

HOT WATER BOILER SCHEDULE

SYMBOL	FUEL	INLET FUEL PRESSURE	TURNDOWN RATIO	INPUT MBH	OUTPUT MBH	EWT °F	LWT °F	OPERATING PRESSURE	ELECTRICAL				AFUE	REMARKS
									AMPS	VOLT. PHASE	DISCONNECT BY (NOTE A)	CONTROLLER/STARTER BY (NOTE A)		
BLR-1	NATURAL GAS	7" WC	5:1	399	377	105	140	25	15	120-1	EC	MFR	95%	
BLR-2	NATURAL GAS	7" WC	5:1	399	377	105	140	25	15	120-1	EC	MFR	95%	

1. WALL HUNG
2. MINIMUM EFFICIENCY IS 95%
3. FACTORY PROVIDED BOILER CIRCULATION PUMP, P-1.
4. FACTORY PROVIDED BOILER CIRCULATION PUMP, P-2.
5. BASED ON 30% PROPYLENE GLYCOL
6. PROVIDE CONDENSATE NEUTRALIZER KIT.

PUMP SCHEDULE

SYMBOL	SERVICE	GPM	PUMP FT. HEAD AT DESIGN	MINIMUM PUMP EFFICIENCY	ELECTRICAL							REMARKS
					HP (NOTE E)	RPM	VOLT. PHASE	DISCONNECT		CONTROLLER/STARTER		
BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)									
P-3	HOT WATER	43.0	30	0.6	0.75	1,725	120-1	EC	NF	MFR	VFD	NOTE 1, 4, 6
P-4	HOT WATER	43.0	30	0.6	0.75	1,725	120-1	EC	NF	MFR	VFD	NOTE 1, 4, 6
P-5	RADIANT FLOOR MANIFOLDS	19.0	15	0.5	0.17	-	120-1	EC	NF	MFR	VFD	NOTES 2-6
P-6	RADIANT FLOOR MANIFOLDS	19.0	15	0.5	0.17	-	120-1	EC	NF	MFR	VFD	NOTES 2-6

- NOTES:
1. PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2. CAST IRON BODY INLINE WET ROTOR CIRCULATOR
3. CAST IRON NPT FLANGE SET
4. ECM MOTOR W/ SELF CONTAINED VFD
5. PROPORTIONAL PRESSURE CONTROL
6. BASED ON 30% PROPYLENE GLYCOL

UNIT HEATER SCHEDULE - HOT WATER

SYMBOL	SERVICE	TYPE	CFM	MBH	GPM	EWT °F	LWT °F	W.P.D. FT. HEAD	ELECTRICAL					CONTROL	REMARKS
									HP	RPM	VOLT- PHASE	DISCONNECT			
												BY (NOTE A)	TYPE (NOTE B)		
UH-1	GARAGE	HORIZONTAL	1,775	50.7	5.9	140	110	1.4	1/5	1,075	120-1	MFR	NF	NOTE 1	
UH-2	ATTIC MECH ROOM	HORIZONTAL	370	8.8	1.0	140	110	0.3	1/25	1,550	120-1	MFR	NF	NOTE 1	
UH-3	BUILDING 412 STORAGE ROOM	HORIZONTAL	340	6.9	0.8	140	110	0.2	1/60	1,550	120-1	MFR	NF	NOTE 1	

- NOTES:
1. PROVIDE WALL MOUNTED THERMOSTAT. SEE CONTROL DIAGRAM ON 1-M-501.
2. BASED ON 30% PROPYLENE GLYCOL

CABINET HEATER SCHEDULE - HOT WATER

SYMBOL	SERVICE	TYPE	NOMINAL CFM	MBH	GPM	EWT °F	LWT °F	MAX. W.P.D. FT. HEAD	CONTROL	CABINET				VOLT. PHASE	DISCONNECT		CONTROLLER/STARTER	REMARKS
										H	W	D	FAN HP		BY (NOTE A)	TYPE (NOTE B)		
																	BY (NOTE A)	
CAB-1	VESTIBULE 100	SURFACE WALL MOUNT	450	26	3.0	140	110	2.9	NOTE 2	25	48-3/4	9-3/4	.05	120-1	MFR	NF	MFR	NOTE 1, 3
CAB-2	VESTIBULE 117	RECESSED WALL MOUNT	250	13	1.5	140	110	1.5	NOTE 2	25	38-3/4	9-3/4	.03	120-1	MFR	NF	MFR	NOTE 1, 3

- NOTES:
1. COORDINATE COLOR SELECTION WITH ARCHITECT.
2. MFR. PROVIDED UNIT MOUNTED THERMOSTAT.
3. HIGH CAPACITY TWO ROW COIL
4. BASED ON 30% PROPYLENE GLYCOL

DUCT MOUNTED HOT WATER COIL

SYMBOL	SERVICE	CFM	MBH	GPM	EWT °F	LWT °F	EAT °F	LAT °F	LENGTH	WIDTH	VELOCITY	CONTROL
HC-1	FCU-6	1,000	10	0.7	140	110	72	81	20"	12"	700	NOTE 1

- NOTES:
1. PROVIDE WALL MOUNTED THERMOSTAT. SEE CONTROL DIAGRAM ON 1-M-501.
2. BASED ON 30% PROPYLENE GLYCOL

HUMIDIFIER SCHEDULE - ELECTRIC

SYMBOL	SERVICE	CAPACITY LB/HR	DUCT SIZE	FLA	VOLT. PHASE	ELECTRICAL			REMARKS
						DISCONNECT		CONTROLLER/STARTER	
						BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	
SH-1	DOAS-1	70	28x14	67.0	208-3	MFR	NF	NOTE 1	NOTE 2

- NOTES:
1. CONTROLLED BY DOAS-1. REFER TO CONTROL DIAGRAMS ON 1-M-501.
2. REFER TO SPEC SECTION 23 22 18 FOR MORE INFORMATION.

HYDRONIC RADIANT PANEL

SYMBOL	SERVICE	TYPE	QTY.	MBH	GPM	MATERIAL	AVERAGE WATER TEMP. °F	W.P.D. FT. HEAD	DIMENSIONS		CONTROL	REMARKS
									LENGTH	WIDTH		
HRP-1	105A, 106A, 109, 114A, 115A	SURFACE MOUNT, MODULAR	6	.7	0.5	ALUMINUM	125	0.23	4'	2'	NOTE 2	
HRP-2	105A, 106A, 115A	SURFACE MOUNT, MODULAR	3	.35	0.5	ALUMINUM	125	0.2	2'	2'	NOTE 2	

- NOTES:
1. PERFORMANCE BASED ON 70°F AIR TEMPERATURE AND NATURAL CONVECTION.
2. REMOTE THERMOSTAT.
3. BASED ON 30% PROPYLENE GLYCOL

PRESSURE FILL SYSTEM

SYMBOL	SERVICE	TANK VOLUME	SYSTEM FILL PRESSURE	PUMP HEAD PSI	GPM	RPM	MHP	VOLT. PHASE	ELECTRICAL		MANUFACTURER	MODEL	REMARKS
									DISCONNECT BY (NOTE A)	CONTROLLER/STARTER BY (NOTE A)			
GFS-1	CONDENSER WATER SYSTEM	55	60	60	5	3,600	0.8	120-1	MFR	MFR	BELL AND GOSSETT	GMU-60	NOTE 1

- NOTES:
1. SEE 23 21 13 FOR ADDITIONAL SYSTEM REQUIREMENTS.

RADIANT - TUBES

ZONE	SERVICE	AREA (SF)	TYPE	INSTALL	BTU/HR	BTU/HR/SF	RAUPEX SIZE	SPACING (IN)	LOOP LENGTH (FT)	# LOOPS	GPM PER LOOP	PD (FT-HD)	MANIFOLD	NOTES
1	102,102A	322	RADIANT	SLAB	7,183	22	1/2"	12	325	1	0.7	7.1	M-1	1,2
2	103,103A	322	RADIANT	SLAB	7,183	22	1/2"	12	325	1	0.7	7.1	M-1	1,2
3	104,104A	301	RADIANT	SLAB	9,257	31	1/2"	12	325	1	0.9	10.8	M01	1,2
4	105,105A	247	RADIANT	SLAB	10,043	41	1/2"	12	250	1	1.0	10.0	M-2	1,2
5	106,106A	317	RADIANT	SLAB	10,043	32	1/2"	12	325	1	1.0	8.1	M-2	1,2
6	108_HEARTH ROOM	529	RADIANT	SLAB	28,514	40	1/2"	12	300	2	1.1	9.5	M-3	1,2
7	109_DEN	206	RADIANT	SLAB	11,312	40	1/2"	12	250	1	0.8	6.9	M-4	1,2
8	110,110A	302	RADIANT	SLAB	7,322	24	1/2"	12	325	1	0.7	7.1	M-4	1,2
9	111,111A	315	RADIANT	SLAB	7,323	23	1/2"	12	325	1	0.7	7.1	M-4	1,2
10	112,112A	319	RADIANT	SLAB	7,322	23	1/2"	12	325	1	0.7	7.1	M-5	1,2
11	113,113A	310	RADIANT	SLAB	7,723	25	1/2"	12	325	1	0.8	8.8	M-5	1,2
12	114_SPA	222	RADIANT	SLAB	10,174	40	1/2"	12	250	1	0.9	8.4	M-5	1,2
13	115,15A	223	RADIANT	SLAB	10,990	40	1/2"	12	250	1	0.9	8.4	M-6	1,2
14	116_OFFICE AND 117_NORTH CORRIDOR	135	RADIANT	SLAB	5,769	43	1/2"	12	150	1	0.4	2.0	M-6	1,2,3
14	117_NORTH CORRIDOR	40	RADIANT	SLAB	1,734	43	1/2"	12	100	1	0.4	2.0	M-6	1,2,4
15	121_DINING	600	RADIANT	SLAB	8,368	14	1/2"	12	325	2	0.4	2.9	M-7	1,2
16	122_KITCHEN	280	RADIANT	SLAB	6,699	24	1/2"	12	325	1	0.7	7.1	M-7	1,2

- NOTES:
1. ZONE TO BE CONTROLLED VIA VRF CONTROLS AND FMCS AND HIGH LIMIT SLAB TEMPERATURE SENSOR. MAXIMUM FLOOR TEMPERATURE IS 85 F.
2. BASED ON 120 F HWS AND 30% PROPYLENE GLYCOL
3. FOR BUILDING 411
4. FOR BUILDING 412
5. TUBE SPACING, SIZE, AND LENGTH SHALL BE CALCULATED BASED ON ACTUAL INSTALLATION.

Construction Documents ACCOMPANYING AMENDMENT VA69D-17-B-0889-A00004

<div>Revisions:</div> <div>Date</div>		CONSULTANTS: <div>O'BrienEngineering, Inc.<div>Hydraulics - Hydrology - Civil Engineering</div></div> <div>KJWWENGINEERING CONSULTANTSExperience you can build on.™</div> <div>H2BINC<div>Texas Firm Registration No. 88561225 N Loop W, Suite 800HOUSTON, TX 77008713.864.2900</div></div>		ARCHITECT/ENGINEERS: <div>COX DESIGN ASSOCIATES</div> <div>ARCHITECTURE PLANNING INTERIORS<div>Austin 5121 Bee Caves Road, Suite 203Austin, Texas 78746T:312 - 327 - 4149F:312 - 454 - 9434bcox@coxdesignassociates.com</div><div>Chicago 820 Davis St., Suite 432Evanston, IL 60201T:312 - 454 - 9434F:312 - 454 - 9439bcox@coxdesignassociates.com</div></div>	
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