

REVISIONS				
SYM	DESCRIPTION	PREPARED BY	DATE	APPROVED

AIR HANDLING UNIT SCHEDULE																										
MARK	TYPE	UNIT LOCATION ROOM No.	FAN							COOLING COIL										REMARKS						
			TOTAL AIR L/s MAX./MIN.	MINIMUM OUTSIDE AIR L/s	DESIGN EXT. S.P. IN. Pa	MIN. FAN MOTOR KW	MAX. RPM	MAX. SOUND POWER LEVEL *	POWER			COIL AIR L/s	MAX. COIL FACE VEL. m/min.	TOTAL CAPACITY WATTS	ENT. D.B. °C	AIR W.B. °C	LVG. D.B. °C	AIR W.B. °C	ENT. WATER TEMP. °C		LVG. WATER TEMP. °C	CHILLED WATER L/s	RUNOUT SUPPLY	PIPE SIZE RETURN	MAXIMUM AIR P.D. IN. Pa	*MAX. WATER PD IN. kPa
AHU-1	1	2D-05	12385/8850	3255	900	30	1120	87	480	3	60	12385	168	330,909	25.2	18.4	10.8	10.3	7.2	12.8	14.25	100	100	290	61	SEE FAN SCHEDULE FOR RETURN AIR FANS SEE FILTER SCHEDULE FOR FILTERS. SEE NOTE THIS SHEET.
AHU-2	1	2D-05	10675/6130	2385	625	30	1100	85	480	3	60	10675	155	219,282	24.5	17.2	11.3	10.8	7.2	12.8	9.44	100	100	190	30	SEE FAN SCHEDULE FOR RETURN AIR FANS SEE FILTER SCHEDULE FOR FILTERS. SEE NOTE THIS SHEET.

TYPE: 1. HORIZONTAL, CENTRAL STATION, VARIABLE AIR VOLUME AIR HANDLING UNIT, WITH CHILLED WATER COOLING COIL, PLUG TYPE AIR FOIL SUPPLY FAN, VARIABLE FREQUENCY FAN DRIVES, DOUBLE WALL INSULATED CONSTRUCTION, WITH FACTORY FABRICATED PERFORATED PANEL DOUBLE WALL DISCHARGE AIR PLENUM, AND OTHER ACCESSORIES ETC. AS INDICATED ON THE DRAWINGS. ALL FANS AND MOTORS SHALL BE INTERNALLY ISOLATED. SEE SHEET M4-1 FOR ADDITIONAL INFORMATAION.

* Db IN 3rd OCTAVE BAND, @ FAN OUTLET.

FILTER SCHEDULE							
SYMBOL	TOTAL FILTER L/s	NOMINAL SIZE OF EACH FILTER, HEIGHT BY WIDTH BY DEPTH INCHES	MINIMUM NUMBER AND ARRANGEMENT	MINIMUM AVERAGE EFFICIENCY %, BASED ON ASHRAE STD. 52-76	MAXIMUM CLEAN RESISTANCE Pa	DESIGN FILTER CHANGE OUT Pa	REMARKS
PF-1	12385	*	*	30%	30	90	MOUNT IN AHU FILTER MIXING BOX
AF-1	12385	*	*	90%	90	300	MOUNT IN AHU FILTER HOUSING
PF-2	10675	*	*	30%	30	90	MOUNT IN AHU FILTER MIXING BOX
AF-2	10675	*	*	90%	90	300	MOUNT IN AHU FILTER HOUSING

* THE QUANTITY OF FILTERS SHALL BE AS REQUIRED TO FIT THE AHU FILTER BOXES FURNISHED

A.C. UNIT SCHEDULE											
MARK	LOCATION	TYPE		TOTAL L/s	O.A. L/s	APPROX. E.S.P. Pa	APPROX. FAN KW	D.X. COOLING COIL		ELECTRICAL	REMARKS
								TOTAL*	SENSIBLE*		
AC-1	1B-21	HORIZ.	D.X. FAN COIL	300	0	50	.07	2500	2500	120/1/60	DUCTLESS, SUSPENDED AND A COS
AC-2	1C-13	HORIZ.	D.X. FAN COIL	300	0	50	.07	2500	2500	120/1/60	DUCTLESS, SUSPENDED AND A COS
AC-3	2B-12	HORIZ.	D.X. FAN COIL	300	0	50	.07	2500	2500	120/1/60	DUCTLESS, SUSPENDED AND A COS
AC-4	2C-15	HORIZ.	D.X. FAN COIL	300	0	50	.07	2500	2500	120/1/60	DUCTLESS, SUSPENDED AND A COS
**AC-5	2D-04	HORIZ.	D.X. FAN COIL	300	0	75	.07	3500	3500	208/1/60	DUCTED TYPE, SUSPENDED, COMPUTER ROOM UNIT

* WATTS OF NET COOLING CAPACITY W/MATCHING A.C.C.U. BELOW @ A.R.I. RATING CONDITIONS

** UNIT TO BE PROVIDED WITH 1.7 KW HUMIDIFIER WITH 15ø COLD WATER MAKEUP, A 2 KW ELECTRIC HEATING COIL, 60% EFF. FILTER MOUNTED IN UNIT RETURN AIR FILTER GRILLE, A REMOTE CONTROL MICROPROCESSOR CONTROL PANEL AND A COS.

AIR COOLED CONDENSING UNIT SCHEDULE										
MARK	MATCHING A/C UNIT	*CAPACITY WATTS	OUTDOOR DESIGN TEMP. °C	COMPRESSOR		COND. FAN		ELEC. CHAR.	** EFFICIENCY	REMARKS
				NO	F.L.A. EA.	NO	F.L.A. EA.			
ACCU-1	AC-1	2500	35	1	7.0	1	0.83	208/1/60	10.0 SEER	
ACCU-2	AC-2	2500	35	1	7.0	1	0.83	208/1/60	10.0 SEER	
ACCU-3	AC-3	2500	35	1	7.0	1	0.83	208/1/60	10.0 SEER	
ACCU-4	AC-4	2500	35	1	7.0	1	0.83	208/1/60	10.0 SEER	
ACCU-5	AC-5	3500	35	1	10.8	1	4.2	208/1/60	10.0 SEER	

* MIN. NET CAPACITY WATTS W/ MATCHING AC UNIT.

** MIN. EFFICIENCY W/ MATCHING AC UNIT.

FAN SCHEDULE														
UNIT NO.	LOCATION	TOTAL AIR L/s	INTERLOCK WITH	TYPE FAN	MAX. RPM	EXT. S.P. Pa	DESIGN MOTOR WATTS	SONES ±	POWER			MAX. SOUND POWER LEVEL db 3rd OCTIVE BAND	DRIVE	REMARKS
									VOLT	PH	CYC			
RAF-1	2D-05	9130	AHU-1	1	1050	620	15000	—	480	3	60	84	BELT	SEE NOTE THIS SHEET
RAF-2	2D-05	8290	AHU-2	1	950	520	11000	—	480	3	60	82	BELT	SEE NOTE THIS SHEET
EF1-1	RF. BLOCK 1B	715	AHU-1	2	880	225	370	—	120	1	60	75	BELT	
EF1-2	RF. BLOCK 2B	860	AHU-1	2	775	155	250	—	120	1	60	73	BELT	
EF1-3	RF. BLOCK 1E	1360	AHU-1	2	925	225	750	—	480	3	60	78	BELT	*
EF1-4	RF. BLOCK 1E	70	AHU-1	2	1485	125	30	—	120	1	60	56	DIRECT	W/ SPEED CONTROLLER
EF2-1	2D-05	810	AHU-2	3	750	215	550	—	208	3	60	73	BELT	*
EF2-2	2D-05	1130	AHU-2	3	615	250	750	—	480	3	60	77	BELT	*
EF2-3	2D-05	270	AHU-2	3	1650	325	370	—	120	1	60	76	BELT	
EF-3	1E-15	450	THERMOSTAT	4	27.5	95	125	13.1	120	1	60	—	DIRECT	
SF-4	1E-15A	50	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	—	DIRECT	
EF-5	1E-17	100	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	—	DIRECT	
EF-6	1E-20	100	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	—	DIRECT	
EF-7	1E-21	50	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	—	DIRECT	
SF-1	2D-05	3100	THERMOSTAT	5	45.5	125	750	23	480	3	60	—	DIRECT	* INTERLOCK WITH SPACE SMOKE DETECTOR TO SHUT DOWN FAN ON SMOKE DETECTION

FAN TYPES:

- CENTRIFUGAL, AIR FOIL FAN, WITH INTERNAL VIBRATION ISOLATION, DOUBLE WALL INSULATED CABINET, MOUNTED IN AIR HANDLING UNIT WITH VARIABLE FREQUENCY DRIVE
- CENTRIFUGAL ROOF MT'D, MOTORIZED DAMPER, PREFABRICATED CURB.
- CENTRIFUGAL IN LINE, CLASS 1 CONSTRUCTION
- WALL MOUNTED, PROPELLER, EXHAUST FAN, WITH WALL HOUSING AND MOTOR OPERATED DAMPER.
- WALL MOUNTED, PROPELLER, SUPPLY FAN, WITH WALL HOUSING AND MOTOR OPERATED DAMPER.

* PROVIDE MAGNETIC ACROSS THE LINE STARTER AND TURN OVER TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION.

AIR COOLED CHILLER SCHEDULE														
MARK	LOCATION	DESCRIPTION	MIN. OPERATING REFRIG. CIRCUITS	MIN. COOL. CAP. KW	WATER FLOW M ³ /HR	AMBIENT TEMP. °C	PRESS. DROP kPa	LVG. WATER TEMP. °C.	ENT. WATER TEMP. °C.	ELECTRICAL CHAR.	OPERATING AMPS	MOTOR CONTROLLER	MIN. STEPS OF CAP. UNLOADING	REMARKS
ACC-1	OUTSIDE	PACKAGED AIR COOLED CHILLER	2	523	85.28	32.2	45	7.2	12.8	480/3/60	290	INTEGRAL STARTER	100/75/50/25/0%	

NOTE:
PROVIDE REDUCED VOLTAGE STARTER TO LIMIT THE MAXIMUM STARTING CURRENT TO 450 AMPS.
CHILLER SHALL BE PROVIDED WITH SINGLE POINT ELECTRICAL WIRING CONNECTION.

AIR SEPARATOR-EXPANSION TANK SCHEDULE																
MARK	AIR SEPARATOR DESCRIPTION	M ³ /HR	P.D. kPa H ₂ O	SIZE			REMARKS <i>NOTE</i>	PRESSURE RELIEF VALVE			MARK	EXP. TANK DESCRIPTION	APPROX. TANK CAPACITY LITERS	MINIMUM ACCEPTANCE VOLUME LITERS	APPROX. SIZE mm	REMARKS
				INLET	OUTLET	AIR		SYSTEM	PRESSURE RELIEF SETTING kPa	MIN. RELIEF CAPACITY kW						
AS-1	1	85.3	6.4	150ø	150ø	32ø	CWS & CWR SYSTEM	AS-1	150	550	ET-1	2	140	140	508 ø x1168	CWS & CWR SYSTEM
AS-2	1	22.0	6.4	100ø	100ø	32ø	HWS & HWR SYSTEM	AS-2	150	350	ET-2	2	215	215	508 ø x1625	HWS & HWR SYSTEM

- CENTRIFUGAL AIR SEPARATOR
- VERTICAL, CAPTIVE AIR, BLADDER TYPE

BOILER SCHEDULE (HOT WATER)

MARK	INPUT KW	OUTPUT MIN. KW	WATER FLOW M ³ /HR	ENT. WATER TEMP. °C	LVG WATER TEMP. °C	ELECTRICAL	APPROX. VENT DIAMETER ø mm	DESIGN NUMBER OF PASSES	MAX. PRESS. DROP kPa	REMARKS
B-1	405.0	324.0	21.0	68.9	82.2	120/1/60	500*	1	20.8	A

NOTE:

A.) UNIT SHALL BE A INDUCED DRAFT, NATURAL GAS FIRED, COPPER TUBE, HOT WATER BOILER, EQUIPPED WITH A 745 WATT, 120 V. INDUCED DRAFT FAN AND A MODULATING GAS VALVE TO MODULATE FIRING RATE FROM 100% DOWN TO 20%
* THE VENT SIZE INDICATED IS APPROXIMATE SIZE FOR ESTIMATING PURPOSES ONLY. THE ACTUAL SIZE OF THE VENT SHALL BE AS RECOMMENDED BY THE SELECTED BOILER MANUFACTURER.

PUMP SCHEDULE

MARK	SERVICE	WT'R FLOW M ³ /HR	MAX. R.P.M.	MIN. HEAD M	MIN. MOTOR SIZE KW	POWER			IEC MOTOR STARTER K.W. RATING	TYPE	PIPING CIRCUIT SERVED	LOCATION	REMARKS
						VOLTS	PH.	CY.					
HWP-1	HWS & HWR	10.5	1750	21.4	2.0	480	3	60	4.0	1	HWS & HWR	2D-05	*
HWP-2	HWS & HWR	10.5	1750	21.4	2.0	480	3	60	4.0	1	HWS & HWR	2D-05	*
CWP-1	CWS & CWR	42.64	1750	21	5.9	480	3	60	7.5	1	CWS & CWR	1E-15	*
CWP-2	CWS & CWR	42.64	1750	21	5.9	480	3	60	7.5	1	CWS & CWR	1E-15	*

TYPE: 1 LINE MOUNTED, CENTRIFUGAL, CONSTANT VOLUME

* PROVIDE MAGNETIC ACROSS THE LINE STARTER AND TURN OVER TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION.

DUCT SOUND ATTENUATION SCHEDULE

SYSTEM NO.	SERVICE	MINIMUM ATTENUATION REQUIRED, db RE: 10 ⁻¹² WATTS								REMARKS
		FAN OCTAVE BAND CENTER FREQUENCY HERTZ								
		63	125	250	500	1000	2000	4000	8000	
AHU 1	SUPPLY	2.2	3.5	10	22.2	10.5	8.4	7.6	8.0	SEE NOTE
AHU 2	SUPPLY	2.2	3.5	10	22.2	10.5	8.4	7.6	8.0	SEE NOTE

NOTE:

DOUBLE WALL DUCT WITH PERFORATED LINER, 50mm THICK INSULATION WITH GLASS CLOTH JACKET BETWEEN INSULATION AND LINER. THE DUCT SUPPLIER SHALL SUBMIT SOUND ATTENUATION VALUES IN EACH DUCT MAIN AND BRANCH, TO THE MINIMUM INDICATED VALUES NOTED IN THE SCHEDULE.

DUCT STATIC PRESSURE SCHEDULE

SYSTEM	DUCT DESCRIPTION	MIN. STATIC PRESSURE CLASS Pa	DUCT SEAL CLASS	DUCT LEAK CLASS	DUCT TEST PRESSURE	REMARKS
AHU-1	SUPPLY	750 P	A	12	750 P	FROM FAN TO TERMINAL UNIT
	SUPPLY	250 P	A	3	250 P	FROM TERMINAL UNIT TO ROOM OUTLET
	RETURN	500 N	A	6	500 N	FROM ROOM INLET TO RAF CASING
	OUTSIDE AIR	250N	A	3	250 N	FROM INTAKE TO AHU CASING
AHU-2	SUPPLY	750 P	A	12	750 P	FROM FAN TO TERMINAL UNIT
	SUPPLY	250 P	A	3	250 P	FROM TERMINAL UNIT TO ROOM OUTLET
	RETURN	500 N	A	6	500 N	FROM ROOM INLET TO RAF CASING
	OUTSIDE AIR	250 N	A	3	250 N	FROM INTAKE TO AHU CASING
AC-1 THRU AC-5	SUPPLY	250 P	A	3	250 P	FROM UNIT TO ROOM OUTLET
	RETURN	250 N	A	3	250 N	FROM ROOM INLET TO UNIT
EXHAUST FANS ALL	EXHAUST	250 N	A	3	250 N	FROM ROOM OUTLET TO FAN

P = POSITIVE PRESSURE

N = NEGATIVE PRESSURE

NOTE:

- ALL DUCT AT OR ABOVE 250 Pa STATIC PRESSURE (P OR N) SHALL BE TESTED PER SMACNA HVACADLTM, 1ST EDITION.

FLEXIBLE DUCT **
SIZING SCHEDULE

LOW VELOCITY DUCT	
MAX. LPS/L.S.	MIN. I.D. mm
25	125ø
45	150ø
70	175ø
100	200ø
170	250ø
280	300ø
400	350ø

NOTES: * MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 1500 mm

* * FLEXIBLE DUCT DIAMETER SHALL MATCH DIFFUSER NECK SIZE IF ROUND NECK DIFFUSERS ARE PROVIDED.

DESIGN CONDITIONS

HEATING & COOLING	LOCATION	SUMMER	WINTER
1. ALL LOCATIONS EXCEPT OTHERWISE INDICATED	OUTSIDE	26.7 °C D.B. & 20.6 °C W.B.	6.1°C D.B.
	INSIDE	23.9 °C D.B. & 50% R.H.	20.0 °C D.B.
2. DENTAL TREATMENT RM'S 2C-06 & 2C-09	OUTSIDE	26.7 °C D.B. & 20.6 °C W.B.	6.1°C D.B.
	INSIDE	23.9 °C D.B. & 50% R.H.	20.0 °C D.B.
3. MECHANICAL ROOMS ELECTRICAL ROOMS	OUTSIDE	SAME AS NO. 1 ABOVE	6.1°C D.B.
	INSIDE	30.0 °C D.B.	—