AIR CONDITIONING DESIGN DATA — DESIGN ALTITUDE FT.

DESIGN AREA	SUMMER OUTSIDE Db	SUMMER OUTSIDE Wb	SUMMER INSIDE Db	SUMMER INSIDE % HUMIDITY	WINTER OUTSIDE Db	WINTER INSIDE Db	WINTER INSIDE % HUMIDITY
ALL AREAS	91	74	78	50	-15	72	35%
SUB-BASEMENT MECH. RMS.	91	—	101	—	-15	65	—

AIR CONDITIONING SYSTEM INDEX

UNIT NO.	LOCATION	AREA SERVED	SUPPLY FAN NO.	CFM SUPPLY	CFM O.A.	FACTORY OR FIELD FABRICATED	FIBERGLASS INTERNAL INSULATION	TYPE OF SYSTEM
AH-1	ROOF	BASEMENT	SF-1	14000	4200	FACTORY	YES	VAV, REHEAT
HV-1	MECH. ROOM	SUB-BSMT MECH	SF-2	10,350	2600	FACTORY	↓	CV VENTILATION

FANS

FAN NO.	LOCATION	CFM	S.P.	FAN TYPE	ARRANGEMENT, INLET, ROTATION & DISCHARGE	WHEEL TYPE	WHEEL MIN. DIA.	MAX. RPM	DRIVE	MOTOR NOM. HP	MOTOR PHASE-VOLT.	INLET VANE
SF-1	AH-1	14,075	4¾"	CF	CW THD. ROOF TOP UNIT	AIR FOIL	27"	540	BELT	20	460/3ϕ	—
SF-2	HV-1	10,350	3¼"	CF	CW THD	F.C.	22¼"	804	BELT	15	460/3ϕ	—
RF-1	AH-1	12,575	1¼"	CF	CW THD. TO MATCH SUPPLY FAN	AIR FOIL	27"	890	BELT	5	460/3ϕ	—
RF-2	SUB-BSMT	10,350	1¼"	CF	CCW UP BLAST	AF	27"	1078	BELT	5	460/3ϕ	—
EF-1	ROOF	370	½"	RV	—	—	—	1125	BELT	1/6	120/1ϕ	—
EF-2	ROOF	370			—	—	—	1125		1/6		—
EF-3	ROOF	320			—	—	—	1465		¼		—
EF-4	ROOF	235			—	—	—	1305		¼		—
EF-5	ROOF	125			—	—	—	1465		¼		—
EF-6	ROOF	280	↓	↓	—	—	—	1465	↓	¼	↓	—

WATER COILS, COOLING

COIL NO.	SYSTEM	CFM	MAX. FACE VEL. FPM	MAX. P.D. LOSS AIR SIDE	ENT. AIR °F Db	ENT. AIR °F Wb	LVG. AIR °F Db	LVG. AIR °F Wb	CIRCULATING FLUID FLUID	GPM	TEMP. IN °F	TEMP. OUT °F	MAX. LOSS FT. FLUID	MIN. BTUH
CC-1	AH-1	14,075	475	0.90	82	68	55	54	30% EG	132	43	53	13.4	620,000 ①②

① CAPACITY ADJUSTED FOR 30% ETHYLENE GLYCOL
② FURNISH COILS WITH UNIT, LARGE FACE AREA 29.63ϕ, 6 ROWS

WATER COILS, HEATING

COIL NO.	SYSTEM	CFM	MAX. FACE VEL. FPM	MAX. S.P. LOSS	TEMP. AIR °F ENT.	TEMP. AIR °F LVG.	CIRCULATING FLUID FLUID	GPM	TEMP. IN °F	TEMP. OUT °F	MAX. LOSS FT. FLUID	MIN. BTUH
HC-1	AH-1	14,075	475	0.10	49.8	72	WATER	25	190	160	0.50	335,664
HC-2	HV-1	10,350	595	0.35	48.75	65	WATER	15	190	160	0.10	187,790

① FURNISH COIL WITH UNIT. FACE AREA 29.63ϕ, 2 ROWS
② FURNISH COIL WITH UNIT FACE AREA 16.8ϕ, 2 ROWS

AIR FILTERS

FILTER NO.	CFM	SYSTEM	VA GRADE	RATED EFF %	MAX. S.P. DROP INITIAL	MAX. S.P. DROP FINAL	HOUSING TYPE	CARTRIDGES NO.	CARTRIDGES SIZE	CARTRIDGES ARRANGEMENT
PF-1	14,000	AH-1	D	30%	0.25	0.7	—	—	—	V-BANK ①
PF-2	10,350	HV-1	D	30%	0.25	0.7	—	—	—	V-BANK ①
AF-1	14,000	AH-1	B	85%	0.25	1.0		6 2	24 x 24 12 x 24	FLAT ②

① FURNISH FILTERS AND SECTION WITH UNIT.
② BUILT UP SECTION TO MATCH UNIT DIMENSIONS

STEAM HUMIDIFIERS

HUMID. NO.	SYSTEM	CFM	NUMBER OF MANIFOLDS	ENT. AIR °F Db	ENT. AIR °F Wb	LVG. AIR °F Db	LVG. AIR °F Wb	STEAM PSIG ENTERING ON-OFF VALVE	STEAM PSIG ENTERING CONTROL VALVE	ON-OFF & CONTROL VALVE LBS/HR	TRAP LBS/HR
SH-1	AH-1	14000	2	55	36	55	46	30	25	100	150

AIR TERMINAL UNITS, SINGLE DUCT

ΔT = 20°

UNIT NO.	UNIT SIZE	CFM MAX/MIN.	MIN. SP. IN. WG.	SPACE NC	ENT. TEMP. °F AIR	ENT. TEMP. °F WATER	GPM	MIN. BTUH	PRESS. DROP FT OF H2O	ROWS	COIL NO
VAV-1	9	745/375	0.38	35	55	190	0.81	8100	.20	2	BC-1
VAV-2	9	735/285	0.32				1.1	11,359	.20		-2
VAV-3	5	240/120	0.29				0.45	4305	.10		-3
VAV-4	8	545/275	0.32				1.04	10,383	.20		-4
VAV-5	8	650/650	0.38				1.4	14,040	.50		-5
VAV-6	8	690/345	0.44				0.8	8047	.20		-6
VAV-7	5	280/280	0.34				1.3	12,918	.25		-7
VAV-8	6	345/345	0.29				1.3	12,824	.50		-8
VAV-9	12	1600/800	0.60				3.5	25,735	1.4		-9
VAV-10	12	1600/800	0.60				3.5	34,375	1.4		-10
VAV-11	14	2000/740	0.57				2.0	19,834	0.5		-11
VAV-12	12	1440/560	0.57				1.6	15,946	0.3		-12
VAV-13	8	560/250	0.24				0.68	6783	0.2		-13
VAV-14	16	2400/500	0.52				2.5	24,416	0.9		-14
VAV-15	4	120/120	0.18	↓	↓	↓	0.32	3222	0.1	↓	-15

PACKAGE AIR COOLED RECIPROCATING CHILLER UNIT

UNIT NO.	EQUIPMENT	LOCATION	PERFORMANCE MINIMUM CAPACITY	MOTOR KW INPUT	MOTOR PHASE VOLT.	REMARKS
PCH-1	COMPRESSOR	ROOF	60 TON NOMINAL CAP. (ACTUAL 45 TONS)	63.3	3ϕ/460V	96' PRESSURE DROP ①②
	CHILLER		124 GPM 53° WATER IN 43° WATER OUT			
	AIR COOLED CONDENSER		AIR COOLED CONDENSER SHALL PROVIDE 6 @ ABOVE PERFORMANCE AT -2°F AMB.	1.0 HP EA	3ϕ/460V	

① 30% ETHYLENE GLYCOL
② STARTER SHALL BE FURNISHED BY EQUIPMENT MANUFACTURER.

CIRCULATING PUMPS

PUMP NO.	LOCATION	SYSTEM	CIRCULATING FLUID FLUID	GPM	PUMP HEAD FT. FLUID	TEMP. °F	Sp. Gr.	% EFF.	TYPE	MOTOR NOM. HP	MOTOR PHASE-VOLT.	MOTOR RPM
P-1	SUB-BSMT MECH RM	PRIMARY HOT WATER	WATER	82	30'	200		55	FLOOR MOUNTED	1½	3ϕ, 460	1750
P-2		STAND BY	↓	↓	↓	↓		55	↓	1½	3ϕ, 460	
P-3		PCH-1	GLYCOL 30%	132	80'	42		68	END SUCTION	7½	3ϕ, 460	
P-4	↓	PCH-1 STAND BY	↓	↓	↓	↓		68	↓	7½	3ϕ, 460	
P-5	ROOF	AH-1	WATER	25	30'	200		38	IN-LINE	¾	3ϕ, 460	
P-6	SUB-BSMT MECH RM	HV-1		15	25'	200		38		½	3ϕ, 460	
P-7	↓	RADIATION & VAV	↓	42	38'	200		49	↓	1½	3ϕ, 460	↓
P-8	SUB-BSMT MECH. RM.	FILL SYSTEM	GLYCOL 30%	10	60	50		30	FLOOR MOUNTED	1	3ϕ 460	3500

CONDENSATE PUMP

PUMP NO.	LOCATION	TYPE UNIT	GPM EACH	DISCHARGE PRESSURE	MOTOR NOM. HP	MOTOR PHASE-VOLT.	REMARKS
CP-1	SUB-BSMT MECH RM	DUPLEX	12	30 PSIG	2 @ 1½	3ϕ-460	①②

① 3500 RPM MOTOR
② MINIMUM 14 GALLON CAST IRON RECIEVER

HOT WATER CABINET UNIT HEATERS AND UNIT HEATERS

UNIT NO.	LOCATION	TYPE UNIT	CFM	MIN. BTUH	ENT. TEMP. °F AIR	ENT. TEMP. °F WATER	GPM	MAX. P.D. FT.	MOTOR WATTS OR HP	MOTOR PHASE VOLT.	REMARK
UH-1	VESTIBULE 034	CABINET	710	34,300	65°	200	3.5	0.03	1/10 HP	120V/1ϕ	①②
UH-2	MAINTENANCE STAIRWAY	HORIZONTAL DISCHARGE	630	31,800	70°	200	3.6	0.12	1/30 HP	120V/1ϕ	

① FAN SPEED AT 850 RPM. MEDIUM SPEED
② PROVIDE 3 SPEED MOTOR

CONVERTORS

CONVERTOR NO.	LOCATION	CIRCULATING FLUID FLUID	GPM	TEMP. IN °F	TEMP. OUT °F	MAX. LOSS FT. FLUID	STEAM PSIG ENTERING CONTROL VALVE	STEAM PSIG ENTERING CONVERTOR	CONTROL VALVE LBS/HR	TRAP LBS/HR
C-1	SUB-BASEMENT	WATER	75	160	190	5	30	30	1000	1500

PRESSURE REDUCING VALVES

PRV NO.	LOCATION	STEAM PRESSURE PSIG INLET	STEAM PRESSURE PSIG OUTLET	CAPACITY LBS/HR REQUIRED	CAPACITY LBS/HR MAXIMUM	BYPASS VALVE	PIPE SIZES D1	PIPE SIZES D2
PRV-1	SUB-BSMT MECH RM	125	60	1272	1400	3/4"	2½"	3"
PRV-2	SUB-BSMT. MECH. RM.	60	30	1272	1400	1"	3"	4"

SAFETY VALVES & RELIEF VALVES

VALVE NO.	SERVICE	FLUID	TEMP. °F	MINIMUM CAPACITY	SET PRESS. PSIG	SIZE & ORIFICE
SV-1	PRV-1	STEAM	353	1464	40	1¼" x 2" (OUT) - (G) ORIFICE

① STEAM PRESSURE TO BE REDUCED IN 2 STEP 125-60 PSI, 60 PSI-30 PSI

GRAVITY HOOD - CURB MOUNTED

UNIT NO.	THROAT SIZE, INCHES	SERVICE/UNIT	CFM	MAX. S.P.	DAMPER TYPE	DAMPER OPERATOR	REMARKS
GH-1	38 x 24	EXHAUST HV-1	10,350		AUTO	PNEUMATIC	4 SIDE LOUVER FACE WITH BIRD SCREEN

AIR FLOW MEASURING DEVICES

UNIT NO.	LOCATION FLOOR	LOCATION DUCT	DUCT SIZE W	DUCT SIZE H	DUCT TYPE	CFM MIN.	CFM MAX.	S.P. DROP	FAN SYSTEM	REMARKS
AMS-1A	BASEMENT	SUPPLY	40	16	FLANGE				SF-1	①
AMS-1B		SUPPLY	48	14					SF-1	①
AMS-2A		RETURN	56	14					RF-1	①
AMS-2B		RETURN	52	14					RF-1	①
AMS-3	↓	SUPPLY	20	12	↓				SF-1	①

① PROVIDE ACCESS PANEL(S) AT EACH INLET SIDE OF EACH AMS STATION

MOTOR STARTER SCHEDULE

Y = YES
MIN. STARTER SIZE

EQUIPMENT TAG	COMB. MAGNETIC STARTER WITH FUSED DISCONNECT SWITCH	H.O.A. SWITH	PILOT LIGHT	3 LEG OVERLOAD RALAYS	MANUAL STARTER	THERMAL OVERLOAD PROTECTION	2 AUX CONTACT	BUILD-IN 120 VOLT TRANSFORMER	REMARKS
SF-1	Y	Y	Y	Y	—	—	Y	Y	
SF-2					—	—			
RF-1					—	—			
RF-2					—	—			
EF-1, EF-2					—	Y		—	
EF-3, 4, 5, 6					—	Y			
P-1, 2, 3, 4					—	—			
P-5, 6, 7	↓	↓	↓	↓	—	—	↓	↓	

FIN PIPE RADIATION SCHEDULE

TAG	CAP BTU/HR LIN. FT.	CAP BTU/HR ELEMENT	PIPE SIZE	FINS SIZE	FIN PER FOOT	WATER FLOW RATE	ELEMENT LENGTH	EWT	LWT	EAT	REMARKS
FT-1	1020	4080	1¼"	4¼" SQ.	33	1GPM MIN.	4'-0"	190	170	65	①③④
FT-2	1490	8960	1¼"	4¼" SQ.	33	—	4'-0"	—	—	65	①, ②③④

① PROVIDE BACK COVER PLATE, WALL BRACKET
② UNIT TO MATCH FT-1, EXCEPT TO CONNECT TO EXISTING LPS & LPR PIPING SYSTEM
③ ENCLOSURE HEIGHT 28" ABOVE FINISHED FLOOR.
④ STEEL ELEMENTS.

EXPANSION TANK SYSTEM

UNIT NO.	SYSTEM	APPROX. SYSTEM VOL. GAL.	SYSTEM TEMP. RANGE °F MIN.	SYSTEM TEMP. RANGE °F MAX.	INITIAL PRESS. IN TANK PSIG	PRV FILL PRESS. AT TANK PSIG	MAX. OPER. PRESS. RELIEF VALVE PSIG	MAX. OPER. PRESS. AT TANK PSIG	TANK SIZE GAL.	AIR SEPARATOR SIZE	AIR SEPARATOR GPM	AIR SEPARATOR MAX. P.D.	AIR SEPARATOR BUILT-IN STRAINER REQUIRED	PIPE SIZE TO TANK	COLD WATER FILL SIZE	REMARKS
ET-1	HOT WATER	140	170	220	0	12	40	40	60	2½	75	-	YES	3/4"	1"	②③④
ET-2	CHILLED WATER	130	40	90	0	12	40	40	15	4	132	-	YES	3/4"	3/4"	①③④

① 12" DIAMETER x 33" LONG TANK
② 10" DIAMETER x 72" LONG
③ PROVIDE PROPER SUPPORTS AND HANGERS
④ ASME CONSTRUCTION

DIFFUSER, REGISTER & GRILLE SCHEDULE

TYPE	NECK SIZE	SERVICE	TYPE	DAMPER	MATERIAL	FINISH	REMARKS
A INDICATED ON PLAN		SUPPLY	PERFORATED DIFF	OBD	ALUMINUM	BAKED ENAMEL	①③
B	↓	↓	↓ SIDE WALL REG.	↓	↓	↓	②③
C							
A_1 INDICATED ON PLAN		RETURN	PERFORATED	OBD	ALUMINUM	BAKED ENAMEL	①
B_1	↓	↓	↓ SIDE WALL REG.	↓	↓		
A_2 INDICATED ON PLAN		EXHAUST	PERFORATED	OBD	ALUMINUM	BAKED ENAMEL	

① 24x24 PANEL SIZE TO FIT LAY-IN TILE CEILING
② 12x12 PANEL SIZE TO FIT LAY-IN TILE CEILING.
③ SEE PLANS FOR LOCATIONS OF 3 WAY, 2 WAY & 1 WAY AIR PATTERNS

VIBRATION ISOLATION FOR EQUIPMENT

UNIT NO.	TYPE BASE	TYPE ISOLATOR	MIN. STATIC DEFL.	REMARKS
HV-1	STEEL CHANNEL	SPRING	1"	①
RF-2	↓	SPRING	1"	
PCH-1	—	ENCLOSED SPRING	2"	②

① SEE SPECIFICATIONS
② WEATHER PROOF CONSTRUCTION

ORIGINAL
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REFERENCE DRAWINGS ONLY
NOT FOR CONSTRUCTION

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NO.	DATE	DESCRIPTION

REVISIONS

PROJ. TITLE: NEW RADIATION/ONCOLOGY CENTER

SHEET TITLE: HVAC EQUIPMENT SCHEDULES

Location: WEST TENTH STREET
Building Number: #1
PROJECT NUMBER: 583-12-159
Drawing Number: H-11.1 + H-12.2
XFY012
Dwg. 87 of 165

Engineering and Facilities Management Services
Department of Veterans Affairs

059_H2