GENERAL NOTES:

1. ALL DRAWINGS ARE CONSIDERED TO BE PART OF THE CONTRACT DOCUMENTS.
2. ANY WORK THAT HAS BEEN PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE, WITHOUT ANY EXPENSE TO THE GOVERNMENT.
3. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE AND WORKABLE INSTALLATION BE PROVIDED. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, SUPERVISION, TRANSPORTATION, WAREHOUSING AND OTHER SERVICES REQUIRED TO COMPLETE THE WORK IN AN EFFICIENT AND TIMELY MANNER.
4. ALL WORK, INCLUDING MATERIALS AND WORKMANSHIP, SHALL CONFORM TO THE REQUIREMENTS OF ALL STATE CODES, LAWS AND ORDINANCES AND THE LATEST EDITIONS OF THE NEC, CALIFORNIA MECHANICAL, PLUMBING AND BUILDING CODES INCLUDING LOCAL AMENDMENTS. WORK SHALL BE COMPLETE IN ALL RESPECTS AND IN ACCORDANCE WITH THE BEST ESTABLISHED AND ACCEPTED CONSTRUCTION PRACTICES AND STANDARDS.
5. PIPE HANGERS AND DEVICES SHALL BE UL LISTED AND FM APPROVED AND COMPLY WITH ALL APPLICABLE STANDARDS.
6. ALL EQUIPMENT, PIPING AND ALL RELATED EQUIPMENT SHALL BE ANCHORED, MOUNTED, BRACED AND SUPPORTED PER THE SMACNA 1997 SEISMIC RESTRAINT MANUAL, "GUIDELINES FOR MECHANICAL SYSTEMS", AND THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE AND THE CALIFORNIA MECHANICAL CODE. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT TO FURNISH AND INSTALL COMPLETE SUPPORT, ANCHORAGE AND SEISMIC RESTRAINT SYSTEMS FOR PIPING, DUCTWORK AND REHEAT COILS IN CONFORMITY WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION.
7. ALL MISCELLANEOUS IRON, STEEL AND CONCRETE WORK REQUIRED TO PROPERLY INSTALL THE DUCTWORK, PIPING AND EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WORK INCLUDES ALL HANGERS, SUPPORTS, RACKS, BRACKETS, ANCHORS, GUIDES, AND ANY WELDING REQUIRED.
8. CONTRACTOR SHALL FURNISH, INSTALL/ERECT AND MAINTAIN FOR THE DURATION OF HIS WORK, ALL GUARDRAILS, LIGHTS, WARNING SIGNS, STAGING, VENTILATION, ETC. REQUIRED BY LOCAL AND STATE LAWS AND ORDINANCES, INCLUDING THE SAFETY REGULATIONS OF OSHA.
9. CONTRACTOR SHALL COMPLY WITH ALL CONTRACT DOCUMENTS IN LAYING OUT HIS WORK AND EQUIPMENT. HE SHALL COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES AND ALL JOB CONDITIONS.
10. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COORDINATE THEIR WORK, BASED ON THE DRAWINGS AND SPECIFICATIONS, PRIOR TO THE START OF CONSTRUCTION. NO ADDITIONAL ALLOWANCE WILL BE SUBSEQUENTLY MADE BECAUSE OF ERRORS, AMBIGUITIES, OR OMISSIONS WHICH REASONABLY COULD HAVE BEEN DISCOVERED DURING THE PREPARATION OF THE BID.
11. VERIFY AND COORDINATE THE EXACT ROUTING AND SIZE OF DUCTWORK AND LOCATIONS OF ALL EQUIPMENT, FIRE SPRINKLER HEADS, DIFFUSERS, REGISTERS AND GRILLES. COORDINATE LOCATIONS OF SUPPORT RODS AND SYSTEMS INCLUDING ARCHITECTURAL ITEMS AND LIGHT FIXTURE SUPPORT RODS. ~~SEE REFLECTED CEILING PLANS~~. NOTIFY CONTRACTING OFFICER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN (E) SYSTEMS AND DRAWINGS. (△1)
12. COORDINATE EXACT LOCATION OF EQUIPMENT AND ALL PENETRATIONS THROUGH ROOF, FLOORS AND WALLS WITH ARCHITECTURAL AND STRUCTURAL SYSTEMS PRIOR TO COMMENCING WORK. VERIFY LOCATIONS WITH CO AND/OR COTR.
13. ALL MATERIALS INCLUDING DUCTWORK, CEILING DIFFUSERS/REGISTERS/GRILLES, EQUIPMENT, PIPING ETC., ARE NEW UNLESS OTHERWISE NOTED.
14. ALL NEW EQUIPMENT SHALL BE AS SPECIFIED AND INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND TO THE INDUSTRY STANDARDS FOR THE WORK, UNLESS A HIGHER STANDARD IS SPECIFIED IN THE DOCUMENTS.
15. ACCESS AND WORKING SPACE SHALL BE PROVIDED AND MAINTAINED AROUND ALL MECHANICAL, ELECTRICAL, CONTROL EQUIPMENT PER THE LATEST EDITION OF THE MECHANICAL, ELECTRICAL AND BUILDING CODES TO PERMIT READY AND SAFE OPERATION, EXAMINATION AND MAINTENANCE.
16. PATCH AND PAINT ALL HOLES THROUGH WALLS TO MATCH ADJACENT SURFACES.
17. CONTRACTOR SHALL COORDINATE WITH OWNER ALL SHUT-DOWNS OF SERVICES REQUIRED TO PERFORM WORK PRIOR TO SHUTDOWN. ALL SHUTDOWNS SHALL BE SCHEDULED AT THE CONVENIENCE OF THE OWNER AND SHALL FOLLOW LOCK OUT/TAG OUT PROCEDURES SPECIFIED BY OWNER.
18. SCHEDULE SHUTDOWN OF CENTRAL AIR HANDLING UNITS. SHUTDOWN SHALL OCCUR AS DICTATED BY THE CO AND/OR COTR.
19. ALL WORK SHOWN SHALL BE PROVIDED UNDER THIS CONTRACT, UNLESS NOTED OTHERWISE. MATERIAL AND EQUIPMENT NOTED AS OFCI SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED. MATERIAL AND EQUIPMENT NOTED AS OFOI SHALL BE OWNER FURNISHED AND OWNER INSTALLED.
20. CONTRACTOR SHALL FIELD VERIFY LAYOUT AND INSTALLATION REQUIREMENTS FOR ACTUAL EQUIPMENT PROVIDED. ACCESS INTO THE BASEMENT MECHANICAL ROOM SHALL BE COORDINATED WITH EQUIPMENT MANUFACTURERS.
21. ALL ELEVATIONS NOTED ARE RELATIVE TO FINISHED FLOOR ELEVATIONS.
22. NOTES SHOWN ON INDIVIDUAL SHEETS ARE DESIGNATED WITH A CIRCLE SURROUNDING THE NOTE NUMBER (SHEET NOTE) OR WITHOUT THE CIRCLE (GENERAL NOTE). WITH THE CIRCLE, THE NOTE APPLIES TO A SPECIFIC LOCATION ON THE SHEET AND WITHOUT THE CIRCLE, THE NOTE APPLIES TO THE ENTIRE SHEET.
23. NO PIPING SHALL BE INSTALLED ABOVE ELECTRICAL EQUIPMENT, UNLESS OTHERWISE NOTED.
24. CONTRACTOR SHALL (1) SURVEY ALL EXISTING AREA SEPARATION PARTITIONS AND OCCUPANCY SEPARATION PARTITIONS, AND (2) SHALL LOCATE PIPE, DUCT, AND ELECTRICAL CONDUITS AND OTHER FIRESTOP SYSTEM FOR THE SEPARATION AND FIRE RATING OF THE PARTITION. FOR LOCATIONS THAT REQUIRE MODIFICATIONS TO ACHIEVE THE REQUIRED SEPARATION AND FIRE RATING. CONTRACTOR SHALL FILL, APPLY AND OTHERWISE INSTALL THE NECESSARY APPROVED SPECIFIED THROUGH-PENETRATION FIRESTOP.
25. PENETRATIONS OF RATED ASSEMBLIES SHALL BE FIRE STOPPED. FIRE STOPPING SHALL BE OF APPROVED MATERIAL.
26. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN A FURRED CHASE OR ABOVE THE SUSPENDED CEILING.
27. CONTRACTOR SHALL MODIFY EXISTING CONSTRUCTION AS REQUIRED TO PROVIDE ACCESS FOR INSTALLATION AND MAINTENANCE OF THE NEW VARIABLE AIR VOLUME TERMINAL UNITS AND NEW AIR HANDLING UNITS.
28. TESTING, ADJUSTING AND BALANCING: SEE SPECIFICATION SECTION 15980. CONTRACTOR SHALL ADJUST CEILING DIFFUSERS AIR FLOW RATE TO QUANTITIES SHOWN.
29. CONTRACTOR SHALL PROTECT PIPING AND DUCTWORK AND SHALL RELOCATE CONCEALED MECHANICAL AND ELECTRICAL WORK, THAT IS REQUIRED TO PRESERVE THE SERVICE TO OTHER AREAS. NOTIFY CO AND/OR COTR BEFORE DISRUPTING THE DUCTWORK OR PIPING.
30. REINSULATE EXISTING PIPING AND DUCTWORK WHERE INSULATION WAS REMOVED OR DAMAGED AS A RESULT OF WORK UNDER THIS PROJECT.
31. CONTRACTOR SHALL TAKE PRECAUTIONS NOT TO DAMAGE ALL WORK TO REMAIN INCLUDING STRUCTURAL WORK INTENDED TO REMAIN. PROVIDE CAREFUL, SELECTIVE CUTTING AND REMOVAL OF EXISTING CONSTRUCTION AS REQUIRED TO PERMIT RELOCATION OR MODIFICATION OF EXISTING MECHANICAL AND ELECTRICAL SYSTEMS.
32. CONTRACTOR SHALL REPAIR DAMAGED WORK WITH MATERIALS, WORKMANSHIP AND FINISHES MATCHING EXISTING WORK WITH NEW.
33. CONTRACTOR SHALL PROVIDE MANUAL BALANCING DAMPERS AT ALL BRANCH TAKE-OFFS TO DIFFUSERS AND GRILLES. WHERE MULTIPLE DIFFUSERS, OR GRILLES HAVE COMMON AIR TERMINALS, PROVIDE MANUAL BALANCING DAMPER IN BRANCH DUCT TO EACH DIFFUSER AND GRILLE. INSTALL DAMPER AS CLOSE TO TAKE-OFFS AS POSSIBLE.
34. DUCT SIZE UPSTREAM WITHIN 3 FEET OF AIR TERMINALS SHALL BE STRAIGHT AND THE SAME SIZE AS THE INLET DIMENSION UNLESS OTHERWISE NOTED.
35. DUCT SIZES DENOTE INSIDE DIMENSIONS UNLESS OTHERWISE INDICATED. THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED.
36. DIFFUSER, REGISTER AND GRILLE SIZES SHOWN ON FLOOR PLAN ARE NECK SIZES. DUCT SIZE TO DIFFUSERS AND GRILLES SHALL BE THE SAME AS NECK SIZE FOR DIFFUSER AND AS GRILLE CONNECTION SIZE FOR GRILLES, UNLESS OTHERWISE NOTED.
37. WHERE INLET DUCT DIAMETER AND DIFFUSER NECK SIZE ARE THE SAME (I.E. 9"ø & 9 X 9) CONTRACTOR SHALL OVERSIZE THE SHEET METAL PLENUM TO ACCOMODATE THE ROUND DUCT CONNECTION.
38. SUPPLY AIR TERMINAL BOX ACTUATOR AND CONTROLLER TO BE MOUNTED ON THE SAME SIDE AS REHEAT COIL PIPING, REHEAT COIL PIPING TO RUN ABOVE CONTROLLER TO ALLOW ACCESS .
39. DIFFUSER THROWS TO BE FOUR-WAY UNLESS OTHERWISE NOTED.
40. USE ACOUSTICAL FLEX DUCT FOR FINAL CONNECTION TO DIFFUSER AND GRILLES. SEE SPECIFICATIONS. MAXIMUM FLEX DUCT LENGTH SHALL BE 5'-0". FLEXIBLE DUCTWORK SHALL BE INSTALLED TO MAINTAIN A CONSTANT CROSS-SECTIONAL AREA THROUGHOUT A BEND. BRANCH DUCTWORK SHALL BE ALIGNED AND INSTALLED IN A DIRECTION DIRECTLY TOWARD THE AIR TERMINAL AND DIFFUSERS TO PREVENT BUCKLING OR KINKING OF THE FLEXIBLE DUCT.
41. BOTTOM OF PIPE (B.O.P.) ELEVATIONS ARE ONLY APPROXIMATIONS, ACTUAL FINAL ELEVATIONS TO BE CONTRACTOR VERIFIED.
42. INSTALL ALL PIPING WITH PITCHES AS NOTED IN SPECIFICATIONS UNLESS NOTED OR SHOWN OTHERWISE.
43. ECCENTRIC PIPE REDUCERS SHALL BE USED UNLESS SHOWN OR NOTED OTHERWISE.
44. WATER PIPE CONNECTIONS TO AIR HEATING AND COOLING COILS SHALL BE MADE TO PROVIDE COUNTER FLOW BETWEEN WATER AND AIR.
45. SIZE OF SLEEVES SHALL BE BASED ON THE OUTSIDE PIPE DIAMETER INDICATED AND INCLUDING THE OUTSIDE DIAMETER OF INSULATION WHERE APPLICABLE.
46. ASBESTOS CONTAINING MATERIALS (ACM'S)MAY EXIST WITHIN THIS FACILITTY. CONTRACTOR SHALL IMMEDIATELY REPORT ANY ENCOUNTERED UNKNOWN OR SUSPECTED HAZARDOUS MATERIAL TO THE CONTRACTING OFFICER FOR TESTING.

DUCT PRESSURE CLASS TABLE

FAN NO.	DUCT INVOLVED	POSITIVE (P) OR NEGATIVE (N) PRESSURE	MINIMUM PRESSURE CLASS, W.G. INCH (MM)
SUPPLY FAN	UNIT DISCHARGE TO (E) SUPPLY DUCT SOUND ATTENUATOR	P	5 (125)
RETURN FAN	(E) RETURN DUCT SOUND ATTENUATOR TO RETURN PLENUM INLET	N	3 (75)

HVAC DESIGN DATA

OUTDOOR DESIGN TEMPERATURES	104°F 40°C Db SUMMER 72°F 22°C Wb SUMMER 26°F −3°C Db WINTER	DESIGN ALTITUDE:	84 FT. 26 (M)		
INDOOR AREA DESIGN CONDITIONS	SUMMER		WINTER		
	Db °F (°C)	% HUMIDITY	Db °F (°C)	% HUMIDITY	
RADIATION THERAPY OFFICES, PHARMACY	72 (22)	50	78 (25)	30	

FAN SOUND POWER (OUTLET) dB SCHEDULE

OCTAVE BAND	1	2	3	4	5	6	7	8	REMARKS
HZ	63	125	250	500	1000	2000	4000	8000	
SUPPLY FAN	97	98	99	97	93	88	81	74	(1)
RETURN FAN	93	93	91	85	85	78	69	63	(1)

NOTES:

(1) CONTRACTOR SHALL VERIFY SOUND POWER WITH AHU-1 MANUFACTURER

ENERGY EFFICIENT MOTOR SCHEDULE

SCHEDULED HP [KW]	NOMINAL NEMA EFF.	SCHEDULED HP [KW]	NOMINAL NEMA EFF.	SCHEDULED HP [KW]	NOMINAL NEMA EFF.
1.0 E [0.75]	82.5	10 E [7.4]	89.5	50 E [37.3]	93.0
1.5 E [1.1]	84.0	15 E [11.1]	91.0	60 E [44.7]	93.6
2.0 E [1.5]	84.0	20 E [14.9]	91.0	75 E [55.9]	94.1
3.0 E [2.2]	86.5	25 E [18.6]	91.7	100 E [74.6]	94.1
5.0 E [3.7]	87.5	30 E [22.3]	92.4	125 E [93.2]	94.5
7.5 E [5.6]	88.5	40 E [29.8]	93.0	150 E [111.9]	95.0

BOOSTER PUMP SCHEDULE

SYMBOL	SERVICE	MINIMUM CAPACITY GPM	TOTAL DYNAMIC HEAD	TYPE	MAX RPM	MANUFACTURER (OR APPROVED EQUAL)	MOTOR				REMARKS
							MIN.H.P.	VOLTAGE	PHASE	HERTZ	
P-1	COIL HHW	(4)	30'	SERIES 80 INLINE	1750	BELL & GOSSETT	1/2	120	1	60	(1)(3)
P-2	COIL CHW	(4)	30'	SERIES 80 INLINE	1750	BELL & GOSSETT	1	460	3	60	(1)(2)

NOTES:

(1) CONNECT PUMP TO (E) JOHNSON CONTROL METASYS SYSTEM. PROVIDE 120V POWER FOR STARTER COIL.

(2) PUMP TO RUN ON CALL FOR COOLING.

(3) PUMP TO RUN ON CALL FOR HEATING

(4) SEE GPM ON AHU COIL SCHEDULE.

DUCT LEAKAGE CLASSIFICATION AND ALLOWABLE LEAKAGE TABLE

DUCT PRESSURE CLASS, W.G. IN[mm]	SEAL CLASS	APPLICABLE SEALING	SMACNA LEAKAGE CLASS	
			RECTANGULAR DUCT	ROUND DUCT
3" [76]	B	TRAVERSE JOINTS AND SEAMS	12	6
4", 6", 10" [102, 152, 254]	A	JOINTS, SEAMS AND ALL WALL PENETRATIONS	6	3

EXHUAST FAN SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL	CFM	E.S.P.	HP	VOLTS	PHASE	LOCATION	WEIGHT LBS	REMARKS
EF-3	2ND & 3RD FLOORS WEST	GREENHECK (OR APPROVED EQUAL)	BCF-210	3270	1"	1	480	3	WEST PENTHOUSE	250	(1)(2)(3)
EF-7	2ND & 3RD FLOORS EAST	GREENHECK (OR APPROVED EQUAL)	BCF-212	5185	1"	1½	480	3	EAST PENTHOUSE	350	(1)(2)(3)
EF-25	2ND & 3RD FLOORS EAST	GREENHECK (OR APPROVED EQUAL)	BCF-210	3560	1"	1	480	3	EAST PENTHOUSE	250	(1)(2)(3)

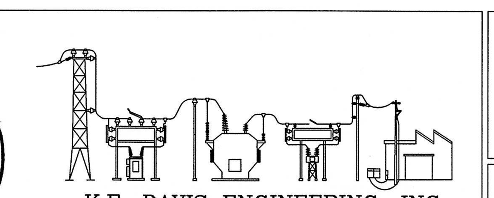
NOTES:

(1) PROVIDE BACKDRAFT DAMPER.

(2) SUSPEND FROM STRUCTURE ABOVE, PROVIDE SEISMICALLY RESTRAINED SPRING VIBRATION ISOLATORS.

(3) START/STOP FAN WITH (E) JOHNSON METASYS SYSTEM.

REGISTERED PROFESSIONAL ENGINEER SHANE PARK M 34008 EXP. 03/31/10 MECHANICAL STATE OF CALIFORNIA



K.F. DAVIS ENGINEERING, INC
530 LA GONDA WAY, SUITE E
DANVILLE, CA 94526

Revisions:	△1 DATED 11/10/08
Drawing Title:	MECHANICAL SCHEDULES
Project Title:	BLDG 650 REPLACE AIR HANDLERS 1 THRU 4, 7 AND 9 – 15
Date:	08/25/08
Project No.:	612A4-07-342
Approved: Medical Center Director	
Approved: Chief, Engineering Service	
Drawn:	RMK
Checked:	KL
Building Number:	
Location:	MATHER VAMC MATHER CALIFORNIA
DRAWING No.	H1.2
Dwg. Of	

Department of Veterans Affairs

SCALE: 3/4"=1'-0" 0 2 4 8 12

SCALE: 1/2"=1'-0" 0 2 4 8 12

SCALE: 1/4"=1'-0" 0 2 4 8 12

SCALE: 1/8"=1'-0" 0 2 4 8 12

111308