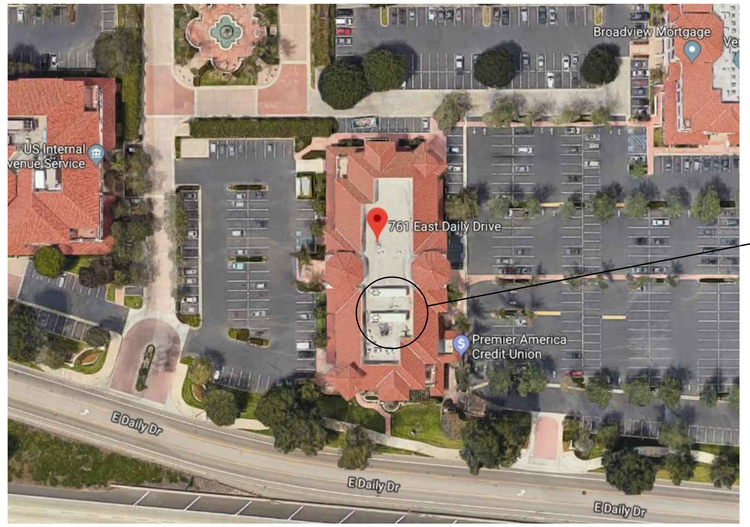
VENTURA COUNTY COMMUNITY COLLEGE DISTRICT

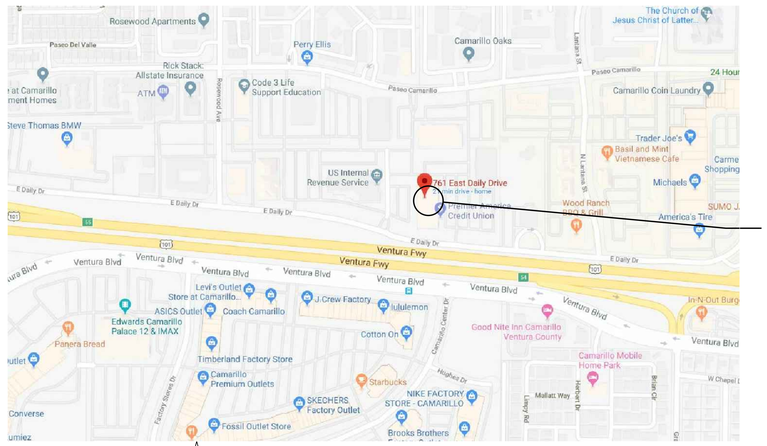
HVAC REPLACEMENT PROJECT

761 DAILY DRIVE CAMARILLO, CA. 93010



PROJECT LOCATION

SITE PLAN
SCALE: NTS



PROJECT LOCATION

VICINITY MAP
NTS

APPLICABLE CODES

CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING:

2016 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 C.C.R.
2016 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
2016 CALIFORNIA ELECTRIC CODE (CEC), PART 3, TITLE 24 C.C.R.
2016 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.
2016 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
2016 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.
2016 CALIFORNIA HISTORICAL CODE, PART 8, TITLE 24 C.C.R.
2016 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R.
2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 C.C.R.
2016 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 C.C.R.

PARTIAL LIST OF APPLICABLE NFPA STANDARDS

NFPA 13 AUTOMATIC SPRINKLER SYSTEMS (CALIFORNIA AMENDED), 2016 EDITION
NFPA 14 STANDPIPES SYSTEMS (CALIFORNIA AMENDED), 2013 EDITION
NFPA 17 DRY CHEMICAL SYSTEMS, 2013 EDITION
NFPA 17A WET CHEMICAL SYSTEMS, 2013 EDITION
NFPA 20 STATIONARY PUMPS, 2016 EDITION
NFPA 24 PRIVATE FIRE MAINS (CALIFORNIA AMENDED), 2016 EDITION
NFPA 72 NATIONAL FIRE ALARM CODES (CALIFORNIA AMENDED), 2016 EDITION
NFPA 80 FIRE DOOR AND OTHER OPENING PROTECTIVES, 2016 EDITION
NFPA 253 CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS, 2015 EDITION
NFPA 2001 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CALIFORNIA AMENDED), 2015 EDITION

NATIONAL REFERENCE STANDARDS:

AISC SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS (ANSI/AISC 341-10)
AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (ANSI/AISC 360-10)
NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION (ANSI/AWS NDS 2015)
ACI-318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

SHEET INDEX

SCOPE OF WORK

THE EXISTING TWO AIR HANDLERS ARE TO BE REMOVED AND REPLACED WITH TWO NEW AIR HANDLERS. THE EXISTING BOILER, & TWO PUMPS ARE TO BE REPLACED WITH A NEW BOILER & TWO NEW PUMPS. CONTRACTOR SHALL MODIFY EXISTING DUCTING, PIPING, ELECTRICAL, & PROVIDE NEW EQUIPMENT PLATFORM & SUPPORT AS REQUIRED TO PROVIDE A COMPLETE FUNCTIONAL SYSTEM.

CLEAN ALL EXISTING VCCCD SYSTEM DUCTS AND AIR DISTRIBUTION DEVICES.

RE-BALANCE ENTIRE VCCCD SYSTEMS INCLUDING SUPPLY, RETURN, OUTSIDE AIR, & EXHAUST.

REPLACE EXISTING TRANE CONTROLS WITH NEW AUTOMATED LOGIC CONTROLS. REPLACE VALVES & ACTUATORS.

SERVICE (E) FIRE DAMPERS

VERIFY OPERATION OF EXISTING DUCT SMOKE DETECTORS

OWNER CONTACT

PURCHASING AGENT
JANICE KISCH
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CONSULTANTS

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REGISTERED PROFESSIONAL ENGINEER HUGH V. MCTERNAN M030626 Rein. 6/30/20 MECHANICAL STATE OF CALIFORNIA

Ventura County Community College District
761 DAILY DRIVE CAMARILLO, CALIFORNIA

SHEET TITLE:
TITLE SHEET

DATE: 04-15-19
DRAWN: HM/JS/TP
JOB NO. AE201911

T1.0
SHEET NO. OF

MECHANICAL NOTES

1. SCOPE OF WORK: WORK INCLUDES THE FOLLOWING: FURNISH AND INSTALL ALL EQUIPMENT AND CONTROLS SHOWN ON THE MECHANICAL DRAWINGS AND DESCRIBED IN THESE NOTES, THE BOOK SPECIFICATIONS AND THE CONTRACT DOCUMENTS. WORK INCLUDES BUT IS NOT LIMITED TO: DEMOLITION OF AIR HANDLERS, BOILERS, PUMPS, TANKS, DUCTING, PIPING, AND CONTROLS. INSTALLATION OF NEW AIR HANDLERS, BOILER, PUMPS, TANKS, DUCTING, PIPING, AND CONTROLS, AND STARTUP AND COMMISSIONING OF REPLACED MECHANICAL AND CONTROL SYSTEMS AS DESCRIBED IN THE CONTRACT DOCUMENTS. INCLUDED ARE ALL DEVICES NEEDED TO MAKE COMPLETE AND FUNCTIONAL SPACE CONDITIONING SYSTEMS AND CONTROLS. CONTRACTOR SHALL FURNISH AND INSTALL, MAKE OPERABLE, AND TEST ALL SYSTEMS AND MECHANICAL EQUIPMENT SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIFICATIONS AND CONTRACT DOCUMENTS. IN CONNECTION THEREWITH, CONTRACTOR SHALL ALSO FURNISH AND INSTALL ALL NECESSARY DEVICES, HARDWARE, AND SYSTEMS REQUIRED TO MAKE SAID EQUIPMENT PROPERLY AND SAFELY OPERABLE, INCLUDING BUT NOT LIMITED TO, MOUNTING HARDWARE, INSULATION, FILTERS, VIBRATION CONTROL DEVICES, DUCT SYSTEMS, CONTROL SYSTEMS, AND PATCHING AND PAINTING.

2. DIMENSIONS. ALL DIMENSIONS SHALL HAVE PREFERENCE OVER SCALE. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN ENGINEERING DRAWINGS AND AS-BUILT CONDITIONS BEFORE PROCEEDING WITH WORK. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON WORKING DRAWINGS. ALL SIZES OF EQUIPMENT AND MATERIALS SHALL BE VERIFIED WITH EQUIPMENT MANUFACTURER.

3. INTERPRETATION OF DRAWINGS, SPECIFICATIONS OR CONTRACT DOCUMENTS. IF ANY BIDDER IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE DRAWINGS, THE SPECIFICATIONS OR OTHER PORTIONS OF THE CONTRACT DOCUMENTS; FINDS DISCREPANCIES, ERRORS OR OMISSIONS THEREIN; OR FINDS VARIANCES IN ANY OF THE CONTRACT DOCUMENTS WITH APPLICABLE RULES, REGULATIONS, ORDINANCES AND/OR LAWS, A WRITTEN REQUEST FOR AN INTERPRETATION OR CORRECTION THEREOF MAY BE SUBMITTED TO THE ENGINEER. IT IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE BIDDER TO SUBMIT SUCH REQUEST IN SUFFICIENT TIME FOR THE PREPARATION OF A RESPONSE THERETO AND DELIVERY OF SUCH RESPONSE TO ALL BIDDERS PRIOR TO THE SCHEDULED CLOSING FOR RECEIPT OF BID PROPOSALS. ANY REQUEST OF ANY BIDDER, PURSUANT TO THE FOREGOING SENTENCE THAT IS MADE LESS THAN SEVEN DAYS PRIOR TO THE SCHEDULED CLOSING DATE FOR THE RECEIPT OF BID PROPOSALS SHALL BE DEEMED UNTIMELY. ANY INTERPRETATION OR CORRECTION OF THE CONTRACT DOCUMENTS WILL BE MADE ONLY BY WRITTEN ADDENDUM DULY ISSUED BY THE OWNER OR THE ENGINEER. A COPY OF ANY SUCH ADDENDUM WILL BE MAILED OR OTHERWISE DELIVERED TO EACH BIDDER RECEIVING A SET OF THE CONTRACT DOCUMENTS. NO PERSON IS AUTHORIZED TO RENDER AN ORAL INTERPRETATION OR CORRECTION OF ANY PORTION OF THE CONTRACT DOCUMENTS TO ANY BIDDER, AND NO BIDDER IS AUTHORIZED TO RELY ON ANY SUCH ORAL INTERPRETATION OR CORRECTION. FAILURE TO REQUEST INTERPRETATION OR CLARIFICATION OF THE DRAWINGS, THE SPECIFICATIONS OR OTHER PORTIONS OF THE CONTRACT DOCUMENTS PURSUANT TO THE FOREGOING SHALL BE DEEMED TO BE A WAIVER OF ANY DISCREPANCY, DEFECT, OR CONFLICT THEREIN.

4. CODES AND STANDARDS: ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE 2016 CALIFORNIA PLUMBING CODE, THE 2016 CALIFORNIA MECHANICAL CODE, THE 2016 CALIFORNIA BUILDING CODE, THE STATE OF CALIFORNIA, THE LOCAL JURISDICTION, AND STANDARD CONSTRUCTION PRACTICES. ALL MECHANICAL EQUIPMENT SHALL BE IN STRICT ACCORDANCE WITH THE EQUIPMENT SCHEDULE, AND SHALL BE NEW AND FREE FROM DEFECTS. CONTRACTOR SHALL OBTAIN APPROVED INSPECTIONS FOR ALL WORK AS REQUIRED BY OWNER, AND LOCAL JURISDICTION. CONTRACTOR SHALL MAINTAIN IN EFFECT ALL INSURANCE REQUIRED BY STATE LAWS, LOCAL JURISDICTION, AND GENERAL CONTRACTOR / OWNER. WHERE CONFLICT OR VARIATION EXISTS AMONGST CODES, SPECIFICATIONS, OR DRAWINGS, THE MOST STRINGENT SHALL GOVERN. INSTALL NEW FLUES FOR STEAM BOILERS PER FULTON INSTALLATION MANUAL.

5. SUBMITTALS REQUIRED: PRIOR TO ORDERING EQUIPMENT AND MATERIALS, CONTRACTOR SHALL FURNISH SHOP DRAWINGS AND SUBMITTALS OF ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE IN THIS PROJECT. ALL EQUIPMENT AND MATERIALS SHALL BE INSTITUTIONAL GRADE HEAVY DUTY QUALITY. ORDERING OF EQUIPMENT AND MATERIALS SHALL ONLY PROCEED AFTER SATISFACTORY REVIEW OF ALL SHOP DRAWINGS AND SUBMITTALS BY ENGINEER / OWNER. COPIES OF ALL OWNER'S MANUALS, WARRANTIES, AND OTHER WRITTEN INFORMATION REGARDING SYSTEMS SHALL BE SUBMITTED TO OWNER. SHOP DRAWINGS SHALL INCLUDE COMPLETE DETAILS OF THE INSTALLATION OF ALL PIPING, EQUIPMENT, AND MATERIALS.

6. CONSTRUCTION OBSERVATION: IN ADDITION TO THE REQUIREMENT FOR OBTAINING INSPECTIONS BY THE LOCAL JURISDICTION, CONTRACTOR SHALL NOTIFY ENGINEER AT APPROPRIATE TIMES DURING THE CONSTRUCTION PROCESS SO THAT ENGINEER CAN VISIT SITE TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF CONTRACTOR'S WORK AND TO DETERMINE IF THE WORK IS PROCEEDING IN GENERAL ACCORDANCE WITH THE CONTRACT DOCUMENTS.

7. UNIT LOCATIONS: EQUIPMENT AND SYSTEM LOCATIONS SHOWN ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL STRUCTURAL MEMBERS AND EXISTING CONDITIONS IN THE FIELD, AND LOCATE UNITS AND DUCTWORK TO AVOID INTERFERENCE. ANY SIGNIFICANT DEVIATIONS FROM THE PLANS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER. ALLOW CLEARANCE FOR DUCTWORK AND PIPING. ALL CLEARANCES REQUIRED BY UNIT MANUFACTURER SHALL BE MAINTAINED. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH CODES AND THE RECOMMENDED INSTALLATION PROCEDURES PUBLISHED BY THE MANUFACTURER.

8. DUCTWORK & PIPING: CONTRACTOR SHALL INSTALL NEW DUCTWORK AND PIPING IN THE APPROXIMATE LOCATIONS SHOWN ON THE DRAWINGS. DUCTWORK & PIPING LOCATIONS SHOWN ARE DIAGRAMMATIC ONLY. ALL DUCTWORK & PIPING SHALL BE SECURELY ANCHORED TO THE BUILDING IN AN APPROVED MANNER THAT WILL RENDER IT FREE FROM VIBRATION AND LATERAL MOVEMENT. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL LATERAL STUBS, OFFSETS, OBSTRUCTIONS, ETC REQUIRED IN THE FIELD AND PROVIDE WITHOUT COST TO THE OWNER ALL REQUIRED TRANSITIONS AND OFFSETS TO AVOID CONFLICTS WITH STRUCTURE AND OTHER TRADES. THE ACTUAL LOCATIONS OF LINES, CLEANOUTS AND CONNECTIONS MAY VARY PROVIDED THAT COMPLETE SYSTEMS ARE SIZED AND INSTALLED IN COMPLIANCE WITH CODES. ANY SIGNIFICANT DEVIATIONS FROM THE PLANS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER PRIOR TO INSTALLATION.

9. ALL MECHANICAL SYSTEMS SHALL BE CLEARLY & PERMANENTLY LABELED. LABEL SHALL DETAIL THE AREA SERVED & UNIT TAG. ALL PIPING NEW PIPING SHALL BE LABELED WITH SERVICE AND FLOW DIRECTION.

10. NATURAL GAS PIPING: ALL ABOVE GROUND NATURAL GAS PIPING SHALL BE US MANUFACTURED BLACK SCH. 40 STEEL PIPE WITH FORGED THREADED FITTINGS. PROVIDE A CAPPED DIRT LEG IN EACH PIPE SERVING GAS BURNING EQUIPMENT. EXTERIOR ABOVE GRADE GAS PIPING SHALL BE GALVANIZED SCH. 40 PIPE WITH GALVANIZED FITTING. SUPPORT PIPES PER CPC REQTS. PROVIDE SHUT OFF VALVE & FLEX CONNECTION AT FINAL CONNECTION TO BOILER.

11. HYDRONIC WATER PIPING SHALL BE U.S. MANUFACTURED TYPE 'L' COPPER WITH WROT SOLDER TYPE FITTINGS. VALVES SHALL BE NIBCO OR EQUAL. ALL PIPE SHALL BE COVERED WITH FIBERGLASS INSULATION WITH ALL SERVICE JACKET. PIPE 2" & SMALLER 1" THICK INSULATION. PIPE GREATER THAN 2" Ø - 2" THICK INSULATION. ALL EXTERIOR PIPING SHALL HAVE ALUMINUM JACKET WITH FORMED ALUMINUM FITTINGS.

12. TEST NEW HYDRONIC HOT WATER PIPING @ 60 PSI FOR 24 HRS.

13. ALL EQUIPMENT DRAINS, CONDENSATE DRAINS, & RELIEF PIPING SHALL TERMINATE AT EXISTING ROOF RECEIVER. DRAINS SHALL BE U.S. MANUFACTURED TYPE 'L' COPPER WITH WROT COPPER FITTINGS AND SOLDERED JOINTS. INSTALL DIELECTRIC FITTINGS AT DISSIMILAR METAL CONNECTIONS.VALVES SHALL BE NIBCO S-585 FULL PORT BALL VALVES. CONDENSATE DRAINS SHALL HAVE CLEAN-OUTS AT CHANGE OF DIRECTION AND SLOPE AT 1/4"/FT. TO DRAIN.

14. PIPING SUPPORT: ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 CALIFORNIA PLUMBING CODE. HORIZONTAL WATER PIPES AND CONDENSATE DRAINS SHALL BE HUNG WITH TOLCO FELT-LINED PIPE HANGERS, THREADED ROD, AND BEAM ATTACHMENT BRACKETS, LOCATED AT SIX FOOT MAXIMUM INTERVALS. MIRO BLOCKS SHALL BE USED AT ROOF.

15. ANCHOR BOILER AND TANKS TO RESIST SEISMIC INDUCED MOTION.

16. VIBRATION ISOLATION: INSTALL FLEXIBLE CONNECTIONS BETWEEN MECHANICAL EQUIPMENT AND DUCTWORK OR PIPING. SEE MECHANICAL DETAILS & SPECIFICATIONS FOR SPECIFIC TYPES.

17. FLUE DISCHARGE: ALL EXHAUST FAN DUCTWORK AND FLUES SHALL BE RUN TO A POINT AT LEAST 10 FEET FROM AIR HANDLER FRESH AIR INTAKES.

18. FLUE MATERIALS: INSTALL NEW TYPE 'B' FLUE FROM BOILER, WITH VENT EXTENSION & OUTDOOR VENT TERMINATION. INSTALL PER MANUFACTURERS INSTALLATION REQUIREMENTS.

19. WIRING: ALL WIRING SHALL BE PERFORMED IN ACCORDANCE WITH CEC REQTS. ALL WIRING SHALL BE IN CONDUIT. ALL INTERIOR LOW VOLTAGE AND CONTROL WIRING SHALL BE IN WIREMOLD AND IN FAN ROOMS SHALL BE IN CONDUIT. EXPOSED CONDUIT SHALL BE INSTALLED IN A SQUARE, PLUMB, AND LEVEL MANNER WITH THOUGHT GIVEN TO THE FINAL APPEARANCES. PROVIDE TO ENGINEER SHOP DRAWING FOR CONTROL TRANSFORMER CONFIGURATIONS DETAILING CIRCUITS TO BE USED, LOAD CALCULATIONS, WIRE SIZES, AND LOCATIONS. WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CALIFORNIA ELECTRICAL CODE AND ELECTRICAL SPECIFICATIONS. ALL TRANSFORMERS SHALL BE PROTECTED BY PROPERLY SIZED CIRCUIT BREAKER OR FUSE(S). ALL TRANSFORMERS SHALL HAVE RESETABLE BREAKER ON THE LOAD SIDE. ALL LOW VOLTAGE CONTROL & COMMUNICATIONS WIRING SHALL BE DONE ACCORDING TO MANUFACTURERS INSTALLATION MANUAL. PROVIDE SUBMITTALS ON WIRE AND ENCLOSURES.

20. INSTALL THREE NEW BREAKERS AT (E) PANEL TO SERVE BOILERS. INSTALL NEW EMT CONDUIT WITH FITTINGS AND THHN WIRE.
PROVIDE ALL NECESSARY CONNECTIONS AND JUNCTION BOXES. LABEL BOXES AND PANEL WITH CIRCUIT NUMBERS. PROVIDE MOTOR RATED SWITCH AT EACH BOILER.

21. COORDINATION: COORDINATE ALL AIR HANDLER & BOILER SHUT DOWNS WITH STAFF TO MAINTAIN SYSTEM FUNCTION. MECHANICAL CONTRACTOR SHALL COORDINATE WORK WITH GENERAL CONTRACTOR AND ALL RELATED TRADES. COORDINATION OF EXACT LOCATIONS AND ELEVATIONS TO AVOID CONFLICTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

22. CORRECTION OF WORK: THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK THE OWNER FINDS DEFECTIVE OR FAILING TO CONFORM TO THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BEAR ALL COSTS REQUIRED BY THE CONTRACT DOCUMENTS. IF ANY OF THE WORK IS FOUND TO BE DEFECTIVE OR NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL CORRECT IT PROMPTLY AFTER RECEIPT OF A WRITTEN NOTICE FROM THE OWNER TO DO SO.

23. PROPERLY DISPOSE OF ALL COMPONENTS TO BE REMOVED. RECYCLE TO THE GREATEST EXTENT POSSIBLE.

24. CLEANUP: EVERY DAY, AND AFTER ALL WORK HAS BEEN COMPLETED, CONTRACTOR SHALL CLEAN ENTIRE JOBSITE OF ALL DEBRIS ASSOCIATED WITH MECHANICAL SYSTEMS. EXPOSED PARTS WHICH ARE TO BE PAINTED SHALL BE THOROUGHLY CLEANED READY FOR PAINTING.

25. AS-BUILT DRAWINGS SHALL BE GIVEN TO THE OWNER PRIOR TO ACCEPTANCE OF THE PROJECT. AS-BUILTS SHALL BE ON PRINTED SHEETS AND ON MAGNETIC MEDIA.

26. WARRANTY: THE CONTRACTOR SHALL WARRANT THAT ALL SYSTEMS, SUBSYSTEMS, COMPONENT PARTS, AND DATABASE SOFTWARE ARE FULLY FREE FROM DEFECTIVE DESIGN, MATERIALS, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER.

27. COMMISSIONING: CONTRACTOR SHALL CONFIRM THAT BUILDING SYSTEMS HAVE BEEN INSTALLED, PROPERLY STARTED, AND CONSISTENTLY OPERATED IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, THAT ALL SYSTEMS ARE COMPLETE AND FUNCTIONING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AT SUBSTANTIAL COMPLETION, AND THAT CONTRACTOR HAS PROVIDED OWNER ADEQUATE SYSTEM DOCUMENTATION AND TRAINING. COMMISSIONING INCLUDES DEFERRED AND/OR SEASONAL TESTS AS APPROVED BY OWNER.

28. GREEN CODE. ALL REQUIREMENTS OF THE 2016 CALIFORNIA GREEN CODE SECTION 5.410 SHALL BE COMPLIED WITH, INCLUDING COMMISSIONING, FUNCTIONAL PERFORMANCE TESTING, AND DOCUMENTATION AND TRAINING FOR ALL HVAC SYSTEMS. PROVIDE TRAINED CONTROL TECHNICIAN FOR 4 HOURS TO DEMONSTRATE TO ENGINEER THAT ALL ELEMENTS ARE FUNCTIONING PROPERLY.

SEE MECH. SCHEDULE FOR DESCRIPTIONS

⌜	VOLUME DAMPER
T 1	THERMOSTAT
	RETURN AIR PLENUM (LINED)
	SUPPLY AIR PLENUM (LINED)
X 1	EQUIPMENT TAG SEE MECH. SCHEDULE
	ROUND DUCTWORK
	RECTANGULAR DUCTWORK

ABBREVIATIONS

ABBREV.	ABBREVIATIONS
ABV.	ABOVE
APPROX.	APPROXIMATELY
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
BLDG	BUILDING
BLW.	BELOW
BTM	BOTTOM
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CL	CENTERLINE
CLG	CEILING
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTINUED
DIA	DIAMETER
DN	DOWN
DSA	DIVISION OF THE STATE ARCHITECT
DWG	DRAWING
(E)	EXISTING
EA	EACH
EL,ELEV	ELEVATION
ELEC	ELECTRIC
EQ	EQUIPMENT
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
FIN	FINISHED
FLR	FLOOR
FRM	FROM
G	GAS
GDW	GYPSUM DRYWALL
GPM	GALLONS PER MINUTE
GSM	GALVANIZED STEEL METAL
HP	HORSE POWER
HWR	HOT WATER RETURN (HYDRONIC)
HWS	HOT WATER SUPPLY (HYDRONIC)
LPG	LOW PRESSURE GAS
MIN.	MINIMUM
MAX.	MAXIMUM
MTL	METAL
(N)	NEW
OC	ON CENTER
POC	POINT OF CONNECTION
PSI	POUNDS PER SQUARE INCH
SD	SMOKE DETECTOR
SHT	SHEET
SMS	SHEET METAL SCREW
SR	SIDEWALL REGISTER
SOV	SHUT-OFF VALVE
SPEC	SPECIFICATIONS
STL	STEEL
UGND	UNDERGROUND
VD	VOLUME DAMPER (LOCKING)
VTR	VENT TO ROOF
VAV	VARIABLE AIR VOLUME BOX
VFD	VARIABLE FREQUENCY DRIVE
WC	WATER COLUMN
WCO	WALL CLEAN-OUT
(TYP)	TYPICAL

REVISIONS:	DATE:

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REGISTERED PROFESSIONAL ENGINEER HUGH A. METERNAN M030626 Rein 6/30/20 MECHANICAL STATE OF CALIFORNIA

Ventura County Community College District
761 DAILY DRIVE
CAMARILLO, CALIFORNIA

SHEET TITLE:
MECHANICAL NOTES

DATE: 04-15-19
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M1.0
SHEET NO. OF

MECHANICAL & PLUMBING SCHEDULE

NEW AIR HANDLING UNIT SCHEDULE

ALL AHU'S SHALL BE FACTORY STARTED AND TUNED

TAG	MANF. & MODEL	SERVES	TOTAL OPER. WEIGHT	EXISTING OPER. WEIGHT	TONS	EER	ELECTRICAL DATA VOLT	PHASE	MCA	MOCP	CFM @ ESP	SUPPLY FAN	RELIEF FAN	RELIEF CFM	MIN. OUTSIDE AIR CFM	COOLING COIL	COOLING CAPACITY TOTAL/SENSIBLE MBTUH	CONDITIONS ENTERING DB/WB	LEAVING DB/WB	NOTES: COMMON TO BOTH AHU'S
																				0-100% ECONOMIZER, SUPPLY FAN VAV (DTC)
AHU	TRANE	1ST FLOOR	8,241# UNIT ONLY	11,000 LBS	40	10.6	460	3	109.67	125	16,000	(2) 20 HP	10 HP	13,000	1,905	AL FINS COPPER	474.76/362.67	80/67	62.5/58.79	& RELIEF/ EXH. FAN VFD w/o BYPASS,
1	40T SXHF										3.84" WC	W/ VFD	W/ VFD			TUBES COATED				2" SPRING ISOLATORS AT FANS, R-410A REFRIGERANT,
																				HIGH-EFFICIENCY MERV 8 FILTERS. VARIABLE SPEED COMPRESSOR
AHU	TRANE	2ND FLOOR	9,021# UNIT ONLY	11,000 LBS	55	10.6	460	3	156.35	175	22,000	(2) 30 HP	15 HP	16,500	2,760	AL FINS COPPER	673.73/532.70	80/67	61.36/58.50	COATED CONDENSER & EVAP. COILS
2	55T SXHF										3.92" WC	W/ VFD	W/ VFD			TUBES COATED				VENTILATION CONTROL & BACNET MODULE, OUTSIDE AIR MONITORING STATION

BOILER SCHEDULE

TAG	MANF. & MODEL	BTUH INPUT	BTUH OUTPUT	H20 CONNECTION	GAS CONNECTION	NOX RATING	EFFICIENCY	VENT SIZE	ELECTRICAL DATA VOLTAGE	AMPS	OPT WEIGHT
B	RAYPAK	990,000	832,000	2-1/2"	2"	< 20 PPM	84%	10"	115/1/60	11	900
1	HI DELTA MODEL 992C							TOP VENT			(1,500 #
	(TYPE H)										EXISTING)

NOTES: FACTORY START AND TUNE BOILER 2 STAGE GAS VALVE, BACNET INTERFACE, WATER TEMP RESET & ALARM. HIGH & LOW GAS PRESSURE, HI TEMP AND LOW WATER SWITCHES ASME RELIEF VALVES. COLD WATER START (INLINE PUMP W/ TEFC MOTOR) W/ FACTORY INLET & OUTLET. TYPE 'B' FLUE W/ EXTENSION & OUTDOOR VENT TERMINATION.

HOT WATER PUMPS

TAG	MANF. & MODEL	FLOW RATE (GPM)	HEAD (FT)	WEIGHT (LBS)	VOLTAGE	PHASE	HP	RPM	NOTES
P	BELL & GOSSETT	54	50	200	460	3	1-1/2	1750	PREMIUM EFF. TEFC MOTOR W/ 1-1/2 HP ABB VARIABLE FREQ. DRIVE
1A&1B	SERIES e-1510 MODEL 1.25BC								145T MOTOR FRAME, METRASPHERE CONNECTIONS AND EMS CONTROL

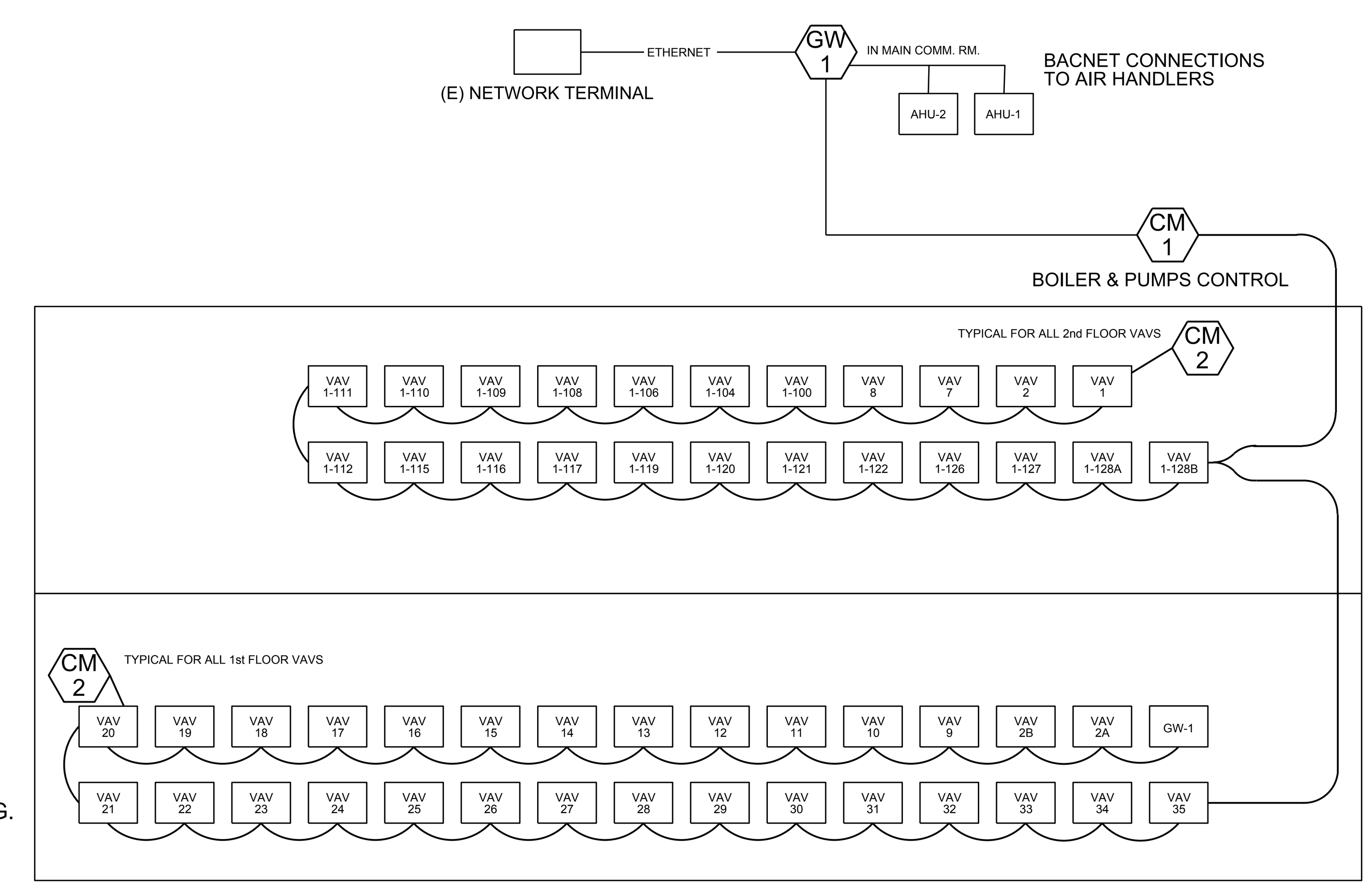
HYDRONIC ACCESSORIES

	WYE STRAINER	STOCKHAM	THREADED	INSTALL NEW ON HOT WATER LOOPS
	VIBRATION ISOLATION	MASON INDUSTRIES SAFEFLEX SFDEJ	VARIES	INSTALL AT PUMP CONNECTIONS SECURE PIPE PER MANUFACTURERS RECOMMENDATIONS
CT 1	CHEMICAL FEED TANK	JL WINGERT DB-5HD		FLUSH SYSTEM AND PROVIDE ONE YEAR CHEMICAL TREATMENT SERVICE. 94 LBS. OPT WT.
AS 1	AIR SEPARATOR	BELL & GOSSETT MODEL R-3F	3" FLANGED	155 LBS. W/ HIGH CAPACITY AIR VENT. VENT PIPED TO ROOF RECEIVER. SECURE TO FLOOR. 197 LBS. OPT. WT.
AV 1	AIR VENT	BELL & GOSSETT	1/4" FIP	INSTALL AT HIGH POINT AND AT AIR SEPARATORS, PIPE TO ROOF RECEIVER.
BFP 1	BACKFLOW PREVENTOR	REUSE EXISTING		
ET 1	EXPANSION TANK	REUSE EXISTING		417 LBS. OPT. WT. DRAIN PIPE TO ROOF RECEIVER.
FV 1	FILL VALVE - HEATING WATER	REUSE EXISTING		

FOR AIR & WATER BALANCE

EXISTING VAV SCHEDULE - FOR AHU-1 / EXISTING VAV SCHEDULE - FOR AHU-2

VAV BOX #	VAV BOX CFM MIN / MAX	# OF COILS	HEATING COIL GPM	BELIMO VALVE	VAV BOX #	VAV BOX CFM MIN / MAX	# OF COILS	HEATING COIL GPM	BELIMO VALVE
1	440 / 980	2-ROW	1.4	B-310	2A	195 / 430	2-ROW	0.6	B-309
2	455 / 1015	2-ROW	1.5	B-310	2B	165 / 365	2-ROW	0.5	B-309
3	NOT USED	2-ROW	-		9	110 / 250	2-ROW	0.4	B-309
4	NOT USED	2-ROW	-		10	110 / 250	2-ROW	0.4	B-309
5	NOT USED	2-ROW	-		11	270 / 600	2-ROW	0.9	B-310
6	NOT USED	2-ROW	-		12	200 / 450	2-ROW	0.7	B-309
7	150 / 330	2-ROW	0.5	B-309	13	410 / 910	2-ROW	1.3	B-310
8	150 / 330	2-ROW	0.5	B-309	14	415 / 925	2-ROW	1.3	B-310
1-100	80 / 175	2-ROW	0.5	B-309	15	505 / 1125	2-ROW	1.6	B-310
1-104	295 / 655	2-ROW	1.0	B-310	16	135 / 300	2-ROW	0.4	B-309
1-106	315 / 700	2-ROW	1.0	B-310	17	495 / 1100	2-ROW	1.6	B-310
1-107	195 / 430	2-ROW	0.6	B-309	18	270 / 600	2-ROW	0.9	B-310
1-108	305 / 675	2-ROW	1.0	B-310	19	470 / 1050	2-ROW	1.5	B-310
1-109	430 / 960	2-ROW	1.4	B-310	20	790 / 1750	2-ROW	2.6	B-311
1-110	285 / 635	2-ROW	0.9	B-310	21	665 / 1480	2-ROW	2.2	B-311
1-111	425 / 940	2-ROW	1.4	B-310	22	170 / 375	2-ROW	0.5	B-309
1-112	300 / 660	2-ROW	1.0	B-310	23	900 / 2000	2-ROW	2.9	B-311
1-115	340 / 760	2-ROW	1.1	B-310	24	405 / 900	2-ROW	1.3	B-310
1-116	340 / 760	2-ROW	1.1	B-310	25	170 / 380	2-ROW	0.6	B-309
1-117	575	NO HEAT	-	B-310	26	155 / 350	2-ROW	0.5	B-309
1-118	NOT USED	2-ROW	-	B-310	27	125 / 275	2-ROW	0.4	B-309
1-119	320 / 710	2-ROW	1.0	B-310	28	225 / 495	2-ROW	0.7	B-309
1-120	440 / 975	2-ROW	1.4	B-310	29	565 / 1250	2-ROW	1.8	B-310
1-121	85 / 190	2-ROW	0.3	B-309	30	340 / 750	2-ROW	1.1	B-310
1-122	165 / 370	2-ROW	0.5	B-309	31	100 / 225	2-ROW	0.5	B-309
1-126	110 / 250	2-ROW	0.4	B-309	32	100 / 225	2-ROW	0.5	B-309
1-127	270 / 600	2-ROW	0.9	B-310	33	405 / 900	2-ROW	1.3	B-310
1-128A	245 / 550	2-ROW	0.8	B-310	34	555 / 1230	2-ROW	1.8	B-311
1-128B	230 / 510	2-ROW	0.7	B-309	35	765 / 1700	2-ROW	2.5	B-311
36	NOT USED	2-ROW	-		TOTAL SECOND FLOOR			33.0 GPM	
TOTAL FIRST FLOOR			20.6 GPM						



CONTROL EQUIPMENT SCHEDULE

ALL EMS CONTROL MODULES SHALL BE AUTOMATED LOGIC CORP.

- GW 1 — GATEWAY MODULE - LGR WITH POWER PACK. TO BE MOUNTED IN THE COMMUNICATION ROOM.
- CM 1 — CONTROL MODULE - SE SINGLE UNIT CONTROLLER WITH 5 DIGITAL OUTPUTS, SIX UNIVERSAL INPUTS AND THREE ANALOG OUTPUTS.
- CM 2 — CONTROL MODULE - ZN341v+ VARIABLE AIR VOLUME (VAV) CONTROLLER WITH ONE DIGITAL OUTPUT, FOUR UNIVERSAL INPUTS, ONE ANALOG OUTPUT AND INTEGRATED FLOW PORT, DAMPER ACTUATOR & ZONE SENSOR PORT.
- T — ZONE SENSOR - AUTOMATED LOGIC ZS PRO
- CS 1 — CURRENT SENSOR - 0-5VDC OR 4-20mA OUTPUT CURRENT SENSOR, TO DETERMINE MOTOR AMPERAGE AND STATUS. VERIS INDUSTRIES OR NIELSEN KULJIAN
- (E) VAV 1 — VARIABLE AIR VOLUME (VAV) BOX - WITH DAMPER AND VALVE ACTUATOR. CONNECT NEW CM-2 CONTROL MODULE (TYP OF 54)
- LT 1 — IMMERSION SENSOR - BAPI OR EQUAL IMMERSION TEMP SENSOR WITH STAINLESSSTEEL THERMAL WELL AND WEATHER PROOF ENCLOSURE. PROVIDED BY CONTROLS CONTRACTOR, THERMAL WELL INSTALLED BY PLUMBING CONTRACTOR.
- OA 1 — OUTSIDE AIR & HUMIDITY SENSOR. BAPI OR EQUAL
- AD 1 — AIR DIFFERENTIAL PRESSURE SENSOR. BAPI ZPS OR EQUAL
- DA 1 — DAMPER ACTUATOR FOR VAV BOXES. BELIMO MODEL LUX24-MFT TYP OF 54
- VA 1 — VALVE AND ACTUATOR. THREE WAY CHARACTERIZED VALVE WITH LF24 MFT ACTUATOR. TYP OF 54. SEE ABOVE FOR VALVE SIZING.

CONTROL POINTS

AHU'S 1 & 2 - BACNET CONNECTION

INPUTS
SUPPLY AIR TEMP
RETURN AIR TEMP
MIXED AIR TEMP
OUTSIDE AIR TEMP (ONE UNIT ONLY - NETWORK BROADCAST)
OUTSIDE AIR HUMIDITY (ONE UNIT ONLY- NETWORK BROADCAST)
FILTER STATUS
FIRE ALARM SHUT DOWN
UNIT ALARM
SUPPLY DUCT PRESSURE SENSOR - FOR MAIN FAN CONTROL
SET DURING AIR BALANCE
SPACE PRESSURE SENSOR - FOR RELIEF FAN CONTROL
SET DURING AIR BALANCE

OUTPUTS
MAIN FAN VFD 1 ENABLE
MAIN FAN VFD 1 SPEED
RELIEF FAN VFD 2 ENABLE
RELIEF FAN VFD 2 SPEED
OUTSIDE AIR DAMPER
RETURN DAMPER
RELIEF DAMPER

BOILER

INPUTS
SUPPLY TEMP FROM BOILER #1
RETURN FROM BUILDINGS TEMP
BOILER 1 ALARM
BOILER 1 FLOW SWITCH - CONNECT TO BOILER
PUMP 1 CURRENT SENSOR
PUMP 2 CURRENT SENSOR

OUTPUTS
BOILER ONE ENABLE
BOILER ONE HOT WATER RESET
PUMP 1 ENABLE
PUMP 2 ENABLE

VAV UNITS

INPUTS
THERMOSTAT
SUPPLY AIR TEMP
FLOW SENSOR

OUTPUTS
DAMPER CONTROL
VALVE CONTROL

REVISIONS:	DATE:

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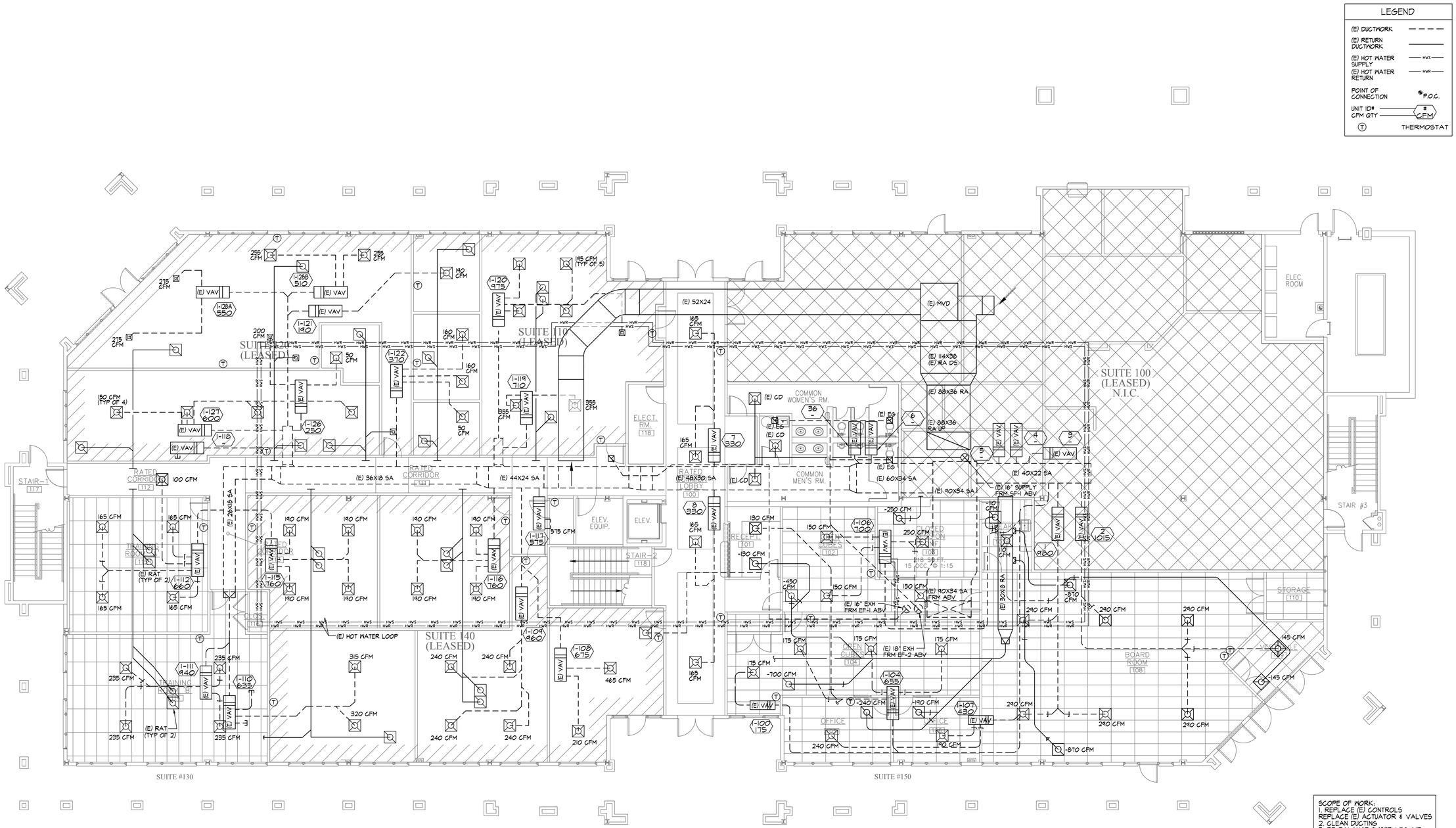
Ventura County Community College District
761 DAILY DRIVE
CAMARILLO, CALIFORNIA

SHEET TITLE:
MECHANICAL SCHEDULES & CONTROLS

DATE: 04-15-19
DRAWN: HM/JS/TP
JOB NO. AE201911

M1.1
SHEET NO. OF



SCOPE OF WORK:
1. REPLACE (E) CONTROLS REPLACE (E) ACTUATOR & VALVES
2. CLEAN DUCTING
3. RE-BALANCE SYSTEM TO AIR QUANTITIES SHOWN.

NORTH

FIRST FLOOR MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

0' 2' 4' 8' 16'

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CAMARILLO, CALIFORNIA

SHEET TITLE:
FIRST FLOOR MECHANICAL PLAN

DATE:	04-15-19
DRAWN:	HM/JS/TP
JOB NO.	AE201911

M2.1

SHEET NO. OF

LEGEND

(E) DUCTWORK
(E) RETURN DUCTWORK
(E) HOT WATER SUPPLY — HWS
(E) HOT WATER RETURN — HWR
POINT OF CONNECTION — P.O.C.
UNIT ID# / CFM QTY — CFM
T — THERMOSTAT
SD — (E)DUCT SMOKE DETECTOR

SCOPE OF WORK:
1. REPLACE (E) CONTROLS REPLACE (E) ACTUATOR & VALVES
2. CLEAN DUCTING
3. RE-BALANCE SYSTEM TO AIR QUANTITIES SHOWN.
4. PROTECT (E) DUCT SMOKE DETECTORS IN PLACE & VERIFY OPERATION.

NORTH

SECOND FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0"
0' 2' 4' 8' 16'

REVISIONS:	DATE:

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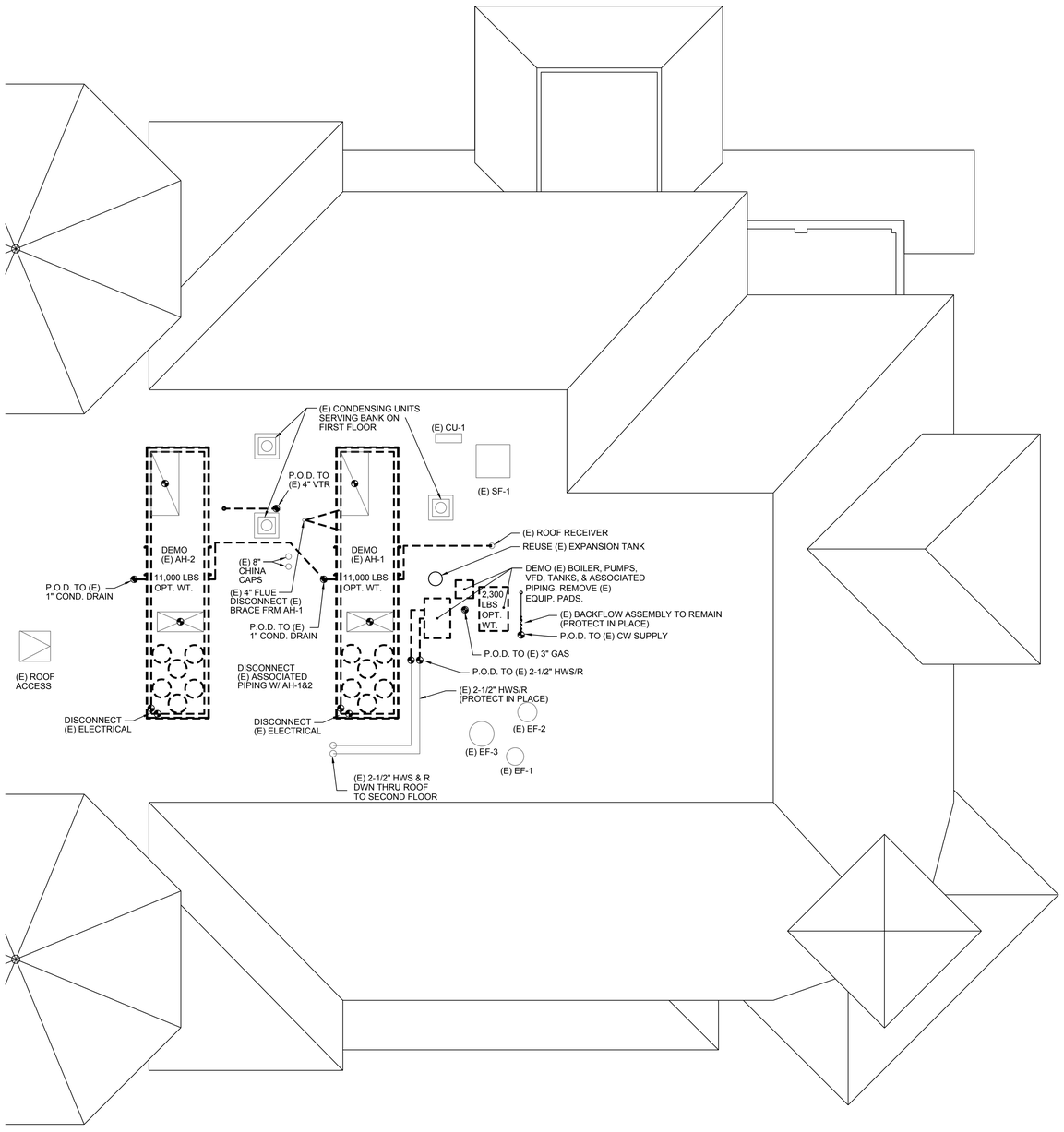
CAMARILLO, CALIFORNIA

SHEET TITLE:
SECOND FLOOR MECHANICAL PLAN

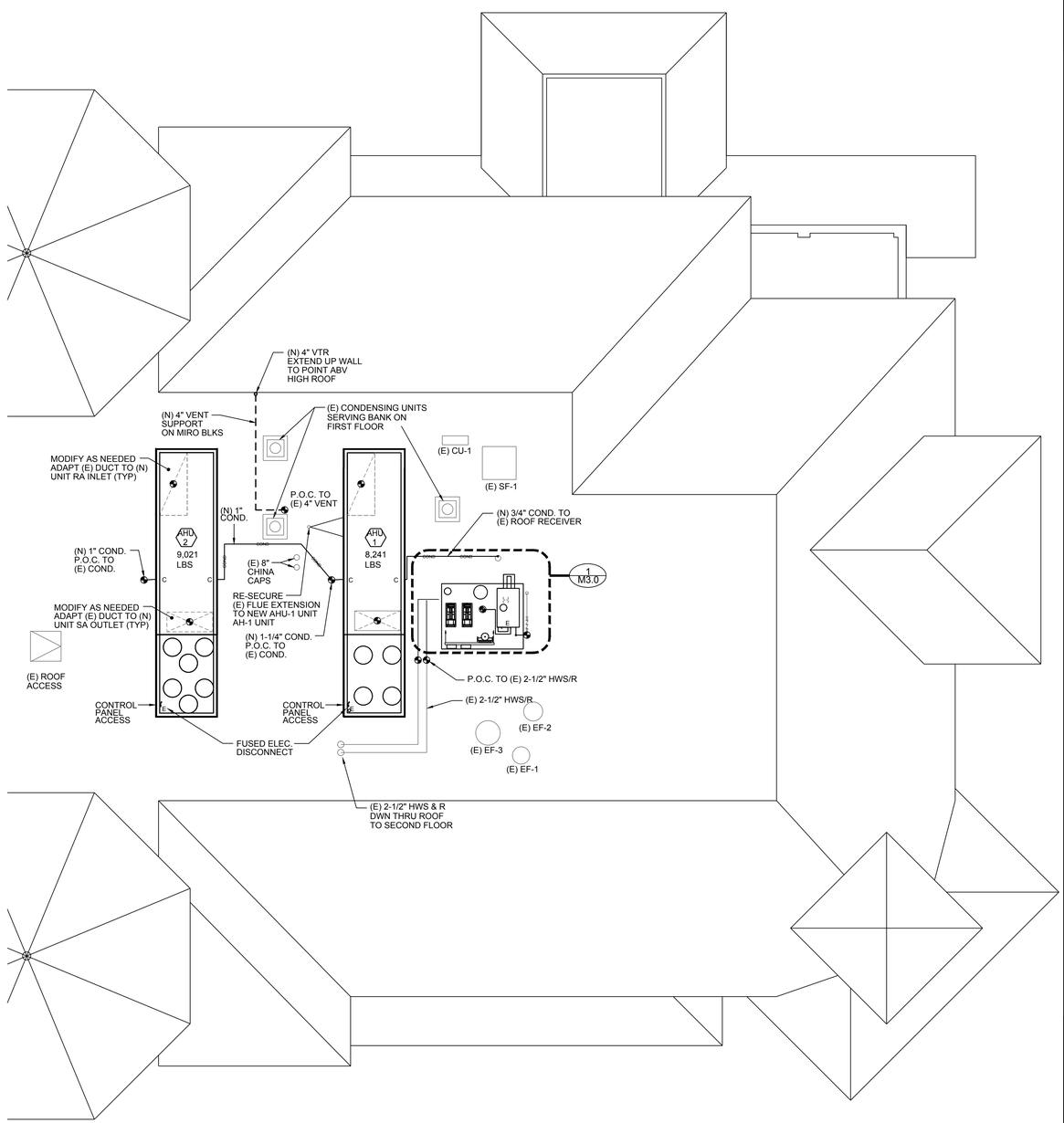
DATE:	04-15-19
DRAWN:	HM/JS/TP
JOB NO.	AE201911

M2.2
SHEET NO. OF



1 MECHANICAL DEMOLITION ROOF PLAN
SCALE: 1/8" = 1'-0"

NORTH



2 MECHANICAL ROOF PLAN
SCALE: 1/8" = 1'-0"

NORTH

REVISIONS:	DATE:

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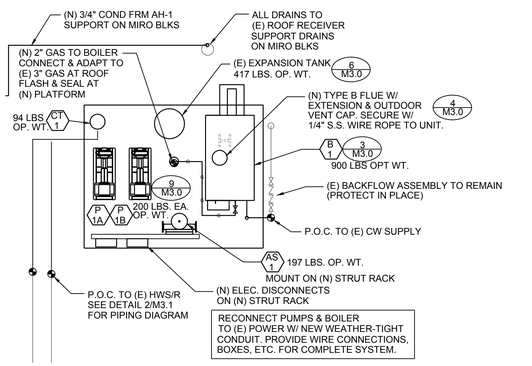
CAMARILLO, CALIFORNIA

SHEET TITLE:
MECHANICAL ROOF PLAN

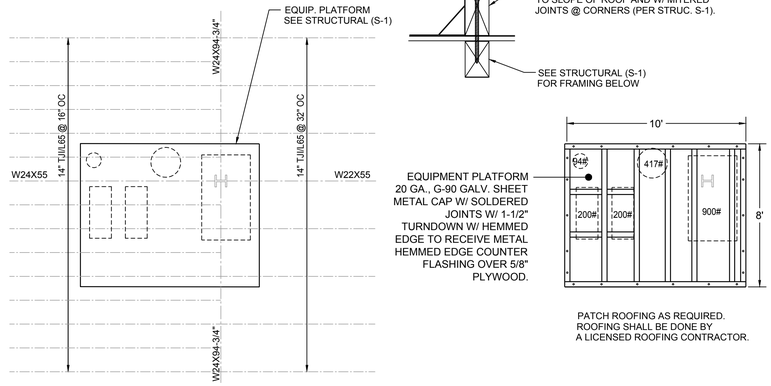
DATE: 04-15-19
DRAWN: HM/JS/TP
JOB NO. AE201911

M2.3
SHEET NO. OF



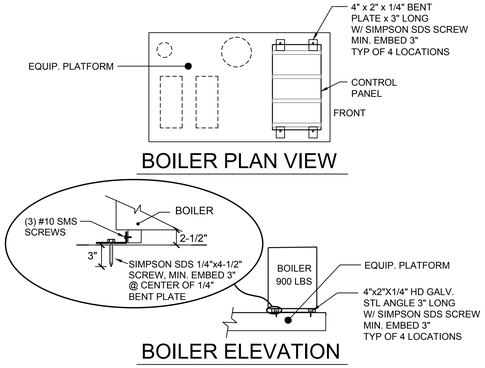
1 / M3.0 — ENLARGED BOILER PLAN

SCALE: NO SCALE



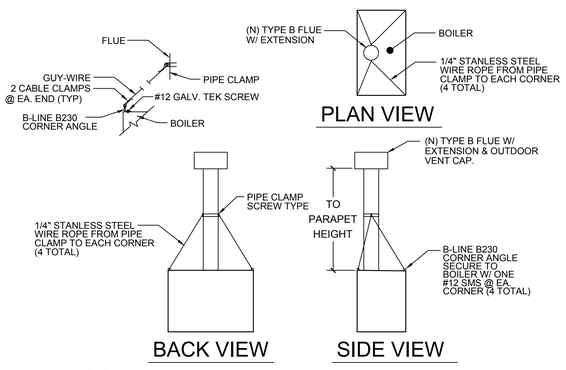
2 / M3.0 — NEW EQUIPMENT PLATFORM DETAIL

SCALE: 1/4" = 1'-0"



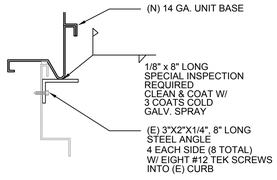
3 / M3.0 — BOILER ANCHORAGE DETAIL

SCALE: NO SCALE



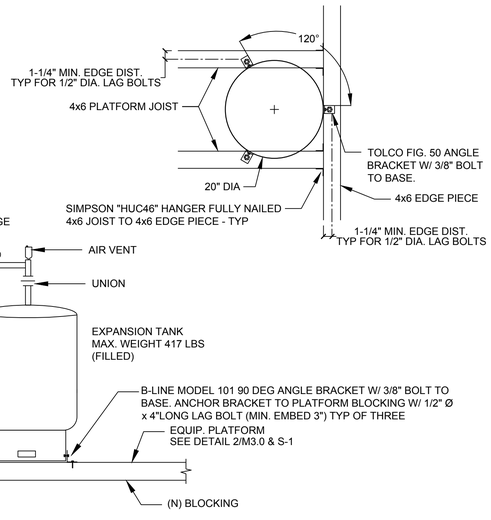
4 / M3.0 — FLUE EXTENSION DETAIL

SCALE: NO SCALE



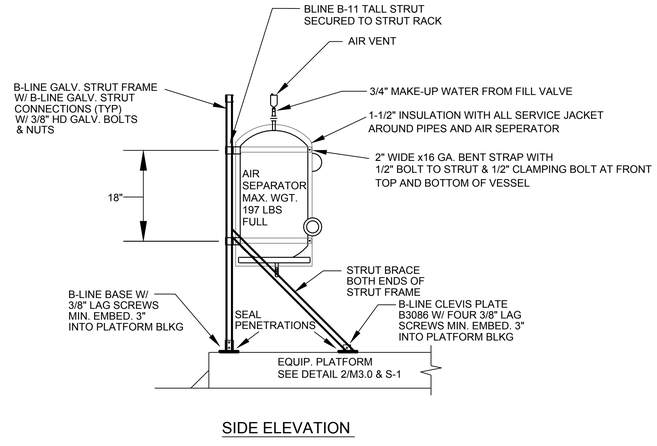
5 / M3.0 — AHU ANCHORAGE DETAIL

SCALE: NO SCALE



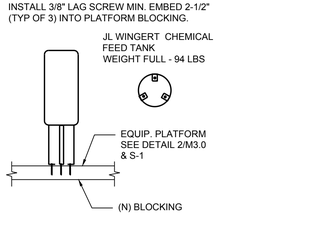
6 / M3.0 — EXPANSION TANK ANCHORAGE DETAIL

SCALE: NO SCALE



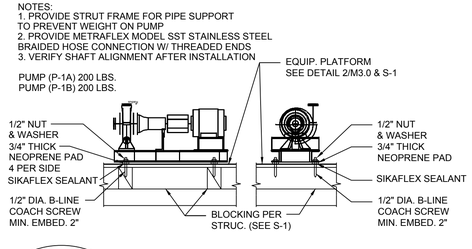
7 / M3.0 — AIR SEPARATOR SUPPORT DETAIL

SCALE: NO SCALE



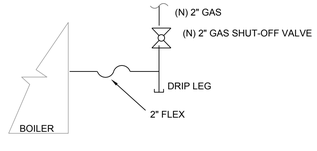
8 / M3.0 — CHEMICAL TANK ANCHORAGE DETAIL

SCALE: NO SCALE



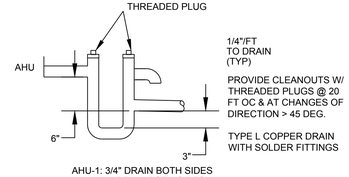
9 / M3.0 — PUMP ANCHORAGE DETAIL

SCALE: NO SCALE



10 / M3.0 — EQUIPMENT GAS SUPPLY DETAIL

SCALE: NO SCALE



11 / M3.0 — CONDENSATE DETAIL

SCALE: NO SCALE

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Ventura County Community College District
761 DAILY DRIVE
CAMARILLO, CALIFORNIA

SHEET TITLE:

MECHANICAL DETAILS

DATE:	04-15-19
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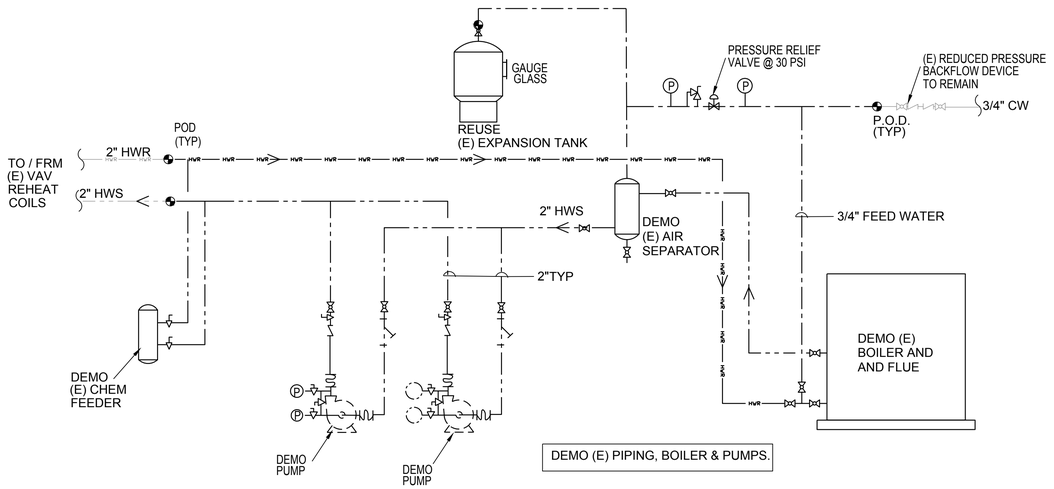
JOB NO.	AE201911

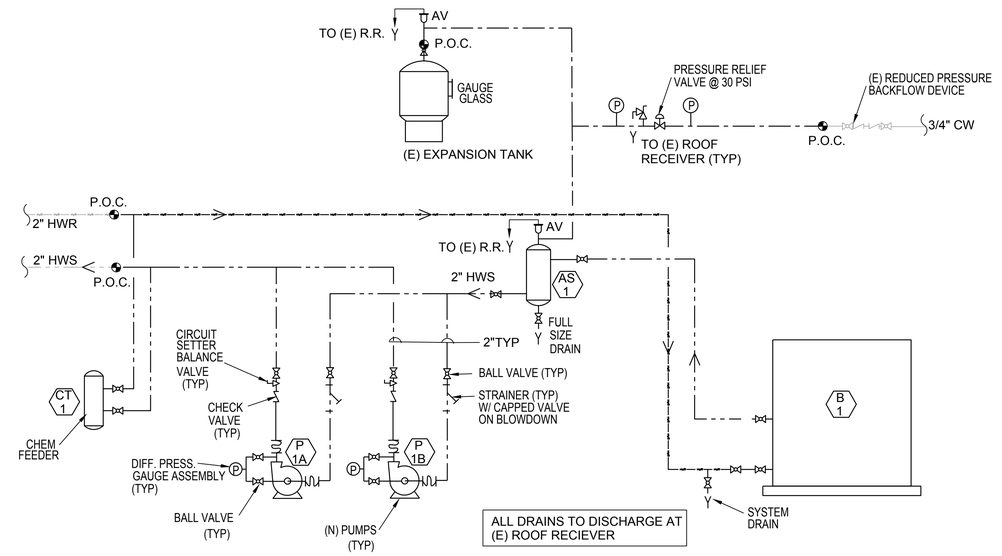
M3.0

SHEET NO. OF



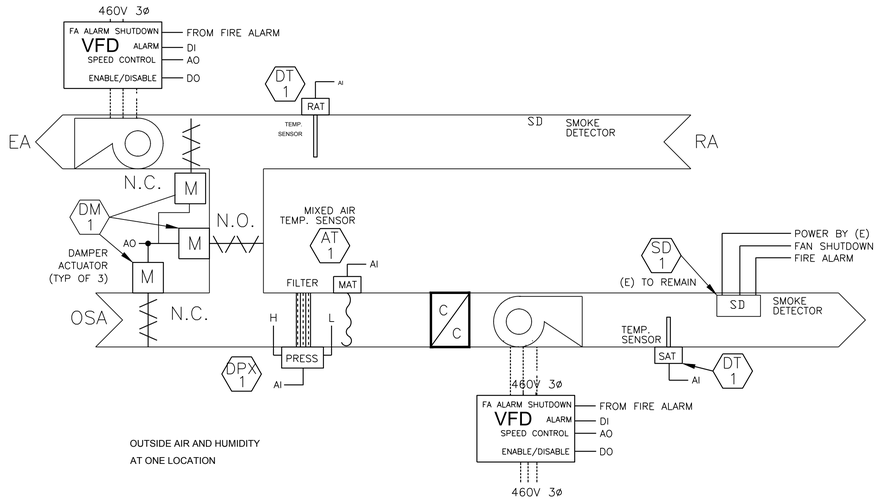
1 M3.1 EXISTING BOILER PIPE SCHEMATIC - FOR REFERENCE

SCALE: NO SCALE



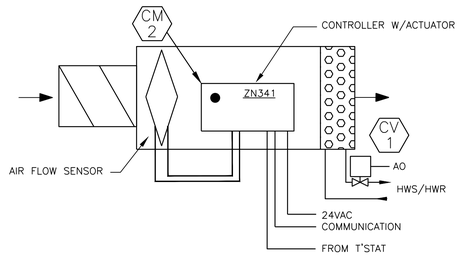
2 M3.1 NEW BOILER PIPE SCHEMATIC

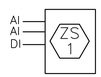
SCALE: NO SCALE



3 M3.1 AHU CONTROL FLOW DIAGRAM

SCALE: NONE





4 M3.1 VAV CONTROL FLOW DIAGRAM (TYP OF ALL VAVs)

SCALE: NONE

REVISIONS:	DATE:

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REGISTERED PROFESSIONAL ENGINEER HUGH A. MCTERNAN M03626 Rein. 6/30/20 MECHANICAL STATE OF CALIFORNIA

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761 DAILY DRIVE
CAMARILLO, CALIFORNIA

SHEET TITLE:

MECHANICAL DETAILS

DATE: 04-15-19
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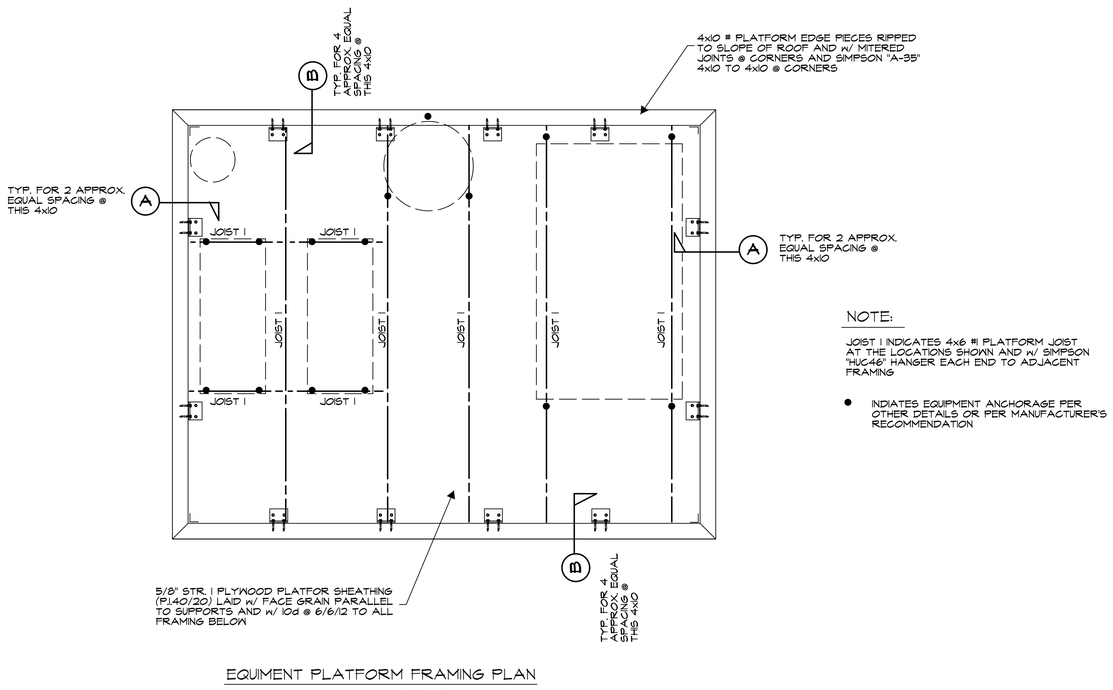
M3.1

SHEET NO. OF



EQUIMENT PLATFORM FRAMING PLAN

SCALE: 3/4" = 1'-0"

NOTE:

JOIST I INDICATES 4x6 # PLATFORM JOIST AT THE LOCATIONS SHOWN AND w/ SIMPSON "HUC46" HANGER EACH END TO ADJACENT FRAMING

● INDIATES EQUIPMENT ANCHORAGE PER OTHER DETAILS OR PER MANUFACTURER'S RECOMMENDATION

GENERAL NOTES

GENERAL

1. ALL WORK SHALL CONFORM WITH THE 2016 CALIFORNIA BUILDING CODE, (CBC), AND ALL LOCAL ORDINANCES.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO STARTING CONSTRUCTION AND BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES OR INCONSISTENCIES.
3. NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, BORED OR OTHERWISE WEAKENED EXCEPT AS ALLOWED BY THE CALIFORNIA BUILDING CODE OR APPROVED BY THE ENGINEER.
4. THE ENGINEER SHALL BE NOTIFIED OF ANY UNUSUAL OR UNFORSEEN CONDITION WHICH EFFECTS THE STRUCTURAL STABILITY OF THE BUILDING PRIOR TO CONTINUING WITH CONSTRUCTION. SHOULD ANY CONDITION ARISE WHERE THERE APPEARS TO BE AN ERROR ON THE DRAWINGS OR A DISCREPANCY BETWEEN THE DRAWINGS AND CONDITIONS IN THE FIELD, THE ENGINEER SHALL BE NOTIFIED PRIOR TO CONTINUING WITH THE WORK.
5. IN THE CASE WHERE TWO OR MORE DETAILS APPLYING TO THE SAME PART OF THE WORK ARE IN CONFLICT, THE MOST RESTRICTIVE SHALL GOVERN UNLESS CLARIFIED OR OTHERWISE APPROVED BY THE ENGINEER.
6. REVIEW OF SHOP DRAWINGS MEANS REVIEW OF GENERAL METHOD OF FABRICATION ONLY. DIMENSIONS AND QUANTITIES MAY NOT BE CHECKED, AND REVIEW OF THE SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS UNLESS SPECIFICALLY SO INDICATED IN THE REVIEW.
7. THE ENGINEER HAS NOT BEEN RETAINED FOR SUPERVISION OR INSPECTION DURING CONSTRUCTION, BUT WILL RESOLVE STRUCTURAL ITEMS BROUGHT TO HIS ATTENTION DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SHORING AND BRACING REQUIRED TO PROTECT PERSONNEL AND ADJACENT PROPERTY DURING CONSTRUCTION. THE CONTRACTOR SHALL ADEQUATELY BRACE ELEMENTS OF THE STRUCTURE DURING CONSTRUCTION TO INSURE THE SAFETY OF THE STRUCTURE.
9. A SET OF THE ORIGINAL CONSTRUCTION DOCUMENTS PREPARED BY NEAL K. SUBIC, ARCHITECT, AND VINCI AND ASSOC., STRUCTURAL ENGINEERS SHALL BE AT THE SITE AND REFERRED TO FOR EXISTING CONDITIONS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A-36.
2. MACHINE BOLTS SHALL CONFORM TO ASTM A-307 AND ANCHOR BOLTS TO ASTM F 1554 UNLESS OTHERWISE NOTED ON PLANS.
3. ALL WELDING SHALL BE PERFORMED WITH E70XX ELECTRODES CONFORMING TO AWS D1.1, LATEST EDITION. PROVIDE BACKING PLATES AS REQUIRED FOR FULL PENETRATION WELDS.
4. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS BY THE A.I.S.C., LATEST EDITION.
5. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS IN THE SHOP OF A FABRICATOR APPROVED BY THE LOCAL BUILDING DEPARTMENT FOR WELDING IN THE SHOP. FOR SHOPS NOT APPROVED, WELDING SHALL BE CONTINUOUSLY INSPECTED BY A LICENSED DEPUTY INSPECTOR PER SECTION 1704.2. OF THE CBC.
6. CONTINUOUS INSPECTION BY A LICENSED DEPUTY INSPECTOR IS REQUIRED FOR ALL FIELD WELDING PER SEC. 1704.3 OF THE CBC, EXCEPT MINOR ITEMS WHEN APPROVED BY THE ENGINEER AND BUILDING INSPECTOR.
7. ALL FABRICATED ITEMS SHALL BE SHOP PAINTED WITH ONE COAT OF SHOP PRIMER EXCEPT FOR ITEMS ENCASED IN CONCRETE AND SURFACES TO BE WELDED. STEEL SURFACES ENCASED IN CONCRETE SHALL BE LEFT UNPAINTED, BUT FREE FROM RUST, OIL, OR OTHER DELETERIOUS MATERIALS WHEN ENCASED.
8. BOLT HOLES SHALL BE 1/16 INCH LARGER THAN BOLT DIAMETER UNLESS SLOTTED HOLES ARE INDICATED IN DETAILS. BOLT HOLES SHALL BE PUNCHED OR DRILLED. BURNED HOLES ARE NOT PERMITTED.
9. BOLT HEADS OR NUTS BEARING ON SLOPING SURFACES SHALL BE EQUIPPED WITH BEVELED WASHERS.

WOOD FRAMING

1. ALL FRAMING LUMBER SHALL BE GRADE MARKED DOUGLAS FIR-LARCH AND SHALL CONFORM TO "STANDARD GRADING RULES NO. 16" BY WEST COAST LUMBER INSPECTION BUREAU, LATEST EDITION.
2. ALL LUMBER SHALL BE NO. 1 GRADE MINIMUM UNLESS OTHERWISE NOTED ON PLANS OR IN DETAILS w/ WOOD STUDS BEING #2 GRADE UNLESS OTHERWISE NOTED.
3. NAILING SHALL CONFORM TO TABLE 2304.10.1 OF THE CALIFORNIA BUILDING CODE UNLESS OTHERWISE NOTED ON PLANS. ALL NAILS SHALL BE COMMON WIRE NAILS OR EQUIVALENT.
4. ALL PLYWOOD SHALL CONFORM TO PS1-09, AND SHALL BE LAID WITH JOINTS STAGGERED AND FACE GRAIN PERPINDICULAR TO SUPPORTS. THE MINIMUM WIDTH OF PLYWOOD BETWEEN EDGES IN ANY DIRECTION SHALL BE 2'-0".

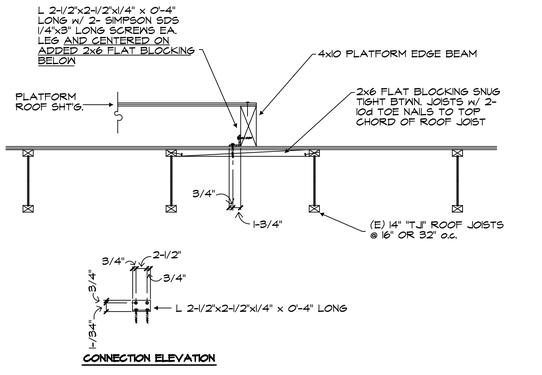
ABREVIATIONS

A.B.-	ANCHOR BOLT	GA-	GAUGE
BLKG.-	BLOCKING	GALV.-	GALVANIZED
B.J.-	BALCONY JOISTS	HORIZ.-	HORIZONTAL
BLK.-	BLOCK	L.L.V.-	LONG LEG VERTICAL
BM.-	BEAM	L.L.H.-	LONG LEG HORIZONTAL
B.N.-	BOUNDRY NAIL	MAX-	MAXIMUM
(B)-	BOTTOM	MIN-	MINIMUM
CLR-	CLEAR	M.B.-	MACHINE BOLT
CMU-	CONCRETE MASONRY	(N)-	NEW
COL.-	COLUMN	NTS-	NOT TO SCALE
C.J.-	CEILING JOIST	O.C.-	ON CENTER
CONC.-	CONCRETE	OPP.-	OPPOSITE
CONN.-	CONNECTION	R.J.-	ROOF JOIST
CONT.-	CONTINUOUS	R.B.-	ROOF BEAM
C TO C-	CENTER TO CENTER	REF.-	REFERENCE
CNTRSNK-	COUNTERSINK	P.R.T.-	PREFAB ROOF TRUSSES
DBL-	DOUBLE	REINF.-	REINFORCING STEEL
DIAM-	DIAMETER	SEL. STR.-	SELECT STRUCTURAL
D.F.-	DOUGLAS FIR	SHTG.-	SHEATHING
DRWGS-	DRAWINGS	STAG-	STAGGER
(E)-	EXISTING	SIM.-	SIMILAR
EA.-	EACH	STD.-	STANDARD
ELEV-	ELEVATION	STL.-	STEEL
F.LG.-	FLANGE	TYP.-	TYPICAL
FL.-	FLOOR	(T)-	TOP
FIN-	FINISH	TOS-	TOP OF SHEATHING
F.J.-	FLOOR JOISTS	T.S.-	TUBE SECTION
FOM-	FACE OF MASONRY	U.N.O.-	UNLESS OTHERWISE NOTED
FOS-	FACE OF STUD	W or WF-	WIDE FLANGE SHAPE
FOC-	FACE OF CONCRETE	W/O-	WITH OUT
HD-	SIMPSON HOLDOWN	VERT.-	VERTICAL
HT.-	HEIGHT		

LAG BOLT INSTALLATION

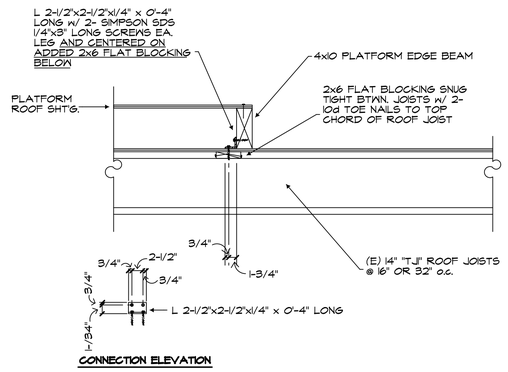
LAG BOLTS AND WOOD SCREWS SHALL BE INSERTED IN LEAD HOLES AS FOLLOWS:

1. THE CLEARANCE HOLE FOR THE SHANK SHALL HAVE THE SAME DIAMETER AS THE SHANK, AND THE SAME DEPTH OF PENETRATION AS THE LENGTH OF THE UN-THREADED SHANK.
2. THE LEAD HOLE FOR THE THREADED PORTION SHALL HAVE A DIAMETER EQUAL TO 60% TO 75% OF THE SHANK DIAMETER, AND A LENGTH EQUAL TO AT LEAST THE LENGTH OF THE THREADED PORTION.
3. THE THREADED PORTION OF THE BOLT/SCREW SHALL BE INSERTED IN ITS LEAD HOLE BY TURNING WITH A WRENCH OR SCREW DRIVER, NOT BY DRIVING WITH A HAMMER.
4. SOAP OR OTHER LUBRICANT SHALL BE USED ON THE BOLTS OR IN THE LEAD HOLE TO FACILITATE INSERTION AND TO PREVENT DAMAGE TO THE BOLT/SCREW.



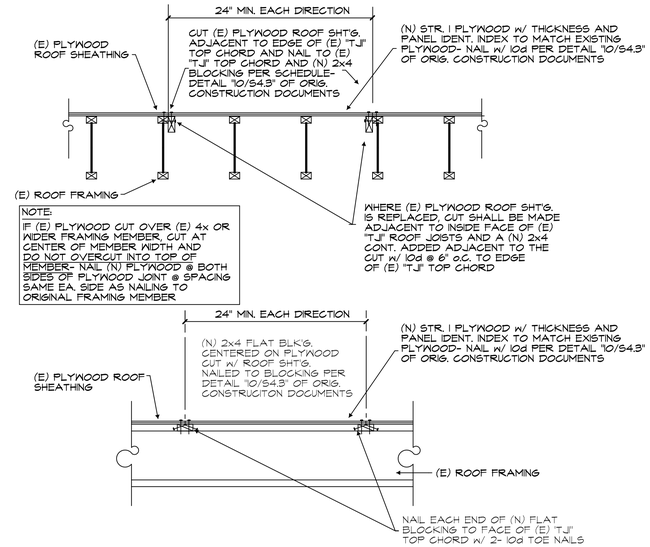
CONNECTION ELEVATION

3/4" = 1'-0" (A)



CONNECTION ELEVATION

3/4" = 1'-0" (B)



REMOVED/REPLACED PLYWOOD SHEATHING

NO.	DATE	REVISIONS

DESIGNED	DATE
DRAWN BY: L. HAUER	04/17/19
CHECKED BY: L. HAUER	04/17/19
APPROVED BY:	

LAWRENCE R. HAUER
STRUCTURAL AND CIVIL ENGINEER
A CORPORATION
2350 E. MAIN, #202
VENTURA, CA. 93003 (805) 653-1743

VENTURA COUNTY COMMUNITY COLLEGE DISTRICT
761 DIALY DRIVE
CAMARILLO, CALIFORNIA

DRAWING #: 019-001

SHEET NUMBER S-1

OF _____

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 1 of 4)
Project Name: VCCCD HVAC Replacement Project	Date Prepared: 4/16/2019

A. MECHANICAL COMPLIANCE DOCUMENTS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2016 Nonresidential Manual
Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

YES	NO	Comp. Doc./Worksheet #	Title
☑	☐	NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
☑	☐	NRCC-MCH-01-E (Part 2 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-02-A to 11-A). Required on plans for all submittals.
☑	☐	NRCC-MCH-01-E (Part 3 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-12-A to 18-A). Required on plans where applicable.
☑	☐	NRCC-MCH-02-E (Part 1 of 2)	Mechanical Dry Equipment Summary is required for all submittals with Central Air Systems. It is optional on plans.
☑	☐	NRCC-MCH-02-E (Part 2 of 2)	Mechanical Wet Equipment Summary is required for all submittals with chilled water, hot water or condenser water systems. It is optional on plans.
☑	☐	NRCC-MCH-03-E	Mechanical Ventilation and Reheat is required for all submittals with multiple zone heating and cooling systems. It is optional on plans.
☑	☐	NRCC-MCH-07-E (Part 1 of 2)	Power Consumption of Fans. Required on plans where applicable
☑	☐	NRCC-MCH-07-E (Part 2 of 2)	Power Consumption of Fans, Declaration. Required on plans where applicable

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 2 of 4)
Project Name: VCCCD HVAC Replacement Project	Date Prepared: 4/16/2019

B. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck – The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-02-A	MCH-03-A	MCH-04-A	MCH-05-A	MCH-06-A	MCH-07-A	MCH-08-A	MCH-09-A	MCH-10-A	MCH-11-A
Equipment Requiring Testing or Verification	# of Units	Outdoor Air	Single Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Control Ventilation (DCV)	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
Raypak 992C	1	☐	☐	☐	☐	☐	☐	☑	☑	☑	☐
Trane 40 Ton A	1	☑	☐	☐	☑	☐	☑	☐	☐	☐	☐
Trane 55 Ton A	1	☑	☐	☐	☑	☐	☑	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 3 of 4)
Project Name: VCCCD HVAC Replacement Project	Date Prepared: 4/16/2019

C. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck – The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-12-A	MCH-13-A	MCH-14-A	MCH-15-A	MCH-16-A	MCH-17-A	MCH-18-A
Equipment Requiring Testing or Verification	# of Units	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Supply Air Temperature Reset Controls	Condenser Water Reset Controls	ECMS
Raypak 992C	1	☐	☐	☐	☐	☐	☐	☐
Trane 40 Ton A	1	☑	☐	☐	☐	☐	☐	☐
Trane 55 Ton A	1	☑	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐
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STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 4 of 4)
Project Name: VCCCD HVAC Replacement Project	Date Prepared: 4/16/2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Tony Perez	Documentation Author Signature:
Company: AE Group Mechanical Engineers, Inc.	Signature Date: 4/16/2019
Address: 838 E. Front St.	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Ventura, Ca 93001	Phone: (805) 653-1722

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Hugh McTernan	Responsible Designer Signature:
Company : AE Group Mechanical Engineers, Inc.	Date Signed: 4/16/2019
Address: 838 E. Front St.	License: M030626
City/State/Zip: Ventura, Ca 93001	Phone: 805-653-1722

REVISIONS:	DATE:

AE Group
Mechanical Engineers, Inc.
838 East Front Street
Ventura, California 93001
(805) 653-1722 FAX: (805) 653-7260
email: hugh@aegroupme.com

REGISTERED PROFESSIONAL ENGINEER ★ HUGH A. McTERNAN M030626 Ren. 6/30/20 MECHANICAL ★ STATE OF CALIFORNIA

Ventura County Community College District
761 DAILY DRIVE
CAMARILLO, CALIFORNIA

SHEET TITLE:
ENERGY FORMS

DATE:	04-15-19
DRAWN:	HM/JS/TP
JOB NO.	AE201911

EN1.0
SHEET NO. OF

STATE OF CALIFORNIA
FAN POWER CONSUMPTION
CEC-NRCC-MCH-07-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-07-E
Power Consumption of Fans Requirements	(Page 1 of 2)
Project Name: *VCCCD HVAC Replacement Project*	Date Prepared: *4/16/2019*

A. Constant Volume Fan Systems

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp of Constant Volume Fan Systems when using the Prescriptive Approach. See Power Consumption of fans §140.4(c).

01	02	03		04	05
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS A02 x A04 x 746 / (A03a x A03b)
AHU-1 - Supply Fan	*19.000*	*93.0 %*	*99.0 %*	*1.0*	*15,395*
Return Fan	*4.270*	*89.5 %*	*99.0 %*	*1.0*	*3,595*

B. Variable Air Volume Fan Systems

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp of Variable Air Volume (VAV) Systems when using the Prescriptive Approach. See Power Consumption of fans §140.4(c).

01	02	03		04	05
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS B02 x B04 x 746 / (B03a x B03b)

C. Totals and Adjustments

FILTER PRESSURE ADJUSTMENT Equation 140.4-A in §140.4(c) of the Building Energy Efficiency Standards.	01	TOTAL FAN SYSTEM POWER (WATTS, SUM COLUMN F)	*18,990*	W
	02	SUPPLY DESIGN AIRFLOW	*16,000*	CFM
A) If filter pressure drop (SP_a) is greater than 1 inch W. C. or 245 Pascal then enter SP_a on line 4. Enter Total Fan pressure drop across the fan (SP_f) on line 5.	03	TOTAL FAN SYSTEM POWER INDEX (Row 1 / Row 2)[1]	*1.187*	W/CFM
	04	SP_a		in W.C or Pa
	05	SP_f		in W.C or Pa
B) Calculate Fan Adjustment and enter on line 6.	06	Fan Adjustment = 1-(SP_a – 1)/SP_f		
C) Calculate Adjusted Fan Power Index and enter on row 7	07	ADJUSTED FAN POWER INDEX (Line 3 x Line 6)[1]	*1.187*	W/CFM

1. TOTAL FAN SYSTEM POWER INDEX or ADJUSTED FAN POWER INDEX must not exceed 0.8 W/cfm for Constant Volume systems or 1.25 W/cfm for VAV systems.

STATE OF CALIFORNIA
FAN POWER CONSUMPTION
CEC-NRCC-MCH-07-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-07-E
Power Consumption of Fans Requirements	(Page 1 of 2)
Project Name: *VCCCD HVAC Replacement Project*	Date Prepared: *4/16/2019*

A. Constant Volume Fan Systems

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp of Constant Volume Fan Systems when using the Prescriptive Approach. See Power Consumption of fans §140.4(c).

01	02	03		04	05
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS A02 x A04 x 746 / (A03a x A03b)
AHU-2 - Supply Fan	*26.780*	*93.6 %*	*99.0 %*	*1.0*	*21,559*
Return Fan	*7.240*	*91.7 %*	*99.0 %*	*1.0*	*5,949*

B. Variable Air Volume Fan Systems

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp of Variable Air Volume (VAV) Systems when using the Prescriptive Approach. See Power Consumption of fans §140.4(c).

01	02	03		04	05
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS B02 x B04 x 746 / (B03a x B03b)

C. Totals and Adjustments

FILTER PRESSURE ADJUSTMENT Equation 140.4-A in §140.4(c) of the Building Energy Efficiency Standards.	01	TOTAL FAN SYSTEM POWER (WATTS, SUM COLUMN F)	*27,509*	W
	02	SUPPLY DESIGN AIRFLOW	*22,000*	CFM
A) If filter pressure drop (SP_a) is greater than 1 inch W. C. or 245 Pascal then enter SP_a on line 4. Enter Total Fan pressure drop across the fan (SP_f) on line 5.	03	TOTAL FAN SYSTEM POWER INDEX (Row 1 / Row 2)[1]	*1.250*	W/CFM
	04	SP_a		in W.C or Pa
	05	SP_f		in W.C or Pa
B) Calculate Fan Adjustment and enter on line 6.	06	Fan Adjustment = 1-(SP_a – 1)/SP_f		
C) Calculate Adjusted Fan Power Index and enter on row 7	07	ADJUSTED FAN POWER INDEX (Line 3 x Line 6)[1]	*1.250*	W/CFM

1. TOTAL FAN SYSTEM POWER INDEX or ADJUSTED FAN POWER INDEX must not exceed 0.8 W/cfm for Constant Volume systems or 1.25 W/cfm for VAV systems.

STATE OF CALIFORNIA
FAN POWER CONSUMPTION
CEC-NRCC-MCH-07-E (Revised MM/YY) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-07-E
Power Consumption of Fans Requirements	(Page 2 of 2)
Project Name: VCCCD HVAC Replacement Project	Date Prepared: 4/16/2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Tony Perez	Documentation Author Signature:	
Company:	AE Group Mechanical Engineers, Inc.	Signature Date:	4/16/2019
Address:	838 E. Front St.	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	Ventura, Ca 93001	Phone:	(805) 653-1722

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name:	Hugh McTernan	Responsible Designer Signature:	
Company :	AE Group Mechanical Engineers, Inc.	Date Signed:	4/16/2019
Address:	838 E. Front St.	License:	M030626
City/State/Zip:	Ventura, Ca 93001	Phone:	805-653-1722

REVISIONS:	DATE:

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Mechanical Engineers, Inc.
838 East Front Street
Ventura, California 93001
(805) 653-1722 FAX: (805) 653-7260
email: hugh@aegroupme.com

REGISTERED PROFESSIONAL ENGINEER HUGH A. MCTERNAN M030626 Rnn: 6/30/20 MECHANICAL STATE OF CALIFORNIA

Ventura County Community College District
761 DAILY DRIVE
CAMARILLO, CALIFORNIA

SHEET TITLE:
ENERGY FORMS

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