

DRAWING ISSUE RECORD		
DATE	REVISIONS	NO.
10/30/18	BID SET	

ROOF-TOP AIR CONDITIONING UNITS																			
UNIT DESIGNATION	RTU-D5E3-4 (R36)	RTU-B5E2-4 (R36)	RTU-A2A1C2C3 (R48)	RTU-A1 (R60)	RTU-A3A5B1 (R60)	RTU-D11 (R60)	RTU-C1 (R12)	RTU-D5D4 (R12)	RTU-D6 (R10)	RTU-A4A5C11 (R120)	RTU-D1 (R14)	RTU-C6D1D9E1E2 (R180)	RTU-B2 (R180)	RTU-B4B5 (R240)	RTU-D4D10 (R360)	RTU-E3-3 (R360)	RTU-C6C1 (R600)	RTU-E1-1, E3-1 (R600)	RTU-E2-1, E2-3, E4-1 (R1200)
MANUFACTURER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER
MODEL NUMBER	48HC04	48HC04	48HC05	48HC06	48HC06	48HC06	48HC07	48HC08	48HC09	48HC12	48HC14	48HC17	48HC17	48HC24	48P2030	48P3030	48P2030	48P3030	48P3060
CONSTANT VOLUME / VARIABLE VOLUME	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	C.V.	V.A.V.	V.A.V.	V.A.V.	V.A.V.
EVAPORATOR FAN PERFORMANCE																			
TOTAL SUPPLY AIR (CFM)	1,200	1,200	1,800	1,990	1,990	1,990	2,400	3,000	3,400	4,000	5,000	6,000	6,000	8,000	9,000	12,000	12,000	18,000	22,000
MINIMUM OUTSIDE AIR (CFM)	120	180	180	200	200	300	360	450	510	600	750	900	900	1,200	1,350	1,200	1,800	2,100	3,300
EXTERNAL STATIC PRESSURE (H ₂ O)																			
FAN MOTOR HORSEPOWER	1/2	1/2	1.0	1.0	1.0	1.0	2.0	2.0	2.0	3.0	3.7	3.7	3.7	5.0	25	25	25	25	40
COOLING PERFORMANCE																			
TOTAL CAPACITY (BTUH)	31,200	31,200	50,400	54,300	54,300	54,300	79,600	93,300	101,600	119,500	148,500	169,400	169,400	244,600	360,000	360,000	600,000	600,000	720,000
SENSIBLE CAPACITY (BTUH)	21,200	21,200	38,100	44,700	44,700	44,700	59,300	72,300	75,600	89,600	108,500	126,500	126,500	181,100	324,000	324,000	540,000	540,000	648,000
ENTERING AIR TEMPERATURE DB/MB (°F)	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	70.5/4	70.5/4	70.5/4	70.5/4	70.5/4
OUTSIDE AMBIENT TEMP (°F)	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
MINIMUM SEER AT ARI CONDITIONS	(15.0) 12.5	(15.0) 12.5	(15.6) 19.0	(15.2) 12.4	(15.2) 12.4	(15.2) 12.4	12.0	12.0	12.0	11.5	12.2	12.0	12.0	12.0	11.2	11.2	11.2	11.2	11.2
HEATING PERFORMANCE																			
HEATING INPUT (BTUH)	72,000	72,000	72,000	115,000	115,000	115,000	125,000	180,000	180,000	180,000	180,000	220,000	220,000	310,000	325,000	--	650,000	--	--
HEATING OUTPUT (BTUH)	54,000	54,000	54,000	49,000	49,000	49,000	109,000	148,000	148,000	148,000	146,000	178,000	178,000	251,000	269,000	--	521,000	--	--
AFLUE (% EFFICIENCY)	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	--	81	--	--
TEMPERATURE RISE (°F)	44	44	34	41	41	41	45	45	40	34	28	27	27	21	20	--	24	--	--
FUEL TYPE	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	--	NATURAL GAS	--	--
ACCESSORIES																			
ADAPTER CURB - IN-LINE, (90° ROTATED)	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	ROTATED	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE	INLINE
ADAPTER CURB W/ VIBRATION ISOLATION	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
SERVICE PLATFORM	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EXISTING RTU MOD. NO. (YORR)	DINH036	DINH036	DINH048	DINH078	DINH060	DINH060	DINH078	DH040	DH102	DH120	DH150	DJ180	DJ180	DJ240	Y18AN	Y18AN	Y18AN	Y18AN	Y18AN
DEHUMIDIFICATION CYCLE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
SLOPED ACCESSORY ROOF CURB	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

NOTE: RTU-A2, C2, C3 ARE 209V-3ph. THE REMAINDER OF THE RTU'S ARE 480V-3ph.

HVAC LEGEND	
SYMBOL	DESCRIPTION
	SUPPLY DUCT
	RETURN OR EXHAUST DUCT
	RECTANGULAR DUCT UP (SUPPLY SHOWN)
	RECTANGULAR DUCT DOWN (SUPPLY SHOWN)
	RECTANGULAR DUCTWORK - 20" SIDE SHOWN x 12" SIDE NOT SHOWN
	DUCTWORK LINED WITH FIBERGLASS DUCT LINER - INSIDE DIMENSION SHOWN
	MITERED ELBOW WITH DOUBLE THICKNESS TURNING VANES
	FULL RADIUS ELBOW
	FLEXIBLE CONNECTION
	FLEXIBLE DUCTWORK
	SPIN-IN FITTINGS WITH SCOOP AND MANUAL DAMPER
	SPIN-IN FITTINGS WITH MANUAL DAMPER
	SPIN-IN FITTINGS WITH SCOOP
	FLAT OVAL DUCTWORK - 20" SIDE SHOWN x 12" SIDE NOT SHOWN
	ROUND DUCT UP
	ROUND DUCT DOWN
	ACCESS PANEL (AP) OR ACCESS DOOR (AD) - ACCESS PANEL SHOWN
	1-1/2 HOUR FIRE DAMPER (UL 555) WITH ACCESS DOOR OR PANEL
	3 HOUR FIRE DAMPER (UL 555) WITH ACCESS DOOR OR PANEL
	SPLITTER DAMPER
	COMBINATION FIRE & SMOKE DAMPER (UL 555S) WITH ACCESS DOOR OR PANEL
	BACK-DRAFT DAMPER WITH ACCESS DOOR OR PANEL
	MANUAL VOLUME DAMPER WITH ACCESS DOOR OR PANEL
	MOTOR OPERATED DAMPER WITH ACCESS DOOR OR PANEL
	DUCT MOUNTED SMOKE DETECTOR -- FURNISHED BY ELECTRICAL, INSTALLED BY HVAC
	REFRIGERANT SUCTION PIPING
	REFRIGERANT LIQUID PIPING
	CONDENSATE DRAIN PIPING
	PIPE TURNING UP
	PIPE TURNING DOWN
	PRESSURE TAP
	SPLIT SYSTEM UNIT CONTROLLER SENSOR
	EHS TEMPERATURE SENSOR
	EHS SPACE HUMIDITY SENSOR
	EHS OUTSIDE LIGHTING OVERRIDE
	ABOVE FINISHED FLOOR
	ABOVE FINISHED GRADE
	ABOVE CEILING
	OUTSIDE AIR
	RETURN AIR
	SUPPLY AIR
	NOT IN CONTRACT
	EXISTING
	WALL OPENING
	THERMOSTAT
	RISE IN DIRECTION OF ARROW
	DROP IN DIRECTION OF ARROW

ROOF-TOP A.C. UNIT (LOW TON)	
UNIT DESIGNATION	RTU-D2D12 (R24)
MANUFACTURER	CARRIER
MODEL NUMBER	48VL-8024
VOLTAGE / PHASE	209V-1
EVAPORATOR FAN PERFORMANCE	
TOTAL SUPPLY AIR (CFM)	700
MINIMUM OUTSIDE AIR (CFM)	70
EXTERNAL STATIC PRESSURE (H ₂ O)	.35
FAN MOTOR HORSEPOWER	1/2
COOLING PERFORMANCE	
TOTAL CAPACITY (BTUH)	23,000
SENSIBLE CAPACITY (BTUH)	16,750
ENTERING AIR TEMPERATURE DB/MB (°F)	80/67
OUTSIDE AMBIENT TEMP (°F)	45
MINIMUM SEER AT ARI CONDITIONS	14.5
HEATING PERFORMANCE	
HEATING INPUT (BTUH)	60,000
HEATING OUTPUT (BTUH)	48,000
AFLUE (% EFFICIENCY)	80
TEMPERATURE RISE (°F)	35
FUEL TYPE	NATURAL GAS
ACCESSORIES	
ADAPTER CURB - IN-LINE, (90° ROTATED)	INLINE
EXISTING RTU MOD. NO. (YORR)	DINH024

DUCTLESS SPLIT SYSTEM UNITS						
UNIT DESIGNATION	FCVHP-1 (24)	FCVHP-2 (24)	FCVHP-3 (12)	FCVHP-4 (24)	FCVHP-5 (36)	FCVHP-1 (30)
MANUFACTURER	MITSUBISHI	MITSUBISHI	MITSUBISHI	MITSUBISHI	MITSUBISHI	MITSUBISHI
FAN-COIL UNIT MODEL NUMBER	MSZ-HM09NA	SLZ-KA09NA	SLZ-KA09NA	FLA-A24EA7	FLA-A24EA7	CEILING CASSETTE
FAN-COIL UNIT TYPE	WALL MOUNTED	CEILING CASSETTE	CEILING CASSETTE	CEILING CASSETTE	CEILING CASSETTE	CEILING CASSETTE
CONDENSING UNIT MODEL NUMBER	--	--	--	--	--	PUY-AB09NA14
HEAT PUMP UNIT MODEL NUMBER	MUZ-HM09NA	SUZ-KA09NA	SUZ-A12NKA1	PUS-HM14KA1	FLS-A36KA1	--
SUPPLY FAN PERFORMANCE						
SUPPLY AIR (CFM)	240	240	360	360	1160	710
EXTERNAL STATIC PRESSURE (H ₂ O)	--	--	--	--	--	--
COOLING PERFORMANCE						
TOTAL CAPACITY (BTUH)	9,000	8,400	12,000	24,000	36,000	30,000
ENTERING AIR TEMPERATURE DB/MB (°F)	80/67	80/67	80/67	80/67	80/67	80/67
OUTSIDE AMBIENT TEMPERATURE (°F)	45	45	45	45	45	45
MIN. SEER AT ARI CONDITIONS	18.0	18.0	18.0	24.2	21.8	13.6
REFRIGERANT LINE SIZE LIQUID/SUCTION	1/4" / 3/8"	1/4" / 1/2"	1/4" / 1/2"	3/8" / 5/8"	3/8" / 5/8"	3/8" / 5/8"
HEATING PERFORMANCE						
HEAT PUMP OUTPUT (BTUH)	10,900	10,900	16,000	26,000	38,000	--
ENTERING AIR TEMPERATURE (°F)	70	70	70	70	70	--
OUTSIDE AMBIENT TEMPERATURE (°F)	47	47	47	47	47	--
HEATING SEASONAL PERFORMANCE FACTOR	8.5	12.8	11.2	10.4	--	--
ACCESSORIES						
WALL-MOUNTED WIRELESS CONTROLLER (PAR-SHIAN)	YES	YES	YES	YES	YES	YES
MAC 3PHI ADAPTER FOR EMS START/STOP	YES	YES	NO	NO	NO	NO
HEAD ADAPTER FOR EMS START/STOP	NO	NO	YES	YES	YES	YES
LOW VOLTAGE CONTROL FOR BASE HEATER	NO	NO	YES	YES	YES	YES
CONDENSATE PUMP						
CEILING MOUNTED SHUT-OFF SAFETY SWITCH	NO	NO	SEE FLANS	NO	NO	NO

EXHAUST FANS							
FAN DESIG.	TYPE	CFM	HT. (FT.)	MOTOR POWER	DRIVE TYPE	MAX. RPM	MANUFACTURER & MODEL NO.
EF-E1	POWER ROOF VENTILATOR	650	25	1/2 HP	DIRECT	1750	PENN DXIIR
EF-E2	POWER ROOF VENTILATOR	1220	25	1/4 HP	DIRECT	1725	PENN DXI3X
EF-T1	POWER ROOF VENTILATOR	1220	125	1/4 HP	DIRECT	1725	PENN DXI3X
EF-T2	POWER ROOF VENTILATOR	480	125	1/2 HP	DIRECT	1550	PENN DXISR

SERIES FAN-POWERED MIXING BOX UNITS										
UNIT DESIG.	PRIMARY AIR VALVE		FAN			HEATER		RADIATED SOUND NC	MANUFACTURER	BOX SIZE - VALVE SIZE
	CFM	MAX. PD (H ₂ O)	CFM	EXT. SP (H ₂ O)	HP	VOLTAGE / PHASE	NO. OF STEPS			
FP2	200	0.1	200	0.30	1/10	2	1	480/36	23	CARRIER 49K2 - 6"6"
FP4	400	0.1	400	0.30	1/10	3	1	480/36	31	CARRIER 49K2 - 6"6"
FP6	600	0.1	600	0.30	1/4	5	2	480/36	33	CARRIER 49K3 - 8"6"
FP10	1000	0.1	1000	0.30	1/4	5	2	480/36	35	CARRIER 49K4 - 10"6"
FP11	1100	0.1	1100	0.30	1/4	8	2	480/36	35	CARRIER 49K4 - 10"6"
FP15	1500	0.1	1500	0.30	1/2	8	2	480/36	36	CARRIER 49K5 - 12"6"
FP16	1600	0.1	1600	0.30	1/2	10	2	480/36	34	CARRIER 49K5 - 12"6"
FP20	2100	0.1	2000	0.30	3/4	14	2	480/36	34	CARRIER 49K6 - 14"6"

- NOTES:
- EXTERNAL STATIC PRESSURE DOES NOT INCLUDE AIR FRICTION PRESSURE DROP ACROSS HEATING COIL OR BOX LOSSES.
 - LINE CASINGS WITH FIBERGLASS INSULATION PROVIDE INTEGRAL FAN DISCONNECT, SINGLE POINT ELECTRICAL CONNECTION, 1" THICK THROWAWAY FILTERS & FILTER FRAMES.
 - BALANCE FAN & VALVE CFM TO CFM SHOWN ON FLANS.
 - RADIATED SOUND IS THE ROOM SOUND PRESSURE EXPRESSED IN NC FOR THE FAN PLUS 100% PRIMARY AIRFLOW CALCULATED USING THE ARI 885-98 TEST CONDITIONS & APPLICATION ASSUMPTIONS.

AIRFLOW MEASUREMENT DEVICES				
DESIG.	SERVES	DUCT SIZE	AIRFLOW (CFM)	MANUFACTURER & MODEL NUMBER
AFM-1-1	ERU-C1 OA SUPPLY	30 x 14	3,000	EBTRON 6TC116-F4
AFM-1-2	ERU-C1 EXHAUST	30 x 14	3,000	EBTRON 6TC116-F4
AFM-2-1	ERU-C2 OA SUPPLY	30 x 14	3,000	EBTRON 6TC116-F4
AFM-2-2	ERU-C2 EXHAUST	30 x 14	3,000	EBTRON 6TC116-F4

ENERGY RECOVERY UNITS	
UNIT DESIGNATION	ERU-C112
SERVES	LOCKER ROOMS
MANUFACTURER	ADDISON
MODEL NUMBER	PROA120B2
MAX HEIGHT W/ ACCESSORIES 4 CURB (LBS)	3200
OUTSIDE AIR SUP	