

MECHANICAL LEGEND	
	POINT OF CONNECTION - NEW TO EXISTING
	ACCESS DOOR
	THERMOSTAT
	HUMIDISTAT
	CARBON DIOXIDE SENSOR
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	CHS - CHILLED WATER SUPPLY
	CHR - CHILLED WATER RETURN
	HWS - HEATING HOT WATER SUPPLY
	HWR - HEATING HOT WATER RETURN
	CD - CONDENSATE DRAIN (COLD)
	PIPE UP
	PIPE DOWN
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	STRAINER WITH BLOWDOWN VALVE
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
	OS&Y VALVE
	CHECK VALVE
	LEVER OPERATED BUTTERFLY VALVE
	GEAR OPERATED BUTTERFLY VALVE
	3-WAY ELECTRIC CONTROL VALVE
	2-WAY ELECTRIC CONTROL VALVE
	VALVE IN RISER (BALL, BUTTERFLY)
	PIPE GUIDE
	CAP ON END LINE
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	PRESSURE GAUGE WITH GAUGE COCK
	THERMOMETER
	FLEXIBLE CONNECTION
	SECTION / ELEVATION REFERENCE
	INDICATES DIRECTION OF SECTION
	SECTION DETAIL NUMBER
	REFERRED SHEET NUMBER
	SUPPLY DIFFUSER/GRILLE LABEL:
	MARK
	THROW PATTERN
	AIRFLOW (CFM)
	RETURN DIFFUSER/GRILLE LABEL:
	MARK
	AIRFLOW (CFM)
	SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	EXHAUST GRILLE
	ROUND DUCTWORK, DIAMETER IN INCHES.
	RECTANGULAR DUCTWORK, SIZE IN INCHES, FIRST NUMBER IS SIDE SHOWN.
	FLAT OVAL DUCTWORK, SIZE IN INCHES, FIRST NUMBER IS MAJOR AXIS (SIDE SHOWN).
	MITERED ELBOW WITH TURNING VANES.
	1.5X RADIUS DUCTWORK ELBOW - ROUND OR RECTANGULAR.
	RECTANGULAR DUCTWORK BRANCH TAKE-OFF WITH 45 DEGREE BRANCH INLET.
	HIGH EFFICIENCY TAP WITH DAMPER.
	FIRE DAMPER / ACCESS DOOR (A/D)
	VOLUME DAMPERS
	MOTORIZED DAMPER

DUCTLESS SPLIT HEAT PUMP, COOLING ONLY															
DESIGNATION	REFERENCE PRODUCT	TYPE	SERVES	AIR FLOW RATE (CFM)	COOLING				ELECTRICAL DATA					REMARKS	
					NOMINAL CAPACITY (TONS)	SENSIBLE/TOTAL CAPACITY		AIR EDB/(EWB, DEG. F)	MINIMUM SEER	INDOOR UNIT		OUTDOOR UNIT			
									VOLTS / PHASE	MCA	VOLTS / PHASE	MCA	MCOP		
DS-1, DS-2, DS-3	TRANE RKA/PUY-A18	WALL MOUNTED	COMM	425	1.5	18.2 / 11.4		80 / 67	18.5	208 / 1	<3	208 / 1	11.4	15	
NOTES: 1. FIELD ROUTE REFRIGERANT LINE SET BETWEEN INDOOR / OUTDOOR UNITS (SIZED PER MANUFACTURER RECOMMENDATION). 2. PROVIDE WALL MOUNT TSTAT, COMPRESSOR SHORT CYCLE PROTECTOR, HIGH AND LOW PRESSURE PROTECTIONS, AND 1-YEAR WARRANTY FOR REFRIGERATION SYSTEM. 3. ELECTRICAL DISCONNECT BY ELECTRICAL CONTRACTOR.															

AIR COOLED CHILLERS																		
DESIGNATION	REFERENCE PRODUCT	TYPE	REFRIGERANT	WEIGHT (LBS)	COOLING DATA				EVAPORATOR FLOW DATA				ELECTRICAL DATA				REMARKS	
					NOMINAL TONS	FULL LOAD CAPACITY (TONS)	AMBIENT AIR TEMPERATURE (DEG. F)	FULL LOAD EER	IPLV / NPLV	DESIGN FLOW RATE (GPM)	PRESSURE DROP (FEET)	MINIMUM FLOW RATE (GPM)	EVAPORATOR EWT/LWT (DEG. F)	VOLTS / PHASE	MCA	MOCP		STARTER TYPE
CH-1	TRANE CGAM	SCROLL	HFC-410A	5,692	80	67.6	95		15.4 / 14.1	200	12.1	64.2	54 / 42	208 / 3	354	400	ACROSS THE LINE	SELECTED WITH 30% PROPYLENE GLYCOL
NOTES: 1. PROVIDE EACH UNIT WITH SINGLE POINT POWER CONNECTION WITH BREAKER DISCONNECT. 2. PROVIDE EACH UNIT WITH COMPRESSOR SHORT CYCLE PROTECTION, LOW PRESSURE CUT OFF SWITCH AND FLOW VERIFICATION. 3. PROVIDE 5 YEAR EXTENDED PARTS WARRANTIES ON ALL REFRIGERANT COMPRESSORS. 4. PROVIDE 110V HEAT TRACE FOR FREEZE PROTECTION. 5. PROVIDE FACTORY REFRIGERANT TERMINATION, SYSTEM CHARGE, AND STARTUP.																		

ELECTRIC UNIT HEATERS												
DESIGNATION	REFERENCE PRODUCT	HEATING SECTION		FAN DATA		ELECTRICAL		OPTIONS				REMARKS
		HEAT INPUT (KW)	HEAT INPUT (BTU/hr)	AIR THROW (FEET)	AIR FLOW (CFM)	STATIC PRESSURE (INCHES W.C.)	VOLTS / PHASE	FLA	THERMOSTAT TYPE	MANUAL FAN SWITCH	DISCONNECT SWITCH	
UH-1, UH-2, UH-3	MARKEL 51 SERIES	3.3	11.2	4	400	---	208 / 1	15.9	WALL	NO	NO	
NOTES: 1. ACCEPTABLE MANUFACTURERS: MARKEL, TRANE, PRE-APPROVED EQUAL. 2. UNIT DISCONNECT PROVIDED BY ELECTRICIAN. 3. PROVIDE UNIT HEATERS WITH HANGING KIT AND WALL MOUNTED THERMOSTAT.												

PUMPS													
DESIGNATION	REFERENCE PRODUCT	LOCATION	TYPE	SERVES	WATER FLOW RATE (GPM)	TOTAL HEAD (FT. WATER)	ROTATION (RPM)	EFFICIENCY AT DESIGN (%)	MOTOR SIZE		ELECTRICAL		REMARKS
									BHP	MHP	VOLTS	PHASE	
HWP-1	PACO 159597LC	MECHANICAL	END SUCTION	HEATING WATER	75	80	1800	65.0	2.4	5	208	3	
SWP-1	PACO 25957LC	MECHANICAL	END SUCTION	SWING PUMP	200	75	1800	77.00	4.9	7.5	208	3	
CHP-1	PACO 25957LC	MECHANICAL	END SUCTION	CHILLED WATER	200	75	1800	77.00	4.9	7.5	208	3	
1. ACCEPTABLE MANUFACTURERS: ARMSTRONG, BELL & GOSSETT, PACO, AND TACO. 2. PROVIDE END SUCTION PUMPS WITH SUCTION DIFFUSER.													

EXPANSION TANKS													
DESIGNATION	REFERENCE PRODUCT	LOCATION	SERVES	TYPE	MINIMUM TEMPERATURE (DEG. F.)	MAXIMUM TEMPERATURE (DEG. F.)	MINIMUM PRESSURE (PSIG)	MAXIMUM PRESSURE (PSIG)	REQUIRED ACCEPTANCE (GAL)	TANK VOLUME (GAL)	TANK DIAMETER (IN.)	TANK HEIGHT (IN.)	REMARKS
ET-1	TACO CA140-125	BASEMENT MECHANICAL	HEATING WATER	DIAPHRAGM	50	180	30	60	15.5	37	16	40	LOCATE ON EQUIPMENT PAD.
ET-2	TACO CA90-125	BASEMENT MECHANICAL	CHILLED WATER	DIAPHRAGM	40	100	30	60	6.5	23	16	29	LOCATE ON EQUIPMENT PAD.
NOTES: 1. ACCEPTABLE MANUFACTURERS: AMTROL, ARMSTRONG, TACO, AND WHEATLEY. 2. COORDINATE EXISTING MAKEUP PRESSURE WITH PRECHARGE OF EXPANSION TANK.													

LOWER SCHEDULE							
DESIGNATION	REFERENCE PRODUCT	TYPE	MAXIMUM AIRFLOW (CFM)	PRESSURE DROP (IN. WATER)	MINIMUM FREE AREA (SQ. FT.)	SIZE W x H (INCHES)	REMARKS
L-1	RUSKIN L6375D	DRAINABLE BLADE	2,500	0.08	4.5	36 x 36	
NOTES: 1. ACCEPTABLE MANUFACTURERS: AMERICAN WARMING, GREENHECK, AND RUSKIN. 2. ALL MOTORIZED DAMPER ACTUATORS SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR. 3. ALL LOUVERS SHALL BE OF ALUMINUM CONSTRUCTION. 4. PAINT / FINISH TO MATCH BUILDING. COORDINATE WITH ARCHITECT.							

HEATING WATER BOILER										
DESIGNATION	REFERENCE PRODUCT	LOCATED	FUEL TYPE	HEATING DATA				ELECTRICAL		REMARKS
				NAT. GAS INPUT (MBH)	HEATING OUTPUT (MBH)	EWT / LWT DEG. F.	WATER FLOW (GPM)	VOLTS / PHASE	AMPS	
B-1	RAYPAK XFIRE 800	MECH	NATURAL GAS	800	768	140 / 120	75	115 / 1	13	6" PVC FLUE. PROVIDE WITH 50 GPM PRIMARY PUMP.
NOTES: 1. NOTE: HEATING OUTPUT IS MAX AND NOT BASED ON OPERATING CONDITIONS. 2. PROVIDE UNITS WITH A MINIMUM OF A 5:1 TURNDOWN, ASME RELIEF, AND DISCONNECT. 3. PROVIDE UNITS WITH FM APPROVED GAS TRAIN AND FACTORY STARTUP. 4. REFER TO CONTROL DRAWINGS AND SPECIFICATIONS FOR CONTROLS REQUIRED. PROVIDE BACNET INTEGRATION MODULE. ⚠										

GRAVITY VENTILATORS										
DESIGNATION	REFERENCE PRODUCT	LOCATION	TYPE	SERVES	VLOUME (CFM)	THROAT WIDTH (INCHES)	THROAT LENGTH (INCHES)	THROAT AREA (SQ. FEET)	THROAT VELOCITY (FT / MIN)	REMARKS
GV-1	COOK 20PR	ROOF	EXHAUST	DRYERS	1,200	20"Ø	---	2.2	550.3	
GV-2	COOK 24TR	ROOF	EXHAUST	RELIEF AIR	2,500	24"Ø	---	3.1	796.2	
1. ACCEPTABLE MANUFACTURERS: ACME, COOK, AND GREENHECK. 2. PROVIDE UNITS WITH ROOF CURB. COORDINATE WITH ROOF TYPE AND PITCH.										

AIR SEPARATORS							
DESIGNATION	REFERENCE PRODUCT	LOCATION	SERVES	TYPE	INLET / OUTLET SIZE (INCHES)	MAXIMUM PRESSURE LOSS (FEET)	REMARKS
AS-1	AMTROL 3-AS	FIRST FLOOR MECHANICAL	HEATING WATER	TANGENTIAL WITH STRAINER	3	5.8	
AS-2	AMTROL 4-AS	FIRST FLOOR MECHANICAL	CHILLED WATER	TANGENTIAL WITH STRAINER	4	4.3	
NOTES: 1. ACCEPTABLE MANUFACTURERS: AMTROL, ARMSTRONG, BELL & GOSSETT, TACO, AND WHEATLEY. 2. PROVIDE WITH HIGH CAPACITY AIR VENT AND MANUAL BLOW DOWN VALVE.							

EXHAUST FANS											
MARK	REFERENCE PRODUCT	TYPE	SERVES	FAN DATA			ELECTRICAL				REMARKS
				AIR FLOW (CFM)	TOTAL STATIC PRESSURE (IN. WATER)	DRIVE	ROTATION (RPM)	SONES	VOLTS / PHASE	MOTOR SIZE (MHP)	
EF-1	COOK 135SQN	IN-LINE	DRYERS	1200	1/4	DIRECT	1,102	8.6	115 / 1	1/8	PROVIDE WITH SPEED CONTROLLER. UNIT SHALL TYPICALLY OPERATE 24/7.
<u>NOTES:</u> 1. ACCEPTABLE MANUFACTURERS: ACME, COOK, GREENHECK, AND TWIN CITY. 2. PROVIDE INLINE FANS WITH ISOLATION HANGER KITS, DISCONNECTS AND FLEXIBLE CONNECTIONS.											



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REPAIR (SUS) ARMEN
DORMITORY BLDG 854

MECHANICAL
SCHEDULES

HS, BD	GC
HS	NKAK 21-1034
GC	
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AS NOTED	83 of 100