1. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE NC BUILDING CODE & CONTR. SHALL NOTIFY ENGINEER IN WRITING REGARDING ANY CODE DISCREPANCIES FOUND ON PLANS. CONTR. IS RESPONSIBLE FOR PERMITS, INSPECTIONS AND FEES.

2. SYSTEMS INDICATED ON PLANS ARE DIAGRAMMATIC IN NATURE. CONTRACTOR SHALL PROVIDE NECESSARY HANGERS, FASTENERS ETC. TO PROVIDE A COMPLETE AND WORKING SYSTEM.

3. CONTRACTOR SHALL SEAL ALL DUCTWORK WITH A PAINT ON MASTIC. ALL WALL PENETRATIONS SHALL BE SEALED AIR TIGHT.

4. CONTRACTOR SHALL FIELD MEASURE ACTUAL INSTALLED CONDITIONS AND COORDINATE DUCT SIZES PRIOR TO FABRICATION OR INSTALLATION OF EQUIP. & DUCTWORK.

5. CONTRACTOR SHALL COORDINATE ALL DUCTWORK, DIFFUSER AND GRILLE LOCATION WITH OTHER CEILING MOUNTED DEVICES SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLAN.

6. CONTRACTOR SHALL INSTALL BALANCING DAMPERS IN EACH BRANCH DUCT TO PROVIDE PROPER AIRFLOW TO EACH ZONE.

7. LOCATE THERMOSTATS AND TEMPERATURE SENSORS AT 4'-0" A.F.F. (CENTER OF BOX FOR GYP BRD, TOP OF BOX FOR MASONRY) IN LOCATION INDICATED ON PLANS.

8. ALL DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS.

9. CONTRACTOR SHALL COORDINATE ALL ROOF AND FLOOR PENETRATION LOCATIONS AND SIZES.

10. FABRICATE AND INSTALL ALL DUCT WORK PER SMACNA 1.5" W.C. PRESSURE. ALL ELBOWS SHALL HAVE 1.5R CENTERLINE. ALL DUCT UNDER SLAB SHALL BE FIBERGLASS.

11. ALL FLEXIBLE ROUND DUCT SHALL BE PRE-INSULATED DOUBLE WALLED WITH SPIRAL METAL RIB, AND SHALL HAVE MIN. RESISTANCE VALUE OF R-6. MAXIMUM LENGTH SHALL BE 10'-0" UNLESS SHOWN SPECIFICALLY OTHERWISE IN PLAN. SECURE ENDS WITH NYLON BANDS AND TAPE.

12. ALL SUPPLY AND RETURN DUCT SHALL BE INSULATED WITH A MINIMUM OF 2-3/16"  $\frac{3}{4}$  LB. OR 2" OF 1.0 LB. DENSITY FIBERGLASS WRAP. PIPING INSULATION (REFRIGERANT OR WATER) SHALL BE A MINIMUM OF 1-1/2" THICK OR PER LATEST NC ENERGY CODE, WHICHEVER IS GREATER.

13. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALUMINUM JACKET PROTECTIVE COVERING FOR ALL REFRIGERANT PIPE INSULATION INSTALLED ON THE BUILDING EXTERIOR.

14. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN CONNECTIONS TO HVAC UNITS.

15. PROVIDE AUXILIARY CONDENSATE DRAIN PAN FOR ALL AIR HANDLING UNITS, FAN COIL UNITS, FURNACE WITH COOLING COIL, ETC. CONTRACTOR SHALL PROVIDE AND INSTALL WATER LEVEL FLOAT SWITCH IN AUXILIARY DRAIN PAN. FLOAT SWITCH SHALL SHUT DOWN INDOOR AND ASSOCIATED OUTDOOR UNIT WHEN ACTIVATED. DRAIN PAN OUTLET SHALL BE PIPED TO BUILDING EXTERIOR.

16. CONDENSATE PIPE SHALL BE SCHEDULE 40 PVC OR HARD DRAWN COPPER. INSTALL WITH PROPER SLOPE AND NO SAGS. COPPER PIPE SHALL BE INSULATED WITH 1/2" THICK CLOSED CELL INSULATION. SCHEDULE 40 PVC PIPE SHALL BE INSULATED WITH 1/2" THICK CLOSED CELL INSULATION.

17. ALL DUCTWORK AND PIPING SHALL BE CONCEALED ABOVE CEILINGS, TRUSSES AND SOFFITS EXCEPT IN MECHANICAL ROOMS, UTILITY PLATFORMS AND WHERE NOTED OTHERWISE.

18. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING & CONNECTIONS TO HIS EQUIPMENT. COOR'D. FEEDER AND FUSE SIZES FOR SPECIFIC EQUIPMENT PROVIDED WITH ELECTRICIAN. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL WORK AND EQUIPMENT REQUIRED TO PROVIDE FEEDERS FOR EQUIPMENT THAT EXCEEDS THE AMP RATINGS LISTED IN THE SCHEDULE.

19. ALL GAS PIPE AS SHOWN (INTERIOR OR EXTERIOR) SHALL BE SCHEDULE 40 BLACK STEEL PAINTED OSHA YELLOW OR YELLOW FLEXIBLE STAINLESS STEEL. ALL GAS PIPING SHALL BE LABELED WITH THE TYPE OF GAS AND THE SUPPLY PRESSURE. CONTRACTOR SHALL INSTALL GAS PIPE PER INSTALLATION STANDARD MSS SP-58. M.C. SHALL PROVIDE MAPA PRODUCTS PIPE SUPPORTS WITH E-6000 ADHESIVE.

20. MECHANICAL CONTRACTOR MAY USE ROUND DUCT OF EQUIV. AREA IN LIEU OF RECTANGULAR. COOR'D. ROUND DUCT SIZES W/ ENGR. USE INSULATED DOUBLE WALLED SPIRAL DUCT WITH PAINT GRIP FINISH WHERE DUCT IS TO BE EXPOSED.

21. MECHANICAL CONTRACTOR SHALL PROVIDE ENGR. WITH AN AIR BALANCE REPORT INDICATING INITIAL AND FINAL READINGS AT EACH DIFFUSER AND TOTAL CFM PER UNIT, INCLUDE IN DOCUMENTS PROVIDED TO OWNER AT

22. MECHANICAL CONTRACTOR SHALL LABEL ALL EQUIPMENT WITH ENGRAVED PLASTIC LAMINATE, SCREWED TO PIECE OF EQUIPMENT.

23. CONVENTIONAL FURNACES SHALL HAVE TYPE B VENTS, CONDENSING TYPE SHALL HAVE PVC VENTS.

24. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL CO & NO SENSOR FOR ALL GAS FIRED EQUIPMENT. 25. UNIT CONTROLLER OR PROGRAMMABLE THERMOSTAT SHALL HAVE 7 DAY PROGRAMING, TIMED OVER-RIDE AND THE ABILITY TO RUN FANS IN OCCUP. MODE & CYCLE FANS IN UN-OCCUP. MODE.

26. MECHANICAL CONTRACTOR SHALL CHANGE UNIT FILTERS AFTER EACH TWO WEEKS OF RUN TIME, AND SHALL LEAVE ONE CHANGE OF FILTERS FOR OWNER TO USE FOR NEXT FILTER CHANGE.

27. MECHANICAL CONTRACTOR SHALL NOT ALLOW DUCTWORK TO CONTACT LAY-IN LIGHT FIXTURES. ROUTE ACCORDINGLY.

28. MECHANICAL CONTRACTOR SHALL INSTALL DUCT MOUNTED SMOKE DETECTORS WHERE INDICATED ON PLANS. COORDINATE WITH E.C. IF DUCT DETECTOR IS PROVIDED AS PART OF BUILDING FIRE ALARM SYSTEM. IF NOT, PROVIDE DETECTOR & ASSOCIATED HORN/STROBE ALARM (HONEYWELL RTS2-AOS MULTI-SIGNALING) AS REQUIRED BY N.C. MECHANICAL CODE SECTION 606.4.1. M.C. IS RESPONSIBLE FOR DUCT ACCESS DOORS UNDER ALL CIRCUMSTANCES.

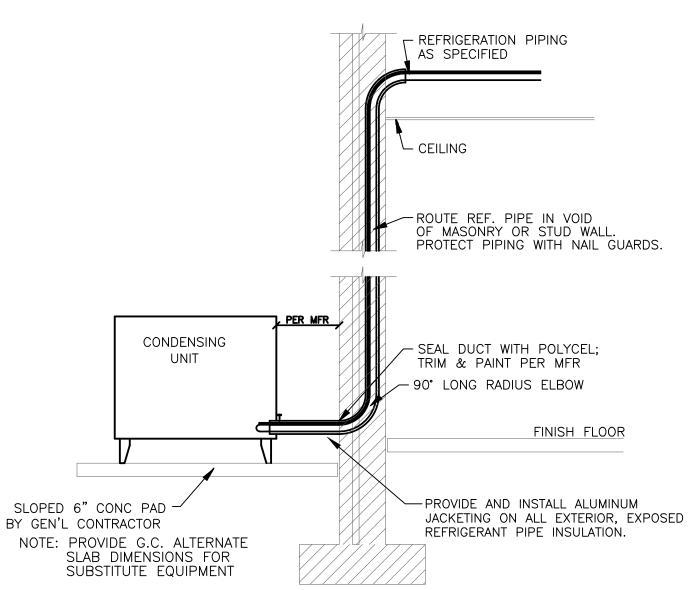
29. PROVIDE HEAT PUMP WITH CONTROLS TO PREVENT HEAT STRIP FROM OPERATING WHEN OUTSIDE AIR TEMP. IS ABOVE 40°F. (C403.2.4.1.1 NCEC)

MARK MIN. MAX. CFM EXT SP. MOTOR HP VOLT/PH MCA MOCP MIN. SHC(MBH) SHC(MBH)

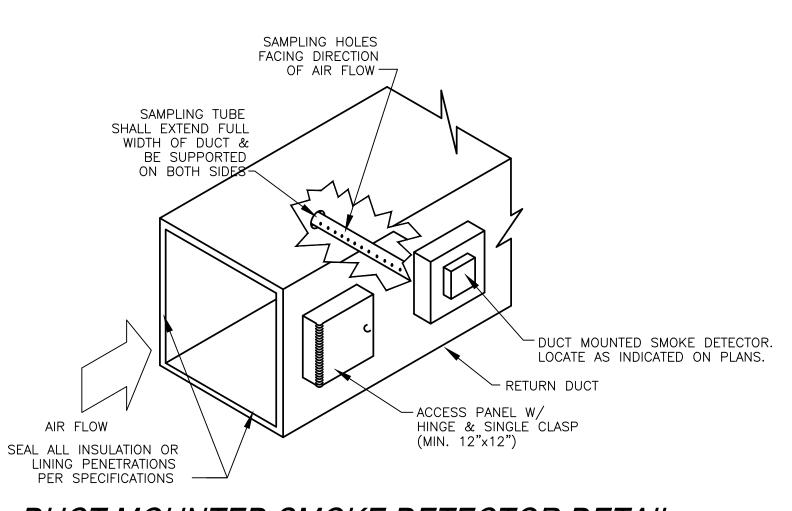
7.5

PROVIDE UNITS WITH MOTORIZED DAMPER OA/RELIEF AND ENTHALPY SENSOR FOR ECONOMIZER.

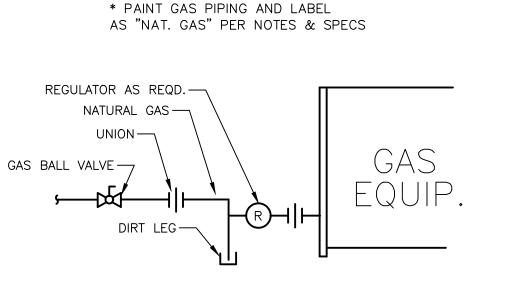
PROVIDE UNITS GP-1 AND GP-2 WITH CO2 SENSOR FOR DEMAND CONTROL VENTILATION.



CONDENSING UNIT INSTALLATION DETAIL



DUCT MOUNTED SMOKE DETECTOR DETAIL



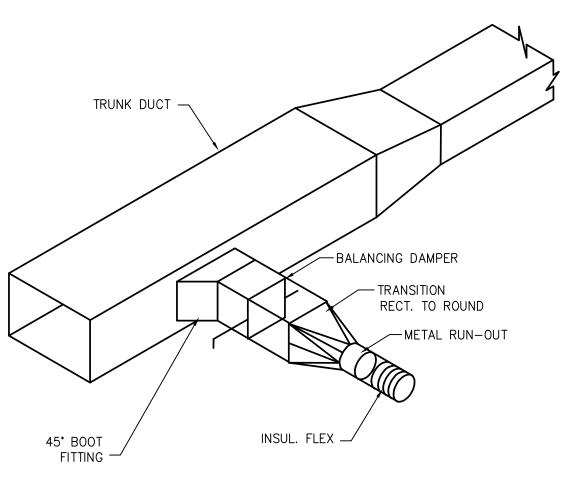
GAS PIPING SCHEMATIC

MIN MBH STAGES OUTPUT OF HEAT AFUE% REMARKS

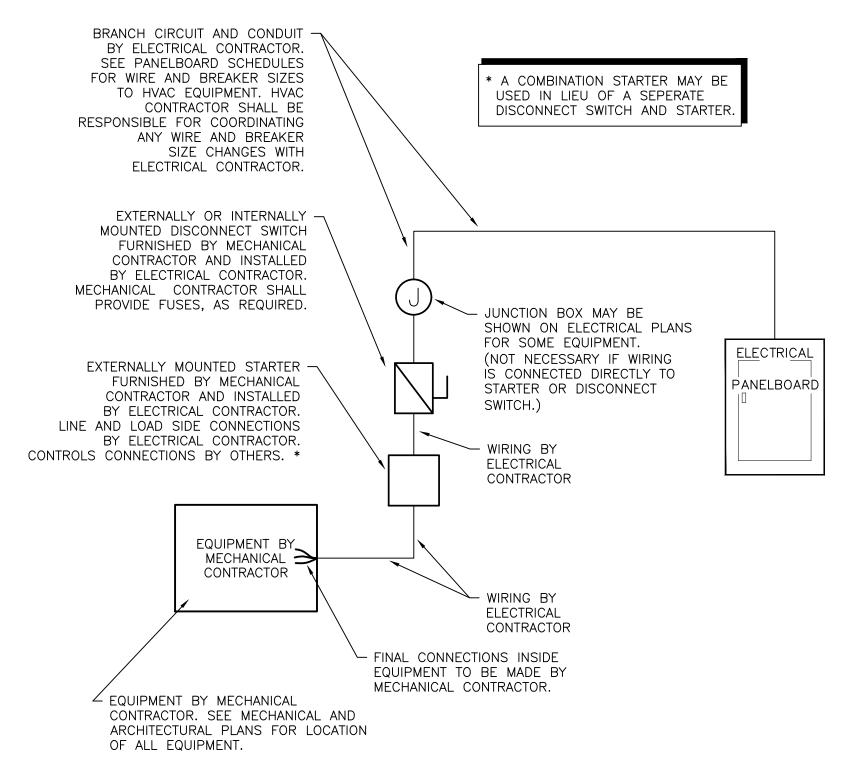
2 81% 1,2,3,4,5

203.0

250.0



LOW PRESSURE BRANCH CONNECTION



MECHANICAL EQUIPMENT **ELECTRICAL CONNECTION DETAIL** SCALE: N.T.S.

VOLT/PH | REMARKS

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE:

PRESCRIPTIVE 🛛 ENERGY COST BUDGET

CLIMATE ZONE: IBC - 3A

THERMAL ZONE WINTER DRY BULB: 18°F SUMMER DRY BULB: 93°F

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

BUILDING HEATING LOAD: 705.6 MBH

BUILDING COOLING LOAD: 1,008.0 MBH MECHANICAL SPACE CONDITIONING SYSTEM

> DESCRIPTION OF UNIT: SPLIT-SYSTEM HEAT PUMP/ GAS PACK HEATING EFFICIENCY: COOLING EFFICIENCY: 14.0 SEER

HEAT OUTPUT OF UNIT: SEE SCHEDULE COOLING OUTPUT OF UNIT: SEE SCHEDULE

TOTAL BOILER OUTPUT: (If oversized, state reason) CHILLER
TOTAL CHILLER OUTPUT: (If oversized, state reason)

LIST EQUIPMENT EFFICIENCIES

EQUIPMENT SCHEDULES WITH MOTORS (Not used for mechanical systems) MOTOR HORSEPOWER:

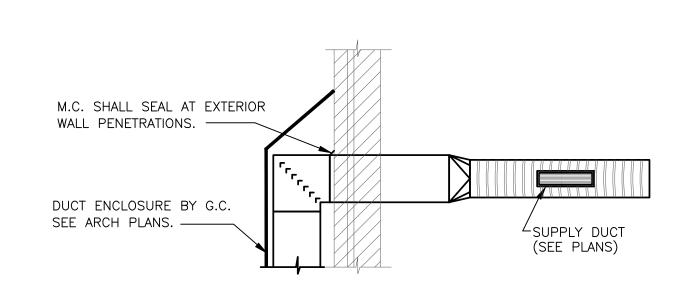
NUMBER OF PHASES: MINIMUM EFFICIENCY: # OF POLES:

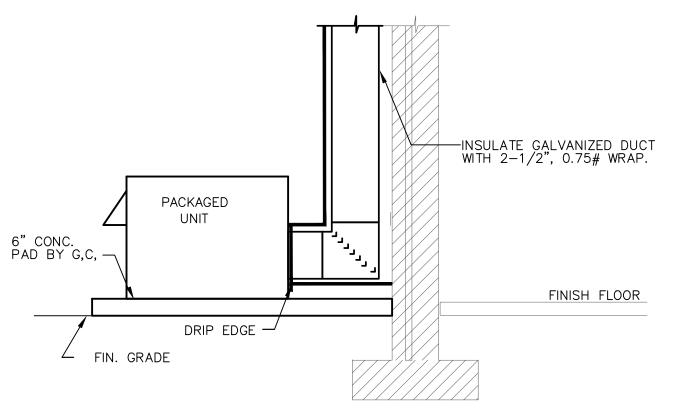
DESIGNER STATEMENT

PRESIDENT

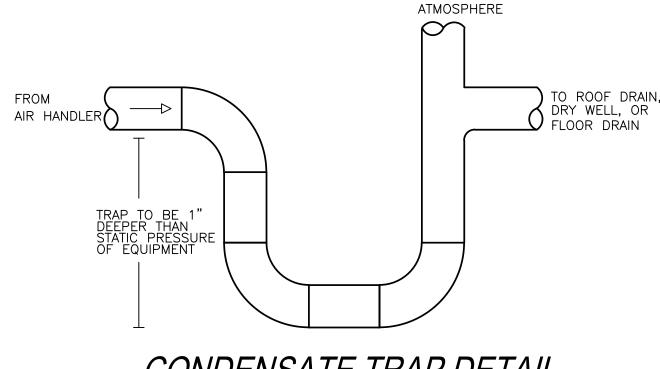
To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2018 North Carolina

energy conservation code. D. WILSON POU, P.E





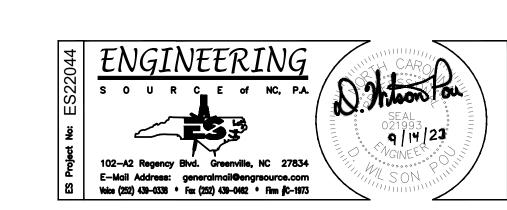
PACKAGED UNIT INSTALLATION DETAIL



CONDENSATE TRAP DETAIL

OPEN TO

LOUVER SCHEDULE										
MARK	SIZE	MANUF.	PD	SERVICE	CFM	MODEL NUMBER				
L-A	60X72	RUSKIN	.05	INTAKE	8,100	ELF81S30				



EF-A	REST ROOM	GREENHECK/SP-A110	EXHAUST	CABINET	75	.125	DIRECT	48.7	120/1	1,2,3	
EF-B	REST ROOM	GREENHECK/SP-A250	EXHAUST	CABINET	225	.125	DIRECT	83.1 224	120/1 120/1	1,2,4	
EF-C	REST ROOM	GREENHECK/SP-A510	EXHAUST	CABINET	450	.125	DIRECT			1,2,5	
1. BACKDRAFT DAMPER. 2. UNIT MOUNTED DISCONNECT SWITCH. 3. ROUTE 6"Ø DUCT TO EXTERIOR WALL, PROVIDE WITH WALL CAP. 4. ROUTE 10"Ø DUCT TO EXTERIOR WALL, PROVIDE WITH WALL CAP.											

FAN SCHEDULE

SERVICE TYPE ASSEMBLY CFM SP (IN. W.G.) DRIVE TYPE WATTS

SPLIT-SYSTEM HEAT PUMP SCHEDULE																
	SUPPLY FAN COOLING											HEATING				
			ESP					STRIP KW					NOM.	NOM.	SEER/	MIN.
MARK	OA	CFM	(IN. W.G.)	FAN HP	VOLT/PH	MCA	моср	@ 208V	MARK	VOLT/PH	MCA	моср	TC (BTUH)	SC (BTUH)	EER	BTUH
AHU-1	250	1,600	.50	1/2	208/3	28.0	30	7.2	HP-1	208/3	18.0	30	48,000	33,600	14.0	24,600
AHU-2	275	1,600	.50	1/2	208/3	28.0	30	7.2	HP-2	208/3	18.0	30	48,000	33,600	14.0	24,600
AHU-3	1,000	4,000	.50	2.0	208/3	49.0	50	10.8	HP-3	208/3	42.0	50	120,000	84,000	12.6 EER	85,051
AHU-4	300	2,000	.50	1.0	208/3	46.0	50	10.8	HP-4	208/3	21.0	35	60,000	42,000	14.0	36,900
AHU-5	225	1,600	.50	1/2	208/3	28.0	30	7.2	HP-5	208/3	18.0	30	48,000	33,600	14.0	24,600
AHU-6	200	1,400	.50	1/2	208/3	28.0	30	7.2	HP-6	208/3	18.0	30	42,000	29,400	14.0	24,600
AHU-7	200	1,400	.50	1/2	208/3	28.0	30	7.2	HP-7	208/3	18.0	30	42,000	29,400	14.0	24,600

1. HEATING AND COOLING CAPACITIES ARE MINIMUM ACCEPTABLE VALUES

. PROVIDE WITH FILTERS AND FILTER FRAMES. 5. PROVIDE WITH SINGLE POINT OF CONNECTION KIT.

|SYMBOL| AREA SERVED |

	DUCTLESS SPLIT-SYSTEM SCHEDULE												
SUPPLY FAN							HEAT PL	COOLING	HEATING				
												MAX.	EFFICIENCY
MARK	CFM	MANUF./MODEL	VOLT/PH	MCA	МОСР	MARK	MANUF./MODEL	VOLT/PH	МСА	моср	TC (BTUH)	TC (BTUH)	SEER
DS-1	455	MITSUBISHI/ PKA-A12LA	208/1	1.0	15	DHP-1	MITSUBISHI/ PUZ-A12NKA7	208/1	11.0	28	12,000	18,000	21.0
DS-2	530	MITSUBISHI/ PLA-A12EA7	208/1	1.0	15	DHP-2	MITSUBISHI/ PUY-A12NKA7	208/1	11.0	28	12,000	18,000	21.0

GAS PACK SCHEDULE

208/3 | 124.0 | 150 | 295.3 | 234.2

PROVIDE UNITS WITH A MINIMUM OF (2) STAGES OF COOLING AND SINGLE ZONE VAV CONTROL FOR DEHUMIDIFICATION IN PART LOAD CONDITIONS.

EER

10.6

FUEL

NATURAL

1. HEATING AND COOLING CAPACITIES ARE MINIMUM ACCEPTABLE VALUES 2. PROVIDE WITH FILTERS AND FILTER FRAMES.

PROVIDE WITH SINGLE POINT OF CONNECTION KIT & "LOW-AMBIENT" KIT. 4. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH E.C. FUSES REQUIRED FOR EQUIPMENT PURCHASED.

5. AMP RATINGS GIVEN ARE MAXIMUM VALUES. 6. ESP INCLUDES .35" FOR DIRTY FILTER ALLOWANCE.

GP-1 900 2,500 9,000 0.75

PROVIDE WITH COIL GUARD OPTION & "LOW-AMBIENT" KIT.

PROVIDE WITH CONTROL TRANS. AS REQUIRED.

. PROVIDE WITH PROG. T'STAT WITH 2 HOUR OVER-RIDE.

ANY WIRING SHALL BE DONE BY A LICENSED ELECTRICAL SUB-CONTRACTOR.

4. "TRANE" AND "LENNOX" EQUIPMENT ACCEPTABLE. 5. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH E.C. FUSES REQUIRED FOR EQUIPMENT PURCHASED. 6. AMP RATINGS GIVEN ARE MAXIMUM VALUES. 7. ESP INCLUDES .35" FOR DIRTY FILTER ALLOWANCE. 8. PROVIDE AHU-3/HP-3 AS SINGLE ZONE VAV, DUAL CIRCUIT, & DUAL COMPRESSORS.

MANUF./MODEL

ar