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HVAC GENERAL NOTES

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT IN STRICT ACCORDANCE WITH APPLICABLE CODES AND STANDARDS, AND PER MANUFACTURER'S DIRECTIONS.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS, LICENSE, INSPECTIONS, APPROVALS, AND FEES.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES BEFORE INSTALLATION OF ANY MATERIALS OR EQUIPMENT.
- THESE DRAWINGS ARE DIAGNOSTIC AND SHOW GENERAL LOCATION AND ARRANGEMENT OF ALL MATERIALS AND EQUIPMENT. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS BUILDING CONSTRUCTION AND ALL OTHER WORK WILL PERMIT.
- DO NOT SCALE DRAWINGS FOR MEASUREMENTS.
- ALL DUCT DIMENSIONS SHOWN ARE INTERIOR DUCT DIMENSIONS.
- ALL PENETRATIONS THROUGH EXTERIOR WALLS & ROOF SHALL BE FLASHED & COUNTERFLASHED IN A WATERPROOF MANNER. (COLOR TO MATCH EXTERIOR).
- SEAL ALL PENETRATIONS OF RATED WALLS WITH FIRE DAMPER, SEALANT MATERIAL APPROVED BY LOCAL CODE.
- ALL SUSPENDED MATERIALS AND EQUIPMENT SHALL BE INDIVIDUALLY SUPPORTED FROM THE BUILDING STRUCTURE. DO NOT SUSPEND ITEMS FROM THE CEILING OR ITS SUPPORT SYSTEM.
- INSTALL ALL CONTROL DEVICES, INCLUDING THERMOSTATS AND SWITCHES, 4'-0" ABOVE FINISHED FLOOR. PROVIDE THE REQUIRED DEVICE(S) FOR ALL SYSTEMS WHETHER LOCATED ON THE PLANS OR NOT.
- LOCATE CEILING DIFFUSERS IN ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS (IF PROVIDED).
- PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND MECHANICAL UNITS FOR MAINTENANCE AND FILTER REMOVAL.
- ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED W/ WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
- ALL SUPPLY AND RETURN DUCT SHALL BE INSULATED. CONCEALED SHEET METAL DUCT MAY BE EXTERNALLY INSULATED WITH MINERAL FIBER BOARD OR BLANKET OR MAY BE INTERNALLY INSULATED WITH DUCT LINER (R-VALUE = 5). THE FIRST 15' FROM THE AIR HANDLER SHALL BE INTERNALLY LINED. INTERNALLY LINED INSULATION SHALL MEET BACTERIOLOGICAL STANDARD ASTM C 665.
- CERTIFIED TEST AND BALANCE CONTRACTOR SHALL BALANCE SYSTEM TO AIR QUANTITIES INDICATED ON PLANS AND PROVIDE OWNER'S REPRESENTATIVE WITH COMPLETE BALANCE REPORT. IF BALANCING DAMPERS ARE NOT PROVIDED IN RETURN DUCTWORK, CONTRACTOR SHALL BALANCE SUPPLY SIDE TO AIR QUANTITIES INDICATED ON PLANS AND SHALL BALANCE OUTSIDE AIR AND RETURN AIR FLOWS AT THE AIR HANDLER TO AIR QUANTITIES INDICATED IN THE SCHEDULE. PROVIDE NEW AIR FILTERS FOR EACH UNIT.
- AS REQUIRED BY LOCAL CODES, MECHANICAL CONTRACTOR SHALL PROVIDE U.L. LISTED FIRE DAMPERS WHERE REQUIRED FOR FIRE PROTECTION REQUIREMENTS OF THE HVAC SYSTEM & THE UL ASSEMBLY.
- PROVIDE 1 YEAR WARRANTY ON ALL EQUIPMENT AND 5 YEAR WARRANTY ON ALL COMPRESSORS.
- ALL INTAKE OPENINGS SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ALL EXHAUST LOCATIONS.

19. REFER TO APPENDIX B FOR SITE SEISMIC CLASSIFICATION. A COMPLETE SYSTEM OF SEISMIC RESTRAINTS SHALL BE DESIGNED BY MASON INDUSTRIES (OR EQUAL) & SEALED BY THEIR REGISTERED ENGR & INSTALLED BY THIS CONTR. AS REQ'D BY APPLICABLE CODES FOR THE LOCALITY OF THIS PROJECT. SEISMIC RESTRAINTS FOR SEISMIC CLASSES D, E, AND F SHALL BE SUBMITTED TO THE DESIGN PROFESSIONAL FOR REVIEW PRIOR TO INSTALLATION.

20. CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED.

21. ALL MAIN DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. RUNOUTS FROM MAIN BRANCH DUCTS MAY BE FLEXIBLE DUCT CONFORMING TO THE REQUIREMENTS OF UL 181 FOR CLASS I FLEXIBLE AIR DUCTS. MAX 1/2 FLEX PER RUNOUT.

22. THE MECHANICAL CONTRACTOR SHALL PROVIDE REFRIGERANT AND LOW VOLTAGE CONTROL LINES FROM THE CONDENSER TO THE AIR HANDLING UNIT. COORDINATE ROUTING AND INSTALLATION WITH THE GENERAL CONTRACTOR. SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.

23. ELECTRICAL CONTRACTOR TO PROVIDE ALL HIGH VOLTAGE ELECTRICAL WIRING, CONDUIT, DISCONNECT SWITCHES, FUSES, ECT. TO SPLIT SYSTEM UNITS. ALL FINAL ELECTRICAL CONNECTIONS ARE BY ELECTRICAL CONTRACTOR.

24. OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 1/2" FIBERGLASS DUCT WRAP WITH VAPOR BARRIER.

25. REFRIGERANT PIPING, NOT SHOWN ON PLANS, SHALL BE SIZED & INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INSTALLATION INSTRUCTIONS AND LOCAL CODES.

26. MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ALL PENETRATIONS FOR RELIEF HOODS, OUTSIDE AIR HOODS, LOUVERS, AND WALL CAPS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.

27. MECHANICAL CONTRACTOR SHALL PAINT ALL RELIEF HOODS, INTAKE HOODS, LOUVERS, AND VENT CAPS. CONFIRM COLOR WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.

28. SEE PLUMBING SHEETS FOR ALL GAS PIPING INFORMATION AND DETAILS.

29. PENETRATIONS OF RATED WALLS, PARTITIONS AND FLOORS OF NON-COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH NONCOMBUSTIBLE MATERIALS. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E-814.

30. GC SHALL PREPARE ALL EXPOSED DUCT, GRILLES, PIPING, AND UNITS FOR PAINTING. GC WILL BE RESPONSIBLE FOR PAINTING.

31. ALL CUTTING AND PATCHING OF WALLS AND FLOORS FOR MECHANICAL EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

32. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE REQUIRED OPENINGS IN ROOF TRUSSES WITH THE G.C. IN ORDER TO PROVIDE ADEQUATE SPACE, ACCESS AND SUPPORT FOR THE MECHANICAL UNIT.

33. THE GENERAL CONTRACTOR SHALL PROVIDE PLATFORMS AS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL UNIT, AND SUITABLE WALKING SURFACES AND WORKING AREAS FOR ACCESS AND MAINTENANCE. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE REQUIREMENTS FOR THESE ITEMS WITH THE GENERAL CONTRACTOR.

MECHANICAL LEGEND

Xxx	RECTANGULAR DUCT	—C—	SIDEWALL DIFFUSER/GRILLE
Xφ	ROUND METAL DUCT	—C—	CONDENSATE DRAIN
Xφ	FLEX/RIGID ROUND DUCT	XX-N	MECHANICAL EQUIPMENT TYPE XX
	ELBOW WITH TURNING VANES	⊕	T-STAT MOUNTED 46" AFF.
	VOLUME DAMPER	⊙	DUCT SMOKE DETECTOR
	SUPPLY TAP W/ NO VOLUME DAMPER	⊕	MANUAL DAMPER
	SUPPLY DIFFUSER/GRILLE	⊕	LOUVERED DOOR (SEE ARCHITECTURAL DRAWINGS)
	RETURN REGISTER/GRILLE	⊕	3/4" DOOR UNDER CUT
	EXHAUST REGISTER/GRILLE	FD	U.L. FIRE DAMPER W/ ACCESS DOOR
	CEILING EXHAUST FAN	RD	U.L. CEILING RADIATION DAMPER
		FSD	U.L. FIRE-SMOKE DAMPER W/ ACCESS DOOR

GAS UNIT HEATER SCHEDULE

TAG	LOCATION	MOUNTING	CAPACITY MBH	FAN DATA	MANUFACTURER # MODEL NO.	NOTES
UH-1	SERVICE AREA	SUSPENDED	75 INPUT 60 OUTPUT	120 1 60	SPACE REAY PT5U 75	1-7

NOTES:
1. PROVIDE WITH 33CS TEMP/STAT
2. UNIT DISCONNECT
3. U.L. LISTED
4. MOUNT HEATER JUST BELOW BAR JOISTS
5. PROVIDE MOUNTING BRACKET
6. PROVIDE WITH TYPE 'B' DOUBLE WALL FLUE WITH APPROVED VENT CAP
7. PROVIDE PRESSURE REGULATOR

FAN SCHEDULE

UNIT NO.	SERVICE	AREA SERVED	CFM	S.P.	RPM	ARCH. ELEMENT	MOTOR HP # VOLTAGE	MANUFACTURER # MODEL NO.	DRIVE	CONTROL SCHEME	NOTES
EF-1	EXHAUST	TOILET	75 MIN	15"	950	CEILING	29 W0.59A 120V1PH	GREENHECK SP-A-110	DIRECT	A	1-5
EF-2	EXHAUST	EQUIPMENT ROOM	100	0.25"	750	ROOF	1/8 HP 120V1PH	GREENHECK G-065-VG	DIRECT	B	1-4, 6, 7

NOTES:
1. SCREEN
2. BACKDRAFT DAMPER
3. COLORED ARCHITECTURE
4. INTEGRAL DISCONNECT SWITCH
5. SPEED CONTROL FOR BAR FAN
6. PROVIDE PARTER AS REQUIRED
7. PROVIDE WITH FACTORY FLOOR CURB

CONTROL OPTIONS:
A. CONTROL W/ ROOM LIGHTS
B. CONTROL W/THERMOSTAT

ENERGY REQUIREMENTS: MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE
PRESCRIPTIVE PERFORMANCE ENERGY COST BUDGET

CLIMATE ZONE: 3

THERMAL ZONE:
WINTER DRY BULB: 23
SUMMER DRY BULB: 91

INTERIOR DESIGN CONDITIONS:
WINTER DRY BULB: 70
SUMMER DRY BULB: 75
RELATIVE HUMIDITY: 50

BUILDING HEATING LOAD (MBH): 104 MBH
BUILDING COOLING LOAD (MBH): 73 MBH

MECHANICAL SPACING CONDITIONING SYSTEM UNITARY
DESCRIPTION OF UNIT: HEATING EFFICIENCY, COOLING EFFICIENCY, HEAT OUTPUT OF UNIT, COOLING OUTPUT OF UNIT
BOILER: TOTAL BOILER OUTPUT, OVERSIZED, STATE REASON NA
CHILLER: TOTAL CHILLER OUTPUT, OVERSIZED, STATE REASON NA

LIST EQUIPMENT EFFICIENCY: SEE SCHEDULES

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS):
MOTOR HP, MOTOR EFFICIENCY, NUMBER OF POLES, MINIMUM EFFICIENCY, MOTOR TYPE, NUMBER OF POLES: SEE SCHEDULES

DESIGNER'S STATEMENT:
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE N.C.S. ENERGY CODE.
SIGNED: H. Wayne King III
NAME: H. WAYNE KING III, P.E.
TITLE: MECHANICAL ENGINEER

SPLIT SYSTEM GAS FURNACE SCHEDULE

AIR HANDLING UNIT DATA										CONDENSING UNIT													
UNIT TAG	AREA SERVED	MANUF. MODEL	FAN DATA			COOLING			HEAT			ELECTRICAL DATA			UNIT TAG	MANUF. MODEL	TONNAGE	EFF. (SEER)	ELECTRICAL DATA			WEIGHT (LBS) AH/HP	NOTES
			CFM	ESP (WG)	MOTOR HP	OA (CFM)	TOTAL (MBH)	SENS. (MBH)	COIL MODEL #	INPUT (MBH)	OUTPUT (MBH)	VOLTAGE (V/PH)	MCA (A)	MOCP (A)					VOLTAGE (V/PH)	MCA (A)	MOCP (A)		
AH-1	SEE PLAN	TRANE XL05 TUH20120	2000	0.4"	3/4	200	56.0	42.2	TRANE 4TXCD	115.0	112.0	120V1φ	13.5	20	CU-1	TRANE 4TXCD	5.0	14.0	208V1φ	32.0	50	267	1-13

NOTES:
1. COOLING CAPACITIES ARE RATED IN ACCORDANCE WITH ARI STANDARD 210/290 AT 95 DEGREE FARENHEIT AMBIENT OUTDOOR AIR TEMPERATURE, 85 DEGREE FARENHEIT DRY BULB, AND 67 DEGREE FARENHEIT WET BULB ENTERING AIR TEMPERATURE, AND NORMAL AIR QUANTITY LISTED.
2. REFRIGERANT PIPING TO BE SIZED PER TOTAL INSTALLATION EQUIVALENT LENGTH. LONG-LINE APPLICATION TO BE PROVIDED WHENEVER MANUFACTURER RECOMMENDED LENGTHS ARE EXCEEDED, INCLUDING LIQUID LINE SOLENOID VALVES, ACCUMULATOR, ETC. MAXIMUM T.E.L. IS 100'.
3. PROVIDE NEW FILTER IN EACH UNIT AT TURN-OVER TO OWNER.
4. OUTDOOR UNITS SHALL HAVE MINIMUM 14.0 SEER RATING.
5. PROVIDE MANUFACTURERS 7-DAY PROGRAMMABLE AUTOMATIC CHANGE-OVER HEAT/COOL THERMOSTAT. PROGRAM FAN SETTING TO BE 'ON' POSITION DURING PERIODS OF OCCUPATION.
6. PROVIDE A 24V MOTORIZED DAMPER ON FRESH AIR RUN-OUT TO UNIT. DAMPER IS OPEN WHEN FAN IS ENERGIZED.
7. RETURN AIR THROUGH FILTERED GRILLE.
8. ALL ACCESSORIES AND OPTIONS ARE TO BE FACTORY INSTALLED
9. AHU TO USE HORIZONTAL APPLICATION
10. DRAIN CONDENSATE TO HUB DRAIN
11. PROVIDE LOCKABLE COVER OVER THERMOSTAT.
12. PROVIDE COMPLETE PVC COMBUSTION/VENTILATION PIPE KIT PER MFG. REQUIREMENT.
13. CATALOG NUMBERS AND MANUFACTURERS ARE TO INDICATE TYPE AND QUALITY OF UNIT DESIRED. SUBMIT CUTSHEETS OF THESE AND ALTERNATE MANUFACTURERS FOR ARCHITECT AND OWNER APPROVAL PRIOR TO PURCHASE OF ANY UNITS PROPOSED BY THE CONTRACTOR SHALL INCLUDE THE

DIFFUSER SCHEDULE

SYMBOL	CFM	NECK SIZE	MODULE SIZE	FRAME TYPE	PATTERN	DAMPER	MATERIAL	SERVICE	FINISH	MANUFACTURER # MODEL NO.	NOTES
	AS NOTED	AS NOTED	AS NOTED	LAY-IN	4-WAY	YES	STEEL	SUPPLY	NOTE 2	TITUS 25052	1
	AS NOTED	AS NOTED	24x24	SURFACE	4-WAY	YES	STEEL	SUPPLY	NOTE 2	TITUS TDC	1
	AS NOTED	AS NOTED	12x12	LAY-IN	4-WAY	YES	STEEL	SUPPLY	NOTE 2	TITUS TDC	1
	AS NOTED	AS NOTED	AS NOTED	SURFACE	-	YES	STEEL	RETURN	NOTE 2	TITUS 350RL	1

NOTES:
1. DIFFUSER DESIGNATIONS ON PLANS AS FOLLOWED:
DIFFUSER OR NECK: 24x4
AIR QUANTITY: 75
DIFFUSER TYPE AS NOTED ABOVE
2. FINISH TO MATCH/BE ABLE MATCH CEILING OR WALL OR DOOR
3. PROVIDE WITH U.L. LISTED RADIATION DAMPER.

SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE

AIR HANDLING UNIT DATA										HEAT PUMP																	
UNIT TAG	AREA SERVED	MANUF. MODEL	FAN DATA			COOLING			HEAT			AUX.			ELECTRICAL DATA			UNIT TAG	MANUF. MODEL	TONNAGE	EFF. (SEER)	HSPF	ELECTRICAL DATA			WEIGHT (LBS) AH/HP	NOTES
			CFM	ESP (WG)	MOTOR HP	OA (CFM)	TOTAL (MBH)	SENS. (MBH)	TOTAL (MBH)	HEAT (KW)	VOLTAGE (V/PH)	MCA (A)	MOCP (A)	VOLTAGE (V/PH)	MCA (A)	MOCP (A)											
AH-2	ELEC. RM.	TRANE 48XWH1624100	800	0.4"	1/2	800	23.2	22.0	23.0	0	208V1	NA	NA	CU-2	TRANE 47XK1624110	2.0	16	9	208V1	16	25	120	1-9				

NOTES:
1. COOLING CAPACITIES ARE RATED IN ACCORDANCE WITH ARI STANDARD 210/290 AT 95 DEGREE FARENHEIT AMBIENT OUTDOOR AIR TEMPERATURE, 80 DEGREE FARENHEIT DRY BULB, AND 67 DEGREE FARENHEIT WET BULB ENTERING AIR TEMPERATURE, AND NORMAL AIR QUANTITY LISTED.
2. REFRIGERANT PIPING TO BE SIZED PER TOTAL INSTALLATION EQUIVALENT LENGTH. LONG-LINE APPLICATION TO BE PROVIDED WHENEVER MANUFACTURER RECOMMENDED LENGTHS ARE EXCEEDED, INCLUDING LIQUID LINE SOLENOID VALVES, ACCUMULATOR, ETC. MAXIMUM T.E.L. IS 100'.
3. PROVIDE NEW FILTER IN EACH UNIT AT TURN-OVER TO OWNER.
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5. OUTDOOR UNITS SHALL HAVE MINIMUM 14.0 SEER RATING.
6. PROVIDE MANUFACTURERS 7-DAY PROGRAMMABLE AUTOMATIC CHANGE-OVER HEAT/COOL THERMOSTAT. PROGRAM FAN SETTING TO BE 'ON' POSITION DURING PERIODS OF OCCUPATION. PROVIDE WITH OUTSIDE TEMPERATURE SENSOR TO LOCKOUT ELECTRIC HEAT WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 60 DEGREE FARENHEIT.
7. RETURN AIR THROUGH FILTERED GRILLE.
8. ALL ACCESSORIES AND OPTIONS ARE TO BE FACTORY INSTALLED.
9. AHU TO USE HORIZONTAL APPLICATION
10. DRAIN CONDENSATE TO HUB DRAIN.
11. PROVIDE LOCKABLE COVER OVER THERMOSTAT.
12. PROVIDE COMPLETE PVC COMBUSTION/VENTILATION PIPE KIT PER MFG. REQUIREMENT.
13. CATALOG NUMBERS AND MANUFACTURERS ARE TO INDICATE TYPE AND QUALITY OF UNIT DESIRED. SUBMIT CUTSHEETS OF THESE AND ALTERNATE MANUFACTURERS FOR ARCHITECT AND OWNER APPROVAL PRIOR TO PURCHASE OF ANY UNITS. INFORMATION ON ALTERNATE UNITS PROPOSED BY THE CONTRACTOR SHALL INCLUDE THE ADD. DETECT ASSOCIATED WITH ACCEPTANCE OF THAT UNIT (OR THE ALTERNATE PACKAGE AS A WHOLE).

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Sheet Title
MECHANICAL SCHEDULES AND NOTES

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