SF)	OCCUPNCY (# PEOPLE)	AREA OUTDOOR AIR FLOW (CFM)	PEOPLE OUTDOOR AIR FLOW (CFM)	TOTAL (CFM)
CORRIDOR	103	0.06	–	–	–	3	–	3
DINING	832	0.18	7.5	70	44 *	150	330	480
TOTAL REQUIRED								483

OUTDOOR AIR PROVIDED FROM EACH HVAC UNIT **

HVAC UNIT	OUTDOOR AIR (CFM)
RTU-1	150
SPHP-1	450
AHU-1	350 – 10" DIA. O.A. DUCT
TOTAL PROVIDED	950

APPLICATION	CFM
TOILETS	70 CFM/FLUSHING FIXTURE

3 FLUSHING FIXTURE X 70 CFM = 210 CFM
EXHAUST PROVIDED BY THREE EXHAUST FANS, MAKE UP AIR BY TRANSFER AIR

APPLICATION	EXHAUST CFM PER SQ./FT.
COOKING KITCHENS	0.7 CFM PER SQ.FT.

498 SQ. FT. X 0.7 CFM PER SQ.FT. = 347 CFM
4300 CFM EXHAUST PROVIDED BY 2 KITCHEN HOODS.

*ACTUAL OCCUPANCY PER BUILDING TENANT AS ALLOWED BY 2018 NCSBC: MECHANICAL CODE, SECTION 403.3.1.1, EXCEPTION.
** SET OUTDOOR AIR DAMPER CONTROLS TO PROVIDE OUTDOOR AIR AS INDICATED IN THIS SCHEDULE.

AIR BALANCE CALCULATION

TOTAL OA PROVIDED	= 950 CFM	KITCHEN OA PROVIDED	= 350 CFM
KITCHEN HOOD #1 EXHAUST	= (1824 CFM)	KITCHEN HOOD #1 EXHAUST	= (1824 CFM)
KITCHEN HOOD SUPPLY FAN	= 2738 CFM	KITCHEN HOOD SUPPLY FAN	= 2738 CFM
KITCHEN HOOD #2 EXHAUST	= (1824 CFM)	KITCHEN HOOD #2 EXHAUST	= (1824 CFM)
TOTAL AIR BALANCE=	= 38 CFM	KITCHEN AIR BALANCE=	= (572) CFM

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.
- DUCT OR WALL MOUNTED SUPPLY AIR DIFFUSER
- SUPPLY DIFFUSER
- RETURN GRILLE
- MD — MANUAL BALANCING DAMPER
- T — WALL MOUNTED THERMOSTAT/HUMIDISTAT WITH REMOTE TEMPERATURE/HUMIDITY SENSOR. MOUNT AT 48" AFF.
- X / XXX — GRILLE TYPE / MIN. CFM
- PS — REMOTE MANUAL PULL STATION FOR KITCHEN HOOD FIRE EXTINGUISHING SYSTEM
- D—D — CONDENSATE PIPING
- R—R — REFRIGERANT PIPING

REFRIGERANT CALCULATIONS

NCSBC MECH EDITION, TABLE 1103.1 ALLOWABLE AMOUNTS OF REFRIGERANT.

404A: 31 LBS. PER 1000 CUBIC FEET
COOLER
SIZE: 10'-3" x 7'-1" x 7'-6" = 545 CUBIC FEET
31 lbs/1000 ft3 x 545 ft3 = 16.9 lbs
AMOUNT (R-404A): 16.9 LBS.
(maximum allowed)

404A: 31 LBS. PER 1000 CUBIC FEET
STEP-IN KEG COOLER
SIZE: 5'-4" x 3'-4" x 7'-6" = 133 CUBIC FEET
31 lbs/1000 ft3 x 133 ft3 = 4.12 lbs
AMOUNT (R-404A): 4.12 LBS.
(maximum allowed)

404A: 31 LBS. PER 1000 CUBIC FEET
FREEZER
SIZE: 7'-1" x 4'-3" x 7'-6" = 226 CUBIC FEET
31 lbs/1000 ft3 x 226 ft3 = 7.00 lbs
AMOUNT (R-404A): 7.00 LBS.
(maximum allowed)

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

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 52,500 BTU/hr

Building Cooling Load 148,000 BTU/hr

Mechanical Spacing Conditioning System

Unitary – The building is served the following systems:
(1) New 2 ton roof-top single package heat pump unit
(1) Existing 4 ton single package heat pump unit
(1) New 5 ton split system heat pump unit.

Boiler – Not applicable to this project.

Chiller – Not applicable to this project.

Equipment efficiencies

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

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22038 BENJAMIN E. BURKE
5/5/21

PROJECT TITLE
MI CANCUN

115 S. RALEIGH ST.
ANGIER, NORTH CAROLINA

PROJECT NO.
0000

DRAWING TITLE
HVAC SCHEDULES

M1

PLOT DATE 5/5/2021
⚠ PLAN REVISIONS

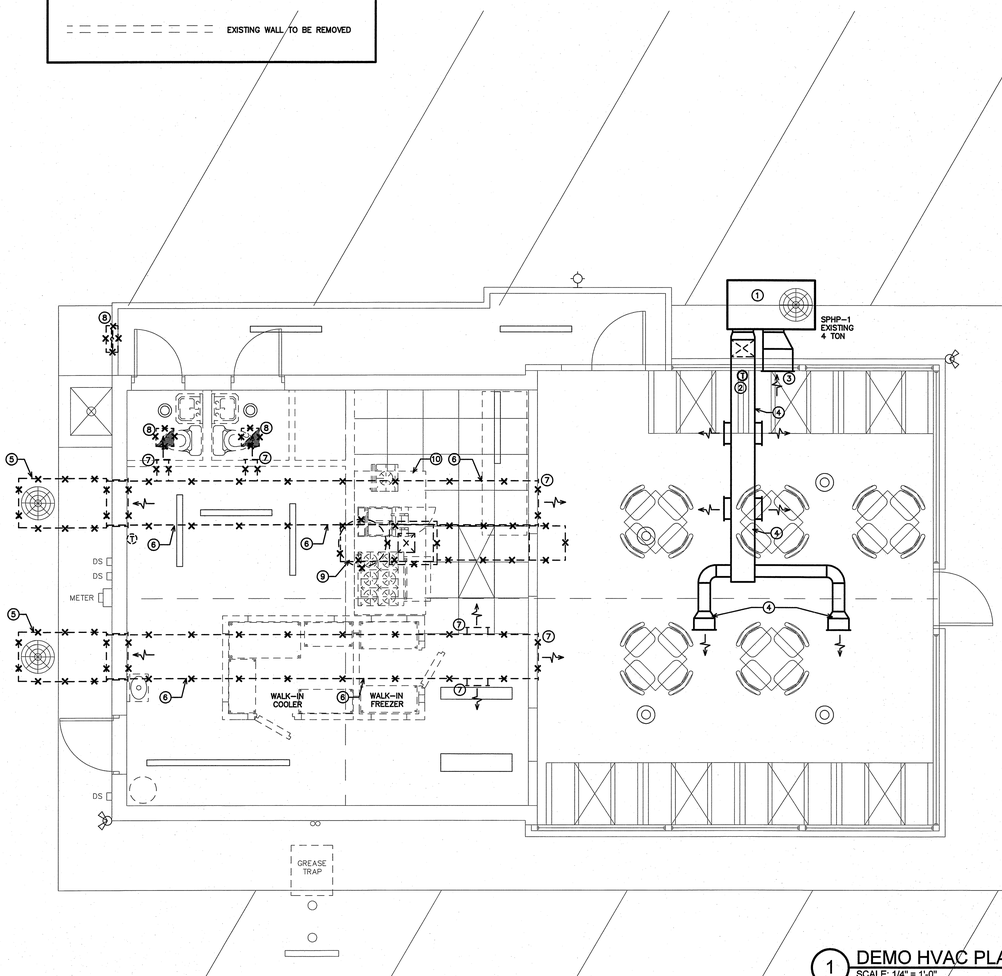
NOTE:
THE EXISTING INFORMATION SHOWN ON THIS DRAWING IS FROM A FIELD INVESTIGATION.
THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND FIELD VERIFYING ALL RELEVANT INFORMATION.
THE SUBMISSION OF A BID INDICATES ACCEPTANCE OF EXISTING CONDITIONS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED.

MI Concun Angier M2

WALL LEGEND

EXISTING WALL TO REMAIN

EXISTING WALL TO BE REMOVED



1 DEMO HVAC PLAN
SCALE: 1/4" = 1'-0"

KEY NOTES FOR SHEET M2

1. EXISTING SINGLE PACKAGE HEAT PUMP UNIT MOUNTED ON GRADE TO REMAIN.
2. EXISTING THERMOSTAT TO REMAIN.
3. EXISTING SIDE WALL RETURN AIR GRILLE TO REMAIN.
4. EXISTING EXPOSED SUPPLY AIR DUCTWORK AND DUCT MOUNTED SUPPLY AIR DIFFUSERS TO REMAIN.
5. REMOVE EXISTING SINGLE PACKAGE HEAT PUMP UNIT.
6. REMOVE EXISTING SUPPLY AIR DUCTWORK.
7. REMOVE EXISTING SUPPLY AIR DIFFUSER.
8. REMOVE EXISTING EXHAUST FAN.
9. REMOVE EXISTING ROOF MOUNTED KITCHEN HOOD EXHAUST AND SUPPLY FAN.
10. REMOVE EXISTING KITCHEN EXHAUST HOOD.

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NORTH CAROLINA PROFESSIONAL SEAL 28056 ENGINEER BENJAMIN E. BURKE
5/5/21

PROJECT TITLE
MI CANCUN

115 S. RALEIGH ST.
ANGIER, NORTH CAROLINA

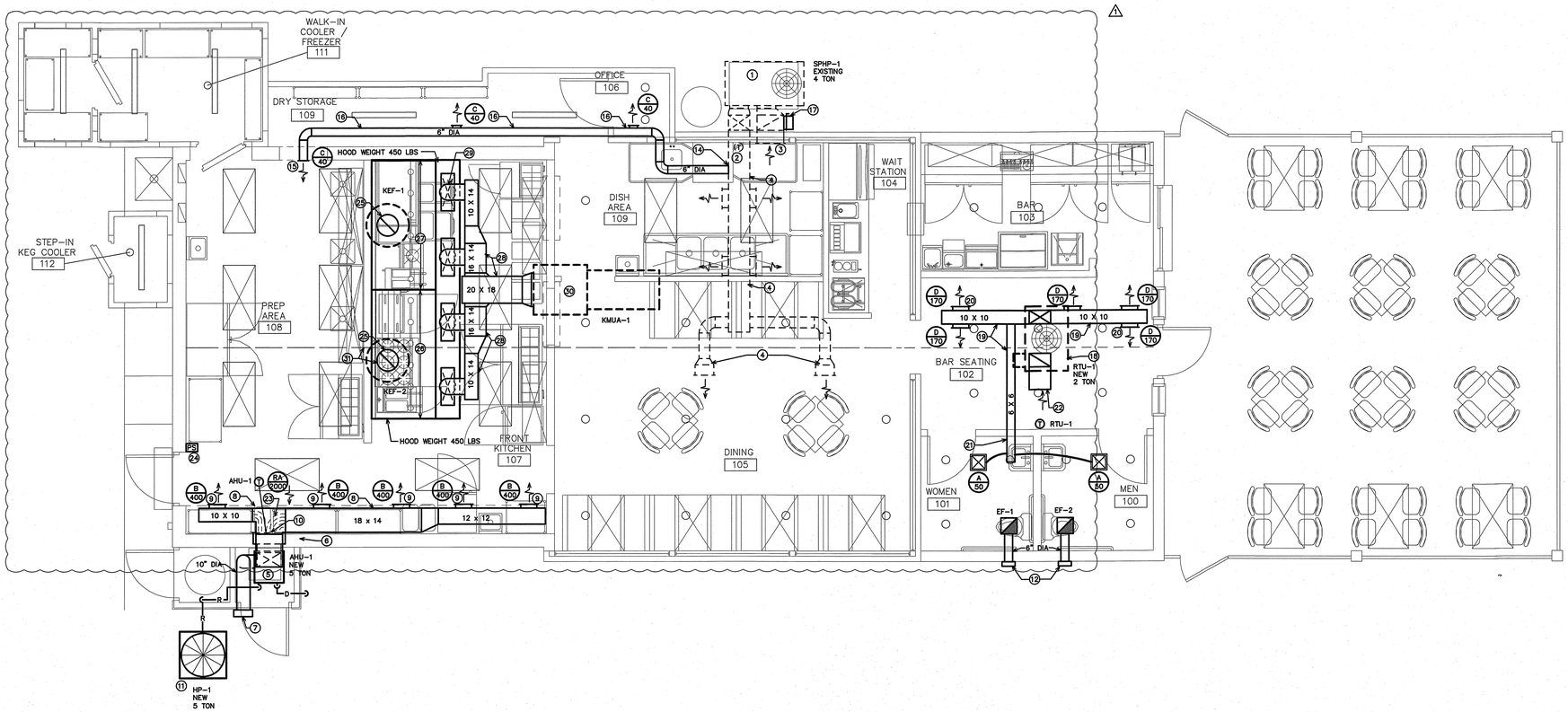
PROJECT NO.
0000

DRAWING TITLE
DEMO HVAC PLAN

M2

PLOT DATE 5/5/2021

NOTE:
THE EXISTING INFORMATION SHOWN ON THIS DRAWING IS FROM A FIELD INVESTIGATION.
THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE AND FIELD VERIFYING ALL RELEVANT INFORMATION.
THE SUBMISSION OF A BID INDICATES ACCEPTANCE OF EXISTING CONDITIONS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED.



1 HVAC PLAN - NEW WORK
SCALE: 1/4" = 1'-0"

KEY NOTES FOR SHEET M3

1. EXISTING SINGLE PACKAGE HEAT PUMP UNIT MOUNTED ON GRADE TO REMAIN.
2. EXISTING THERMOSTAT TO REMAIN.
3. EXISTING SIDE WALL RETURN AIR GRILLE TO REMAIN.
4. EXISTING EXPOSED SUPPLY AIR DUCTWORK AND DUCT MOUNTED SUPPLY AIR DIFFUSERS TO REMAIN.
5. NEW VERTICAL AIR HANDLING UNIT IN CLOSET. SEE DETAIL 1/M4.
6. SUPPLY AIR DUCT SHALL ENTER BUILDING AS HIGH AS POSSIBLE, TIGHT TO BOTTOM OF ROOF STRUCTURE.
7. WALL MOUNTED OUTDOOR AIR INTAKE HOOD. INTAKE SHALL BE 10'-0" MIN. HORIZONTALLY OR OR 3'-0" MIN. BELOW ANY EXHAUST DISCHARGE OR PLUMBING VENT.
8. RUN SUPPLY AIR DUCT TIGHT TO BOTTOM OF ROOF STRUCTURE. DUCT SHALL BE ENCLOSED IN NEW SOFFIT AT CEILING. SOFFIT BY GENERAL CONTRACTOR.
9. NEW SUPPLY AIR DIFFUSER MOUNTED ON SIDE OF SOFFIT.
10. NEW SIDE WALL RETURN AIR GRILLE. MOUNT WITH BOTTOM AT 8" AFF.
11. NEW OUTDOOR HEAT PUMP UNIT MOUNTED ON 4" THICK CONCRETE PAD. PROVIDE ALL MANUFACTURER'S CLEARANCES AROUND UNIT.
12. NEW WALL EXHAUST CAP. EXHAUST DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
13. 6" DIA. RIGID EXHAUST DUCT UP TO NEW ROOF MOUNTED EXHAUST CAP. EXHAUST DISCHARGE SHALL BE 10'-0" FROM ANY OUTSIDE AIR INTAKE.
14. CONNECT NEW SUPPLY AIR DUCT TO EXISTING SUPPLY AIR DUCT.
15. NEW HIGH SIDE WALL SUPPLY AIR DIFFUSER.
16. RUN NEW SUPPLY AIR DUCT EXPOSED OVERHEAD AS HIGH AS POSSIBLE.
17. INSTALL NEW OUTSIDE AIR INTAKE HOOD WITH MANUAL BALANCING DAMPER IN EXISTING VERTICAL RETURN AIR DUCT.
18. NEW ROOF-TOP SINGLE PACKAGE HEAT PUMP. SEE DETAIL 2/M4.
19. RUN NEW SUPPLY AIR DUCT EXPOSED OVERHEAD AS HIGH AS POSSIBLE. ALL EXPOSED DUCT WORK SHALL HAVE INTERNAL DUCT LINER INSULATION AND HAVE "PAINT-GRIP" GALVANIZED FINISH. FINAL PAINTING BY GENERAL CONTRACTOR.
20. DUCT MOUNTED SUPPLY AIR DIFFUSER. SEE DETAIL 3/M4 (TYPICAL).
21. RUN NEW SUPPLY AIR DUCT CONCEALED ABOVE TOILET CEILING.
22. OPEN END OF RETURN AIR DUCT. INSTALL 1/2" X 1/2" METAL SCREEN OVER OPEN END OF DUCT.
23. TURNING VANES IN SUPPLY AIR TEE.
24. WALL MOUNTED MANUAL PULL STATION FOR KITCHEN HOOD FIRE EXTINGUISHING SYSTEM. MOUNT AT 48" AFF. VERIFY FINAL LOCATION WITH LOCAL FIRE MARSHALL.
25. NEW 16" DIA. KITCHEN HOOD EXHAUST DUCT UP TO NEW ROOF MOUNTED KITCHEN HOOD EXHAUST FAN. EXHAUST DISCHARGE SHALL BE 10'-0" MIN FROM ANY OUTSIDE AIR INTAKE.
26. NEW KITCHEN EXHAUST HOOD #1.
27. NEW KITCHEN EXHAUST HOOD #2
28. RUN NEW KITCHEN HOOD SUPPLY AIR DUCT OVER ROOF. ALL EXPOSED DUCTWORK SHALL BE SEALED WATERTIGHT.
29. 12" DIA. KITCHEN HOOD SUPPLY AIR DUCT DOWN THROUGH ROOF. CONNECT TO SUPPLY AIR COLLAR ON KITCHEN HOOD. PROVIDE ROUND TO RECTANGULAR DUCT TRANSITION. (TYPICAL FOR 4).
30. NEW ROOF MOUNTED KITCHEN HOOD SUPPLY AIR FAN. INTAKE SHALL BE 10'-0" MIN. FROM ANY EXHAUST DISCHARGE OR PLUMBING VENT.
31. FIELD CUT EXHAUST RISER OPENING TO AVOID EXISTING ROOF STRUCTURE BEAM.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22038 BENJAMIN E. BURKE
5/5/21

PROJECT TITLE
MI CANCUN

115 S. RALEIGH ST.
ANGIER, NORTH CAROLINA

PROJECT NO.
0000

DRAWING TITLE
HVAC PLAN – NEW WORK

M3

PLOT DATE 5/5/2021

PLAN REVISIONS

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.

G. Kitchen exhaust hood exhaust air ductwork shall be shall have all welded seams. Ducts shall meet all requirements of NCSBC, Mechanical Code, Section 506. Minimum thickness of steel ducts shall be 16 gauge steel and 18 gauge for stainless steel.

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. Duct detectors are not required since units 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.

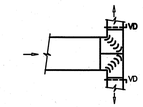
B. The manual shall be bound, indexed, dated and signed by the HVAC Contractor.

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.

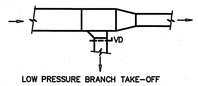
3.5 GUARANTEE

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.

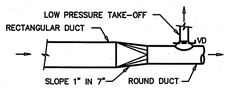
B. All air flows must be measured and balanced to within 10% of design airflows. All equipment used must have a current certification. Provide two copies of the balance report to the owner at closeout. The HVAC contractor shall return and re–balance to occupant comfort after 90 days from close–out
Provide 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.



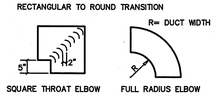
LOW PRESSURE TEE



LOW PRESSURE BRANCH TAKE–OFF



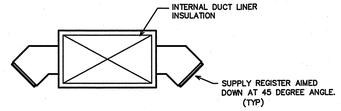
RECTANGULAR TO ROUND TRANSITION



SQUARE THROAT ELBOW FULL RADIUS ELBOW

LOW PRESSURE DUCT ELBOWS

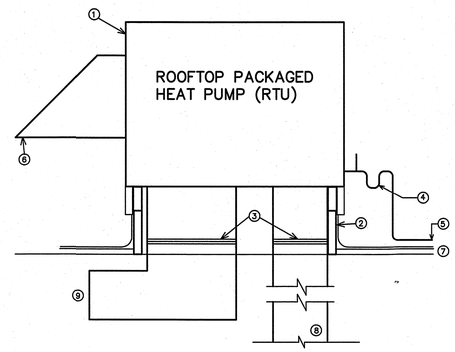
4 DUCT CONSTRUCTION DETAIL
SCALE: NOT TO SCALE



NOTE:

ALL EXPOSED DUCT SHALL HAVE DUCT LINER INSULATION.
ALL EXPOSED DUCT SHALL HAVE "PAINT–GRIP" GALVANIZED FINISH.
FINAL PAINTING BY GENERAL CONTRACTOR.

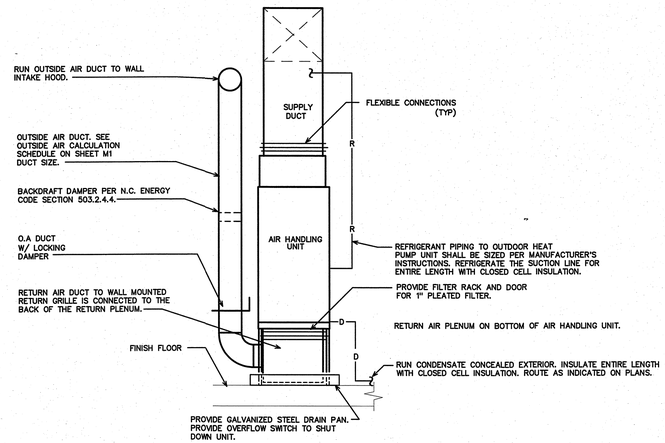
3 DUCT MOUNTED REGISTER DETAIL
SCALE: NOT TO SCALE



KEY NOTES FOR 2/M4

1. ROOFTOP SINGLE PACKAGE HEAT PUMP UNIT.
2. ROOF CURB PROVIDED BY HVAC CONTRACTOR FOR ROOF TOP UNIT. ALL ROOF WORK SHALL BE DONE BY LICENSED ROOFING CONTRACTOR HIRED BY THE HVAC CONTRACTOR.
3. FLEXIBLE CONNECTIONS
4. PROVIDE CONDENSATE DRAIN TRAP. SIZE PER MANUFACTURERS RECOMMENDATIONS.
5. CONDENSATE DRAIN. RUN TO ROOF.
6. OUTSIDE AIR HOOD. SET DAMPER TO PROVIDE SCHEDULED MIN. OUTSIDE AIR.
7. ROOF SYSTEM. COORDINATE TYPE WITH GENERAL CONTRACTOR. ALL WORK MUST MEET ORIGINAL ROOF WARRANTY REQUIREMENTS.
8. DUCT WORK DROP DOWN INTO SPACE AND CONNECT TO BRANCH DUCT. TRANSITION FROM UNIT CONNECTION SIZES TO DUCT SIZES NOTED ON DRAWING.
9. OPEN END OF RETURN AIR DUCT IN SPACE. INSTALL 1/2" X 1/2" METAL SCREEN OVER OPEN END OF DUCT.

2 ROOF–TOP UNIT DETAIL
SCALE: NOT TO SCALE



1 VERTICAL AIR HANDLING UNIT DETAIL
SCALE: NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23080 BENJAMIN E. BURKE
5/6/21

PROJECT TITLE
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115 S. RALEIGH ST.
ANGIER, NORTH CAROLINA

PROJECT NO.
0000

DRAWING TITLE
HVAC SPECIFICATIONS

M4

PLOT DATE 5/5/2021

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