- CONCERNED.

- SHALL BE INSULATED.
- DISTRICT & ENGINEER.

- SHALL BE SUBJECT TO THE APPROVAL OF THE DISTRICT & ENGINEER.
- JOBSITE AT ALL TIMES.
- ACTIVITY OF THE BUILDING.
- 25. PROVIDE PROPER SLEEVING AND CAULKING TO ALL NEW WATER PIPING PASSING THROUGH SLAB ON GRADE AND WALLS
- AREA.
- DESIGNATED BY THE OWNER.
- AVOID INTERFERENCE WITH THE NORMAL ACTIVITY ON THE SCHOOL PREMISES

- PRESENT FACILITIES.

- PLANS.
- ENGINEER.

# MECHANICAL NOTES

1. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AND LISTED LIST OF CALIFORNIA CODE OF REGULATIONS (C.C.R.)

2. BEFORE STARTING ANY WORK, VERIFY THE ADEQUACY, LOCATION, SIZE, AND AVAILABILITY OF ALL UTILITIES

3. DRAWINGS INDICATE SIZE AND TERMINATION OF PIPING AND SUGGEST PROPER ROUTES OF PIPING TO CONFORM TO THE STRUCTURE TO AVOID OBSTRUCTION AND TO PRESERVE CLEARANCE. IT IS NOT THE INTENT TO INDICATE ALL NECESSARY OFFSETS AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL PIPING IN SUCH A MANNER AS TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM, KEEP OPENINGS AND PASSAGEWAYS CLEAR AND MAKE ALL EQUIPMENT REQUIRING INSPECTION, MAINTENANCE AND REPAIR ACCESSIBLE WITHOUT FURTHER INSPECTIONS OR ADDITIONAL COST.

4. THE WORK OF THIS PROJECT INVOLVES THE REPLACEMENT OF EXISTING SANITARY WASTE AND VENT PIPING BELOW GROUND INSIDE THE BUILDING AND WASTE PIPING ABOVE GROUND AS INDICATED ON THE DRAWINGS. VISIT THE JOBSITE TO DETERMINE THE EXTENT OF WORK REQUIRED BY THE CONSTRUCTION ACTIVITIES. THE DRAWINGS FOR THESE AREAS SHOW THE CHANGES TO BE MADE REVISE, REARRANGE, REROUTE OR REMOVE EXISTING PIPING AND AND RELATED APPURTENANCES AS REQUIRED TO ACCOMMODATE THE CHANGES AND ADDITIONS SHOWN

5. THE ALTERATION OF THE EXISTING CAST IRON SANITARY WASTE PIPING TO NEW PVC SCHEDULE 80 DRAINAGE PIPING BELOW GROUND INSIDE THE BUILDING IS WORK OF A COMPLEX NATURE WHICH WILL REQUIRE ACCURATE PLANNING, CAREFUL PREPARATION AND EXECUTION BY THE CONTRACTOR.

6. UNLESS OTHERWISE NOTED, EXISTING PIPING AND RELATED APPURTENANCES BEING REMOVED SHALL BE DISPOSED OF OFF-SITE AT CONTRACTOR'S EXPENSE.

7. ALL WORK THAT INVOLVES "SHUT-DOWN" OF EXISTING UTILITIES OR PORTIONS THEREOF, SHALL BE DONE AT SUCH TIMES THAT WILL CAUSE THE LEAST INCONVENIENCE TO THE DISTRICT'S ACTIVITIES. THE EXACT TIME AND LENGTH OF "SHUT-DOWN" SHALL BE PRE-ARRANGED WITH THE DISTRICT AND SCHOOL SITE AT LEAST 72 HOURS IN ADVANCE OF THE REQUIRED SHUT-DOWN.

8. ALL PIPING SHALL BE SEISMICALLY RESTRAINED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "SMACNA" GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL AND PLUMBING PIPING SYSTEMS. 9. EXPOSED HOT WATER SUPPLY PIPES. TRAP AND TRAP ARM AT "ACC" OR "D.A." LAVATORIES WITH HOT WATER

10. RUN ALL PLUMBING LINES CONCEALED. NO LINES SHALL BE RUN EXPOSED WITHOUT PRIOR APPROVAL FROM THE

11. AESTHETICS ARE A VERY IMPORTANT COMPONENT OF THIS PROJECT. INSTALLATION OF PLUMBING WORK SHALL BE OF THE HIGHEST QUALITY AND CRAFTSMANSHIP POSSIBLE.

12. REMOVE ALL (E) ABANDON PIPING THAT ARE EXPOSED OR WILL BE EXPOSED DURING THE DEMOLITION AND NEW PIPING INSTALLATION; COORDINATE AND VERIFY (E) PIPING PRIOR TO REMOVAL.

13. ALL BRANCH PIPING THAT WILL BE REMOVED SHALL BE CAPPED TO THE NEAREST ACTIVE TEE.

14. ALL EXIST. IRRIGATION PIPING BEL. GRD., VALVES, VACUUM BREAKER & ALL RELATED APPURTENANCES TO REMAIN. 15. SUCCESSFUL BIDDER SHALL REQUEST THE DISTRICT TO FURNISH A SET OF AVAILABLE "RECORD DRAWINGS".

CONTRACTOR SHALL USE DRAWINGS AS GENERAL GUIDELINE TO GENERALLY LOCATE EXISTING UNDERGROUND UTILITY LINES (ELECTRIC CONDUITS, WATER PIPING, SPRINKLER LINES, SEWER LINES, ETC.). CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL LINES INCLUDING DEPTH AND INVERT ELEVATIONS IN FIELD PRIOR TO TRENCHING. USE ELECTRONIC LOCATING DEVICES, USE DIG ALERT SERVICE, ETC. INCLUDE THIS LOCATING WORK IN BID. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGED LINES. TO RESTORE TO ORIGINAL CONDITION.

16. AFTER AWARD OF CONTRACT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR. PROVIDING ADEQUATE PROTECTION OF ALL EXISTING STRUCTURES (BOTH EXTERIOR AND INTERIOR) WITHIN AND ADJOINING WORK AREA. ANY EXISTING STRUCTURES AND /OR IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND/OR REPLACED WITH MATERIALS, WORKMANSHIP, FIXTURES OR EQUIPMENT TEMPORARILY REMOVED SHALL BE RE-ERECTED OR INSTALLED IN AN APPROVED MANNER, THE CONTRACTOR SHALL SUBMIT ALL PROPOSED PROTECTION METHODS TO THE CONSTRUCTION MANAGER FOR REVIEW AND SHALL RECEIVE WRITTEN APPROVAL, PRIOR TO THEIR USE.

17. CUTTING, BORING, SAW CUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN APPROVED AND ACCEPTED BY THE DISTRICT & ENGINEER.

18. ALL WELDING SHALL BE SPECIALLY INSPECTED BY AN AWS-CWI QUALIFIED INSPECTOR APPROVED BY THE DISTRICT AND IN COMPLIANCE WITH CBC 1704 A.3.

19. ALL BRACING OF PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES. 20. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES. THE FIELD INSTALLATION

21. A COPY OF THE GUIDELINES PUBLISHED BY SMACNA BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE

22. THE LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES WHERE SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE DISTRICT, THE ENGINEER OR THEIR REPRESENTATIVES. DETERMINE THE EXACT LOCATION, DEPTH, INVERT ELEVATIONS, POINT OF CONNECTIONS AND PROPER SLOPES BEFORE CONNECTING WORK.

23. OCCUPANTS OF THE EXISTING BUILDING SHALL NOT BE INCONVENIENCED, DUE TO CONTRACTOR'S WORK DEBRIS, ETC. ENTRANCES AND CORRIDORS SHALL BE PROTECTED AND KEPT FREE OF OBSTRUCTIONS. THE OWNER SHALL BE NOTIFIED IN ADVANCE OF, TIME DELIVERY OF EQUIPMENT IN ORDER TO AVOID INTERFERENCE WITH THE NORMAL

24. UPON COMPLETION OF PROJECT, CONTRACTOR SHALL PROVIDE OWNER WITH WRITTEN CERTIFICATION THAT ALL MATERIALS USED ON THIS PROJECT ARE ASBESTOS FREE.

26. CONTRACTOR SHALL PROVIDE THE DISTRICT WITH A WRITTEN SCHEDULE OF WORK WHICH IS TO BE COORDINATED AND APPROVED BY THE DISTRICT PROJECT MANAGER, PRIOR TO THE START OF CONSTRUCTION.

27. CONTRACTOR TO COMPLY WITH ALL APPLICABLE SAFETY LAWS (OSHA, CAL OSHA ETC.). 28. WHEN CONTRACTOR HAS BEEN AWARDED THE CONTRACT, IT IS HIS RESPONSIBILITY TO SECURE THE AREAS SO NO UNAUTHORIZED PERSONNEL OR STUDENTS GAIN ACCESS TO THE PROJECT AREA OR THE CONTRACTORS STAGING

29. THE CONTRACTOR SHALL COOPERATE WITH THE DISTRICT TO THE FULLEST EXTENT IN PROVIDING TRAFFIC CONTROL DURING COURSE OF CONSTRUCTION SO AS TO PROVIDE A MAXIMUM PROTECTION FOR STUDENTS AND DISTRICT PERSONNEL. ALL EMPLOYEES ON THE PROJECT WORK SHALL PARK THEIR PRIVATE VEHICLES IN THE AREA

30. THE CONTRACTOR SHALL EXERCISE MAXIMUM DUST AND NOISE CONTROL EFFORTS TO KEEP AT A MINIMUM THE NUISANCE OF DUST AND CONSTRUCTION NOISE FROM THE CONSTRUCTION. 31. THE DISTRICT SHALL BE NOTIFIED IN ADVANCE OF TIMES OF EQUIPMENT OR MATERIALS DELIVERY IN ORDER TO

32. THE WORK AREA SHALL BE CLEANED DAILY AND ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF BY THE CONTRACTOR AT LEGAL DUMP. AT CONCLUSION OF PROJECT CONTRACTOR SHALL LEAVE WORK AREA AND SITE, BROOM CLEAN AND GENERALLY IN SAME CONDITION AS PRIOR TO THIS CONSTRUCTION WORK.

33. PROTECT-IN PLACE AND CARE FOR LAWNS SHRUBS, ETC, IN THE CONSTRUCTION AREAS DURING CONSTRUCTION PERIOD. REPLACE ALL DAMAGED ITEMS AT NO COST TO DISTRICT. 34. AT NO TIME DURING THE WORK UNDER THE CONTRACT SHALL THE CONTRACTOR PLACE, OR CAUSE TO BE PLACED,

ANY MATERIAL OR EQUIPMENT ETC, AT A LOCATION THAT WOULD IMPEDE OR IMPAIR ACCESS TO OR FROM THE 35. CONTRACTORS TRAILER TO BE LOCATED ON SITE AS DIRECTED BY THE DISTRICT.

36. IF ASBESTOS/LEAD IS ENCOUNTERED IT SHALL BE IMMEDIATELY REPORTED TO THE DISTRICT. CONTRACTOR SHALL NOT CONTINUE THEIR WORK WHERE ANY HAZARDOUS MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION. REMOVAL AND ABATEMENT OF SUCH ENCOUNTERED SHALL BE PROVIDED BY DISTRICT.

37. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING STRUCTURES AT THE WORK AREA FROM WEATHER AND OTHER INCLEMENT CONDITIONS. ANY DAMAGE INCURRED DUE TO FAILURE BY THE CONTRACTOR TO PROPERLY PROTECT SUCH WORK SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE. 38. THE CONTRACTOR SHALL DISPOSE OF ALL REMOVED AND OR DEMOLISHED MATERIAL, WASTE AND DEBRIS CAUSED BY THE NEW WORK. THIS MATERIAL SHALL BE REMOVED FROM THE SCHOOL PROPERTY AND TAKEN TO A LEGALLY OPERATED DISPOSAL SITE. SEE NOTE NO.36.

39. CUTTING. BORING. SAW CUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED IN THE DRAWINGS OR ACCEPTED BY THE ARCHITECT AND STRUCTURAL ENGINEER WITH THE APPROVAL OF DSA REPRESENTATIVE.

40. THE SEISMIC ANCHORAGE OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL CONFORM TO ASCE 7-05 SECTION 13.3.1 AND TABLE 13.6-1. ANCHORAGE DETAILS FOR ROOF/FLOOR MOUNTED EQUIPMENT SHALL BE SHOWN ON

41. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES AS APPROVED BY DSA. WHERE BRACING DETAILS ARE NOT SHOWN ON DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECTED TO THE APPROVAL OF ARCHITECT, STRUCTURAL ENGINEER AND DSA FIELD

42. A COPY OF OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY DSA SHALL BE PROVIDED BY CONTRACTOR AND KEPT ON JOB SITE AT ALL TIMES.

### 1. CONTRACTOR SHALL PROV1DE COMPLETE SEISMIC ANCHORAGE AND BRACING FOR ALL PLUMBING AND REQUIRED PIPING

- 2. CONTRACTOR SHALL COMPLY WITH THE SUPPORT AND ANCHORAGE OF HVAC EQUIPMENT AS SHOWN ON DRAWINGS.
- A. THE EQUIPMENT HAS AN OPERATING WEIGHT OVER 40D POUNDS AND IS MOUNTED DIRECTLY ON THE FLOOR OR ROOF
- B. THE EQUIPMENT HAS AN OPERATING WEIGHT OVER 20 POUNDS AND IS SUSPENDED FROM THE ROOF, FLOOR, OR WALL OR IS SUPPORTED BY SPRING ISOLATION DEVICES. C. THE CONTRACTOR SHALL SUBMIT THE ANCHORAGE DETAILS AND CALCULATIONS FOR ITEMS NOT SHOWN ON THE DRAWINGS AND FOR ALL SUBSTITUTED EQUIPMENT THAT IS GREATER IN WEIGHT OR VARIES MORE THAN 10% IN I FNGTH.
- 3. THE CALCULATIONS AND DETAIL SUBMITTALS SHALL BE SEALED AND SIGNED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA. THE CALCULATIONS SHALL DEMONSTRATE THE FOLLOWING:
- A. THE ADEQUACY OF ANCHORAGE UNDER ALL APPLICABLE LOAD CONDITIONS PRESCRIBED BY THE UNIFORM BUILDING CODE. B. THE STRUCTURAL ELEMENTS, WHICH ARE RESISTING THE ANCHORAGE LOADS; SUCH AS CONCRETE FILL ON
- 4. FOR ALL VIBRATION ISOLATORS AND THEIR ANCHORAGES, THE CONTRACTOR SHILL PROVIDE CALCULATIONS, DETAILS AND TEST DATA TO SUBSTANTIATE THE ISOLATOR'S CAPACITY FOR VERTICAL AND LATERAL LOADS. CALCULATIONS MUST ALSO BE SUBMITTED TO SUBSTANTIATE THE SIZE, QUANTITY, LOCATION AND CONNECTION TO STRUCTURE. THE DRAWINGS MUST BE MADE CONSISTENT WITH THE CALCULATIONS. THE MANUFACTURER, EQUIPMENT AND STRUCTURAL ATTACHMENT PROCEDURE MUST BE CLEARLY SPECIFIED. ISOLATORS WHICH SUPPORT A COMPONENT INSIDE THE
- ACTUAL UNIT WILL NOT BE REVIEWED. WHERE CONCRETE AND MASONRY EXPANSION OR ADHESIVE TYPE ANCHORS ARE USED, THE ANCHORAGE DETAILS AND CALCULATIONS SHALL INDICATE THE MANUFACTURER, ICBO REPORT NO., TYPE, DIAMETER, MINIMUM EMBEDMENT, CONCRETE TYPE AND STRENGTH.
- CAUTION TO AVOID CUTTING DR DAMAGING THE EXISTING REINFORCING BARS. LOCATE REINFORCEMENT BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTILLATION. MAINTAIN A MINIMUM CLEARANCE OF ONE INCH BETWEEN THE R8NFORCEMENT AND THE DRILILED-IN ANCHOR AND/OR PIN. 7. NO POWER DRIVEN FASTENERS AND/OR SHOT PINS ARE ALLOWED FOR HANGING EQUIPMENT, DUCTWORK AND PIPING SYSTEMS.
- 8. ALL EXPANSION ANCHORS SHALL HAVE 50% OF THE BOLTS TESTED. IF ANY ANCHOR F~LS TESTING, TEST ALL ANCHORS OF THE~E CATEGORY NOT PREVIOUSLY TESTED UNTIL 20 CONSEQUENT PASS, THEN RESUME THE MINIMAL TESTING FREQUENCY. TESTING SHALL OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS, IN ACCORDANCE WITH IR19-1.
- 9. FOR ANCHORAGE USE RED HEAD THRU BOLTS ICC ESR-2427 OR HILTI KWIK BOLT 3 WEDGE ANCHORS ICC ESR-13BS. 10. THE SEISMIC ANCHORAGE OF MECHANICAL EQUIPMENT SHALL CONFORM TO 2013 CBC SECTIONS 1615A.1.21 AND 1616A.1.22.

# **EXISTING CONDITIONS**

- 1. THE INFORMATION ON THESE DRAWINGS WAS OBTAINED FROM THE BEST SOURCES AVAILABLE BUT IT IS NOT TO BE ASSUMED CORRECT IN ALL ASPECTS.
- 2. THE CONTRACTOR SHALL VERIFY IN THE FIELD AII EXISTING CONDITIONS. INFORM THE ENGINEER AND DISTRICT'S REPRESENTATIVE OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO COMMENCING WORK. DO NOT PROCEED WITHOUT APPROVAL BY THE ENGINEER AND DISTRICT'S REPRESENTATIVE, FOR ANY CHANGES, IF REQUIRED.
- 3. PLEASE BE ADVISED THAT THIS IS AN ALTERATION TO AN EXISTING STRUCTURE AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTING CONDITIONS.
- 4. CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTAL OF BID & FAMILIARIZE HIMSELF W/ EXISTING CONDITIONS. SUBMITTAL OF BID SHALL BE ONLY AFTER THE CONTRACTOR HAS VISITED THE SITE. CONTRACTOR SHALL IDENTIFY ALL DISCREPANCIES FOUND AND INDICATE ON HIS BID THE CORRESPONDING COST IMPLICATIONS, IF ANY.

# SEISMIC NOTES

IF THERE IS NO ANCHORAGE DETAIL SHOWN ON THE DRAWINGS, SUBMIT SHOPDRAWINGS IF THE FOLLOWING APPLY:

METAL DECK AND/OR STEEL BEAMS, ARE NOT STRESSED BEYOND ITS ACCEPTABLE VALUE.

6. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND

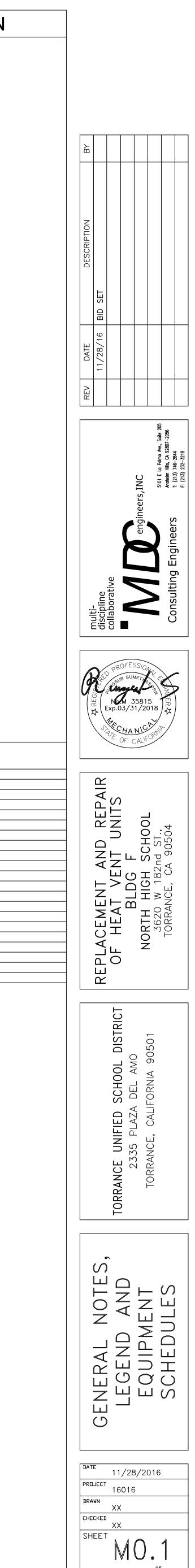
# MECHANICAL LEGEND AND ABBREVIATION

	ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
	w	SANITARY WASTE PIPING BEL. FLR.	ABS.	ACRYLONITRILE – BUTADIENE – STYRENE
	w	SANITARY WASTE PIPING ABV. FLR.	ABV.	ABOVE
	V	VENT PIPING	ACC	ACCESSIBLE
LW	LW	LABORATORY WASTE PIPING		
LV	LV	LABORATORY VENT PIPING		
	CW	COLD WATER PIPING	A.P.	ACCESS PANEL
	нw	HOT WATER PIPING	BEL.	BELOW
	HWR	HOT WATER RETURN PIPING	BEH.	BEHIND
<del>/////////////////////////////////////</del>		EXIST. PIPING TO BE REMOVED	CLG.	CEILING
Ð	POC	POINT OF CONNECTION	C.I.	CAST IRON
O	UP	PIPING UP	CONN.	CONNECT/CONNECTION
Э	DN	PIPING DOWN	CON'T.	CONTINUATION
Φ	FCO COYB	FLOOR CLEANOUT CLEANOUT IN YARD BOX	DA.	DISABLED ACCESS
	wco	WALL CLEANOUT	DN.	DOWN
G	G	GAS PIPING	DF.	DRINKING FOUNTAIN
	U.	UNION	DWG'S	DRAWINGS
lQt	B.V.	BALL VALVE	(E) EXIST.	EXISTING
	C.V.	CHECK VALVE	FLR.	FLOOR
	SOV	SHUT-OFF VALVE	FD	FLOOR DRAIN
	FLEX.	FLEXIBLE CONNECTION	FU	FIXTURE UNIT
——(E) HW——	(E) HW	EXIST. HOT WATER PIPING	FV	FLUSH VALVE
——(E) CW——	(E) CW	EXIST. COLD WATER PIPING	GPM	GALLONS PER MINUTE
—— (E) G ——	(E) G	EXIST. GAS PIPING	GRD	GRADE
—— (E) W ——	(E) W	EXIST. WASTE PIPING	H.B.	HOSE BIBB
— —(E) V— —	(E) V	EXIST. VENT PIPING	HDR	HEADER
I&I	G.C.	GAS COCK	IE.	INVERT ELEVATION
(E)	EXIST.	EXIST. PIPING TO BE ABANDONED	MTD	MOUNTED
TP	TP	TRAP PRIMER LINE	CFH	CUBIC FEET PER HOUR
——(E) IRR ——	(E)IRR	EXIST. IRRIGATION LINE	REQ'D	REQUIRED
SD	SD	STORM DRAIN PIPING	TYP.	TYPICAL
	V.C.P.	VETRIFIED CLAY PIPE	VTR.	VENT THRU ROOF
	СНЖ	CHILLED WATER		
	ннพ	HEATING HOT WATER		
۲	(E)AFSH	EXIST. AUTOMATIC SPRINKLER HEAD	Y.B.	YARD BOX
TW	TW	TEMPERED WATER	F.H.C.	FIRE HOSE CABINET
	OCEW	ON CENTER EACH WAY	VCP	VITRIFIED CLAY PIF

## SHEET INDEX

M0.	1 GENERAL NOTES, LEGEND AND EQUIPMENT SCHEDULES
M0.:	2 MECHANICAL EQUIPMENT SCHEDULES
M2.	1 BUILDING F FIRST FLOOR MECHANICAL PLAN
M2.	2 BUILDING F ROOF MECHANICAL PLAN
M3.	1 BUILDING F MECHANICAL ROOM ENLARGED PLANS
M5.	1 HHW PIPE RISER SCHEMATIC DIAGRAMS
M6.	1 LEGEND, NOTES, AND OVERALL SYSTEM ARCHITECTURE
M6.	2 HEATING HOT WATER CONTROL DIAGRAMS AND SEQUENCE OF OPERATION
M6.	3 HEATING-VENTILATING UNIT AND EXHAUST FAN CONTROL DIAGRAMS AND SEQUENCE OF OPERATION
M6.	4 HEATING-VENTILATING UNIT CONTROL DIAGRAMS AND SEQUENCE OF OPERATION
M6.	5 EXHAUST FAN CONTROL DIAGRAMS AND SEQUENCE OF OPERATION
M7.	1 MECHANICAL DETAILS
M7.	2 MECHANICAL DETAILS
M7.	3 MECHANICAL DETAILS
E0.	1 ELECTRICAL GENERAL NOTES, AND SYMBOL LIST
E2.	1 BUILDING F FIRST FLOOR ELECTRICAL PLAN
E2.2	2 BUILDING F ROOF ELECTRICAL PLAN
E3.	1 BUILDING F MECHANICAL ROOM ELECTRICAL ENLARGE PLAN

S1.0 | STRUCTURAL GENERAL NOTES, AND DETAILS



# HOT WATER HEATING BOILER SCHEDULE

										00		_		
UNIT TAG	LOCATION	MAKE	MODEL NUMBER	SERVICE	INPUT	OUTPUT	н	EATING W	IATER CO	IL	ELECTRICA	۸L	WEIGHT	NOTES
	Lookhold		MODEL NOMBER	SERVICE	MBH	MBH	GPM	LWT(*F)	EWT(*F)	ΔΡ (FT)	VOLT/PH/HZ	FLA	(LBS.)	NOTES
B-1	MECH RM 123	PATTERSON- KELLEY	MACH C1050	HOT WATER HEATING SYSTEM	1050	987	66	180	150	5	120/1/60	6.0	1000	1. BOILER SHALL BE LOW-NOX, SCAQMD COMPLIANT, HOT WATER BOILER COMPLETE WITH NURO CONTROL UNIT.
														2. CONNECT BOILER CONTROLS TO BMS.     3. PROVIDE CONDENSATE NEUTRALIZING KIT.     4. PROVIDE CPVC SCHEDULE 80 FOR VENTING SYSTEM     CONDUCTS ON AND ADDRESS
														<ul> <li>COMPLETE WITH ROOF CAP AND DRAFT CONTROL AS REQUIRED.</li> <li>5. PROVIDE SEISMIC CLIPS FOR ANCHORING TO CONCRETE PAD.</li> </ul>
														6. PROVIDE REQUIRED RELAYS AND CONTROLS TO OPERATE BOILER PUMP.

							PUM	<sup>&gt;</sup> SCHE	EDULE	Ξ		
								MAX.	ELE	ECTRICAL	OPERATING	
UNIT TAG	MAKE	MODEL NUMBER	SERVICE	TYPE			RPM	WORKING PRESSURE, PSI	HP	VOLT/PH/HZ	WEIGHT (LBS.)	NOTES
HWP-1	TACO	KV1507	HOT WATER HEATING	VERTICAL, INLINE	66	40	1750	150	1.5	208/3/60	125	1. HWP-1; PROVIDED WITH TEFC PREMIUM EFFICIENCY MOTORS AND PUMP STANDS; PROVIDE SUCTION DIFFUSERS WITH STRAINERS (OR
BP-1	TACO	1900 SERIES	BOILER	INLINE	66	15	1750	150	0.5	120/1/60	90	<ul> <li>Y-STRAINERS) CHECK VALVES, SHUTOFF VALVES, PRESSURE GAGES, AND FLEX CONNECTIONS.</li> <li>2. HWP-1: PROVIDE VFD (ABB); CONTROLLED AND MONITORED THRU</li> </ul>
												CENTRAL HHW CONTROL SYSTEM. 3. BP-1: INTERLOCK WITH BOILER CONTROLLER.

## COMBINATION AIR AND DIRT SEPARATOR SCHEDULE

UNIT TAG	LOCATION	MAKE	MODEL NUMBER	SERVICE	TYPE	GPM	INLET/OUTLET SIZE (IN.)	DRY WEIGHT (LBS.)	NOTES
AS-1	MECH RM 123	SPIROTHERM	VDN400FA	HEATING HOT WATER	COALESCING TYPE COMBINATION AIR AND DIRT SEPARATOR	70	4/4		FLANGE CONNECTION ASME CONSTRUCTION COMPLETE WITH COPPER COALESCING MEDIUM, BRASS VENT HEAD, DRAIN VALVE, AND REMOVABLE LOWER HEAD.

## EXPANSION TANK SCHEDULE

					EXPANSI	ON TAIN	SUTEL	JULE			
UNIT TAG	LOCATION	MAKE	MODEL NUMBER	SERVICE	TYPE	TANK VOLUME	ACCEPTANCE VOLUME	SIZE I	NCHES	OPERATING	NOTES
	200/1101			GERVICE		(GAL)	(GAL)	DIA.	HEIGHT	WEIGHT (LBS.)	
ET-1	MECH RM 123	WESSELS	NLA50	HEATING HOT WATER	BLADDER	13	13	14	24		PRE–CHARGED STEEL EXPANSION TANK W/ REPLACEABLE HEAVY–DUTY BUTYL BLADDER; TANK SHALL BE ASME RATED.

# CHEMICAL POT FEEDER SCHEDULE

				•.					
UNIT TAG	LOCATION	MAKE	MODEL NUMBER	SERVICE	CAPACITY (GAL)	MAX. PRESSURE (PSI)	MAX. TEMPERATURE (*F)	OPERATING WEIGHT (LBS.)	NOTES
CPF-1	MECH RM 123	JL WINGERT	DB-5HD	HOT WATER HEATING SYSTEM	6	200	200		COMPLETE WITH INLET, OUTLET, DRAIN VALVE, AND FILL PORT, ISOLATION VALVES, INTERNAL & EXTERNAL EPOXY COATING, PRESSURE GAGE, AND AIR RELEASE VALVE

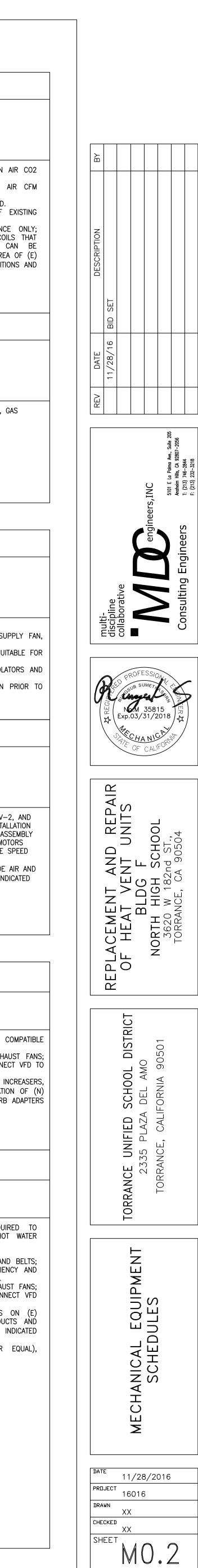
	· · · · · ·		I					NE	W HO	T WA	TER	HE		NGC	COIL	SC	CHE	DUL	Ξ			
					SI	JPPLY SI	· · = ·	MIN. OUTSIDE	DCV MIN. OUTSIDE			HEATIN		water c						WEIGHT		
UNIT TAG	MAKE	TYPE	UNIT SERVED	LOC			AIR CFM	AIR (1)	AIR (2) CFM	CAPACITY BTU/HR		LAT (°F)	APD (IN)	FLOW GPM	EWT (°F)	LWT (°F)		LENGT H (IN)	HEIGHT (IN)	(LBS.)		NOTES
HVHC-1	SFI	CASED COIL	HV-1				,500	650	NA	160,000		105	0.1	11	180	150	1.5	30	30	90 1		MODE: MINIMUM OUTSIDE AIR CFM WHEN RETURN AIR ABOVE 900 PPM.
HVHC-2	SFI	CASED COIL	HV-2	R	DOF 4	,100 3	,000	750	NA	180,000	65	105	0.1	12	180	150	1.5	31	30	90	. DEMAND- WHEN RE	CONTROL VENTILATION MODE: MINIMUM OUTSIDE AIR FURN AIR CO2 LEVEL IS BELOW 900 PPM. R HEATING COILS SHALL BE INSULATED AND CASED.
SFHC-1	SFI	CASED COIL	SF-1	MECH	RM 106 10	0,000 5	,000	3,200	1,150	160,000	65	80	0.2	11	180	150	1.5	70	36	125 4	. CAPACITIE GAS-FIRE	S OF COILS WERE BASED ON CAPACITIES OF EXI D FURNACE IGTH AND HEIGHT ARE SHOWN FOR REFERENCE
SFHC-2	SFI	CASED COIL	SF-2	MECH	RM 106 12	2,500 7	,000	5,000	1,150	200,000	64	80	0.2	13	180	150	1.5	78	39	150	WILL ME	OR SHALL DETERMINE THE ACTUAL SIZE OF COILS ET THE PERFORMANCE ABOVE AND THAT CAN DATED IN EXISTING CONDITIONS, EITHER MATCH AREA O
SFHC-3	SFI	CASED COIL	SF-3	MECH	RM 123 4	,500 2	,500	1,800	600	60,000	65	80	0.2	4	180	150	1.5	45	24	75		OR MODIFY (E) CABINETS; PROVIDE DUCT TRANSITIONS AS REQUIRED.
SFHC-4	SFI	CASED COIL	SF-4	R	DOF 4	,000 2	,000	1,400	500	60,000	65	80	0.2	4	180	150	1.5	45	24	75		
					E	EXIST	NG	GAS-	FIRED	) FUR	RNAC	E S	CHE	EDU	LE (	UN	ITS <sup>-</sup>	το ε	ER	EMOVE	D)	
						SUPPL AIR		SSURE	FURNACE CA		WEIGH	.   <sub>H</sub>	OT WAT	ER HEAT	ING COI	11						
UNIT TAG	MAKE	MODEL	AREA SERVI	ED	LOCATION	CFM	IN			OUTPUT BTU/HR	(LBS.)			PLACEME								NOTES
DF-1	REZNOR	HX-200	STUDENT DINING	G 107	MECHANICAI ROOM 106		0	.45 2	200,000	160,000	250			SFHC-1						RNACE SHALL AND CONDUITS		AND DISPOSED OF INCLUDING ASSOCIATED VENTS, GAS
DF-2	REZNOR	HX-250	STUDENT DINING	G 108	MECHANICAI ROOM 106		(	0.5 2	250,000 2	200,000	300			SFHC-2				·				
DF-3	REZNOR	HX-75	FOOD SERVICE	118	MECHANICAI ROOM 123		(	).3	75,000	60,000	200			SFHC-3								
DF-4	REZNOR	HX-75	FACULTY DININ	G 130	ROOF	1,950	(	).3	75,000	60,000	200			SFHC-4								
								NE\	N HEA	TING	G-VE	NTIL	ATI	NG	UNI	T S	CHE	DUL	E			
				MIN. OUTSID	E						ATING HC					- ELE	ECTRICAL	WEIGH	т			
UNIT TAG	MAKE	MODEL	AREA SERVED	AIR CFM	CFM	SUPPL ESP (IN)		MAX. RPM	CAPACITY BTU/HR	EAT (°F)	LAT (°F)	FLOW GPM	EWT (°F)	LWT (°F)	WPD (FT)	VOLT	T/PH/HZ	LBS.				NOTES
HV-3	MAGIC AIRE	BMB30H	PREP 115	1000	3000	0.75	1.5	1800	160,000	57	105	11	180	150	3.4	208	8/3/60	500				ING HEATING VENTILATING UNIT HV-3.
																			3.	MOTOR, HOT MOTOR SHALI VARIABLE DRI	WATER HEATI . BE PREMIU VE OPERATIO	NG COIL, MERV 8 FILTERS M EFFICIENCY AND DRIVE ASSEMBLY SHALL BE SUITABI N; VFD SHALL BE ABB ACH550 SERIES.
																				SEISMIC REST CONTRACTOR	RAINTS.	EL FRAME SUPPORT COMPLETE WITH SPRING ISOLATOF
																				PURCHASE.		
	1						E	XIST	ING H	EATI	NG-`	/EN	TIL	TIN	GU	NIT	SCI	HED	ULE			
						MIN. OUTSID AIR	E							CAPACIT	— Ε	ELECTRI	ICAL	WEIGHT		UNIT		
UNIT TAG	MAKE	MODEL	AREA SERVI	ED	LOCATION	CFM	C	FM E	SUPPLY	HP	MAX. RF		IPUT U/HR	OUTPL BTU/H		OLT/PH	H/HZ	(LBS.)	REPL	ACEMENT		NOTES
HV-1	REZNOR	HREB-200	WEIGHT LIFTING	G 101	ROOF	400	3	700	0.75	3	1800	20	0,000	160,00	00 2	240/3/	/60	600		_ 1	MODIFY U	) HV-2: REMOVE GAS FURNACE IN HV-1 AND HV-2, NIT CABINETS AS REQUIRED TO ACCOMMODATE INSTALLAT
HV-2	REZNOR	HREB-225	WRESTLING 2	103	ROOF	500	4	100	0.75	3	1800	22	5,000	180,00	00 2	240/3/	/60	600		-	AND REPL SHALL BE	HOT WATER HEATING COILS; CLEAN UNIT AND FAN ASSEM ACE FILTERS, MOTORS, DRIVES AND BELTS; NEW MOTOR PREMIUM EFFICIENCY AND SUITABLE FOR VARIABLE SPE
HV-3	REZNOR	HXE-200	PREP 115	5	MECH RM 12	23 1000	30	000	0.75	1.5	1800	20	0,000	160,00	00 2	240/3/	/60	400	ł	<sub>HV-3</sub> 2	. HV—1 ANI RETURN D	N; VFD SHALL BE ABB ACH550 SERIES. ) HV—2: PROVIDE (N) ACTUATORS ON (E) OUTSIDE AIR ) AMPERS AND ADJUST/BALANCE AS REQUIRED TO INDICA
																				3	OUTSIDE / HV-3: U	AIR CFM. NIT SHALL BE REMOVED AND DISPOSED OF.
										N	EWI	FAN	SC	HED	ULE	<b>-</b>						
							MAKE	MODE	EL NUMBER		TYF	Έ		CFM	(1	SP IN. .C.)	RPM	н	P	VOLT/PH/HZ	OPERATING WEIGHT (LBS.)	NOTES
UNIT TA	G	SERVICE	L	OCATION	AREA SI	ERVED										.0.)						HOTES
		EXHAUST FA	N		WEIG	HT LO	PEN COO	к 27	70HI C-B	CENTRIF			UNTED,	6.000		/4	525	3/	′4	208/3/60		1. PROVIDE PREMIUM EFFICIENCY MOTORS COM
EF-4	(S	EXHAUST FA EQUENCE W/ EXHAUST FA	N HV-1) N	ROOF	WEIG	HT NG LOP	EN COO		70HLC-B		LOW PF	OFILE		6,000	D 1,	/4	525	3/		208/3/60	370	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT</li> </ol>
EF-4 EF-5	(S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/	N HV-1) N HV-2)	ROOF ROOF	WEIG LIFTII WREST	HT LOP	EN COO	К 21	IOHLC-B	CENTRIF	LOW PF UGAL, R LOW PF	OFILE	UNTED,	4,900	D 1,	/4	849	3/	′4	208/3/60	370	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION</li> </ol>
EF-4	(S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/	N HV-1) N HV-2) N HV-2)	ROOF	WEIG LIFTII WREST	HT LOF NG LOF LING LOF		К 21		CENTRIF	LOW PF UGAL, R LOW PF UGAL, R LOW PF	COFILE COF-MO COFILE COF-MO COFILE	UNTED, UNTED,		D 1,				′4		370	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION</li> </ol>
EF-4 EF-5	(S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA	N HV-1) N HV-2) N HV-2)	ROOF ROOF	WEIG LIFTII WREST	HT LOP NG LOP LING LOP LING LOP	EN COO	К 21 К 21	IOHLC-B	CENTRIF	LOW PF UGAL, R LOW PF UGAL, R LOW PF	20FILE 20F-M0 20FILE 20F-M0 20FILE 20FILE	UNTED, UNTED,	4,900	D     1,       D     1,       D     1,       D     1,	/4	849	3/	<sup>′</sup> 4 <sup>′</sup> 4	208/3/60	370	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE</li> </ol>
EF-4 EF-5 EF-6	(S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/	N HV-1) N HV-2) N HV-2)	ROOF ROOF ROOF	WEIG LIFTII WREST WREST	HT LOP NG LOP LING LOP LING LOP	EN COO	К 21 К 21	IOHLC-B	CENTRIF	LOW PF UGAL, R LOW PF UGAL, R LOW PF	20FILE 20F-M0 20FILE 20F-M0 20FILE 20F-M0 20FILE	UNTED, UNTED, UNTED,	4,900 4,900 3800	D     1,	/4 /4 /4 JLE	849 849 695	3/	<sup>′</sup> 4 <sup>′</sup> 4	208/3/60 208/3/60	370 260 260	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE</li> </ol>
EF-4 EF-5 EF-6	(S (S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/	N HV-1) N HV-2) N HV-2) SF-4)	ROOF ROOF ROOF	WEIG LIFTII WREST WREST FACUI DININ	HT LOP NG LOP LING LOP LING LOP NG LOP	EN COO	К 21 К 21 К 21	IOHLC-B	CENTRIF CENTRIF CENTRIF	LOW PF UGAL, R LOW PF UGAL, R LOW PF	COFILE COF-MO COFILE COF-MO COFILE COFILE COFILE	UNTED, UNTED, UNTED,	4,900 4,900 3800	D 1, D 1, D 1, D 1, D 1, D 1, EDU	/4 /4 /4	849 849 695	3/	<sup>7</sup> 4 <sup>7</sup> 4 <sup>7</sup> 2	208/3/60 208/3/60	370 260 260	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE</li> </ol>
EF-4 EF-5 EF-6 EF-26	(S (S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA	N HV-1) N HV-2) N SF-4) L	ROOF ROOF ROOF ROOF OCATION	WEIG LIFTII WREST WREST FACUI DININ AREA SI	HT LOP NG LOP LING LOP LING LOP STY LOP ERVED	REN COO REN COO REN COO	К 21 К 21 К 21	IOHLC-B IOHLC-B	CENTRIF	LOW PF UGAL, R LOW PF UGAL, R LOW PF	COFILE COF-MO COFILE COFILE COFILE COFILE COFILE	UNTED, UNTED, UNTED,	4,900 4,900 3800 SCHI	D 1, D 1, D 1, D 1, D 1, D 1, D 1, D 1,	/4 /4 /4 JLE IN.	849 849 695	3/	'4 '4 '2 P	208/3/60 208/3/60 208/3/60	370 260 260 260 0PERATING WEIGHT	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE SHALL BE L-ARDEN OR EQUAL.</li> </ol> NOTES           1. MODIFY         ALL         FAN         CABINETS         AS         REQUIRED
EF-4 EF-5 EF-6 EF-26	(S (S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/	N HV-1) N HV-2) N SF-4) L N ME R( N ME	ROOF ROOF ROOF ROOF OCATION	WEIG LIFTII WREST WREST FACUI DININ AREA SI AREA SI DINING L STUDI	HT LOP NG LOP LING LOP LING LOP STY LOP ERVED CONT 107	EN COO EN COO EN COO MAKE	К 21 К 21 К 21	IOHLC-B IOHLC-B IOHLC-B EL NUMBER BF	CENTRIF	LOW PF UGAL, R UGAL, R LOW PF UGAL, R LOW PF	COFILE COF-MO COFILE COFILE COFILE COFILE COFILE COFILE COFILE	UNTED, UNTED, UNTED,	4,900 4,900 3800 SCHI CFM	D       1,         D       1,	/4 /4 /4 JLE SP IN. .C.)	849 849 695 RPM	3/ 3/ 1/ H 7.	/4 /4 /2 5	208/3/60 208/3/60 208/3/60 VOLT/PH/HZ 240/3/60	370 260 260 260 260 0PERATING WEIGHT (LBS.) 650	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE SHALL BE L-ARDEN OR EQUAL.</li> <li>NOTES</li> <li>MODIFY ALL FAN CABINETS AS REQUIRED ACCOMMODATE INSTALLATION OF NEW HOT W HEATING COILS.</li> <li>CLEAN ALL UNIT AND FAN ASSEMBLY.</li> <li>REPLACE ALL FILTERS, MOTORS, DRIVES AND E</li> </ol>
EF-4 EF-5 EF-6 EF-26 UNIT TAC SF-1 SF-2	(S (S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ SERVICE SUPPLY FA SUPPLY FA	N HV-1) N HV-2) N SF-4) L N ME R( N ME R( N ME	ROOF ROOF ROOF ROOF OCATION	WEIG LIFTII WREST WREST FACUI DININ AREA SI AREA SI DINING L STUDI DINING	HT NG LOI LING LOI LING LOI LING LOI STY IG LOI ERVED C ERVED C ENT 107 C ENT 108 ERVICE	EN COO EN COO EN COO MAKE MAKE	К 21 К 21 К 21	IOHLC-B IOHLC-B IOHLC-B EL NUMBER BF 219	CENTRIF	LOW PF UGAL, R LOW PF UGAL, R UGAL, R UGAL, R UGAL, R STIN STIN STIN BINET, B BINET, B	COFILE COFILE COFILE COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COF-MO COFILE COFILE COF-MO COFILE CO	UNTED, UNTED, UNTED,	4,900 4,900 3800 SCHI CFM 10,00 12,50	D       1,         D       1         IO       1         IO       1	/4 /4 /4 JLE SP IN. .C.) I.5	849 849 695 RPM 970 686	3/ 3/ 1/ H 7. 7.	<pre>'4 '4 '2 '2 5 5</pre>	208/3/60 208/3/60 208/3/60 VOLT/PH/HZ 240/3/60 240/3/60	370 260 260 260 0PERATING WEIGHT (LBS.) 650 955	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE SHALL BE L-ARDEN OR EQUAL.</li> <li>NOTES</li> <li>MODIFY ALL FAN CABINETS AS REQUIRED ACCOMMODATE INSTALLATION OF NEW HOT W HEATING COILS.</li> <li>CLEAN ALL UNIT AND FAN ASSEMBLY.</li> <li>REPLACE ALL FILTERS, MOTORS, DRIVES AND E NEW MOTORS SHALL BE PREMIUM EFFICIENCY SUITABLE FOR VARIABLE SPEED OPERATION.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST</li> </ol>
EF-4 EF-5 EF-6 EF-26 UNIT TAC	(S (S (S (S	EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ EXHAUST FA EQUENCE W/ SERVICE	N HV-1) N HV-2) N SF-4) L N N ME R( N N ME R( N	ROOF ROOF ROOF ROOF OCATION	WEIG LIFTII WREST WREST FACUI DININ AREA SI AREA SI DINING L STUDI DINING	HT NG LOP LING LOP LING LOP TY IG LOP ERVED C ENT 107 C ENT 108 ENT 108	EN COO EN COO EN COO MAKE	К 21 К 21 К 21	IOHLC-B IOHLC-B IOHLC-B EL NUMBER BF	CENTRIF	LOW PF UGAL, R LOW PF UGAL, R LOW PF UGAL, R LOW PF STIN TYF BINET, B	COFILE CO	UNTED, UNTED, UNTED, <b>AN S</b> /E	4,900 4,900 3800 SCHI CFM 10,00	D       1,         D       1         ID       1         ID       1         ID       1         ID       1	/4 /4 /4 JLE SP IN. .C.)	849 849 695 RPM 970	3/ 3/ 1/ H 7.	<pre>/4 /4 /2 /2 5 5 5 5</pre>	208/3/60 208/3/60 208/3/60 VOLT/PH/HZ 240/3/60	370 260 260 260 260 0PERATING WEIGHT (LBS.) 650	<ol> <li>PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.</li> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>PROVIDE CURB ADAPTERS, REDUCERS AND INCR AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE SHALL BE L-ARDEN OR EQUAL.</li> <li>NOTES</li> <li>MODIFY ALL FAN CABINETS AS REQUIRED ACCOMMODATE INSTALLATION OF NEW HOT W HEATING COILS.</li> <li>CLEAN ALL UNIT AND FAN ASSEMBLY.</li> <li>REPLACE ALL FILTERS, MOTORS, DRIVES AND E NEW MOTORS SHALL BE PREMIUM EFFICIENCY SUITABLE FOR VARIABLE SPEED OPERATION.</li> </ol>

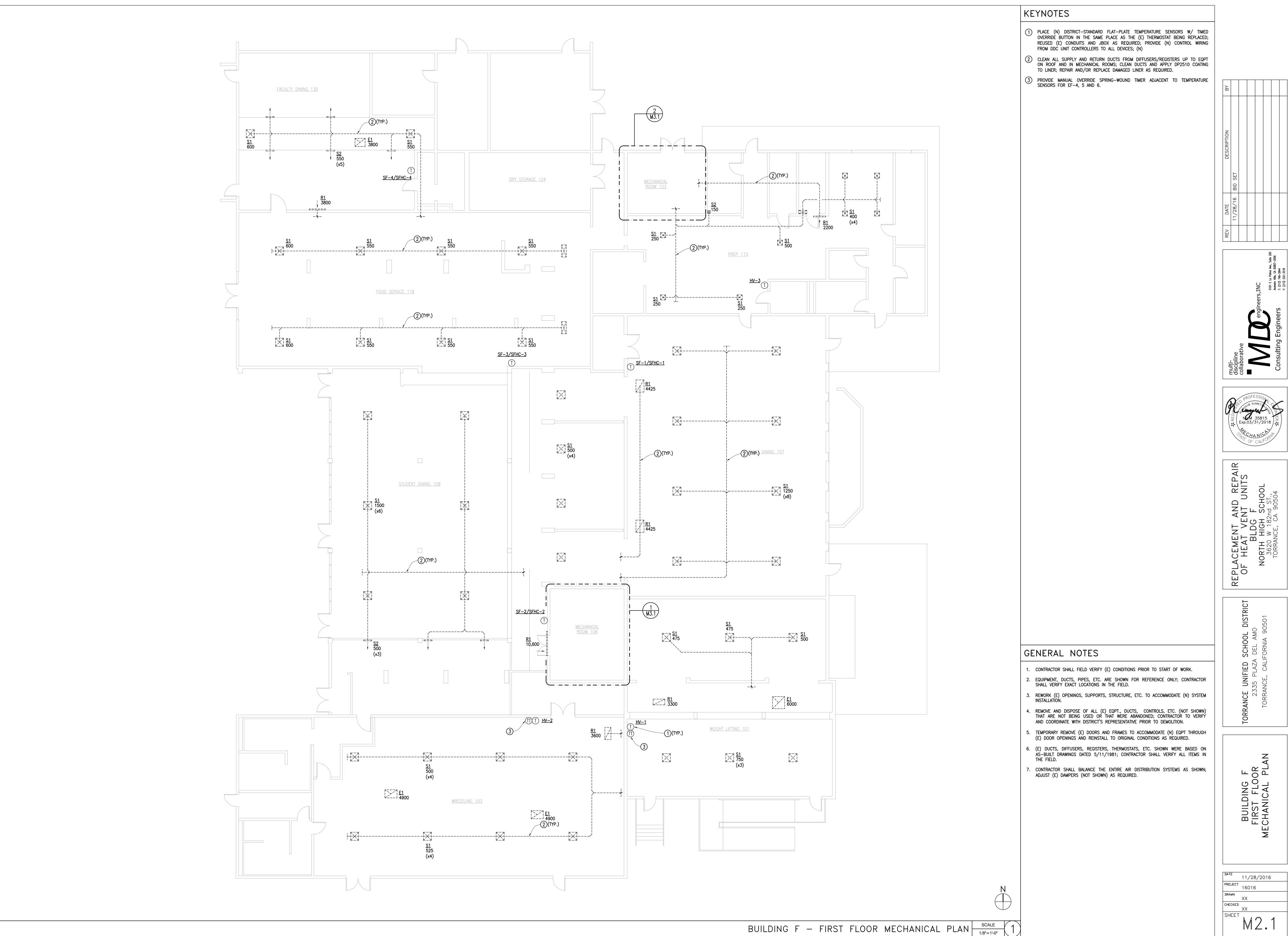
								N		OT WA	TER	RHE		NG (		. SC	CHEI	DUL				
						MAX. SUPPLY	MIN. SUPPLY		De OUTSIDE	·	1	HEATING	G HOT V	WATER C				FIN	IS	WEIGHT		
UNIT TAG	MAKE	TYPE	UNIT SERVED	LOCA		AIR CFM	AIR 	AIR (		CAPACITY BTU/HR		LAT (°F)	APD (IN)	FLOW GPM	EWT (°F)	LWT (°F)	WPD (FT)	LENGT H (IN)	HEIGH <sup>-</sup>	T (LBS.)		NOTES
HVHC-1	SFI	CASED COIL	HV-1	RO		3,700	2,500	650		160,000		105	0.1	11	180	150	1.5	30	30	90		MODE: MINIMUM OUTSIDE AIR CFM WHEN RETURN AIR
HVHC-2	SFI	CASED COIL	HV-2	RO		4,100	3,000	750		180,000		105	0.1	12	180	150		31	30	90	<ol> <li>DEMAND- WHEN RE</li> <li>HOT WATE</li> </ol>	ABOVE 900 PPM. CONTROL VENTILATION MODE: MINIMUM OUTSIDE AIR TURN AIR CO2 LEVEL IS BELOW 900 PPM. ER HEATING COILS SHALL BE INSULATED AND CASED. S OF COILS WERE BASED ON CAPACITIES OF EXIS
SFHC-1	SFI	CASED COIL	SF-1	MECH F	RM 106	10,000	5,000	3,200	0 1,150	160,000	65	80	0.2	11	180	150	1.5	70	36	125	5. FINS LEN CONTRACT	D FURNACE NGTH AND HEIGHT ARE SHOWN FOR REFERENCE ( FOR SHALL DETERMINE THE ACTUAL SIZE OF COILS
SFHC-2	SFI	CASED COIL	SF-2	MECH F	RM 106	12,500	7,000	5,000	0 1,150	200,000	64	80	0.2	13	180	150	1.5	78	39	150	ACCOMMO HV UNITS	EET THE PERFORMANCE ABOVE AND THAT CAN DATED IN EXISTING CONDITIONS, EITHER MATCH AREA OF OR MODIFY (E) CABINETS; PROVIDE DUCT TRANSITIONS
SFHC-3	SFI	CASED COIL	SF-3	MECH F	RM 123	4,500	2,500	1,800	0 600	60,000	65	80	0.2	4	180	150	1.5	45	24	75	OFFSETS	AS REQUIRED.
SFHC-4	SFI	CASED COIL	SF-4	RO		4,000	2,000	1,400		60,000	65	80	0.2	4	180	150		45	24	75		
						EXIS		GAS					CHE	EDU	LE (		ITS	ΤΟΕ	BE F	REMOV	ED)	
							PPLY P AIR	RESSURE DROP	FURNACE		WEIGH				ING COI	L						NOTES
UNIT TAG	MAKE	MODEL	AREA SERVE	ED	LOCATION	1 (	CFM	IN WG	BTU/HR	BTU/HR	(LBS.)	)	RE	PLACEME	<u>NI</u>							
DF-1	REZNOR	HX-200	STUDENT DINING	G 107	MECHANIC ROOM 10		930	0.45	200,000	160,000	250			SFHC-1						FURNACE SHAL S AND CONDUI		AND DISPOSED OF INCLUDING ASSOCIATED VENTS, GAS
DF-2	REZNOR	HX-250	STUDENT DINING	G 108	MECHANIC ROOM 10		975	0.5	250,000	200,000	300			SFHC-2								
DF-3	REZNOR	HX-75	FOOD SERVICE	118	MECHANIC ROOM 12		950	0.3	75,000	60,000	200			SFHC-3	; ;							
DF-4	REZNOR	HX-75	FACULTY DININ	G 130	ROOF	1,	950	0.3	75,000	60,000	200			SFHC-4								
								N	EW HE	ATING	6-VE	NTIL	ATI.	NG	UNI	T S	CHE	DUL	E			
				MIN. OUTSIDE	<u> </u>					HEA	TING HC	)T WATER	COIL		1	ELE	CTRICAL	WEIGH				
		NODEL		AIR			PPLY FAN						EWT	LWT	WPD		T/PH/HZ	(LBS.				NOTES
UNIT TAG	MAKE MAGIC AIRE		AREA SERVED PREP 115	CFM 1000	CFM 3000	ESP (IN 0.75	I) HP 1.5		,		(°F) 105	GPM	(°F) 180	(°F)	(FT) 3.4		8/3/60		1.	. CAPACITY B	ASED ON EXIS	TING HEATING VENTILATING UNIT HV-3.
						0.70													2.	MOTOR, HO	T WATER HEATI	R CONSTRUCTION, HORIZONTAL, COMPLETE WITH SUPPL' NG COIL, MERV 8 FILTERS JM EFFICIENCY AND DRIVE ASSEMBLY SHALL BE SUITABL
																				. PROVIDE BA	ASE RAIL STEE STRAINTS.	N; VFD SHALL BE ABB ACH550 SERIES. EL FRAME SUPPORT COMPLETE WITH SPRING ISOLATOR
																			5.	PURCHASE.	R SHALL VERI	FY THAT UNIT SHALL FIT IN EXISTING CONDITION PRI
								EXIS	TING I		NG-'	VEN <sup>-</sup>	TILA		I IG U	NIT	SC			 E		
							IIN.			• • • •	-			CAPACIT	Y							
							TSIDE — AIR		SUPPLY	γ FAN		IN	PUT	OUTPU	JT	LECTR		WEIGHT (LBS.)	RE	UNIT PLACEMENT		NOTES
UNIT TAG	MAKE	MODEL	AREA SERVE					CFM	ESP (IN)		MAX. RE		J/HR	BTU/H				<b>•</b> • •			1 H\/_1 ^\ir	D HV-2: REMOVE GAS FURNACE IN HV-1 AND HV-2, A
HV-1	REZNOR		WEIGHT LIFTING		ROOF		100 500	3700	0.75	3	1800		),000 5,000	160,00		240/3, 		600			MODIFY U OF NEW I	NIT CABINETS AS REQUIRED TO ACCOMMODATE INSTALLAT HOT WATER HEATING COILS; CLEAN UNIT AND FAN ASSEN LACE FILTERS, MOTORS, DRIVES AND BELTS; NEW MOTOR:
HV-2		HREB-225	WRESTLING 1				500	4100	0.75	3	1800		5,000	180,00		240/3, 		600		- HV_3	SHALL BE OPERATIOI	PREMIUM EFFICIENCY AND SUITABLE FOR VARIABLE SPE N; VFD SHALL BE ABB ACH550 SERIES. D HV-2: PROVIDE (N) ACTUATORS ON (E) OUTSIDE AIR
HV-3	REZNOR	HXE-200	PREP 115	>   N	MECH RM	120 1	000	3000	0.75	1.5	1800	200	0,000	160,00		240/3,	/ 00	400			RETURN D OUTSIDE /	DAMPERS AND ADJUST/BALANCE AS REQUIRED TO INDICA
																					J. 11V-J. U	WIT STRALL DE INLIVIUVED AND DISPUSED UP.
										<b>k</b>		<b>-</b> ^ • ·	000			-						
										N	=vv I	FAN	SC	ηΕD								
UNIT TAG		SERVICE	L	OCATION	AREA S	SERVED	MAKE	М	ODEL NUMBEI	2	TYF	ΡE		CFM	ı (I	SP IN. .C.)	RPM	Н	Ρ	VOLT/PH/HZ	OPERATING WEIGHT (LBS.)	NOTES
EF-4	(SE	EXHAUST FA		ROOF	WEI		LOREN C	оок	270HLC-B	CENTRIF	UGAL, R LOW PF	OOF-MOU ROFILE	JNTED,	6,00	0 1,	/4	525	3/	/4	208/3/60	370	1. PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.
EF-5	(00	EXHAUST FA		ROOF	WRES	TLING	LOREN C	оок	210HLC-B	CENTRIF	UGAL, R LOW PF		JNTED,	4,90	0 1,	/4	849	3/	/4	208/3/60	260	2. PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.
EF-6		EXHAUST FA	N	ROOF	WRFC	TLING	LOREN C	оок	210HLC-B	CENTRIF	UGAL, R	00F-MOl	JNTED,	4,90	0 1	/4	849	3/	/4	208/3/60	260	3. PROVIDE CURB ADAPTERS, REDUCERS AND INCRE AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AD
	(SE	EQUENCE W/ I	N		FACI					CENTRIE	LOW PF	ROFILE	JNTFD									SHALL BE L-ARDEN OR EQUAL.
EF-26	(SE	EQUENCE W/ S		ROOF		IING	LOREN C	UUK	210HLC-B		LOW PF	ROFILE		3800		/4	695	1/	Z	208/3/60	260	
						T		I		EXIS	STIN	G FA	AN S	SCH								1
UNIT TAG		SERVICE	Ŀ	OCATION	AREA S	SERVED	MAKE	ы	ODEL NUMBE	۲	TYF	ΡĒ		CFM	ı (I	SP IN. .C.)	RPM	Н	Ρ	VOLT/PH/HZ	OPERATING WEIGHT (LBS.)	NOTES
SF-1		SUPPLY FAN		CHANICAL		DENT G 107	REZNO	R	BF	CA	BINET, B	elt drivi	Ē	10,00		.5	970	7.	.5	240/3/60	650	1. MODIFY ALL FAN CABINETS AS REQUIRED ACCOMMODATE INSTALLATION OF NEW HOT W
SF-2		SUPPLY FAN	, ME	CHANICAL		DENT	AIRFAI	N	219	CA	BINET. R	elt drivi	=	12,50	)0 1	.5	686	7.	.5	240/3/60	955	HEATING COILS. 2. CLEAN ALL UNIT AND FAN ASSEMBLY. 3. REPLACE ALL FILTERS, MOTORS, DRIVES AND B
				COM 106									_									<ul> <li>NEW MOTORS SHALL BE PREMIUM EFFICIENCY</li> <li>SUITABLE FOR VARIABLE SPEED OPERATION.</li> <li>4. PROVIDE VFD FOR ALL SUPPLY AND EXHAUST I</li> </ul>
SF-3		SUPPLY FAN		DOM 123	1	18	AIRFAI	N	118		RB	H		4,50	0 1	.5	722		3	240/3/60	500	VFD SHALL BE ABB ACH550 SERIES; CONNECT TO BMS. 5. PROVIDE (N) DAMPERS AND ACTUATORS ON
		SUPPLY FAN	J	ROOF		JLTY	REZNO	R	RBH		RINFT R	elt drivi	-	4,00	0 1	5	1100	-	z	240/3/60	350	OUTSIDE AIR, RETURN AND EXHAUST DUCTS
SF-4					DINING	G 130	NEZNO		KBH				_	т,00		.5	1100		)	240/ 3/ 00		ADJUST/BALANCE AS REQUIRED TO INDIC OUTSIDE AIR CFM.

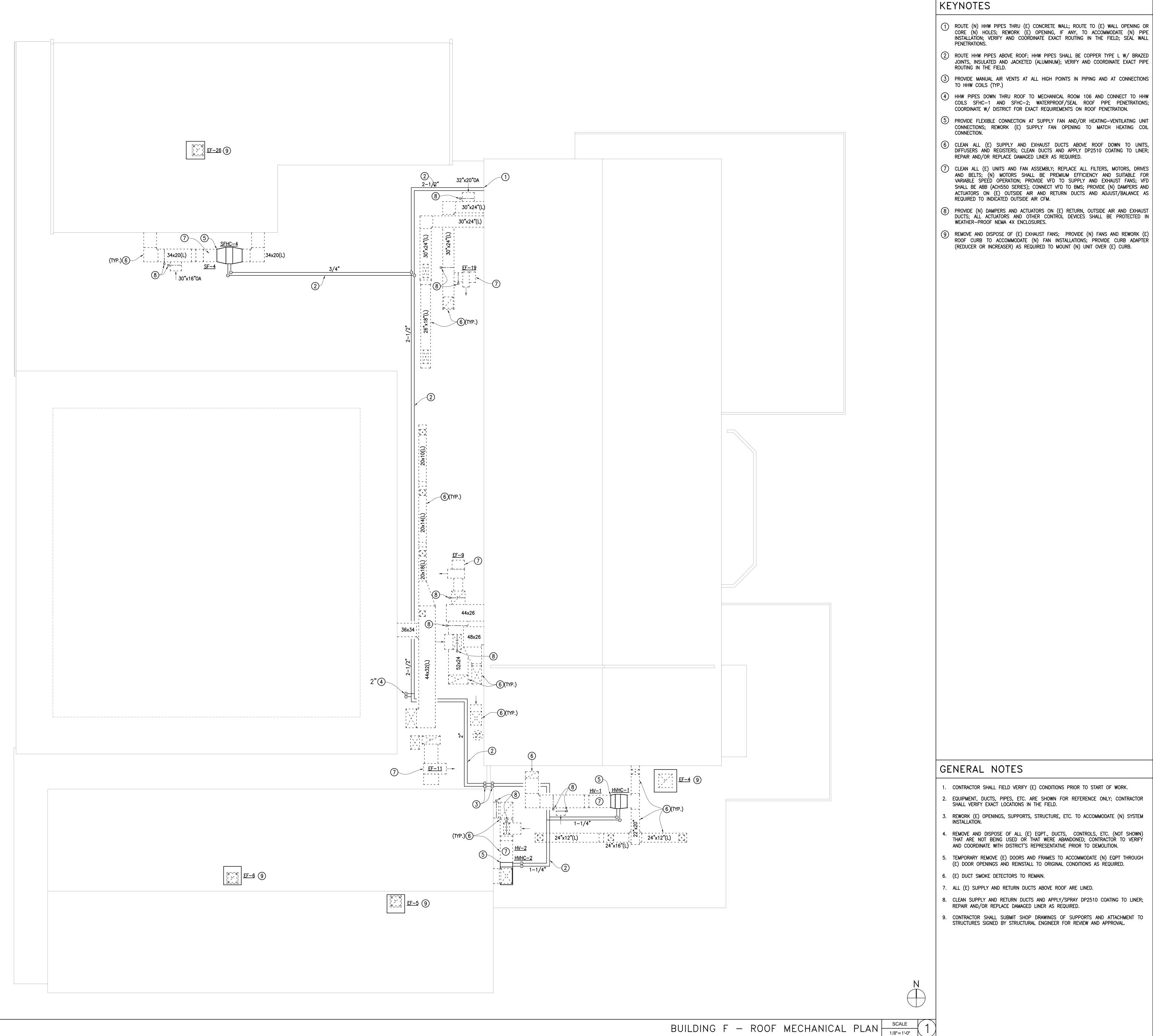
								NE	W HO	T WA	TER	HEA		G CC	DIL :	SCHE	EDUL	E			
						MAX. SUPPLY	MIN. SUPPL		DCV MIN. OUTSIDE			HEATING	HOT WAT	ER COIL	-		F	NS			
						AIR	AIR		AIR (2)	CAPACITY	EAT		APD F			_WT WP	D LENGT	HEIGHT	WEIGHT (LBS.)		NOTES
UNIT TAG	MAKE	TYPE	UNIT SERVE			CFM	CFM		CFM	BTU/HR	(°F)					(°F) (F1		(IN)			MODE: MINIMUM OUTSIDE AIR CFM WHEN RETURN AIR
HVHC-1	SFI	CASED COIL				3,700	2,500		NA	160,000	65					150 1.5		30	90	LEVEL IS 2. DEMAND-	ABOVE 900 PPM. -CONTROL VENTILATION MODE: MINIMUM OUTSIDE AIR ETURN AIR CO2 LEVEL IS BELOW 900 PPM.
HVHC-2	SFI	CASED COIL				4,100	3,000		NA	180,000	65					150 1.5		30	90	3. HOT WAT 4. CAPACITII	ER HEATING COILS SHALL BE INSULATED AND CASED. ES OF COILS WERE BASED ON CAPACITIES OF EX ED FURNACE
SFHC-1	SFI	CASED COIL				10,000	5,000		1,150	160,000	65					150 1.5		36	125	5. FINS LE CONTRAC	INGTH AND HEIGHT ARE SHOWN FOR REFERENCE TOR SHALL DETERMINE THE ACTUAL SIZE OF COILS IEET THE PERFORMANCE ABOVE AND THAT CAN
SFHC-2	SFI	CASED COIL				12,500	7,000		1,150	200,000	64					150 1.5		39	150	ACCOMM HV UNITS	ODATED IN EXISTING CONDITIONS, EITHER MATCH AREA ( S OR MODIFY (E) CABINETS; PROVIDE DUCT TRANSITION: AS REQUIRED.
SFHC-3	SFI	CASED COIL				4,500	2,500		600	60,000	65					150 1.5		24	75	UFFSETS	AS REQUIRED.
SFHC-4	SFI	CASED COIL	SF-4	R		4,000	2,000		500	60,000	65					150 1.8		24			
								G GAS-			NAC		HEL	JULI	= (U			3E F	KEMO	VED)	
							JPPLY AIR	PRESSURE DROP	FURNACE C		WEIGHT	НОТ	WATER		COIL						NOTES
UNIT TAG	MAKE	MODEL	AREA SER	RVED	LOCATIO	N (	CFM	IN WG		BTU/HR	(LBS.)		REPLA	CEMENT							
DF-1	REZNOR	HX-200	STUDENT DINI	NG 107	MECHANIC ROOM 10		,930	0.45	200,000	160,000	250		SFI	HC-1					URNACE SHA S AND COND		D AND DISPOSED OF INCLUDING ASSOCIATED VENTS, GAS
DF-2	REZNOR	HX-250	STUDENT DINI	NG 108	MECHANIC ROOM 10		,975	0.5	250,000	200,000	300		SFI	IC-2							
DF-3	REZNOR	HX-75	FOOD SERVIC	CE 118	MECHANIC ROOM 12		,950	0.3	75,000	60,000	200		SFI	IC-3							
DF-4	REZNOR	HX-75	FACULTY DIN	ING 130	ROOF	1,	,950	0.3	75,000	60,000	200		SF	IC-4							
					1		I									I					
								NE	W HEA	ATING	-VEI	NTILA	άτιν	Gυ	NIT	SCH	EDUI	E			
				MIN. OUTSIE						HEA	TING HOT	WATER (	COIL			ELECTRIC	A 1				
				AIR		SU	PPLY FA	AN	CAPACITY		LAT	FLOW E	EWT L	WT V	VPD		WEIG				NOTES
UNIT TAG	MAKE	MODEL	AREA SERVED			ESP (II			,		. ,					VOLT/PH/		1	CAPACITY		STING HEATING VENTILATING UNIT HV-3.
HV-3	MAGIC AIRE	BMB30H	PREP 115	1000	0 3000	0.75	1.	.5 1800	160,000	57	105	11 1	180 1	50 3	3.4	208/3/6	50 50	2.	UNIT SHA MOTOR, H	LL BE MODULA OT WATER HEAT	ING HEATING VENTILATING UNIT HV-5. R CONSTRUCTION, HORIZONTAL, COMPLETE WITH SUPP ING COIL, MERV 8 FILTERS UM EFFICIENCY AND DRIVE ASSEMBLY SHALL BE SUITAE
																		- 4.	VARIABLE PROVIDE	DRIVE OPERATION BASE RAIL STE	OM EFFICIENCY AND DRIVE ASSEMBLY SHALL BE SOITAB DN; VFD SHALL BE ABB ACH550 SERIES. EEL FRAME SUPPORT COMPLETE WITH SPRING ISOLATOI
																		5.			RIFY THAT UNIT SHALL FIT IN EXISTING CONDITION PR
								EXIST	ING F	IEATI	NG-∖					IIT SO			Ξ		
						— OU	VIN. ITSIDE AIR		SUPPLY	FAN			NACE CA	PACITY	- ELE	CTRICAL	WEIGHT		UNIT		NOTES
UNIT TAG	MAKE	MODEL	AREA SER	RVED	LOCATIO	N (	CFM	CFM	SP (IN)		MAX. RP			TU/HR	VOL	T/PH/HZ	(LBS.)	REF	PLACEMENT		
HV-1	REZNOR	HREB-200	WEIGHT LIFTI	NG 101	ROOF		400	3700	0.75	3	1800	200,0	000 1	60,000	24	0/3/60	600		_	MODIFY U	ID HV-2: REMOVE GAS FURNACE IN HV-1 AND HV-2, JNIT CABINETS AS REQUIRED TO ACCOMMODATE INSTALLA
HV-2	REZNOR	HREB-225	WRESTLING	103	ROOF	Ę	500	4100	0.75	3	1800	225,0	000 1	80,000	24	0/3/60	600		_	AND REF SHALL B	HOT WATER HEATING COILS; CLEAN UNIT AND FAN ASSEPLACE FILTERS, MOTORS, DRIVES AND BELTS; NEW MOTOP E PREMIUM EFFICIENCY AND SUITABLE FOR VARIABLE SPI
HV-3	REZNOR	HXE-200	PREP 1	15	MECH RM	123 1	000	3000	0.75	1.5	1800	200,0	000 1	60,000	24	0/3/60	400		HV-3	2. HV-1 AN	DN; VFD SHALL BE ABB ACH550 SERIES. ID HV—2: PROVIDE (N) ACTUATORS ON (E) OUTSIDE AIF DAMPERS AND ADJUST/BALANCE AS REQUIRED TO INDICA
																				OUTSIDE	AIR CFM. UNIT SHALL BE REMOVED AND DISPOSED OF.
										NE	EW F	AN S	SCHI	EDU	LE						
															ESP					OPERATING	
UNIT TAC	;	SERVICE		LOCATION	N AREA	SERVED	MAI	KE MOD	EL NUMBER		TYPI	<u>-</u>		CFM	(IN. W.C.			IP	VOLT/PH/H	IZ WEIGHT (LBS.)	NOTES
EF-4	(SE	EXHAUST F EQUENCE W/		ROOF		IGHT TING	LOREN	СООК 2	70HLC-B		JGAL, RC LOW PR	OF-MOUN OFILE	ITED,	6,000	1/4	525	5	/4	208/3/60	370	1.         PROVIDE         PREMIUM         EFFICIENCY         MOTORS         COM           WITH         VARIABLE         FREQUENCY         DRIVES.         2.         PROVIDE         VFD         FOR         ALL         SUPPLY         AND         EXHAUST
EF-5	(SI	EXHAUST F EQUENCE W/		ROOF	WRES	STLING	LOREN	СООК 2	10HLC-B		JGAL, RC LOW PR	OF-MOUN OFILE	ITED,	4,900	1/4	849	) 3	/4	208/3/60	260	VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS. 3. PROVIDE CURB ADAPTERS, REDUCERS AND INCR
EF-6		EXHAUST F	AN	ROOF	WRES	STLING	LOREN	СООК 2	10HLC-B	CENTRIFU		OF-MOUN	ITED,	4,900	1/4	849	) 3	/4	208/3/60	260	AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AI SHALL BE L-ARDEN OR EQUAL.
	(30	EQUENCE W/	,		FAC	ULTY		0001/					ITED.	7000	1 / 4			10			
EF-26	(SI	EQUENCE W/	SF-4)	ROOF		NING	LOREN	COOK 2	10HLC-B		LOW PR			3800	1/4	695		/2	208/3/60	260	
										EXIS	TIN	g fai		HE	-						
UNIT TAC	<u>;</u>	SERVICE		LOCATION	N AREA	SERVED	MAI	KE MOD	EL NUMBER		TYPI	E		CFM	ESP (IN. W.C.	RPN	1	IP	VOLT/PH/H	IZ OPERATING IZ WEIGHT (LBS.)	NOTES
		SUPPLY F				DENT	REZI	NOR	BF	CAF	BINET. BF	LT DRIVE		10,000	1.5		, , ,	'.5	240/3/60		1. MODIFY ALL FAN CABINETS AS REQUIRED
				ROOM 10		G 107 DENT															ACCOMMODATE INSTALLATION OF NEW HOT HEATING COILS. 2. CLEAN ALL UNIT AND FAN ASSEMBLY. 3. REPLACE ALL FUTERS MOTORS DRIVES AND U
SF-2		SUPPLY F		ROOM 10	06 DININ	G 108	AIRF	FAN	219	CAE	DINEI, BE	LT DRIVE		12,500	1.5	686		'.5 	240/3/60	955	<ul> <li>3. REPLACE ALL FILTERS, MOTORS, DRIVES AND FINEW MOTORS SHALL BE PREMIUM EFFICIENCY SUITABLE FOR VARIABLE SPEED OPERATION.</li> <li>4. PROVIDE VFD FOR ALL SUPPLY AND EXHAUST</li> </ul>
<u>.</u>		SUPPLY F	I N	<b>MECHANIC</b>	ALLEOOD	SERVICE			110	1			•			1	1		0 10 /7 /00		T T. TINUVIUE VED FUR ALL SUPPLY AND EXHAUST
SF-3		30112117		ROOM 12		18	AIRF	FAN	118		RBH	1		4,500	1.5	722	2	3	240/3/60	) 500	VFD SHALL BE ABB ACH550 SERIES; CONNEC TO BMS.
SF-3 SF-4		SUPPLY F			23 1 FAC		AIRI REZI		RBH	CAE		I LT DRIVE		4,500 4,000	1.5 1.5			3 3	240/3/60		

							NE	EW HO	)T WA	TER		ΕΑΤΙ	NG	COIL	_ SC	CHE	DULE				
					MAX.	MIN.	MIN.	DCV MIN.					WATER			_	FINS				
					SUPPL AIR		OUTSIDE AIR (1)	OUTSIDE		r eat	LAT	APD	FLOW	EWT	LWT	WPD	LENGT H	IEIGHT	WEIGHT (LBS.)		NOTES
UNIT TAG	MAKE	TYPE	UNIT SERVED	LOCAT	ION CFM	CFM	CFM	CFM	BTU/HR	(*F)	(°F)	(IN)	GPM	(°F)	(*F)	(FT)	(IN)	(IN)			
HVHC-1	SFI	CASED COIL	HV-1	ROO	F 3,700	2,500	650	NA	160,000	65	105	0.1	11	180	150	1.5	30	30	90	LEVEL IS 2. DEMAND-	MODE: MINIMUM OUTSIDE AIR CFM WHEN RETURN AIR ABOVE 900 PPM. CONTROL VENTILATION MODE: MINIMUM OUTSIDE AIR
HVHC-2	SFI	CASED COIL	HV-2	ROO	9F 4,100	3,000	750	NA	180,000	65	105	0.1	12	180	150	1.5	31	30	90	3. HOT WATE	TURN AIR CO2 LEVEL IS BELOW 900 PPM. R HEATING COILS SHALL BE INSULATED AND CASED. S OF COILS WERE BASED ON CAPACITIES OF EXI
SFHC-1	SFI	CASED COIL	SF-1	MECH RN	W 106 10,000	5,000	3,200	1,150	160,000	65	80	0.2	11	180	150	1.5	70	36	125	5. FINS LEN CONTRACT	D FURNACE NGTH AND HEIGHT ARE SHOWN FOR REFERENCE OR SHALL DETERMINE THE ACTUAL SIZE OF COILS
SFHC-2	SFI	CASED COIL	SF-2	MECH RN	W 106 12,500	) 7,000	5,000	1,150	200,000	64	80	0.2	13	180	150	1.5	78	39	150	WILL ME ACCOMMO	ET THE PERFORMANCE ABOVE AND THAT CAN DATED IN EXISTING CONDITIONS, EITHER MATCH AREA O OR MODIFY (E) CABINETS; PROVIDE DUCT TRANSITIONS
SFHC-3	SFI	CASED COIL	SF-3	MECH RN	W 123 4,500	2,500	1,800	600	60,000	65	80	0.2	4	180	150	1.5	45	24	75	OFFSETS	AS REQUIRED.
SFHC-4	SFI	CASED COIL	SF-4	ROO	F 4,000	2,000	1,400	500	60,000	65	80	0.2	4	180	150	1.5	45	24	75		
					EX	ISTIN	G GAS	-FIRED		RNAC	CE S	SCH	EDU	ILE (	(UN	ITS 7	ΟВ	ER	EMOV	ED)	
						SUPPLY AIR	PRESSURE	FURNACE C		WEIGH	r I i	HOT WA	TER HEA								
UNIT TAG	MAKE	MODEL	AREA SERV	/FD	LOCATION	CFM			OUTPUT BTU/HR	(LBS.)			EPLACEM		11						NOTES
DF-1	REZNOR		STUDENT DININ	107 N	MECHANICAL ROOM 106	4,930			160,000	250			SFHC-	1							AND DISPOSED OF INCLUDING ASSOCIATED VENTS, GAS
DF-2	REZNOR	HX-250	STUDENT DININ	108 N	MECHANICAL ROOM 106	6,975	0.5	250,000	200,000	300			SFHC-:	2		PIPI	NG, CON	TRULS A	ND CONDU	115.	
DF-3	REZNOR	HX-75	FOOD SERVICE	- 118 N	WECHANICAL	1,950	0.3	75,000	60,000	200			SFHC-	3							
DF-4	REZNOR		FACULTY DININ		ROOM 123 ROOF	1,950		75,000	60,000	200			SFHC								
							0.0														
															<u>т о</u>						
							NE	W HEA						UNI		CHE		E T			
				MIN. OUTSIDE AIR		SUPPLY FAN	١	CAPACITY		ATING HO	FLOW			WPD	- ELE	ECTRICAL	WEIGHT (LBS.)				NOTES
UNIT TAG	MAKE	MODEL	AREA SERVED	CFM	CFM ESP	(IN) HP	MAX. RPI	M BTU/HR	(°F)	(°F)	GPM	(°F)	(°F)	(FT)	VOL	T/PH/HZ					
HV-3	MAGIC AIRE	Е ВМВЗОН	PREP 115	1000	3000 0.	75 1.5	1800	160,000	57	105	11	180	150	3.4	20	8/3/60	500				TING HEATING VENTILATING UNIT HV-3.
																		3.	MOTOR, HO MOTOR SH/	T WATER HEATI	NG COIL, MERV & FILTERS IM EFFICIENCY AND DRIVE ASSEMBLY SHALL BE SUITAB N; VFD SHALL BE ABB ACH550 SERIES.
																		- 4.	PROVIDE B SEISMIC RE	ASE RAIL STEE STRAINTS.	EL FRAME SUPPORT COMPLETE WITH SPRING ISOLATOF
																			PURCHASE.		IT THAT ONT SHALL ITT IN EXISTING CONDITION TR
							FXIS	L FING F		NG-\	/FN			IG U	INIT	r scł		JIF			
						MIN.							E CAPACI								
						OUTSIDE - AIR		SUPPLY	FAN			INPUT	OUTF		ELECTR	RICAL	WEIGHT (LBS.)				NOTES
UNIT TAG	MAKE	MODEL	AREA SERV	′ED	LOCATION	CFM	CFM	ESP (IN)	HP	MAX. RF	PM B.	TU/HR	BTU/	HR V	OLT/PI	H/HZ					
HV-1	REZNOR	HREB-200	WEIGHT LIFTIN	G 101	ROOF	400	3700	0.75	3	1800	20	00,000	160,0	000	240/3	/60	600		-	MODIFY U	D HV—2: REMOVE GAS FURNACE IN HV—1 AND HV—2, NIT CABINETS AS REQUIRED TO ACCOMMODATE INSTALLAT HOT WATER HEATING COILS; CLEAN UNIT AND FAN ASSEM
HV-2	REZNOR	HREB-225	WRESTLING	103	ROOF	500	4100	0.75	3	1800	22	25,000	180,0	000	240/3	/60	600		-	AND REPL SHALL BE	ACE FILTERS, MOTORS, DRIVES AND BELTS; NEW MOTOR PREMIUM EFFICIENCY AND SUITABLE FOR VARIABLE SPE N; VFD SHALL BE ABB ACH550 SERIES.
HV-3	REZNOR	HXE-200	PREP 11	5 ME	ECH RM 123	1000	3000	0.75	1.5	1800	20	00,000	160,0	000	240/3	/60	400	н	V-3	2. HV-1 ANI	D HV–2: PROVIDE (N) ACTUATORS ON (E) OUTSIDE AIR DAMPERS AND ADJUST/BALANCE AS REQUIRED TO INDICA
																					INIT SHALL BE REMOVED AND DISPOSED OF.
									N	EW I	=AN	ISC	HED	OULE	=						
UNIT TAC		SERVICE		_OCATION	AREA SERVE	D MAK	E MOI	DEL NUMBER		TYF			CFI		ESP (IN.	RPM	HP		OLT/PH/HZ	OPERATING WEIGHT	NOTES
	,				AREA SERVE			JEL NOMBER		115					(IN. /.C.)			· · ·		(LBS.)	
EF-4	(S	EXHAUST FAI EQUENCE W/ H		ROOF	WEIGHT LIFTING	LOREN	соок 2	270HLC-B	CENTRIF	UGAL, RO LOW PF		OUNTED	<sup>9,</sup> 6,00	00 1	/4	525	3/4	4	208/3/60	370	1. PROVIDE PREMIUM EFFICIENCY MOTORS COM WITH VARIABLE FREQUENCY DRIVES.     2. PROVIDE VFD FOR ALL SUPPLY AND EXHAUST
EF-5	(S	EXHAUST FAI EQUENCE W/ H		ROOF	WRESTLING	LOREN	соок 2	10HLC-B	CENTRIF	UGAL, RO LOW PF		OUNTED	4,90	00 1	/4	849	3/4	4	208/3/60	260	<ul> <li>VFD SHALL BE ABB ACH550 SERIES; CONNECT BMS.</li> <li>3. PROVIDE CURB ADAPTERS, REDUCERS AND INCR</li> </ul>
EF-6	(5	EXHAUST FAI		ROOF	WRESTLING	LOREN	соок 2	210HLC-B	CENTRIF	UGAL, RO		OUNTED	<sup>,</sup> 4,90	00 1	/4	849	3/4	4	208/3/60	260	AS REQUIRED TO ACCOMMODATE INSTALLATION EXHAUST FANS TO (E) ROOF CURBS; CURB AE SHALL BE L-ARDEN OR EQUAL.
	(3	EXHAUST FAI	,		FACULTY				CENTRIF	UGAL, R		OUNTED	700				1.//		000 /7 /00		SHALL DE L-ARDEN OR EQUAL.
EF-26	(S	EQUENCE W/ S	SF-4)	ROOF	DINING	LOREN		210HLC-B		LOW PF			, 380		/4	695	1/2	2	208/3/60	260	
									EXIS	STIN	G F	AN	SCH	EDL	JLE						
UNIT TAG	;	SERVICE		_OCATION	AREA SERVE	D MAK	E MOE	DEL NUMBER	:	TYF	ΡĒ		CFI	и (	ESP (IN. (.C.)	RPM	HP		OLT/PH/HZ	OPERATING WEIGHT (LBS.)	NOTES
		SUPPLY FAN	M	ECHANICAL	STUDENT	REZN		BF		BINET, BI			10,0		1.5	970	7.5		240/3/60	650	1. MODIFY ALL FAN CABINETS AS REQUIRED
		SUFFLITAN	K	OOM 106	DINING 107			Ы					10,0		1.5	970	/		2+0/ 3/ 00		ACCOMMODATE INSTALLATION OF NEW HOT V HEATING COILS. 2. CLEAN ALL UNIT AND FAN ASSEMBLY.
SF-2		SUPPLY FAN		ECHANICAL OOM 106	STUDENT DINING 108	AIRF	AN	219	CA	BINET, BI	elt dri	IVE	12,5	00	1.5	686	7.5	5	240/3/60	955	3. REPLACE ALL FILTERS, MOTORS, DRIVES AND E NEW MOTORS SHALL BE PREMIUM EFFICIENCY SUITABLE FOR VARIABLE SPEED OPERATION.
SF-3		SUPPLY FAN		ECHANICAL OOM 123	FOOD SERVIC	E AIRFA	AN	118		RB	H	_	4,50	00	1.5	722	3		240/3/60	500	<ol> <li>PROVIDE VFD FOR ALL SUPPLY AND EXHAUST VFD SHALL BE ABB ACH550 SERIES; CONNECT TO BMS.</li> </ol>
SF-4		SUPPLY FAN	1	ROOF	FACULTY DINING 130	REZN	OR	RBH	CA	BINET, BI	elt dri	IVE	4,00	00	1.5	1100	3		240/3/60	350	5. PROVIDE (N) DAMPERS AND ACTUATORS ON OUTSIDE AIR, RETURN AND EXHAUST DUCTS ADJUST/BALANCE AS REQUIRED TO INDIC
EF-4	(0	EXHAUST FAI		ROOF	WEIGHT LIFTIN	IG EXITAI	RE	S-3012		ROOF-M	OUNTED	)	6,00	00 1	/4	425	3/4	4	240/1/60	450	OUTSIDÉ AIR CFM. 6. (N) MOTORS SHALL BE BALDOR (OR EG
	`	, EXHAUST FAI	N																		208V/3P/60H COMPATIBLE WITH VFD.
EF-5	(S	EQUENCE W/ H	HV-2)	ROOF	WRESTLING	EXITAI	KL	S-2414		ROOF-M	juníED	J	4,90	1 UI	/4	650	3/4	4	240/1/60	350	
EF-6	(S	EXHAUST FAI EQUENCE W/ F		ROOF	WRESTLING	EXITAI	RE	S-2414		ROOF-M	OUNTED	)	4,90	00 1	/4	650	3/4	4	240/1/60	350	
EF-9	(S	EXHAUST FAI EQUENCE W/ S		ROOF	STUDENT DINING 107	PAC	E	U-27AF	UT	TILITY, BE	LT DRIV	VE	7,57	75 3	3/8	1800	1.5	5	240/3/60	650	
EF-11	(5	EXHAUST FAI		ROOF	STUDENT DINING 108	PAC	E	U-33AF	UT	TILITY, BE	LT DRIV	VE	10,6	00 3	3/8	1700	5		240/3/60	990	
EF-19		EXHAUST FAI	N	ROOF	FOOD SERVIC		E	U-22AF	ті і	TILITY, BE		VE	415	0 -	3/8	1500	3/4	4	240/1/60	400	-
	(S	EQUENCE W/ S EXHAUST FAI			118 FACULTY	PAC															
EF-26	(S	EXHAUST FAI EQUENCE W/ S		ROOF	DINING	EXITAI	RE	S-2413		ROOF-M	OUNTED	)	380	0 1	/4	550	1/2	2	120/1/60	275	

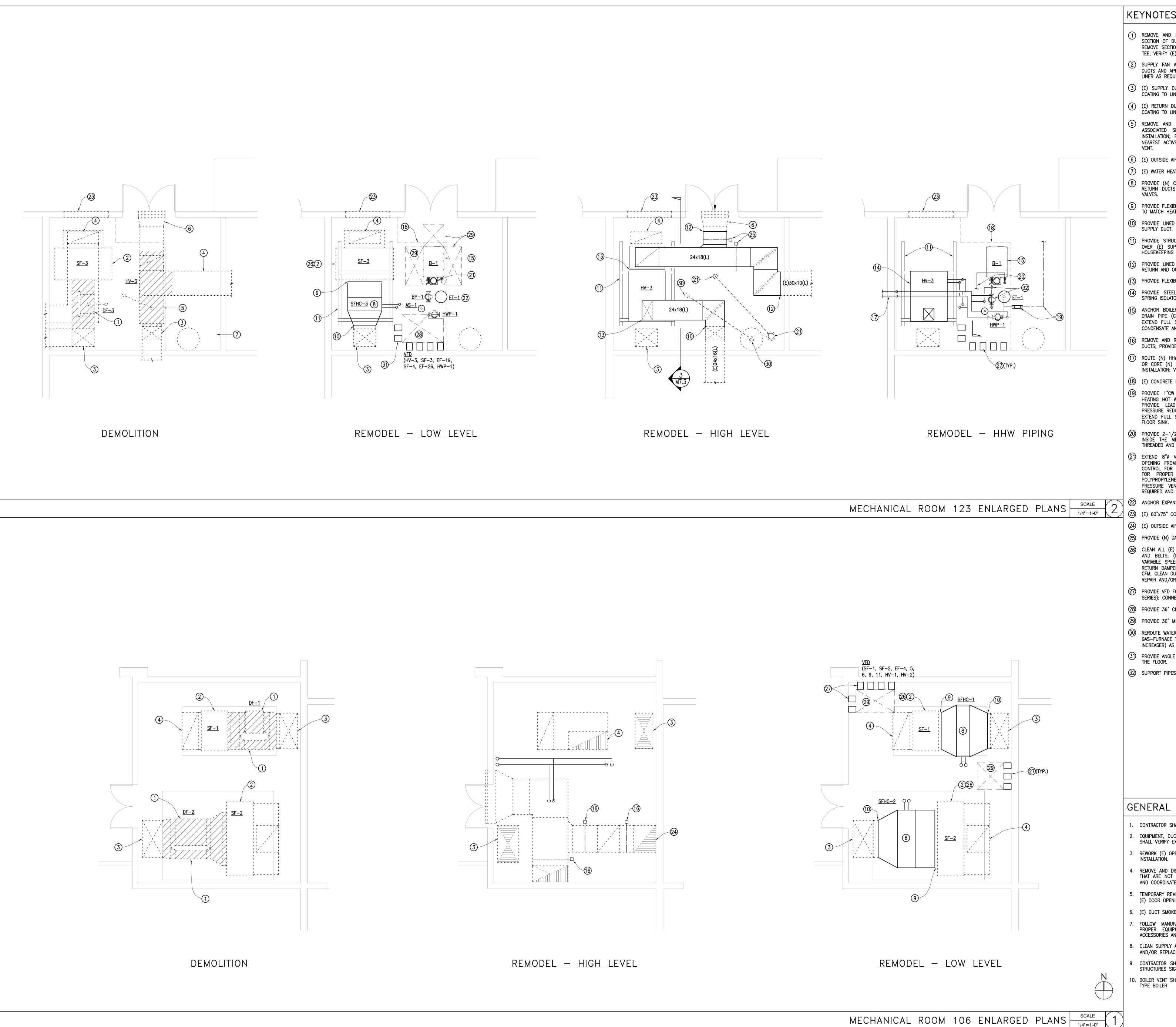
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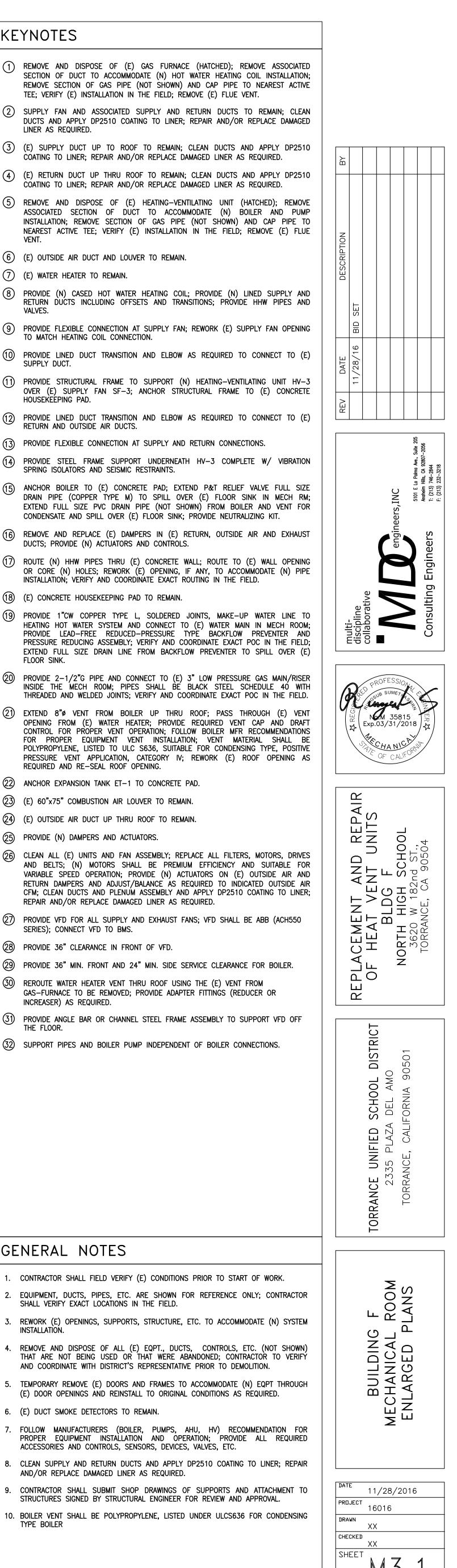


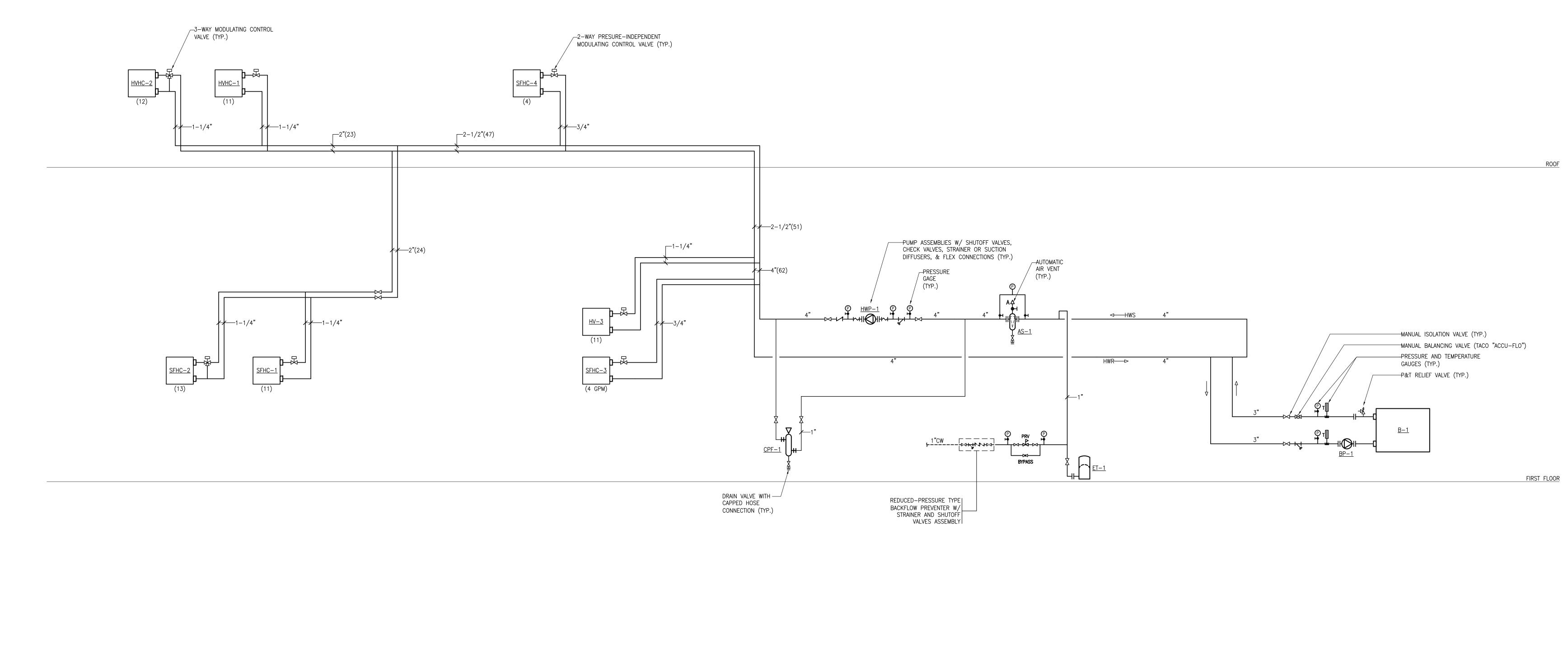
## KEYNOTES

- (1) REMOVE AND DISPOSE OF (E) GAS FURNACE (HATCHED); REMOVE ASSOCIATED SECTION OF DUCT TO ACCOMMODATE (N) HOT WATER HEATING COIL INSTALLATION; REMOVE SECTION OF GAS PIPE (NOT SHOWN) AND CAP PIPE TO NEAREST ACTIVE TEE; VERIFY (E) INSTALLATION IN THE FIELD; REMOVE (E) FLUE VENT.
- DUCTS AND APPLY DP2510 COATING TO LINER; REPAIR AND/OR REPLACE DAMAGED LINER AS REQUIRED. (3) (E) SUPPLY DUCT UP TO ROOF TO REMAIN; CLEAN DUCTS AND APPLY DP2510
- COATING TO LINER; REPAIR AND/OR REPLACE DAMAGED LINER AS REQUIRED.
- (4) (E) RETURN DUCT UP THRU ROOF TO REMAIN; CLEAN DUCTS AND APPLY DP2510 COATING TO LINER; REPAIR AND/OR REPLACE DAMAGED LINER AS REQUIRED.
- (5) REMOVE AND DISPOSE OF (E) HEATING-VENTILATING UNIT (HATCHED); REMOVE ASSOCIATED SECTION OF DUCT TO ACCOMMODATE (N) BOILER AND PUMP INSTALLATION; REMOVE SECTION OF GAS PIPE (NOT SHOWN) AND CAP PIPE TO NEAREST ACTIVE TEE; VERIFY (E) INSTALLATION IN THE FIELD; REMOVE (E) FLUE VENT
- (6) (E) OUTSIDE AIR DUCT AND LOUVER TO REMAIN.
- (7) (E) WATER HEATER TO REMAIN.
- (8) PROVIDE (N) CASED HOT WATER HEATING COIL; PROVIDE (N) LINED SUPPLY AND RETURN DUCTS INCLUDING OFFSETS AND TRANSITIONS; PROVIDE HHW PIPES AND VALVES.
- (9) PROVIDE FLEXIBLE CONNECTION AT SUPPLY FAN; REWORK (E) SUPPLY FAN OPENING TO MATCH HEATING COIL CONNECTION.
- (10) provide lined duct transition and elbow as required to connect to (e)
- (11) PROVIDE STRUCTURAL FRAME TO SUPPORT (N) HEATING-VENTILATING UNIT HV-3 OVER (E) SUPPLY FAN SF-3; ANCHOR STRUCTURAL FRAME TO (E) CONCRETE HOUSEKEEPING PAD.
- (12) PROVIDE LINED DUCT TRANSITION AND ELBOW AS REQUIRED TO CONNECT TO (E) RETURN AND OUTSIDE AIR DUCTS.
- (13) PROVIDE FLEXIBLE CONNECTION AT SUPPLY AND RETURN CONNECTIONS.
- (14) PROVIDE STEEL FRAME SUPPORT UNDERNEATH HV-3 COMPLETE W/ VIBRATION SPRING ISOLATORS AND SEISMIC RESTRAINTS.
- (15) ANCHOR BOILER TO (E) CONCRETE PAD; EXTEND P&T RELIEF VALVE FULL SIZE DRAIN PIPE (COPPER TYPE M) TO SPILL OVER (E) FLOOR SINK IN MECH RM; EXTEND FULL SIZE PVC DRAIN PIPE (NOT SHOWN) FROM BOILER AND VENT FOR CONDENSATE AND SPILL OVER (E) FLOOR SINK; PROVIDE NEUTRALIZING KIT.
- (16) REMOVE AND REPLACE (E) DAMPERS IN (E) RETURN, OUTSIDE AIR AND EXHAUST DUCTS; PROVIDE (N) ACTUATORS AND CONTROLS.
- (17) ROUTE (N) HHW PIPES THRU (E) CONCRETE WALL; ROUTE TO (E) WALL OPENING OR CORE (N) HOLES; REWORK (E) OPENING, IF ANY, TO ACCOMMODATE (N) PIPE INSTALLATION; VERIFY AND COORDINATE EXACT ROUTING IN THE FIELD. (18) (E) CONCRETE HOUSEKEEPING PAD TO REMAIN.
- (19) PROVIDE 1"CW COPPER TYPE L, SOLDERED JOINTS, MAKE-UP WATER LINE TO HEATING HOT WATER SYSTEM AND CONNECT TO (E) WATER MAIN IN MECH ROOM; PROVIDE LEAD-FREE REDUCED-PRESSURE TYPE BACKFLOW PREVENTER AND PRESSURE REDUCING ASSEMBLY; VERIFY AND COORDINATE EXACT POC IN THE FIELD; EXTEND FULL SIZE DRAIN LINE FROM BACKFLOW PREVENTER TO SPILL OVER (E) FLOOR SINK.
- 20 PROVIDE 2-1/2"G PIPE AND CONNECT TO (E) 3" LOW PRESSURE GAS MAIN/RISER INSIDE THE MECH ROOM; PIPES SHALL BE BLACK STEEL SCHEDULE 40 WITH THREADED AND WELDED JOINTS; VERIFY AND COORDINATE EXACT POC IN THE FIELD.
- (21) EXTEND 8" VENT FROM BOILER UP THRU ROOF; PASS THROUGH (E) VENT OPENING FROM (E) WATER HEATER; PROVIDE REQUIRED VENT CAP AND DRAFT CONTROL FOR PROPER VENT OPERATION; FOLLOW BOILER MFR RECOMMENDATIONS FOR PROPER EQUIPMENT VENT INSTALLATION; VENT MATERIAL SHALL BE POLYPROPYLENE, LISTED TO ULC S636, SUITABLE FOR CONDENSING TYPE, POSITIVE PRESSURE VENT APPLICATION, CATEGORY IV; REWORK (E) ROOF OPENING AS REQUIRED AND RE-SEAL ROOF OPENING.
- $\sqrt{22}$  anchor expansion tank et-1 to concrete pad.
- (E) 60"x75" COMBUSTION AIR LOUVER TO REMAIN.
- (E) OUTSIDE AIR DUCT UP THRU ROOF TO REMAIN.
- (25) PROVIDE (N) DAMPERS AND ACTUATORS.
- (26) CLEAN ALL (E) UNITS AND FAN ASSEMBLY; REPLACE ALL FILTERS, MOTORS, DRIVES AND BELTS; (N) MOTORS SHALL BE PREMIUM EFFICIENCY AND SUITABLE FOR VARIABLE SPEED OPERATION; PROVIDE (N) ACTUATORS ON (E) OUTSIDE AIR AND RETURN DAMPERS AND ADJUST/BALANCE AS REQUIRED TO INDICATED OUTSIDE AIR CFM; CLEAN DUCTS AND PLENUM ASSEMBLY AND APPLY DP2510 COATING TO LINER; REPAIR AND/OR REPLACE DAMAGED LINER AS REQUIRED.
- (27) PROVIDE VFD FOR ALL SUPPLY AND EXHAUST FANS; VFD SHALL BE ABB (ACH550 SERIES); CONNECT VFD TO BMS.
- (28) PROVIDE 36" CLEARANCE IN FRONT OF VFD.
- (29) PROVIDE 36" MIN. FRONT AND 24" MIN. SIDE SERVICE CLEARANCE FOR BOILER. 30 REROUTE WATER HEATER VENT THRU ROOF USING THE (E) VENT FROM
- GAS-FURNACE TO BE REMOVED; PROVIDE ADAPTER FITTINGS (REDUCER OR INCREASER) AS REQUIRED.
- (3) PROVIDE ANGLE BAR OR CHANNEL STEEL FRAME ASSEMBLY TO SUPPORT VFD OFF THE FLOOR.
- (32) SUPPORT PIPES AND BOILER PUMP INDEPENDENT OF BOILER CONNECTIONS.

### GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY (E) CONDITIONS PRIOR TO START OF WORK.
- EQUIPMENT, DUCTS, PIPES, ETC. ARE SHOWN FOR REFERENCE ONLY; CONTRACTOR SHALL VERIFY EXACT LOCATIONS IN THE FIELD.
- REWORK (E) OPENINGS, SUPPORTS, STRUCTURE, ETC. TO ACCOMMODATE (N) SYSTEM INSTALLATION.
- . REMOVE AND DISPOSE OF ALL (E) EQPT., DUCTS, CONTROLS, ETC. (NOT SHOWN) THAT ARE NOT BEING USED OR THAT WERE ABANDONED; CONTRACTOR TO VERIFY AND COORDINATE WITH DISTRICT'S REPRESENTATIVE PRIOR TO DEMOLITION.
- 5. TEMPORARY REMOVE (E) DOORS AND FRAMES TO ACCOMMODATE (N) EQPT THROUGH (E) DOOR OPENINGS AND REINSTALL TO ORIGINAL CONDITIONS AS REQUIRED.
- 6. (E) DUCT SMOKE DETECTORS TO REMAIN.
- 7. FOLLOW MANUFACTURERS (BOILER, PUMPS, AHU, HV) RECOMMENDATION FOR PROPER EQUIPMENT INSTALLATION AND OPERATION; PROVIDE ALL REQUIRED ACCESSORIES AND CONTROLS, SENSORS, DEVICES, VALVES, ETC.
- B. CLEAN SUPPLY AND RETURN DUCTS AND APPLY DP2510 COATING TO LINER; REPAIR AND/OR REPLACE DAMAGED LINER AS REQUIRED.
- D. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF SUPPORTS AND ATTACHMENT TO STRUCTURES SIGNED BY STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. 10. BOILER VENT SHALL BE POLYPROPYLENE, LISTED UNDER ULCS636 FOR CONDENSING TYPE BOILER

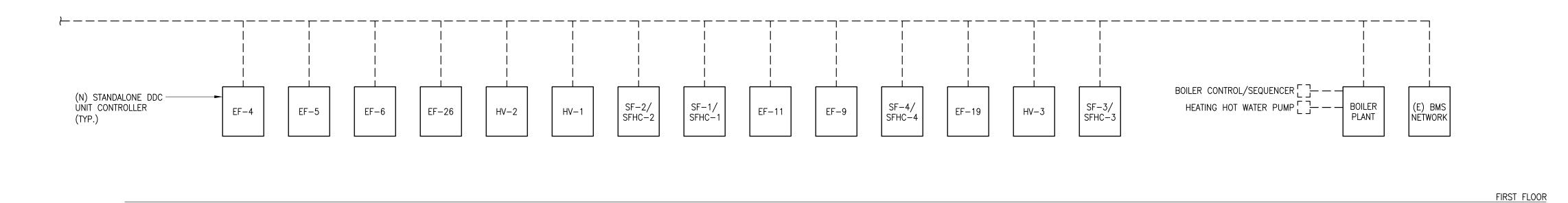




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	SCOPE OF WORK
1.	CONTRACTOR SHALL INSTALL, PROGRAM AND COMMISSION ALL DISTRICT FURNISHED CONTROLLERS, SENSORS, AND OTHER DEVICES; CONNECT AND INTERFACE ALL CONTROLLERS TO EXISTING BUILDING CONTROL NETWORK.
2.	CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING AND CONDUITS, BETWEEN EQUIPMENT, CONTROLLERS, SENSORS AND OTHER DEVICES, AS REQUIRED FOR PROPER SYSTEM OPERATION, BOTH LINE VOLTAGE AND LOW VOLTAGE.
3.	DISTRICT SHALL FURNISH ALL CONTROLLERS, ACTUATORS, SENSORS, TRANSFORMERS AND OTHER DEVICES.
	GENERAL NOTES
1.	CONTROL POINTS AND SCHEMATIC ARE NOT COMPLETE, DIAGRAMMATIC AND FOR REFERENCE ONLY. CONTRACTOR SHALL INCLUDE ALL REQUIRED CONTROL POINTS AND DEVICES FOR SAFE AND PROPER SYSTEM OPERATION.
2.	ALL AIR CONDITIONING UNIT, EQUIPMENT AND OTHER DEVICES SHALL BE WIRED FOR IN ACCORDANCE TO MANUFACTURER RECOMMENDATIONS.
3.	ALL BMS LOW VOLTAGE WIRING, INCLUDING FINAL CONNECTIONS TO CONTROL DEVICES AND EQUIPMENT, SHALL BE AS INDICATED ON THE MECHANICAL DRAWINGS OR SPECIFIED IN THE MECHANICAL SECTIONS OF THE SPECIFICATIONS. ALL LOW VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT, UNLESS OTHERWISE PERMITTED TO RUN IN PLENUM IN CONCEALED SPACES WHICH REQUIRES THAT WIRING SHALL BE PLENUM RATED. THE BMS LOW VOLTAGE WIRING SHALL BE PART OF THE TEMPERATURE CONTROL WORK. VERIFY WITH DISTRICT'S REPRESENTATIVE.
4.	ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH 2013 CALIFORNIA ELECTRICAL CODE, 2013 CALIFORNIA MECHANICAL CODE, 2013 CALIFORNIA BUILDING CODE AND ALL APPLICABLE CODES AND REGULATIONS OF ALL GOVERNING BODIES HAVING JURISDICTION.
5.	CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS OF ALL EXISTING EQUIPMENT IN THE FIELD.
6.	CONTRACTOR SHALL REFER TO EQUIPMENT MANUFACTURER RECOMMENDATION FOR PROPER CONTROL WIRING REQUIREMENTS AND INSTALLATION. CONTRACTOR SHALL CONTACT AND COORDINATE WITH EXISTING EQUIPMENT MANUFACTURER'S REPRESENTATIVE.
7.	UNLESS INDICATED OTHERWISE, PROVIDE ALL ACCESSORY CONTROL DEVICES SUCH AS TIME CLOCKS, CONTROL TRANSFORMERS, TRANSMITTERS, SENSORS AND RELAYS IN LOCATION AS NOTED ON PLANS OR LOCATION SHALL BE IN ACCORDANCE WITH CODES AND REQUIREMENTS.
8.	PROVIDE ALL NECESSARY HARDWARE AND SOFTWARE INCLUDING, BUT NOT LIMITED TO, CONTACTS, SENSORS, DEVICES, INSTRUMENTATIONS, WIRING AD CONDUITS TO ACCOMPLISH THE FOLLOWING CONTROL AND CONTROL SEQUENCE FOR THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS, UNLESS OTHERWISE NOTED ON THE DRAWINGS AND SPECIFIED ELSEWHERE.
9.	ALL EQUIPMENT AND DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SHALL COMPLY WITH ABOVE MENTIONED CODES.
10.	CONTROL DIAGRAM IS DIAGRAMMATIC AND SHALL NOT REPRESENTS THE NUMBER OF WIRES, DEVICES AND CONTROL POINTS; WIRING CONFIGURATION SHALL BE PER BMS/DDC MANUFACTURER'S RECOMMENDATION.
11.	CONTRACTOR SHALL VERIFY THAT ALL EXISTING EQPT AND DEVICES TO BE CONTROLLED AND MONITORED ARE WORKING AND IN PROPER CONDITION. INFORM THE DISTRICT'S REPRESENTATIVE IF THERE ARE ANY DEVICES THAT ARE FOUND TO BE NOT IN GOOD CONDITION OR NOT WORKING.
12.	CONTRACTOR SHALL FIELD VERIFY THE EXISTING BUILDING SYSTEM CONDITION AND VERIFY THE ACTUAL NUMBER OF EXISTING HVAC EQUIPMENT AND DEVICES TO BE PROVIDED WITH CONTROLS AND/OR CONNECTED TO BMS PRIOR TO START OF WORK.
13.	ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE.
14.	CONTROLS SHALL BE DIRECT DIGITAL CONTROL (DDC), UNLESS OTHERWISE NOTES. ACTUATORS FOR VALVES, DAMPERS AND TERMINAL CONTROLLERS SHALL BE ELECTRIC/ELECTRONIC CONTROL. ALL FAN OPERATIONS (STATUS) SHALL BE MONITORED AND ALARMED BY CENTRAL CONTROL STATION.
15.	ALL FANS AND PUMPS STATUS SHALL BE MONITORED BY THE CORRESPONDING CURRENT SENSORS OR DIFFERENTIAL PRESSURE TRANSMITTERS AS INDICATED.
16.	PROVIDE TIME DELAY PROGRAM FOR ALL FAN AND PUMP MOTORS AND EQUIPMENT THAT SHALL BE BROUGHT ONLINE ONE AT A TIME TO PREVENT POWER SURGE.
47	



### WORK

### NOTES

17. ALL MOTORIZED ACTUATORS, VFD AND SIMILAR DEVICES LOCATED OUTDOORS SHALL BE RATED FOR OUTDOOR APPLICATION OR ENCLOSED/PROTECTED WITH WEATHER-PROOF COVER. 18. REMOVE ALL ABANDONED CONTROLS, WIRING AND DEVICES THAT WILL NOT BE REUSED.

	ABBREVIATION	IS AND L	_EGEND
AHU	AIR HANDLING UNIT	(c)	CONTACT
ADJ	ADJUSTABLE		
AI	ANALOG INPUT	СТ	CURRENT TRANSMITTER
AO	ANALOG OUTPUT		
AV	ANALOG VALUE		CARBON DIOXIDE SENSOR/TRANSMITTER
В	BOILER		
BI	BINARY INPUT		DIFFERENTIAL PRESSURE SENSOR/TRANSMITTI
BO	BINARY OUTPUT		
BV	BINARY VALUE		EQUIPMENT TAG
CC	COOLING COIL		
СН	CHILLER	$\square$	FAN
CHWP	CHILLED WATER PUMP		
CHWR	CHILLED WATER RETURN		
CHWS	CHILLED WATER SUPPLY	(FM)	FLOW MEASUREMENT
CO2	CARBON DIOXIDE		
СТ	CURRENT TRANSMITTER	(н)	HUMIDITY SENSOR/TRANSMITTER
DI	DIGITAL INPUT	$\overline{}$	
DO	DIGITAL OUTPUT	(M)	MOTOR/ACTUATOR
DV	DIGITAL VALUE		
EA	EXHAUST AIR	SD	SMOKE DETECTOR, DUCT
EF	EXHAUST FAN		
F	FAHRENHEIT	SP	STATIC PRESSURE SENSOR/TRANSMITTER
FCU	FAN COIL UNIT		
FM	FLOW MEASURING STATION/SENSOR	$\langle T \rangle$	TEMPERATURE SENSOR, THERMOSTAT
FS	FLOW SWITCH/SENSOR		
Н	HUMIDITY		
HC	HEATING COIL		
HWP	HEATING HOT WATER PUMP		
HWR	HEATING HOT WATER RETURN		
HWS	HEATING HOT WATER SUPPLY		
М	MOTOR		
OA	OUTSIDE AIR		
RA	RETURN AIR		
SD	SMOKE DETECTOR, DUCT		
SP	STATIC PRESSURE		
T	TEMPERATURE SENSOR / THERMOSTAT		
VAV	VARIABLE AIR VOLUME TERMINAL UNIT		
VFD	VARIABLE AIR VOLOME TERMINAL ONIT		
VI U	WINNEL THEOREMOTE DITAL		
		1	

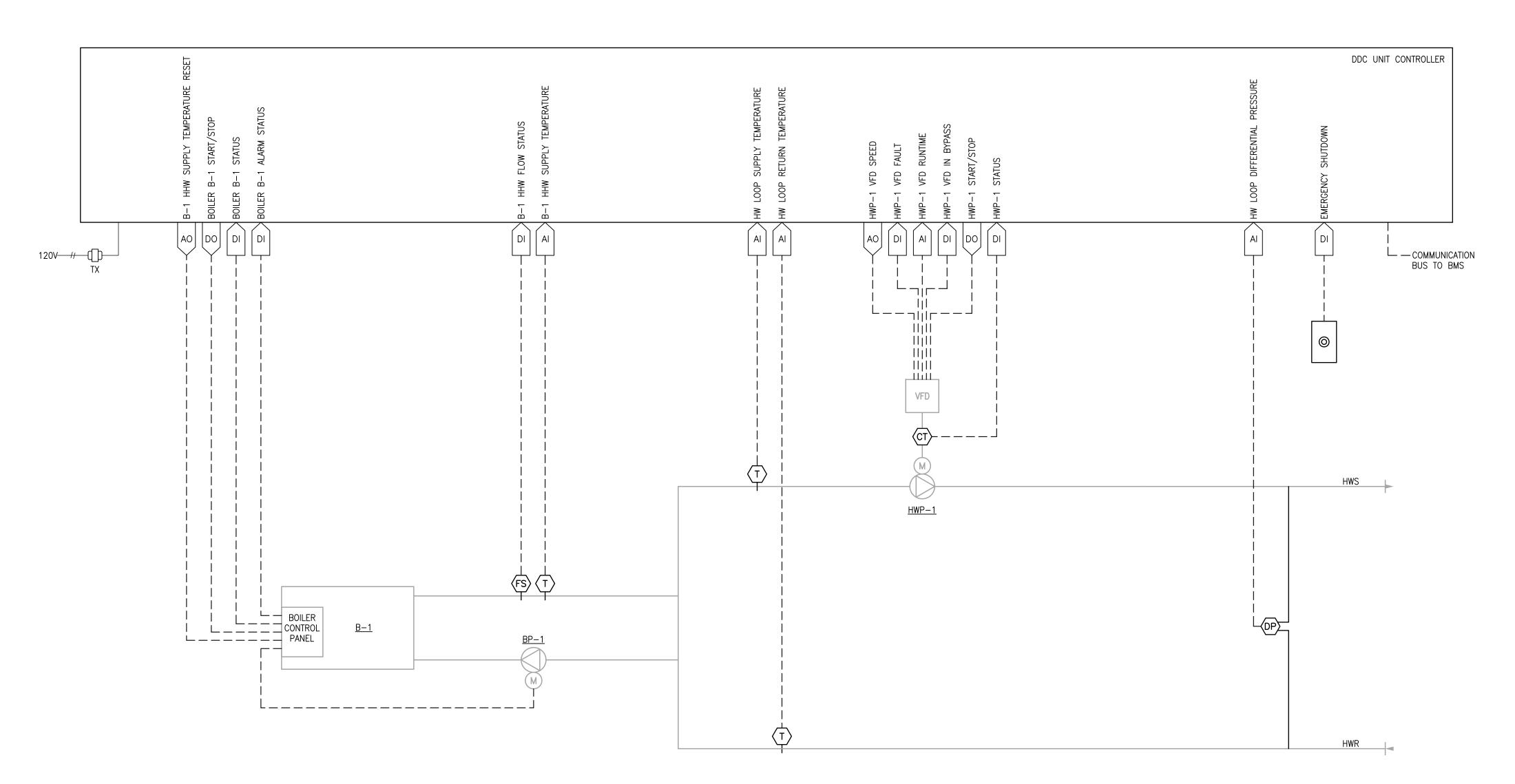
### OVERALL SYSTEM ARCHITECTURE

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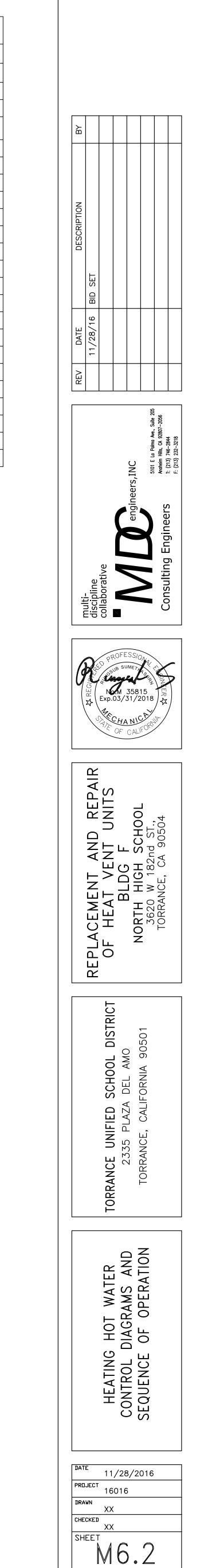


ROOF

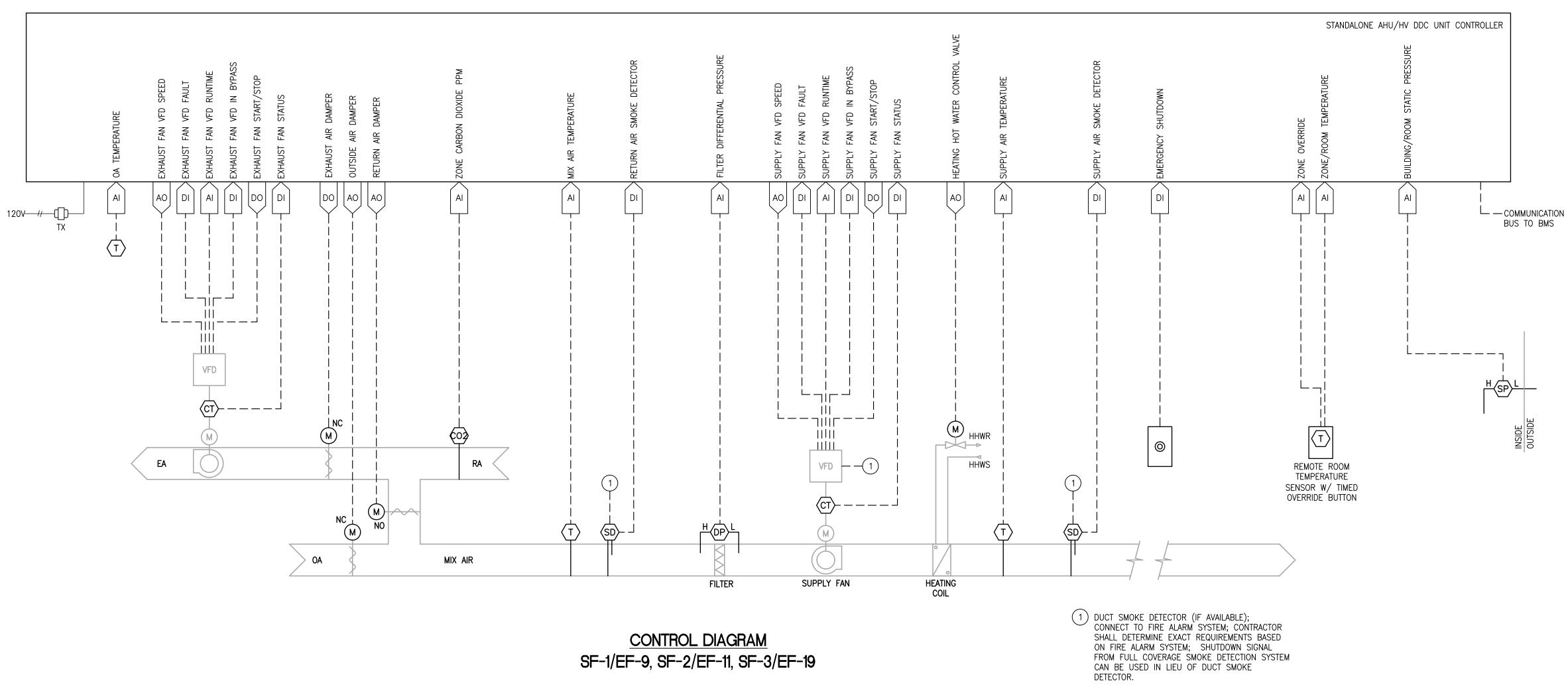
HHW SYSTEM SEQUENCE OF OPERATION		I/O POINTLIST										
Δ	BOILER SYSTEM – RUN CONDITIONS:			HARDWARE POINTS SOFTWARE								
,	1. THE BOILER SYSTEM SHALL BE ENABLED TO RUN WHENEVER A DEFINABLE NUMBER OF HOT WATER COILS NEED HEATING AND OUTSIDE AIR TEMPERATURE	POINT NAME	AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
	IS LESS THAN 65°F (ADJ.). 2. TO PREVENT SHORT CYCLING, BOILERS SHALL RUN FOR AND	LOOP HOT WATER RETURN TEMP	X							x		Х
	BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS.	BOILER B-1 HOT WATER SUPPLY TEMP	X							x		Х
	3. BOILERS SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.	LOOP HOT WATER SUPPLY TEMP SETPOINT										, v
	4. THE BOILER SYSTEM SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER THE OUTSIDE AIR TEMPERATURE IS LESS THAN 38'F	RESET		X						X		X
	(ADJ.).	BOILER B–1 ALARM STATUS BOILER B–1 NO WATER FLOW			X X					X X	X X	X X
В.	BOILER SAFETIES: 1. THE FOLLOWING SAFETIES SHALL BE MONITORED:	HOT WATER PUMP HWP-1 STATUS			X					X	^	х Х
	a. BOILER ALARM. b. WATER FLOW.	BOILER B-1 STATUS			x					X		X
	2. ALARMS SHALL BE PROVIDED AS FOLLOWS: a. BOILER ALARM.	HOT WATER PUMP HWP-1 START/STOP				X				X	x	X
	b. NO WATER FLOW ALARM.	BOILERS ENABLE				X					x	X
D.	HOT WATER PUMP: 1. THE HOT WATER PUMP SHALL RUN ANYTIME THE BOILER IS	OUTSIDE AIR TEMP					x					X
	CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.	HOT WATER PUMP HWP-1 FAILURE									x	^
	a. HOT WATER PUMP FAILURE: COMMANDED ON, BUT THE	HOT WATER PUMP HWP-1 RUNNING IN HAND									X	
	<ul> <li>b. HOT WATER PUMP FAILURE: COMMANDED ON, BUT THE</li> <li>STATUS IS OFF.</li> <li>b. HOT WATER PUMP RUNNING IN HAND: COMMANDED OFF,</li> </ul>	HOT WATER PUMP HWP-1 RUNTIME EXCEEDED									X	
	BUT THE STATUS IS ON.	BOILER B-1 FAILURE									x	
	C. HOT WATER PUMP RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.	BOILER B-1 RUNNING IN HAND									x	
	d. VFD FAULT	BOILER B-1 RUNTIME EXCEEDED										
E.	BOILER OPERATION: 1. BOILER SHALL OPERATE BASED ON ITS OWN CONTROL SEQUENCE MAINTAINING HOT WATER	HIGH HOT WATER SUPPLY TEMP									x	
	<ol> <li>BOILER SHALL OPERATE BASED ON ITS OWN CONTROL SEQUENCE MAINTAINING HOT WATER SUPPLY TEMPERATURE SETPOINT.</li> <li>ALARMS SHALL BE PROVIDED FOR BOILER AS FOLLOWS:</li> </ol>	LOW HOT WATER SUPPLY TEMP									x	
	a. BOILERS B-1 a.1 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.	BOILER B-1 HIGH HOT WATER SUPPLY TEMP									X	
	a.2 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS	BOILER B-1 LOW HOT WATER SUPPLY TEMP									x	
	IS ON. a.3 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.	BUILER B-I LOW HUI WATER SUFFLI TEMP									^	
F.	HOT WATER SUPPLY TEMPERATURE SETPOINT RESET:											
	<ol> <li>THE DESIGN HEATING HOT WATER TEMPERATURE IS 180F-150F (ADJ).</li> <li>THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET USING A TRIM AND RESPOND ALGORITHM BASED ON HEATING</li> </ol>											
	REQUIREMENTS. 3. AS THE BUILDING HOT WATER VALVES OPEN BEYOND A USER DEFINABLE THRESHOLD (90% OPEN, TYP.), THE SETPOINT SHALL RESET TO A HIGHER VALUE (ADJ.). ONCE THE HOT WATER COILS ARE SATISFIED (VALVES CLOSING) THEN THE SETPOINT SHALL GRADUALLY LOWER OVER TIME TO REDUCE HEATING ENERGY USED.											
G.	<ul> <li>HOT WATER TEMPERATURE MONITORING:</li> <li>1. THE FOLLOWING TEMPERATURES SHALL BE MONITORED: <ul> <li>a. LOOP HOT WATER SUPPLY.</li> <li>b. LOOP HOT WATER RETURN.</li> </ul> </li> <li>2. ALARMS SHALL BE PROVIDED AS FOLLOWS: <ul> <li>a. HIGH LOOP HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).</li> <li>b. LOW LOOP HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).</li> </ul> </li> </ul>											
H.	<ul> <li>BOILERS HOT WATER TEMPERATURE MONITORING:</li> <li>1. THE FOLLOWING TEMPERATURES SHALL BE MONITORED: <ul> <li>a. BOILER HOT WATER SUPPLY.</li> <li>b. BOILER HOT WATER RETURN.</li> </ul> </li> <li>2. ALARMS SHALL BE PROVIDED AS FOLLOWS: <ul> <li>a. HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).</li> </ul> </li> </ul>											
l I.	HOT WATER DIFFERENTIAL PRESSURE CONTROL:											
	<ol> <li>THE CONTROLLER SHALL MEASURE HOT WATER DIFFERENTIAL PRESSURE AND MODULATE THE HOT WATER PUMP VFDS IN SEQUENCE TO MAINTAIN ITS HOT WATER DIFFERENTIAL PRESSURE SETPOINT.</li> <li>ALARMS SHALL BE PROVIDED AS FOLLOWS:         <ul> <li>HIGH HOT WATER DIFFERENTIAL PRESSURE: IF 25% (ADJ.) GREATER THAN SETPOINT.</li> </ul> </li> </ol>											
	LOW HOT WATER DIFFERENTIAL PRESSURE: IF 25% (ADJ.) LESS THAN SETPOINT.											



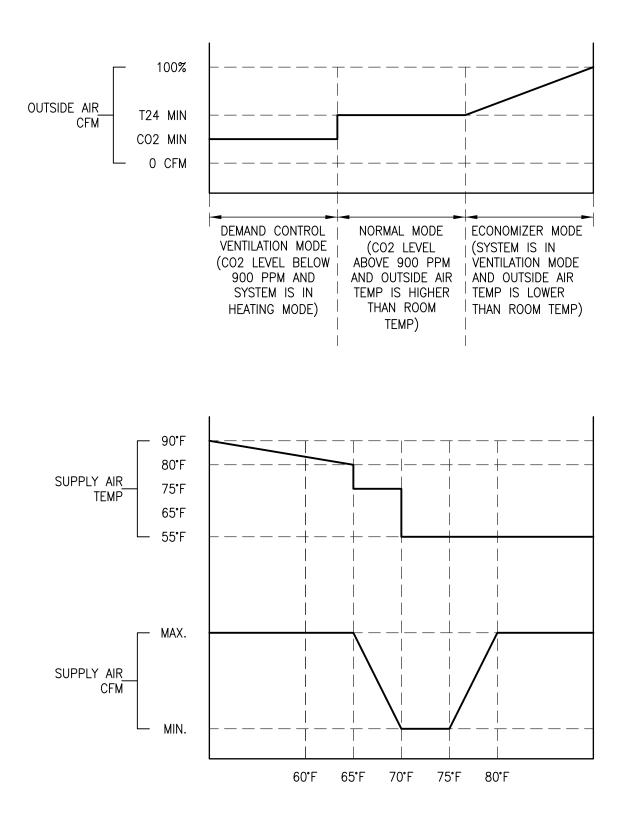
### HEATING HOT WATER CONTROL DIAGRAM

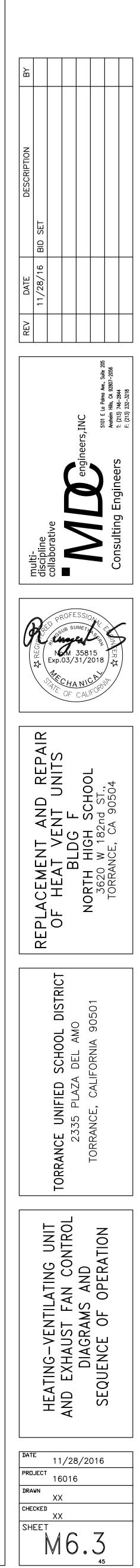


- <u>RUN CONDITIONS SCHEDULED:</u> THE UNIT SHALL RUN ACCORDING TO A USER [ FOLLOWING MODES: A. OCCUPIED MODE: THE UNIT SHALL MAINTAIN • A 74°F (ADJ.) COOLING SETPOINT • A 70°F (ADJ.) HEATING SETPOINT.
- B. UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT • A 85°F (ADJ.) COOLING SETPOINT.
- A 55°F (ADJ.) HEATING SETPOINT.
- C. ALARMS SHALL BE PROVIDED AS FOLLOWS: HIGH ZONE TEMP: IF THE ZONE TEMPERATUR SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.) LOW ZONE TEMP: IF THE ZONE TEMPERAT SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.)
- 2. <u>ZONE SETPOINT ADJUST:</u> THE OCCUPANT SHALL BE ABLE TO ADJUST THE 2 COOLING SETPOINTS AT THE ZONE SENSOR.
- . <u>ZONE OPTIMAL START:</u> THE UNIT SHALL USE AN OPTIMAL START ALGORITH ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-STILL ACHIEVING COMFORT CONDITIONS BY THE START
- 4. ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED OF TIME. AT THE EXPIRATION OF THIS TIME, AUTOMATICALLY RETURN TO THE SCHEDULE.
- EMERGENCY SHUTDOWN: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALAR SHUTDOWN SIGNAL.
- <u>SUPPLY AIR SMOKE DETECTION:</u> THE UNIT SHALL SHUT DOWN AND GENERATE AN ALAR SMOKE DETECTOR STATUS.
- . <u>SUPPLY FAN:</u> A. THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT SHUTDOWN ON SAFETIES. TO PREVENT S SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM F B. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SUPPLY FAN FAILURE: COMMANDED ON, BUT TH • SUPPLY FAN IN HAND: COMMANDED OFF, BUT SUPPLY FAN RUNTIME EXCEEDED: STATUS RUN LIMIT (ADJ.).
- B. <u>ZONE TEMPERATURE CONTROL:</u> THE CONTROLLER SHALL MEASURE THE ZONE TEMPE SUPPLY FAN VFD SPEED TO MAINTAIN ZONE TEMPER SHALL INCREASE AS THE ZONE TEMPERATURE RISES / THE ZONE TEMPERATURE DROPS BELOW HEATING SET SHALL NOT DROP BELOW 30% (ADJ.).
- 9. <u>HEATING COIL VALVE:</u>
- A. THE CONTROLLER SHALL MEASURE THE ZONE HEATING COIL VALVE TO MAINTAIN ITS HEATING SE B. THE HEATING SHALL BE ENABLED WHENEVER: • OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F

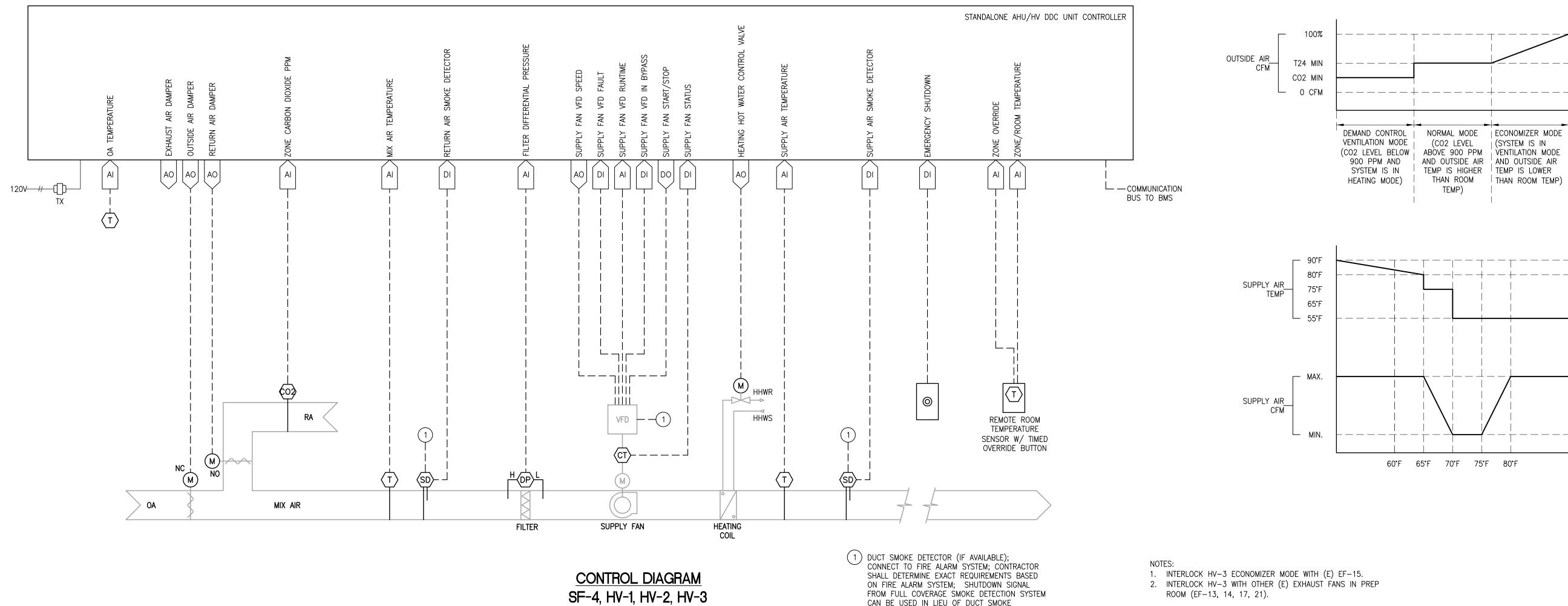


<ul> <li> <ul> <li></li></ul></li></ul>	VAV	V HEATING-VENTILATING SEQUENCE OF OPERATION	N	I/O POINTLIST									
<ul> <li></li></ul>		AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.			HARDWA	RE POINT	6		SO	OFTWARE POINTS			
<ul> <li></li></ul>	ER DEFINABLE TIME SCHEDULE IN THE		14. <u>RETURN AIR TEMPERATURE:</u>	POINT NAME			DO	AV					
<ul> <li>A mont</li> <li>A mont</li></ul>		AND THE COOLING IS NOT ACTIVE.	A. THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS							X X			
<ul> <li>A matrix and matrix</li></ul>		10. ECONOMIZER:			× ×					X		× ×	
a. b. 2000 Meeting 2 Meet												× ×	
<ul> <li>Mathematical and apply of a structure data of a struc</li></ul>	JNIT SHALL MAINTAIN	ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F LESS THAN THE								v		× ×	
<ul> <li>A 1 - Distance of Line of</li></ul>					× ×					^		×	
1     2										^		× ×	
Aug. P. 19 (2000)     Aug. P. 19 (20										^		× ×	
Lumba         Lumba <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>^</td></th<>												^	
GRU.	, ,	TEMPERATURE.	HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER									X	
19     2.0.1 CONCRECTOR 2.0.2 CONCRETOR     000.     1     000.     1     0		• AND THE SUPPLY FAN STATUS IS ON.										X	
11. DOT LIGNET (2018) 000       - match matchedde 1005 (100 000, 100 00		C. THE ECONOMIZER SHALL CLOSE WHENEVER:								X		X	
August 20 works 0 works	THE ZONE TEMPERATURE HEATING AND	• MIXED AIR TEMPERATURE DROPS FROM 45°F TO 40°F (ADJ.).			X					X		X	
CIPUL TO AURING CUPUT ON THE DATE OF SUPERATION TO AURING TO AURING AU			EXHAUST FAN SHALL OPERATE TOGETHER WITH CORRESPONDING SUPPLY FAN OR HEATING				X			X		X	
SHUE & MCCET MODULE OF MULTING       0       <		OR THE FREEZESTAT (IF PRESENT) IS ON.		ZONE OVERRIDE		X				X		X	
Sole of Sole LD Sole DefinitionSole of Sole DefinitionSole Definiti	ARM-UP OR COOL-DOWN PERIOD WHILE	D. THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR		SUPPLY AIR SMOKE DETECTOR		X				X	X	X	
$x_{i}$ (SCLAME FROME SCLENCE TO THE THE DESCRIPTION OF THE TRUE SOUTH FROME SCLENCE TO THE ADDRESS AD		DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS		SUPPLY FAN VFD FAULT		X				X		X	
PM WORT RD AV AUXTMETRY PMU       I <tdi< td=""><td></td><td></td><td></td><td>SUPPLY FAN STATUS</td><td></td><td>X</td><td></td><td></td><td></td><td>X</td><td></td><td>X</td></tdi<>				SUPPLY FAN STATUS		X				X		X	
Ref. CANNOT CP in Minit Source in Control 15 and in C	IPIED MODE FOR AN ADJUSTABLE PERIOD	WHEN IN THE OCCUPIED MODE, THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2		SUPPLY FAN START/STOP			х			x		x	
APR PON RECENT NOTE: CREATEND RECENT NOTE: A DEPEND RECENT NOTE: A DEPEND RECENT NOTE: A DEPEND RECENT R				EXHAUST FAN VFD FAULT		X					X	X	
ALREW UPON RECEDENCY       A DURING of RUMPARE SHULL NOT THE ALL RUMPE NEW AL RUMPE NEW ALL RUMPE NEW ALL RUMPE NEW ALL RUMPE NEW				EXHAUST FAN STATUS		X				X		x	
I AGRY UPON RECEVA A SUPPLY AN ARCE THE AR SYSTEM NOD ELEMANG THE DAMES FORMULE STORM TO FOLORE WITH SETTON IN COLUMN TO SUPPLY AND SETTON FROM SETON FROM S				EXHAUST FAN START/STOP			х			X		х	
A AWA LINER REGIME AR 2014 MRC 00 FAULT D NO FAUL SAPE UNDER       No       No       No       No       No       No       No         I AWA LINER REGIME AR 2014 CLED TO 300 FAUL SAPE UNDER       No	ALARM UPON RECEIVING AN EMERGENCY	DCV/CO2 MODE. CONTRACTOR SHALL BALANCE THE AIR SYSTEM AND DETERMINE THE		ECONOMIZER ZONE TEMP SETPOINT				x		X		Х	
I AARAU LOGA RECEIVING A SLIPPING AND				RETURN AIR CARBON DIOXIDE PPM SETPOINT				x		X		X	
SHAL MODULATE CORE TO NORMAL MORE (WINNUM TO TAP EXSTORM).       SHAL MODULATE CORE TO NORMAL MORE (WINNUM TAP EXSTORM).       X	I ALARM UPON RECEIVING A SUPPLY AIR	TO MAXIMUM CFM W/ OUTSIDE AIR DAMPER POSITION AT MINIMUM DCV/CO2 MODE.		SUPPLY AIR TEMP SETPOINT				x		X		x	
LINE IS COMMANDE TO UNULURES       MODULATE CLOSE TO CX/CO22 MODE.       A       A       A       A         SUPPLY TAIL NULLESS UNCE       Function Supply fail fail fail fail fail fail fail fail				HEATING MIXED AIR TEMP SETPOINT				x		x		X	
USERCET VOCUME, THE SUPPLY FAN SHALL         USERCET VOCUME, THE SUPPLY FAN SHALL         UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING:       UNRING:         UNRING: </td <td></td> <td></td> <td></td> <td>OUTSIDE AIR TEMP SETPOINT</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td>X</td> <td></td> <td>X</td>				OUTSIDE AIR TEMP SETPOINT				X		X		X	
THE STATUS IS OF.       12. MED AR TEMPERATURE:	SHORT CYCLING, THE SUPPLY FAN	E. FURTHER DROP OF RETURN AIR CO2 LEVEL TO 600 PPM, SUPPLY FAN SHALL		EMERGENCY SHUTDOWN					x		X	X	
11 /IE SANDE IS OFF.       12 //// AND INFORT THE SAND.       12 //// AND INFORT THE MADE AND TEMPERATURE AND USE AS REQUESTS ON.         RUNTIME EXCEEDS A USER DEFINABLE       A. THE CONTROLLER SHALL MONITOR THE MARED AR TEMPERATURE AND USE AS REQUESTED THAN 1000 CONTROL (F PRESENT) OR PRESENT) OR PRESENT) OR PRESENT OR	IUM RUNTIME.			SUPPLY FAN FAILURE							X		
RUNTIME EXCEEDS A USER DEFINABLE       A. THE CONTROLLER SHALL MONITOR THE MIXED AR TEMPERATURE AND USE AS RECOMMERCE CONTROL (F PRESENT) OR PREHATING CONTROL (F PRESENT) OR PREHATING CONTROL (F PRESENT).         EMPERATURE AND SHALL MODULATE THE EMPERATURE AND USE AS SETEONT. THE FAN SPEED ISS SHALL BE PROVIDED AS FOLLOWS:       A. THE CONTROLLER SHALL MEDULATE THE (ADUL).         I	T THE STATUS IS OFF.	12. <u>MIXED AIR TEMPERATURE:</u>		SUPPLY FAN IN HAND							x		
RUNING EACEUS A USER OF INAGELE       REQURED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT)         EMPERATURE AND SHALL BE PROVIDED AS FOLLOWS:       IIGH BUILDING STATIC PRESSURE       IIGH BUILDING STATIC PRESSURE       IIGH CONE TEMP       IIGH	BUT THE STATUS IS ON.			SUPPLY FAN RUNTIME EXCEEDED							X		
B. ALARMS SHALL BE PROVIDED AS FOLLOWS:         EMPERATURE AND SHALL MODULATE THE EMPERATURE SEPTIONT. THE FAN SPEED SETFOINT. THE SUPPLY FAN VPD SPEED         I. B. ALARMS SHALL BE PROVIDED AS FOLLOWS:         • HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).         • LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).         • LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).         • I. I. RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:         • I. I. RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:         • HIGH MIXED AIR TEMP       I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	RUNTIME EXCEEDS A USER DEFINABLE	REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF		HIGH BUILDING STATIC PRESSURE							X		
EMPERATURE AND SHALL MODULATE THE EMPERATURE SETPOINT. THE FAN SPEED ISES ABOVE COOLING SETPOINT, OR AS SETPOINT. THE SUPPLY FAN VFD SPEED       - HIGH MIXED AIR TEMPE IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90'F (ADJ.).       - LOW MIXED AIR TEMPE IF THE MIXED AIR TEMPERATURE IS LESS THAN 45'F (ADJ.).         1. RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:       - A. THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 LEVELS.       - HIGH MIXED AIR TEMP				HIGH ZONE TEMP							x		
EMPERATURE SETPOINT. THE FAN SPEED ISES ABOVE COOLING SETPOINT, OR AS SETPOINT. THE SUPPLY AR TEMP       I       <	EMPERATURE SETPOINT. THE FAN SPEED			LOW ZONE TEMP							X		
SETPOINT. THE SUPPLY FAN VFD SPEED       LOW MIXED AIR TEMP       I       I       I       X       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				HIGH SUPPLY AIR TEMP							X		
ONE TEMPERATURE AND MODULATE THE IG SETPOINT.       A. THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 LEVELS.         B. ALARMS SHALL BE PROVIDED AS FOLLOWS:       Image: Concentration: IF THE RETURN AIR CO2 CONCENTRATION IS GREATER THAN 1000PPM (ADL) WHEN IN THE OCCUPIED MODE		• LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).		LOW SUPPLY AIR TEMP							X		
A. THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 LEVELS. HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION IS GREATER THAN 1000PPM (AD.L) WHEN IN THE OCCUPIED MODE		13. RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:		HIGH MIXED AIR TEMP							Х		
A. THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 LEVELS. HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION IS GREATER THAN 1000PPM (AD.L) WHEN IN THE OCCUPIED MODE				LOW MIXED AIR TEMP							x		
HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION: IF THE RETURN AIR CO2     CONCENTRATION IS CREATER THAN 1000PPM (AD.L) WHEN IN THE OCCUPIED MODE				HIGH RETURN AIR CARBON DIOXIDE									
65°F (ADJ.).		HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION: IF THE RETURN AIR CO2				+							
	65°F (ADJ.).	CONCENTRATION IS GREATER THAN 1000PPM (ADJ.) WHEN IN THE OCCUPIED MODE.											





- <u>RUN CONDITIONS SCHEDULED:</u> THE UNIT SHALL RUN ACCORDING TO A USER [ FOLLOWING MODES: A. OCCUPIED MODE: THE UNIT SHALL MAINTAIN • A 74°F (ADJ.) COOLING SETPOINT
- A 70°F (ADJ.) HEATING SETPOINT. B. UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT
- A 85°F (ADJ.) COOLING SETPOINT. • A 55°F (ADJ.) HEATING SETPOINT.
- C. ALARMS SHALL BE PROVIDED AS FOLLOWS: HIGH ZONE TEMP: IF THE ZONE TEMPERATUR SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.). LOW ZONE TEMP: IF THE ZONE TEMPERATU
- SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.)
- 2. <u>ZONE SETPOINT ADJUST:</u> THE OCCUPANT SHALL BE ABLE TO ADJUST THE 2 COOLING SETPOINTS AT THE ZONE SENSOR.
- . <u>ZONE OPTIMAL START:</u> THE UNIT SHALL USE AN OPTIMAL START ALGORITH ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-STILL ACHIEVING COMFORT CONDITIONS BY THE START
- 4. <u>ZONE UNOCCUPIED OVERRIDE:</u> A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED OF TIME. AT THE EXPIRATION OF THIS TIME, AUTOMATICALLY RETURN TO THE SCHEDULE.
- EMERGENCY SHUTDOWN: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALAR SHUTDOWN SIGNAL.
- <u>SUPPLY AIR SMOKE DETECTION:</u> THE UNIT SHALL SHUT DOWN AND GENERATE AN ALAR SMOKE DETECTOR STATUS.
- . <u>SUPPLY FAN:</u> A. THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT SHUTDOWN ON SAFETIES. TO PREVENT SH SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM F
- B. ALARMS SHALL BE PROVIDED AS FOLLOWS: • SUPPLY FAN FAILURE: COMMANDED ON, BUT THE • SUPPLY FAN IN HAND: COMMANDED OFF, BUT SUPPLY FAN RUNTIME EXCEEDED: STATUS RUN LIMIT (ADJ.).
- B. <u>ZONE TEMPERATURE CONTROL:</u> THE CONTROLLER SHALL MEASURE THE ZONE TEMPER SUPPLY FAN VFD SPEED TO MAINTAIN ZONE TEMPER SHALL INCREASE AS THE ZONE TEMPERATURE RISES / THE ZONE TEMPERATURE DROPS BELOW HEATING SET SHALL NOT DROP BELOW 30% (ADJ.).
- 9. <u>HEATING COIL VALVE:</u>
- A. THE CONTROLLER SHALL MEASURE THE ZONE HEATING COIL VALVE TO MAINTAIN ITS HEATING SE B. THE HEATING SHALL BE ENABLED WHENEVER: • OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F

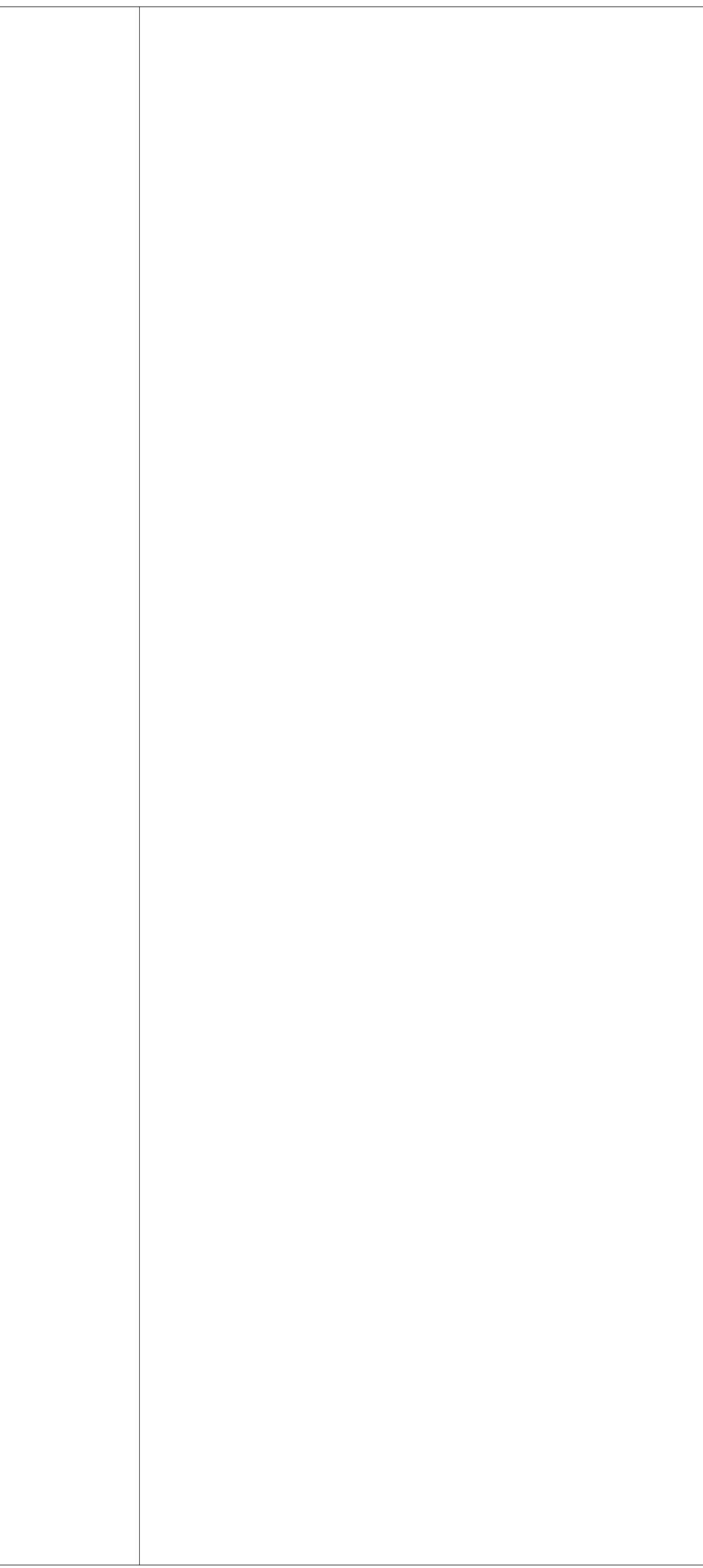


VAV HEATING-VENTILATING SEQUENCE OF OPERATION			I/O POINTLIST									
	AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.			HARDWA	RE POINT	S			SOFTWARE	POINTS		
ER DEFINABLE TIME SCHEDULE IN THE	AND THE SUPPLY FAN STATUS IS ON.	14. <u>RETURN AIR TEMPERATURE:</u>	POINT NAME	AI AO	DI	DO	AV	DV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
	AND THE COOLING IS NOT ACTIVE.	A. THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS	SCHEDULE						х			
	10. ECONOMIZER:	REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT).	ZONE TEMP	x						x		x
		<ul> <li>B. ALARMS SHALL BE PROVIDED AS FOLLOWS:</li> <li>HIGH RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS GREATER THAN</li> </ul>	ZONE SETPOINT ADJUST							~		
JNIT SHALL MAINTAIN	A. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2'F LESS THAN THE	90°F (ADJ.).										
	ZONE COOLING SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20% (ADJ.) OPEN WHENEVER OCCUPIED.	<ul> <li>LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).</li> </ul>	BUILDING STATIC PRESSURE	X						X		X
			SUPPLY AIR TEMP	X						X		X
	B. THE ECONOMIZER SHALL BE ENABLED WHENEVER:	15. <u>SUPPLY AIR TEMPERATURE:</u>	MIXED AIR TEMP	X						X		X
ATURE IS GREATER THAN THE COOLING	• OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).	A. THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.	RETURN AIR CARBON DIOXIDE PPM	X						Х		X
(ADJ.).	<ul> <li>AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE ROOM/ZONE AIR TEMPERATURE.</li> </ul>	<ul> <li>B. ALARMS SHALL BE PROVIDED AS FOLLOWS:</li> <li>HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER</li> </ul>	SUPPLY FAN VFD SPEED	X						Х		X
ERATURE IS LESS THAN THE HEATING (ADJ.).	AND THE SUPPLY FAN STATUS IS ON.	THAN 120°F (ADJ.).	HEATING VALVE	X						Х		<u> </u>
		<ul> <li>LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).</li> </ul>	RETURN AIR DAMPER	X						Х		X
THE ZONE TEMPERATURE HEATING AND	<ul> <li>C. THE ECONOMIZER SHALL CLOSE WHENEVER:</li> <li>MIXED AIR TEMPERATURE DROPS FROM 45°F TO 40°F (ADJ.).</li> </ul>	(ADJ.).	OUTSIDE AIR DAMPER	X						х		Х
THE ZONE TEMPERATURE HEATING AND	MIXED AIR TEMPERATURE DROPS FROM 45 F TO 40 F (ADJ.).      OR ON LOSS OF SUPPLY FAN STATUS.	16. <u>EXHAUST FAN:</u>	EXHAUST AIR DAMPER			x				x		x
	OR THE FREEZESTAT (IF PRESENT) IS ON.	EXHAUST FAN SHALL OPERATE TOGETHER WITH CORRESPONDING SUPPLY FAN OR HEATING VENTILATING UNIT. EXHAUST FAN SHALL MODULATE SPEED TO MAINTAIN ROOM STATIC	ZONE OVERRIDE		x					х		Х
ORITHM FOR MORNING START-UP. THIS		DIFFERENTIAL PRESSURE. REFER TO SEPARATE EXHAUST FAN SEQUENCE OF OPERATION.	SUPPLY AIR SMOKE DETECTOR		X					х	Х	X
ARM-UP OR COOL-DOWN PERIOD WHILE	D. THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS AVAILABLE, THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED.		SUPPLY FAN VFD FAULT		X					x		X
			SUPPLY FAN STATUS							x		× ×
LOW AN OCCUPANT TO OVERRIDE THE	MODE EXCELL THAT THE OUTSIDE AIX DAMILER SHALE MODULATE TO FOLLT CLOSED.		SUPPLY FAN START/STOP									
PIED MODE FOR AN ADJUSTABLE PERIOD IME, CONTROL OF THE UNIT SHALL	11. <u>MINIMUM OUTSIDE AIR VENTILATION – CARBON DIOXIDE (CO2) CONTROL:</u>		,			X				X		X
IME, CUNTROL OF THE UNIT SHALL	WHEN IN THE OCCUPIED MODE, THE CONTROLLER SHALL MÉASURE THE RETURN AIR CO2 LEVELS AND MODULATE THE OUTSIDE AIR DAMPERS OPEN ON RISING CO2		EXHAUST FAN VFD FAULT		X						X	X
	CONCENTRATIONS, OVERRIDING NORMAL DAMPER OPERATION TO MAINTAIN A CO2 SETPOINT OF 900 PPM (ADJ.).		EXHAUST FAN STATUS		X					X		X
ALARM UPON RECEIVING AN EMERGENCY	A. OUTSIDE AIR DAMPER SHALL HAVE TWO MINIMUM POSITIONS - NORMAL MODE AND		EXHAUST FAN START/STOP			X				X		X
	DCV/CO2 MODE. CONTRACTOR SHALL BALANCE THE AIR SYSTEM AND DETERMINE THE DAMPER POSITION FOR EACH MINIMUM SETPOINTS.		ECONOMIZER ZONE TEMP SETPOINT				X			Х		X
	B. UPON RISE OF RETURN AIR CO2 LEVEL TO 900 PPM, SUPPLY FAN SHALL RAMP UP		RETURN AIR CARBON DIOXIDE PPM SETPOINT				X			Х		X
I ALARM UPON RECEIVING A SUPPLY AIR	TO MAXIMUM CFM W/ OUTSIDE AIR DAMPER POSITION AT MINIMUM DCV/CO2 MODE. C. FURTHER RISE OF RETURN AIR CO2 LEVEL TO 950 PPM, OUTSIDE AIR DAMPER		SUPPLY AIR TEMP SETPOINT				X			Х		X
	SHALL MODULATE OPEN TO NORMAL MODE (MINIMUM T24 POSITION.).		HEATING MIXED AIR TEMP SETPOINT				X			х		X
	D. UPON DROP OF RETURN AIR CO2 LEVEL TO 700 PPM, OUTSIDE AIR DAMPER SHALL		OUTSIDE AIR TEMP SETPOINT				x			Х		Х
UNIT IS COMMANDED TO RUN, UNLESS SHORT CYCLING, THE SUPPLY FAN	MODULATE CLOSE TO DCV/CO2 MODE. E. FURTHER DROP OF RETURN AIR CO2 LEVEL TO 600 PPM, SUPPLY FAN SHALL		EMERGENCY SHUTDOWN					Х			х	x
IUM RUNTIME.	MODULATE TO MAINTAIN ZONE TEMPERATURE.		SUPPLY FAN FAILURE								Х	
T THE STATUS IS OFF.	12. MIXED AIR TEMPERATURE:		SUPPLY FAN IN HAND								Х	
BUT THE STATUS IS OFF.	12. MIALD AIR TEMPERATORE.		SUPPLY FAN RUNTIME EXCEEDED								X	
RUNTIME EXCEEDS A USER DEFINABLE	A. THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF		HIGH BUILDING STATIC PRESSURE								x	
	PRESENT).		HIGH ZONE TEMP								×	
	B. ALARMS SHALL BE PROVIDED AS FOLLOWS:										~	
EMPERATURE AND SHALL MODULATE THE EMPERATURE SETPOINT. THE FAN SPEED SISES ABOVE COOLING SETPOINT, OR AS SETPOINT. THE SUPPLY FAN VFD SPEED	<ul> <li>HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).</li> </ul>		LOW ZONE TEMP								X	
	LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).		HIGH SUPPLY AIR TEMP								X	
SETFOINT. THE SUFFLI FAIN VED SPEED			LOW SUPPLY AIR TEMP								Х	
	13. RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:		HIGH MIXED AIR TEMP								Х	
	A. THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 LEVELS.		LOW MIXED AIR TEMP								Х	<u> </u>
ONE TEMPERATURE AND MODULATE THE IG SETPOINT.	B. ALARMS SHALL BE PROVIDED AS FOLLOWS:		HIGH RETURN AIR CARBON DIOXIDE CONCNTRATION								х	
:	HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION: IF THE RETURN AIR CO2     CONCENTRATION IS GREATER THAN 1000PPM (ADJ.) WHEN IN THE OCCUPIED MODE.											
65°F (ADJ.).	CONCENTION IS OREATER THAN TOOOFT MI (ADD.) WHEN IN THE OCCUPIED MODE.		L		_	I	I					1

CAN BE USED IN LIEU OF DUCT SMOKE DETECTOR.



1 mu bull will will but also automatically binds all parties involved with misuse to fully indemnify and defend MDC and cannot be lawfully used in the contractual agreement between MDC and cannot be lawfully used in the contractual agreement between MDC and mu bull and beta and beta



### EXHAUST FAN SEQUENCE OF OPERATION

1. <u>RUN CONDITIONS – SCHEDULED:</u> THE FAN SHALL RUN ACCORDING TO A USER DEFINABLE SCHEDULE.

2. <u>FAN:</u> THE FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

3. <u>RUN CONDITIONS</u> THE EXHAUST FAN SHALL BE INTERLOCKED TO RUN WHENEVER CORRESPONDING AHU, HV OR SUPPLY FAN RUNS, UNLESS SHUTDOWN ON SAFETIES.

4. BUILDING STATIC PRESSURE CONTROL

A. THE EXHAUST DAMPER SHALL OPEN AND THE EXHAUST FAN SHALL RUN WHEN COMMANDED ON. B. THE CONTROLLER SHALL MEASURE BUILDING STATIC PRESSURE AND MODULATE THE EXHAUST FAN VFD SPEED TO MAINTAIN A BUILDING STATIC PRESSURE SETPOINT OF 0.05IN H2O (ADJ.). THE EXHAUST FAN VFD SPEED SHALL NOT DROP BELOW 20% (ADJ.).

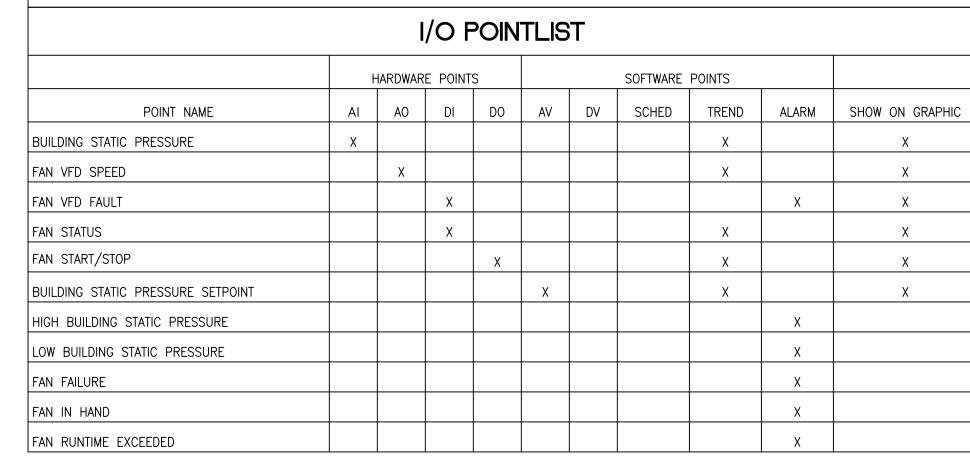
5. <u>FAN STATUS:</u>

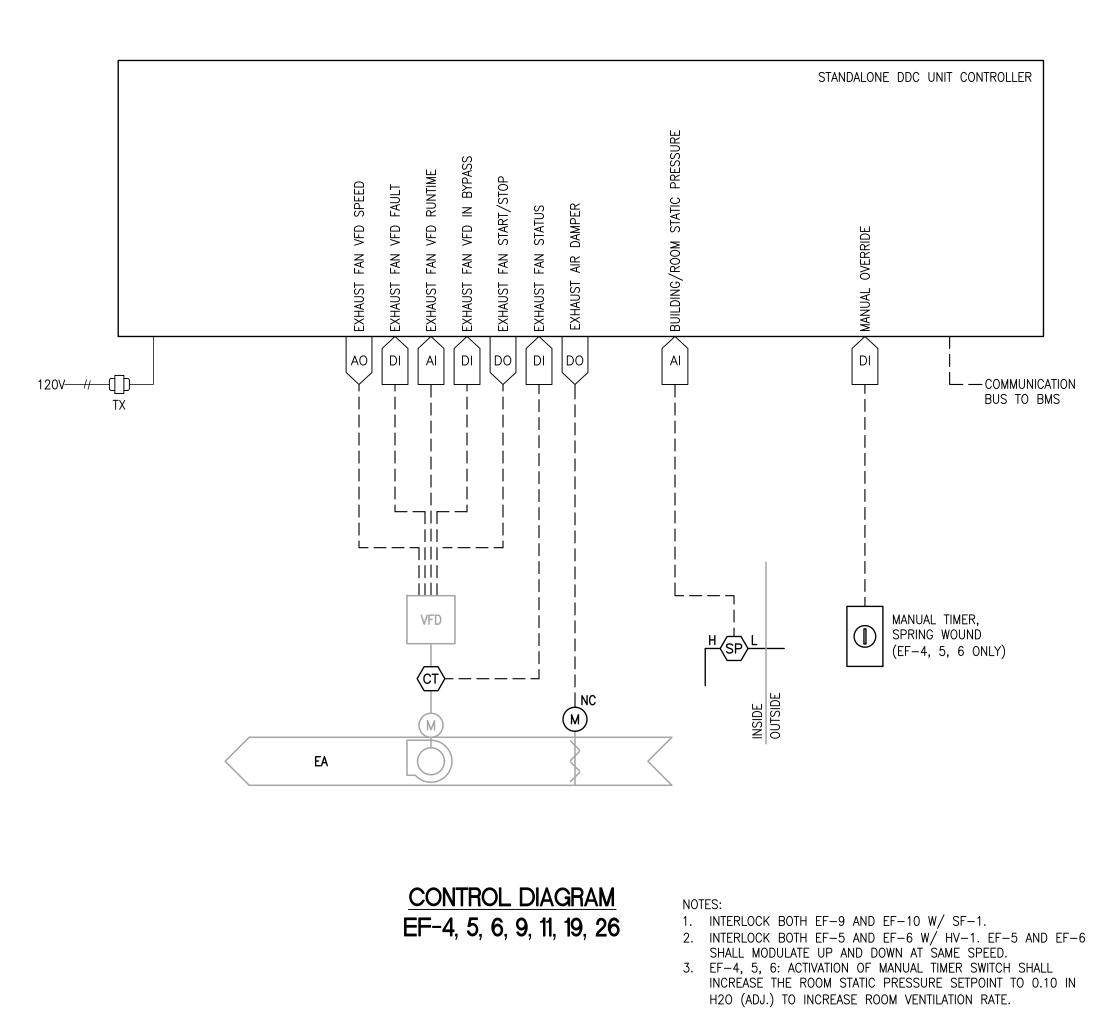
A. THE CONTROLLER SHALL MONITOR THE FAN STATUS.

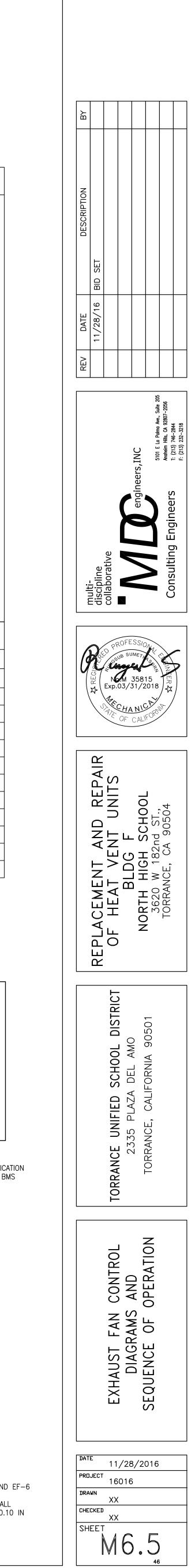
B. ALARMS SHALL BE PROVIDED AS FOLLOWS: a. FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

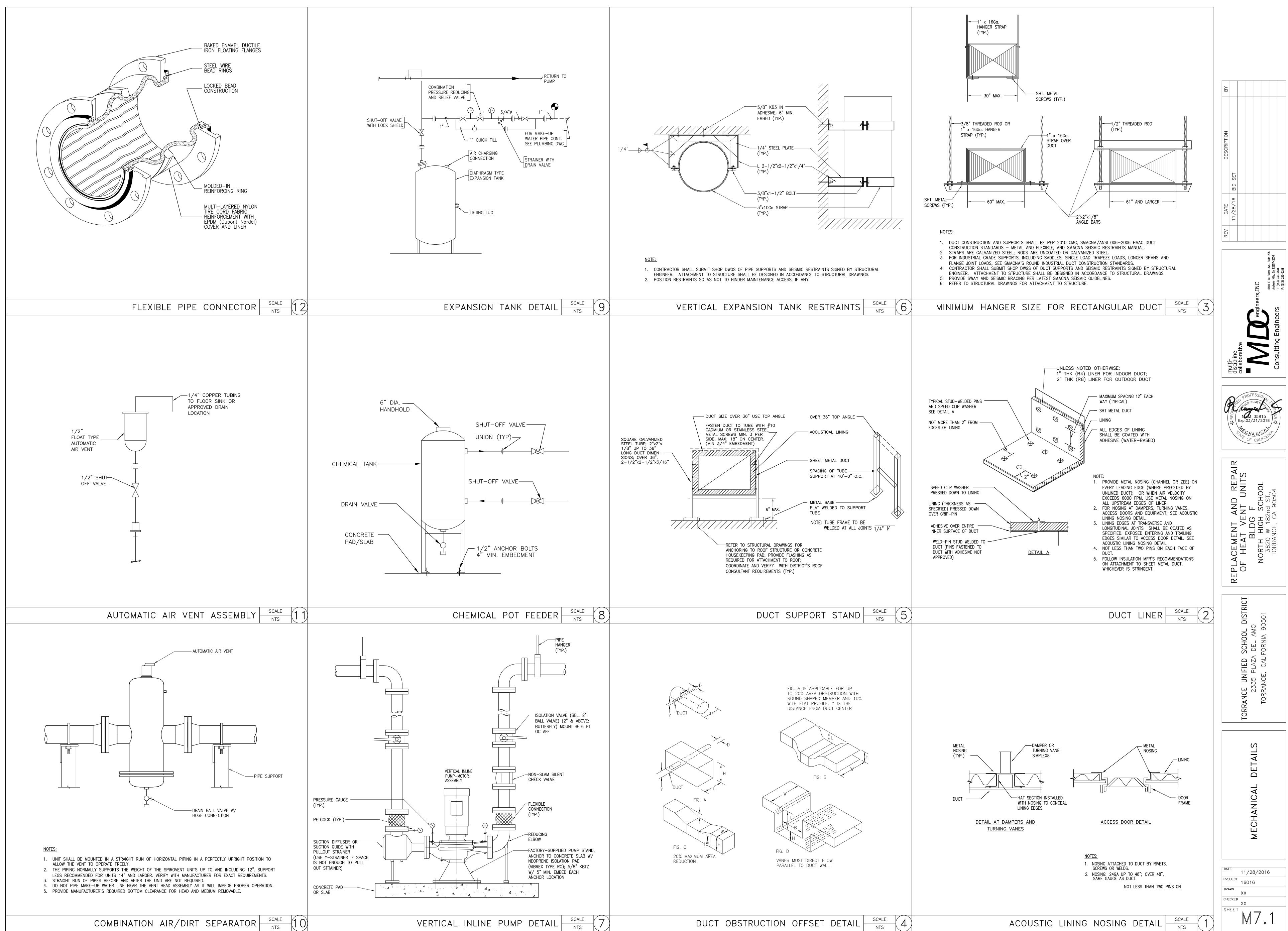
b. FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

c. FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).



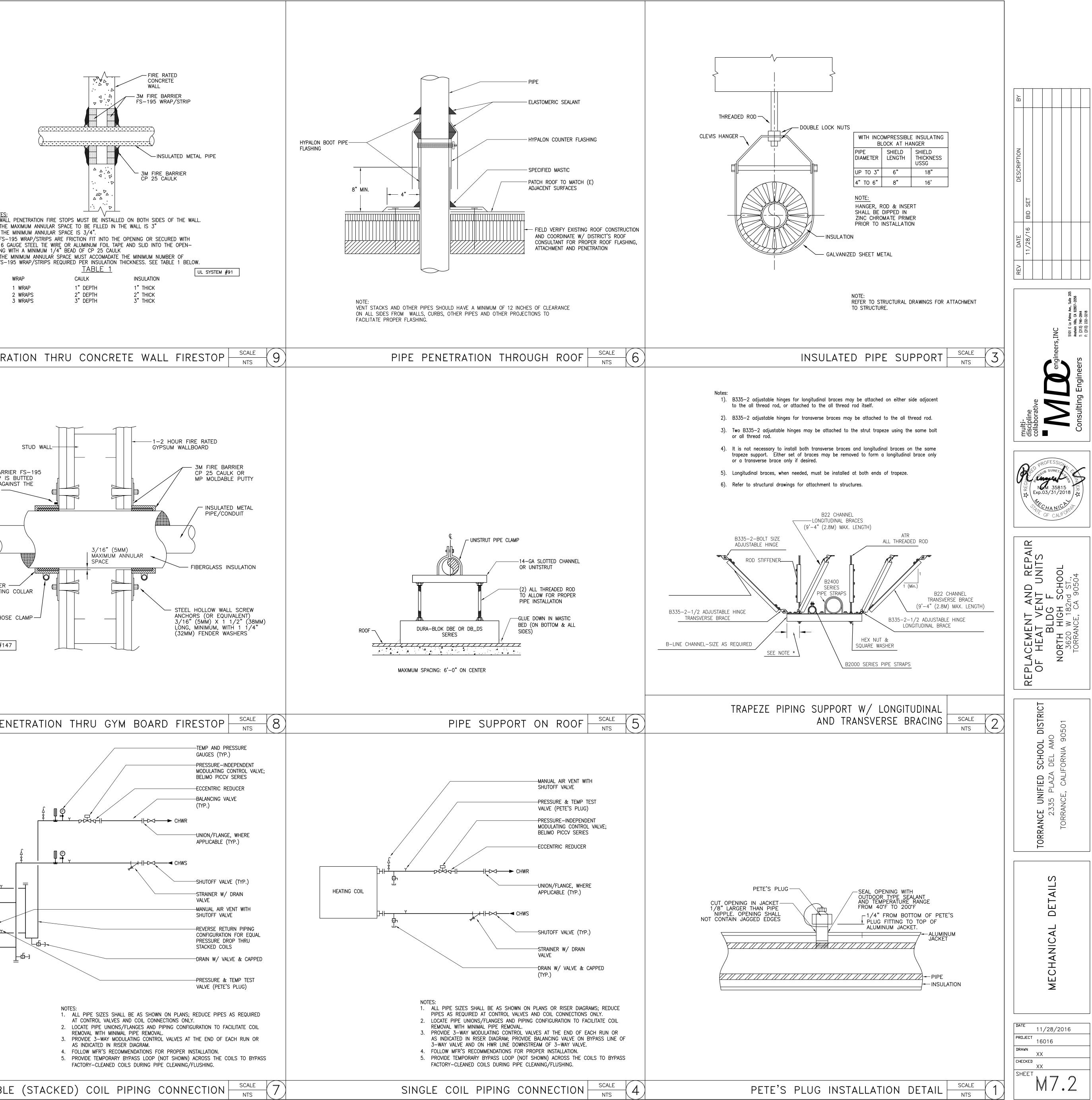






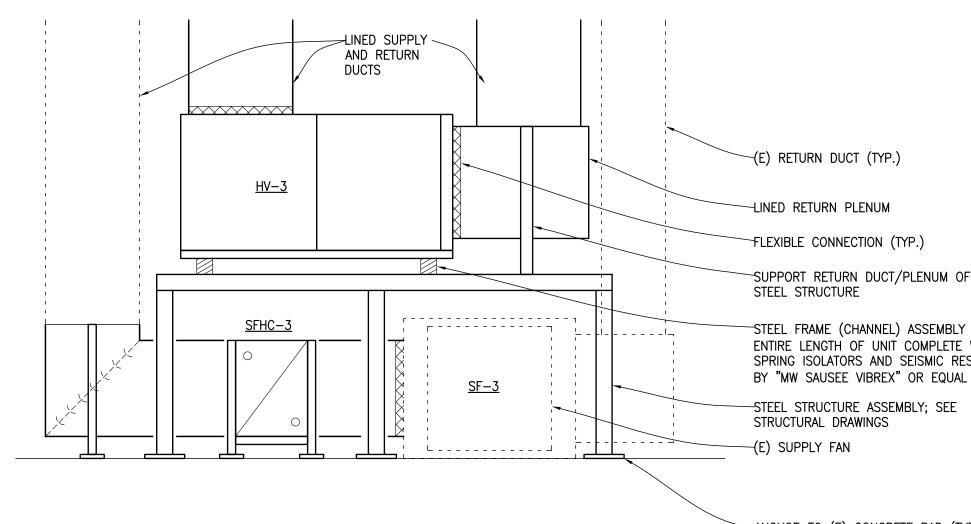
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	I
	NOTES
	<u>NOTES</u> 1. WA 2. TH TI 3. FS 16 INC 4. TH FS·
	ING 4. TH FS <sup>.</sup>
	PIPE PENETR
	3M FIRE BAR WRAP/STRIP SECURELY AG WALLBOARD -
	3M FIRE BARRIEF RC-1 RESTRICTIN
	STEEL HO
	UL SYSTEM #1
	PIPE PE
TOP OF TERMOSTAT, SWITCH, OUTLET, CONTROL.	
Image: Control intermostat, switch     Image: Control intermostat, switch       Image: Control intermostat, switch     Image: Control intermostat, switch	
48, MAX.	
<u>MOUNTING HEIG</u> HT <u>OVER OBSTRUCTION</u>	
THERMOSTAT MOUNTING	DOUBI
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					ELECTR
ITENT OF THESE STALLATION BE BOR AND TOOLS WITH ALL APPLI	E PLANS AND PROVIDED FO S NECESSARY LICABLE CODES	SPECIFICATIONS R THE EQUIPMEN AND INSTALL AF S, INCLUDING ITE	ND SHALL BE CONSIDERED THE THAT A COMPLETE AND WOR NT DESCRIBED OR SHOWN AS PPARATUS, MATERIALS, AND E MS REQUIRED BUT NOT NECE NECTORS, AND HARDWARE.	KABLE ST BEING IN QUIPMENT	AND BY EMERGENCY N THIS CONTRACT. IN A FASHION
TING FIELD CON R OF CONDUITS	NDITIONS, ELE S AND CONDU REQUIRED FOR	CTRICAL SERVICE ICTORS, PANELS,	SITE AND FULLY ACQUAINT N REQUIREMENT, INCLUDING N DISCONNECT SWITCHES CABL OMPLETE AND OPERABLE FIRE	ECESSARY .ES ETC.,	PULL BOXES, SIZE WHETHER SHOWN ON
OOR SWINGS, D IOR TO COMMEI	DUCTS, PIPES, Encing, any W	CEILINGS AND E	IMENSIONS AND CONDITIONS, BRING ANY DISCREPANCIES TO ONTROLS, SHALL BE INSTALLE ID REPAIRING.	THE ATT	ENTION OF THE
NT OF THE REQ / INDICATING TH NN WITH THE EX JT SUBJECT TO NECESSARY OFF	QUIRED EQUIP HE ACTUAL DI EXISTING FIELD O APPROVAL O FSETS, BENDS TRACTOR SHAL	MENT AND LAYOU MENSIONS, THE I CONDITIONS ANI OF THE DISTRICT , PULL BOXES A	CATE THE LOCATION OF DEVIC JTS OF PROPOSED EQUIPMEN DRAWINGS SHALL BE FOLLOWE D SPACE WILL PERMIT. SIMPL FOR VISUAL AND STRUCTURA AND OBSTRUCTIONS. THE DRAV E GENERAL CONSTRUCTION DF	TS AND T ED AS CL <sup>I</sup> IFY INSTAI L REASON WINGS ARI	HOUGH NOT OSELY AS PROPER LLATION WHEREVER NS. THE DRAWINGS DO E NOT INTENDED TO
DR INSPECTION CEPTED, PRESE	I WITH DISTRIC ENT TO THE [	DISTRICT SIGNED	CONNECTION THEREWITH, CO CERTIFICATE OF FINAL INSPEC STRICT COMPLIANCE WITH THE PF	CTION.	
ODE, REGULATION	N AND ORDINAN	ICES, AND AUTHOR	RITIES HAVING JURISDICTION.		
ICABLE AT FINI ED CONDUIT SHAL FREE FROM D SHALL BE INST SHALL BE INST OR TRAPS IN AL OR TRAPS IN AL OX SHALL BE LOO DUIT SYSTEM A NDUCTING COM LOCKNUTS SHA AS PART OF T THREADS SHAL MUST BE COUP , THEN THE "E BOTH MECHANIC AND CONNECTORS SHALL BE TER O WIRES FROM SIZES SHALL BE INTS OF THE "C.I LEEVES, NIPPLES, A CONDUIT SHALL B CONDUIT SHALL B CONDUIT FROM CTION PERIOD.W O, REMOVED ON ILY CLEAN THE IN	IN OR SPECIFI ISHED AREAS HALL BE RUN P DENTS OR FLA STALLED AS A STALLED ENTIRI STALLED WITHIN LL CONDUIT RUI DCATED AT EACH AND CONDUCTION MPONENT IS P ALL BE USED THE BOX OR ALL NOT BE U PLED TOGETHE ERICKSON" TYP CALLY AND EL S USED ON ELECO RMINATED WITH ABRASION AT MINIMUM OF 3 .E.C". AND COUPLINGS BE PROVIDED TO M DAMAGE AN NATERTIGHT ST NLY WHEN WIR NSIDE OF CONDU	ED, CONDUIT SH. AND EXPOSED A IN AS DIRECT A ARALLEL TO, OR ATTENING. CONDU COMPLETE SYST ELY FREE FROM I 6 INCHES OF NS WHERE MOISTU I LOW POINT IN O ING WIRE ENCLOS ROVIDED WITH A FOR SECURING CABINET. SED ON CONDUIT R, AND IT IS IM PE OF COUPLING ECTRICALLY EFFE CTRIC METALLIC TUB I SUITABLE BUSH THE ENDS. 5/4" UNLESS OTHE REQUIRED FOR THE CONNECT MOTORS D THE ENTRANCI OPPERS OR CAP E IS TO BE INST JITS TO ASCERTAIN	BING SHALL BE COMPRESSION TYPE HINGS OR EQUIVALENT DEVICES ERWISE NOTED AND IN ACCORDAN INSTALLATION OF CONDUIT. SLEEVES TO N SLIDING BASES, TO CONTROLS E OF WATER AND FOREIGN MA PS SHALL BE INSTALLED IMME TALLED. FOREIGN MATERIALS ARE REMOVED	AS. HALL BE LINES OF D SECURE CTORS AR THER MEG G OR HEA IDED.WHER DRAINAGE. BONDED T GROUND. IET UNLES LINGS.WHE ENGTHS IN TO PROVID C, COMPRES S WHICH ICE WITH T SHALL PROUS AND TO ATTER DU DIATELY A	OF LONG SWEEP TYPE THE BUILDING.BEND LY FASTENED. E PULLED IN. CHANICAL EQUIPMENT, TING FLUES. E DIPS ARE UNAVOIDABLE FOGETHER SO THAT FO SS A THREADED HUB I ERE 2 LENGTHS OF NTO AN ORDINARY DE A RIGID JOINT THAT SSION. SHALL PROTECT THE THE MINIMUM JECT 2" ABOVE FLOOR. VIBRATING EQUIPMENT. RING THE AFTER THE CONDUIT IS
TION OF HANGE E.HANGERS AND OR BRIDGING, F RS FOR SUPPO PROVED DEVICE LLEABLE IRON ( NT IN FORMS, R WITH OTHER TION SHALL BE OTHER TRADES	ERS AND SUP O SUPPORTS S PIPING OR OT ORTS AND HAN CES. FASTENER OR WROUGHT WITH SELF D APPROVED T SUCH SO AS S. PROVISION	PORTS SHALL BE SHALL NOT BE IN HER CONDUIT. IGERS SHALL BE S FOR SUPPORT STEEL INSERTS RILLING TYPE EX YPE DEVICES. S TO SUPPORT ON FOR EXPANSIO	NERS AS REQUIRED. E MADE TO THE STRUCTURAL NSTALLED TO PRE-CAST CONC MADE WITH BEAM CLAMPS, U S AND HANGERS TO CONCRE WITH LONG RADIUS NECKS A PANSION SHIELDS WITH INSID CONDUIT WITHOUT SAGGING AN N AND CONTRACTION SHALL E CONDUIT RUNS SHALL BE AS	DRETE, ME J-BOLTS, TE SHALL ND KEYHO E THREAD ND SHALL BE MADE.	TAL DECKS, STEEL STUD WELDING OR BE MADE WITH ONE DLE SLOTS FOR S AND EXPANSION BE CLEAR OF THE
	UMBER OF DUITS IN RUN		LOCATION		MAXIMUM SUPPORT SPACING (FEET)
- 1	1 OR 2 1 OR 2		ILING OR WALL IFFICULT TO PROVIDE SUPPOF ERVALS FIXED BY BUILDING	RTS	5 7 7
GER 1	1 OR 2	ON A FLAT CEI WHERE IT IS D	IFFICULT TO PROVIDE SUPPOR	RTS	6
	1 OR 2 5 OR MORE	ANY LOCATION	ERVALS FIXED BY BUILDING		10
OF SUPPORTS	FOR EXPOSE SIZE OF C (INCHE 3/	CONDUIT ES)	DUIT RUNS SHALL BE AS FOL MAXIMUM SUPPORT SPAC (FEET) 7		
	1  AND $1\frac{1}{2} \text{ AND } 1$	· 1	8 10		
			WHEN EXPOSED TO OUTDOORS		
RUCT THE DIST ET BOXES IN C TED TO BE LAR	STRICT ON THE CONFORMITY W RGER, MINIMUN	USE AND MAIN	RES. PRIOR TO COMPLETION C TENANCE OF THE INSTALLED S NUMBER AND GAUGE OF CONI NLL BE 4" SQUARE BY 2 1/8 S.	SYSTEM. DUCTORS	THEREIN. EXCEPT
IN BOXES, COM MOUNTED BOXES E AT LEAST 1/ TO ROOMS ANI OUS WARNING S RS, CEILINGS AN CONCRETE WALL OR SHALL COOR	NDUIT BODIES AND CABINI 4 INCH AIR S ND OTHER GUA SIGN FORBIDDI ND WALLS AS LLS OR CEILING RDINATE WITH	AND FITTINGS S ETS MOUNTED IN SPACE BETWEEN ARDED LOCATIONS NG UNQUALIFIED REQUIRED FOR GS SHALL BE PF DISTRICT. ALL W	CE OF WALLS AND CEILINGS OF SHALL BE ADEQUATELY CLOSED I WET AND DAMP LOCATIONS THE BOX AND MOUNTING SU S THAT CONTAIN LIVE PARTS S PERSONS TO ENTER. INSTALLATION OF ELECTRICAL ROVIDED BY MEANS OF SLEEV ORK SHALL BE PATCHED AND	D. SHALL BE RFACE. SHALL BE WORK. A ES OR CO REPAIRE	WEATHERPROOF AND MARKED WITH A PPROVED PENETRATION ORE DRILLING, D AS DIRECTED BY
ALL REQUIRED IRER, CATALOG	O SHOP DRAWI NUMBER, DIM	NGS, BROCHURE IENSIONS AND P	HALL SUBMIT TO THE ENGINEE S AND OTHER SATISFACTORY ERFORMANCE OF THE EQUIPM	DESCRIPT ENT.	IONS INDICATING
R. SIZE PER CE	EC 250-122.	FOR ALL BRAN	CH CIRCUIT WIRING WITH A S NG LABORATORY.	lµarate	GREEN GROUNDING
SUPPORTS, CA SHALL BE PRO OR NOT THESE OUNDING INSTA BY THE "CEC" AT THE SERVIC ING SHALL BE DO	ABINETS, AND OPERLY GROU CONNECTIONS ALLATION SHAL "THESE GROU CE CONNECTIO DONE IN ACCORI	ASSOCIATED EQU NDED BY CONNE S ARE SHOWN O L HAVE PROVISIO JNDING SYSTEMS N. DANCE WITH THE F	ELECTRICAL EQUIPMENT AND IPMENT, WHICH ARE INSTALLE CTION TO THE GROUNDING S' N THE DRAWINGS. ONS FOR BOTH SYSTEM AND ARE TO BE EFFECTIVELY INS PROVISIONS OF "CEC" AND THE TO	D OR CO YSTEM, RE EQUIPMEN ULATED F "NESC". LC	NNECTED UNDER THIS EGARDLESS OF NT GROUNDS AS ROM EACH OTHER DCAL REQUIREMENTS OF
R SERVICE IS CALLY CONTINUC CAL PATH SHALI GROUND CABLE O OF THE RACE FION SHALL BE	USED FOR GF OUS AT JOINT LL HAVE SUCH ES ENTER ANI EWAY. WHERE MADE TO SU	ROUNDING POINT, S AND IS OF CO I JOINTS BONDED D LEAVE FERROU GROUND CABLE ICH METAL.	IS CONDUITS, THEY SHALL BE PASSES THROUGH FERROUS	THAT THE PIPING WI MECHAN FLOORING	WATER PIPING IS TH SWEATED JOINTS IN ICALLY CONNECTED TO OR FRAMING,
R WASTE MATE SITE AND PROP LY CLEAN ALL CONDUIT SHALL FT IN CONDITIC ENT FURNISHED LED SURFACES TESTS HAVE BE	PARTS OF TH PARTS OF TH BE CLEANED ON SUITABLE D WITHOUT SH S OF METAL R EEN COMPLETE	) BY HIS WORKM TE SHALL BE CL IE EQUIPMENT AI OF CEMENT, PL TO THE CONTRAC IOP APPLIED FINI ACKS, FRAMES, J ED, CLEAN ALL E	ILDING AND SITE FREE FROM IEN, AND SHALL REMOVE SUC LEANED AT THE END OF EACH ASTER, DIRT, RUST, GREASE, CTOR AND ACCEPTABLE FOR F ISH SHALL BE FIELD PAINTED AND BOXES SHALL BE PAINTE QUIPMENT WITH SOAP AND W	CH ACCUM I WORKING AND OTHI PAINTING. D BEFORI	IULATIONS FROM THE G DAY. ECTION. SURFACES OF ER FOREIGN MATTER, E MOUNTING.
ORDER AT TH AND CONNECTI ANY EQUIPME 5, INSULATION F	HE COMPLETIO FIONS SHALL E ENT OR FIXTUF RESISTANCE, /	N OF THE WORK BE TESTED FOR RES ARE CONNEG AND PROPER PH	Continuity, grounds, short Cted thereto. Cables shali	CIRCUITS	S, AND OTHER DEFECT CKED FOR CONTINUITY
0T0-		CABLES & WIRE	S WITH TEDMINIAL LUCS (SUE		

# **RICAL NOTES**

24. INSULATION SHALL BE TESTED BEFORE AND AFTER INSTALLATION, AND BEFORE ENERGIZING. A) RUBBER INSULATION SHALL BE TESTED FOR ACCEPTANCE BY APP TIMES THE RATIO OF DIRECT CURRENT TO 60% OF EQUIVALENT "RI

- VOLTAGE FOR 5 MINUTES. B) VARNISHED CAMBRIC, PAPER, AND OTHER INSULATION SHALL BE TO THE LIMITS RECOMMENDED BY THE MANUFACTURER. C) INSULATION RESISTANCE SHALL BE TESTED BY MEGGER OF NOT L CIRCUITS 480 VOLTS AND LESS. ANY CIRCUIT SHOWING AN INSULAT
- BE INVESTIGATED AND THE WEEK POINT CORRECTED. CORRECT OR GROUNDED AND MAKE WIRE-BY-WIRE TEST.
- 25. THE ENTIRE SYSTEM SHALL BE PLACED IN PROPER OPERATING CONDI A) ALL CHANGES SHALL BE MADE THAT ARE NECESSARY FOR ADJUST B) GROUND TESTS SHALL BE MADE WITH THE 3 ELECTRODE "AC" OR INITIAL READINGS FOR RECORDS, AND TO ASCERTAIN THAT THEY ME C) CONTROL CIRCUITS SHALL BE CHECKED OUT FOR PROPER
- 26. SEISMIC ANCHORAGE NOTE: INSTRUCTIONS

ALL EQUIPMENT/COMPONENTS DIRECTLY SUPPORTED ON THE GROUND EQUIPMENT WEIGHTING MORE THAN 20 LBS. SUPPORTED FROM A ROO HAVE ITS CORRESPONDING STRUCTURAL CALCULATIONS AND ANCHORAGE ALL EXPANSION ANCHOR BOLTS SHALL HAVE ICC, ESR # 1385 (CONC AND 1912A OF CBC-2007.

THE SEISMIC ANCHORAGE OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL CONFORM TO ASCE7-05 SECTION 13.3.1 AND TABLE 13.6-1 ANCHORAGE DETAILS FOR ROOF/FLOOR MOUNTED EQUIPMENT SHALL BE SHOWN ON PLANS.

27. ALL WORK SHOULD CONFORM TO LATEST EDITION TITLE 24, CALIFORNIA CODE REGULATION (CCR). 28. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CHANGE ORDERS

APPROVED BY DISTRICT. 29. AN INSPECTOR WHO IS SPECIALLY QUALIFIED IN MECHANICAL AND ELECTRICAL WORK WILL BE REQUIRED FOR THIS PROJECT.

30. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHERE IN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24. CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. SECTION 4-317(C), CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1 TITLE 24, CCR).

31. CUTTING, BORING, NOTCHING FOR ALL FRAMING MEMBERS SHALL BE DONE WITH PRIOR APPROVAL OF ENGINEER.

# GENERAL NOTES

- 1. THE FOLLOWING GENERAL NOTES ARE APPLICABLE AS STATED BELOW, EXCEPT WHERE SPECIFICALLY INDICATED AND NOTED OTHERWISE ON THE DRAWINGS OR IN THE SPECIFICATIONS.
- 2. RISER DIAGRAMS, ELEVATIONS, SCHEMATICS AND DETAILS SHOWN HEREIN ARE CONCEPTUAL AND ILLUSTRATE THE
- FUNCTIONAL RELATIONSHIPS BETWEEN SYSTEM COMPONENTS AND THE DESIGN INTENT OF THE PROJECT. 3. REFERENCE EQUIPMENT SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING EQUIPMENT AND MATERIALS USED
- ON THE PROJECT.
- 4. MINIMUM CONDUIT SIZE SHALL BE 3/4 " UNLESS OTHERWISE NOTED. 5. PENETRATION(S) TO ANY FIRE RATED ASSEMBLY SHALL BE FIRE STOPPED WITH APPROVED U.L. LISTED FIRE STOP
- MATERIAL. INSTALLATION AND APPLICATION, PER MANUFACTURERS INSTRUCTIONS. 6. DEVICE LOCATIONS AS NOTED ON PLANS ARE NEW AND CONCEPTUAL. CONTRACTOR SHALL LOCATE DEVICES AS SITE
- CONDITIONS REQUIRE AND AS APPROVED BY THE DISTRICT. 7. REFERENCE SPECIFICATIONS FOR ADDITIONAL SYSTEM REQUIREMENTS AND SCOPE OF WORK.
- 8. PROVIDE FIRE RATED SEALANT AS REQUIRED AT FIRE RATED LOCATIONS, PAINT TO MATCH ADJACENT COLOR OR PROVIDE ADDITIONAL NON-RATED SEALANT FOR COLOR TO MATCH ADJACENT SURFACE.

# **DEMOLITION NOTES**

- 1. CONTRACTOR TO REMOVE ALL EXISTING DEVICES AND EQUIPMENT WITH ASSOCIATED WIRING IN THE WAY OF SCOPE OF NEW WORK. CONTRACTOR TO VERIFY WITH DISTRICT AND DISPOSE ALL REMOVED DEVICES AND EQUIPMENT AS DIRECTED. CONTRACTOR TO FIELD VERIFY (E) DEVICES ABOVE CEILING SPACES AND REMOVE COMPLETELY.
- 2. CHECK PANEL SCHEDULE IDENTIFICATION FOR VALIDITY. RE-IDENTIFY ANY OR ALL CHANGES IN PANEL ON PANEL SCHEDULE CARD (INCLUDING EXISTING CIRCUITRY). WHILE PANEL COVER IS REMOVED, TURN OFF ANY SPARE BREAKERS AND VERIFY SPARES AS INDICATED ON PANEL SCHEDULE CARD. 3. PROVIDE BLANK COVER PLATES TO REMOVED DEVICES. STAINLESS STEEL OR AS SELECTED BY DISTRICT. TYPICAL U.O.N.
- 4. PROVIDE CIRCUIT IDENTIFICATION TO EXISTING DEVICES WHICH WILL REMAIN AFTER NEW WORK.
- 5. DEMOLITION DEVICES/EQUIPMENT SHOWN ARE OBTAINED FROM VISUAL INSPECTION OF THE PROJECT SITE. CONTRACTOR SHALL FIELD VERIFY EXISTING DEVICES AT WALL/CEILING/ATTIC SPACES/DUCT (SUPPLY/RETURN) AND REMOVE AS PART OF THE DEMOLITION WORK.
- 6. WHEN CEILING SUSPENSION SYSTEMS, EQUIPMENT'S SUPPORT SYSTEM, LIGHTING FIXTURES, J-BOXES, OR OTHER ITEMS MUST BE REMOVED TO PERFORM THE WORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAINTING OR REPLACING ANY BROKEN OR DAMAGED ITEMS, INCLUDING PATCHING WALLS AND PAINTING AS REQUIRED, TO BRING THE AREA TO ITS ORIGINAL CONDITION. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY BROKEN/DAMAGED CEILING TILES DURING CONSTRUCTION. CONTRACTOR TO DOCUMENT EXISTING CONDITIONS WITH DIGITAL PICTURES PRIOR TO START WORK, FAILURE TO DOCUMENT EXISTING CONDITIONS CONTRACTOR ASSUMES TOTAL RESPONSIBILITY OF REPLACING DAMAGED CEILING TILES, REPLACED CEILING TILES SHALL MATCH EXISTING BY COLOR/TYPE/STYLE.

# ELECTRICAL SYMBOLS LIST SYMBOLS REPRESENT EQUIPMENT AND OUTLET BOXES TO WHICH CONDUIT AND WIRE IS RUN FOR CONNECTION

AND BEFORE ENERGIZING. PLYING DIRECT CURRENT POTENTIAL NOT OVER 3		BOLS REPRESENT EQUIPMENT AND OUTLET BOXES TO WHICH CONDUIT AND WIRE IS RUN FOR TIXTURES AND DEVICES.
"RMS" ALTERNATING CURRENT FACTORY TEST		GENERAL DESCRIPTION
TESTED IN THE MANNER DIRECTED BY AND UP	Ū	CEILING MOUNTED JUNCTION BOX, WITH COVER (4" SQUARE, DEEP, WITH PLASTER RING)
LESS THAN 600 VOLTS OUTPUT FOR LATION RESISTANCE OF LESS THAN 1 M $\Omega$ SHALL	e e	DUPLEX RECEPTACLE, FLUSH IN WALL, GROUNDING TYPE (20 AMP, 120 VOLT, COVER PLATE SPECIFIED)
R REPLACE ANY CIRCUIT DEFECTIVE OR	<b>₽</b>	DOUBLE DUPLEX RECEPTACLE, FLUSH IN WALL, GROUNDING TYPE (20 AMP, 120 VOLT., COVER PLATE SPECIFIED)
NDITION. STING, SETTING AND BALANCING.	₽	DUPLEX RECEPTACLE, WITH GROUND FAULT INTERRUPTER (20 AMP. 120 VOLT, 3W)
DR "DC" VOLTAGE DROP METHOD TO ESTABLISH		ELECTRICAL WALL MOUNTED PANEL.
MEET DESIGN AND CODE REQUIREMENTS.		ELECTRICAL FLUSH WALL MOUNTED PANEL.
	Sa	SWITCH, FLUSH IN WALL, TOGGLE, SINGLE—POLE +42" AFF (SUBSCRIPT DENOTES UNIT CONTROLLED)
	S3	SWITCH, FLUSH IN WALL, TOGGLE, THREE WAY +42" AFF (CONNECT TO MATCHING SWITCH FOR 3–WAY USE)
ND OR ROOF WITH WP EXCEEDING 400 LBS.,	Sĸ	SWITCH, FLUSH IN WALL, KEY OPERATED
OOF FLOOR OR HUNG FROM A WALL SHALL	S <sup>m</sup>	SWITCH, FLUSH IN WALL, MOMENTARY CONTACT, S.P.S.T.
RAGE DETAIL(S) SHOWN ON THE PLANS. DNCRETE/CMU), AND TESTED PER SEC. 1911A	M-3	METER
NORELLY OWNER, AND TESTED TER SEC. TOTTA		NON-FUSED DISCONNECT SWITCH, MANUAL EXO, H.P. RATED
ENT SHALL CONFORM TO ASCE7-05 SECTION		STARTER

AFF RATED STARTER CIRCUIT BREAKER OF POLES, VOLTS, TRIP-AMPS NOTED (CONFIRM INTERRUPTING CAPACITY NEEDED) GROUND BOX CONDUIT FOR CIRCUIT ---- conduit stub-up with coupling flush in floor (to permit future removal) ----- CONDUIT CONCEALED IN OR UNDER FLOOR: OR UNDERGROUND (CONFIRM DEPTH; GRADE TO DRAIN INTO PULL BOXES) BRANCH CIRCUIT WITH GREEN INSOLATED GROUND CONDUCTOR, SAME SIZE WIRE 250-122 CONCEALED IN #10 NUMBER INDICATES GAUGE OF WIRE IN CODE SIZED CONDUIT. <u>— C.O.</u> CONDUIT-ONLY WITH #12 TW COPPER PULL-WIRE (3/4" MINIMUM SIZE, UNLESS NOTED OTHERWISE) A-1.3 HOMERUN TO CIRCUITS #1 & #3 IN PANEL "A" (CROSSMARKS INDICATE NUMBER OF WIRES) GROUND CONNECTION WITH ACCESSIBLE CLAMP (TO COLD WATER PIPE OR DRIVEN GROUND ROD) ------] STUB CONDUIT • CONDUIT DROPPING DOWN FROM RUN (IF CONDUIT IS USED, KEEP COVER ACCESSIBLE) ----- CONDUIT RISING UP FROM RUN (IF CONDUIT IS USED, KEEP COVER ACCESSIBLE) REFER TO SPECIFICATION SECTION 16130, RACEWAYS AND BOXES FOR PERMITTED TYPES OF RACEWAYS. GENERAL SYMBOLS 1 NUMBERED NOTE FOR SHEET WHERE SHOWN

### **ABBREVIATION** UON - UNLESS OTHERWISE NOTED. AFF – ABOVE FINISH FLOOR MH – MOUNTING HEIGHT C.O. - CONDUIT ONLY. (TO BOTTOM OF FIXTURE) V – VOLTS. D.P. - DISTRIBUTION PANEL. MC - MOMENTARY CONTACT ACTION. EM – EMERGENCY. (N) — NEW EF – EXHAUST FAN WBE – WHITE BAKED ENAMEL. NÉC – NATIONAL ELECTRICAL CODE. WPE - WHITE PORCELAIN ENAMEL. (E) – EXISTING. NL – NIGHT LIGHT. NIC - NOT IN CONTRACT (X) — EXISTING FIRE ALARM (ER) – EXISTING DEVICE TO BE REPLACED NTS - NOT TO SCALE. FA – FIRE ALARM. OFCI – OWNER FURNISHED. GND – GROUND. CONTRACTOR INSTALLED HP - HORSEPOWER RATING. PNL – PANEL BOARD J-BOX - JUNCTION BOX. PEC - PHOTO ELECTRIC CELL KA – KILO AMPERES. (R) – RELOCATE KW – KILOWATT. SA – SATIN ALUMINUM. KVA – KILO-VOLT AMPS. SSS - SATIN STAINLESS STEEL. LTG – LIGHTING. TEL – TELEPHONE LCL – LONG CONTINUOUS LOAD TSC - TIME SWITCH CONTROL. (+)X'-Y" - MOUNTING HEIGHT (TO L.O. – LUGS ONLY. TRANSF - TRANSFORMER LV – LOW VOLTAGE. TL – TWIST-LOCK CONSTRUCTION 5SD - METAL BOX 4-11/16" TTB – TELEPHONE TERMINAL BOARD. TYP – TYPICAL.

# LIST OF CALIFORNIA CODE OF REGULATIONS (C.C.R.)

APPLICABLE CODES AS OF JANUARY 1, 2014 TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

DETAIL DESIGNATION FOR ITEM & DRAWING NUMBER

E1.0/

TITLE 24 C.C.R., PART1 2013 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE. TITLE 24 C.C.R., PART2 2013 CALIFORNIA BUILDING CODE (CBC)

(2012 INTERNATIONAL BUILDING CODE OF THE INTERNATIONAL CODE COUNCIL, WITH CALIFORNIA AMENDMENTS) TITLE 24 C.C.R., PART3 2013 CALIFORNIA ELECTRICAL CODE (CEC)

(2012 NATIONAL ELECTRICAL CODE OF THE NATIONAL FIRE PROTECTION ASSOCIATION, NFPA)

- TITLE 24 C.C.R., PART4 2013 CALIFORNIA MECHANICAL CODE (CMC) (2012 UNIFORM MECHANICAL CODE OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS, IAPMO)
- TITLE 24 C.C.R., PART5 2013 CALIFORNIA PLUMBING CODE (CPC) (2012 UNIFORM PLUMBING CODE OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS, IAPMO)
- TITLE 24 C.C.R., PART6 2013 CALIFORNIA ENERGY CODE TITLE 24 C.C.R., PART7 2013 SAFETY CODE FOR ELEVATORS AND ESCALATORS (ASME A17.1-2004)
- TITLE 24 C.C.R., PART8 2013 CALIFORNIA HISTORICAL BUILDING CODE TITLE 24 C.C.R., PART9 2013 CALIFORNIA FIRE CODE (CFC)
- (2012 INTERNATIONAL FIRE CODE OF THE INTERNATIONAL CODE COUNCIL) TITLE 24 C.C.R., PART10 2013 CALIFORNIA EXISTING BUILDING CODE
- (2012 INTERNATIONAL EXISTING BUILDING CODE OF THE INTERNATIONAL CODE COUNCIL, WITH AMENDMENTS) TITLE 24 C.C.R., PART11 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN CODE)

TITLE 24 C.C.R., PART12 2013 CALIFORNIA REFERENCED STANDARDS CODE 2007 ASME A17.L(W/A17.LA/CSA B44A-08 ADDENDA) SAFETY CODE FOR ELEVATORS AND ESCALATORS

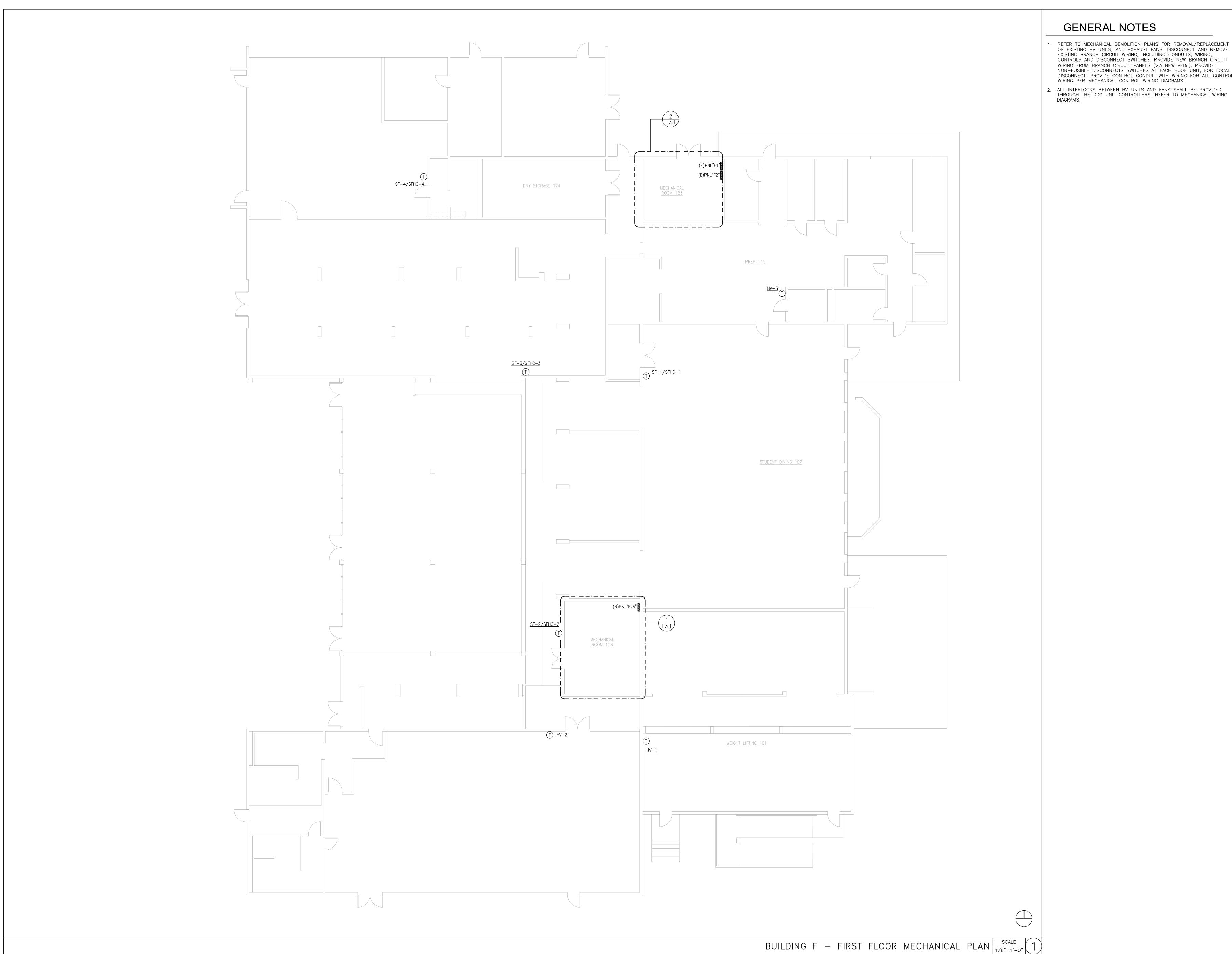
# PARTIAL LIST OF APPLICABLE STANDARDS

2013 CALIFORNIA BUILDING CODE (FOR SFM) REFERENCED STANDARDS CHAPTER 35

- NFPA 13 INSTALLATION OF SPRINKLER SYSTEMS 2013 EDITION NFPA 14 STANDPIPE SYSTEMS 2013 EDITION NFPA 17 DRY CHEMICAL EXTINGUISHING SYSTEMS 2013 EDITION NFPA 17A WET CHEMICAL SYSTEMS 2013 EDITION NFPA 20 STATIONARY PUMPS 2013 EDITION NFPA 22 WATER TANKS OF PRIVATE FIRE PROTECTION 2013 EDITION NFPA 24 PRIVATE FIRE MAINS 2013 EDITION NFPA 72 NATIONAL FIRE ALARM CODE 2013 EDITION NFPA 80 FIRE DOORS AND OTHER OPENING PROTECTIVE 2013 EDITION NFPA 92 STANDARD FOR SMOKE CONTROL SYSTEMS 2012 EDITION NFPA 253 CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 2006 EDITION 2012 EDITION NFPA 2001 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS BLEACHERS, FOLDING AND TELESCOPIC SEATING, AND GRAND STANDS 2012 EDITION ICC 300 FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION 2005 EDITION UL 300 AUDIBLE SIGNAL APPLIANCES 2003 EDITION UL 464 UL 521 HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS 1999 EDITION SHEET INDEX E0.1 ELECTRICAL GENERAL NOTES, AND SYMBOL LIST
- E2.1 BUILDING F FIRST FLOOR ELECTRICAL PLAN E2.2 BUILDING F ROOF ELECTRICAL PLAN E3.1 | BUILDING F MECHANICAL ROOM ELECTRICAL ENLARGE PLAN

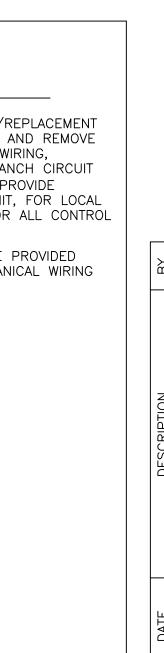




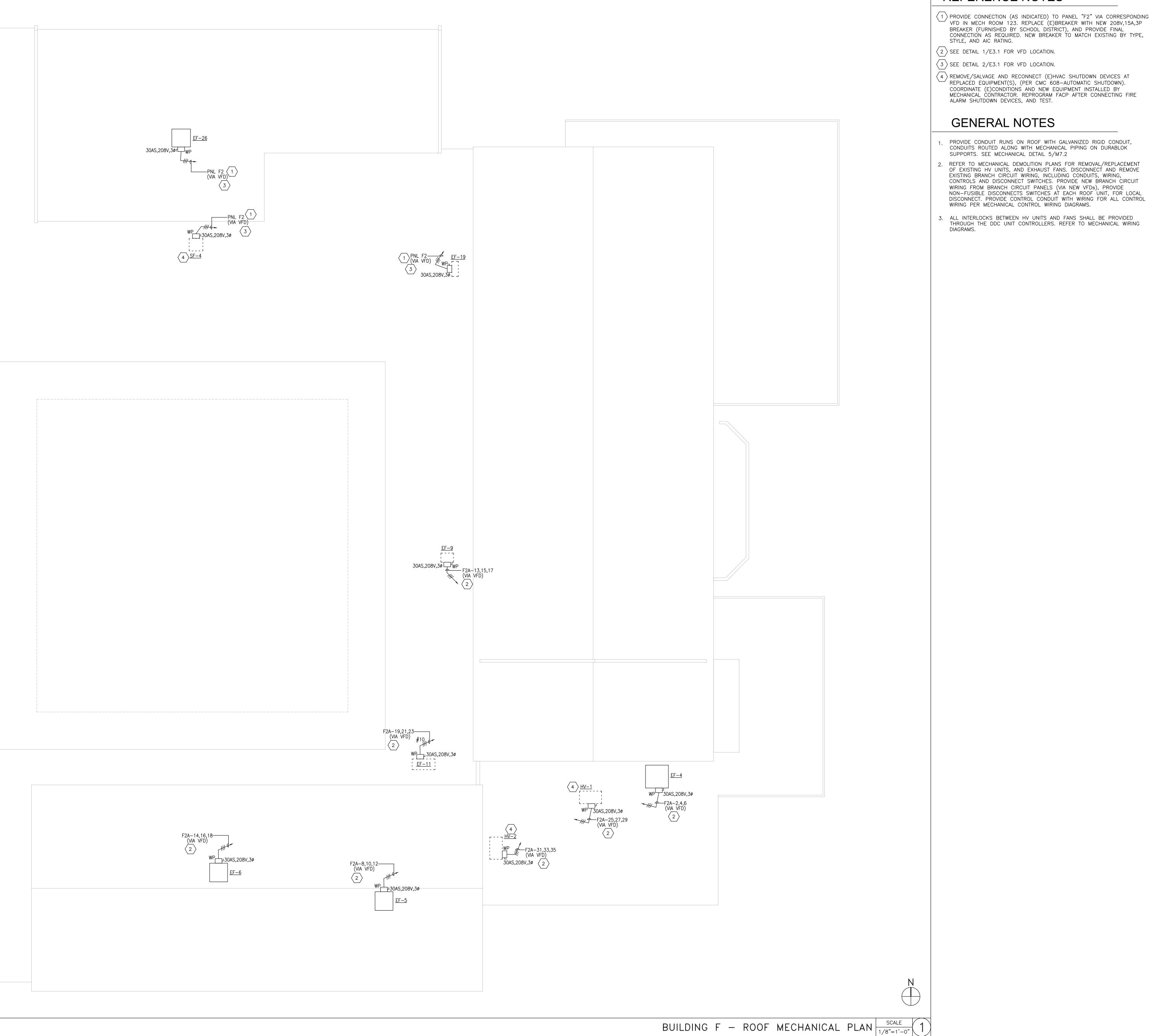


# GENERAL NOTES

1. REFER TO MECHANICAL DEMOLITION PLANS FOR REMOVAL/REPLACEMENT OF EXISTING HV UNITS, AND EXHAUST FANS. DISCONNECT AND REMOVE EXISTING BRANCH CIRCUIT WIRING, INCLUDING CONDUITS, WIRING, CONTROLS AND DISCONNECT SWITCHES. PROVIDE NEW BRANCH CIRCUIT WIRING FROM BRANCH CIRCUIT PANELS (VIA NEW VFDs), PROVIDE NON-FUSIBLE DISCONNECTS SWITCHES AT EACH ROOF UNIT, FOR LOCAL DISCONNECT. PROVIDE CONTROL CONDUIT WITH WIRING FOR ALL CONTROL WIRING PER MECHANICAL CONTROL WIRING DIAGRAMS.

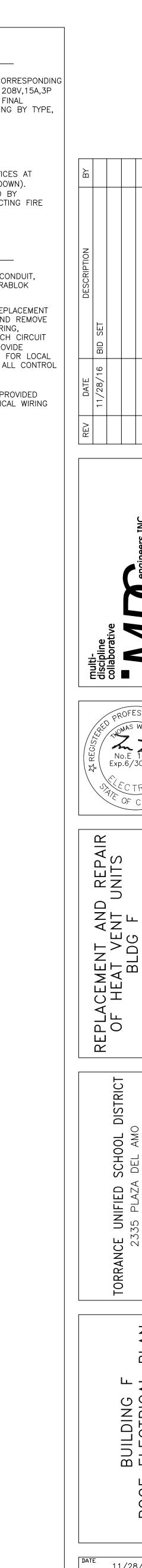


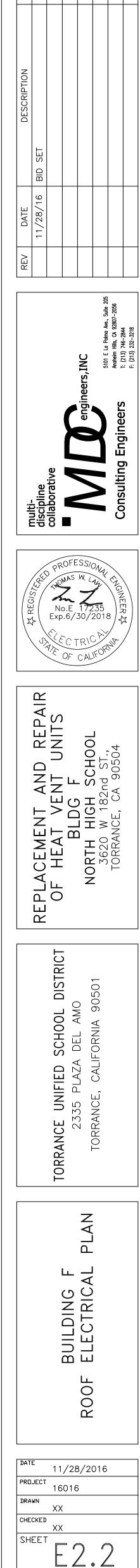


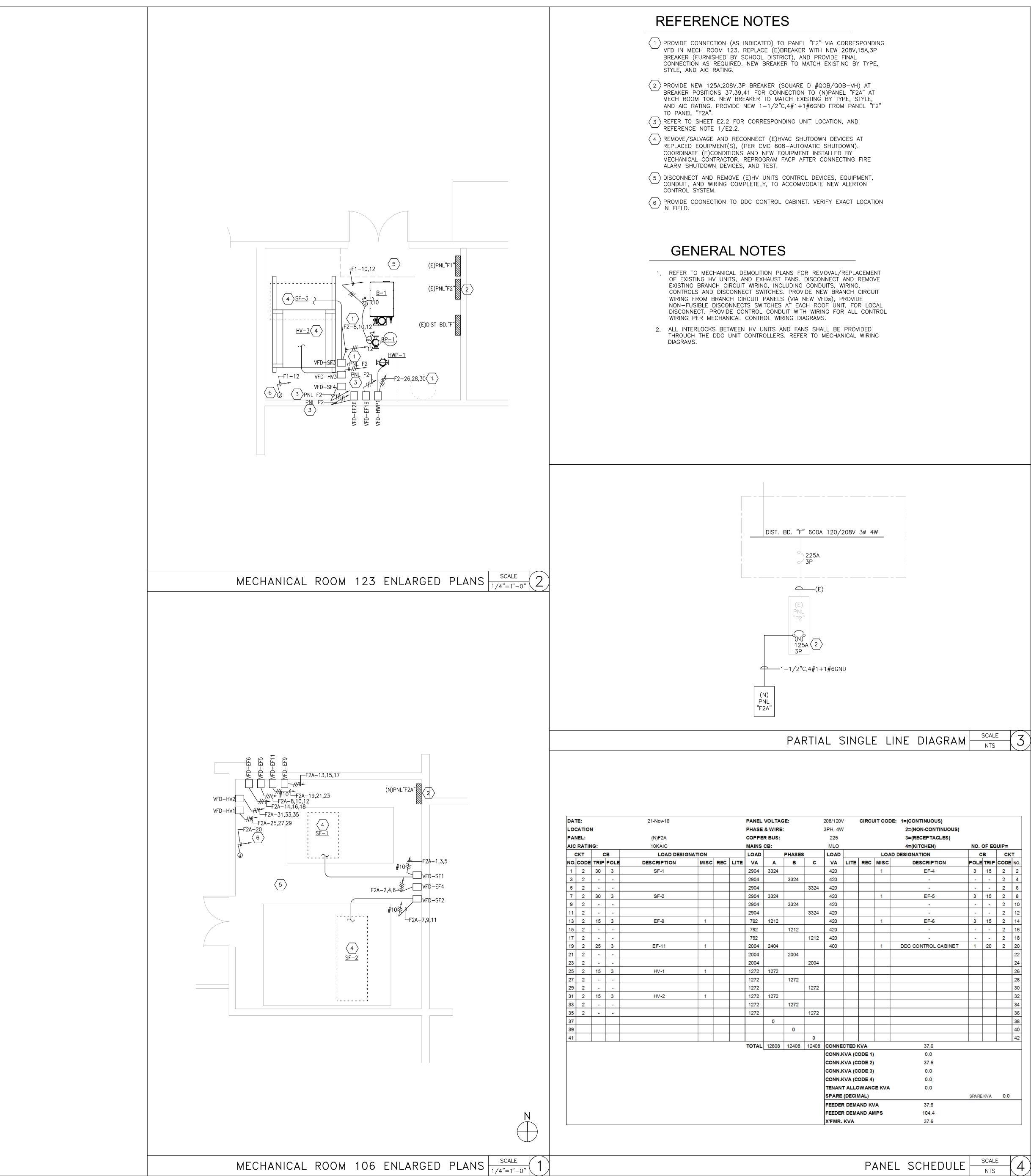


# REFERENCE NOTES

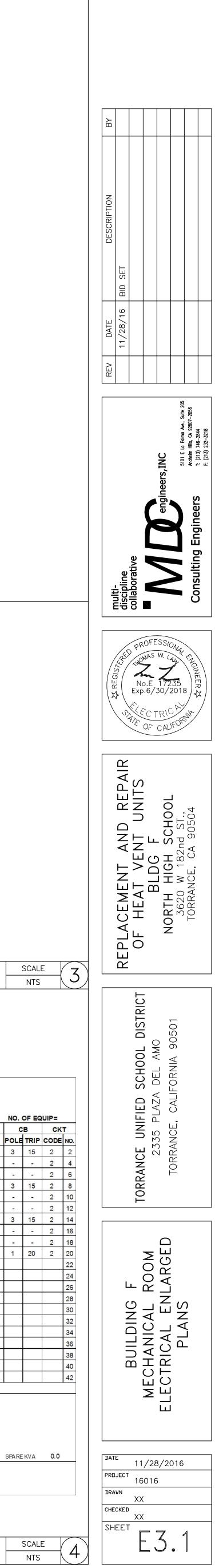
1 PROVIDE CONNECTION (AS INDICATED) TO PANEL "F2" VIA CORRESPONDING VFD IN MECH ROOM 123. REPLACE (E)BREAKER WITH NEW 208V,15A,3P BREAKER (FURNISHED BY SCHOOL DISTRICT), AND PROVIDE FINAL CONNECTION AS REQUIRED. NEW BREAKER TO MATCH EXISTING BY TYPE,

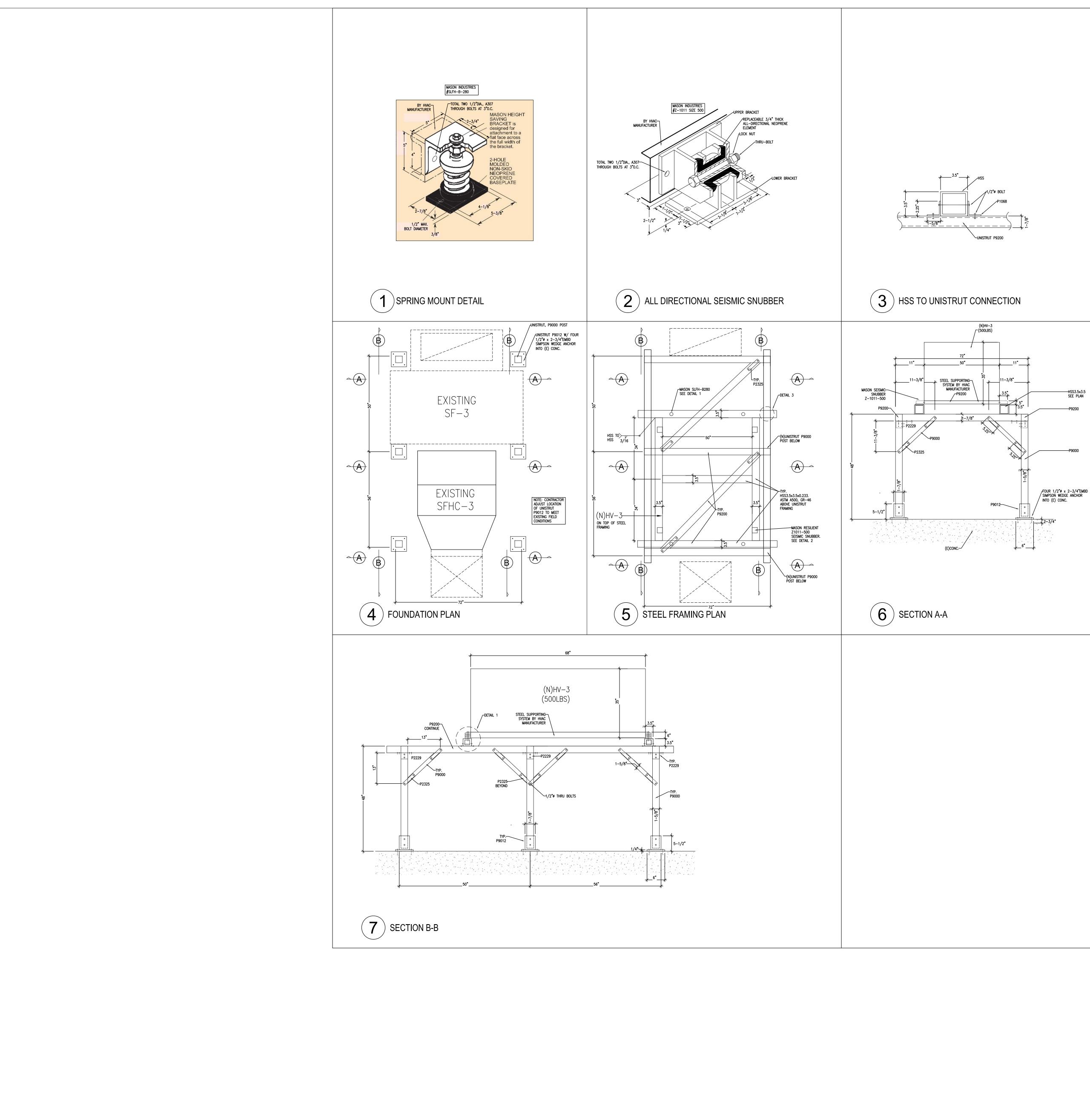






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# ARCHITECTURE AND STRUCTURE NOTES

- 1. DOOR DETAILS ILLUSTRATE FUNCTIONAL RELATIONSHIPS, ACTUAL ARCHITECTURAL CONDITIONS (DIRECTION OF SWING, HAND OF DOOR) MAY VARY AND SHALL BE FIELD VERIFIED.
- 2. ALL NEW WORK SHALL BE PAINTED, INCLUDING (BUT NOT LIMITED TO) GYPSUM BOARD, EXPOSED CONDUITS AND CLIPS, EXPOSED FRAMING AND STRUCTURAL MEMBERS, ETC.
- 3. PAINTING, PATCHING, AND FINISHES FOR ALL DEVICES LOCATED IN EXISTING AREAS SHALL MATCH EXISTING FINISHES AND MUST BE APPROVED AND COORDINATED WITH THE DISTRICT. THE PAINT SYSTEM SHALL BE MINIMUM OF 1 PRIMER COAT, 1 INTERMEDIATE COAT AND 1 FINISH COAT.
- 4. CONTRACTOR SHALL PATCH WALL, FLOOR, CEILING AND ANY AFFECTED WORK TO MATCH EXISTING AS REQUIRED. 5. FIRE RATED WALL ASSEMBLY SHALL COMPLY WITH THE MOST CURRENT CBC AND UL'S REQUIREMENTS. GYPSUM BOARD SHALL BE %" TYPE-X. FINISH LEVEL: LEVEL 5 (GYPSUM ASSOCIATION). INSTALL PER UL'S AND MANUFACTURER'S RECOMMENDATIONS.
- 6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXACT DIMENSIONS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF THE FIELD CONDITION IS DIFFERENT FROM THE SITUATION DEPICTED IN THE CONTRACT DOCUMENTS.
- 7. CONSTRUCTION SHALL BE ACCORDING TO THE INDUSTRY STANDARD OF EACH TRADE OR OTHERWISE DETAILED OR SPECIFIED IN THE CONTRACT DOCUMENTS (WHICHEVER IS MORE STRINGENT). THE ENGINEER HAS THE FINAL AUTHORITY TO INTERPRET THE DOCUMENTS.
- 8. WORKMANSHIP AND MATERIALS SHALL CONFORM TO MOST CURRENT UNIFORM BUILDING CODE (UBC) STANDARDS, SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AS FURNISHED BY THE CONTRACT DRAWINGS. WORKMANSHIP AND MATERIALS NOT IN CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS ARE SUBJECT TO REMOVAL AND/OR REPLACEMENT AT CONTRACTOR'S EXPENSE.
- 9. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES. 10. CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE ALL EXISTING UTILITIES IN THE SITE AND TO PROTECT THEM FROM
- ANY DAMAGE. ANY REPAIR AND REPLACEMENT DUE TO THE PERFORMANCE OF THIS WORK SHALL BE AT CONTRACTOR'S OWN EXPENSE.
- 11. THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE AND DOES NOT INDICATE THE METHOD OF CONSTRUCTION. CONSTRUCTOR SHALL PROVIDE ALL NECESSARY BRACING AND SHORING TO PROTECT THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.
- 12. ALL WORK SHALL CONFORM TO THE REQUIREMENT AND STANDARD OF THE 2010 EDITION OF THE C.B.C. BUILDING CODE AND ANY OTHER REGULATING AGENCIES WHO HAVE AUTHORITY OVER ANY PORTION OF THE WORK. 13. ANY A.S.T.M. DESIGNATIONS INDICATED ON THE DRAWINGS SHALL BE THE LATEST REVISIONS.
- 14. SPECIFIC NOTES, DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
- 15. CONTRACTOR SHALL VERIFY ALL THE EXISTING BUILDING CONDITION, NOT LIMITED TO ALL THE EXISTING MEMBER SIZES, FRAMING DIRECTIONS AND ALL EXISTING FOUNDATION. IF ANY DISCREPANCIES OR INCONSISTENCIES ARE FOUND DURING CONSTRUCTION, ENGINEER SHALL BE NOTIFIED IMMEDIATELY. ENGINEER SHALL RE-DESIGN TO RECTIFY THE DISCREPANCIES AND THERE ARE NO ADDITIONAL COST TO OWNER.

# STRUCTURAL STEEL NOTES

- 1. ALL STEEL CHANNELS AND PLATES SHALL BE GALVANIZED AND CONFORM TO ASTM A36
- 2. ALL STEEL PIPE COLUMNS SHALL CONFORM TO ASTM A53, GRADE B
- 3. UNFINISHED BOLTS SHALL CONFORM TO ASTM A307
- 4. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS AND CONFORM TO THE AMERICAN WELDING SOCIETY SPECIFICATIONS. 5. ALL FIELD WELDING SHALL BE CONTINUOUSLY INSPECTED BY AN APPROVED WELDING INSPECTOR ENGAGED BY THE DISTRICT.
- 6. ELECTRODES SHALL BE E70XX

### CONCRETE NOTES

- 1. ALL CONCRETE SHALL CONFORM TO THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE(CBC)
- 2. CONCRETE SHALL BE DESIGNED AND TESTED AS OUTLINED IN THE C.B.C. LATEST EDITION.
- 3. ALL CEMENT SHALL CONFORM TO A.S.T.M.(C-150), TYPE I OR II. 4. FINE AND COARSE AGGREGATE SHALL CONFORM TO A.S.T.M. (C-33) FOR STANDARD WEIGHT CONCRETE.
- 5. ALL AGGREGATE SHALL BE COMPARABLE TO "SAN GABRIEL VALLEY" AGGREGATE. THE SHRINKAGE SHALL BE PER A.S.T.M. (C-157) WITH THE AVERAGE DRYING SHRINKAGE AT (28 DAYS) OF DRYING NOT EXCEEDING 0.04%
- 6. CONCRETE SLAB SHALL BE CURED BY KEEPING CONTINUOUSLY WET FOR (3 DAYS) OR BY AN APPROVED CURING COMPOUND. 7. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWING FOR MISCELLANEOUS ITEMS TO BE CAST INTO CONCRETE AND
- FLOOR DEPRESSIONS, ETC. 8. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2500 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED.
- 9. PROVIDE EXTERIOR SLAB CONTROL JOINTS AT MAXIMUM 10 FT. ON CENTER, EACH WAY.

# REINFORCING STEEL NOTES

- 1. REINFORCING STEEL SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE CONFORMING TO A.S.T.M. SPECIFICATION A615 GRADE 40 BARS #4 AND SMALLER.
- 2. REINFORCEMENT MARKED CONTINUOUS MAY BE SPLICED BY LAPPING 40 BAR DIAMETERS IN CONCRETE, WITH A 24 INCH
- MINIMUM LAP EACH CASE. 3. PROVIDE SPACER BARS, SPREADERS, CHAIRS, BLOCKS, ETC., AS REQUIRED TO SECURELY HOLD STEEL IN PLACE.



