

HVAC GENERAL NOTES

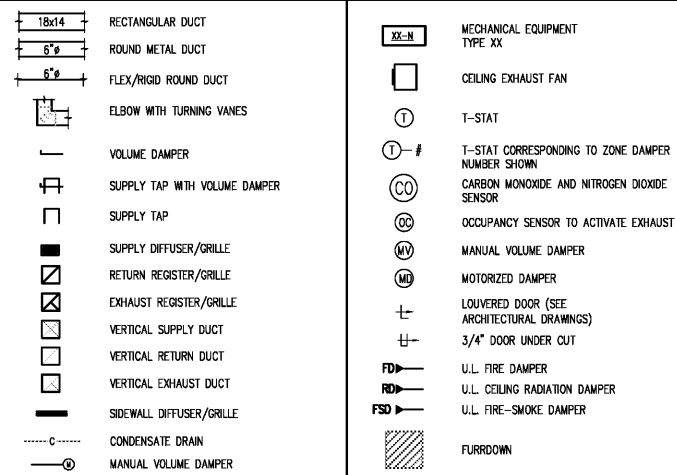
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT IN STRICT ACCORDANCE WITH APPLICABLE CODES AND STANDARDS, AND PER MANUFACTURER'S DIRECTIONS.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS, LICENSE, INSPECTIONS, APPROVALS, AND FEES.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES BEFORE INSTALLATION OF ANY MATERIALS OR EQUIPMENT.
- THESE DRAWINGS ARE DIAGRAMMATIC 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, WITH TOP OF DEVICE 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.
- ALL ACTUATORS ON MOTORIZED DAMPERS, SMOKE DAMPERS, AND FIRE-SMOKE DAMPERS ARE TO BE LOW VOLTAGE UNLESS OTHERWISE NOTED.
- CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED.
- COMMON AREAS - ALL MAIN DUCTWORK SHALL BE DUCTBOARD METAL IN ACCORDANCE WITH SMACNA STANDARDS INSULATED TO R-6, R-8 FOR TOP FLOOR. RUNOUTS FROM MAIN BRANCH DUCTS MAY BE FLEXIBLE DUCT CONFORMING TO THE REQUIREMENTS OF UL 181 FOR CLASS 1 FLEXIBLE AIR DUCTS.
- RESIDENTIAL UNITS ONLY - ALL MAIN DUCTWORK SHALL BE DUCTBOARD IN ACCORDANCE WITH SMACNA STANDARDS. RUN OUTS FOR THE MAIN BRANCH DUCTS MAY BE FLEX DUCT CONFORMING TO THE REQUIREMENTS OF UL 181 FOR CLASS 1 FLEXIBLE AIR DUCTS.
- 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.
- ELECTRICAL CONTRACTOR TO PROVIDE ALL HIGH VOLTAGE ELECTRICAL WIRING, CONDUIT, DISCONNECT SWITCHES, FUSES, ETC. TO SPLIT SYSTEM UNITS. ALL FINAL ELECTRICAL CONNECTIONS ARE BY ELECTRICAL CONTRACTOR.
- OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 1/4" FIBERGLASS DUCT WRAP WITH VAPOR BARRIER.
- REFRIGERANT PIPING, NOT SHOWN ON PLANS, SHALL BE SIZED & INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, INSTALLATION INSTRUCTIONS AND LOCAL CODES.
- MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ALL PENETRATIONS FOR RELIEF HOODS, OUTSIDE AIR HOODS, LOUVERS, AND WALL CAPS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
- MECHANICAL CONTRACTOR SHALL PAINT ALL RELIEF HOODS, INTAKE HOODS, LOUVERS, AND VENT CAPS. CONFORM COLOR WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
- ALL SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK IN ATTIC TO BE INSULATED WITH A MINIMUM OF R-8 PER IBC/NC 2009 SECTION 803.2.8
- 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.
- ALL CUTTING AND PATCHING OF WALLS AND FLOORS FOR MECHANICAL EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.
- 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.
- 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.
- THE MECHANICAL CONTRACTOR SHALL SEAL DUCTS WITH UL 181A OR UL 181B MASTIC.
- COORDINATE ELECTRICAL SERVICE TYPE FOR FIRE-SMOKE DAMPER CONNECTIONS. IF 120V IS USED, ELECTRICAL CONTRACTOR WILL HAVE TO PROVIDE CONNECTION.
- MANUFACTURER'S LABEL INDICATES LEAKAGE IS LESS THAN OR EQUAL TO 2% OF DESIGN AIRFLOW.
- 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 ENGINEER & INSTALLED BY THIS CONTRACTOR AS REQUIRED 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.

FAN SCHEDULE

UNIT NO.	SERVICE	AREA SERVED	CFM	S.P.	RPM	TYPE & ARRANGEMENT	MIN. MOTOR HP & VOLTAGE	MANUFACTURER & MODEL NO.	DRIVE	CONTROL SCHEME	REMARKS
EF-1	EXHAUST	UNITS, TOILETS, AND MAINT.	70 MIN	0.25"	-	CEILING	26 WATTS/0.3 A 120V/1P	AIR KING FRAK90	DIRECT	C	1-4
EF-2	EXHAUST	RESTROOMS	140	0.25"	830	CEILING	100 W/1.3 A 120V/1P	BROAN L150	DIRECT	A	1-4
EF-3	EXHAUST	ELECTRICAL	330	0.25"	905	CEILING	212 W/2.6 A 120V/1P	BROAN L300	DIRECT	B	1-4
GEF-1	EXHAUST	GARAGE	13800/1380	0.5"	1333	SIDEWALL	3 HP 208V/3P	GREENHECK AER-E30C-825-B-VGD	DIRECT	E	1-4, 9, 10
GEF-2	EXHAUST	GARAGE REDIRC.	2688	0.25"	2800	INLINE	1.5 HP 208/3P	GREENHECK GUX-31-160-0834-M15	DIRECT	D	1-4, 6, 11

- NOTES:
- SCREEN
 - BACKDRAFT DAMPER
 - COLOR BY ARCHITECT
 - INTEGRAL DISCONNECT SWITCH
 - SPEED CONTROLLER NEAR FAN
 - PROVIDE AUTOMATIC DISCONNECT/STARTER SIZED PER MANUFACTURER. E.C. TO INSTALL AND WIRE.
 - CORROSION RESISTANT FAN
 - PROVIDE MANUFACTURER'S DAMPER KIT
 - PROVIDE WITH VFD EQUIVALENT TO ABB GROUP ACH550-BDR-059A-2
 - PROVIDE WALL HOUSING AND MOUNT FOR FAN IN GARAGE. VERIFY AND COORDINATE SIZE WITH STRUCTURE.
 - PROVIDE MANUFACTURER'S CEILING MOUNT KIT
- CONTROL OPTIONS:
- CONTROL W/ ROOM SWITCHES
 - CONTROL W/ REMOTE SWITCH
 - CONTROL W/ SWITCH CONTINuously OPERATED
 - INTERLOCKED WITH CO/NO2 SENSOR, MOTION SENSORS, & VFD

MECHANICAL LEGEND



UNIT HEATER SCHEDULE

TAG	LOCATION	MOUNTING	CAPACITY MBH	ELECTRICAL DATA			MANUFACTURER & MODEL NO.	NOTES	
				V	PH	HZ			
UH-1	SEE PLANS	WALL	10.2	3.0	208	1φ	60	MARKEL H3453	1-4
UH-2	SEE PLANS	SUSPENDED	17.1	5.0	208	3φ	60	MARKEL F2F5105N	1-4

NOTES:

- INTERNAL THERMOSTAT
- MOUNT HEATER @ 12" A.F.F.
- UNIT DISCONNECT
- U.L. LISTED

DIFFUSER SCHEDULE

SYMBOL	CFM	NECK SIZE	MODULE SIZE	FRAME TYPE	PATTERN	DAMPER	MATERIAL	SERVICE	FINISH	MANUFACTURER & MODEL NO.	NOTES
(A)	AS NOTED	AS NOTED	AS NOTED	SURFACE	3-WAY	YES	STEEL	RETURN/TRANSFER	NOTE 2	HART & COOLEY 683	1, 2, 3
(B)	AS NOTED	AS NOTED	AS NOTED	SURFACE	-	NO	STEEL	TRANSFER	NOTE 2	HART & COOLEY 650	1, 2
(C)	AS NOTED	AS NOTED	AS NOTED	SURFACE/LAY-IN	4-WAY	YES	STEEL	SUPPLY	NOTE 2	PRICE SMD	1, 2, 3
(D)	AS NOTED	AS NOTED	AS NOTED	SURFACE/LAY-IN	-	NO	STEEL	RETURN/TRANSFER	NOTE 2	PRICE PDDR	1, 2
(E)	AS NOTED	AS NOTED	AS NOTED	SURFACE	-	NO	STEEL	SUPPLY	NOTE 2	PRICE LBP	1, 2

NOTES:

- DIFFUSER DESIGNATIONS ON PLANS ARE AS FOLLOWS:
DIFFUSER OR NECK SIZE: 8x4 (A) 75 (B) 75 (C) 75 (D) 75 (E) 75
AIR QUANTITY: 75 (A) 75 (B) 75 (C) 75 (D) 75 (E) 75
- FINISH TO MATCH / BE ABLE MATCH CEILING OR WALL OR DOOR
- PROVIDE WITH U.L. LISTED RADIATION DAMPER.

DRYER VENT LENGTH SPECIFICATION

ALL ELECTRIC STANDALONE CONFIGURATION GE MODEL: GE GF0N120EDWW 7.0 CU. FT. SUPER CAPACITY FRONT LOAD ELECTRIC DRYER

OF 90° ELBOWS: 0
1 ELBOW: 30 FT
2 ELBOWS: 45 FT

MAX. LENGTH: 90 FT
35 FT
25 FT
15 FT

NEED DRYER SPECS.

ENERGY REQUIREMENTS:

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE: PRESCRIPTIVE PERFORMANCE ENERGY COST BUDGET

CLIMATE ZONE: WINTER DRY BULB / SUMMER DRY BULB

INTERIOR DESIGN CONDITIONS: WINTER DRY BULB / SUMMER DRY BULB / RELATIVE HUMIDITY

BUILDING HEATING LOAD (BTU/H): - MBH

BUILDING COOLING LOAD (BTU/H): - MBH

MECHANICAL SPACE CONDITIONING SYSTEM UNITS

DESCRIPTION OF UNIT: HEATING EFFICIENCY / COOLING EFFICIENCY / HEAT OUTPUT OF UNIT / COOLING OUTPUT OF UNIT

BOILER: TOTAL BOILER OUTPUT, IF OVERSIZED, STATE REASON. NA

CHILLER: TOTAL CHILLER OUTPUT, IF OVERSIZED, STATE REASON. NA

LIST EQUIPMENT EFFICIENCIES: SEE SCHEDULES

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS): MOTOR HORSEPOWER / NUMBER OF PHASES / 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.

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NAME: GREGORY K. ANDREWS, PE
TITLE: MECHANICAL ENGINEER

SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE

UNIT TAG	AREA SERVED	MANUF. MODEL	AIR HANDLING UNIT DATA				ELECTRICAL DATA	HEAT PUMP				NOTES								
			FAN CFM	ESP (WG)	MOTOR (HP)	OA (CFM)		COOLING	HEAT	AUX.	ELECTRICAL DATA		GENERAL DATA	ELECTRICAL DATA						
SEE PLANS	DAIKIN FTK12R6VJU	392	-	-	SEE PLANS	10.8	8.64	13.6	-	208/1φ	HP-1	DAIKIN RXT2R6VJU9	1.0	19.4/10.6	208/1φ	9.1	15	60	1-9, 11, 13, 14	
SEE PLANS	GOODMAN AWUF305	600	0.30"	1/5	SEE PLANS	18.0	13.1	17.4	5.0	208/1φ	HP-2	GOODMAN GS214018	1.5	14/8.2	208/1φ	8.5	15	143	1-10, 12, 14, 17	
SEE PLANS	GOODMAN AWUF31	800	0.30"	1/3	SEE NOTE 13	24.0	18.1	23.6	5.0	208/1φ	HP-3	GOODMAN GS214024	2.0	14.0	208/1φ	14.6	25	183	1-10, 12, 14, 17	
SEE PLANS	GOODMAN AWUF31	1000	0.30"	1/2	SEE NOTE 13	28.8	20.8	28.0	8.0	208/1φ	HP-4	GOODMAN GS214030	2.5	14.0	208/1φ	17.8	30	182	1-10, 12, 14, 17	
SEE PLANS	GOODMAN AWUF31	1200	0.30"	1/2	SEE NOTE 13	28.8	20.8	28.0	8.0	208/1φ	HP-5	GOODMAN GS214036	3.0	14.0	208/1φ	20.2	35	184	1-10, 12, 14, 17	
SEE PLANS	GOODMAN ARUF19	600	0.30"	1/3	SEE NOTE 13	19.0	13.9	18.0	5.0	208/1φ	HP-6	GOODMAN SS2140181A	1.5	14.5	208/1φ	11.8	20	173	1-10, 12-14	
SEE PLANS	GOODMAN ARUF28B14	800	0.30"	1/3	SEE PLANS	24.0	22.2	27.4	8.0	208/1φ	HP-7	GOODMAN GS214024	2.0	14/9	208/1φ	14.6	25	143	1-10, 12, 14, 17	
SEE PLANS	GOODMAN ARUF31B14	1000	0.30"	1/3	SEE PLANS	28.0	25.4	27.8	8.0	208/1φ	HP-8	GOODMAN GS214031	2.5	14/8.5	208/1φ	17.8	30	186	1-10, 12, 14, 16, 17	
SEE PLANS	GOODMAN ARUF49D14	1600	0.30"	1/2	SEE PLANS	44.0	40.4	44.0	10.0	208/1φ	HP-9	GOODMAN GS214048	4.0	14/8.5	208/1φ	24.4	40	237	1-10, 12, 14, 16, 17	
SEE PLANS	GOODMAN ARUF61D14	1800	0.30"	3/4	SEE PLANS	56.5	42.3	56.5	10.0	208/1φ	HP-10	GOODMAN GS214060	5.0	14/8.5	208/1φ	34.3	60	292	1-10, 12, 14, 16, 17	
IU-1	LOBBY	DAIKIN FTQ1202VJU	353	-	-	SEE PLANS	10.8	8.43	13.5	-	208/1φ	OU-1	DAIKIN RKT20M4VJU	1.0	18.9	208/1φ	8.6	15	128	1-9, 11, 13, 14, 18

- NOTES:
- COOLING CAPACITIES ARE RATED IN ACCORDANCE WITH ARI STANDARD 210/290 AT 95°F AMBIENT OUTDOOR AIR TEMP., 80°F DRY BULB, 67°F WET BULB ENTERING AIR TEMP., AND NOMINAL AIR QUANTITY LISTED.
 - 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 SINGLE POINT ELECTRICAL CONNECTION FOR AIR HANDLING UNIT.
 - PROVIDE NEW FILTER IN EACH UNIT AT TURNOVER TO OWNER.
 - OUTDOOR UNITS SHALL HAVE A MINIMUM 14:0 SEER RATING.
 - PROVIDE MANUFACTURER'S HARDWIRED 7-DAY PROGRAMMABLE AUTOMATIC CHANGE-OVER HEAT/COOL THERMOSTAT.
 - PROVIDE HEAT PUMP KIT WITH AIR HANDLER (IF REQUIRED).
 - ALL ACCESSORIES AND OPTIONS ARE TO BE FACTORY INSTALLED.
 - RETURN AIR THROUGH FILTERED GRILLE.
 - AHU TO USE UPFLOW APPLICATION.
 - AHU TO USE HORIZONTAL APPLICATION.
 - DRAIN CONDENSATE TO HUB DRAIN. COORDINATE WITH P.C.
 - OUTSIDE AIR PROVIDED BY NATURAL VENTILLATION AND INFILTRATION.
 - 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/DEDUCT ASSOCIATED WITH ACCEPTANCE OF THAT UNIT (OR THE ALTERNATE PACKAGE AS A WHOLE).
 - PROVIDE AH WITH HIGH STATIC DRIVE AND ALTERNATE MOTOR.
 - PROVIDE WITH BI-POLAR IONIZATION SYSTEM ON RETURN SIDE.
 - PROVIDE A MICRO TSTAT IN CONDENSING UNIT TO CONTROL HEAT STRIPS.

PROJECT: 1915
DATE: 010CT19
DRAWN BY: CME
CHECKED BY: CME
MECHANICAL SCHEDULES, NOTES & LEGEND

M1.1