

HVAC GENERAL NOTES

- FURNISH ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETE INSTALLATION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH RECOMMENDED PRACTICE AND LATEST INTERNATIONAL MECHANICAL CODE.
- DO NOT SCALE DRAWINGS. USE ARCHITECTURAL DRAWINGS & REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
- ALL MECHANICAL PERMITS AND INSPECTION FEES SHALL BE OBTAINED AND PAID FOR BY THE MECHANICAL CONTRACTOR.
- MECHANICAL CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR, EFFECTIVE THE DAY THE PROJECT IS ACCEPTED BY THE OWNER. REFRIGERANT COMPRESSORS SHALL BE GUARANTEED FOR FIVE YEARS.
- DRAWINGS ARE DIAGNOSTIC AND MAY NOT SHOW ALL REQUIRED FITTINGS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE TYPE, SIZE AND LOCATION OF ALL AIR DEVICES, DUCTWORK, PIPING AND EQUIPMENT WITH THE CEILING PLAN, LIGHTS, STRUCTURAL ELEMENTS AND OTHER TRADES. CONTRACTOR TO FURNISH AND INSTALL ALL BENDS, OFFSETS, ELBOWS, ETC. AS REQUIRED. VERIFY ALL CLEARANCES PRIOR TO FABRICATING DUCTWORK OR ORDERING EQUIPMENT.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING MATERIALS AND INSTALLING THE WORK IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES.
- DUCTWORK
 - ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS WITH A MINIMUM PRESSURE CLASSIFICATION OF 2", SEAL CLASS C, WITH A MAXIMUM LEAKAGE RATE OF 5%.
 - ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.
 - ALL DUCT DIMENSIONS SHOWN ARE INTERIOR CLEAR DIMENSIONS.
 - PROVIDE A MANUAL BALANCING DAMPER AT ALL SUPPLY AND RETURN BRANCH TAKEOFFS.
 - FLEXIBLE DUCT, IF SHOWN ON DRAWINGS, SHALL BE INSULATED ROUND DUCT WITH AN OUTER GLASS REINFORCED SILVER MYLAR JACKET ENCLLOSING MIN. 1 1/2" THICK GLASS FIBER INSULATION AROUND A CONTINUOUS INNER LINER, AND SHALL CONFORM TO THE REQUIREMENTS OF U.L. 181 FOR CLASS 1 FLEXIBLE AIR DUCTS. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 6 FEET. "R" VALUE SHALL MEET/EXCEED ENERGY CODE (R-8)
 - ALL SHEET METAL DUCTWORK WITHIN 10' OF THE AIR HANDLING UNIT SHALL BE LINED WITH DUCT LINER. ALL REMAINING SUPPLY, OUTSIDE AIR AND EXTERIOR DUCTS SHALL BE EITHER INTERNALLY LINED OR EXTERNALLY INSULATED WITH DUCT WRAP. PROVIDE AN ADDITIONAL 1" OF DUCT WRAP AND AN ALUMINUM JACKET FOR ALL EXTERIOR DUCT.
 - ALL DUCT INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS AND PARTITIONS.
- PIPING
 - CONDENSATE DRAINS SHALL BE SCHEDULE 40 PVC OR TYPE L COPPER WITH SOLDERED JOINTS.
 - REFRIGERANT PIPING SHALL BE TYPE ACR WROUGHT COPPER WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS.
- INSULATION
 - DUCT LINER - FIBROUS GLASS DUCT LINER, MINIMUM 1" THICK WITH R-VALUE TO MEET LOCAL ENERGY CODE, WITH COATED SURFACE EXPOSED TO AIR STREAM. APPLY WITH MECHANICAL FASTENERS AND 100% COVERAGE OF ADHESIVE.
 - DUCT WRAP - MINERAL FIBER BLANKET, MINIMUM 1 1/2" THICK WITH R-VALUE TO MEET LOCAL ENERGY CODE, WITH REINFORCED FOL AND PAPER VAPOR RETARDANT JACKET. APPLY WITH MECHANICAL FASTENERS AND ADHESIVE.
 - INTERIOR CONDENSATE DRAINS - INSULATE WITH 1/2" THICK FLEXIBLE ELASTOMERIC PIPE INSULATION.
 - REFRIGERANT SUCTION LINES - INSULATE WITH 1" THICK FLEXIBLE ELASTOMERIC PIPE INSULATION. PROVIDE ALUMINUM JACKET FOR EXTERIOR INSULATION.
- ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS & ROOF SHALL BE FLASHED & COUNTER-FLASHED IN A WATERPROOF MANNER.
- EXTEND ALL CONDENSATE DRAINS TO SPLASH BLOCK. DRAINS FROM AHU'S SHALL BE TRAPPED. SLOPE 1/8" PER FOOT.
- LOCATE ALL THERMOSTATS AND SWITCHES 4'-0" ABOVE FINISHED FLOOR. FURNISH A THERMOSTAT FOR EVERY DEVICE REQUIRING ONE WHETHER SHOWN ON DRAWINGS OR NOT.
- ALL EQUIPMENT SHALL BE INSTALLED PER CODE & MANUFACTURER'S REQUIREMENTS FOR SERVICE AND ACCESS CLEARANCES.
- ALL EQUIPMENT SHALL BE U.L. LISTED.
- MECHANICAL CONTRACTOR SHALL BALANCE SYSTEM TO AIR QUANTITIES INDICATED ON PLANS AND PROVIDE A COMPLETE BALANCING REPORT IN ACCORDANCE WITH NEBB OR ABC STANDARDS.
- ALL CONTROL WIRING SHALL BE BY MECHANICAL CONTRACTOR.
- PROVIDE A CLEAN SET OF FILTERS FOR ALL AIR HANDLING EQUIPMENT AT SUBSTANTIAL COMPLETION.
- DUCT SMOKE DETECTORS SHALL BE INSTALLED IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS OR DECONTAMINATION EQUIPMENT UPON ACTIVATION THE SMOKE DETECTOR SHALL SHUT DOWN THE AIR HANDLING UNIT. DETECTORS SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. INSTALLED BY THE MECHANICAL CONTRACTOR. ACTIVATION OF A DUCT SMOKE DETECTOR SHALL INITIATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANT ATTENDED LOCATION.
- MAINTAIN A MINIMUM 10'-0" BETWEEN OUTDOOR AIR INTAKES AND EXHAUST FAN DISCHARGE AND PLUMBING VENTS, ETC. FIELD COORDINATE.
- RUN DUCT UP WITHIN STRUCTURE OR THROUGH JOIST WEBS WHERE POSSIBLE & WHERE REQUIRED TO MAINTAIN CEILING HEIGHTS. PROVIDE OFFSETS IN DUCT WHERE REQ'D WITH MAX. 45° ELBOWS. MAKE BRANCH TAPS OFF TOP, SIDES OR BOTTOM AS REQ'D. NO BACK TO BACK 90° ELBOWS ALLOWED.
- ALL EQUIPMENT SHALL BE LABELED ACCORDING TO NUMBERING / IDENTIFICATION SYSTEM ON PLANS.
- PROVIDE 4" THICK CONCRETE PAD FOR ALL GROUND MOUNTED OUTDOOR HVAC UNITS. PADS SHALL BE MINIMUM 6" LARGER THAN UNIT ON ALL SIDES.
- REFRIGERANT PIPING SHALL BE SIZED & INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.

SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE

UNIT DESIG.	TON	AREA SERVED	AIR HANDLING UNIT DATA						HEAT PUMP UNIT DATA										NOTES							
			MANUFACTURER & MODEL #	S.A. CFM	O.A. CFM	E.S.P. (IN.WG)	FAN RPM	ELECTRICAL DATA	AUX. HEATER	WEIGHTS LBS	MANUFACTURER & MODEL #	ELECTRICAL DATA			COOLING CAPACITY			HP HEATING CAPACITY			WEIGHTS LBS					
								FAN HP	FAN VOLT/PH	KW	VOLTAGE															
AH/HP-1	5.0	SEE PLAN	TRANE TEM440C85S1	2,000	500	0.5	BY MFG	3/4	208V/1#	9.6	208V/1#	168	TRANE 4TW440B0A3	208V/3#	21	35	56.8	42.8	14.0 SEER	54.5	34.3	8.2	278	1	7	
AH/HP-2	4.0	SEE PLAN	TRANE TEM440C85A1S	1,600	350	0.5	BY MFG	3/4	208V/1#	9.6	208V/1#	168	TRANE 4TW440B0A3	208V/3#	18	30	46.8	34.0	14.0 SEER	46.0	29.0	8.2	261	1	7	
AH/HP-3	5.0	SEE PLAN	TRANE TEM440C85S1	2,000	500	0.5	BY MFG	3/4	208V/1#	9.6	208V/1#	168	TRANE 4TW440B0A3	208V/3#	21	35	56.8	42.8	14.0 SEER	54.5	34.3	8.2	278	1	7	

NOTES:

- COOLING CAP. RATED IN ACCORDANCE WITH ARI STD. 210/290 AT 95°F AMBIENT OUTDOOR AIR TEMP., 80°F DRY BULB, 67° WET BULB ENTERING AIR TEMP. & NOM. AIR QTY. LISTED.
- PROVIDE 7-DAY, AUTO. CHANGEOVER HEAT/COOL PROGRAMMABLE T'STAT & MATCHING SUBBASE FOR EACH UNIT. THERMOSTAT TO BE HONEYWELL T-7300 OR AS APPROVED BY ENGINEER.
- REFRIG. PIPING TO BE SIZED PER TOTAL INSTALL. EQUIV. LENGTH. LONG-LINE APP. TO BE PROVIDED WHENEVER MFG. RECOMM. LENGTHS ARE EXCEEDED, INCL. LIQ. LINE SOLENOID VALVES, ACCUMULATOR, ETC. MAX T.E.L. IS 100'.
- PROVIDE NEW THROW-AWAY FILTERS FOR EACH UNIT.
- OUTDOOR UNITS SHALL HAVE A MINIMUM 14.0 SEER RATING.
- PROVIDE HEAT PUMP KIT WITH AIR HANDLER.
- PROVIDE WATER LEVEL MONITORING DEVICES TO COMPLY WITH NC MECHANICAL CODE 307.2.3.1

FAN SCHEDULE

UNIT NO.	SERVICE	AREA SERVED	CFM	S.P.	RPM	TYPE & ARRANGEMENT	MIN. MOTOR HP & VOLTAGE	MANUFACTURER & MODEL #	DRIVE	CONTROL SCHEME	REMARKS
EF-1	EXHAUST	SEE PLAN	75	0.25	700	CEILING	20 WATTS 120/1#	GREENHECK MODEL SP-B90	DIRECT	A	1 2 3 4

NOTES:

- SCREEN
- BACKDRAFT DAMPER
- SPEED CONTROLLER
- INTEGRAL DISCONNECT SWITCH

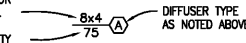
CONTROL OPTIONS:

- CONTROL W/ ROOM LIGHTS

DIFFUSER SCHEDULE

SYMBOL	CFM	NECK SIZE	MODULE SIZE	FRAME TYPE	PATTERN	DAMPER	MATERIAL	SERVICE	FINISH	MANUFACTURER & MODEL NO.	NOTES
(A)	AS NOTED	AS NOTED	24x24	LAY-IN	4-WAY	YES	STEEL	SUPPLY	NOTE 2	TITUS TMS	1
(B)	AS NOTED	AS NOTED	24x24	PERFORATED	4-WAY	NO	STEEL	RETURN	NOTE 2	TITUS PAR	1

NOTES:

- DIFFUSER DESIGNATIONS ON PLANS AS FOLLOWS:
1. DIFFUSER OR NECK SIZE.  DIFFUSER TYPE AS NOTED ABOVE.
- FINISH TO MATCH CEILING OR WALL.

ELECTRIC HEATER SCHEDULE

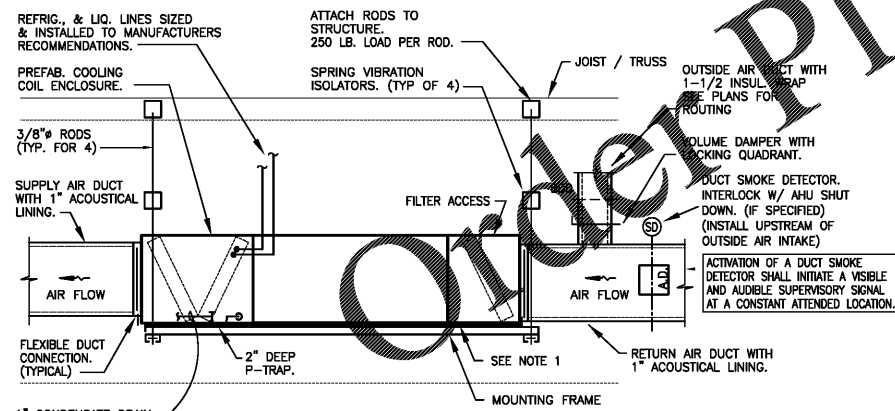
TAG	LOCATION	NO. OF HEATERS	CAPACITY BTUH	ELECTRICAL DATA				MANUFACTURER & MODEL #	NOTES
				W	V	PH	HZ		
EWH-1	STAIR	1	5,120	1,500	120	1	60	MARVEL 3320 SERIES 3323TD-RP	1 - 7

NOTES:

- INTERNAL THERMOSTAT
- WALL/CEILING MOUNT
- DISCONNECT
- SURFACE-MOUNTING
- FIELD MOUNTED DISCONNECT SWITCH - TO BE PROVIDED & INSTALLED BY E.C.
- WALL MOUNTING FRAME TO FIT WALL THICKNESS.

VENTILATION REQUIREMENTS

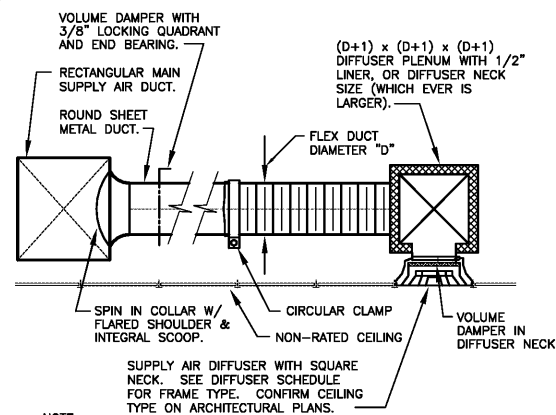
SYSTEM	SPACE	AREA SQ. FT.	ESTIMATED MAXIMUM OCCUPANT LOAD		OCC. (PERSON)	REQUIRED OUTDOOR AIR (CFM/PERSON)	REQUIRED OUTDOOR AIR (CFM/SQ.FT.)	REQUIRED VENTILATION CFM	MIN. OUTSIDE AIR REQUIREMENT(CFM) (REQUIRED/O.8)	PROVIDED TOTAL O.A. (CFM)
			PERSONS PER 1,000 SQ. FT.	PER PERSON						
AH-1	FUTURE TENANT 101	1,583	15	24	7.5	0.12	368	460	500	
AH-2	FUTURE TENANT 202	1,144	15	17	7.5	0.12	266	332	350	
AH-3	FUTURE TENANT 201	1,629	15	24	7.5	0.12	379	473	500	



NOTES:

- AUXILIARY DRAIN PAN WITH MICROFLOAT SWITCH. INTERLOCK FLOAT SWITCH WITH FURNACE. INSTALL FLOAT SWITCH IN ONE CORNER OF PAN AND TILT PAN TO THAT CORNER.
- PROVIDE WATER LEVEL MONITORING DEVICES TO COMPLY WITH NC MECHANICAL CODE 307.2.3.1

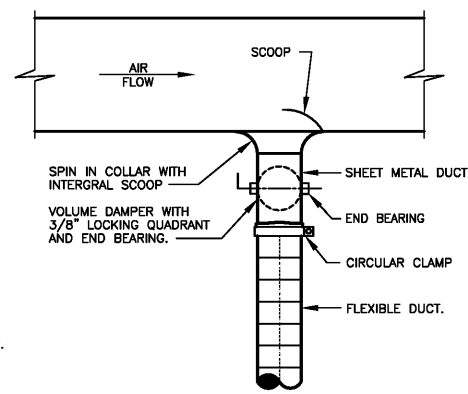
1 HORIZONTAL AIR HANDLING UNIT DETAIL
M-1 N.T.S.



NOTE:

- SEE FLOOR PLANS AND SPECIFICATIONS FOR DUCT INSULATION REQUIREMENTS.
- MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE 6'-0"

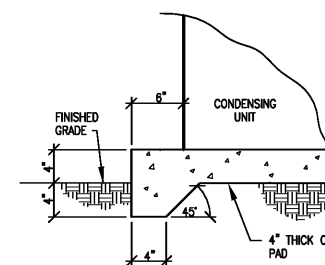
2 SUPPLY AIR DIFFUSER DETAIL
M-1 N.T.S.



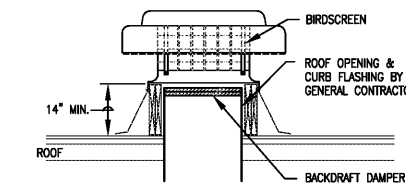
NOTE:

- SEE FLOOR PLANS AND SPECIFICATIONS FOR DUCT INSULATION REQUIREMENTS.

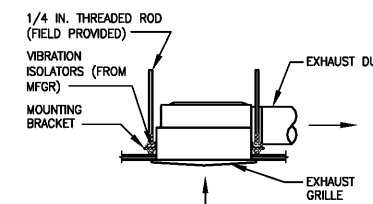
3 ROUND SUPPLY TAP TO SINGLE AIR OUTLET
M-1 N.T.S.



4 GROUND MOUNTED CONDENSING UNIT PAD DETAIL
M-1 N.T.S.



6 GRAVITY ROOF VENT DETAIL
M-1 N.T.S.



5 CEILING EXHAUST FAN DETAIL
M-1 N.T.S.

ENERGY REQUIREMENTS:

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE	ENERGY COST BUDGET
PREScriptive <input checked="" type="checkbox"/>	ENERGY COST BUDGET <input type="checkbox"/>
THERMAL ZONE EXTERIOR DESIGN CONDITIONS WINTER DRY BULB SUMMER DRY BULB INTERIOR DESIGN CONDITIONS WINTER DRY BULB SUMMER DRY BULB RELATIVE HUMIDITY BUILDING HEATING LOAD (BTUH) BUILDING COOLING LOAD (BTUH) MECHANICAL SPACING COOLING SYSTEM UNITARY DESCRIPTION OF ENERGY EFFICIENCY MEASURES HEAT LOSS COEFFICIENT COOLING OUTPUT OF UNIT CHILLER BOILER OUTPUT TOTAL CHILLER OUTPUT LIST EQUIPMENT EFFICIENCIES EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS) MOTOR HORSEPOWER NUMBER OF PHASES MINIMUM EFFICIENCY MOTOR TYPE NUMBER OF POLES 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 NORTH CAROLINA STATE BUILDING CODE.	3A 18 93 72 75 50 99.8 MBH 167.1 MBH SEE SCHEDULES SEE SCHEDULES SEE SCHEDULES SEE SCHEDULES NA NA SEE SCHEDULES SEE SCHEDULES SEE SCHEDULES SEE SCHEDULES SEE SCHEDULES

MECHANICAL LEGEND

	CEILING S.A. DIFFUSER		DOOR UNDERCUT
	CEILING R.A. DIFFUSER		THERMOSTAT/CONTROL
	CEILING EXHAUST FAN		DUCT SMOKE DETECTOR FURNISHED & WIRED BY EC; INSTALLED BY M.C. PER CODE
	RECTANGULAR DUCT	S.A.	SUPPLY AIR
	FLEXIBLE DUCT	R.A.	RETURN AIR
	ROUND RIGID DUCT	A.F.F.	ABOVE FINISHED FLOOR
		C.D.	CONDENSATE DRAIN
		O.A.	OUTSIDE AIR

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REVISIONS

NO.	DATE

Project No: 1923
 Scale:
 Date Drawn: 10/04/19
 Sheet Title: MECHANICAL COVER SHEET

M-1