



ISSUANCES		
No.	Drawing Issue Description	Date
1	ISSUED FOR BD	11/04/19

HVAC ELECTRIC HEATERS							
TAG	MANUFACTURER	MODEL NO.	TYPE	CAPACITY (KW)	MOUNTING HEIGHT (A.F.F.)	WEIGHT (LBS)	ACCESSORIES
EUH A	RAYWALL	AFA	WALL HEATER	1.5	12"	26	1,2,3,6
EUH B	RAYWALL	3380	CEILING HEATER	2.0	CEILING	22	1,2,4,5

NOTES (APPLY TO ALL HEATERS)

- A. ALL HEATERS SHALL BE UL OR ETL TESTED AND LISTED
- B. CAPACITY SCHEDULED IS AT INSTALLED VOLTAGE. COORDINATE WITH ELECTRICAL DWGS
- C. ALL HEATERS SHALL HAVE THERMAL OVERLOAD PROTECTION

ACCESSORIES

- 1. INTEGRAL ADJUSTABLE THERMOSTAT KNOB
- 2. INTEGRAL DISCONNECT SWITCH
- 3. RECESSED MOUNTING KIT
- 4. WALL MOUNTED THERMOSTATIC EMS SENSOR. PROVIDE OPTIONAL RELAYS TO CONNECT TO BUILDING EMS
- 5. ENABLABLE THROUGH AIR CEMS
- 6. PROVIDE WALL MOUNTED THERMOSTATIC EMS SENSOR TO MONITOR SPACE TEMPERATURE

SELECTIONS BASED ON PRODUCTS BY RAYWALL
EQUAL PRODUCTS BY MARKEL, BERKO, QMARK, INDECO

HVAC BIPOLAR IONIZATION						
TAG	MODEL NUMBER	MAX CFM	NO. NEEDLES	PRESSURE SWITCH SETTING	SERVICE	ACCESSORIES
BP 1	GPS-DM48-AC	4800	2	POSITIVE	RTU-1	1,2,3
BP 2	GPS-DM48-AC	4800	2	POSITIVE	RTU-2	1,2,3
BP 3	GPS-DM48-AC	4800	2	POSITIVE	RTU-3	1,2,3

ACCESSORIES

- DUCT MOUNTED - SEE PLANS
 - AIR PRESSURE SWITCH
 - COORDINATE VOLTAGE WITH ELECTRICAL
- A. COMPLETE AIR PURIFICATION SYSTEM, INCLUDING BIPOLAR IONIZATION UNIT, POWER CONTROL WIRING, SAFETY SWITCHES, AIRFLOW SWITCHES, CONTROLS, AND HOUSING SHALL BE UL OR ETL LISTED. EACH ASSEMBLY SHALL BE PROVIDED WITH A BASE PLATE, 1/4 GAUGE GALV. STEEL, WITH PRE-DRILLED MOUNTING HOLES.
- INSTALLATION SHALL BE INSPECTED AFTER COMPLETION BY MFG.'S REPRESENTATIVE AND REPORT SUBMITTED.
- SELECTIONS AREA BASED ON PRODUCTS BY: GLOBAL PLASMA SOLUTIONS.
- ALTERNATE ACCEPTABLE MANUFACTURERS: PLASMA AIR
- B. IONIZATION UNITS SHALL BE SIZED TO COMPLY WITH ASHRAE 62.1-2004 AND SHALL MAINTAIN A CONCENTRATION OF NEGATIVE IONS AT A LEVEL OF 500 TO 1500 IONS PER CUBIC CENTIMETER IN THE PRIMARY SPACE SERVED BY THE DEVICE
- C. IONIZATION UNIT SHALL BE UL LISTED OR ETL LISTED FOR INSTALLATION IN A RETURN AIR PLENUM.
- D. INSTALL IONIZATION UNITS IN SUPPLY FAN INLET OR IN SUPPLY AIR DUCTWORK IN ACCESSIBLE LOCATION.
- E. CALCULATIONS FOR SIZING THE IONIZATION UNITS SHALL BE BASED ON THE USE OF THE SPACE AND ANY UNUSUAL ODOR PROBLEMS SUCH AS IN WEIGHT ROOMS, LOCKER ROOMS, & COSMETOLOGY LABS.
- F. PROVIDE IONIZATION UNITS FOR ALL WHIPS AND RTUS.
- G. PROVIDE IONIZATION UNITS AS FOLLOWS:
G.1. GPS-HV / GPS-241Z: UP TO 2400 CFM, BAS CONTACT, DUCT MOUNTED, 24V. (PROVIDE DOUBLE CAPACITY PER LOCKER / WEIGHT RM UNITS, TRIPLE ON COSMETOLOGY)
G.2. GPS-FC-3-BAS: UP TO 3200 CFM, BAS CONTACT, FAN INLET MOUNTED, 24V. (PROVIDE DOUBLE CAPACITY PER LOCKER / WEIGHT RM UNITS, TRIPLE ON COSMETOLOGY)
G.3. TIVO GPS-FC-3-BAS: UP TO 1600 CFM, BAS CONTACT, FAN INLET MOUNTED, 24V.
G.4. GPS-BAR: ABOVE 6400 CFM, BAS CONTACT, MOUNTED ABOVE THE FILTERS AT THE TOP OF THE COOLING COIL, BAR IS FULL WIDTH OF THE COOLING COIL, 120V OR 208V/1.

HVAC FANS												
TAG	MANUFACTURER	MODEL	TYPE	DUTY	CFM	ESP (IN WG)	MOTOR SIZE (HP)	RPM	DRIVE	SONES	WEIGHT (LBS)	ACCESSORIES
EF 1	GREENIECK	SP-B150	CC	EXHAUST	100	0.25	128 W	708	D	0.6	11	1,2,3,4,5,6
EF 2	GREENIECK	SP-B150	CC	EXHAUST	100	0.25	128 W	708	D	0.6	11	1,2,3,4,5
EF 3	GREENIECK	BSQ-140-S	LC	EXHAUST	1075	0.5	1/2	1221	B	12.4	107	2,5,7,8,9,10

NOTES

- A. REFER TO DETAILS FOR ADDITIONAL OPTIONS, ACCESSORIES, MOUNTING ARRANGEMENT, ETC
- B. WEIGHTS INCLUDE ACCESSORIES, CURBS, MOTORS, ETC
- C. FANS SHALL BE CERTIFIED AND BEAR THE HV-2100 OR AMCA LABEL FOR AIR AND SOUND PERFORMANCE

ACCESSORIES

- 1. QUANTITY BACKDRAFT DAMPER
- 2. DISCONNECT SWITCH
- 3. MANUFACTURER'S STANDARD WALL CAP
- 4. WIRE TO WALL LIGHT SWITCH
- 5. PROVIDE RELAY TO CONNECT TO BUILDING EMS FOR START/STOP
- 6. SPEED CONTROLLER FOR BALANCING PURPOSES (FOR MOUNTING BY ELECTRICAL)
- 7. FAN CONTROLLER BY EMS SCHEDULE
- 8. PROVIDE SPRING TYPE VIBRATION ISOLATORS AND SUSPENSION KIT
- 9. AUTOMATIC BELT TENSIONER
- 10. WALL EXHAUST LOUVER

FAN TYPES

- | | |
|---------------------------------|--|
| CC - CEILING CENTRIFUGAL | CA - WALL MOUNTED (REFER TO ELECTRICAL DWGS) |
| CAB - IN LINE CABINET | CB - WALL MOUNTED THERMOSTAT |
| CD - ROOF CENTRIFUGAL DOWNBLAST | CC - STAIRWELL TOP SWITCH WITH INDICATOR LIGHT |
| RDJ - ROOF CENTRIFUGAL UPBLAST | CD - INTERLOCK WITH BASTIMELOCK |
| WC - WALL CENTRIFUGAL | DE - INTERLOCK WITH MOTORIZED DAMPER/COMBINATION LOUVER |
| LC - IN LINE CENTRIFUGAL | CF - SWITCH ON FACE OF KITCHEN HOOD |
| WP - WALL PROPEL | CG - DOOR SWITCH (JAMS MOUNTED) |
| TA - THROUGH THE ROOF | CH - VARIABLE FREQUENCY DRIVE |
| TR - THROUGH THE ROOF | CJ - COX2 GAS MONITORING AND CONTROL SYSTEM |
| UCF - UNDER CABINET FAN | CK - HYDROGEN GAS MONITORING AND CONTROL SYSTEM |
| AF - ARCHITECTURAL FAN | CL - WALL MOUNTED HUMIDITY SENSOR (DEWSTOP MODEL FS-300) |
| FS - FAN SPEED CONTROLLER | CM - INTERLOCK WITH |
| MS - MOTOR MOUNTED FAN | CN - CONTINUOUS OPERATION |
| MT - MOTOR MOUNTED FAN | CP - WALL MOUNTED TIMER (20-30 MINUTES LABELED "NICHEN VENTILATION") |
| | CQ - INTERLOCK WITH GAS MONITORING SYSTEM/BOILER CONTROLS |
| | CR - INTERLOCK WITH VENTILATION CONTROLLER WITH MOTORIZED DAMPER |
| | CS - OCCUPANCY SENSOR - REFER TO ELECTRICAL DWGS |

UNLESS NOTED OTHERWISE, SELECTIONS ARE BASED ON PRODUCTS BY GREENIECK
EQUAL PRODUCTS: PENN, CARNES, COOPER, INDECO, MOUNTING KIT: INDECO
SCHEDULED PERFORMANCE AND SPECIFICATIONS

HVAC RTU GAS HEAT																									
TAG	MANF.	MODEL NO.	AREA SERVED	SYSTEM TYPE	SUPPLY FAN					NET COOLING				HEATING					ACCESSORIES						
					AIRFLOW (CFM)		MAX MOTOR HP	ESP (IN WC)	CAPACITY (MBH)	EAT (F)		EFFICIENCY	CAPACITY (MBH)		EFFICIENCY	NO. OF CONTROL STAGES	FILTERS MERV RATING	WEIGHT (LB)							
					TOTAL	MIN				TOT	SENS		DB	WB						MAX	MIN	INPUT	OUTPUT		
RTU 1	TRANE	YHC092	GIRLS LOCKER ROOM	CV	2625	920	2.75	1.15	7.5	85.49	61.7	80	67	12.6	15.0	120	96	60	80	-	1	8	1291	1,2,3,4,5,6,7,8,9,11,12,13,14	
RTU 2	TRANE	YHC092	BOYS LOCKER ROOM	CV	2625	1100	-	2.75	1.15	7.5	85.49	61.7	80	67	12.6	15.0	120	96	60	80	-	1	8	1291	1,2,3,4,5,6,7,8,9,11,12,13,14
RTU 3	TRANE	4YCY9224	STORAGE ROOM	CV	800	100	-	0.5	0.75	2	23.32	22.13	80	67	12.0	15.0	60	33.9	65	-	81	2	8	355	1,2,3,4,5,10,12,13,15

NOTES (APPLIES TO ALL UNITS)

- A. SCHEDULED COOLING CAPACITY IS BASED ON THE FOLLOWING OUTDOOR AMBIENT TEMPERATURE:
- B. REFRIGERANT SHALL BE R-410A
- C. ALL RTUS WITH CAPACITIES 7.5 TONS AND HIGHER SHALL BE PROVIDED WITH MULTIPLE COMPRESSORS AND A MINIMUM OF 2 INDEPENDENT REFRIGERANT CIRCUITS
- D. RETURN AND OUTSIDE AIR DAMPERS SHALL BE CLASS 1 LOW LEAKAGE TYPE
- E. PROVIDE DRANKCASE HEATERS ON ALL UNITS 5 TONS AND LARGER
- F. RTUS SHALL BE PROVIDED WITH 2" PLEATED DISPOSABLE FILTERS, MOTORIZED OUTSIDE AIR DAMPER, STAINLESS STEEL HEAT EXCHANGER WITH DIRECT SPARK IGNITION AND 10 YEAR WARRANTY COMPRESSOR ANTI-RECYCLE CONTROLS, SINGLE PDM POWER CONNECTION, COOLING OPERATION DOWN TO 40°F, 14" HIGH INSULATED ROOF CURB. CURBS TO BE SET ON CONCRETE EQUIPMENT PROVIDED BY OTHERS

ACCESSORIES (THIS LIST IS NOT ALL INCLUSIVE. IN ADDITION, PROVIDE MANUFACTURER RECOMMEND ACCESSORIES FOR SAFE AND PROPER OPERATION)

- 14" TALL ROOF CURB (UNIT TO BE GROUND MOUNTED ON CONCRETE EQUIPMENT PAD)
- COMPRESSOR ANTI-RECYCLE CONTROLS
- INSTALL BIPOLAR IONIZATION UNIT IN RTU SUPPLY DUCT OR INSIDE FAN COMPARTMENT
- LOW AMBIENT OPERATION TO 40°F
- PROVIDE SEPARATE DISCONNECT SWITCH FOR INSTALLATION BY DW 26 CONTRACTOR
- INSTALL DUCT SMOKE DETECTOR IN EXTERIOR SUPPLY DUCT. DUCT SMOKE DETECTOR PROVIDED AND WIRED BY DIVISION 26
- HOT GAS RE-HEAT ADAPTIVE DEHUMIDIFICATION SYSTEM. CONTROLS AND WALL MOUNTED HUMIDISTAT BY ALCO
- PHASE MONITORING PROTECTION
- 28" TALL COOLING AND 2 COMPRESSORS
- DIRECT DRIVE FAN
- ECONOMIZER, INTEGRATED DIFFERENTIAL ENTHALPY TYPE, SIZED FOR 100% SUPPLY AIR CAPACITY, CAPABLE OF SIMULTANEOUS ECONOMIZER AND COMPRESSOR OPERATION, WITH BAROMETRIC RELIEF
- CONDENSER COIL HAL GUARDS
- MANUFACTURER STARTUP
- ECONOMIZER TO BE CONTROLLED BY ALCO
- 2 POSITION MOTORIZED OUTSIDE AIR DAMPER

EQUIPMENT SELECTIONS BASED ON PRODUCTS INDICATED. SUBJECT TO COMPLIANCE WITH ALL PRODUCTS, EQUAL PRODUCTS BY CARRIER, TRANE, AAO, LENNOX

SYSTEM DESCRIPTION AND REQUIREMENTS

PROVIDE THE FOLLOWING FEATURES LISTED BELOW FOR THE SYSTEM TYPES IDENTIFIED FOR EACH UNIT

- CV CONSTANT VOLUME, VARIABLE TEMPERATURE. PROVIDE WITH HOT GAS RE-HEAT ADAPTIVE DEHUMIDIFICATION SYSTEM WITH HIGH RE-HEAT COIL, SPACE HUMIDISTAT AND CONTROLS
- CB-VAV CHANGE-OVER BYPASS VARIABLE VOLUME. PROVIDE WITH HOT GAS RE-HEAT ADAPTIVE DEHUMIDIFICATION SYSTEM, BYPASS DAMPER FOR CONSTANT SPEED FAN OPERATION
- SAV STAGED AIR VOLUME FOR RTUS WITH 28" TALL COOLING SHALL CONSIST OF: (1) SPEED ADJUSTABLE INDOOR FAN. FAN SPEED SHALL ADJUST TO MATCH COMPRESSION RATIO. (2) HIGH CAPACITY HOT GAS RE-HEAT ADAPTIVE DEHUMIDIFICATION SYSTEM WITH HUMIDISTAT AND CONTROLS
- SA2-VAV SINGLE ZONE VARIABLE AIR VOLUME (VAV) SYSTEM WITH VARIABLE SPEED DRIVE ON FAN AND INTERNAL CONTROLS TO ALLOW OPERATOR TO OPERATE WITH VARIABLE AIR FLOWS. RTU SHALL OPERATE AT CONSTANT SPEED. OPERATOR TEMPERATURE CONTROL
- MZ-VAV MULTIPLE ZONE VAV SYSTEM. PROVIDE WITH STAGING AS SA2-VAV, BUT FAN SHALL BE CONTROLLED BY SIGNAL FROM DUCT MOUNTED STATIC PRESSURE SENSOR

HVAC DUCTLESS SPLIT SYSTEM HEAT PUMP

TAG (INDOOR)	TAG (OUTDOOR)	MANUFACTURER	MODEL NO. (INDOOR/OUTDOOR)	AREA SERVED	TYPE	TOTAL CFM	TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH)	HP HEAT (MBH)	SEER	HSPF	WEIGHT (INDOOR/OUTDOOR) (LBS)	ACCESSORIES
FCU 1	HP 1	mitsubishi	SLZKFO9NA / SUZKA09NA2	FEMALE COACH	C	265	9.00	7.83	12.00	22.4	12.2	31 / 81	1 - 9
FCU 2	HP 2	mitsubishi	SLZKFO9NA / SUZKA09NA2	HEAD MALE COACH	C	265	9.00	7.83	12.00	22.4	12.2	31 / 81	1 - 9
FCU 3	HP 3	mitsubishi	SLZKFO9NA / SUZKA09NA2	ASSISTANT COACH	C	265	9.00	7.83	12.00	22.4	12.2	31 / 81	1 - 9

NOTES (APPLY TO ALL UNITS)

- A. COOLING CAPACITIES ARE BASED ON AN INDOOR EAT OF 80°F DB/67°F WB AND 95°F AMBIENT
- B. HEAT PUMP HEATING CAPACITY BASED ON AN INDOOR EAT OF 70°F DB AND 47°F ENTERING OUTDOOR UNIT
- C. REFER MINIMUM UNITS WITH R-410A MINIMUM 8.2 HSPF. SUBMIT AIR-CERTIFIED CAPACITIES FOR ACTUAL EQUIPMENT TO BE INSTALLED
- D. REFER TO HVAC GENERAL NOTES AND DETAILS FOR ADDITIONAL INFORMATION
- E. INDOOR AND OUTDOOR UNITS SHALL BE INSTALLED PER PLANS, MANUFACTURER'S RECOMMENDATIONS AND LOCAL CODE REQUIREMENTS
- F. DISCONNECT SWITCH FOR OUTDOOR UNIT BURNISHED BY DW 26, INSTALLED BY DW 26
- G. UNITS SHALL BE EQUIPPED WITH AN INTERNAL CONDENSATE TRAP OR CHECK VALVE

ACCESSORIES (THIS LIST IS NOT ALL INCLUSIVE. IN ADDITION, PROVIDE MANUFACTURER RECOMMEND ACCESSORIES FOR SAFE AND PROPER OPERATION)

- WIRED WALL MOUNT UNIT CONTROLLER
- CONDENSATE PUMP AND SAFETY SWITCH
- COMPRESSOR ANTI-RECYCLE CONTROLS
- FILTER/DRYER PER MANUFACTURER'S RECOMMENDATIONS
- REFRIGERANT LINE SET (VERIFY LENGTH)
- PROVIDE CONCRETE EQUIPMENT PAD FOR OUTDOOR UNIT
- PROVIDE A PAC-75AD TIMER ADAPTOR AND 24 VOLT RELAY TO ALLOW THE UNIT TO BE STARTED AND STOPPED BY THE BUILDING EMS
- PROVIDE INTERCONNECTING POWER WIRING FROM OUTDOOR UNIT TO INDOOR
- LOW AMBIENT CONTROL DOWN TO 0 DEG F AND WIND BAFFLE

SELECTIONS BASED ON PRODUCTS BY MITSUBISHI
EQUAL PRODUCTS BY FUJITSU OR LG

HVAC GRILLES, REGISTERS AND DIFFUSERS

TAG	MANUFACTURER	SERIES	DUTY	NECK SIZE	FACE SIZE	DAMPER	MATERIAL	TYPE	ACCESSORIES
A	TITUS	TMS	SUPPLY	SEE DWGS	24x24	YES	STEEL	SQUARE CONE FACE DIFFUSER	3.5
B	TITUS	300FS	SUPPLY	SEE DWGS	12x12	YES	ALUMINUM	DOUBLE DEFLECTION SUPPLY GRILLE	1.5
C	TITUS	300FS	SUPPLY	SEE DWGS	SEE DWGS	YES	ALUMINUM	DOUBLE DEFLECTION SUPPLY GRILLE	1,2,4
D	TITUS	50F	EXHAUST	SEE DWGS	12x12	YES	ALUMINUM	EGG CRATE FACE GRILLE	2
E	TITUS	350FL	EXHAUST	SEE DWGS	SEE DWGS	YES	ALUMINUM	35° DEFLECTION RETURN GRILLE	1,2,4
F	TITUS	50F	RETURN / TRANSFER	SEE DWGS	24x24	NO	ALUMINUM	EGG CRATE FACE GRILLE	-
G	TITUS	350FL	RETURN / TRANSFER	SEE DWGS	SEE DWGS	NO	ALUMINUM	35° DEFLECTION RETURN GRILLE	1,4

NOTES (APPLY TO ALL AIR DEVICES)

- A. REFER TO ARCHITECTURAL DRAWINGS FOR TYPE OF CEILING AND/OR SUSPENSION SYSTEM
- B. FINISH SHALL BE MANUFACTURER'S STANDARD WHITE, UNLESS NOTED OTHERWISE
- C. FINISH SHALL BE MANUFACTURER'S STANDARD. REFER TO ACCESSORIES NOTES FOR CUSTOM FINISHES, IF ANY. SUBMIT COLOR CHART WITH SHOP DRAWINGS
- D. DRYER MAKE-UP AIR GRILLE SHALL HAVE A MINIMUM OF 120 SQUARE INCHES OF FREE AREA
- E. STEEL CONSTRUCTION AS REQUIRED BY UL INSTALLATION DETAIL FOR GRILLE ACCESS TYPE FIRE/SMOKE DAMPER

ACCESSORIES:
1. 3/4" BLADE SPACING
2. OPPOSED BLADE DAMPER
3. BALANCING DAMPER IN INLET
4. FINISH SHALL BE CUSTOM COLOR SELECTED BY THE ARCHITECT. SUBMIT COLOR CHART WITH SHOP DRAWINGS
5. MOLDED INSULATION (R-8) BLANKET ON BACK PAN

EQUAL PRODUCTS: PRICE, KRUEGER, METAL AIRE, NALOR