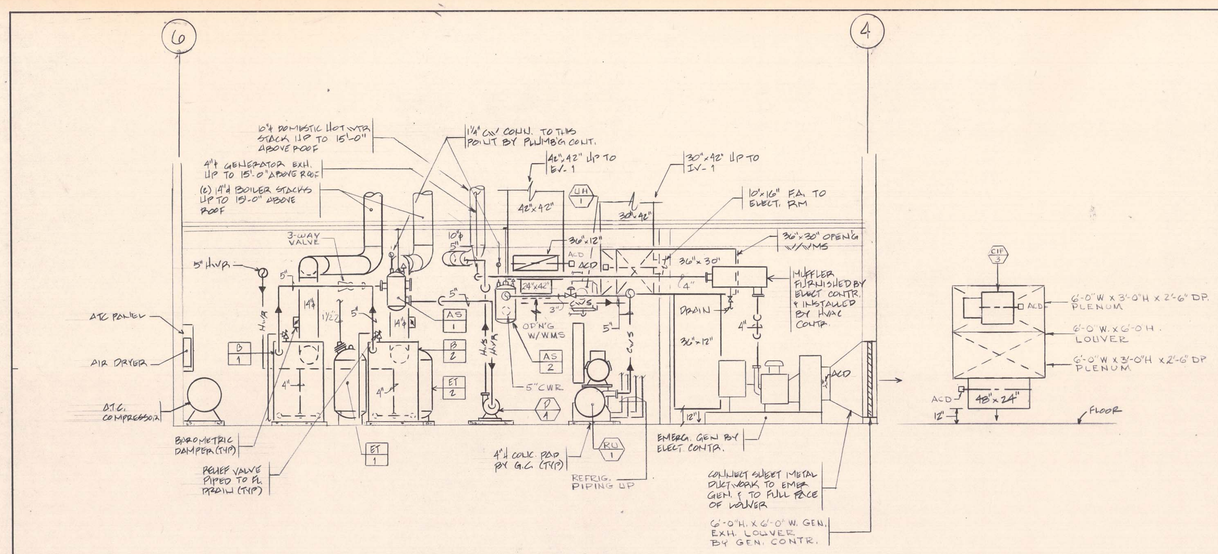
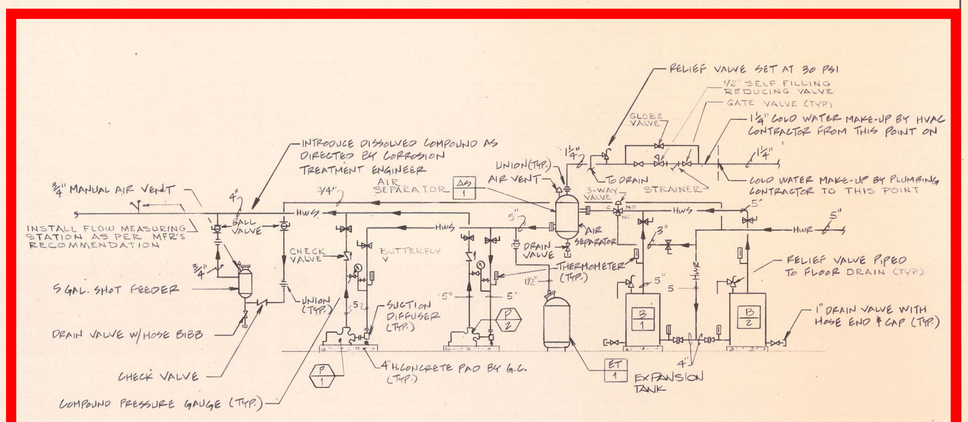
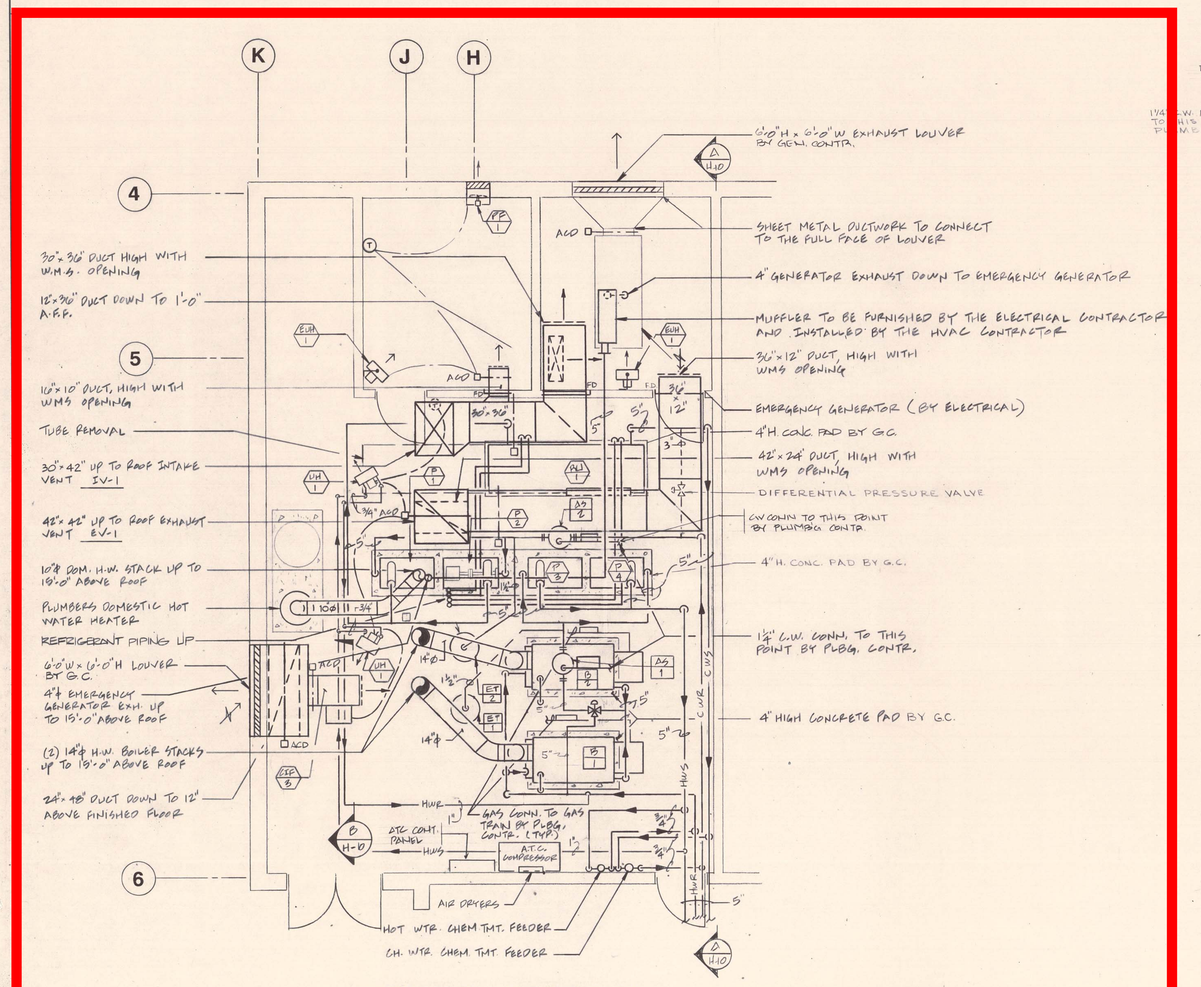


SECTION (A / H-10)
SCALE: 1/4"=1'-0"

SECTION (B / H-10)
SCALE: 1/4"=1'-0"



HOT WATER FLOW DIAGRAM



MECHANICAL ROOM PLAN
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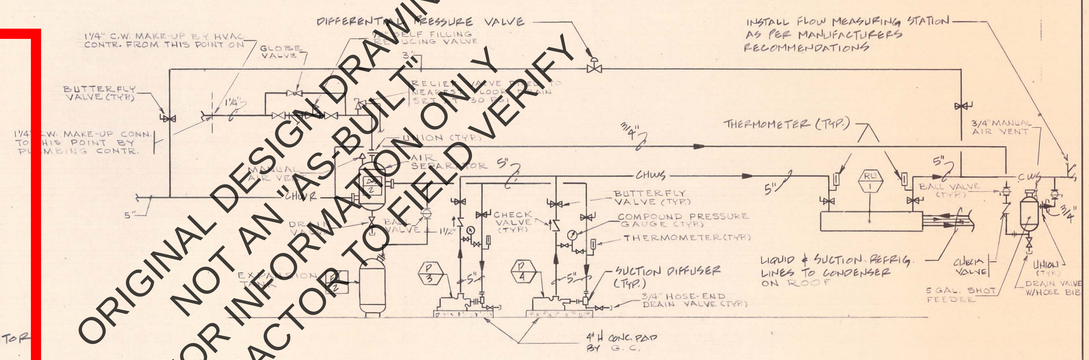
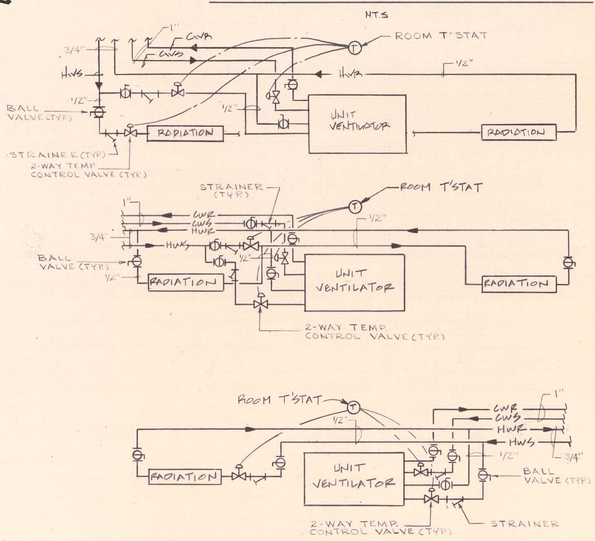


CHILLED WATER FLOW DIAGRAM
NTS



TYPICAL PIPING SCHEMATIC TO UNIT VENTILATOR & RADIATION
N.T.S.

ORIGINAL DESIGN DRAWING
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D·R·A

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Site No. 8

PART PLANS AND FLOW DIAGRAMS

Scale: AS NOTED
Dr. By:
Job No.: 912000
Date: 7-15-91

H-10

HEATING COILS (HOT WATER) — HC

BASED ON 190 F EWT

SYMBOL	CFM	DUCT SIZE W	DUCT SIZE H	AIR SIDE EAT	AIR SIDE LAT	AIR SIDE MAX SP	WATER SIDE GPM	WATER SIDE MAX PD	MBH	REMARKS
HC-1	6000	60"	33"	32°F	75° F	.16	28	.57	280.0	
HC-2	2100	45"	18"	72°F	85°F	.13	3.5	.10	30.0	
HC-3	2185	45"	24	45°F	75° F	.36	7	.10	70.0	

BASED ON TRANE Co.

PUMPS — P

SYMBOL	SERVICE	GPM	HEAD FT.	TYPE	IMPELLER DIAMETER	NPSHR	RPM	MOTOR HP	REMARKS
P-1	H.W. SYSTEM	200	40	END SUCTION	6½"	7'	1750	5	SIZE 4"AC
P-2	H.W. SYSTEM STAND BY	200	40	↓	6½"	7'	↓	5	" "
P-3	C.W. SYSTEM	285	60		8½"	8½'		7½	SIZE 2½"BB
P-4	C.W. SYSTEM STAND BY	285	60		8½"	8½'		7½	" "
P-5	HAV-1 FREEZE PROTECTION	40	17	IN-LINE	4½"	5'		½	SIZE 2"AA

BASED ON B & G

EXPANSION TANK & AIR SEPARATOR — ET & AS

SYMBOL	SERVES	CAPACITY GALLONS	TANK DIMENSIONS	AIR SEPARATOR MODEL NO.	MAX. CAP. GPM	AIR SEPARATOR DIMENSIONS	REMARKS
ET-1/AS-1	H.W. SYSTEM	158	65"H x 30" DIA.	R-5	500	36"H x 16" DIA.	
ET-2/AS-2	C.W. SYSTEM	105	66¼"H x 24" DIA.	R-5	500	36"H x 16" DIA.	

BASED ON B & G.

SOUND ATTENUATORS — ATT

SYMBOL	CFM	DUCT SIZE	LENGTH	MAX P.D. IN. WATER	D.I.L. @ 250 HZ	REMARKS
ATT-1	6000	48"x18"	5'-0"	.10	17	CAFE. SUP. TYPE LFL
ATT-2	3000	20"Ø	3'-0"	.06	21	GYM SUP. TYPE FCL
ATT-3	3750	36"x18"	5'-0"	.08	17	GYM RET. TYPE LFL
ATT-4	200	12"x6"	3'-0"	.07	16	PRACTICE RMS. TYPE S
ATT-5	150	12"x6"	3'-0"	.04	16	PRACTICE RMS. TYPE S

BASED ON IAC

ROOF EXHAUST FAN — REF

SYMBOL	CFM	SP	MIN. FAN DIA.	MAX. TIP SPEED	MAX. BHP	MOTOR HP	TYPE DRIVE	REMARKS
REF-1	4400	.625"	24½	5000	.85	1	BELT	
REF-2	4925	.75"	24½	5500	1.00	1½	BELT	
REF-3	1680	.50"	16½	4150	.25	1/3	BELT	
REF-4	400	.25"	11	3024	—	1/10	DIRECT	
REF-5	350	.375"	11¾	3243	—	1/4	DIRECT	
REF-6	360	.375"	11¾	3243	—	1/4	DIRECT	
REF-7	300	.25"	11¾	2657	—	1/4	BELT	
REF-8	7200	1.00"	30	6800	2.4	3	BELT	
REF-9	800	.625"	13½	3900	.15	1/4	BELT	
REF-10	500	.25"	13½	3403	—	1/10	DIRECT	
REF-11	210	.25"	9⅞"	2749	—	1/10	DIRECT	

BASED ON ACME.

CENTRIFUGAL IN-LINE FAN — CIF

SYMBOL	CFM	SP	MIN. FAN DIA.	MAX. TIP SPEED	MAX. BHP	MOTOR HP	TYPE DRIVE	REMARKS
CIF-1	6000	1.75	20"	8550	3.5	5	BELT	
CIF-2	1870	1.50	13 11/16"	7500	1.0	1½	BELT	
CIF-3	2200	.25	16⅛"	4609	.30	1/3	BELT	

BASED ON ACME

PROPELLER FANS — PF

SYMBOL	CFM	SP	FAN DIA.	RPM	TYPE DRIVE	BHP	MOTOR HP	ARRANGEMENT	REMARKS
PF-1	1030	.125	12	1350	DIRECT	.069	1/9	WALL MOUNTED	

BASED ON ACME

COOLING COIL (DIRECT EXPANSION) — DX

SYMBOL	CFM	COIL FPM	REFRIGERANT TYPE	SUCTION TEMP.	EAT DB	EAT WB	LAT DB	LAT WB	MBH TC	MBH SC	REMARKS
DX-1	2185	300	R-22	—	80.8	66.6	54.0	53.0	90.0	63.2	ASSOC. WITH ACU-3
DX-2	800	400	R-22	40°F	85.0	71.0	59.5	57.3	36.5	21.5	ASSOC. WITH ACU-2

RECIPROCATION UNITS — RU

SYMBOL	COMPRESSOR TYPE	CHILLED WATER DATA E.W.T.	L.W.T.	GPM	MAX. WATER ΔP - FT.	COMPRESSOR DATA VOLT.	PHASE	HERTZ	MODEL NO.	RLA	REMARKS
RU-1	RECIPROCATING	55°F	45°F	285	12	460	3	60	CCAC-DIZ	2@89 EA.	

BASED ON TRANE Co.

AIR COOLED CONDENSER — ACC

SYMBOL	SERVES	LOCATION	MODEL	MBH	TONS	CONDENSER COIL LCT	EAT	KW	TD	CONDENSER FAN HP	FLA	LRA	REMARKS
ACC-1	RU-1	ROOF	CAUC-080	710.4	59.2	125	95°F	7.2	30	(3) 1.0	1.8 EA	9.0 EA	
ACC-2	RU-1	ROOF	CAUC-080	710.4	59.2	125	95°F	7.2	30	(3) 1.0	1.8 EA	9.0 EA	

BASED ON TRANE Co.

AIR COOLED CONDENSING UNIT — ACCU

SYMBOL	SERVES	LOCATION	MODEL NO.	MBH	TONS	COMPRESSOR HP	FLA	LRA	CONDENSER HP	FLA	LRA	REMARKS
ACCU-1	ADMIN.	ROOF	TTA090A4	81.0	7½	7½	13.2	79.0	½	1.3	3.3	
ACCU-2	ELEV. MACH. RM	ROOF	TTA036A4	36.5	3	5	5.4	52.0	⅓	1.0	1.8	

BASED ON TRANE CO.

AIR CONDITIONING UNIT — ACU

SYMBOL	SERVES	LOCATION	CFM O.A.	CFM TOTAL	SP	HP	RPM	FAN SIZE	FILTER	COOLING COIL	CURRENT V	PH	HTZ	REMARKS
ACU-1	CAFETERIA	MECH 221	3000	6000	2.5"	5	885	18.25"	15.9 FT2 T.A.	CC-1	460	3	60	
ACU-2	LOBBY	MECH 221	0	2100	1.15	1.5	1497	10.5"	6.24 FT2 T.A.	CC-2	460	3	60	
ACU-3	ADMIN.	JAN. 161	700	2185	.8 ESP	1.5	985	15"	8.33 FT2 T.A.	DX-1	460	3	60	

BASED ON TRANE Co.

COOLING COIL (CHILLED WATER) — CC

SYMBOL	CFM	COIL SIZE W	COIL SIZE H	EAT DB	EAT WB	LAT DB	LAT WB	MAX SP DROP	WATER SIDE GPM	EWT	LWT	MAX WATER PD	REMARKS
CC-1	6000	60	33	83.5	68.3	58	56.1	.60	47	45°F	55°F	2.6'	
CC-2	2100	45	18	80	67	58	57	.27	13	45°F	55°F	2.6'	

FAN COIL UNITS — FCU

SYMBOL	CFM	HP	RPM	MOTOR TYPE	UNIT STYLE	TYPE COIL	COOLING EDB	EWB	TOT. MBH	SENS. MBH	GPM	PD	HEATING MBH	GPM	PD	ΔT	REMARKS
FCU-1	150	1/15	1200	PSC	HORIZ.	A	80°F	67°F	3.8	3.0	1.3	1.1	—	—	—	—	
FCU-2	800	1/4	900	↓	HORIZ.	D	↓	↓	36.1	22.9	7.3	8.0	—	—	—	—	
FCU-3	260	1/30	900		VERT.	A			7.3	5.9	1.9	5.8	5.0	.6	.5	20	
FCU-4	260	1/12	1200		HORIZ.	A			7.7	5.4	1.9	4.1	—	—	—	—	
FCU-5	175	1/15	1200		HORIZ.	D			6.7	4.7	1.5	3.6	—	—	—	—	

BASED ON TRANE Co.

BOOSTER HEATING COILS (ELECTRIC) — BHC

SYMBOL	CFM	DUCT SIZE W	DUCT SIZE H	AIR SIDE EAT	AIR SIDE LAT	POWER KW	VOLTS	PHASE	STAGES	REMARKS
BHC-1	230	12	6	60°F	75°F	1.5	277	1	1	
BHC-2	300	12	8	60°F	75°F	1.5	277	1	2	
BHC-3	250	12	6	60°F	75°F	1.5	277	1	2	
BHC-4	140	8	6	60°F	75°F	.75	277	1	1	
BHC-5	180	10	6	60°F	70°F	.75	277	1	1	
BHC-6	300	14	6	60°F	70°F	1.0	277	1	2	
BHC-7	410	12	8	60°F	70°F	1.5	277	1	2	
BHC-8	375	12	8	60°F	70°F	1.5	277	1	2	

BASED ON INDEECO

PROPELLER UNIT HEATER (HOT WATER) — UH

SYMBOL	ARRANGEMENT	CFM	MBH	WATER SIDE GPM	EWT	MAX PD	MOTOR HP	REMARKS
UH-1	HORIZONTAL	580	17.7	2.5	190°F	2.2	1/20	

BASED ON VULCAN

INTAKE / EXHAUST VENTILATORS — IV/EV

SYMBOL	MAX. CFM	MAX. SP.	THROAT AREA	REMARKS
IV-1	7870	0.21	30"x30"	
IV-2	11,000	0.23	42"x30"	
IV-3	1300	0.21	12"x12"	
IV-4	1300	0.21	12"x12"	
IV-5	5200	0.23	24"x24"	
IV-6	1300	0.21	12"x12"	
IV-7	1300	0.21	12"x12"	
EV-1	6000	0.17	30"x30"	
EV-2	15800	0.28	42"x42"	
EV-3	700	0.10	12"x12"	

BASED ON ACME

HOT WATER BOILER SCHEDULE

SYMBOL	CAPACITY GROSS MBH	HEATING SURFACE SQFT (MIN)	EWT °F	LWT °F	NUMBER OF PASSES	FUEL	FIRING RATE @ RATED BOILER CAPACITY	BURNER H.P.	COMBUSTION AIR FAN HP	MODEL NO.
B-1	1965	177.6	170	190	8 SECTION	NAT. GAS	1709 MBH	½	—	28A-W-8
B-2	1965	177.6	170	190	8 SECTION	NAT. GAS	1709 MBH	½	—	28A-W-8

BASED ON H.B. SMITH Co.

HEATING AND VENTILATING UNIT (HOT WATER) — H&V

SYMBOL	CFM	TOTAL S.P. H_2O	MIN. WHEEL DIA.	MAX. TIP SPEED FPM	BHP	MOTOR HP (& RPM)	HEATING COIL @ 200°F ENT. WATER MIN. SQ.FT.	GPM	MAX PRESS DROP FT.	EAT	LAT	TYPE FILTER BOX	REMARKS
H&V-1	7,500	1.25	15"	3616	4.30	7.5 920	18.1	26/36	.46	54°F/45°F	86°F/89°F	2" T.A	1500 CFM MIN. O.A. 3000 CFM MAX. O.A.
	7,500	1.25	15"	3812	4.67	7.5 970							RETURN FAN

BASED ON TRANE Co.

GAS FIRED MAKE-UP AIR UNIT — MU

SYMBOL	CFM	TOTAL S.P. H_2O	MIN. WHEEL DIA.	MAX. TIP SPEED FPM	BHP	MOTOR HP (& RPM)	GAS HEATING SECTION BTUH INPUT	BTUH OUTPUT	EAT	LAT	TYPE FILTER BOX	REMARKS
MU-1	4200	.75	—	—	1.43	2 / 695	400,000	300,000	-4°F	61°F	2" T.A.	

CABINET UNIT HEATER (HOT WATER) — CUH

SYMBOL	ARRANGEMENT	CFM	MBH	WATER SIDE GPM	EWT	MAX PD	MOTOR HP	REMARKS
CUH-1	FLOOR MOUNTED	450	26.1	2.9	190°F	.5	1/15	UNIT SIZE 4
CUH-2	WALL RECESSED	450	27.7	4.0	↓	.7	1/15	" " 4
CUH-3	CEILING RECESSED	620	34.3	2.0		.3	1/15	" " 6
CUH-4	FLOOR MOUNTED	250	11.5	1.3		.1	1/30	" " 2
CUH-5	CEILING RECESSED	620	34.2	2.0		.3	1/15	" " 6
CUH-6	CEILING RECESSED	330	20.5	2.2		.5	1/15	" " 3

BASED ON VULCAN

CONVECTORS (HOT WATER) — C

SYMBOL	DESCRIPTION	W x H x L	MBH	EWT	LWT	END POCKETS	REMARKS
C-1	RECESSED RF-A32	4"x28"x36"	3.8	190°F	170°F		
C-2	RECESSED RF-A32	4"x28"x24"	2.3	190°F	170°F		

BASED ON VULCAN

UNIT VENTILATORS (CHILLED WATER / HOT WATER) — UV

SYMBOL	MODEL NO.	CFM O.A.	CFM TOTAL	COOLING EDB	EWB	TOT. MBH	SENS. MBH	GPM	PD	HEATING MBH	GPM	PD	ΔT	HP	RPM	MOTOR V	PH	HTZ	REMARKS
UV-1	07	200	650	80.1	66.1	22.0	17.1	4	6.0	28.0	1.0	.5	35	1/3	1250	277	1	60	HORIZ. W/HI. ESP. MOT.
UV-2	07	240	650	81.6	67.0	23.2	18.0	4	6.0	34.0	1.0	.5	43	1/3	1250	↓	1	60	HORIZ. W/HI. ESP. MOT.
UV-3	07	200	750	80.1	66.1	22.0	17.1	4	6.0	28.0	1.0	.4	35	1/6	1050		1	60	VERTICAL
UV-4	07	375	750	83.5	68.3	27.5	22.0	6	5.0	40.0	1.0	.4	43	1/6	1250		1	60	VERTICAL
UV-5	10	375	1000	81.7	67.1	31.6	22.5	6	5.5	48.0	1.5	.8	44	1/3	1250		1	60	HORIZ. W/HI. ESP. MOT.
UV-6	10	375	1000	81.7	67.1	37.4	26.3	8	9.6	48.0	1.5	.8	44	1/3	1050		1	60	HORIZ. W/HI. ESP. MOT
UV-7	10	375	1000	81.7	67.1	35.0	27.0	6	5.5	48.0	1.5	.8	44	1/6	1050		1	60	VERTICAL
UV-8	12	375	1250	80.5	66.4	35.5	25.6	6	6.5	40.0	1.0	.5	30	1/4	1050		1	60	VERTICAL
UV-9	12	375	1250	80.5	66.4	43.3	30.6	8	18.8	40.0	1.0	.5	30	1/4	1050		1	60	VERTICAL
UV-10	12	375	1250	80.5	66.4	43.3	30.6	8	18.8	50.0	1.5	.5	37	1/2	1050	↓	1	60	HORIZ. W/HI. ESP. MOT
UV-11	12	375	1250	80.5	66.4	35.5	25.6	6	6.5	50.0	1.5	.5	37	1/2	1250	277	1	60	HORIZ. W/HI. ESP. MOT
UV-12	15	375	1500	79.8	65.9	44.8	33.4	8	5.2	60.0	1.5	.5	37	1/2	1250	277	1	60	HORIZ. W/HI. ESP. MOT

BASED ON TRANE Co.

FINNED TUBE RADIATION — FTR

SYMBOL	COVER TYPE	ROWS	TUBE SIZE	TUBE TYPE	FIN SIZE	FIN TYPE	FINS/FOOT	BTUH PER LINEAR FOOT	REMARKS
FTR-1	BARE ELEMENT	1	3/4"	CU	2¾"x3"	ALUM	33	590	
FTR-2	SLOPE TOP-(FS-210)	1	3/4"	CU	2¾"x3"	ALUM	33	630	10"H ENCLOSURE 14"H MTG HEIGHT
FTR-3	SLOPE TOP-(FS-214)	2	3/4"	CU	2¾"x3"	ALUM	48	1240	14"H ENCLOSURE 18"H MTG HEIGHT
FTR-4	INVERTED SLOPE-(FS-212)	1	3/4"	CU	2¾"x3"	ALUM	48	750	12"H ENCLOSURE MTD. ABV. EQUIP.

BASED ON VULCAN @ 180°F A.W.T.

PROPELLER UNIT HEATER (ELECTRIC) — EUH

SYMBOL	ARRANGEMENT	CFM	COIL DATA KW	STAGES	VOLTS	PHASE	MOTOR DATA HP	VOLTS	PHASE	REMARKS
EUH-1	HORIZ.	350	3.0	1	277	1	1/100	277	1	FURN. W/ WALL MTG. BRACKET
EUH-2	HORIZ.	350	3.0	1	277	1	1/100	277	1	FURN. W/ WALL MTG. BRACKET & INTEGRAL T-STAT
EUH-3	HORIZ.	350	3.0	1	277	1	1/100	277	1	FURN. W/ WALL MTG. BRACKET & LINE VOLT T-STAT

BASED ON Q-MARK CHROMALOX

DESTRATIFICATION FANS — DF

SYMBOL	LOCATION	MODEL	SIZE	CFM	DRIVE	RPM	HP	V	PH	HZ	REMARKS
DF-1	CAFETERIA	HT 11-48	48" DIA BLADES	18,600	DIRECT	315 HI 125 LO	65W.	120	1	60	COLOR BY ARCH. PROVIDE 2 SPD. SW. & HANGING HARDWARE
DF-2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

BASED ON LEADING EDGE

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Lowell Massachusetts

Site No. 8

COMMONWEALTH OF MASSACHUSETTS EMMETTE G. JACKSON, JR. No. 14246 REGISTERED PROFESSIONAL ENGINEER

SCHEDULES

Scale: NONE
Dr. By: GL
Job No: 912000
Date: 7-15-91

H-11