HVAC IMPROVEMENTS
AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT

200 SOUTH L ST, MADERA, CA 93637

DSA FILE NO: 20-H3

PTN: 65243-159

DSA APP. NO. 02-122084

GENERAL

PROJECT ADDRESS:
200 SOUTH L ST, MADERA, CA 93637

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF THE REMOVAL AND REPLACEMENT OF (2) BOILERS AT THE POOL EQUIPMENT BLDG., (2) FURNACES AND 2 BLOWERS AT THE WRESTLING ROOM MEZZANINE, (7) UNIT HEATERS AT THE INDUSTRIAL ARTS BLDG., (2) MAKEUP AIR UNITS AND (1) PACKAGED COOLING/HEATING UNIT AT THE FIELD HOUSE, AND THE ADDITION OF (4) MAKEUP AIR UNITS, (4) EXHAUST FANS AT THE JOE FLORES GYM AND THE ADDITION OF (1) MAKEUP AIR UNIT AT THE OLIVE GYM. RELATED SCOPE INCLUDES EQUIPMENT INSTALLATION, DUCTWORK, GAS PIPING, ELECTRICAL PANELS, ELECTRICAL POWER, AND STRUCTURAL UPGRADES.

ENFORCING AGENCY

DIVISION OF THE STATE ARCHITECT / OFFICE OF REGULATION SERVICES (DSA / ORS), SACRAMENTO OFFICE
AMERICAN WITH DISABILITIES ACT AND THE CALIFORNIA TITLE 24 ACCESSIBILITY GUIDELINES

FLOOD ZONE INFORMATION

FLOOD ZONE DESIGNATION: ZONE X
AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE OF FLOOD. FLOOD INSURANCE RATE MAP (FIRM) PANEL DESIGNATION: 06029C1817E EFFECTIVE DATE OF (FIRM): SEPTEMBER 26, 2008 BASE FLOOD ELEVATION (BFE): NOT REQUIRED APPLICABLE COMMUNITY ORDINANCE SECTION: NOT REQUIRED

DEFERRED SUBMITTALS

NONE.

GOVERNING CODES

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR
2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 CCR
2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
2022 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 CCR
2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 CCR
2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR
TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
NFPA 13-22 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (AS AMENDED)
NFPA 24-19 INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES (AS AMENDED)
NFPA 25-13CA (CALIFORNIA NFPA 25 EDITION) INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS
NFPA 72-22 NATIONAL FIRE ALARM AND SIGNALING CODE (AS AMENDED)

FOR A LIST OF APPLICABLE STANDARDS, INCLUDING CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS, REFER TO CBC CHAPTER 35 AND CFC CHAPTER 80.

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.

ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER/ARCHITECT OF RECORD OR THE OWNER'S AGENT.

A LISTING OF CERTIFIED ATT CAN BE FOUND AT:
HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE.
THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR) AND A COPY TITLE 24 C.C.R. PARTS 1 TO 5 SHALL BE KEPT ON THE JOB SITE AT ALL TIMES.
2. CHANGES TO THE STRUCTURAL, ACCESSIBILITY OR FIRE AND LIFE-SAFETY PORTIONS OF THE PLANS AND SPECIFICATIONS AFTER DSA APPROVAL SHALL BE MADE BY A CONSTRUCTION CHANGE DOCUMENT (CCD) AS REQUIRED IN SECTION 4-338, PART I, CAC, AND SHALL BE SUBMITTED TO, AND APPROVED BY DSA PRIOR TO COMMENCEMENT OF THE WORK. CONSTRUCTION CHANGE DOCUMENTS SHALL BE PREPARED AND SUBMITTED TO DSA IN COMPLIANCE WITH DSA INTERPRETATION OF REGULATION IR A-6.
3. ALL TESTS TO CONFORM TO THE REQUIREMENTS OF TITLE 24 SECTION 4-335, PART 1, AND APPROVED T & I SHEET.
4. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH TITLE 24 SECTION 4-335, PART I, AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RETEST MAY BE BACK CHARGED TO THE CONTRACTOR.
5. DSA SHALL BE NOTIFIED AT THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF THE CONCRETE PER TITLE 24 SECTION 4-331, PART I.
6. A "DSA CERTIFIED" PROJECT INSPECTOR CLASS 3 EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK.THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24 CCR.
7. SUPERVISION OF CONSTRUCTION BY DSA SHALL BE IN ACCORDANCE WITH TITLE 24 SECTION 4-334, PART 1.
8. CONTRACTOR, INSPECTOR, ARCHITECT, AND ENGINEERS SHALL SUBMIT VERIFIED REPORTS (FORM SSS-6) IN ACCORDANCE WITH TITLE 24 SECTION 4-336, PART I.
9. THE ARCHITECT AND THE STRUCTURAL ENGINEER SHALL PERFORM THEIR DUTIES IN ACCORDANCE WITH TITLE 24 SECTION 4-333(a) AND 4-341, PART I.
10. THE CONTRACTOR SHALL PERFORM HIS DUTIES IN ACCORDANCE WITH TITLE 24 SECTION 4-343, PART I.
11. SUBSTITUTIONS AND REQUESTS FOR INFORMATION AFFECTING STRUCTURAL SAFETY, FIRE AND LIFE SAFETY OR ACCESS COMPLIANCE SHALL BE APPROVED BY DSA PRIOR TO FABRICATION OR USE.
12. ADDENDA MUST BE SIGNED BY ARCHITECT AND APPROVED BY DSA.
13. NO CHANGES OR REVISIONS SHALL BE MADE FOLLOWING WRITTEN APPROVAL WHICH AFFECTS ACCESS COMPLIANCE ITEMS UNLESS SUCH CHANGES OR REVISIONS ARE SUBMITTED TO THE DSA FOR APPROVAL.
14. SUBSTITUTIONS AFFECTING DSA REGULATED ITEMS SHALL BE SUBMITTED AS A CONSTRUCTION CHANGE DOCUMENT OR ADDENDA, AND SHALL BE APPROVED BY DSA PRIOR TO FABRICATION AND INSTALLATION PER DSA IR A-6 AND SECTION 338(C) PART 1, TITLE 24 CCR.
15. CONSTRUCTION CHANGE DOCUMENTS MUST BE SIGNED BY THE FOLLOWING: • ARCHITECT OR ENGINEER OF RECORD • STRUCTURAL ENGINEER (WHEN APPLICABLE) • DELEGATED PROFESSIONAL ENGINEER.
16. MATERIALS AND THEIR INSTALLATION SHALL COMPLY WITH APPLICABLE CODES, STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
17. THESE PLANS AND SPECIFICATIONS WILL COMPLY WITH CFC CHAPTER 33-FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION. CONTRACTOR SHALL COMPLY W/ CFC CH. 33 - FIRE SAFETY DURING DEMOLITION & CONSTRUCTION.
18. DSA IS NOT SUBJECT TO ARBITRATION.
19. THIS PROJECT IS A HVAC ONLY PROJECT AND IS EXEMPT FROM ACCESSIBILITY UPGRADES UNDER 11B-202.4 EXCEPTION 7.
20. PAINT ALL NEW WORK IN ACCORDANCE WITH PAINT SPECIFICATIONS.
21. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
22. 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, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR).

GENERAL

MECHANICAL

ARCHITECTURAL

STRUCTURAL

ELECTRICAL

FIRE ALARM

NUMBER OF SHEETS = 34

SHEET INDEX

PROJECT DIRECTORY

OWNER
MADERA UNIFIED SCHOOL DISTRICT

1902 HOWARD RD,
MADERA, CA 93637
(559) 675-4548

CONTACT: ROSALIND COX
EMAIL: ROSALINDCOX@MADERAUSD.ORG

MECHANICAL ENGINEER
NET POSITIVE CONSULTING ENGINEERS

5 RIVER PARK PLACE EAST, SUITE 303
FRESNO CA, 93720
(559) 940-7293

CONTACT: JONATHAN SCHLUNDT, PE
EMAIL: JSCHLUNDT@NPCENG.COM
LICENSE #: M35955

ARCHITECT
TETER, INC.

7535 N. PALM, SUITE 201
FRESNO, CA 93711
(559) 437-0887

CONTACT: AYA SHITANISHI
EMAIL: AYA.SHITANISHI@TETERAE.COM
LICENSE #: C34089

ELECTRICAL ENGINEER
REFIK ELECTRICAL ENGINEERS

1500 SHAW AVE.
CLOVIS, CA, 93611
(559) 242-6477

CONTACT: STEFFAN KIFER, PE
EMAIL: STEFFANKIFER@REFIKENGINEERING.COM
LICENSE #: E23239

STRUCTURAL ENGINEER
PROVOST & PRITCHARD CONSULTING GROUP

286 W. CROMWELL AVE.,
FRESNO, CA 93711
(559) 449-2700

CONTACT: ROBBY GOTTSELIG, SE
EMAIL: RGOTTSELIG@PPENG.COM
LICENSE #: S6790

DRAWN BY: MI REVIEW BY:

ARCHITECT'S STATEMENT

STATEMENT OF GENERAL CONFORMANCE
FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS.

APPLICATION NO.: 02-122084 FILE NO.:20-H3

THE DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1. DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341, AND 4-344" OF TITLE 24, PART I.

I CERTIFY THAT:

☒ ALL DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX
☐ THIS DRAWING OR PAGE

IS/ARE IN GENERAL CONFORMANCE AND HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS.

ARCHITECT'S SIGNATURE 05/13/2024
AYA SHITANISHI
ARCHITECT OF RECORD
TETER, INC.

C34089 1.31.2025
LICENSE NUMBER EXPIRATION DATE

VICINITY MAP

NORTH

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122084 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 07/03/2024

NET POSITIVE
consulting engineers
www.NPCeng.com
559.940.7293

REGISTERED PROFESSIONAL ENGINEER
No. C34089
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS:

Symbol	Description

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Symbol	Description

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Symbol	Description

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PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
COVER SHEET

SHEET NO:
G001

TETER, INC.
FRESNO HEADQUARTERS
VISALIA | BAKERSFIELD | MODESTO | SAN LUIS OBISPO
ARCHITECTS ENGINEERS CONNECTED

ANCHORAGE & BRACING NOTES

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☒ MD ☒ PP ☒ E ☐ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP ☐ MD ☐ PP ☐ E ☐ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE HCAI (OSHPD) PRE-APPROVAL (OPM #) #0043-13, AS INCLUDED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS.

PLUMBING GENERAL NOTES

1. COORDINATION OF WORK: LAYOUT OF MATERIALS, EQUIPMENT AND SYSTEMS IS GENERALLY DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED. SOME WORK MAY BE SHOWN OFFSET FOR CLARITY.
2. THE ACTUAL LOCATION OF ALL MATERIALS, PIPING, DUCTWORK, FIXTURES, EQUIPMENT, SUPPORTS, ETC. SHALL BE CAREFULLY PLANNED, PRIOR TO INSTALLATION OF ANY WORK TO AVOID ALL INTERFERENCES WITH EACH OTHER, OR WITH STRUCTURAL, ELECTRICAL, ARCHITECTURAL OR OTHER ELEMENTS.
3. VERIFY THE PROPER VOLTAGE AND PHASE OF ALL EQUIPMENT WITH THE ELECTRICAL PLANS. ALL CONFLICTS SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT AND THE ENGINEER PRIOR TO THE INSTALLATION OF ANY WORK OR THE ORDERING OF ANY EQUIPMENT.
4. ALL DRAWINGS AND SPECIFICATIONS ARE TO BE CONSIDERED PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS PRIOR TO ANY CONSTRUCTION, INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENT SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR THE OWNER REPRESENTATIVE.
5. EXISTING PIPING IS SHOWN IN THEIR APPROXIMATE LOCATIONS ONLY. INFORMATION OF (E) UTILITIES IS BASED UPON EXISTING PLUMBING DRAWINGS AND OWNER'S BEST KNOWLEDGE. EXISTING INFORMATION SHOWN MAY NOT BE TAKEN AS COMPREHENSIVE, AND NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE EXISTING INFORMATION SHOWN.
6. MINIMUM SLOPE FOR SEWER IS 1/4" PER FT, UNLESS OTHERWISE NOTED.
7. ALL ROOF PENETRATIONS SHALL BE COMPATIBLE WITH ROOF SYSTEM WITH AS FEW PENETRATIONS AS POSSIBLE.
8. MINIMUM DOMESTIC WATER PIPE SIZE TO BE 3/4". USE A REDUCING ELL AT FIXTURE, IF NECESSARY.
9. CONTRACTOR TO VERIFY EXACT LOCATION AND DEPTH OF POINTS OF CONNECTION TO SITE UTILITIES.
10. ALL PLUMBING FIXTURES, VALVES, FAUCETS, FIXTURE STOPS, ETC. WHICH PROVIDE WATER FOR HUMAN CONSUMPTION MUST MEET THE "LEAD FREE" REQUIREMENT FOR THE STATE OF CALIFORNIA.
11. MAXIMUM ALLOWABLE DISTANCE FOR HOT WATER LATERALS TO FIXTURES OFF OF THE CIRCULATING MAIN SHALL BE 10'-0" FOR HAND WASH SINKS AND LAVS, AND 15'-0" FOR OTHER SINKS.
12. LEAN CONCRETE SHALL BE USED AS BACK FILL WHERE UTILITY TRENCHES EXTEND FROM THE EXTERIOR TO THE INTERIOR LIMITS OF THE BUILDING. LEAN CONCRETE SHALL EXTEND A MINIMUM DISTANCE OF TWO (2) FEET LATERALLY ON EACH SIDE OF THE EXTERIOR BUILDING LINE AND A MINIMUM OF SIX (6) INCHES ABOVE FOOTING PENETRATION.

MECHANICAL GENERAL NOTES

1. COORDINATION OF WORK: LAYOUT OF MATERIALS, EQUIPMENT AND SYSTEMS IS GENERALLY DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED. SOME WORK MAY BE SHOWN OFFSET FOR CLARITY.
2. THE ACTUAL LOCATION OF ALL MATERIALS, PIPING, DUCTWORK, FIXTURES, EQUIPMENT, SUPPORTS, ETC. SHALL BE CAREFULLY PLANNED, PRIOR TO INSTALLATION OF ANY WORK TO AVOID ALL INTERFERENCES WITH EACH OTHER, OR WITH STRUCTURAL, ELECTRICAL, ARCHITECTURAL OR OTHER ELEMENTS.
3. VERIFY THE PROPER VOLTAGE AND PHASE OF ALL EQUIPMENT WITH THE ELECTRICAL PLANS. ALL CONFLICTS SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT AND THE ENGINEER PRIOR TO THE INSTALLATION OF ANY WORK OR THE ORDERING OF ANY EQUIPMENT.
4. PROVIDE ALL DUCT TRANSITION PIECES AND FITTINGS REQUIRED TO ACCOMMODATE MECHANICAL EQUIPMENT CONNECTIONS, STRUCTURE, ARCHITECTURAL ELEMENTS, AND CHANGES IN DUCT SIZES.
5. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED AND TESTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY SMACNA AND CHAPTER 6 OF THE 2022 CMC.
6. ALL DUCTWORK AND PIPING SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF 2022 CMC. INSULATION MATERIALS SHALL MEET THE CALIFORNIA QUALITY STANDARD PER SECTION 110.8, 120.3, AND 120.4 OF THE 2022 CALIFORNIA ENERGY CODE.
7. ALL DUCT SIZES SHOWN ARE NET INSIDE DIMENSIONS.
8. DUCTWORK SHALL BE SHEET METAL CONSTRUCTED IN COMPLETE CONFORMANCE WITH CMC LATEST EDITION, CHAPTER 6 AND THE LATEST SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
9. ALL DRAWINGS AND SPECIFICATIONS ARE TO BE CONSIDERED PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS PRIOR TO ANY CONSTRUCTION, INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENT SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR THE OWNER REPRESENTATIVE.
10. PROVIDE VOLUME DAMPERS IN ALL BRANCH DUCTS (SUPPLY, RETURN, OSA AND EXHAUST) FOR SYSTEM BALANCING.
11. HANDLE, STORE AND INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS AND AS DIRECTED IN THE PROJECT MANUAL.
12. ALL AIR SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED TO MEET THE REQUIRED FLOW. TAB METHODOLOGY SHALL BE SUBMITTED TO OWNER REPRESENTATIVE PRIOR TO IMPLEMENTATION AND IN ACCORDANCE WITH PROJECT SEQUENCING.

MECHANICAL / PLUMBING LEGEND

SYMBOL	ITEM	ABBR.
	ABOVE	ABV
	ABOVE CEILING	ABV CLG
	ABOVE FINISHED FLOOR	AFF
	ALTERNATE	ALT
	AIR CONDITIONING	AC
	AIR FLOW STATION	AFS
	AIR HANDLER UNIT	AHU
	ANALOG INPUT	AI
	ANALOG OUTPUT	AO
¢	AND	
	ARCHITECT / ARCHITECTURAL	ARCH
@	AT	
	BACKDRAFT DAMPER	BDD
	BELOW FINISH CEILING	BFC
	BELOW FLOOR	BEL FLR
	BELOW GRADE	BEL GR
	BLIND FLANGE	BLF
	BRITISH THERMAL UNIT	BTU
	BRITISH THERMAL UNIT PER HOUR	BTUH
	CALIFORNIA MECHANICAL CODE	CMC
	CALIFORNIA PLUMBING CODE	CPC
	CEILING	CLG
℄	CENTER LINE	
	CONTINUATION	CONT
	CUBIC FEET OF AIR PER MINUTE	CFM
	CURRENT SENSOR	CS
Ø	DIAMETER	DIA
	DIFFERENTIAL PRESSURE SWITCH	DPS
	DIGITAL INPUT	DI
	DIGITAL OUTPUT	DO
	DOWN	DN
	DRAWING	DWG
	ELECTRICAL	ELEC
	ELBOW	ELL
	EXHAUST	EXH
	EXHAUST AIR	EA
	EXHAUST FAN	EF
	EXISTING	(E)
	FEET	FT
	FLOOR	FLR
	FLOW LINE	FL
	FLOW SWITCH	FS
	GAUGE	GA
	GALLON	GAL
	GALLONS PER HOUR	GPH
	GALLONS PER MINUTE	GPM
	INSIDE DIAMETER	ID
	MAKE-UP AIR UNIT	MAU
	MAXIMUM	MAX
	MINIMUM	MIN
	NEW	(N)
	NOT IN CONTRACT	NIC
	NOT TO SCALE	NTS
#	NUMBER	NO.
	OUTSIDE AIR	OSA
	OUTSIDE DIAMETER	OD
	POUNDS	LBS
	POUNDS PER SQUARE INCH	PSI
	POUNDS PER SQUARE INCH ABSOLUTE	PSIA
	POUNDS PER SQUARE INCH GAUGE	PSIG
	POLYVINYL CHLORIDE	PVC
	PRESSURE STATION	PS
	RETURN AIR	RA
	ROOM	RM
	SUPPLY AIR	SA
	SPECIFICATION	SPEC
	SQUARE FEET	SQ FT
	STAINLESS STEEL	SS
	TEMPERATURE	TEMP
	TEMPERATURE SENSOR	TS
	THROUGH	THRU
	TYPICAL	(TYP)
	VARIABLE REFRIGERANT FLOW	VRF
	VARIABLE AIR VOLUME UNIT	VAV
	WITH	W/
	WITHOUT	W/O
—A—	COMPRESSED AIR	A
—CHWS—	CHILLED WATER SUPPLY	CHWS
—CHWR—	CHILLED WATER RETURN	CHWR
—CWS—	CONDENSER WATER SUPPLY	CWS
—CWR—	CONDENSER WATER RETURN	CWR
—CW—	DOMESTIC COLD WATER	
—HWS—	HOT WATER SUPPLY	HWS
—HWR—	HOT WATER RETURN	HWR
—RD—	REFRIGERANT DISCHARGE	RD
—RL—	REFRIGERANT LIQUID	RL
—RS—	REFRIGERANT SUCTION	RS
—S—	STEAM SUPPLY	S
—CR—	STEAM CONDENSATE RETURN	CR
—CD—	CONDENSATE DRAIN	CD
—G—	LOW PRESSURE NATURAL GAS	G

SYMBOL	ITEM	ABBR.
	PIPING CAP	
	EXISTING (DESIGNATED)	(E)
	REMOVE / DEMO EXISTING (DESIGNATED)	
	DIRECTION OF FLOW	
	SUPPLY AIR	SA
	RETURN AIR	RA
	EXHAUST AIR	EA
	PIPE/DUCT TURN DOWN	
	PIPE/DUCT TURN UP	
	ROUND DUCT (SMALLER THAN 10"Ø)	
	ROUND FLEXIBLE DUCT	
	RECTANGULAR OR ROUND DUCT (SIZE PER PLAN)	
	EXISTING DUCT (DESIGNATED)	
	REMOVE/ DEMO EXISTING DUCT (DESIGNATED)	
	DUCT WITH ACOUSTIC LINING	
	SUPPLY AIR DUCT DROP	
	SUPPLY AIR DUCT RISE	
	RETURN AIR DUCT DROP	
	RETURN AIR DUCT RISE	
	EXHAUST AIR DUCT DROP	
	EXHAUST AIR DUCT RISE	
	OUTSIDE AIR DUCT DROP	
	OUTSIDE AIR DUCT RISE	
	TURNING VANES	TV
	EXTRACTOR	
CO	CO_2 SENSOR	
DD	DUCT DETECTOR	DD
HD	HEAT DETECTOR	HD
SD	SMOKE DETECTOR	SD
M	MOTORIZED DAMPER	
◆	FIRE DAMPER W/MOTORIZED RESET AND ACCESS DOOR	
-OR- ■	FIRE/SMOKE DAMPER WITH ACCESS PANEL	FSD
	VOLUME CONTROL DAMPER WITH LOCKING QUADRANT	VCD
T	REMOTE T'STAT WITH SENSOR IN DUCT	
T AC-1	THERMOSTAT; THERMOSTAT LABEL EXAMPLE : THERMOSTAT FOR AC-1	T'STAT
	POINT OF CONNECTION TO EXISTING	POC
	BYPASS TIMER	BPT
	THERMOMETER	
	PRESSURE GAGE	
	SECURITY BARS	
	PETE'S PLUG	
	BALANCING COCK	
	BALL VALVE	
	BUTTERFLY VALVE	
	CHECK VALVE	
	CONCENTRIC REDUCER	
	TWO-WAY CONTROL VALVE	
	FLOW SWITCH	FS
	FLEXIBLE CONNECTION	FLEX
	GATE VALVE	
	GLOBE VALVE	
	INSTRUMENT WELL	
	PLUG VALVE	
	PRESSURE RELIEF VALVE	PRV
	"Y" TYPE STRAINER	
	UNION	
1	KEYNOTE	
A 8"x8" 100 CFM	NEW GRILLE TAG EXAMPLE: GRILLE MARK A NECK SIZE: 8"x8" / AIRFLOW: 100 CFM	
EF 8	NEW EQUIPMENT TAG EXAMPLE: DESCRIPTION EF, MARK NUMBER 8	
2 M202	DETAIL REFERENCE EXAMPLE: DETAIL 2, SHEET M202	
3 M400	SECTION REFERENCE EXAMPLE: SECTION 3, SHEET M400	

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JONATHAN C. SCHLUETER
M35955
Exp. 06-30-26
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STATE OF CALIFORNIA

REVISIONS:

Symbol	Description
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PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
MECHANICAL LEGEND & NOTES
SHEET NO:
M001

DRAWN BY: MI
REVIEW BY:

MECHANICAL / PLUMBING SCHEDULES

MAKE-UP AIR UNIT SCHEDULE

DESIGNATION		MUA-1	MUA-2	MUA-3	MUA-4	MUA-5	MUA-6
BLOWER	SUPPLY AIR (CFM)	13,250	13,250	13,250	13,250	3,855	3,855
	TOTAL SP (IN WC)	3.2	3.2	3.2	3.2	1.0	1.0
	HP/BRAKE HP	15 / 11.41	15 / 11.41	15 / 11.41	15 / 11.41	1.5 / 1.13	1.5 / 1.13
	VOLTS/PHASE	460/3	460/3	460/3	460/3	208 / 3	208 / 3
	MCA/MOCP	28.1/45	28.1/45	28.1/45	28.1/45	10.2/15	10.2/15
	R.P.M.	1725	1725	1725	1725	1725	1725
	ISOLATOR DEFLEC (IN)	-	-	-	-	-	-
EVAPORATIVE	MEDIA DEPTH	12"	12"	12"	12"	12"	12"
	TYPE	CELDEK	CELDEK	CELDEK	CELDEK	CELDEK	CELDEK
	EADB/EAWB (OF)	103.6 / 73.7	103.6 / 73.7	103.6 / 73.7	103.6 / 73.7	103.7 / 73.7	103.7 / 73.7
	LADB/LAWB (OF)	77.0 / 73.7	77.0 / 73.7	77.0 / 73.7	77.0 / 73.7	76.7 / 73.7	76.7 / 73.7
HEATING	INPUT (MBH)	800.0	800.0	800.0	800.0	300.0	300.0
	OUTPUT (MBH)	648.0	648.0	648.0	648.0	243.0	243.0
	FUEL	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS
	AFUE (%)	81.0	81.0	81.0	81.0	81.0	81.0
FILTERS	QUANTITY/SIZE	10 / 20x25x2	10 / 20x25x2	10 / 20x25x2	10 / 20x25x2	6 / 20x20x2	6 / 20x20x2
	EFFICIENCY (%)	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13
	TYPE	SUPPLY	SUPPLY	SUPPLY	SUPPLY	SUPPLY	SUPPLY
	FINAL PD (IN WC)	-	-	-	-	-	-
MANUFACTURER		GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK
TYPE		DIR. EVAP. & IND. GAS	DIR. EVAP. & IND. GAS	DIR. EVAP. & IND. GAS	DIR. EVAP. & IND. GAS	DIR. EVAP. & IND. GAS	DIR. EVAP. & IND. GAS
MODEL NUMBER		IGX-P127-H32-MF3-Q	IGX-P127-H32-MF3-Q	IGX-P127-H32-MF3-Q	IGX-P127-H32-MF3-Q	IGX-P116-H22-MF-J	IGX-P116-H22-MF-J
CONTROL		-	-	-	-	-	-
LOCATION		JOE FLORES GYM	JOE FLORES GYM	JOE FLORES GYM	JOE FLORES GYM	FIELD HOUSE	FIELD HOUSE
EXISTING WT. (LBS)		1006	1006	1006	1006	915	915
OPER. WT. (LBS)		2661	2661	2661	2661	1579	1579
MOUNTING DETAIL		3/M800	3/M800	3/M800	3/M800	3/M800	3/M800
ACCESSORIES		1, 2	1, 2	1, 2	1, 2	1, 2	1, 2

1. MANUFACTURER'S ROOF CURB
2. SUPPLY DUCT SMOKE DETECTOR FOR UNIT SHUTDOWN PER 2022 CMC 609.0

EXHAUST FAN SCHEDULE

DESIGNATION	EF-1	EF-2	EF-3	EF-4	EF-4.1	EF-4.2	EF-5
CFM	13250	13250	13250	13250	880	880	5830
EXT. SP (IN. WC)	1.00	1.00	1.00	1.00	0.67	0.67	0.50
HP/ BHP	5.0 / 4.93	5.0 / 4.93	5.0 / 4.93	5.0 / 4.93	.33 / .17	.33 / .17	3 / 2.3
VOLTS/ PHASE	208 / 3	208 / 3	208 / 3	208 / 3	115 / 1	115 / 1	460 / 3
RPM	488	488	488	488	1525	1525	1513
TIP SPEED/ SONES	- /18.9	- /18.9	- /18.9	- /18.9	- / 12.2	- / 12.2	- / 28
DRIVE	BELT	BELT	BELT	BELT	DIRECT	DIRECT	DIRECT
MOUNTING	ROOF	ROOF	ROOF	ROOF	MEZZANINE	MEZZANINE	MEZZANINE
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK	GREENHECK
TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
MODEL NUMBER	GB-420-VG	GB-420-VG	GB-420-VG	GB-420-VG	USF-12-B7	USF-12-B7	USF-18-B7
CONTROL	4	4	4	4	4	4	4
LOCATION	JOE FLORES GYM	JOE FLORES GYM	JOE FLORES GYM	JOE FLORES GYM	FIELD HOUSE	FIELD HOUSE	FIELD HOUSE
OPER. WT. (LBS)	319	319	319	319	185	185	363
EXISTING OPER. WT. (LBS)	-	-	-	-	115	115	405
MOUNTING DETAIL	5/M800	5/M800	5/M800	5/M800	2/M800	2/M800	2/M800
ACCESSORIES	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1	1	1

1. PROVIDE BACKDRAFT DAMPER, ROUND DUCT CONNECTOR, AND SPEED CONTROLLER.
2. PROVIDE BIRD SCREEN.
3. PROVIDE WITH ROOF CURB.
4. INTERLOCK WITH MUA SUPPLY AIR FAN.

UNIT HEATER SCHEDULE

DESIGNATION		UH-1	UH-2	UH-3	UH-4	UH-5	UH-6	UH-7
BLOWER	SUPPLY AIR (CFM)	1537	1537	1537	1537	1921	1921	1921
	EXT. S P (IN. WC)	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	HP/AMPS	0.05 / 5.6	0.05 / 5.6	0.05 / 5.6	0.05 / 5.6	1/6 / 3.8	1/6 / 3.8	1/6 / 3.8
	VOLTS/PHASE	115 / 1	115 / 1	115 / 1	115 / 1	115 / 1	115 / 1	115 / 1
	THROW (FT)	-	-	-	-	-	-	-
HEATING	INPUT (MBH)	120.0	120.0	120.0	120.0	150.0	150.0	150.0
	OUTPUT (MBH)	99.6	99.6	99.6	99.6	124.5	124.5	124.5
	FUEL	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS
MANUFACTURER		REZNOR	REZNOR	REZNOR	REZNOR	REZNOR	REZNOR	REZNOR
TYPE		GAS-FIRED	GAS-FIRED	GAS-FIRED	GAS-FIRED	GAS-FIRED	GAS-FIRED	GAS-FIRED
MODEL NUMBER		UDZ	UDZ	UDZ	UDZ	UDX	UDX	UDX
LOCATION		INDUSTRIAL ARTS	INDUSTRIAL ARTS	INDUSTRIAL ARTS	INDUSTRIAL ARTS	INDUSTRIAL ARTS	INDUSTRIAL ARTS	INDUSTRIAL ARTS
EXISTING WT. (LBS)		135	135	135	135	210	210	210
OPER. WT (LBS)		107	107	107	107	178	178	178
MOUNTING DETAIL		7/M800	7/M800	7/M800	7/M800	7/M800	7/M800	7/M800
ACCESSORIES		1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3

1. VERTICAL COMBUSTION AIR/VENT KIT.
2. INTEGRATED VERTICAL LOUVERS.
3. THERMOSTAT WITH GUARD AND LOCKING COVER.

BOILER SCHEDULE

DESIGNATION	B-1A	B-1B
CAPACITY (MBH)	1,923	1,923
INPUT (MBH)	1,999	1,999
FUEL	NAT. GAS	NAT. GAS
NOX EMISSION (PPM)*	-	-
BLOWER HP	-	-
VOLTS/ PHASE	120/1	120/1
GPM (@ 40°F)	96	96
PD (FT.)	8.1	8.1
EWT (0F)	120	120
LWT (0F)	160	160
MANUFACTURER	LOCHINVAR	LOCHINVAR
TYPE	CONDENSING	CONDENSING
MODEL NUMBER	FB 2001	FB 2001
LOCATION	OLIVE GYM BOILER RM.	OLIVE GYM BOILER RM.
EXISTING WT. (LBS)	3500	3500
OPER. WT. (LBS)	2570	2570
MOUNTING DETAIL	1/M800, 13/M800	1/M800, 13/M800
ACCESSORIES	1, 2, 3	1, 2, 3

* CORRECTED TO 3% OXYGEN

1. CONDENSATE TRAP
2. NEUTRALIZER KIT
3. ULTRA-LOW NOx OPERATION

PACKAGE AIR CONDITIONING SCHEDULE

DESIGNATION		AC-1
VOLTS/PHASE		208 / 3
F.L.A.		-
MCA/MOCP (AMPS)		23.4
SEER/EER @ ARI		14.0 / 11.5
BLOWER	SUPPLY AIR (CFM)	1895
	EXT. S P (IN. WC)	0.80
	MIN. OSA (CFM)	-
	DCV MIN. OSA (CFM)	-
	HP	1.2
	RPM	-
	DRIVE	DIRECT
COOLING	SENSIBLE (MBH)	37.6
	TOTAL (MBH)	45.3
	EADB/EAWB (°F)	80/67
	AMBIENT AIR (°F)	105
HEATING	INPUT CAP. (MBH)	70.0
	OUTPUT CAP. (MBH)	56.0
	FUEL	NATURAL GAS
	AFUE (%)	-
FILTERS	QTY./SIZE (RETURN)	2 / 16x25x2
	TYPE	30% PLEATED
	QTY./SIZE (OUTDOOR)	1 / 20x24x1
	TYPE	CLEANABLE
	P D (IN WC)	0.1
MANUFACTURER		DAIKIN
TYPE		GAS/ELECTRIC
MODEL NUMBER		DFG0483WL00001C
LOCATION		FIELD HOUSE
EXISTING WT (LBS)		500
OPER. WT (LBS)		548
MOUNTING DETAIL		4/M800
ACCESSORIES		1

1. INTEGRATED MICROMETL ECONOMIZER, ROOF CURB, AND PROGRAMMABLE THERMOSTAT.

GRILLE SCHEDULE

MARK	DUTY	DESCRIPTION
A	DUCT RETURN	TITUS 350RL STEEL RETURN GRILLE, 3/4" BLADE SPACING, WITH O.B.D. COORDINATE COLOR WITH DISTRICT.
B	DUCT SUPPLY	TITUS MODEL 272RL (TYPE 7) WITH HORIZONTAL LOUVERS IN FRONT, 3/4" LOUVER SPACING, 1-1/4" WIDE FRAME, O.B.D., NO. 26 OFF-WHITE FINISH.

FURNACE SCHEDULE

DESIGNATION		F-1	F-2
BLOWER	SUPPLY AIR (CFM)	6,000	6,000
	EXT. SP (IN WC)	0.5	0.5
	MCA/MOCP	12/20	12/20
	FLA	9.6	9.6
	VOLTS/PHASE	230/3	230/3
HEATING	INPUT (MBH)	250.0	250.0
	OUTPUT (MBH)	202.5	202.5
	FUEL	NATURAL GAS	NATURAL GAS
	AFUE (%)	81.0	81.0
MANUFACTURER		MODINE	MODINE
TYPE		POWER VENTED	POWER VENTED
MODEL NUMBER		DFP250TMLNN24E2	DFP250TMLNN24E2
CONTROL		T'STAT	T'STAT
LOCATION		MEZZANINE	MEZZANINE
EXISTING WT. (LBS)		1200	1200
OPER. WT. (LBS)		560	560
MOUNTING DETAIL		10/M800	10/M800
ACCESSORIES		1, 2, 3, 4, 5	1, 2, 3, 4, 5

1. DIGITAL NON-PROGRAMMABLE ROOM T'STAT WITH SWITCHING.
2. 20 GAUGE ALUMINIZED STEEL CABINET.
3. STAINLESS STEEL CONDENSATE DRAIN PAN.
4. SUPPLY DUCT SMOKE DETECTOR FOR UNIT SHUTDOWN PER 2022 CMC 609.0
5. SEPARATE POWER FOR BLOWER SECTION.

BLOWER SCHEDULE

DESIGNATION	B-1	B-2
CFM	6000	6000
EXT. S P (IN. WC)	0.50	0.50
HP/ BHP	3 / 2.5	3 / 2.5
VOLTS/ PHASE	230 / 3	230 / 3
RPM	1552	1552
SONES	41	41
DRIVE	DIRECT	DIRECT
MANUFACTURER	GREENHECK	GREENHECK
TYPE	CENTRIFUGAL	CENTRIFUGAL
MODEL NUMBER	USF-18-B7	USF-18-B7
CONTROL	WALL SWITCH	WALL SWITCH
LOCATION	WR. RM. MEZZANINE	WR. RM. MEZZANINE
EXISTING WT. (LBS)	1200	1200
OPER. WT. (LBS)	365	365
MOUNTING DETAIL	25/M800	25/M800
ACCESSORIES	1	1

1. PROVIDE BACKDRAFT DAMPER AND SPEED CONTROLLER.

MAKE-UP AIR UNIT SCHEDULE - HOT WATER HEATING

DESIGNATION		MUA-7
BLOWER	SUPPLY AIR (CFM)	4,700
	EXT. SP (IN WC)	0.5
	HP/BRAKE HP	3/2
	VOLTS/PHASE	208/3
	MCA/MOCP	15.8/25
	R.P.M.	1833
	ISOLATOR DEFLEC (IN)	2"
EVAPORATIVE	MEDIA WIDTH	12"
	TYPE	CELDEK
	EADB/EAWB (OF)	105/72
	LADB/LAWB (OF)	76.9/73.7
HEATING COIL	CAPACITY (MBH)	341.4
	COIL SIZE (FT2)	-
	AIR PD (IN WC)	0.23
	GPM/PD (FT)	35.1
	EWT /EAT (OF)	200/31.5
	BRANCH SIZE	-
	VALVE TYPE	2-WAY
FILTERS	QUANTITY/SIZE	6 / 20x20x2
	EFFICIENCY (%)	-
	TYPE	MERV13
	FINAL PD (IN WC)	0.184
MANUFACTURER		GREENHECK
TYPE		DIRECT EVAP/HW COIL
MODEL NUMBER		MSX-P116-H22-MF
CONTROL		THERMOSTAT
LOCATION		OLIVE GYM MECH RM
OPER. WT. (LBS)		1955
MOUNTING DETAIL		8/M800
ACCESSORIES		1, 2

1. LOUVERED OSA INTAKE W/ 2" MESH FILTER
2. DOUBLE WALL CONSTRUCTION WITH 1" FIBERGLASS INSULATION

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Exp. 06-30-26
MECHANICAL
STATE OF CALIFORNIA

REVISIONS:

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PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S. L St, Madera, CA 93637

PROJECT NO: 1336

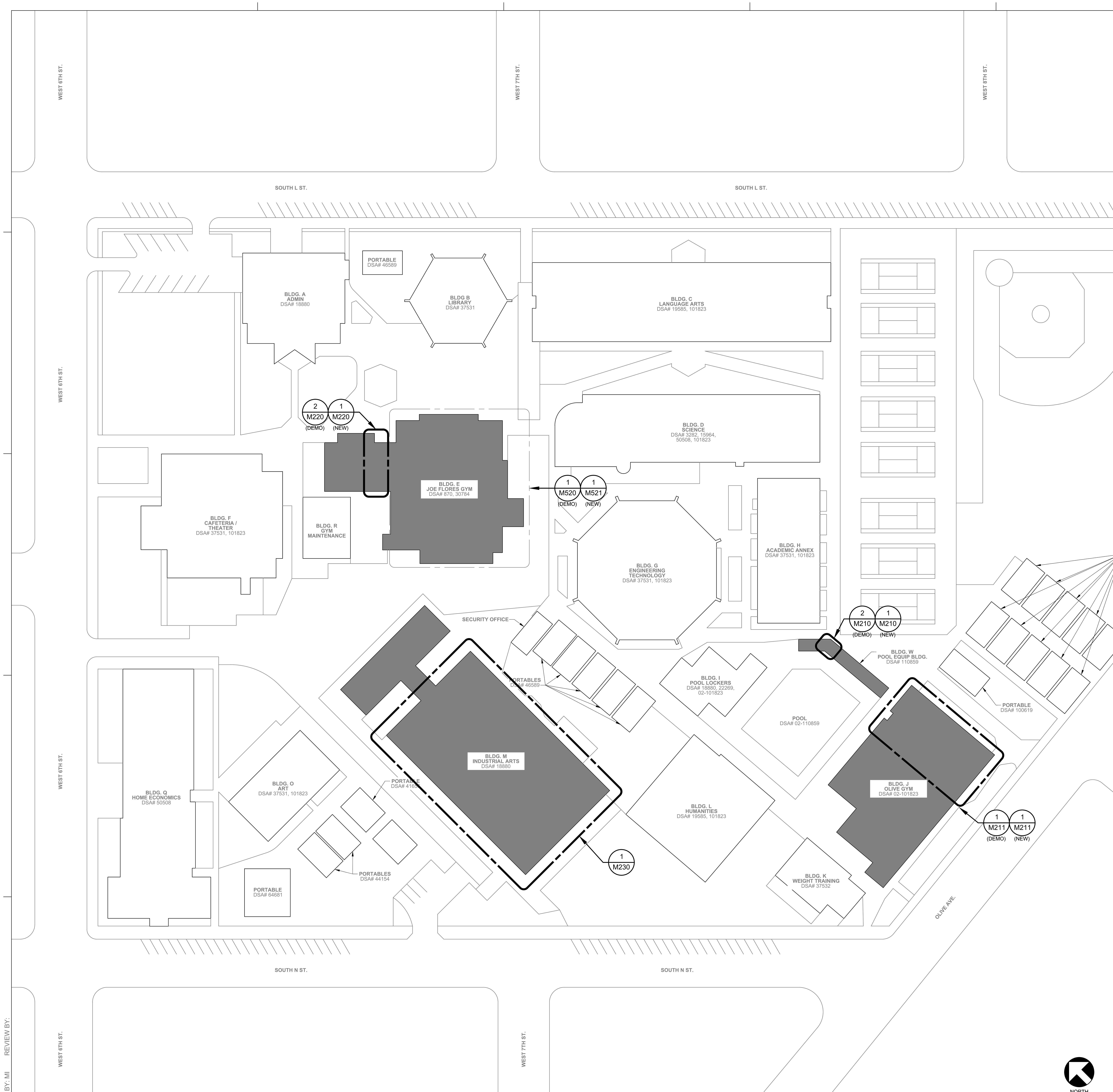
DATE: 05/13/2024
SHEET TITLE:
MECHANICAL SCHEDULES

SHEET NO:
M002

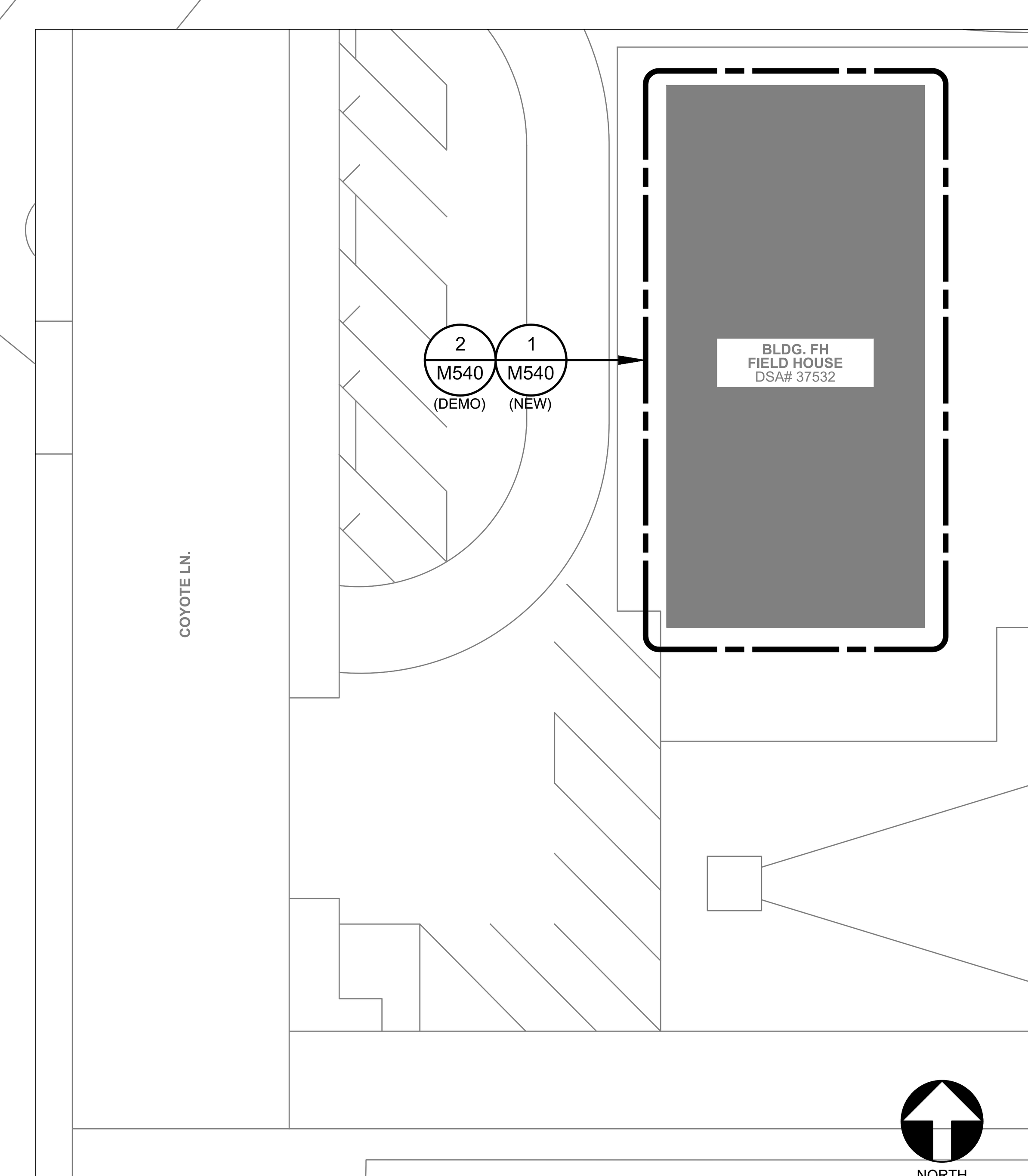
DRAWN BY: MI REVIEW BY:

LEGEND

- BUILDING NOT IN SCOPE
- BUILDING IN SCOPE



MECHANICAL / PLUMBING SITE PLAN — 1" = 40'-0" — 2



FIELD HOUSE SITE PLAN — 1" = 20'-0" — 1

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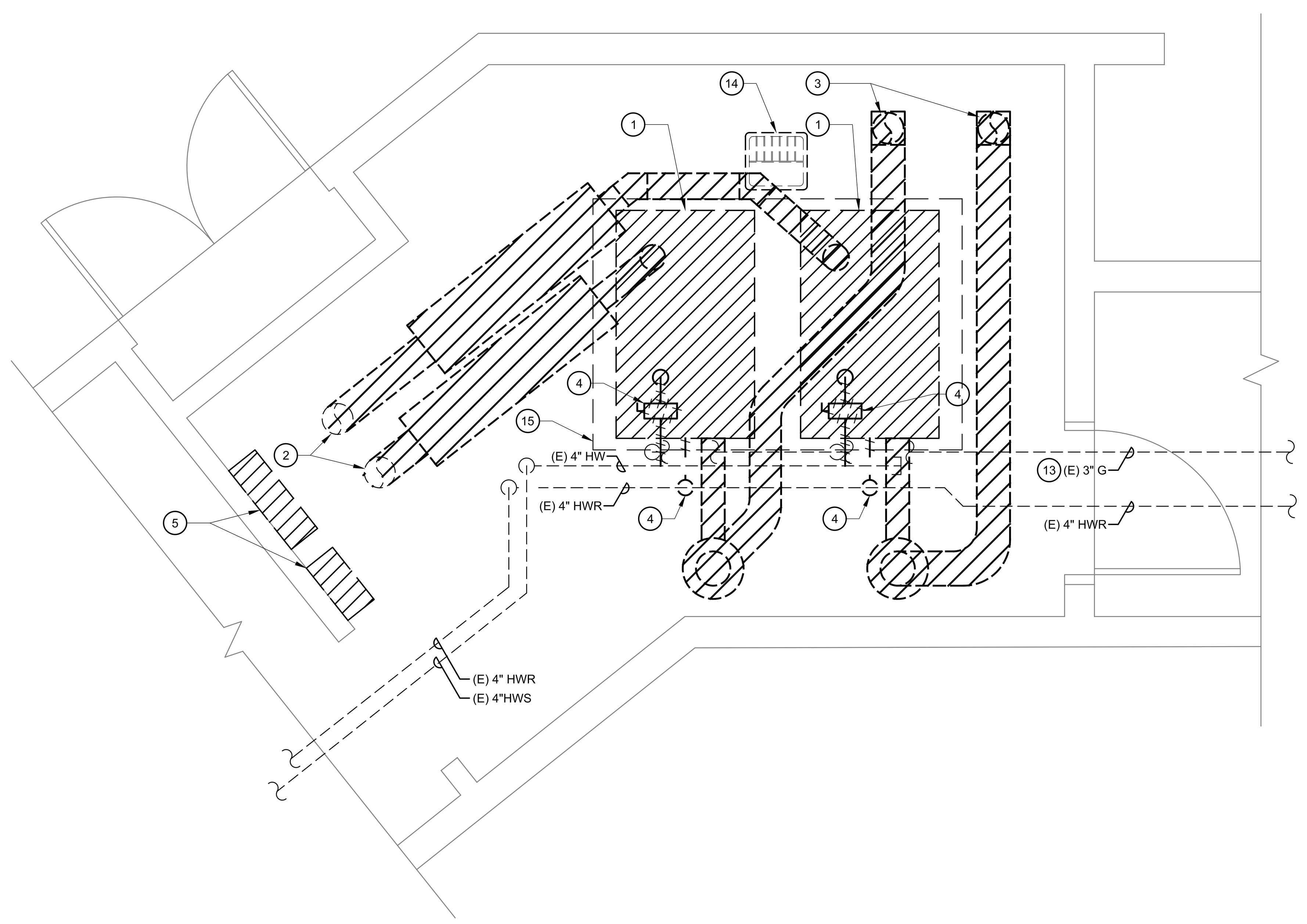
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

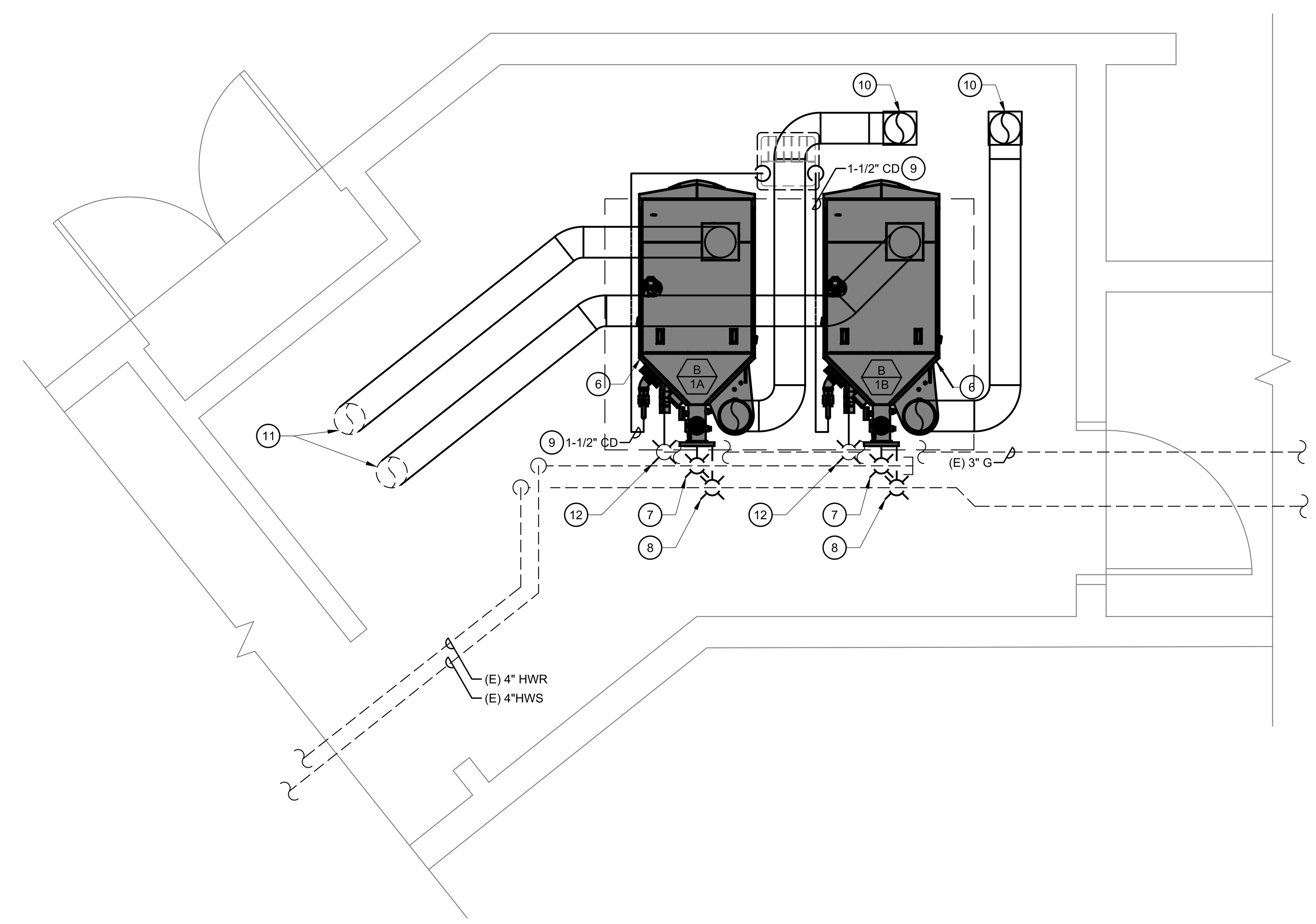
DATE: 05/13/2024
SHEET TITLE:
MECHANICAL SITE PLAN
SHEET NO:
M100

DRAWN BY: MI REVIEW BY:



NORTH

BOILER ROOM DEMO PLAN 1/2" = 1'-0" 2



NORTH

BOILER ROOM FLOOR PLAN 1/2" = 1'-0" 1

KEYNOTES (#)

1. REMOVE (E) BOILER WHERE SHOWN HATCHED. PRESERVE CONCRETE PAD FOR NEW.
2. REMOVE (E) 6"Ø OSA INTAKE WHERE SHOWN HATCHED. UPSIZE (E) PENETRATION TO 8"Ø.
3. REMOVE (E) 6"Ø FLUE WHERE SHOWN HATCHED. UPSIZE (E) PENETRATION TO 8".
4. REMOVE (E) 4"HW AND (E)4"HWR CONNECTIONS WHERE SHOWN HATCHED.
5. REMOVE (E) BOILER CONTROL PANELS AND VFD.
6. INSTALL (N) BOILER ON (E) CONCRETE PAD PER DETAIL 1/M800 AND 13/M800.
7. POC (N) 4" HW TO (E) 4" HW AND ROUTE DOWN TO (N) BOILER.
8. POC (N) 4" HWR TO (E) 4" HWR AND ROUTE DOWN TO (N) BOILER.
9. ROUTE (N) 1-1/2" BOILER CONDENSATE TO (N) NEUTRALIZATION KIT AND TERMINATE AT (E) FLOOR SINK.
10. (N) 8" FLUE UP THRU UPSIZED ROOF PENETRATION PER DETAIL 26/M800.
11. (N) 8" OSA INTAKE UP THRU (E) ROOF PENETRATION.
12. POC (N) 3" GAS TO (E) 3" GAS. ROUTE DOWN TO BOILER GAS INTAKE AND TRANSITION TO 1-1/2" GAS AT BOILER CONNECTION. PROVIDE (N) GAS SOV AND DIRT LEG PER DETAIL 15/M800.
13. (E) 3" G OVERHEAD TO REMAIN.
14. (E) FLOOR SINK TO REMAIN.
15. (E) CONCRETE PAD TO REMAIN.

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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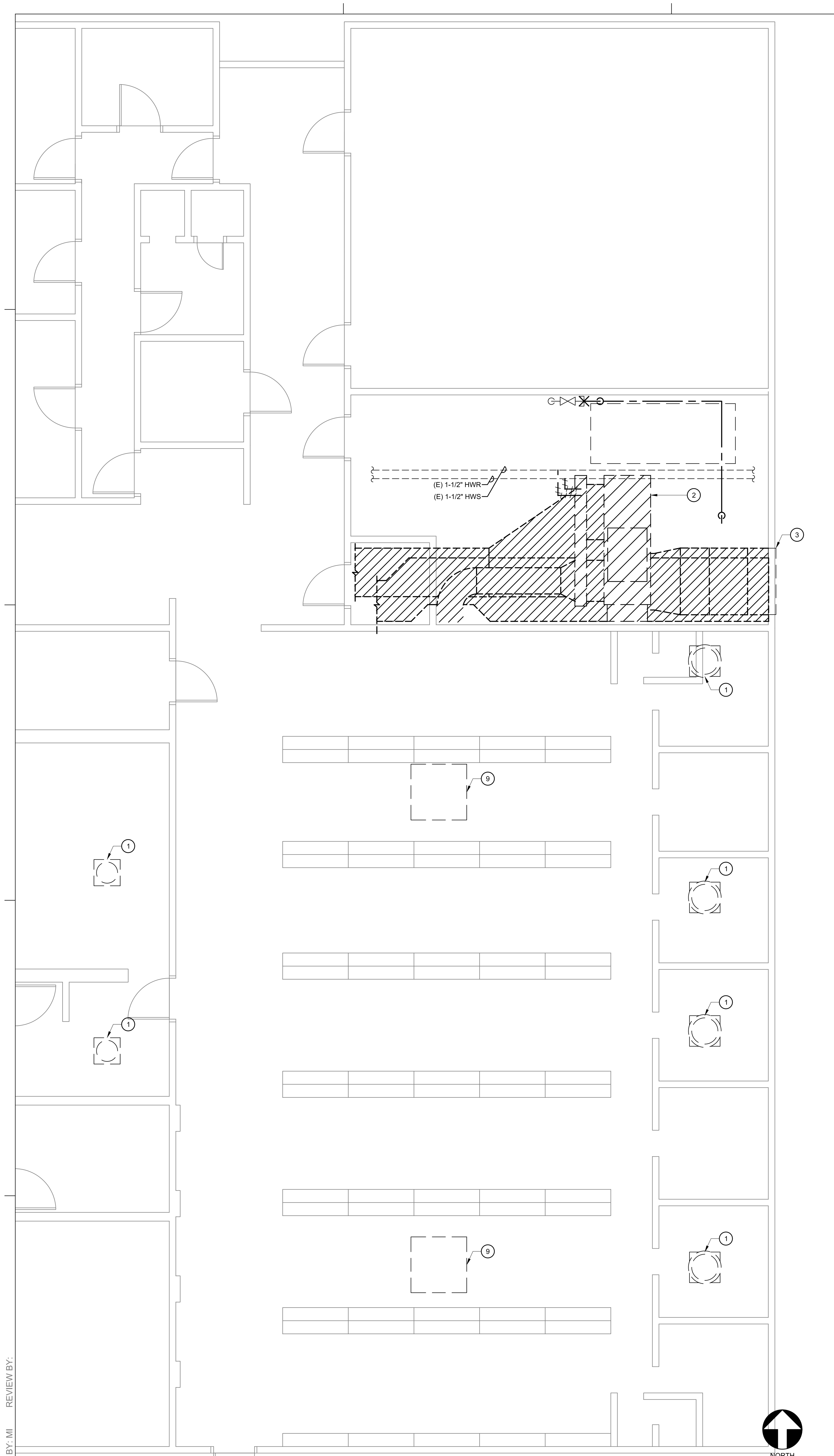
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
OLIVE GYM
BOILER ROOM

SHEET NO:
M210

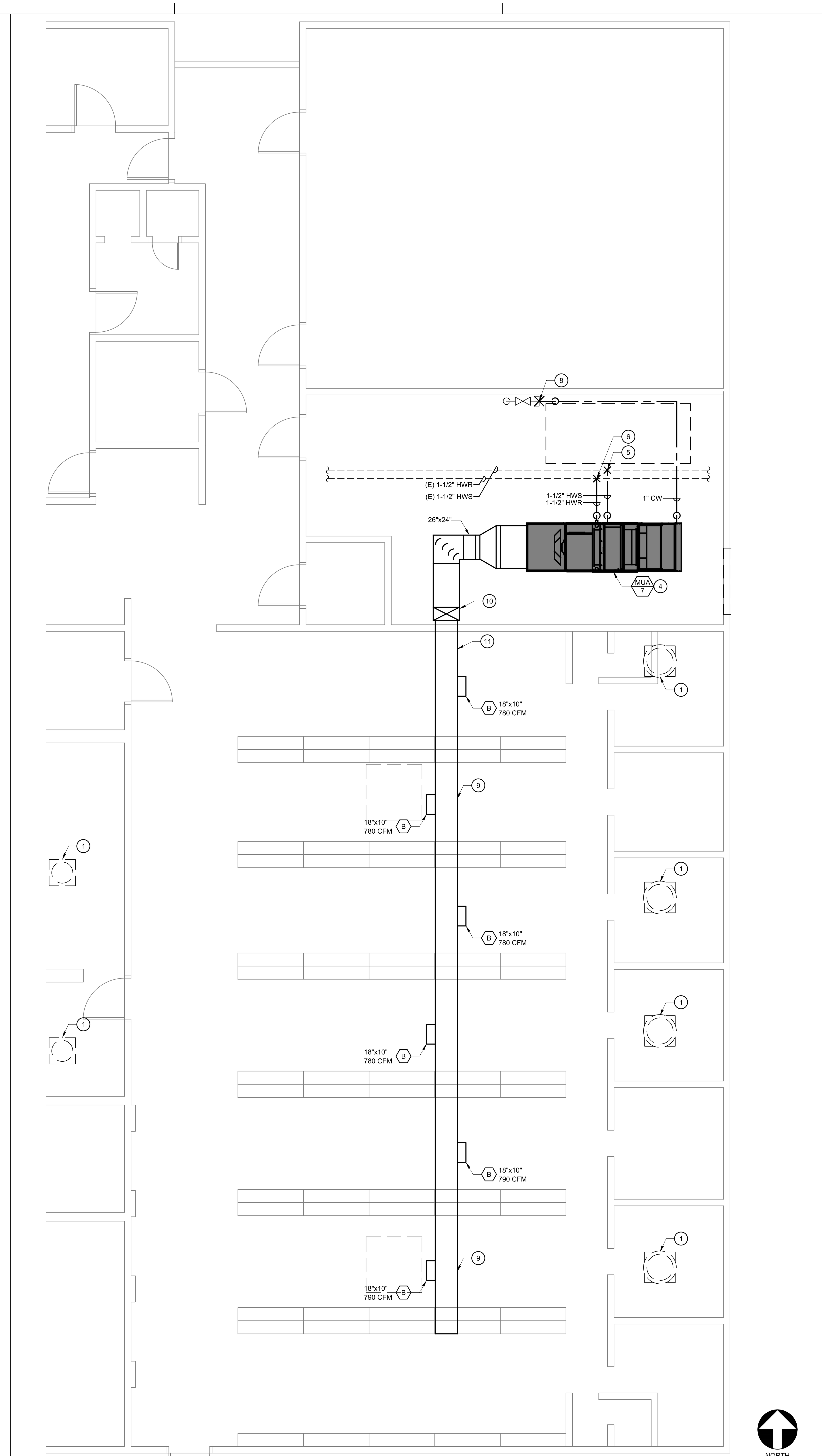
DRAWN BY: MI REVIEW BY:



OLIVE GYM DEMO PLAN

1/4" = 1'-0"

2



OLIVE GYM FLOOR PLAN

1/4" = 1'-0"

1

KEYNOTES (#)

1. (E) EXHAUST FAN ON ROOF TO REMAIN
2. REMOVE (E) BUILT-UP AH AND ALL ASSOCIATED COILS, FANS, PIPE CONNECTIONS, AND DUCT WORK WHERE SHOWN HATCHED.
3. (E) OSA LOUVER TO REMAIN.
4. INSTALL (N) MUA ON (N) HOUSEKEEPING PAD PER DETAIL 8/M800. AVOID UNDER FLOOR RETURN AIR TRENCH.
5. POC (N) 1-1/2" HWS TO (E) 1-1/2" HWS. ROUTE DOWN TO (N) MUA-7 HWS CONNECTION (SHOWN OFFSET FOR CLARITY).
6. POC (N) 1-1/2" HWR TO (E) 1-1/2" HWR. ROUTE DOWN TO (N) MUA-7 HWR CONNECTION.
7. DEMO (E) SA DUCT TO GRADE. CAP AND ABANDON (E) BELOW GRADE SA DUCT.
8. POC (N) 1" CW TO (E) 2-1/2" CW AND ROUTE TO (N) MUA-7.
9. (E) ROOFTOP EVAP COOLER TO REMAIN.
10. (N) 24"x26" SA DUCT TO RISE UP AND TRANSITION TO 24"Ø SA DUCT. SUPPORT DUCT ON WALL PER DETAIL 21/M800.
11. SUSPEND (N) 24"Ø SA DUCT FROM THE LOCKER ROOM CEILING PER DETAIL 22/M800.

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122084 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 07/03/2024

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REGISTERED PROFESSIONAL ENGINEER
JONATHAN C. SCHLUNDT
M35955
Exp. 06-30-26
MECHANICAL
STATE OF CALIFORNIA

REVISIONS:

Symbol	Description
--/--/----	---
--/--/----	---
--/--/----	---

PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

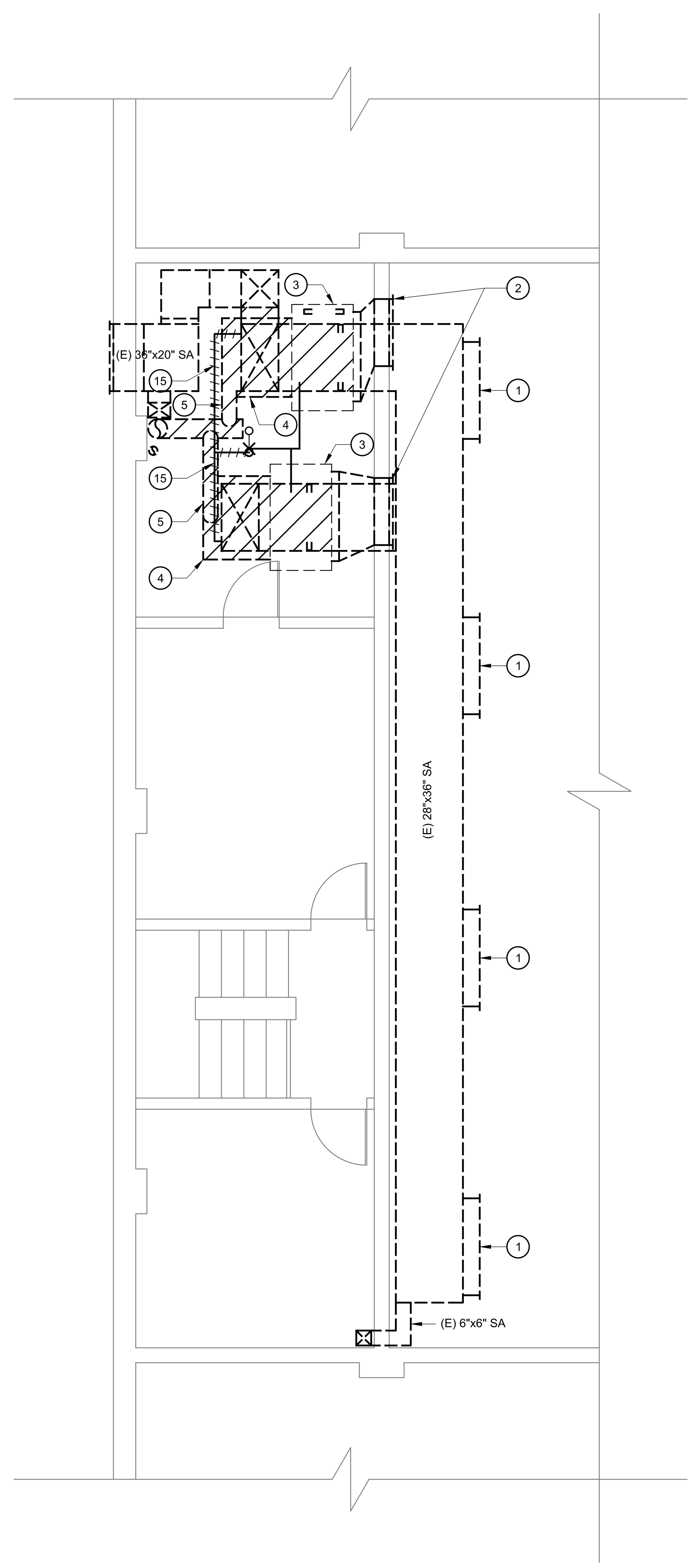
PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
OLIVE GYM
FLOOR PLAN

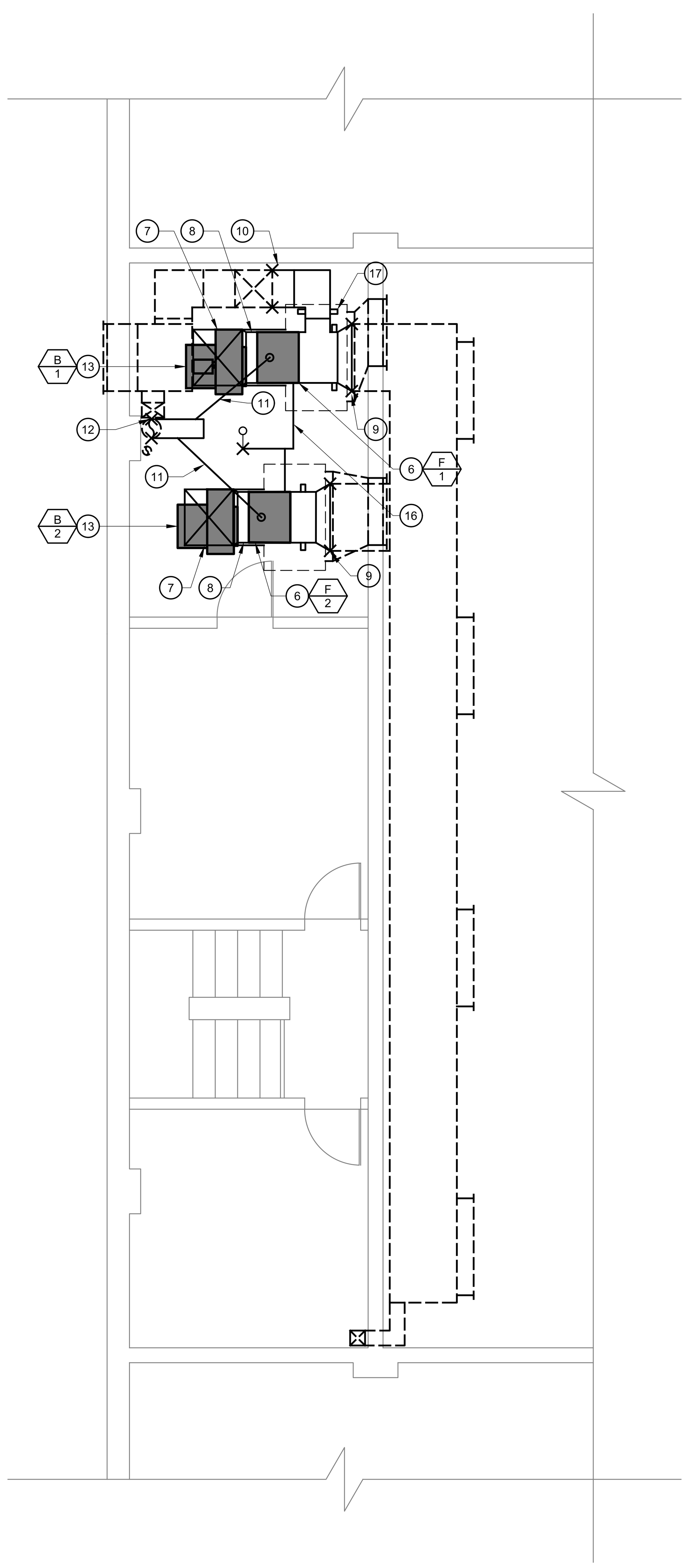
SHEET NO:
M211

DRAWN BY: MI REVIEW BY:



WRESTLING ROOM MEZZANINE DEMO PLAN

1/4" = 1'-0" 2



WRESTLING ROOM MEZZANINE PLAN

1/4" = 1'-0" 1

KEYNOTES

1. (E) 52"x8" SA GRILLE TO REMAIN.
2. (E) 36"x30" RA GRILLE BELOW SA DUCTWORK TO REMAIN.
3. (E) BLOWER TO BE REMOVED.
4. (E) DUCT FURNACE TO BE REMOVED. DISCONNECT (E) GAS PIPING.
5. (E) FLUE BRANCH TO BE REMOVED BACK TO HEADER. HEADER TO BE PRESERVED FOR CONNECTION TO (N) FLUE.
6. (N) FURNACE SUSPENDED FROM CEILING ABOVE (E) BLOWER PER DETAIL 10/M800.
7. (N) 30"X26" SA DUCT FROM (E) BLOWER OUTLET. SA DUCT TO RISE UP TO LEVEL OF (N) FURNACE AND ROUTE TO (N) FURNACE INLET.
8. (N) 30"X26" SA DUCT TO TRANSITION TO (N) FURNACE INLET AS REQUIRED.
9. TRANSITION FROM (N) FURNACE OUTLET AND POC TO (E) 40"X26" SA DUCTWORK.
10. (N) 36"X20" SA DUCT. ROUTE AND POC TO (E) 36"X20" SA DUCT.
11. (N) 8"DIAMETER FLUE FROM(N) FURNACE TO (N) 10" HEADER.
12. POC (N) 10" FLUE HEADER TO (E) 10" DIAMETER FLUE UP THRU ROOF.
13. MOUNT (N) BLOWER ON (E) MEZZANINE PER DETAIL 25/M800.
14. (E) 2" GAS DOWN FROM ABOVE CEILING TO REMAIN.
15. (E) 1" GAS TO (E) FURNACE TO BE REMOVED.
16. CONNECT (N) 3/4" GAS CONNECTION AT (N) FURNACE TO (E) 1" GAS. PROVIDE SOV AND DIRT LEG PER DETAIL 15/M800.
17. PROVIDE (N) DUCT SUPPORT ON (E) PLATFORM PER DETAIL 11/M800 (TYP).

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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Symbol	Description
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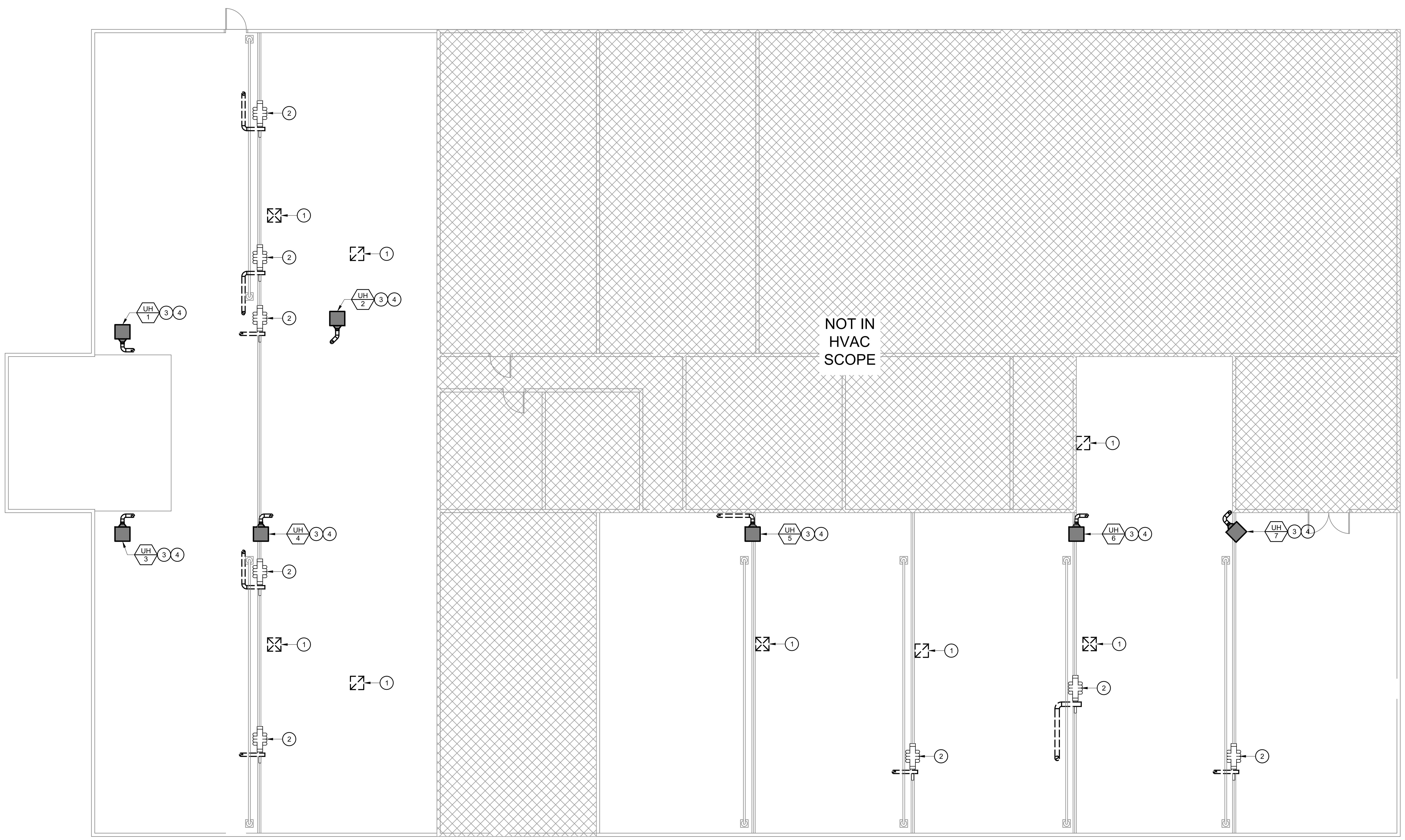
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
JOE FLORES WRESTLING ROOM

SHEET NO:
M220

DRAWN BY: MI REVIEW BY:



NORTH

INDUSTRIAL ARTS FLOOR PLAN

1/8" = 1'-0"

1

KEYNOTES

1. (E) HVAC GRILLE TO REMAIN
2. (E) EXHAUST REEL TO REMAIN
3. REMOVE (E) UNIT HEATER AND REPLACE WITH (N) UH IN SPACE. CONNECT (N) UNIT HEATER TO (E) 6"Ø FLUE. SEE DETAIL 7/M800 FOR MOUNTING.
4. DISCONNECT (E) GAS FROM (E) UNIT HEATER. RECONNECT (E) GAS LINE TO (N) UH IN SPACE. PROVIDE (N) SOV AND DIRT LEG DETAIL 15/M800.

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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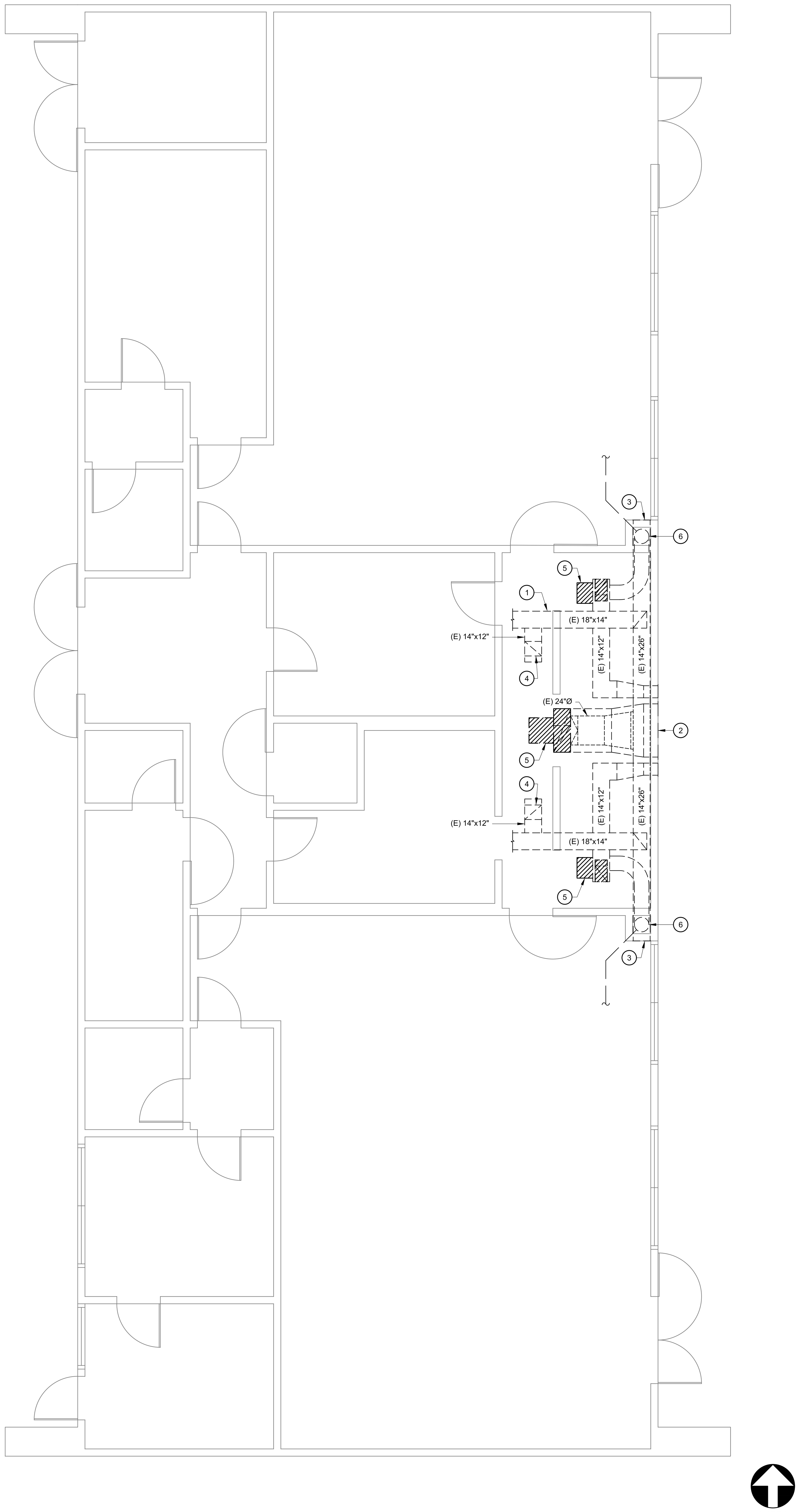
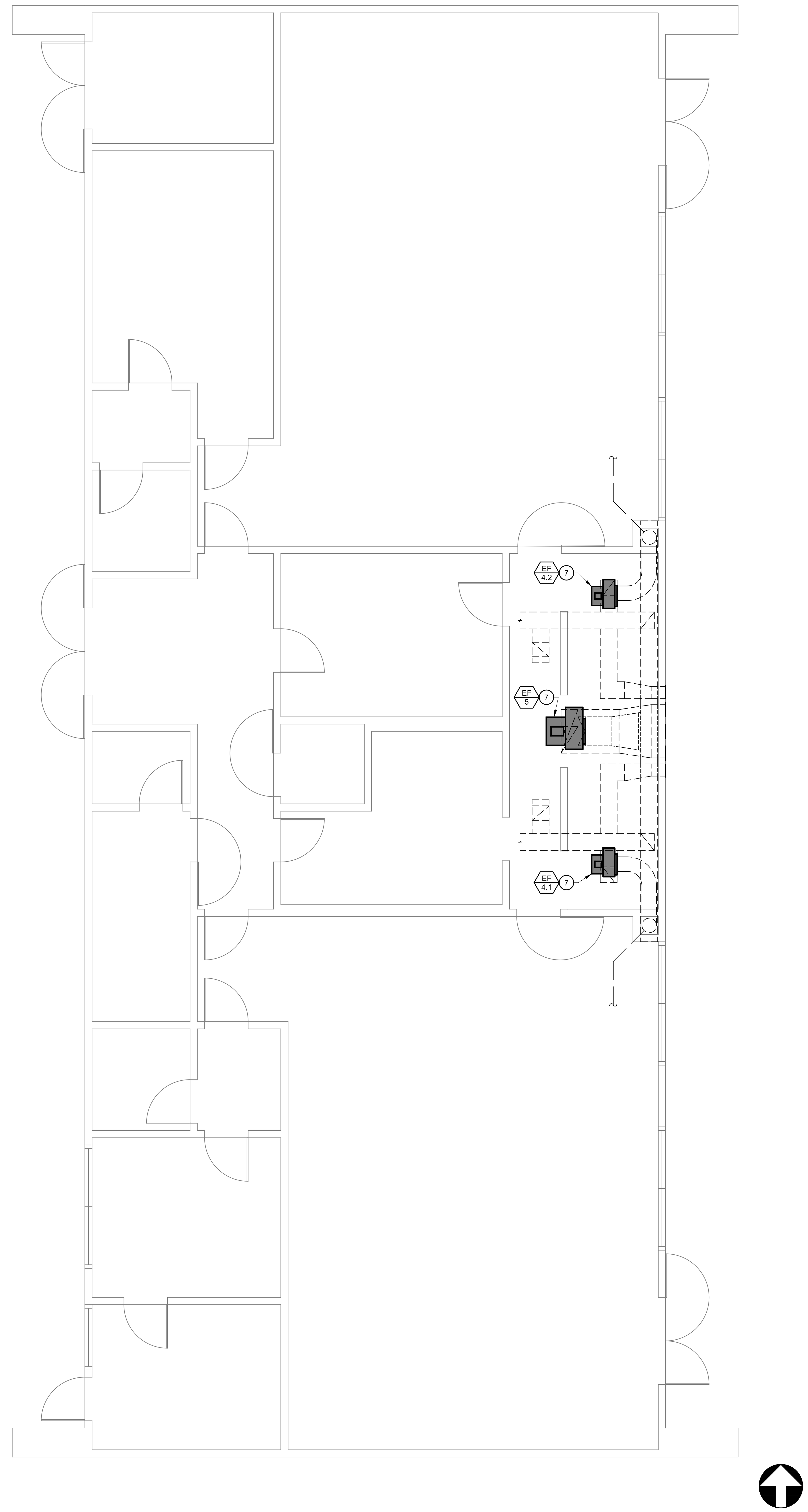
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
INDUSTRIAL ARTS FLOOR PLAN
SHEET NO:
M230

DRAWN BY: MI REVIEW BY:



FIELD HOUSE DEMOLITION FLOOR PLAN   1/4" = 1'-0"   2



FIELD HOUSE FLOOR PLAN   1/4" = 1'-0"   1

KEYNOTES (#)

1. (E) DUCTWORK TO REMAIN (TYP).
2. (E) 64"x32" EXHAUST DISCHARGE (7590 CFM) TO REMAIN.
3. (E) 16"x30" SIDEWALL EXHAUST (1180 CFM) TO REMAIN.
4. (E) 20"x20" CEILING RETURN/EXHAUST (1185 CFM) TO REMAIN.
5. (E) EXHAUST FAN TO BE REMOVED AND REPLACED.
6. (E) 12"Ø TO UNDERGROUND EXHAUST.
7. INSTALL (N) EF ON (E) MEZZANINE PER DETAIL 2/M800. CONNECT EXISTING DUCTWORK AT (N) EF INLET AND DISCHARGE. TRANSITION DUCTWORK TO (N) EF AS REQUIRED.

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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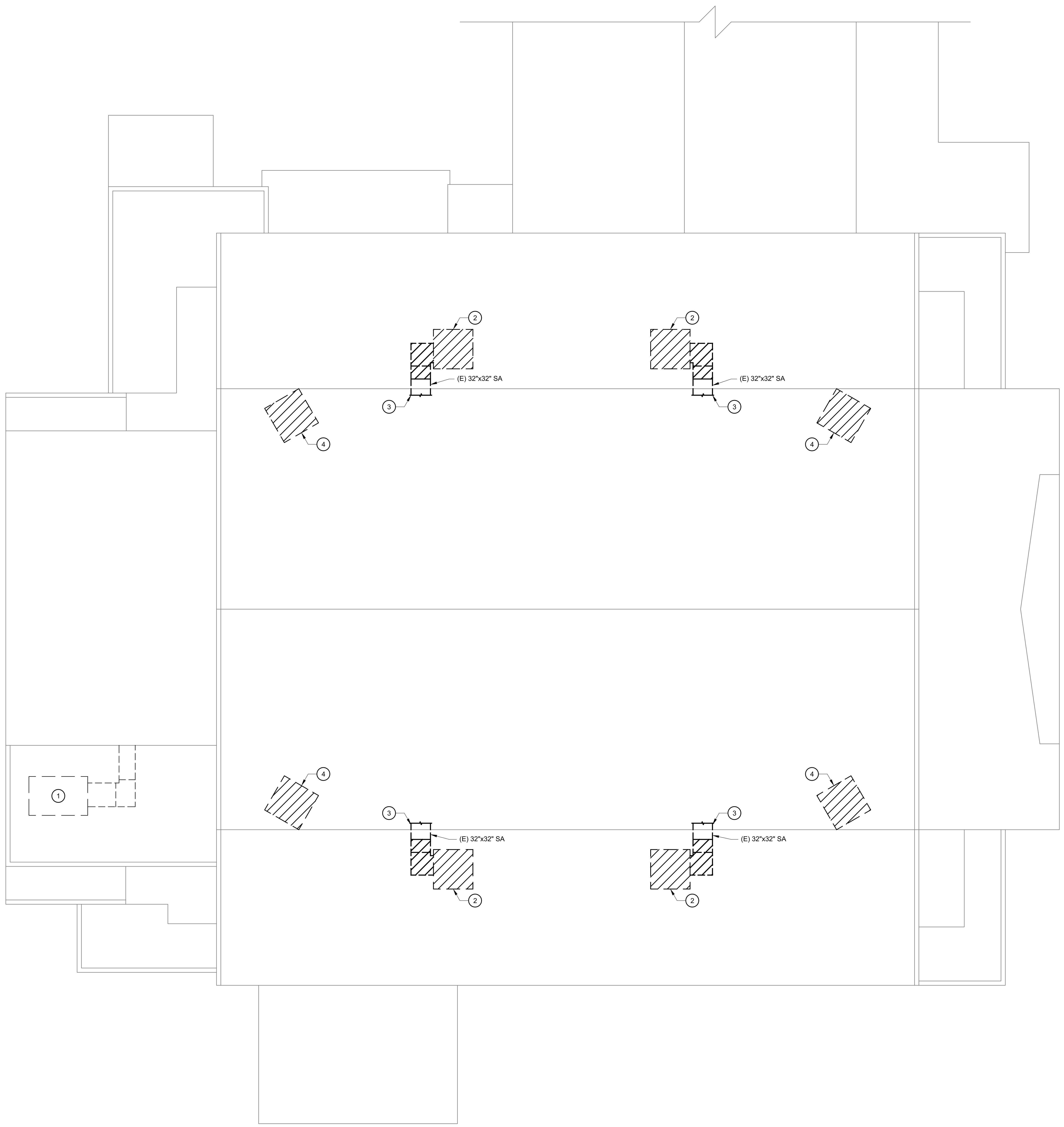
PROJECT NAME:
HVAC IMPROVEMENTS AT MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
FIELD HOUSE FLOOR PLAN

SHEET NO:
M240

DRAWN BY: MI REVIEW BY:



JOE FLORES GYM (DEMO) PLAN

1/8" = 1'-0"

1

NORTH

KEYNOTES

1. (E) MAKE-UP AIR UNIT TO REMAIN.
2. REMOVE (E) EVAP COOLER AND ASSOCIATED DUCTWORK WHERE SHOWN HATCHED. DISCONNECT (E) 3/4" CW SUPPLY AND 1" CD PIPING AND CAP BOTH IN PREPARATION FOR CONNECTION TO (N) UNIT.
3. (E) 32"x32" SA DUCT TO REMAIN IN PREPARATION FOR CONNECTION TO (N) UNIT.
4. REMOVE (E) UH IN GYM SPACE BELOW ROOF. REMOVE ASSOCIATED FLUE UP THRU ROOF AND ROOF CAP ON ROOF. PATCH ROOF BACK AS REQUIRED TO MATCH CURRENT CONDITIONS AND SEAL WATER TIGHT. REMOVED ASSOCIATED POWER AND CONTROLS WIRING. REMOVE ASSOCIATED 1" G BACK UP THRU ROOF, CAP ABOVE ROOF, AND PATCH BACK ROOF AS REQUIRED TO MATCH CURRENT CONDITIONS AND SEAL WATER TIGHT.

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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JONATHAN C. SCHLUNT
M35955
Exp. 06-30-26
MECHANICAL
STATE OF CALIFORNIA

REVISIONS:

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Symbol	Description
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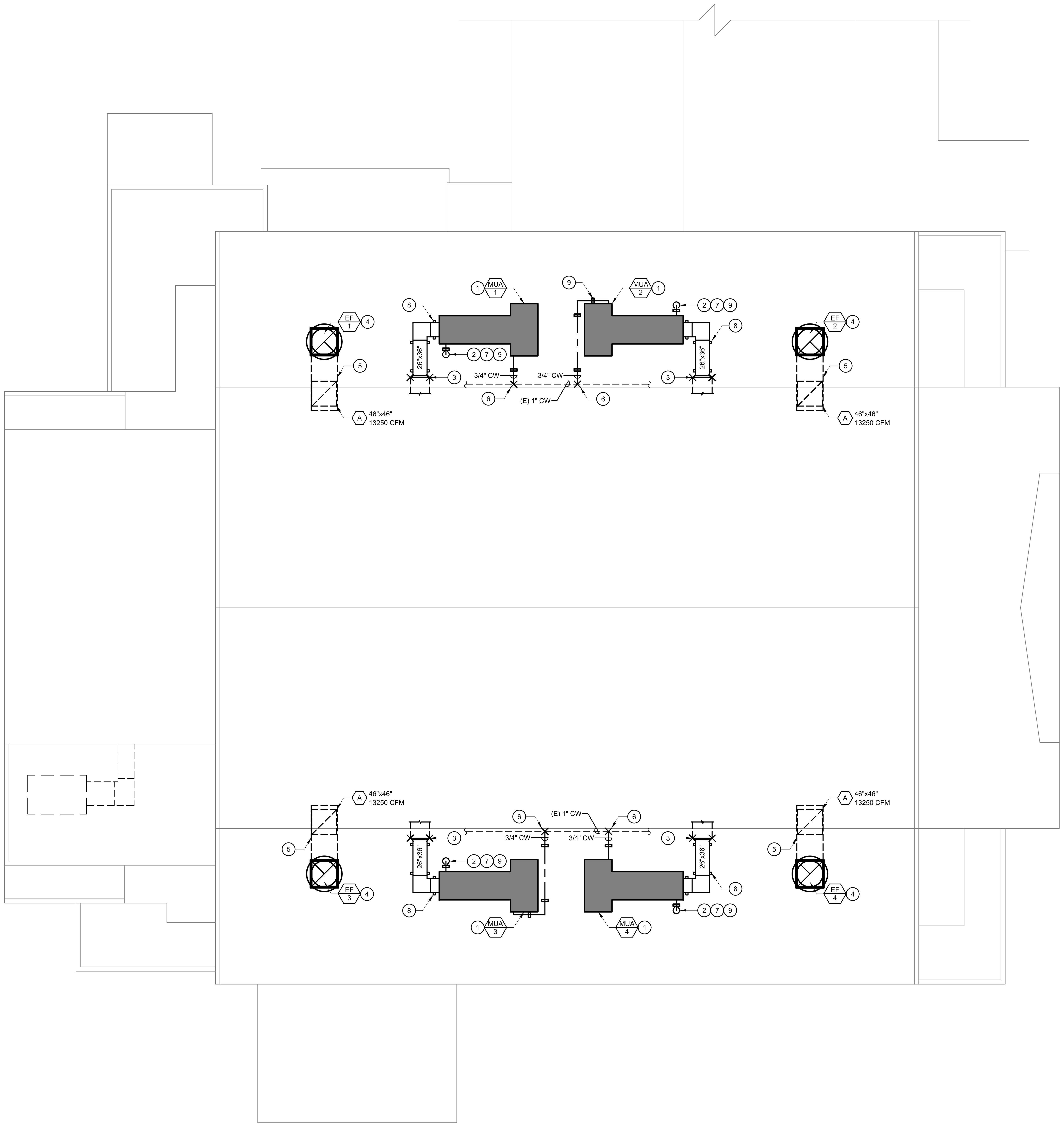
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
JOE FLORES
GYM ROOF
(DEMO)

SHEET NO:
M520

DRAWN BY: MI REVIEW BY:



JOE FLORES GYM (NEW)

1/8" = 1'-0"

1

NORTH

KEYNOTES

1. (N) MAKE-UP AIR UNIT ON ROOF PER DETAIL 3/M800. CONNECT (N) 3/4" CW TO (N) UNIT. CONNECT (N) 1" CD TO 1" CD CONNECTION ON (N) UNIT. PROVIDE 1" CD OVERFLOW DRAIN LINE AND CONNECT TO 3/4" C OVERFLOW DRAIN ON (N) UNIT. PIPE PER MANUFACTURER'S REQUIREMENTS.
2. POC (N) 1" G TO (N) 3/4" G CONNECTION AT (N) MUA. PROVIDE SOV AND DIRT LEG PER DETAIL 15/M800.
3. TRANSITION (N) 26"x36" SA TO (E) 32"x32" SA
4. (N) EXHAUST FAN ON ROOF PER DETAIL 5/M800.
5. ROUTE (N) 40"x30" EA DUCT DOWN THRU ROOF FROM (N) EF INTO GYM SPACE. EA DUCT TO HAVE ONE 90° TURN WITH GRILLE ON TOP SIDE OF DUCT.
6. POC (N) 3/4" CW TO (E) 1" CW ABOVE ROOF.
7. (N) 1" G FROM BELOW, EXTENDED FROM (E) UH HEATER, UP THRU ROOF PER DETAIL 14/M800.
8. SUPPORT (N) SA DUCTWORK PER DETAIL 11/M800 (TYP).

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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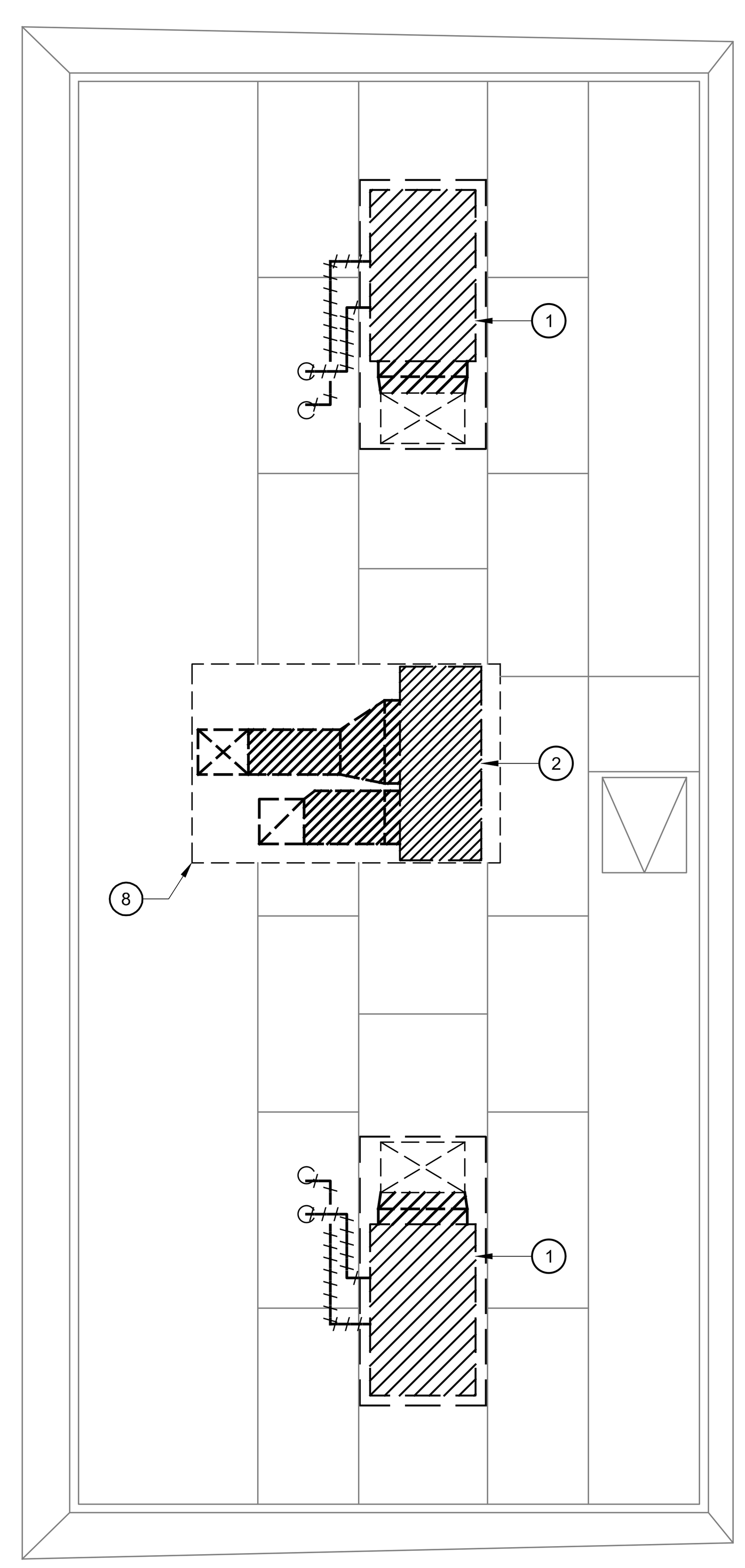
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

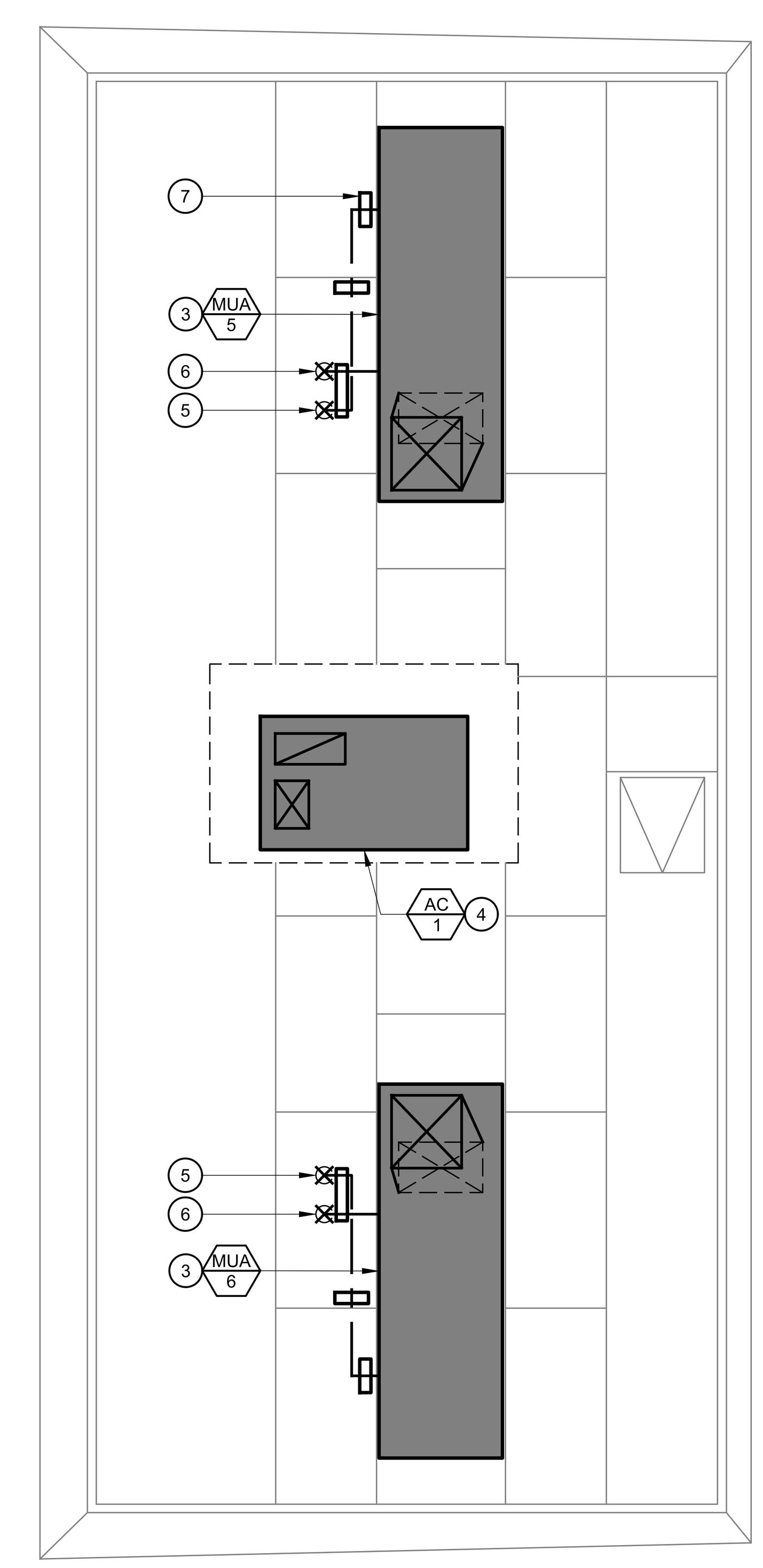
DATE: 05/13/2024
SHEET TITLE:
JOE FLORES
GYM ROOF
(NEW)
SHEET NO:
M521

DRAWN BY: MI REVIEW BY:



FIELD HOUSE DEMO PLAN

1/4" = 1'-0" 2



FIELD HOUSE PLAN

1/4" = 1'-0" 1

KEYNOTES (#)

1. REMOVE (E) MAKE-UP AIR UNIT AND ASSOCIATED DUCTWORK ON ROOF WHERE SHOWN HATCHED. REMOVE (E) CURB.
2. REMOVE (E) PACKAGE UNIT AND ASSOCIATED DUCTWORK ON ROOF WHERE SHOWN HATCHED. PRESERVE (E) PLATFORM.
3. INSTALL (N) MAKE-UP AIR UNIT ON (N) CURB PER DETAIL 3/M800. PROVIDE DUCT TRANSITIONS UNDER PLATFORM AS NEEDED TO RECONNECT TO EXISTING DROPS. PIPE (N) G, CW, AND CD PER DETAIL 18/M800.
4. INSTALL (N) PACKAGE UNIT ON (E) PLATFORM PER DETAIL 4/M800. PROVIDE DUCT TRANSITIONS UNDER PLATFORM AS NEEDED TO RECONNECT TO EXISTING DROPS AND FIT BETWEEN (E) FRAMING.
5. POC (N) 3/4" CW TO (E) 3/4" CW RISER ABOVE ROOF.
6. POC (N) 3/4" G TO (E) 3/4" G RISER ABOVE ROOF. PROVIDE SOV AND DIRT LEG PER DETAIL 15/M800.
7. SUPPORT (N) PIPING ON ROOF PER DETAIL 20/M800.
8. CONTRACTOR SHALL REMOVE PLATFORM CAP AND VERIFY (E) BLOCKING CONDITIONS, LOCATIONS, AND SIZES. NOTIFY MEOR AND SEOR OF FINDINGS BEFORE COMMENCEMENT OF NEW WORK.

GENERAL NOTES

A. FIELD VERIFY DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT, INCLUDING ASSOCIATED PIPING AND DUCTWORK, PRIOR TO COMMENCEMENT OF WORK.

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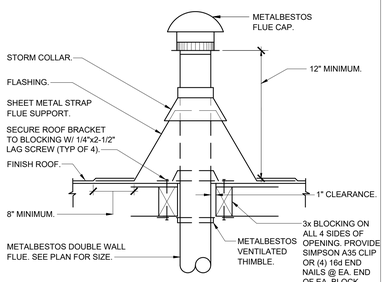
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

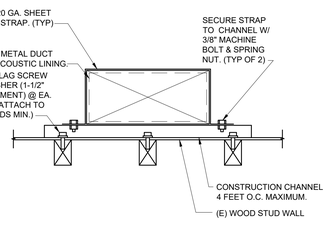
DATE: 05/13/2024
SHEET TITLE:
FIELD HOUSE ROOF PLANS

SHEET NO:
M540

DRAWN BY: MI REVIEW BY:

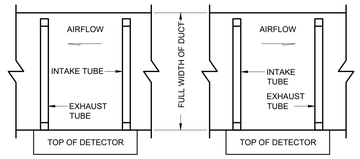


FLUE THROUGH ROOF - ATMOSPHERIC NTS 26

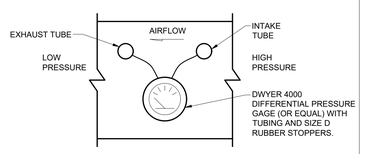


NOTES:
1. SEE PLANS FOR INTERIOR DUCT SIZE.

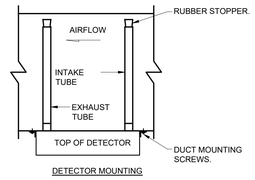
DUCT ON WALL SUPPORT NTS 21



SAMPLING TUBE ORIENTATION



AIR SAMPLING VERIFICATION

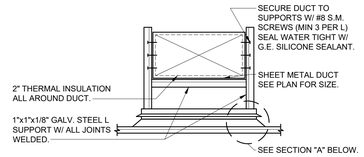


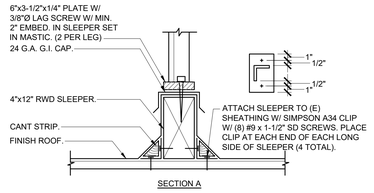
DETECTOR MOUNTING

NOTES
1. MOUNT DUCT DETECTOR IN SA DUCT UPSTREAM OF BRANCH TAKE-OFFS.
2. UPON DETECTON OF SMOKE UNITS SHALL BE SHUT-DOWN AUTOMATICALLY.
3. PROVIDE INTERLOCKS TO SHUT DOWN UNIT AS REQUIRED.
4. PROVIDE INTERLOCKS TO ACTIVATE ALARM SYSTEM PER CMC 609.1.

DUCT SMOKE DETECTOR NTS 17

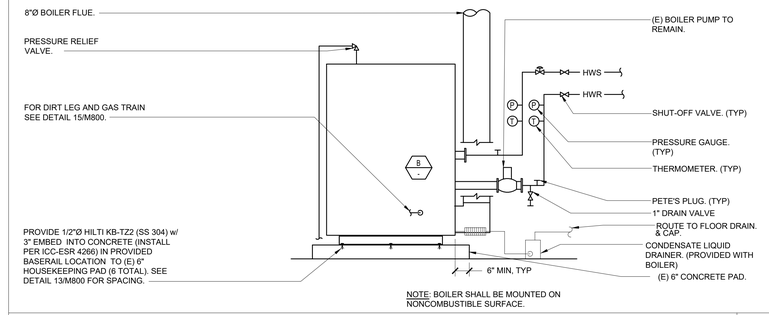
NOTES:
1. SEE PLANS FOR INTERIOR DUCT SIZE.
2. SEE SPECIFICATIONS FOR REQUIRED SPACING.
3. INSTALL SLEEPERS TO ALLOW ROOF DRAINAGE.
4. SHAPE SLEEPERS TO FIT ROOF SLOPE.





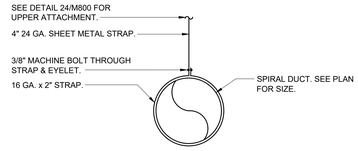
SECTION A

DUCT ON ROOF-RECTANGULAR NTS 11



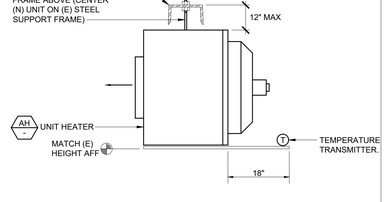
NOTE: BOILER SHALL BE MOUNTED ON NONCOMBUSTIBLE SURFACE.

BOILER MOUNTING AND PIPING NTS 1

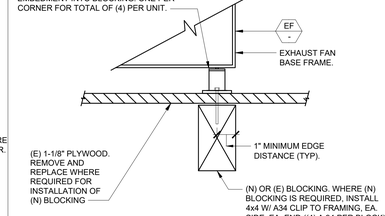


NOTES:
1. PROVIDE BRACING FOR ROD LENGTHS OVER 12".
2. SEE SPECIFICATIONS FOR REQUIRED SPACING.

DUCT SUPPORT DETAIL NTS 22

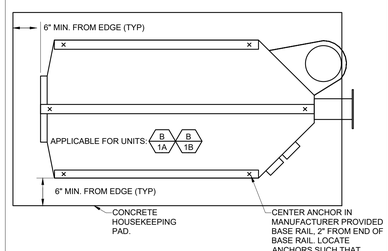


UNIT HEATER NTS 7

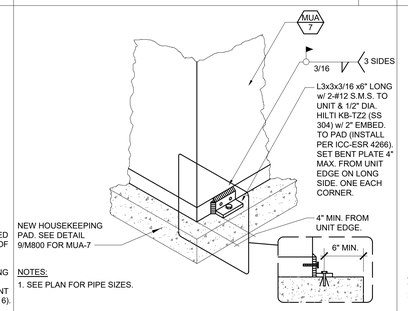


EF ON (E) MEZZANINE NTS 2

MUA PIPING SCHEMATIC NTS 18

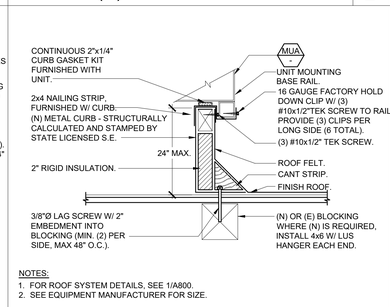


BOILER MOUNTING DETAIL NTS 13



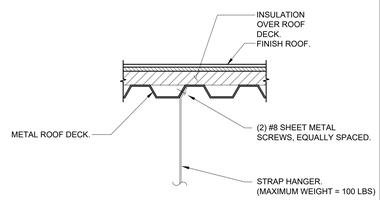
NOTES:
1. SEE PLAN FOR PIPE SIZES.

MUA-7 UNIT ANCHORAGE NTS 8

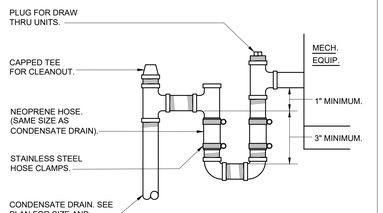


NOTES:
1. FOR ROOF SYSTEM DETAILS, SEE 1/A800.
2. SEE EQUIPMENT MANUFACTURER FOR SIZE.

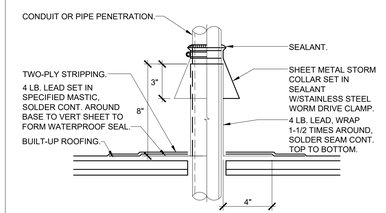
EQUIPMENT CURB - WOOD ROOF NTS 3



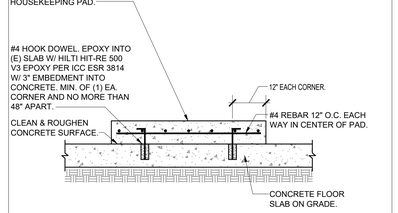
DUCTWORK SUPPORT DETAIL NTS 24



CONDENSATE DRAIN CONNECTION NTS 19

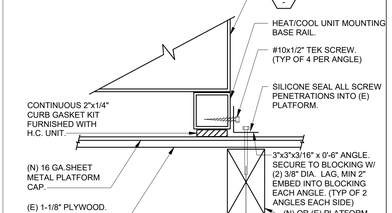


PIPE PENETRATION DETAIL NTS 14

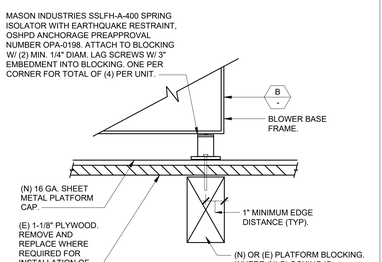


NOTES:
1. SEE SPECIFICATIONS FOR CONCRETE AND REBAR.
2. SEE EQUIPMENT MANUFACTURER FOR SIZE.

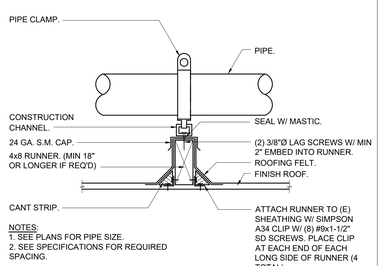
HOUSEKEEPING PAD NTS 9



PACKAGE AC ON (E) PLATFORM NTS 4

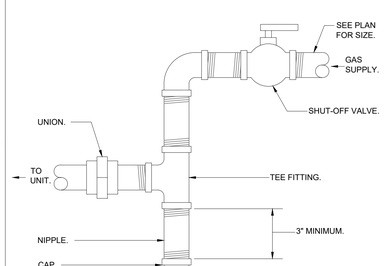


BLOWER ON (E) PLATFORM NTS 25

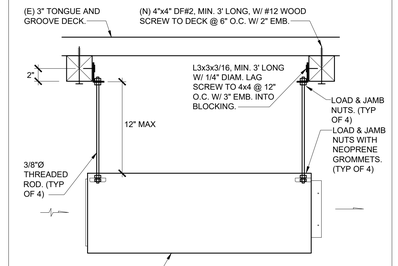


NOTES:
1. SEE PLANS FOR PIPE SIZE.
2. SEE SPECIFICATIONS FOR REQUIRED SPACING.

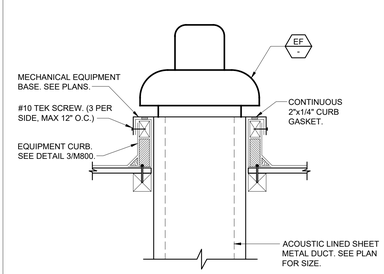
PIPE SUPPORT - ON ROOF - ANCHORED NTS 20



GAS DIRT LEG NTS 15



SUSPENDED FURNACE MOUNTING NTS 10



EXHAUST FAN ON CURB NTS 5

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122084 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 07/03/2024

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559.940.7293

REGISTERED PROFESSIONAL ENGINEER JONATHAN C. STOUT Exp. 06-30-26 MECHANICAL STATE OF CALIFORNIA

REVISIONS:

Symbol	Description

--/--/----	

Symbol	Description

--/--/----	

Symbol	Description

--/--/----	

PROJECT NAME:
HVAC IMPROVEMENTS AT MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S. L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
MECHANICAL DETAILS
SHEET NO:
M800

DRAWN BY: MI REVIEW BY:

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)2 for alterations.			
Project Name: 1336 - HVAC Improvements at Madera High School		**Report Page:**	**(Page 1 of 12)**
Project Address: 200 S L St, Madera, CA 93637		**Date Prepared:**	2024-02-06T13:57:02-05:00

A. GENERAL INFORMATION

01	Project Location (city)	Madera	04	Total Conditioned Floor Area	28395
02	Climate Zone	13	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

● Gymnasium ● School or Classroom

B. PROJECT SCOPE

This table includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, 170.2(b) or 141.0(b)2 and 180.2(b)2 for alterations.

01	02	03
Air System(s)	Wet System Components	Dry System Components
☒ Heating Air System	☐ Water Economizer	☒ Air Economizer
☒ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☐ System Piping	☒ Fan Systems
☒ Mechanical Controls (existing to remain, altered or new)	☐ Cooling Towers	☐ Ductwork (existing to remain, altered or new)
	☐ Chillers	☐ Ventilation
	☒ Boilers	☐ Zonal Systems/ Terminal Boxes

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: 1336 - HVAC Improvements at Madera High School	**Report Page:**	**(Page 2 of 12)**
	Date Prepared:	2024-02-06T13:57:02-05:00

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D., or the table indicated as not compliant for guidance.

01	AND	02	AND	03	AND	04	AND	05	AND	06	AND	07	AND	08	09
System Summary 110.1, 110.2, 140.4, 170.2(c)		Pumps 140.4(k), 170.2(c)4I		Fans/ Economizers 140.4(c), 140.4(e), 170.2(c)		System Controls 110.2, 120.2, 140.4(f), 170.2(c)		Ventilation 120.1, 160.2		Terminal Box Controls 140.4(d), 170.2(c)4B		Distribution 120.3, 140.4(l), 160.2, 160.3		Cooling Towers 110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND			AND Yes	AND	Yes	AND		AND		AND		AND		COMPLIES
Mandatory Measures Compliance (See Table Q for Details)												COMPLIES			

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Space Conditioning System Information

01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat
AC-1 (Field House)	1	Single zone	Alteration		☐
HP 1,2 (Olive Gym)	2	Single zone	New/ Addition	School or Classroom	☐

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters and DOAS systems)

01	02	03	04	05	06	07	08	09	10	11
					Equipment Sizing per Mechanical Schedule (kBtu/h) 140.4(a&b), 170.2(c)1 & 170.2(c)2					
					Heating Output[1,3]		Cooling Output[1,3]		Load Calculations[3,4]	
Name or Item Tag	Equipment Category per Tables 110.2, 140.4(a)2 and 170.2(c)3iii	Equipment Type per Tables 110.2 and Title 20	Smallest Size Available[3] 140.4(a) and 170.2(c)1	Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
AC-1 (Field House)	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				37.6	45.3		32.8
HP 1,2 (Olive Gym)	Unitary Heat Pumps	Air-cooled, pkg (3 phase)	Yes	168.7	150	0	156.2	207.8	320	400

[1] FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per 140.4(a) and 170.2(c)1. Healthcare facilities are excepted.
[2] It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.
[3] If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.
[4] Authority Having Jurisdiction may ask for load calculations used for compliance per 140.4(b) and 170.2(c).

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP), DX-DOAS and Dual Fuel Heat Pumps)

01	02	03	04	05	06	07	08	09
		Heating Mode				Cooling Mode		
Name or Item Tag	Size Category (Btu/h)	Rating Condition (°F)	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency
AC-1 (Field House)	<65,000					SEER	13	14
HP 1,2 (Olive Gym)	>=240,000	47 °Fdb/ 43 °Fwb OSA	COP	3.3	3.3	EER IEER	9.5 12.5	9.6 14

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Boiler Efficiency and Controls

Boiler System Serving		Olive Gym							
01	02	03	04	05	06	07	08	09	10
Boiler Name or Item Tag	Equipment Type[1]	Qty	Rated Input Capacity (Btu/h)[2,3]	Rated Efficiency	Minimum Efficiency Required per 110.2	Efficiency Unit	Boiler Controls per 140.4(k), 170.2(c)iii		High Capacity Boiler Exceptions
							Isolation Valve	Temperature Reset	
Olive Gym Boilers	Hot Water, Gas-Fired	2	1,999	0.96	0.82	AFUE	Yes	Yes	Replacement gas hot water boiler
System Efficiency					Minimum System Efficiency for High Capacity Boilers per 140.4(k)8A				

[1] FOOTNOTES: Use NRCC-PLB to document compliance with domestic hot water and service water heating systems.
[2] Maximum capacity- minimum and maximum ratings as provided for and allowed by the unit's controls
[3] Includes all-fired (residual)

G. PUMPS

This section does not apply to this project.

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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H. FAN SYSTEMS & AIR ECONOMIZERS

This table is used to demonstrate compliance with prescriptive requirements found in 140.4(c), 140.4(e), 140.4(m), 170.2(c)3, and 170.2(c)4A for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name	Joe Flores Gym	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	53,000	Site Elevation	207	Economizer	NA: <=33 kBtu/h cooling
01	02	03	04			05		06	07	08	09			10	11
Fan Name or Item Tag	Fan Type	Qty	Component					Airflow through Component (%)	Allowance		Design				
									Water Gauge (w.g.)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method		Motor Nameplate Horsepower	Design Electrical Input Power (kW)
MUA1,2 ,3,4	Supply	4	100% outdoor air system			100				0.1					
			Supply Fan System			100				0.07	0.393	Manufacturer provided			11.18
			Gas heat			100				0.07					
			MERV 13-16 Filter upstream of thermal conditioning equipment			100				0.1					
Eff 1,2,3,4	Exhaust	4	Exhaust/Relief/Return/Transfer Fan System			100				0.05	0.055	Manufacturer provided			3.7
Supply Fan Base Allowance (kW)		0.236	Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)			0.19		Fan System Allowance (kW)[3]		117.55		Fan System Electrical Output (kW)			59.52

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	Olive Gym and Locker Room	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	20,700	Site Elevation	207	Economizer	Fixed Temperature
01	02	03	04			05		06	07	08	09			10	11
Fan Name or Item Tag	Fan Type	Qty	Component					Airflow through Component (%)	Allowance		Design				
									Water Gauge (w.g.)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method		Motor Nameplate Horsepower	Design Electrical Input Power (kW)
HP 1,2	Supply	2	Air Blender			100				0.03					
			Hydronic/DX cooling coil or heat pump coil			100				0.1					
			Economizer Return Damper			100				0.03	0.393	Default per Table 140.4-D		>=3 and <5	4.17
			MERV 13-16 Filter upstream of thermal conditioning equipment			100				0.1					
			Supply Fan System			100				0.1					
MUA-7	Supply	1	100% outdoor air system			100				0.1					
			MERV 13-16 Filter upstream of thermal conditioning equipment			100				0.1	0.321	Default per Table 140.4-D		>=2 and <3	2.57
			Supply Fan System			100				0.1					
Supply Fan Base Allowance (kW)		0.236	Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)			0		Fan System Allowance (kW)[3]		27.8		Fan System Electrical Output (kW)			10.91

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	Field House fan systems	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	9,605	Site Elevation	207	Economizer	Fixed Temperature
01	02	03	04			05		06	07	08	09			10	11
Fan Name or Item Tag	Fan Type	Qty	Component					Airflow through Component (%)	Allowance		Design				
									Water Gauge (w.g.)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method		Motor Nameplate Horsepower	Design Electrical Input Power (kW)
AC-1	Supply	1	Economizer Return Damper			100				0.04					
			Hydronic/DX cooling coil or heat pump coil			100				0.12					
			Gas heat			100				0.06	0.46	Default per Table 140.4-D		>=1 and <1_5	1.29
			MERV 13-16 Filter upstream of thermal conditioning equipment			100				0.12					
			Supply Fan System			100				0.12					
MUA 5,6	Supply	2	100% outdoor air system			100				0.1					
			Gas heat			100				0.06					
			MERV 13-16 Filter upstream of thermal conditioning equipment			100				0.12	0.4	Default per Table 140.4-D		>=1 and <1_5	1.29
			Supply Fan System			100				0.12					
Supply Fan Base Allowance (kW)		0.256	Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)			0		Fan System Allowance (kW)[3]		14.56		Fan System Electrical Output (kW)			3.87

[1] FOOTNOTES: Fans serving spaces with design background noise goals below NC35
[2] Low-turndown single-zone VAV fan system must be capable of and configured to reduce airflow to 50 percent of design airflow and use no more than 30 percent of the design wattage at that airflow. No more than 10 percent of the design load served by the equipment shall have fixed loads.
[3] Fan system allowance includes fan system base allowance.
[4] Filter pressure loss can only be counted once per fan system.

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H. FAN SYSTEMS & AIR ECONOMIZERS

[5] Complex Fan System means a fan system that combines a single cabinet fan system with other supply fans, exhaust fans, or both.
[6] Computer room economizers must meet requirements of 140.9(a) and will be documented on the NRCC-PRC-E document.

H. EXHAUST AIR HEAT RECOVERY 140.4(q), 170.2(c)4O

01	02	03	04	05	06	07	08	09	10	11
Fan System Name	Qty	Hours of Operation per Year	Design Supply Airflow Rate	Outdoor Airflow	% Outdoor Air at Full Design Airflow	Exemptions to Exhaust Air Heat Recovery Requirement per 140.4(q) & 170.2(c)4O	Exhaust Air Heat Recovery 140.4(q) & 170.2(c)4O	Type Of Heat Recovery Rating	Required Recovery Ratio	Energy Recovery Bypass
Joe Flores Gym			53,000	53,000	1	NA: Serving space not cooled and heated to <60 F				
Olive Gym and Locker Room			20,700	10,800	0.52	NA: Serving space not cooled and heated to <60 F				
Field House fan systems			9,605	8,185	0.85	NA: Serving space not cooled and heated to <60 F				

Fan Energy Index (FEI)

01	02	03
Name or Item Tag	FEI Exception	FEI
Joe Flore Fan Systems	Altered Fan System	
Olive Gym Fan System	Altered Fan System	
Field House Fan Systems	Altered Fan System	

STATE OF CALIFORNIA
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I. SYSTEM CONTROLS

This table is used to demonstrate compliance with mandatory controls in 110.2 and 120.2 and prescriptive controls in 140.4(f) and (n), 170.2(c)4D 170.2(c)4L or requirements in 141.0(b)2E 180.2(b)2 for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats 110.2(b) & (c)[1], 120.2(a) 160.3(a)2A or 141.0(b)2E & 180.2(b)2	Shut-Off Controls 120.2(e) & 160.3(a)2D	Isolation Zone Controls 120.2(g) & 160.3(a)2F	DR Tstat per 110.12	Supply Air Temp. Reset 140.4(f) & 170.2(c)4D	Window Interlocks per 140.4(n) & 170.2(c)4D
All Control Systems	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E		NA: Alteration	NA: Alteration Project

[1] FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.

J. VENTILATION AND INDOOR AIR QUALITY

This section does not apply to this project.

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This section does not apply to this project.

M. COOLING TOWERS

This section does not apply to this project.

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-4

Form/Title
NRCI-MCH-01-E - Must be submitted for all buildings

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

Form/Title	Systems/Spaces To Be Field Verified
NRCA-MCH-05-A - Air Economizer Controls	Olive Gym and Locker Room; Field House fan systems
NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance	HP 1,2 (Olive Gym)

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCV forms required for this project.

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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Q. MANDATORY MEASURES DOCUMENTATION LOCATION

This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.

01		02
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block	No	Plan sheet or construction document location
03		04
Mandatory Measure		**Plan sheet or construction document location**
Heating Equipment Efficiency per 110.1		M002
Cooling Equipment Efficiency per 110.1		M002
Furnace Standby Loss Control per 110.2(d)		Equipment Cutsheets
Heating Hot Water Equipment Efficiency per 110.1		M002
Combustion air shutoff, combustion air fan controls and stack design and controls for boilers per 120.9		Specifications
Heat Pump with Supplemental electric Resistance Heater Controls per 110.2(b)		N/A

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: 1336 - HVAC Improvements at Madera High School	**Report Page:**	**(Page 12 of 12)**
Project Address: 200 S L St, Madera, CA 93637	**Date Prepared:**	2024-02-06T13:57:02-05:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Matthew Ilagan	Documentation Author Signature: Matthew Ilagan
Company: Net Positive Consulting Engineers	Signature Date: 2/6/2024
Address: S Riwe Park Place East, Suite 315	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Fresno, CA. 93720	Phone: 559.940.7293

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: Jonathan Schlundt	Responsible Designer Signature:
Company: Net Positive Consulting Engineers	Date Signed: 2/6/2024
Address: S Riwe Park Place East, Suite 315	License: M59055
City/State/Zip: Fresno, CA. 93720	Phone: 559.940.7293

DRAWN BY: MI REVIEW BY:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122084 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 07/03/2024

NET POSITIVE
consulting engineers
www.NPCeng.com
559.940.7293

REGISTERED PROFESSIONAL ENGINEER JONATHAN C. SCHLUNDT Exp. 06-30-26 MECHANICAL STATE OF CALIFORNIA

REVISIONS:

Symbol	Description

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Symbol	Description

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Symbol	Description

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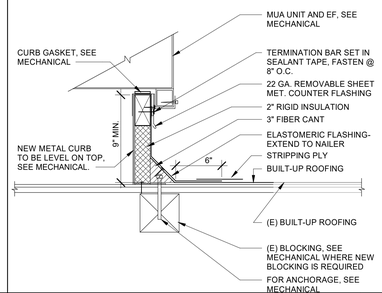
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

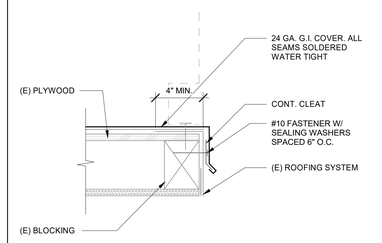
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
TITLE 24 DOCUMENTATION

SHEET NO:
M900



ROOF HVAC EQUIPMENT CURB 1 1/2" = 1'-0" 1



FLASHING @ (E)RAISED EQUIPMENT PLATFORM 12" = 1'-0" 2

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MARK	DATE	DESCRIPTION
	05/13/24	DSA BACKCHECK

TETER, INC.
FRESNO HEADQUARTERS
VISALIA | BAKERSFIELD | MODESTO | SAN LUIS OBISPO
ARCHITECTS ENGINEERS CONNECTED

HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

DRAWING TITLE
DETAILS

PROJECT NO.
23-12939

DRAWING
A800

3. STRUCTURAL WOOD

A. *MATERIALS: (UNLESS OTHERWISE NOTED ON DRAWINGS)*
   1. *ALL DIMENSIONED LUMBER: DOUGLAS FIR #1*
   2. *L.V.L. MATERIAL: 1.8E-DF/LP/WH LAMINATED VENEER LUMBER PER ICC ESR-1387*
   3. *L.S.L. MATERIAL: 1.7E LAMINATED STRAND LUMBER PER ICC ESR-1387.*
   4. *WOOD STRUCTURAL PANELS (PLYWOOD OR ORIENTED STRAND BOARD (OSB)): EACH PANEL SHALL BE IDENTIFIED WITH THE GRADE TRADEMARK OF THE APA. INSTALL ROOF PLYWOOD w/ FACE-GRAIN PERPENDICULAR TO SUPPORT FRAMING.*

B. *MACHINE BOLTS & LAG SCREWS:*
   1. *BOLTS AND NUTS: ASTM A307*
   2. *WASHERS: STANDARD CUT WASHERS SHALL BE FURNISHED AT EACH BOLT HEAD AND NUT PLACED NEXT TO WOOD.*
   3. *BOLT HOLES: MINIMUM 1/32" TO MAXIMUM 1/16" LARGER THAN BOLTS, ACCURATELY LOCATED. OVERSIZE OR SLOTTED HOLES NOT PERMITTED UNLESS SPECIFICALLY DETAILED ON DRAWINGS.*
   4. *LAG SCREWS: LEAD HOLE FOR THREADED PORTION SHALL BE 70% OF SHANK DIAMETER WITH A DEPTH EQUAL TO THE LENGTH OF SCREW AND CLEARANCE HOLE FOR UNTHREADED PORTION SHALL EQUAL THE DIAMETER AND LENGTH OF THE SCREW SHANK.*

C. *WOOD SCREWS: ANSI/ASME STANDARD B18.6.1*
   1. *CONNECTION WOOD TO WOOD: WOOD SCREWS MAY BE PRE-DRILLED. THE LEAD HOLE RECEIVING THE SHANK SHALL BE NO MORE THAN $\frac{7}{8}$ OF THE SHANK DIAMETER. THE LEAD HOLE RECEIVING THE THREADED PORTION SHALL BE NO MORE THAN $\frac{1}{4}$ DIAMETER OF THE SHANK AT THE THREADED PORTION.*
   2. *WOOD SCREWS SHALL NOT HAVE UPSET THREADS. DECKING SCREWS ARE NOT ALLOWED. SOAP OR OTHER LUBRICANT SHALL BE USED ON WOOD SCREWS TO FACILITATE INSERTION.*
   3. *CONNECTING PLYWOOD TO LIGHT GAUGE STEEL: USE SELF-DRILLING, FLAT PHILLIPS HEAD, ZINC-PLATED STEEL SCREWS.*
   4. *CONNECTING PLYWOOD TO STEEL SHAPES: USE THREAD CUTTING, FLAT PHILLIPS HEAD, ZINC-PLATED STEEL SCREWS.*

D. *FASTENERS , INCLUDING ANCHOR BOLTS, IN CONTACT WITH PRESSURE TREATED MATERIAL: FASTENERS SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL (ASTM A 153). FASTENERS OTHER THAN NAILS, WOOD SCREWS AND LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC COATED STEEL (ASTM B 695, CLASS 55 MIN.)*

E. *NAILED JOINTS: USE ONLY COMMON WIRE NAILS OR SPIKES. FOR MINIMUM REQUIREMENTS, REFER TO THE TYPICAL FASTENING SCHEDULE. (SINKERS AND BOX NAILS ARE NOT ALLOWED). PRE-DRILL HOLES WHERE WOOD TENDS TO SPLIT.*

F. *MISC. METAL CONNECTORS: ALL SHEET METAL CONNECTORS USED FOR CONNECTING STRUCTURAL WOOD MEMBERS SHALL HAVE C.B.C. APPROVAL AND CONNECTORS SHALL BE GALVANIZED.*

G. *CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR MISC. BLOCKING, FURRING, SHIMS, ETC. FOR ATTACHMENT OF FINISHES AND ORNAMENTAL ITEMS.*

H. *ALL SOLID SAWN LUMBER SHALL BE SEASONED LUMBER WITH A 19% MAX. MOISTURE CONTENT AT TIME OF INSTALLATION. WOOD PIECES EXCESSIVELY SPLIT, BENT OR DISTORTED SHALL BE REJECTED.*

2. CONCRETE

A. *GENERAL: ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI MANUAL OF CONCRETE PRACTICE AND THE C.B.C.*

B. *REINFORCING MATERIALS:*
   1. *DEFORMED ASTM A615 OR A706 - GRADE 60*
   2. *WELDED WIRE FABRIC, ASTM A1064*
   3. *WELDED REBAR (IF USED): ASTM A706*

C. *CONCRETE MIX DESIGNS: CONCRETE MIX SHALL BE LIMITED BY THE FOLLOWING. SEE SPECIFICATIONS FOR OTHER CONCRETE MIX INFORMATION.*

LOCATION	COMP. STRENGTH (f'c)	MAX. WATER/ CEMENT RATIO	AGGREGATE SIZE
HOUSEKEEPING PADS	3,000 psi	.60	ASTM C33 SIZE 8

D. *ADMIXTURES: ONLY AS APPROVED BY THE ARCHITECT AND IN ACCORDANCE WITH ASTM C494.*

E. *NO WELDING OF REINFORCING STEEL (BAR TO BAR) AS A SPLICE CONNECTION SHALL BE ALLOWED.*

F. *CONCRETE CURING: SEE SPECIFICATIONS.*

G. *FORM REMOVAL: SIDE FORMS OF FOOTINGS SLABS ON GRADE, MINIMUM 2 DAYS.*

H. *VIBRATION: VIBRATE ALL CONCRETE IN PLACE WITH A MECHANICAL VIBRATOR USED BY EXPERIENCED PERSONNEL.*

I. *TESTING. IN ACCORDANCE WITH ACI-318, SECTION 26.12. SEE SPECIFICATIONS FOR TAKING OF TEST SAMPLES.*

J. *DRILLED AND EPOXIED ANCHOR BOLTS: WHERE ANCHOR BOLTS OR HOLDOWN BOLTS ARE OMITTED, BOLTS SHALL BE SUBSTITUTED WITH DRILLED OR EPOXIED ANCHORS PER ENGINEERS WRITTEN DIRECTION.*

CONCRETE REINFORCEMENT COVER

LOCATION	MINIMUM COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	*3"*
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THROUGH #18 BAR	*2"*
#5 BAR, W31 OR D31, AND SMALLER	*1½"*

CONCRETE REINFORCEMENT LAP SPLICES

MIN. SPLICES UNLESS OTHERWISE DIMENSIONED ON DRAWINGS.

CONCRETE BAR TYPES

FOOTING BARS (OTHER THAN TOP BARS)
FOOTING 'TOP BARS'
HORIZ. & VERT. WALL BARS

LAP TYPE

CL1
CL2
CL2

BAR SIZE	CL1	CL2
#3 & #4	*32"*	*41"*
#5	*39"*	*51"*
#6	*47"*	*61"*
#7	*69"*	*89"*
#8	*78"*	*102"*

"TOP BAR" = HORIZ. BARS WHERE d > 12" FRESH CONCRETE PLACED BELOW HORIZ. REINF.

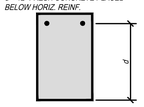
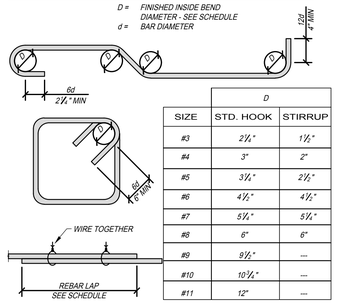


TABLE BASED ON 2.5 ksi CONCRETE AND CLASS B SPLICES

REINFORCEMENT BENDING REQUIREMENTS

D = FINISHED INSIDE BEND DIAMETER - SEE SCHEDULE
d = BAR DIAMETER



SIZE	D STD. HOOK	D STIRRUP
#3	*2½"*	*1½"*
#4	*3"*	*2"*
#5	*3½"*	*2½"*
#6	*4½"*	*4½"*
#7	*5¼"*	*5¼"*
#8	*6"*	*6"*
#9	*9½"*	*---*
#10	*10¾"*	*---*
#11	*12"*	*---*

1. GENERAL NOTES

A. *ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE CALIFORNIA BUILDING CODE (CBC), 2022 EDITION, AND ALL OTHER PUBLICATIONS AND STANDARDS LISTED HEREIN.*

B. *ALL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND ALL OTHER CONTRACT DRAWINGS AND SPECIFICATIONS.*

C. *DETAILS SHOWN ON STRUCTURAL DRAWINGS ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS. CONDITIONS NOT COMPATIBLE TO THE DETAILS PROVIDED SHALL BE REPORTED TO THE ARCHITECT.*

D. *DIMENSIONS SHOWN SHALL TAKE PRECEDENCE OVER SCALE ON PLANS, SECTIONS AND DETAILS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.*

E. *NOTES AND DETAILS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.*

F. *FRAMING AND DETAIL CONDITIONS SPECIFIED BY THESE DRAWINGS SHALL NOT BE MODIFIED WITHOUT APPROVED WRITTEN DOCUMENTATION FROM THE ENGINEER AND ARCHITECT. CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION OF CONDITIONS NOT APPROVED.*

G. *CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FLOOR OR ROOF FRAMING MEMBERS. LOAD SHALL NOT EXCEED DESIGN LIVE LOAD.*

H. *DESIGN LOADING: PER CBC, 2022 EDITION.*

I. *CONSTRUCTION DOCUMENTS SHALL CONSIST OF THE "APPROVED" DRAWINGS, SPECIFICATIONS AND ADDENDUM BEARING THE STAMP AND SIGNATURE OF THE ARCHITECT AND THE APPROVAL STAMP OF THE JURISDICTIONAL BUILDING DEPARTMENT. STRUCTURAL CALCULATIONS ARE NOT PART OF THE CONSTRUCTION DOCUMENTS AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.*

J. *ALL WORK SHALL BE PERFORMED FROM THE "APPROVED" DOCUMENTS ONLY. A FULL SET OF APPROVED DOCUMENTS SHALL BE KEPT ON SITE DURING ALL CONSTRUCTION PHASES.*

K. *CONTRACTOR TO NOTIFY E.O.R. PRIOR TO MODIFYING ANY EXISTING FRAMING BEYOND REMOVAL OF EXISTING UNIT BLOCKING.*

L. *DESIGN DATA CONDITIONS AS LISTED BELOW.*

WIND DESIGN DATA	
ULTIMATE WIND SPEED (3 SECOND GUST)	*100 mph*
WIND EXPOSURE CATEGORY	*C*
RISK CATEGORY	*III*

SEISMIC DESIGN DATA	
SEISMIC IMPORTANCE FACTOR (I)	*1.25*
RISK CATEGORY	*III*
MAPPED SPECTRAL RESPONSE	*S_S = 0.599* *S_1 = 0.235*
SITE CLASS	*D (DEFAULT)*
SPECTRAL RESPONSE COEFFICIENTS	*S_{DS} = 0.528*
SEISMIC DESIGN CATEGORY	*D*

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559.940.7293

REVISIONS:

Symbol	Description

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Symbol	Description

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Symbol	Description

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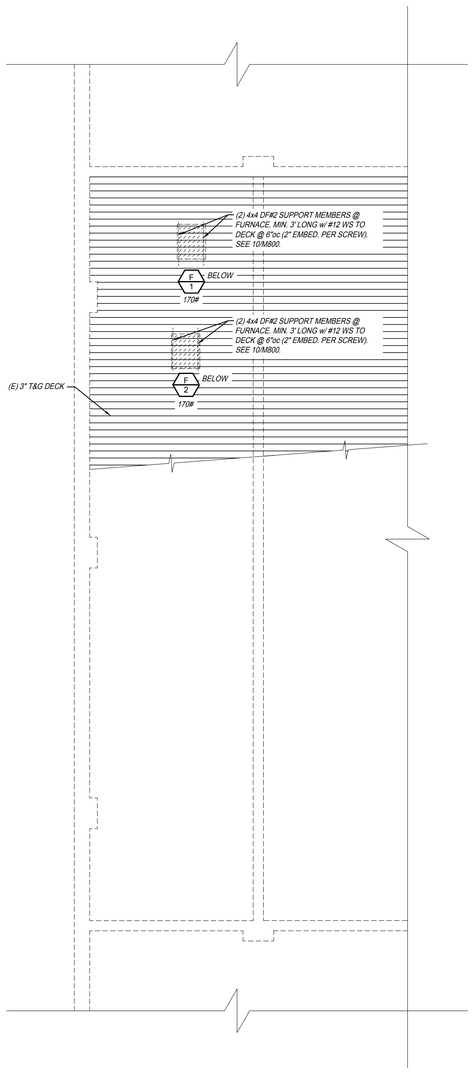
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO.: 1336

DATE: 05/13/2024
SHEET TITLE:
TYPICAL NOTES

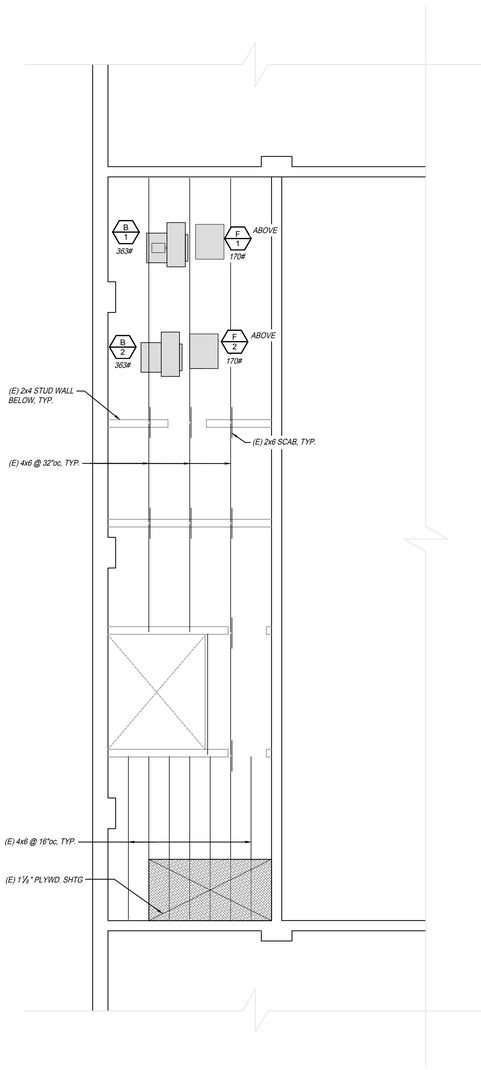
SHEET NO:
S100

PROVOST& PRITCHARD
PARRISH HANSEN
455 W FIR AVENUE
CLOVIS, CALIFORNIA 93611
559/449-2700 FAX 559/449-2715
https://provostandpritchard.com/



WRESTLING ROOM ROOF FRAMING PLAN

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



WRESTLING ROOM MEZZANINE FRAMING PLAN

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

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559.940.7293

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HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
WRESTLING ROOM
MEZZANINE
FRAMING PLAN

SHEET NO:
S220

REGISTERED PROFESSIONAL ENGINEER
GREGORY F. GOTT
No. S6790
STRUCTURAL
STATE OF CALIFORNIA

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455 W FIR AVENUE
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559/449-2700 FAX 559/449-2715
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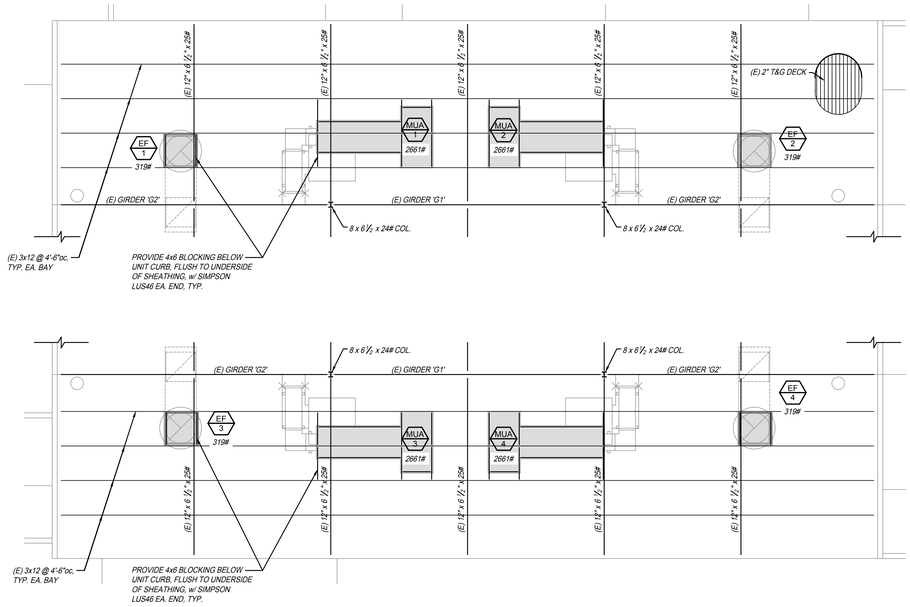

JOE FLORES GYM PARTIAL ROOF FRAMING PLAN

SCALE: ViewportScale

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MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
JOE FLORES GYM
PARTIAL ROOF
FRAMING PLAN

SHEET NO:
S521

REGISTERED PROFESSIONAL ENGINEER
GREGORY F. GOTT
No. S6790
STRUCTURAL
STATE OF CALIFORNIA

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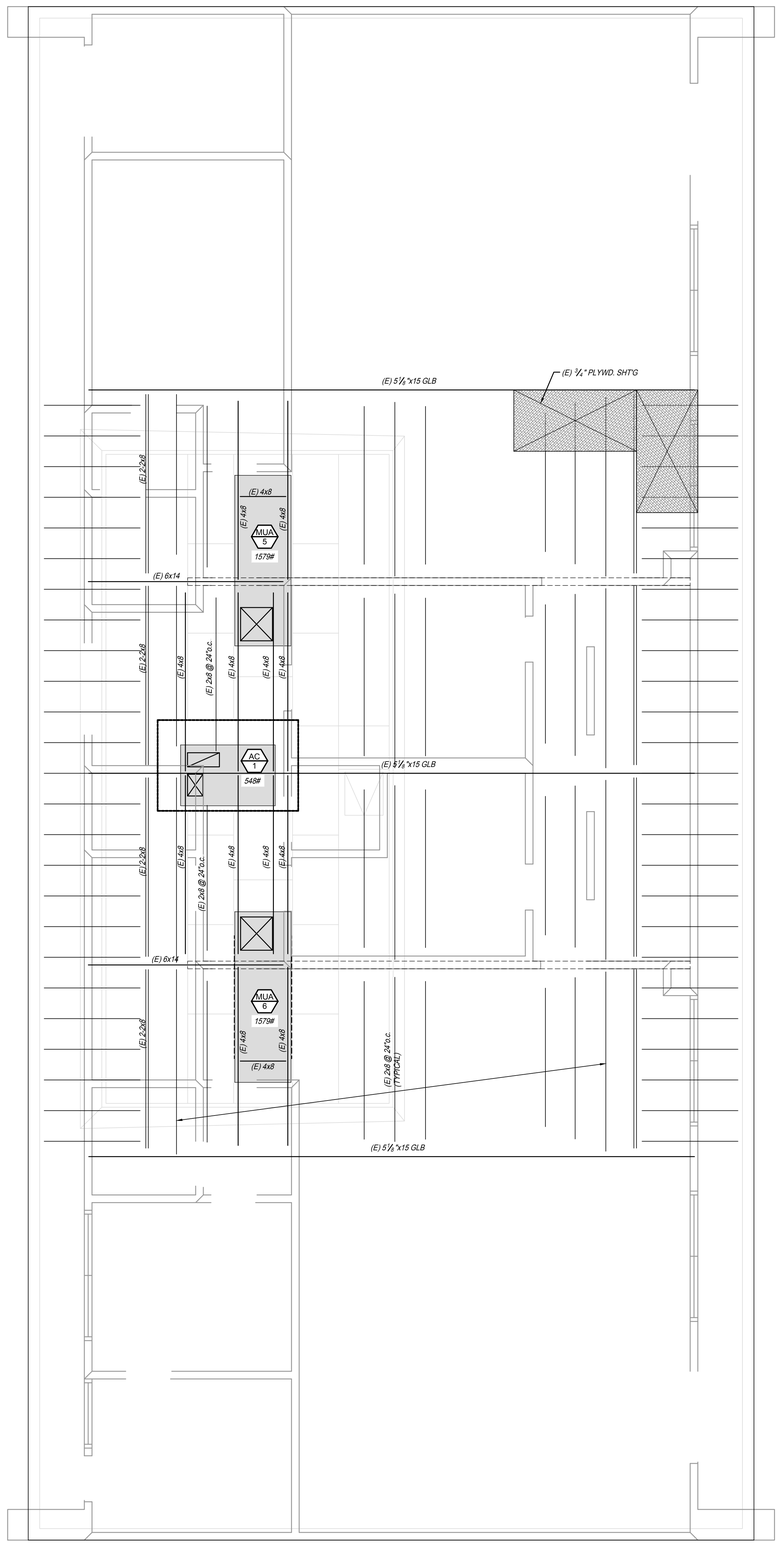

FIELD HOUSE PARTIAL ROOF FRAMING PLAN

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

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MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
FIELD HOUSE
PARTIAL ROOF
FRAMING PLAN

SHEET NO:
S540

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. GOTT
No. S6790
STRUCTURAL
STATE OF CALIFORNIA

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559/449-2700 FAX 559/449-2715
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DISCLAIMER:

REFIK ELECTRICAL ENGINEERS PROVIDES THE ATTACHED DRAWINGS WITH THE FOLLOWING CONDITIONS AND UNDERSTANDINGS. THIS DISCLAIMER IS APPLICABLE TO ALL SHEETS BEARING THE REFIK ELECTRICAL ENGINEERS SEAL. ALL INFORMATION IS ISSUED ON THE EXPRESS UNDERSTANDING THAT THE RECIPIENT ACCEPTS THESE LIMITATIONS AND DISCLAIMERS:

1. THE INFORMATION MUST SOLELY AND ONLY BE USED FOR THE COORDINATION AND/OR CONSTRUCTION OF THE CURRENT PROJECT.
2. THE INFORMATION ISSUED MAY BE CONFIDENTIAL AND MUST NOT BE USED OTHER THAN BY THE INTENDED RECIPIENT.
3. REFIK ELECTRICAL ENGINEERS ACCEPT NO LIABILITY OR RESPONSIBILITY FOR ANY LOSS OR DAMAGE SUFFERED BY THE RECIPIENT ARISING OUT OF, OR IN CONNECTION WITH, THE USE OR MISUSE OF THE INFORMATION ISSUED.
4. THE COPYRIGHT OF THE ORIGINAL DOCUMENTS BELONGS TO REFIK ELECTRICAL ENGINEERS. THE INFORMATION IS ONLY FOR USE IN PREPARATION OF DOCUMENTS FOR THIS PROJECT.
5. DO NOT SCALE OFF DRAWINGS. ANY MEASUREMENTS TAKEN FROM INFORMATION WHICH IS NOT DIMENSIONED ON THE ELECTRONIC COPY ARE AT THE RISK OF THE RECIPIENT.
6. THE RECIPIENT IS RESPONSIBLE FOR VERIFYING THE CORRECTNESS AND COMPLETENESS OF THE INFORMATION ISSUED. THIS SHOULD BE DONE BY CONSULTING ALL RELEVANT DOCUMENTS SUPPLIED DURING THE COURSE OF THE PROJECT AND BY CONFIRMING DIMENSIONS ON SITE.
7. IF ALTERED OR ADDED TO IN ANY WAY, ALL REFERENCES TO REFIK ELECTRICAL ENGINEERS MUST BE REMOVED AND THOSE MAKING THE CHANGES ASSUME TOTAL RESPONSIBILITY FOR THE INFORMATION THEREON.
8. ELECTRICAL DESIGN IS THE SOLE OWNERSHIP OF REFIK ELECTRICAL ENGINEERS.

GENERAL NOTES:

1. ALL ELECTRICAL POWER IN CLOSE PROXIMITY TO THE INSTALLATION OF THE ELECTRICAL EQUIPMENT MUST BE POWERED OFF PRIOR TO THE START OF CONSTRUCTION, TO PREVENT ANY ELECTRICAL INJURIES.
2. THE METHODS CONTAINED IN CEC ARTICLE 250 SHALL BE FOLLOWED TO COMPLY WITH GROUNDING AND BONDING OF ELECTRICAL SYSTEMS AND NON-CURRENT CARRYING CONDUCTIVE MATERIALS, ENCLOSURES, OR ITEMS FORMING PART OF ANY SUCH EQUIPMENT THAT ENCLOSES OR CARRIES ELECTRICAL CONDUCTOR OR EQUIPMENT THAT IS LIKELY TO BECOME ENERGIZED. SEE CEC 250.4(A)(1) THROUGH (5) FOR FURTHER DESCRIPTION.
3. PER CEC 110.26 "ACCESS AND WORKING SPACE SHALL BE PROVIDED AND MAINTAINED ABOUT ALL ELECTRICAL EQUIPMENT TO PERMIT READY AND SAFE OPERATION AND MAINTENANCE OF SUCH EQUIPMENT."
4. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED, OR CERTIFIED BY A NATIONALLY, RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION.
5. PER CEC 210.19 (A) INFORMATIONAL NOTE #4, "CONDUCTORS FOR BRANCH CIRCUITS AS DEFINED IN ARTICLE 100, SIZED TO PREVENT A VOLTAGE DROP EXCEEDING 3 PERCENT AT THE FARTHEST OUTLET OF POWER, HEATING, AND LIGHTING LOADS, OR COMBINATION OF SUCH LOADS, AND WHERE THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST OUTLET DOES NOT EXCEED 5%."
6. CONDUIT RUNS SHOWN ON THIS PLAN ARE DIAGRAMMATIC ONLY. CONTRACTOR SHALL DETERMINE BEST ROUTING TO THE EQUIPMENT.
7. CONTRACTOR TO PROVIDE STRUCTURAL SUPPORT AND ALL REQUIRED APPURTENANCE FOR ALL EQUIPMENT/DEVICES INCLUDING, BUT NOT LIMITED TO SURFACE RACEWAY, JUNCTION BOXES, ETC.
8. EXISTING ELECTRICAL FACILITIES AND CIRCUIT SHOWN ARE BASED ON LIMITED RECORD DRAWINGS AND OBSERVED SITE CONDITIONS. THE DRAWINGS MAY NOT ACCURATELY REPRESENT ACTUAL EXISTING CONDITIONS IN THE FIELD. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND RING OUT EXISTING CIRCUITS TO DETERMINE EXACT ROUTING.
9. NEW PENETRATIONS THROUGH WALLS, CEILINGS, FLOORS, AND/OR ROOFS SHALL BE SEALED.
10. WORK DONE TO EXISTING WALLS, CEILINGS, FLOORS, AND/OR ROOFS SHALL BE PATCHED AND FINISHED TO MATCH (E) SURROUNDING AREAS
11. COORDINATE ALL ELECTRICAL WORK WITH OTHER TRADES WHOSE WORK WILL IMPACT PLACEMENT OR CONNECTION OF ELECTRICALLY POWERED EQUIPMENT REGARDLESS OF RESPONSIBILITY FOR SUPPLYING EQUIPMENT.

MECHANICAL, ELECTRICAL AND PLUMBING ANCHORAGE NOTE:

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (e.g. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.

B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8 AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (e.g., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP☐ MD☐ PP☐ E☑ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP☐ MD☐ PP☐ E☐ - OPTION 2: SHALL COMPLY WITH HCAI (OHSPD) PREAPPROVAL (OPM#) #0052-13 AS INCLUDED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS

LEGEND:

O.C.	ON CENTER
U.O.N.	UNLESS OTHERWISE NOTED
A.F.F.	ABOVE FINISHED FLOOR
	DUPLEX RECEPTACLE, 18" A.F.F, O.C., U.O.N.
	QUADRUPLEX RECEPTACLE, 18" A.F.F., O.C., U.O.N.
	GFCI RECEPTACLE, 18" A.F.F., O.C., U.O.N.
	GFCI QUADRUPLEX RECEPTACLE, 18" A.F.F., O.C., U.O.N.
WP	WEATHER RESISTANT GFCI RECEPTACLE WITH WHILE-IN-USE WEATHERPROOF COVER, 18" A.F.F., O.C., U.O.N.
	HALF CONTROLLED DUPLEX RECEPTACLE, 18" A.F.F., O.C., U.O.N. RECEPTACLE SHALL BE PERMANENTLY MARKED PER NEC 406.4(E)
	DATA OUTLET, PROVIDE 1" CONDUIT BETWEEN OUTLET AND SERVER RACK, 18" A.F.F., O.C., U.O.N.
	FLOOR BOX WITH DUPLEX RECEPTACLE
	FLOOR BOX WITH DUPLEX RECEPTACLE AND DATA
	SPECIAL RECEPTACLE, 18" A.F.F., O.C., U.O.N. REFER TO POWER PLAN FOR MORE INFORMATION.
	JUNCTION BOX
TV	RECESSED TV BOX WITH POWER OUTLET AND AV/DATA JACK PROVISIONS. 65" A.F.F., O.C., U.O.N., VERIFY HEIGHT PRIOR TO ROUGH-IN. MAKE POWER CONNECTION AND PROVIDE 1-1/2"C STUB TO ACCESSIBLE ATTIC SPACE
P/D	POWER AND DATA JUNCTION BOXES WITH MODULAR FURNITURE FLEX WHIPS, 18" A.F.F., O.C., U.O.N.
	POWER POLE WITH POWER AND DATA CHANNELS AND BOXES
$_M	MOTOR RATED SNAP SWITCH, 600V, 20A (MIN)
	AC DISCONNECT. SEE PLANS FOR MORE INFORMATION.
	CONDUIT RUN, 3/4"C WITH 2#12 CU AND 1#12 CU GROUND U.O.N., IN WALL OR ATTIC.
	CONDUIT RUN, 3/4"C WITH 3#12 CU AND 1#12 CU GROUND, IN WALL OR ATTIC.
	CONDUIT RUN, 3/4"C WITH 4#10 CU AND 1#10 CU GROUND, IN WALL OR ATTIC.
	CONDUIT RUN, 3/4"C WITH 5#10 CU AND 1#10 CU GROUND, IN WALL OR ATTIC.
	CONDUIT RUN, 1"C WITH 6#10 CU AND 1#10 CU GROUND, IN WALL OR ATTIC.
	BELOW GRADE ELECTRICAL CONDUIT; SIZE AND COUNT AS NOTED
	EXISTING BELOW GRADE ELECTRICAL CONDUIT

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(559) 484-2049

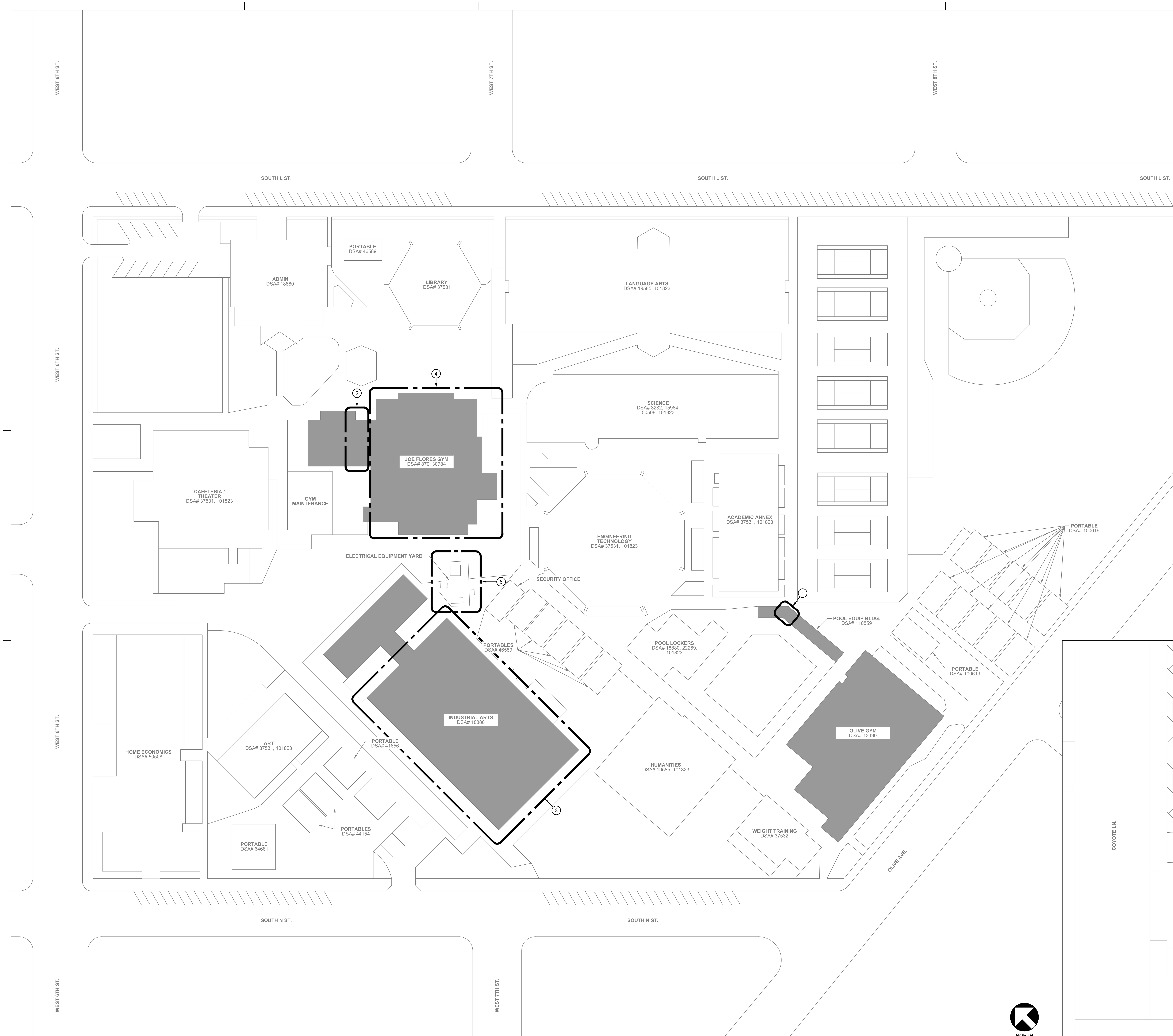
PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

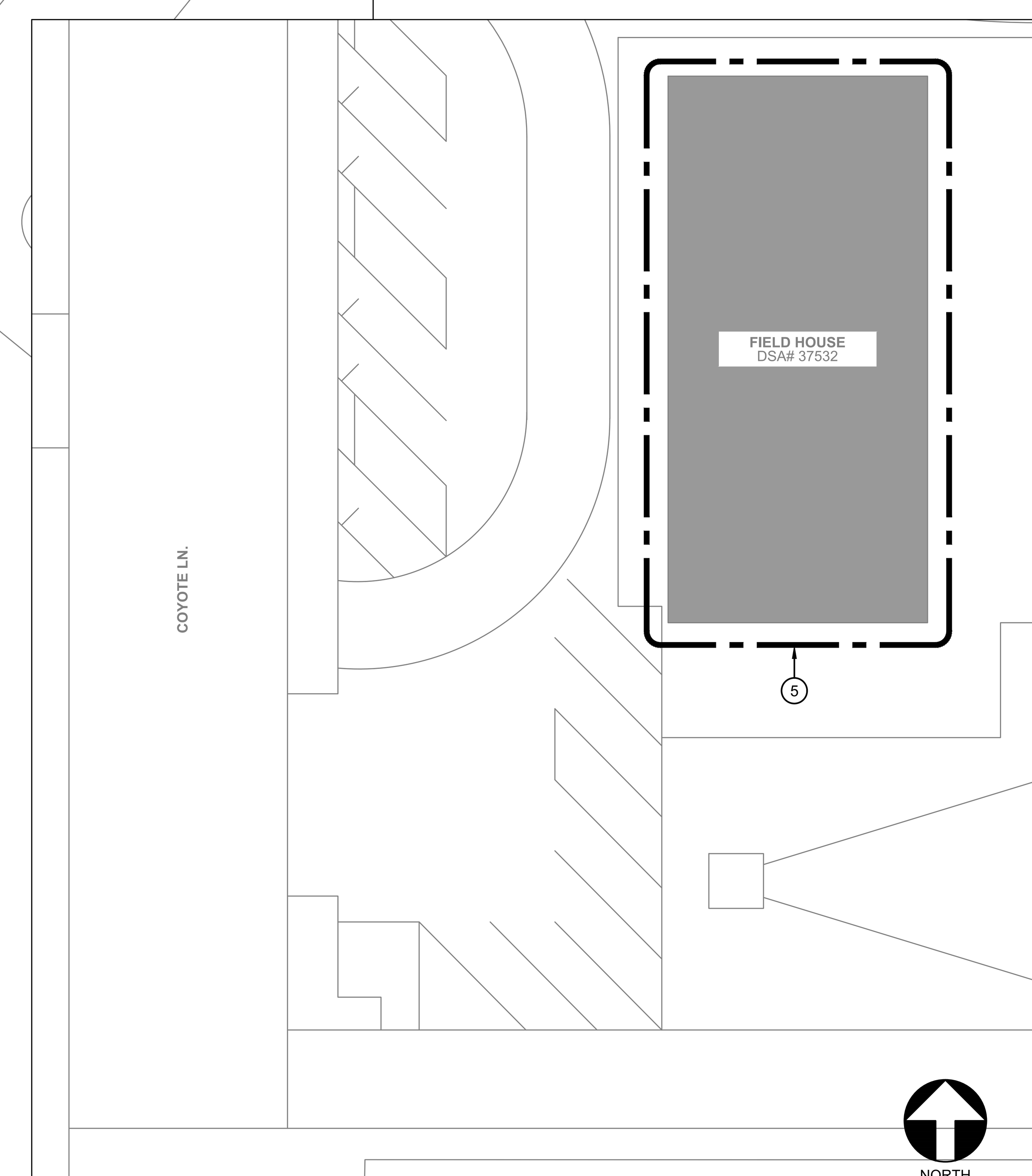
DATE: 05/13/2024

SHEET TITLE:
NOTES AND SPECIFICATIONS

SHEET NO:
E1.0



ELECTRICAL SITE PLAN 1" = 40'-0" 2



SITE PLAN - FIELD HOUSE 1" = 20'-0" 1

KEYNOTES:

1. FOR WORK IN THIS AREA, SEE POWER PLAN - OLIVE GYM BOILER ROOM ON SHEET [E3.0].
2. FOR WORK IN THIS AREA, SEE POWER PLAN - JOE FLORES GYM WRESTLING ROOM ON SHEET [E3.1].
3. FOR WORK IN THIS AREA, SEE POWER PLAN - INDUSTRIAL ARTS ON SHEET [E3.2].
4. FOR WORK IN THIS AREA, SEE ROOF DEMOLITION PLAN - JOE FLORES GYM ON SHEET [E3.4] AND ROOF POWER PLAN - JOE FLORES GYM ON SHEET [E3.5].
5. FOR WORK IN THIS AREA, SEE POWER PLAN - FIELD HOUSE ON SHEET [E3.3] AND [E3.6].
6. FOR WORK IN THIS AREA, SEE POWER PLAN - ELECTRICAL EQUIPMENT YARD ON SHEET [E3.7].

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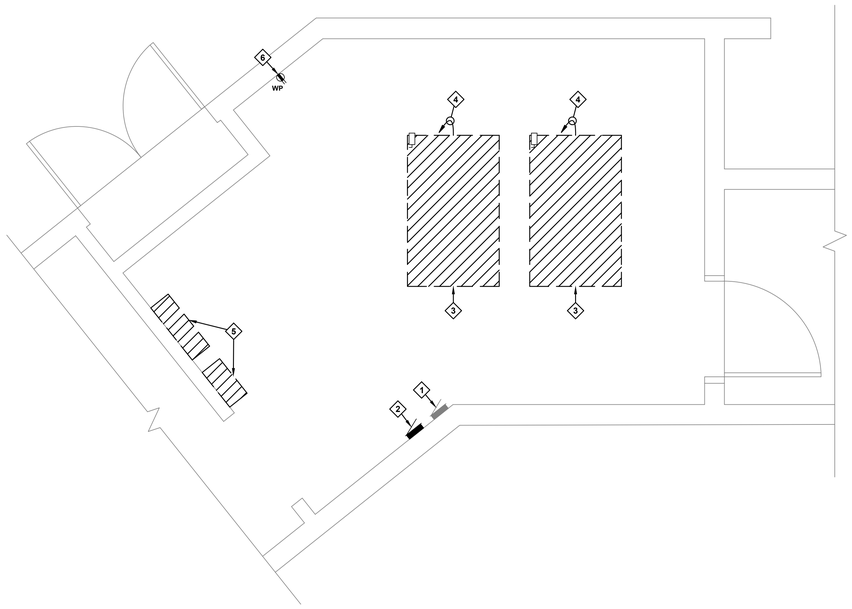
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
ELECTRICAL SITE PLAN
SHEET NO:
E2.0

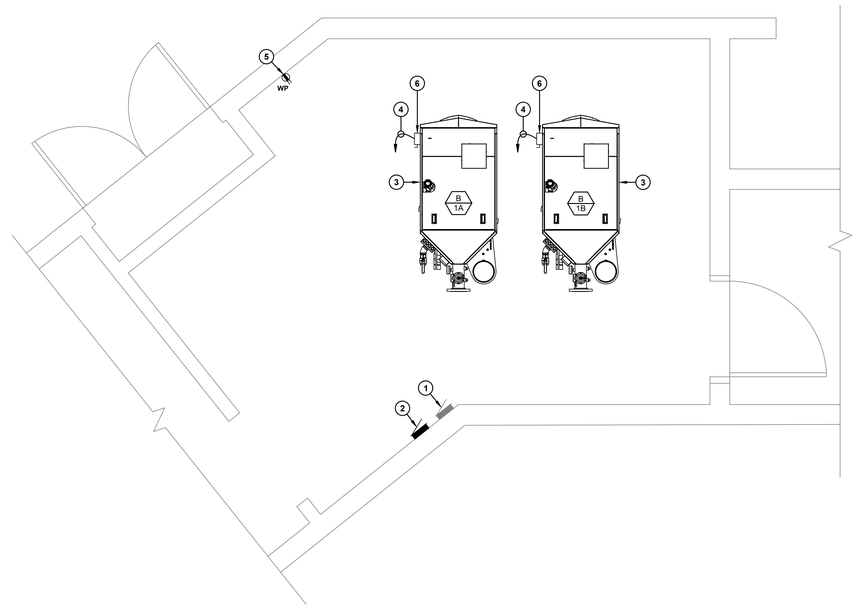


NORTH

DEMOLITION PLAN - BOILER ROOM

1/2" = 1'-0"

2



NORTH

POWER PLAN - BOILER ROOM

1/2" = 1'-0"

1

DEMOLITION KEYNOTES:

1. PRESERVE EXISTING DISTRIBUTION PANEL 'SP'.
2. PRESERVE EXISTING DISTRIBUTION PANEL 'AW'.
3. DISCONNECT EXISTING BOILER FOR DEMOLITION.
4. DEMO EXISTING CONDUIT AND CONDUCTORS.
5. DEMO EXISTING BOILER CONTROL PANELS AND EXISTING VFD.
6. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.

POWER KEYNOTES:

1. EXISTING DISTRIBUTION PANEL 'SP'. (NO CHANGES)
2. EXISTING DISTRIBUTION PANEL 'AW'. (NO CHANGES)
3. NEW BOILER. TERMINATE NEW BOILER PER MANUFACTURERS REQUIREMENTS.
4. PROVIDE (1) 3/4"C WITH 2#12 CU AND 1#12 CU GND FROM BOILER TO DISTRIBUTION PANEL 'AW'. TERMINATE ON EXISTING BOILER BREAKERS. FIELD COORDINATE WITH MECHANICAL FOR INTERCONNECTION TO EXISTING EMS SYSTEM.
5. EXISTING WEATHER RESISTANT GFCI RECEPTACLE.
6. PROVIDE 30A, 2-POLE, 240V, NEMA 3R NON-FUSED DISCONNECT. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 2#12 CU AND 1#12 CU GND FROM DISCONNECT TO BOILER.

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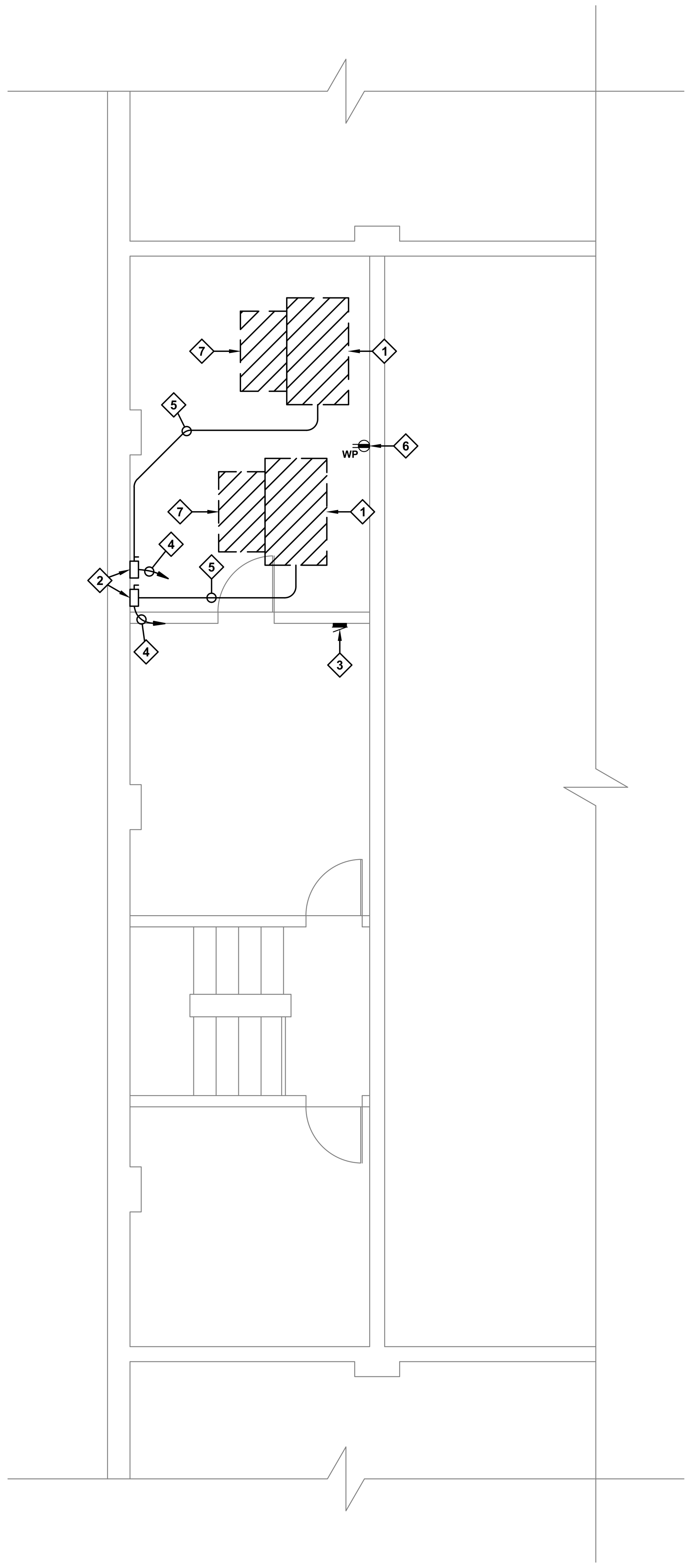
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
POWER PLAN -
OLIVE GYM
BOILER ROOM

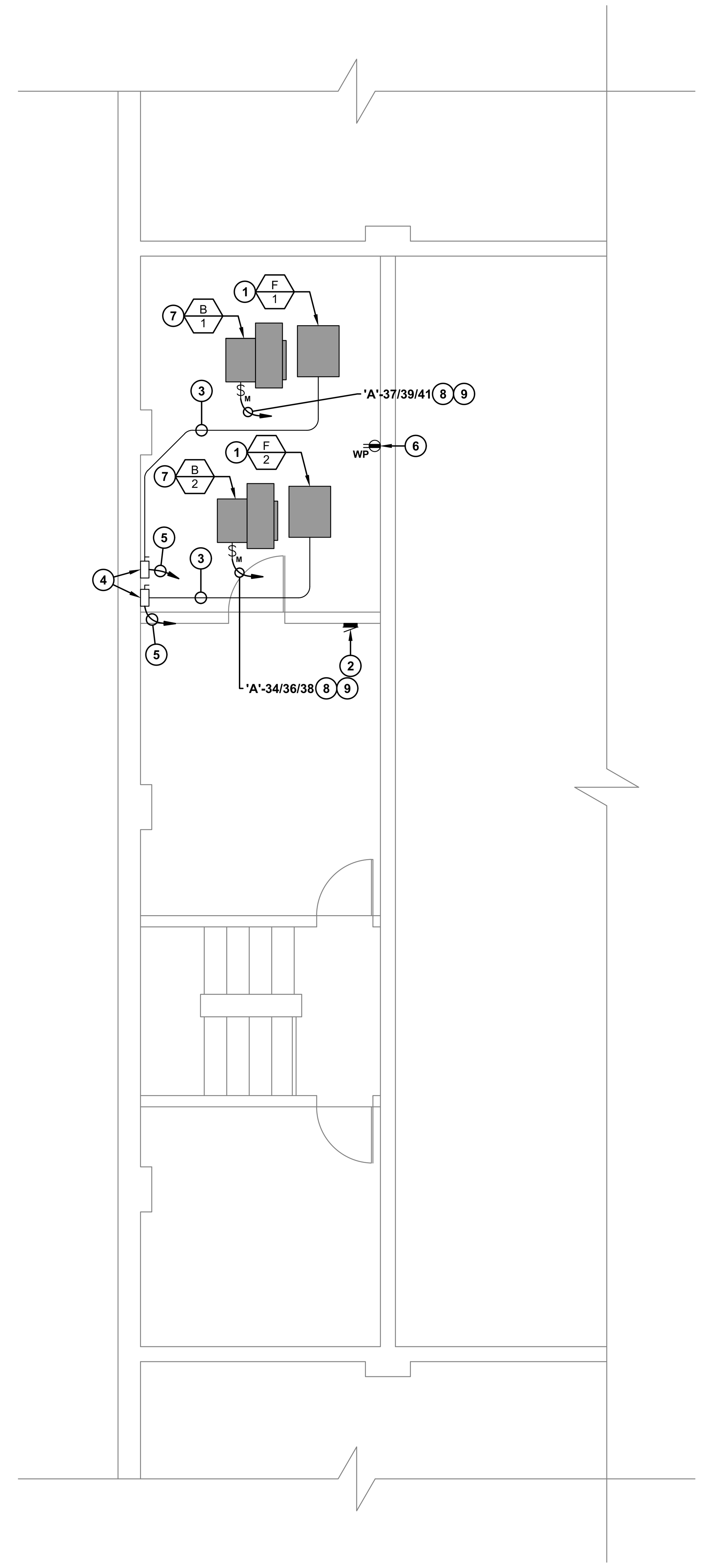
SHEET NO:
E3.0



NORTH

DEMOLITION PLAN - WRESTLING ROOM MEZZANINE

1/4" = 1'-0" | 2



NORTH

POWER PLAN - WRESTLING ROOM MEZZANINE

1/4" = 1'-0" | 1

DEMOLITION KEYNOTES:

1. DISCONNECT EXISTING FURNACE FOR DEMOLITION.
2. DEMO EXISTING FURNACE DISCONNECT.
3. PRESERVE EXISTING DISTRIBUTION PANEL 'A', LOCATED ON FIRST FLOOR.
4. PRESERVE EXISTING CONDUIT AND DEMO EXISTING CONDUCTORS.
5. DEMO EXISTING CONDUIT AND CONDUCTORS.
6. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.
7. DISCONNECT EXISTING BLOWER FOR DEMOLITION.

POWER KEYNOTES:

1. NEW FURNACE. TERMINATE NEW FURNACE PER MANUFACTURERS REQUIREMENTS.
2. EXISTING DISTRIBUTION PANEL 'A' LOCATED ON THE FIRST FLOOR. REMOVE (2) EXISTING 15A/3P BREAKERS FOR EXISTING FURNACES. PROVIDE (4) 20A/3P BREAKERS FOR PROPOSED IMPROVEMENTS AND UPDATE LABELS.
3. PROVIDE (1) 3/4"C WITH 2#12 CU AND 1#12 CU GND FROM DISCONNECT TO BOILER.
4. PROVIDE 30A, 240V, 3-POLE, NEMA 1 FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE.
5. PROVIDE CONDUCTORS IN EXISTING CONDUIT MIN. 3/4"C WITH 2#12 CU AND 1#12 CU GND TO PANEL 'A'.
6. EXISTING WEATHER RESISTANT GFCI RECEPTACLE.
7. NEW BLOWER. TERMINATE NEW BLOWER PER MANUFACTURERS REQUIREMENTS.
8. PROVIDE 600V, 3-POLE, 20A MOTOR RATED SNAP SWITCH. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 2#12 AND 1#12 CU GND FROM MOTOR RATED SNAP SWITCH TO BLOWER.
9. PROVIDE (1) 3/4"C WITH 2#12 CU AND 1#12 CU GND FROM DISCONNECT TO PANEL 'A'.

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MADERA UNIFIED SCHOOL DISTRICT
200 S L St. Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
POWER PLAN - JOE FLORES GYM WRESTLING ROOM

SHEET NO:
E3.1

DEMOLITION KEYNOTES:

1. DISCONNECT EXISTING UNIT HEATER FOR DEMOLITION. EXISTING UNIT HEATERS LOCATED WITHIN BUILDING. PRESERVE CONDUIT FROM UNIT HEATER TO SOURCE PANEL.
2. PRESERVE EXISTING DISTRIBUTION PANEL 'M1'.

POWER KEYNOTES:

1. NEW UNIT HEATER. TERMINATE NEW UNIT HEATER PER MANUFACTURERS REQUIREMENTS.
2. PROVIDE 240V, 2-POLE MOTOR RATED SNAP SWITCH. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 2#12 AND 1#12 CU GND FROM MOTOR RATED SNAP SWITCH TO NEW UNIT HEATER.
3. PROVIDE CONDUCTORS IN EXISTING CONDUIT FROM NEW MOTOR RATED SNAP SWITCH TO EXISTING DISTRIBUTION PANEL 'M1'. TERMINATE ON EXISTING UNIT HEATER BREAKERS. MIN. (1) 3/4"C WITH 2#12 CU AND 1#12 CU GND.
4. EXISTING DISTRIBUTION PANEL 'M1'. (NO WORK REQUIRED)

NORTH

POWER & DEMOLITION PLAN - INDUSTRIAL ARTS

1/8" = 1'-0"

1

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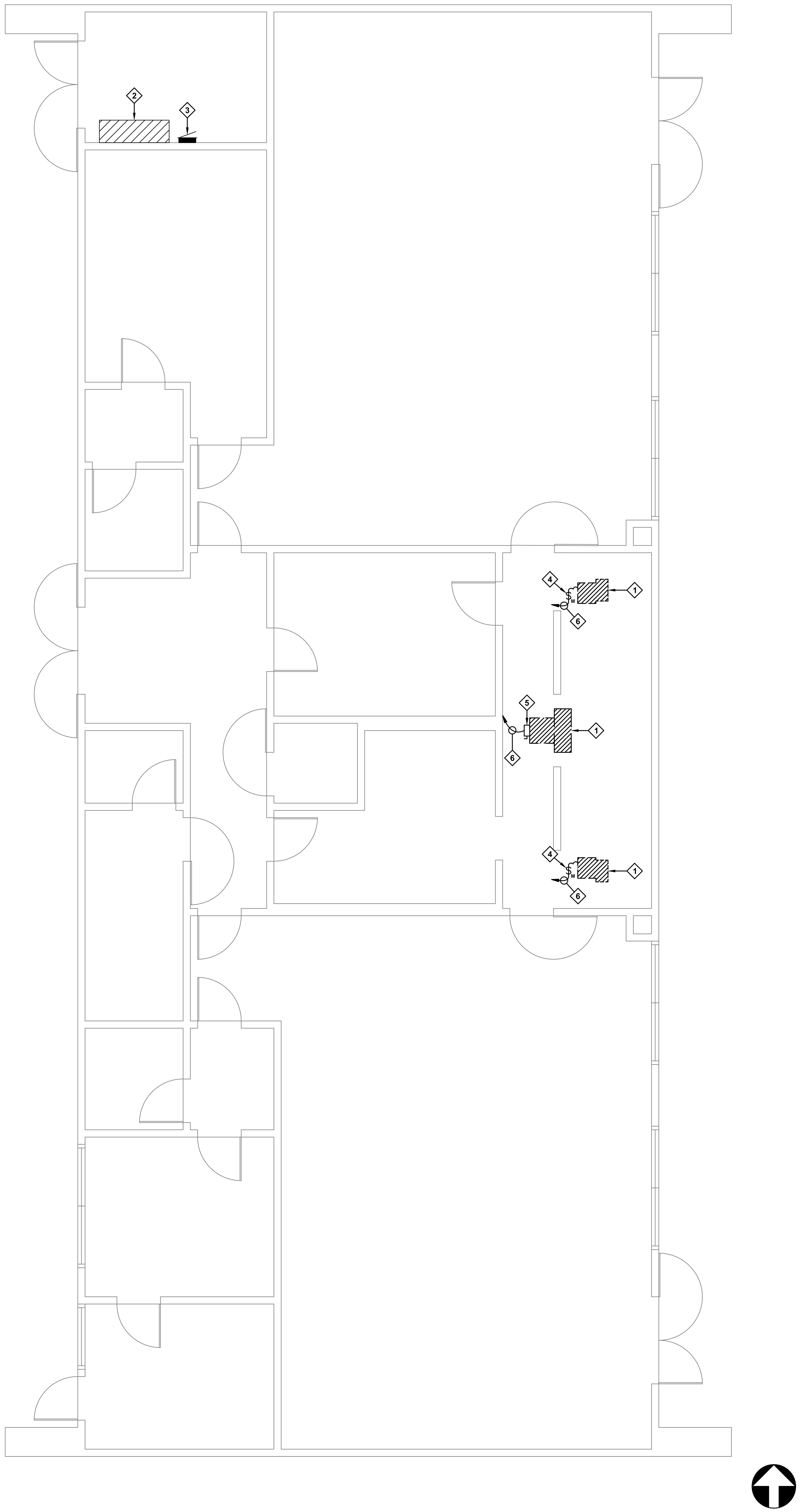
PROJECT NO: 1336

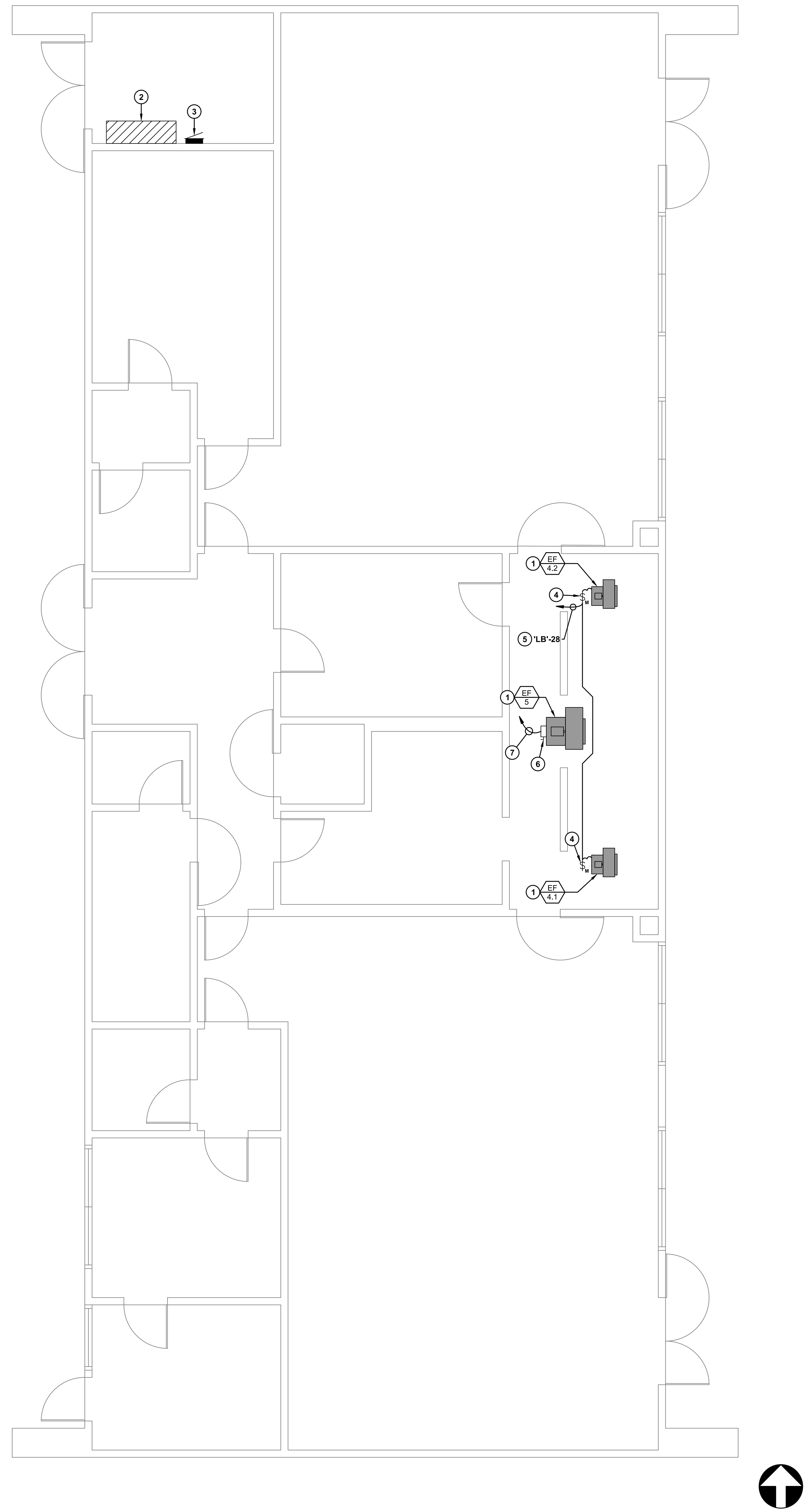
DATE: 05/13/2024
SHEET TITLE:
POWER PLAN - INDUSTRIAL ARTS

SHEET NO:
E3.2



DEMOLITION PLAN - FIELD HOUSE

1/4" = 1'-0" | 2



POWER PLAN - FIELD HOUSE

1/4" = 1'-0" | 1

DEMOLITION KEYNOTES:

1. DISCONNECT EXISTING EXHAUST FAN FOR DEMOLITION. EXISTING EXHAUST FAN LOCATED IN FIELD HOUSE MEZZANINE.
2. PRESERVE EXISTING DISTRIBUTION PANEL 'LA', LOCATED IN ELECTRICAL ROOM.
3. PRESERVE EXISTING DISTRIBUTION PANEL 'LB', LOCATED IN ELECTRICAL ROOM.
4. DEMO EXISTING SNAP SWITCH DISCONNECT.
5. DEMO EXISTING EXHAUST FAN DISCONNECT.
6. PRESERVE EXISTING CONDUIT AND DEMO EXISTING CONDUCTORS.

POWER KEYNOTES:

1. NEW EXHAUST FAN. TERMINATE NEW EXHAUST FAN PER MANUFACTURERS REQUIREMENTS.
2. EXISTING DISTRIBUTION PANEL 'LA' LOCATED IN ELECTRICAL ROOM. PROVIDE (1) 15A/3P CIRCUIT BREAKER BUCKET FOR EXHAUST FAN IN EXISTING SPARE BUCKET. UPDATE PANEL LABELS.
3. EXISTING DISTRIBUTION PANEL 'LB' LOCATED IN ELECTRICAL ROOM. PROVIDE (1) 20A/1P IN OPEN CIRCUIT #28 FOR EXHAUST FANS. UPDATE PANEL LABELS.
4. PROVIDE 240V, 2-POLE MOTOR RATED SNAP SWITCH. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 2#12 AND 1#12 CU GND FROM MOTOR RATED SNAP SWITCH TO NEW EXHAUST FAN.
5. PROVIDE CONDUCTORS IN EXISTING CONDUIT FROM NEW MOTOR RATED SNAP SWITCH TO EXISTING DISTRIBUTION PANEL 'LB' MIN. (1) 3/4"C WITH 2#12 CU AND 1#12 CU GND.
6. PROVIDE 30A, 600V, 3-POLE, NEMA 1 FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 3#12 AND 1#12 CU GND FROM DISCONNECT SWITCH TO NEW EXHAUST FAN.
7. PROVIDE CONDUCTORS IN EXISTING CONDUIT MIN. 3/4"C WITH 3#12 CU AND 1#12 CU GND TO PANEL 'LA'.

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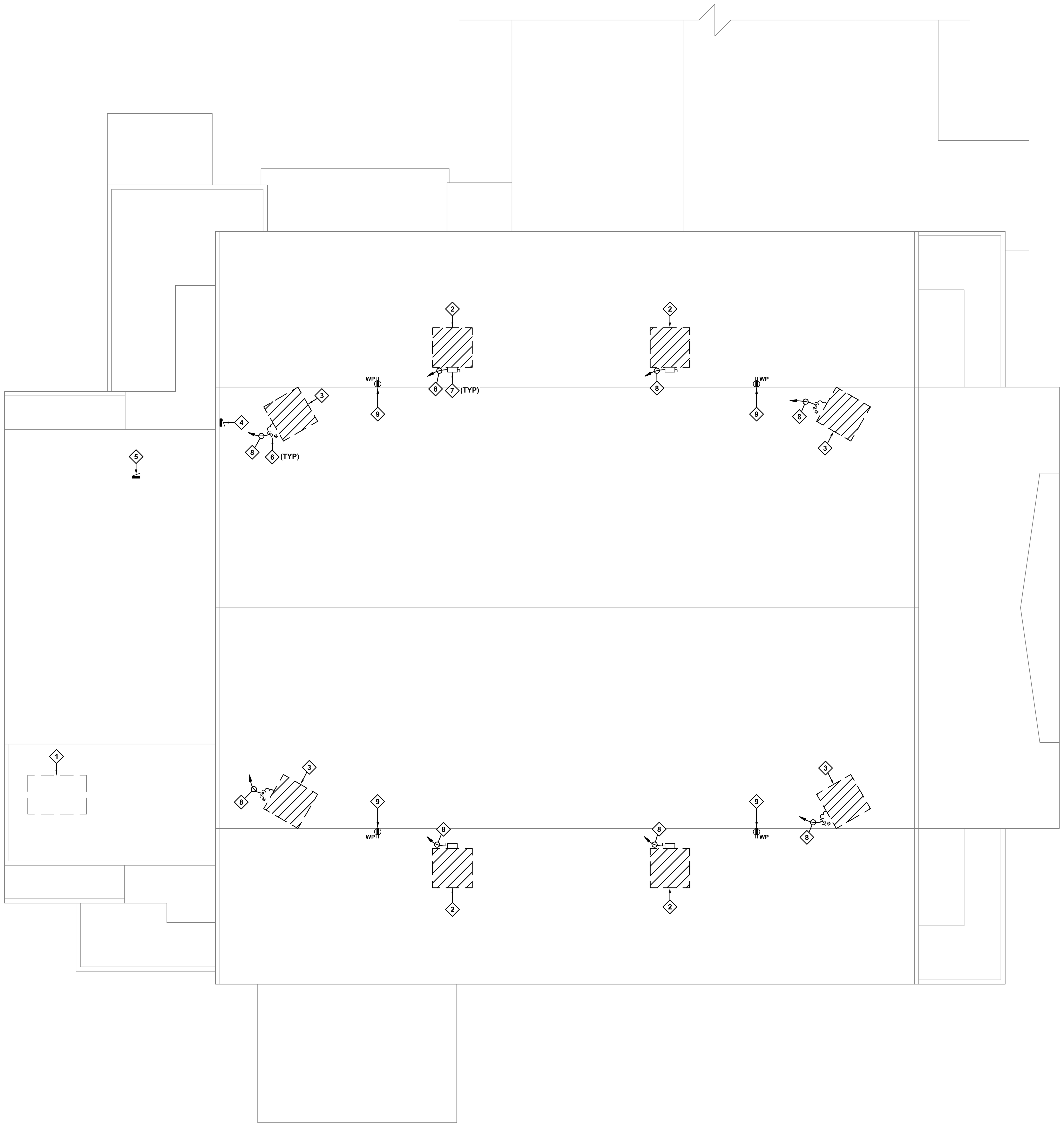
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
POWER PLAN - FIELD HOUSE

SHEET NO:
E3.3



ROOF DEMOLITION PLAN - JOE FLORES GYM

1/8" = 1'-0"

1

DEMOLITION KEYNOTES:

1. PRESERVE EXISTING MAKE UP AIR UNIT.
2. DISCONNECT EXISTING EVAP COOLER FOR DEMOLITION.
3. DISCONNECT EXISTING UNIT HEATER FOR DEMOLITION.
4. PRESERVE EXISTING DISTRIBUTION PANEL 'UNLABELED', LOCATED ON WALL OF GYM FLOOR.
5. PRESERVE EXISTING DISTRIBUTION PANEL 'A1', LOCATED IN STAIRWELL HALLWAY.
6. DEMO EXISTING SNAP SWITCH.
7. DEMO EXISTING EVAP COOLER DISCONNECT.
8. DEMO EXISTING CONDUIT AND CONDUCTORS.
9. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.

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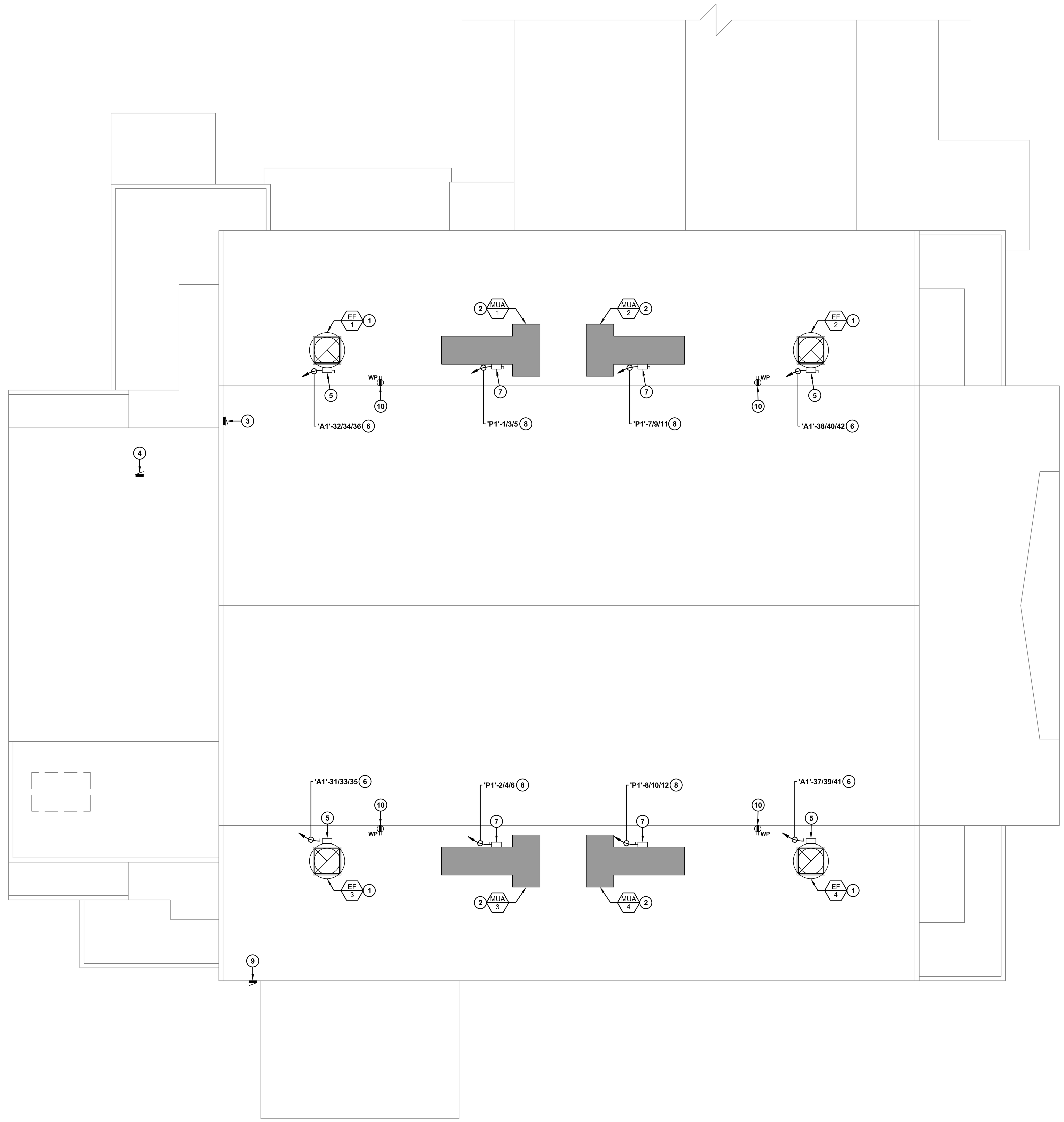
PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
ROOF DEMOLITION PLAN - JOE FLORES GYM

SHEET NO:
E3.4



NORTH

ROOF POWER PLAN - JOE FLORES GYM

1/8" = 1'-0" 1

POWER KEYNOTES:

1. NEW EXHAUST FAN. TERMINATE NEW EXHAUST FAN PER MANUFACTURERS REQUIREMENTS.
2. NEW MAKE UP AIR UNIT. TERMINATE NEW MAKE UP AIR UNIT PER MANUFACTURERS REQUIREMENTS.
3. EXISTING DISTRIBUTION PANEL 'UNLABELED' LOCATED ON WALL IN GYM FLOOR. (NO CHANGES)
4. EXISTING DISTRIBUTION PANEL 'A1' LOCATED ON WALL IN GYM FLOOR. UPDATE LABELS TO REFLECT PROPOSED CHANGES.
5. PROVIDE 60A, 3-POLE, 240V, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 3#8 AND 1#10 CU GND FROM DISCONNECT TO EXHAUST FAN.
6. PROVIDE (1) 3/4"C WITH 3#8 CU AND 1#10 GU GND FROM DISTRIBUTION PANEL 'A1' TO NEW EXHAUST FAN. TERMINATE ON EXISTING EVAP COOLER BREAKERS. SEE DETAILS [A/E4.0] & [B/E4.0] FOR ADDITIONAL INFORMATION.
7. PROVIDE 60A, 3-POLE, 600V, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 3#8 AND 1#10 CU GND FROM DISCONNECT TO MAKE UP AIR UNIT.
8. PROVIDE (1) 3/4"C WITH 3#8 CU AND 1#10 CU GND FROM DISCONNECT TO PANEL 'P1'.
9. PROPOSED SURFACE MOUNTED DISTRIBUTION PANEL 'P1' LOCATED ON EXTERIOR GYM WALL. SEE SHEET [E3.7] FOR ADDITIONAL INFORMATION.
10. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.

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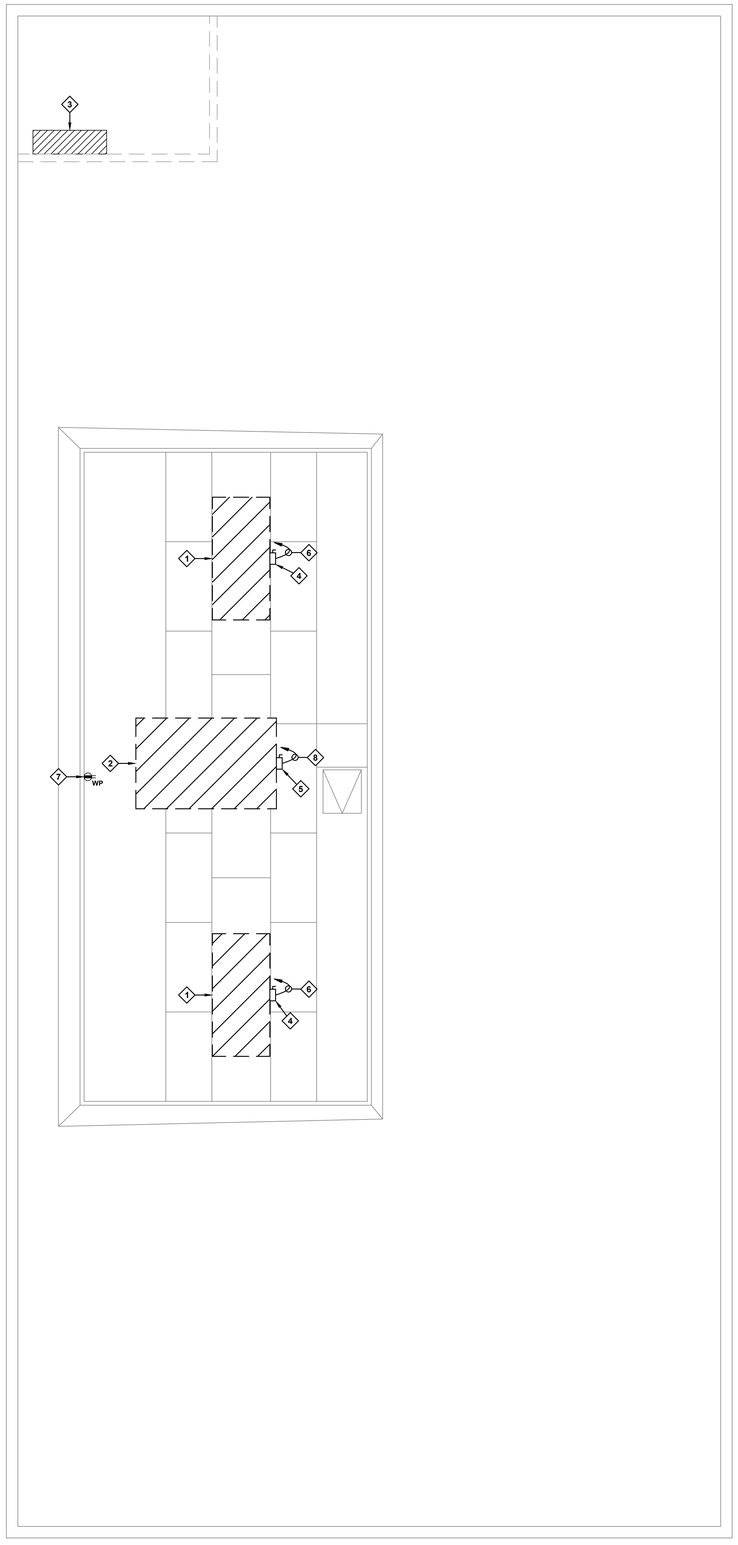
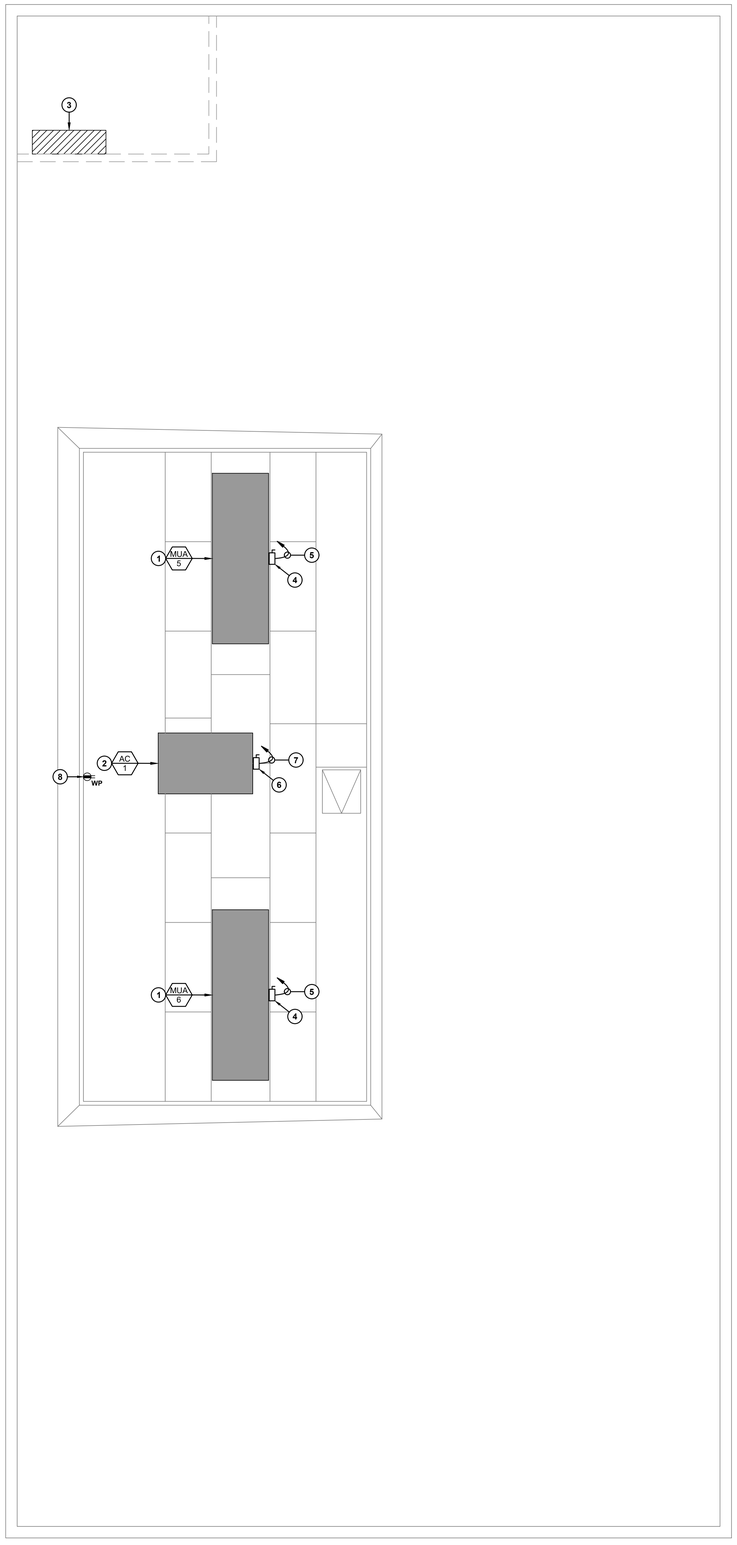
DATE: 05/13/2024
SHEET TITLE:
ROOF POWER PLAN - JOE FLORES GYM

SHEET NO:
E3.5



ROOF DEMOLITION PLAN - FIELD HOUSE 1/4" = 1'-0" 2

NORTH



ROOF POWER PLAN - FIELD HOUSE 1/4" = 1'-0" 1

NORTH

DEMOLITION KEYNOTES:

1. DISCONNECT EXISTING MAKE UP AIR UNIT FOR DEMOLITION.
2. DISCONNECT EXISTING PACKAGE UNIT FOR DEMOLITION.
3. PRESERVE EXISTING DISTRIBUTION PANEL 'LA', LOCATED IN ELECTRICAL ROOM.
4. DEMO EXISTING MAKE UP AIR DISCONNECT.
5. DEMO EXISTING PACKAGE UNIT DISCONNECT.
6. PRESERVE EXISTING CONDUIT AND DEMO EXISTING CONDUCTORS.
7. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.
8. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.

POWER KEYNOTES:

1. NEW MAKE UP AIR UNIT. TERMINATE NEW MAKE UP AIR UNIT PER MANUFACTURERS REQUIREMENTS.
2. NEW PACKAGE UNIT. TERMINATE NEW PACKAGE UNIT PER MANUFACTURERS REQUIREMENTS.
3. EXISTING DISTRIBUTION PANEL 'LA' LOCATED IN ELECTRICAL ROOM. (NO CHANGES).
4. PROVIDE 30A, 600V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH 3#12 AND 1#12 CU GND FROM DISCONNECT TO HEAT PUMP.
5. PROVIDE CONDUCTORS IN EXISTING CONDUIT MIN. (1) 3/4"C WITH 3#12 CU AND 1#12 CU GND. TERMINATE ON EXISTING HEAT PUMP BREAKER.
6. PROVIDE 30A, 600V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE. PROVIDE (1) 3/4" FLEXIBLE CONDUIT WITH NEW CONDUCTORS FROM DISCONNECT TO PACKAGE UNIT. 3#10 AND 1#10 CU GND.
7. TERMINATE EXISTING CONDUCTOR ON PROPOSED PACKAGE UNIT DISCONNECT.
8. EXISTING WEATHER RESISTANT GFCI RECEPTACLE.

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DATE: 07/03/2024

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MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S. St, Madera, CA 93637

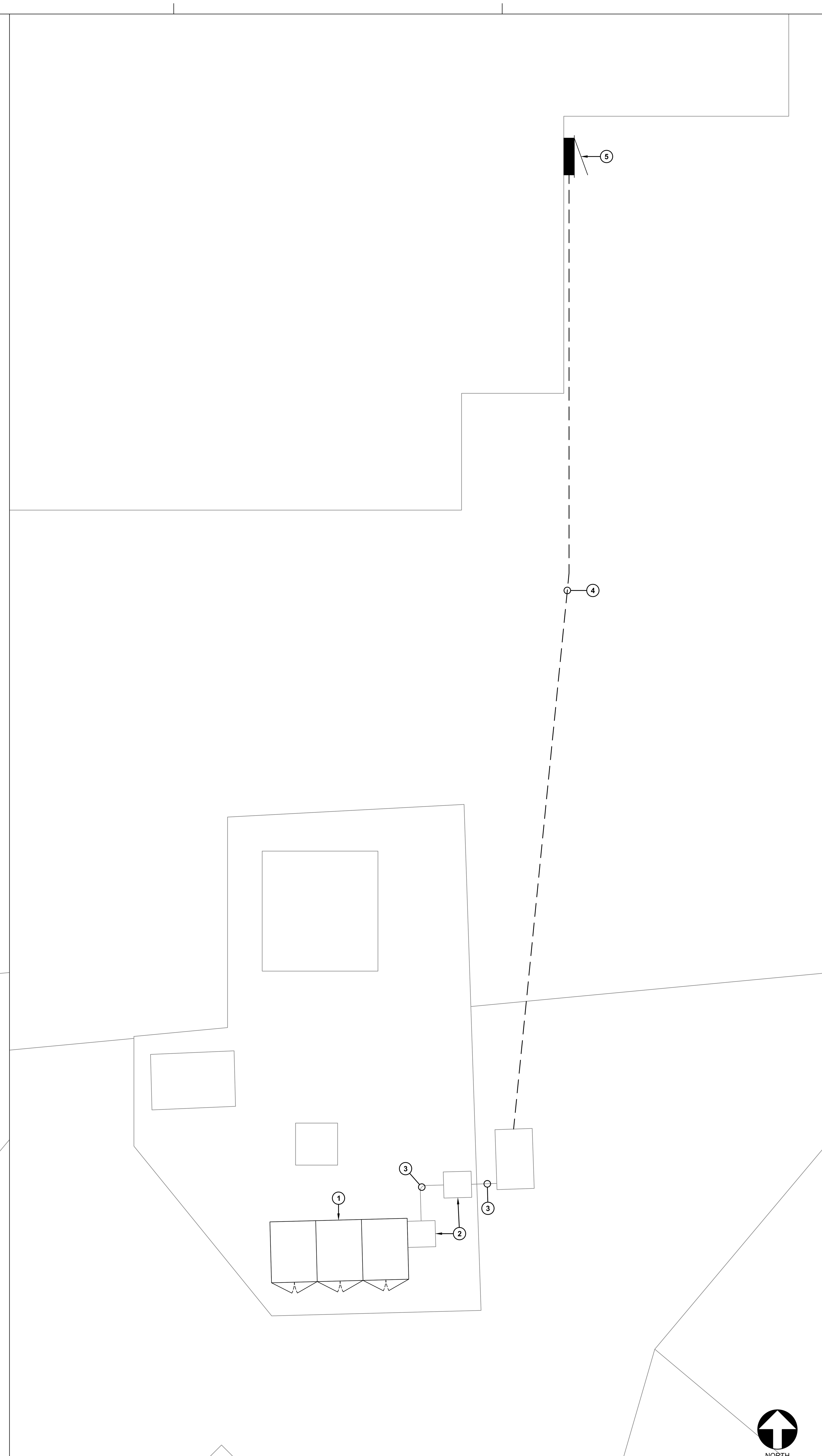
PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
ROOF POWER PLAN - FIELD HOUSE

SHEET NO:
E3.6

DEMOLITION PLAN - ELECTRICAL EQUIPMENT YARD 1" = 5'-0" 2



POWER PLAN - ELECTRICAL EQUIPMENT YARD 1" = 5'-0" 1

DEMOLITION KEYNOTES:

1. PRESERVE EXISTING MAIN SWITCH BOARD 'MSB', LOCATED IN ELECTRICAL EQUIPMENT YARD.
2. EXISTING PULLBOX TO REMAIN.
3. EXISTING CONDUIT AND CONDUCTORS TO REMAIN.
4. EXISTING ELECTRICAL VAULT TO REMAIN.
5. DEMO EXISTING ASPHALT FOR PROPOSED TRENCH. SEE TRENCH DETAIL [E/E4.0] FOR ADDITIONAL INFORMATION.

POWER KEYNOTES:

1. EXISTING MAIN SWITCH BOARD 'MSB'. PROVIDE A 200A, 3-POLE BREAKER FOR PROPOSED DISTRIBUTION PANEL 'P1'.
2. EXISTING PULLBOX.
3. IN EXISTING SPARE (1) 2"C, PULL IN 4#2 CU AND 1#6 CU GND FOR NEW FEEDER CIRCUIT.
4. PROVIDE (1) 2"C WITH 4#2 CU AND 1#6 CU GND IN PROPOSED TRENCH TO PANEL 'P1'. PROVIDE (1) 2"C SPARE WITH PULL ROPE, STUB AND CAP AT BASE OF BUILDING.
5. PROVIDE 200A, 277/480V, 3Ø, NEMA 3R SURFACE MOUNTED DISTRIBUTION PANEL 'NH1'. SEE PANEL SCHEDULE ON SHEET [F/E4.0]. SEE DETAIL [C/E4.0] FOR ADDITIONAL INFORMATION.

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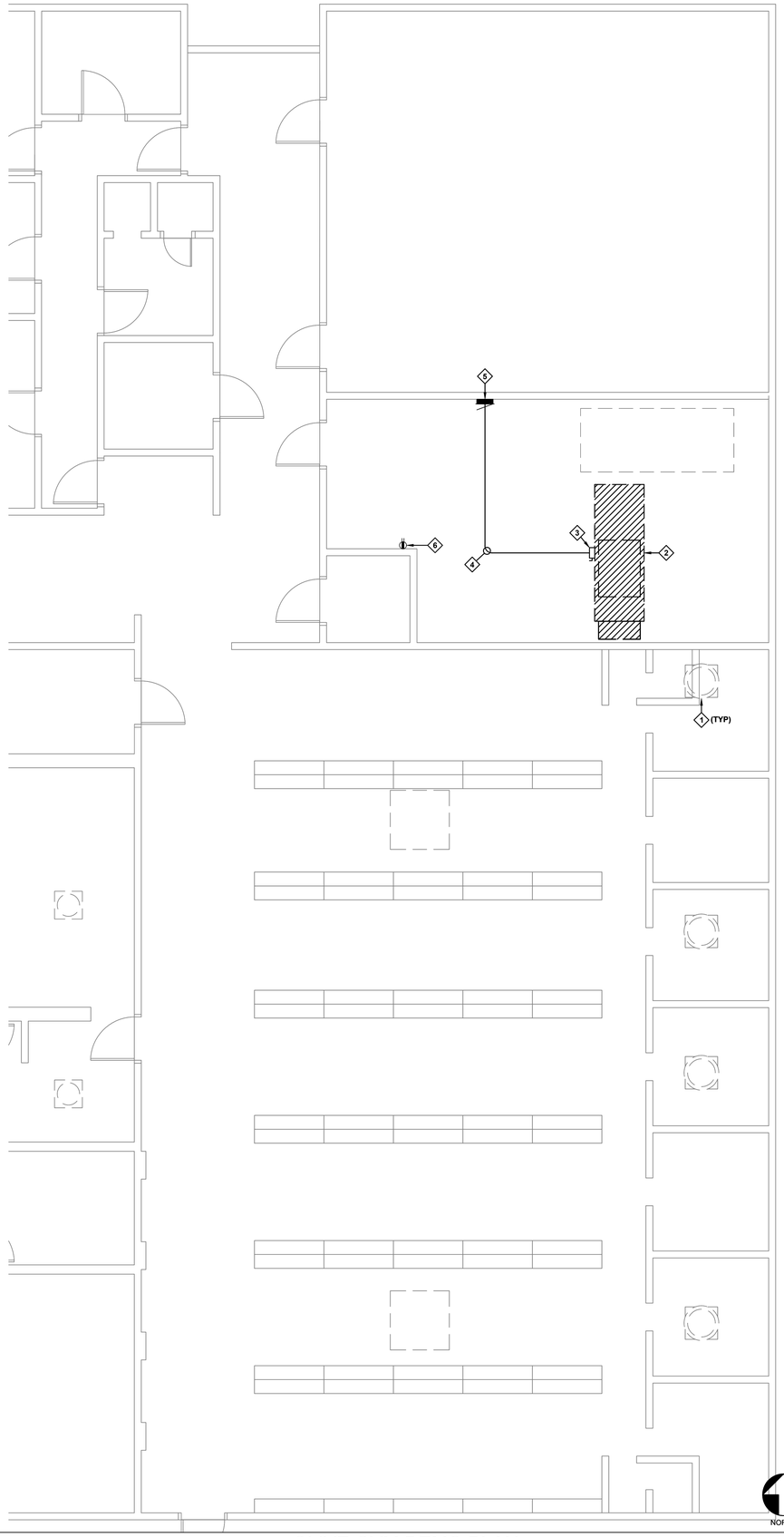
PROJECT NO: 1336

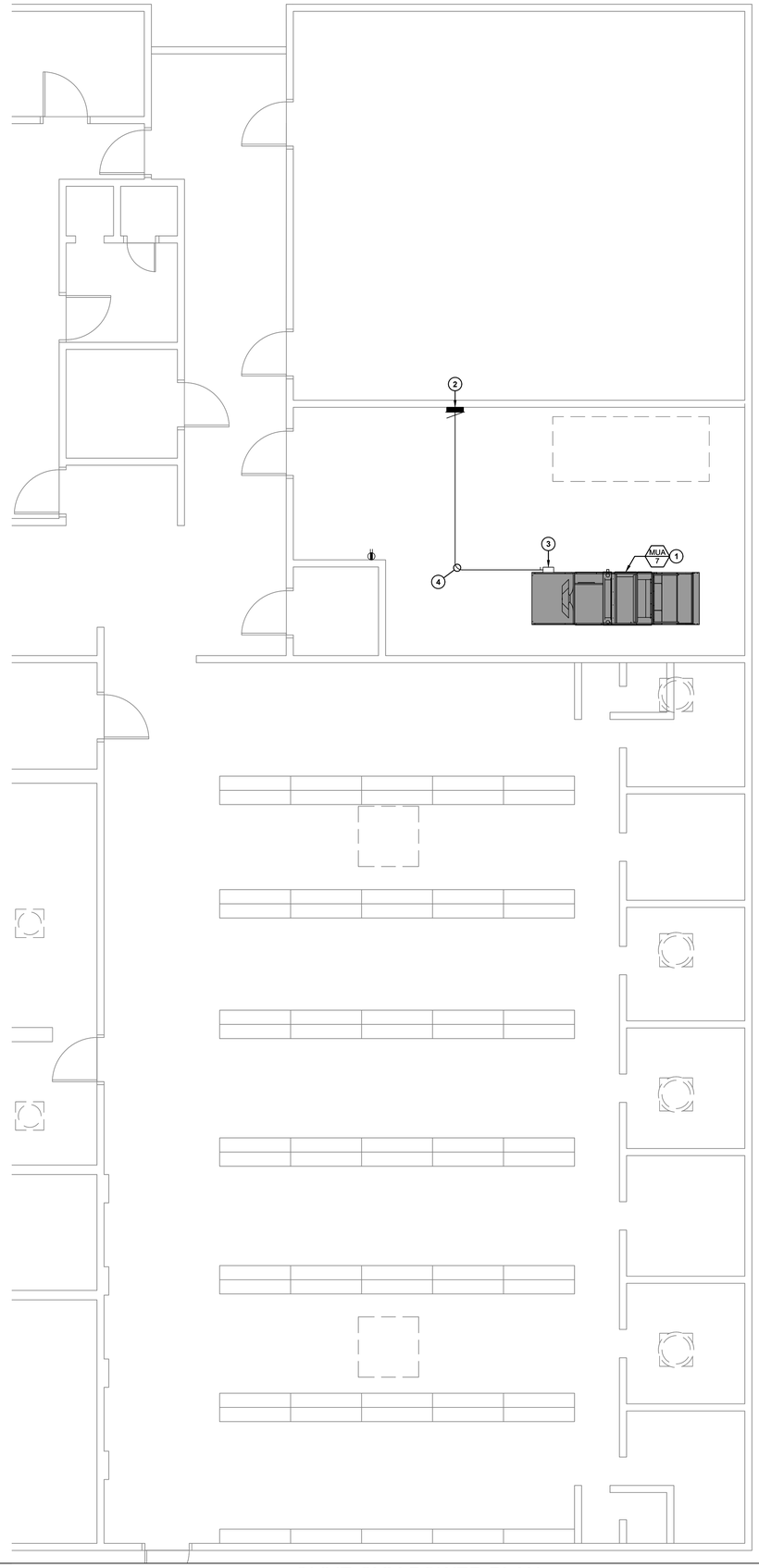
DATE: 05/13/2024

SHEET TITLE:
POWER PLAN - ELECTRICAL EQUIPMENT YARD

SHEET NO:
E3.7



OLIVE GYM DEMO PLAN 1/4" = 1'-0" 2



OLIVE GYM POWER PLAN 1/4" = 1'-0" 1

DEMOLITION KEYNOTES:

1. PRESERVE EXISTING EXHAUST FAN ON ROOF.
2. DISCONNECT EXISTING AIR HANDLER FOR DEMOLITION.
3. DEMO EXISTING AIR HANDLER DISCONNECT.
4. DEMO EXISTING CONDUIT AND CONDUCTORS.
5. PRESERVE EXISTING DISTRIBUTION PANEL 'F'.
6. PRESERVE EXISTING GFCI RECEPTACLE.

LEGEND AND KEYNOTES:

1. NEW MAKE UP AIR UNIT. TERMINATE NEW MAKE UP AIR UNIT PER MANUFACTURER'S REQUIREMENTS.
2. EXISTING DISTRIBUTION PANEL 'F'. PROVIDE NEW 25A, 3-POLE CIRCUIT BREAKER FOR NEW MAKE UP AIR UNIT BRANCH CIRCUIT.
3. PROVIDE NEW 30A, 600V, 3-POLE, NEMA 1 FUSED DISCONNECT. SIZE FUSES PER MECHANICAL NAMEPLATE.
4. PROVIDE (1) 3/4"C WITH 3#10 CU AND 1#10 CU GND.

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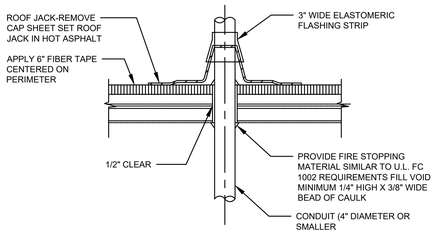
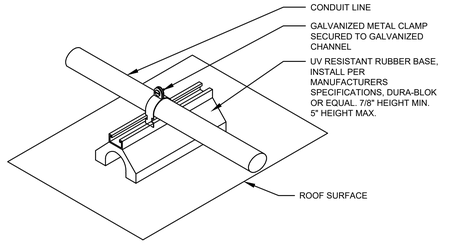
SHEET TITLE:
OLIVE GYM
POWER PLAN

SHEET NO:
E3.8

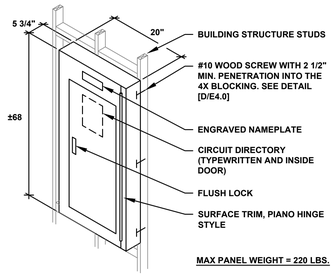


DETAIL NOTE:
SIMILAR TO U.L. FIRE RESISTANCE DIRECTORY SYSTEM F-C-1002

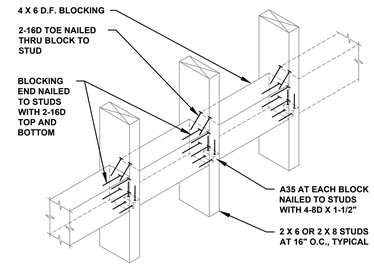
A E4.0 CONDUIT THRU ROOF DETAIL
NO SCALE



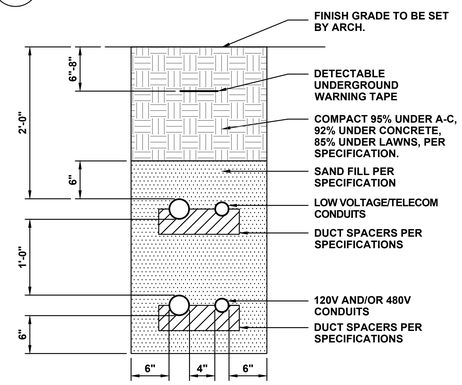
B E4.0 ROOF PIPE SUPPORT
NO SCALE



C E4.0 SURFACE MOUNTED PANEL DETAIL
NO SCALE



D E4.0 BLOCKING AT WOOD STUDS
NOT TO SCALE



ALL DIMENSIONS GIVEN ARE MINIMUM AND ARE ACCORDING TO SPECIFICATION SECTION 26 6000, GENERAL CONDITIONS FOR ELECTRICAL WORK, ARTICLES 3.3, AND SPECIFICATION SECTION 26 7000, BASIC ELECTRICAL MATERIALS AND METHODS, ARTICLE 3.4, PARAGRAPH D.

NOTES:

1. **CONDUITS INSTALLED UNDERGROUND BUT NOT UNDER BUILDINGS SHALL HAVE MINIMUM 24" COVER OVER TOP OF CONDUIT.**
2. **MATERIAL 6" BELOW, 6" AROUND, AND TO 6" ABOVE SHALL BE SAND.**
3. **TWO OR MORE POWER AND TELECOMMUNICATIONS CONDUITS INSTALLED IN A COMMON TRENCH SHALL BE SEPARATED BY A MINIMUM OF 12".**
4. **TWO OR MORE POWER OR TELECOMMUNICATIONS CONDUITS INSTALLED IN A COMMON TRENCH SHALL BE SEPARATED BY A MINIMUM OF 4".**
5. **INSTALL CONTINUOUS DETECTABLE WARNING TAPE 6" - 8" BELOW FINISHED GRADE AND DIRECTLY ABOVE POWER AND/OR COMMUNICATIONS CONDUIT RUNS.**

E E4.0 TYPICAL TRENCH SECTION
NO SCALE

Site Name:	MUSD HVAC Madera HS			MANUFACTURER:	SQUARE D OR EQUAL											
Panel Name:	P1			PHASE:	3			WIRE:	4							
VOLTAGE:	277/ 480	Volts AC		BUS RATING:	200 AMPS											
MAIN BREAKER:	200 AMPS			KAIC:	22											
MOUNT:	Surface															
ENCLOSURE TYPE:	NEMA 3R															
PANEL STATUS:	New															

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	Demand Factor	USAGE FACTOR	PHASE A VA	PHASE B VA	PHASE C VA	USAGE FACTOR	Demand Factor	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1					7788	1.00	1.00	15576			1.00	1.00	7788					2
3	MUA-1	45	3	New	7788	1.00	1.00		15576		1.00	1.00	7788	New	3	45	MUA-3	4
5					7788	1.00	1.00			15576	1.00	1.00	7788					6
7					7788	1.00	1.00	15576			1.00	1.00	7788					8
9	MUA-2	45	3	New	7788	1.00	1.00		15576		1.00	1.00	7788	New	3	45	MUA-4	10
11					7788	1.00	1.00			15576	1.00	1.00	7788					12
13	—	—	—	—		1.00	1.00	0			1.00	1.00		—	—	—	—	14
15	—	—	—	—		1.00	1.00		0		1.00	1.00		—	—	—	—	16
17	—	—	—	—		1.00	1.00			0	1.00	1.00		—	—	—	—	18
19	—	—	—	—		1.00	1.00	0			1.00	1.00		—	—	—	—	20
21	—	—	—	—		1.00	1.00		0		1.00	1.00		—	—	—	—	22
23	—	—	—	—		1.00	1.00			0	1.00	1.00		—	—	—	—	24
								PHASE A	PHASE B	PHASE C								
								31152	31152	31152	VA							
										TOTAL	KVA	93.46						
											AMPS	112.41						

G E4.0 PANEL 'P1' SCHEDULE
NO SCALE

Site Name:	MUSD HVAC Madera HS			MANUFACTURER:	SQUARE D OR EQUAL											
Panel Name:	LA			PHASE:	3			WIRE:	4							
VOLTAGE:	277/ 480	Volts AC		BUS RATING:	225 AMPS											
MAIN BREAKER:	225 AMPS			KAIC:	22											
MOUNT:	Surface															
ENCLOSURE TYPE:	Nema 1															
PANEL STATUS:	Existing															

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	Demand Factor	USAGE FACTOR	PHASE A VA	PHASE B VA	PHASE C VA	USAGE FACTOR	Demand Factor	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1					7788	1.00	1.00	14216			1.00	1.00	6428					2
3	Exhaust Fan (EF-5)	15	3	New	7788	1.00	1.00		16444		1.00	1.00	8656	Ex.	3	125	Panel 'LB'	4
5					7788	1.00	1.00			7788	1.00	1.00	0					6
7					1275	1.00	1.00	2550			1.00	1.00	1275					8
9	MUA-5	15	3	Ex.	1275	1.00	1.00		2550		1.00	1.00	1275	Ex.	3	15	MUA-6	10
11					1275	1.00	1.00			2550	1.00	1.00	1275					12
13						1.00	1.00	3049			1.00	1.00	3049					14
15	Spare	—	—	—		1.00	1.00		3049		1.00	1.00	3049	Ex.	3	70	AC Unit (AC-1)	16
17						1.00	1.00			3049	1.00	1.00	3049					18
19						1.00	1.00	4434			1.00	1.00	4434					20
21	Spare	—	—	—		1.00	1.00		4434		1.00	1.00	4434	Ex.	3	20	Unlabeled	22
23						1.00	1.00			4434	1.00	1.00	4434					24
								PHASE A	PHASE B	PHASE C								
								24249	26477	17821	VA							
										TOTAL	KVA	68.55						
											AMPS	82.45						

H E4.0 PANEL 'LA' SCHEDULE
NO SCALE

Site Name:	MUSD HVAC Madera HS			MANUFACTURER:	SQUARE D OR EQUAL											
Panel Name:	LB			PHASE:	1			WIRE:	3							
VOLTAGE:	120/ 240	Volts AC		BUS RATING:	225 AMPS											
MAIN BREAKER:	225 AMPS			KAIC:	22											
MOUNT:	Surface															
ENCLOSURE TYPE:	NEMA 1															
PANEL STATUS:	Existing															

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	Demand Factor	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	Demand Factor	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	Office, T.R., Lock Recpt.	20	1	Ex.	360	1.00	1.00	360		1.00	1.00		Ex.	1	20	Spare	2
3	Spare	20	1	Ex.		1.00	1.00		360	1.00	1.00	360	Ex.	1	20	Locker, Toilet, Janitor Recpt	4
5	Faculty Office Recpt.	20	1	Ex.	360	1.00	1.00	1160		1.00	1.00	800	Ex.	1	20	Fire Alarm	6
7	Attic Roof Lights	20	1	Ex.	1000	1.00	1.25		2450	1.00	1.00	1200	Ex.	1	20	H.W. Pumps	8
9	Attic Roof Recpt.	20	1	Ex.	360	1.00	1.00	360		1.00	1.00		Ex.	1	20	Spare	10
11	Spare	20	1	Ex.		1.00	1.00		0	1.00	1.00		Ex.	1	20	Spare	12
13	Exhaust Fan (EF-4.1)	20	1	Ex.	246	1.00	1.25	908		1.00	1.00	600	Ex.	1	20	Temp Cont. Panel	14
15	Exhaust Fan (EF-4.2)	20	1	Ex.	246	1.00	1.00		846	1.00	1.00	600	Ex.	1	20	Water Cooler	16
17	Spare	20	1	Ex.		1.00	1.00	600		1.00	1.00	600	Ex.	1	20	Water Cooler	18
19	Locker Rm., Lights	20	1	Ex.	1000	1.00	1.25		2500	1.25	1.00	1000	Ex.	1	20	Locker 2 Lights	20
21	Locker Equipment Lights	20	1	Ex.	1000	1.00	1.25	2500		1.25	1.00	1000	Ex.	1	20	Locker Mech. Lights	22
23	Office 889, Dressing Lights	20	1	Ex.	1000	1.00	1.25		2500	1.25	1.00	1000	Ex.	1	20	Exterior Lights	24
25	Trainging, Lobby, Office Recpts.	20	1	Ex.	540	1.00	1.00	540		1.00	1.00		Ex.	1	20	Spare	26
27	—	—	—	—		1.00	1.00		2	1.00	1.00	2	New	1	15	Exhaust Fan	28
29	—	—	—	—		1.00	1.00	0		1.00	1.00		—	—	—	—	30
								PHASE A	PHASE B								
								6428	8658	VA							
									TOTAL	KVA	15.09						
										AMPS	62.86						

F E4.0 PANEL 'LB' SCHEDULE
NO SCALE

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DETAILS

SHEET NO:
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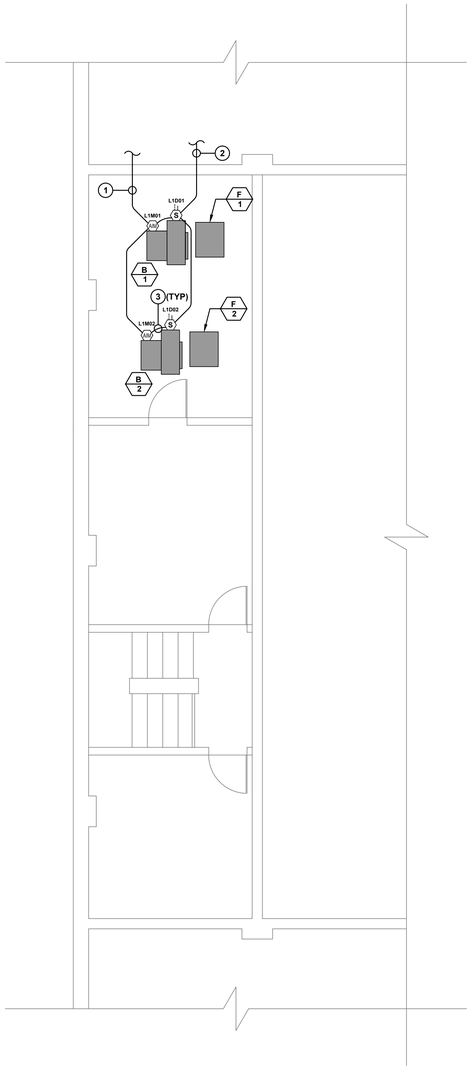

NORTH

INTERIOR FIRE ALARM PLAN

1/4" = 1'-0" | 1

GENERAL NOTES

1. SMOKE DETECTORS SHALL BE INSTALLED 3' AWAY FROM SUPPLY AND RETURN AIR REGISTERS.
2. FINAL FIRE ALARM TEST OF ALL DEVICES SHALL BE WITNESSED BY THE PROJECT INSPECTOR. TEST SHALL INCLUDE ALL INFORMATION PER NFPA 12 FIGURE 14.6.2.4 AND READ OUT VERIFICATION FORM FROM CENTER STATION.
3. UNDERGROUND AND EXTERIOR CONDUITS WILL HAVE WATER-TIGHT FITTINGS. (C.E.C. 110.11 AND 300.6)
4. AUDIBLE DEVICE(S) SHALL BE AT LEAST 15 DBA ABOVE AVERAGE AMBIENT SOUND LEVEL BUT NOT LESS THAN 75 DBA AT 10' OR MORE THAN 110DBA IN TOTAL, THROUGHOUT (NFPA 72 18.4.1 AND C.F.C. 907.6.2)
5. AUDIBLE DEVICES SHALL SOUND THE CALIFORNIA CODE IN TEMPORAL PATTERN CODE 3
6. VISUAL DEVICES SHALL NOT EXCEED TWO FLASHES PER SECOND AND SHALL NOT BE SLOWER THAN ONE FLASH PER SECOND (NFPA 72 18.5.2.1)
7. PROVIDE AND ENGRAVED NAMEPLATE INDICATING THE D.S.A. APPLICATION NUMBER, FILE NUMBER AND DATE OF INSTALLATION AT FIRE ALARM CONTROL PANEL "F.A.C.P." AND AT EACH FIRE ALARM POWER EXPANDER PANEL "P.E.P."

7.1. THE PRIMARY POWER SUPPLY TO THE FIRE ALARM CONTROL PANEL "F.A.C.P." AND EACH FIRE ALARM POWER EXPANDER PANEL "P.E.P." SHALL BE IN ACCORDANCE WITH NFPA 72 10.5.5 AND AS FOLLOWS:

7.1.1. THE CIRCUIT BREAKER FEEDING THE RESPECTIVE PANEL SHALL BE LOCATED IN A LOCKED ROOM OR BEHIND A LOCKABLE DOOR AND BE READILY ACCESSIBLE TO AUTHORIZED PERSONNEL ONLY. PAINT HANDLE RED

7.1.2. THE CIRCUIT BREAKER SHALL BE EQUIPPED WITH A LOCK-ON ACCESSORY

7.1.3. THE CIRCUIT BREAKER SHALL HAVE AN ENGRAVED NAMEPLATE THAT IDENTIFIES IT AS A "FIRE ALARM CIRCUIT." THIS ENGRAVED NAMEPLATE SHALL HAVE WHITE LETTERS ON A RED BACKGROUND. MOUNT ONTO THE INTERIOR TRIM AND LOCATE ADJACENT TO CIRCUIT BREAKER WHERE POSSIBLE

7.1.4. THE LOCATION OF THE CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL PANEL "F.A.C.P." AND AT EACH FIRE ALARM POWER EXPANDER PANEL "P.E.P." PROVIDE AN ENGRAVED NAMEPLATE (WHITE LETTERS ON A RED BACKGROUND) WHICH INDICATES THIS

8. PROVIDE A COPY OF THE BATTERY CALCULATION AT THE FIRE ALARM CONTROL PANEL "F.A.C.P." AND A COPY OF THE BATTERY CALCULATION AT EACH FIRE ALARM POWER EXPANDER PANEL "P.E.P." BATTERY CALCULATION SHALL CONTAIN INFORMATION AS NOTED ON SCHEDULES AND BE PLASTIC LAMINATED. MOUNT ONTO INSIDE OF FACE DOOR
9. MORE THAN TWO VISIBLE NOTIFICATION APPLIANCES OR GROUPS OF SYNCHRONIZED APPLIANCES IN THE SAME ROOM OR ADJACENT SPACE WITHIN THE FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION. NFPA 72 18.5.4.3.2(4)
10. THE AUTOMATIC ALARM SYSTEM SHALL BE INSTALLED, TESTED AND MAINTAINED IN ACCORDANCE WITH THE STATE FIRE MARSHAL'S REGULATIONS (C.F.C. 907.9)
11. FIRE ALARM SYSTEM SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH NFPA 72, CHAPER 14

FIRE ALARM SYSTEM CONDUCTOR SCHEDULE

FOR INITIATION ZONES:
1. "FA" CABLE - WEST PENN #D990 FOR INDOOR APPLICATIONS
2. "SFA" CABLE - WEST PENN #AQ225 FOR OUTDOOR APPLICATIONS
3. ALL CABLES SHALL BE U.L. LISTED AS C.E.C., TYPE "FPL"

FOR NOTIFICATION APPLIANCE CIRCUITS:
1. #12 AWG STRANDED COPPER CONDUCTORS, THHN/THWN INSULATION. USE #10 AWG CONDUCTORS WHERE NOTED AND PIGTAIL DOWN TO #12 AT NOTIFICATION APPLIANCE

FOR CONVENTIONAL INITIATION DEVICE CIRCUITS:
1. #14 AWG STRANDED COPPER CONDUCTORS, THHN/THWN INSULATION

FIRE ALARM LEVEL OF AUDIBILITY

ALARM INDICATING DEVICES OF A FIRE ALARM SYSTEM INTENDED TO ALERT ALL OCCUPANTS SHALL BE SO LOCATED AND UNOBSTRUCTED AS TO CAUSE A LEVEL OF AUDIBILITY OF NOT LESS THAN 15DB ABOVE AMBIENT NOISE LEVELS MEASURED FOUR FEET ABOVE THE FLOOR INSIDE BUILDING.

AMBIENT NOISE LEVELS SHALL BE CONSTRUED TO MEAN THAT WHICH CAN NORMALLY BE EXPECTED TO EXIST WHEN THE FACILITY, BUILDING, ROOM OR AREA IS FUNCTIONING UNDER NORMAL OPERATIVE OR WORKING CONDITIONS.

THE FIRE ALARM SIGNAL SHALL COMPLY WITH THE CALIFORNIA EDUCATION CODE, SECTIONS 32000 AND 32004, AND BE A TEMPORAL PATTERN, CODE 3.

SCHOOL FIRE ALARM REQUIREMENTS

THE FIRE ALARM SYSTEM SHALL CONFORM TO CALIFORNIA BUILDING CODE, SECTION 907.2.3; CALIFORNIA ELECTRICAL CODE, ARTICLE 760 AND CALIFORNIA FIRE CODE, CHAPTER 9, SECTION 907.

UPON COMPLETION OF THE INSTALLATION OF THE FIRE PROTECTIVE SIGNALING EQUIPMENT, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE ENFORCING FIRE AGENCY, NFPA 72. IF TESTING RESULTS DETERMINE FIRE ALARM AUDIBILITY DOES NOT MEET 15DB OVER AMBIENT NOISE LEVELS, ADDITIONAL FIRE ALARM SIGNALING DEVICES MAY BE REQUIRED BY THE ENFORCING AGENCY.

FIRE ALARM SYSTEM CERTIFICATION AND DESCRIPTION SHALL BE PROVIDED FOR TESTING AND A PLASTIC LAMINATED COPY SHALL REMAIN (WITH INSTRUCTIONS) AT THE FIRE ALARM CONTROL PANEL PER NFPA 72.

THE FIRE ALARM "CERTIFICATION OF COMPLETION" FORM IN NFPA 72 SHALL BE COMPLETED, SIGNED AND SUBMITTED.

COMPLETE AUTOMATIC FIRE ALARM SYSTEM SUBMITTAL

THE FIRE ALARM SYSTEM SHOWN ON THESE PLANS HAS BEEN SUBMITTED AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT. ANY SUBSTITUTION OF THE FIRE ALARM SYSTEM SHALL BE RESUBMITTED TO THE ARCHITECT FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL PAY ANY ADDITIONAL FEES THAT ARE OCCURRED DUE TO THIS SUBSTITUTION.

THE FIRE ALARM SYSTEM SHALL BE A TOTAL (COMPLETE) AUTOMATIC HEAT AND SMOKE DETECTION SYSTEM, PER C.F.C. SECTION 907.2.3.6, AND SHALL COVER EVERY ROOM AND/OR AREA. UPON THE ACTIVATION OF ANY INITIATION DEVICE THE FIRE ALARM SYSTEM SHALL ALERT ALL OCCUPANTS AND TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION (C.F.C SECTION 907.2.3.5).

FIRE KEYNOTES AND LEGEND:

1. T-TAP EXISTING SLC CIRCUIT FROM ADDRESSABLE INPUT MODULE AT NAC EXPANDER PANEL AND EXTEND "FA" CABLING TO PROPOSED DUCT DETECTORS. SEE SHEET [F2.0] FOR CONTINUATION TO NAC EXPANDER PANEL AND LOCATION.
2. PROVIDE #12 CABLING FOR 24V AUXILIARY POWER FROM NAC EXPANDER PANEL TO DUCT DETECTORS AND BETWEEN DUCT DETECTORS.
3. PROVIDE "FA" CABLING BETWEEN ADDRESSABLE INPUT MODULE AND DUCT DETECTOR FOR MONITORING DUCT DETECTOR.

NAC: (E) NAC EXPANDER PANEL

S L#D## XX: DUCT DETECTOR (L#D## DENOTES ADDRESS, XX DENOTES DEVICE TYPE)
MODEL #: SYSTEM SENSOR D4120
CSFM #: 3242-1653:0207

IM L#M## XX: ADDRESSABLE INPUT MODULE (L#M## DENOTES ADDRESS, XX DENOTES DEVICE TYPE)
MODEL #: GAMEWELL PID-95
CSFM #: 7300-1703:0135

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122084 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 07/03/2024

NET POSITIVE
consulting
engineers
www.NPCeng.com
559.940.7293

REVISIONS:

Symbol	Description

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Symbol	Description

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Symbol	Description

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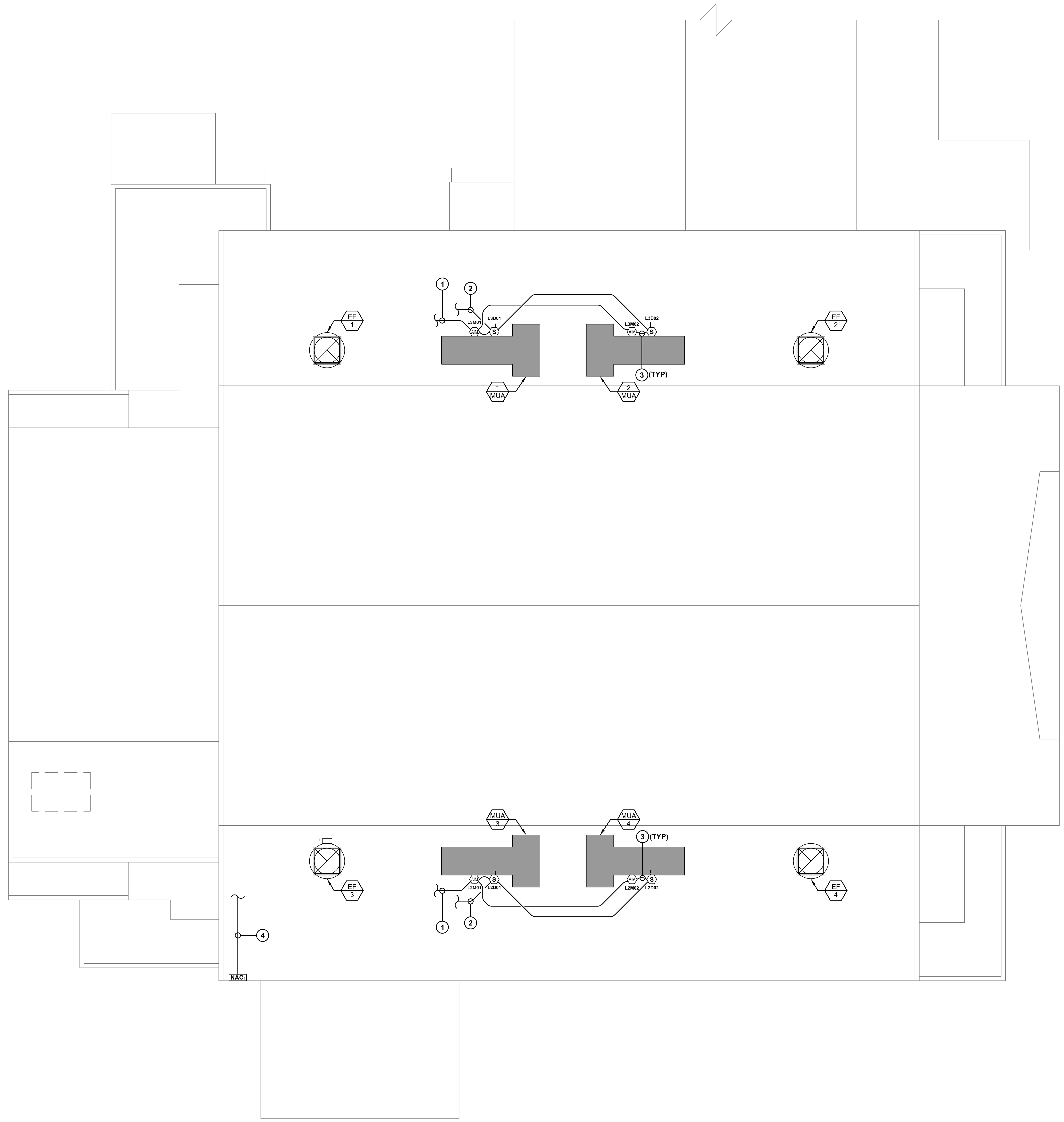
REGISTERED PROFESSIONAL ENGINEER
STEPHAN R. REFIK
No. 23239
ELECTRICAL
REFIK
ELECTRICAL ENGINEERS
1500 SHAW AVENUE
CLOVIS, CA 93611
(559) 484-2049

PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
FIRE ALARM PLAN - JOE FLORES GYM WRESTLING ROOM
SHEET NO:
F1.0



NORTH

ROOF FIRE ALARM PLAN - JOE FLORES GYM

1/8" = 1'-0"

1

FIRE KEYNOTES AND LEGEND:

(1)	T-TAP EXISTING SLC CIRCUIT FROM ADDRESSABLE INPUT MODULE AT NAC EXPANDER PANEL AND EXTEND "FA" CABLING TO PROPOSED DUCT DETECTORS.
(2)	PROVIDE #12 CABLING FOR 24V AUXILIARY POWER FROM NAC EXPANDER PANEL TO DUCT DETECTORS AND BETWEEN DUCT DETECTORS.
(3)	PROVIDE "FA" CABLING BETWEEN ADDRESSABLE INPUT MODULE AND DUCT DETECTOR FOR MONITORING DUCT DETECTOR.
(4)	CABLING TO BLOWER DUCT DETECTORS AND ADDRESSABLE INPUT MODULES ON JOE FLORES GYM & WRESTLING ROOM. SEE SHEET [F1.0]FOR CONTINUATION.
NAC#	(E) NAC EXPANDER PANEL
S L#D## XX	DUCT DETECTOR (L#D## DENOTES ADDRESS, XX DENOTES DEVICE TYPE) MODEL #: SYSTEM SENSOR D4120 CSFM #: 3242-1653:0207
AIM L#M## XX	ADDRESSABLE INPUT MODULE (L#M## DENOTES ADDRESS, XX DENOTES DEVICE TYPE) MODEL #: GAMEWELL PID-95 CSFM #: 7300-1703:0135

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REVISIONS:

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REFIK ELECTRICAL ENGINEERS
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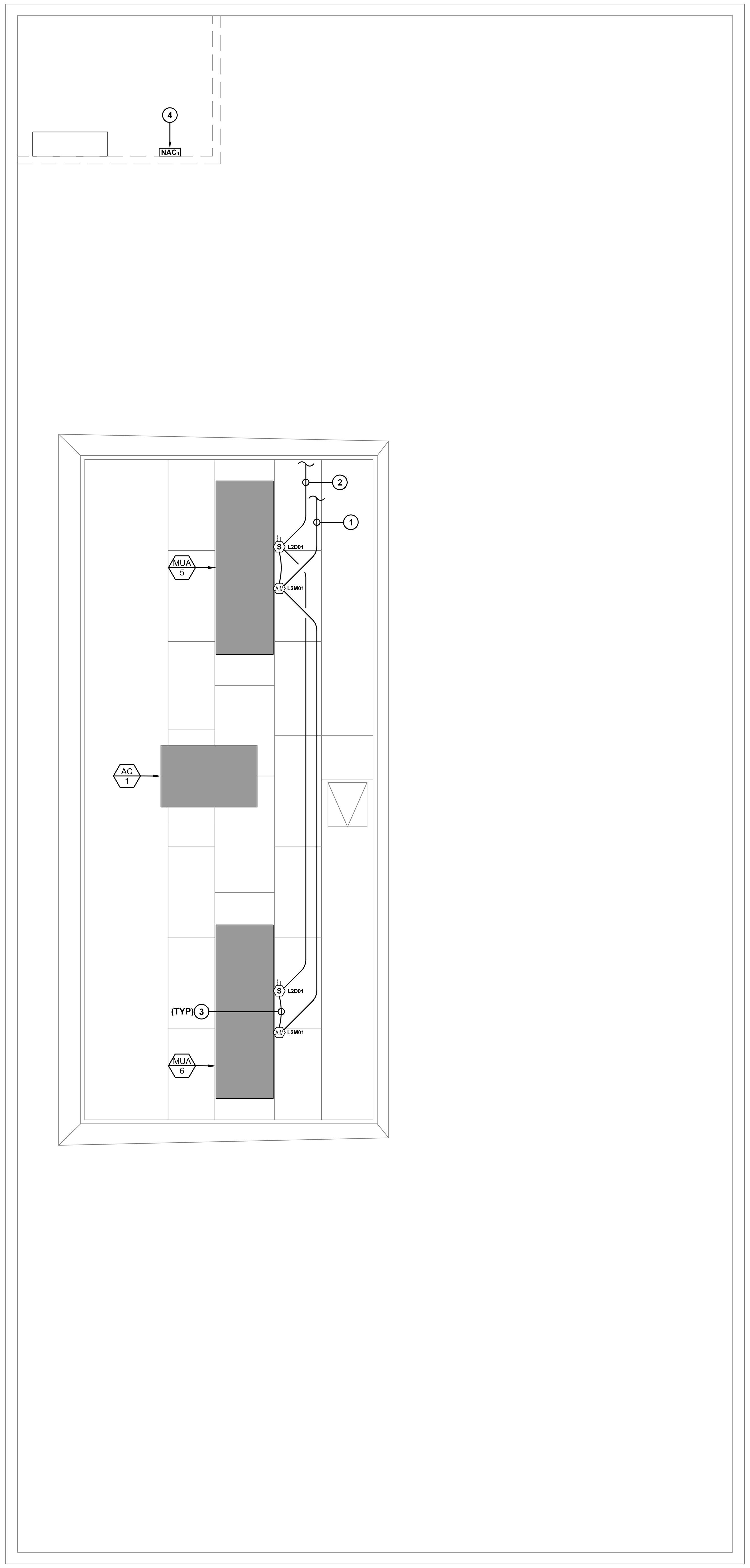
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637

PROJECT NO: 1336

DATE: 05/13/2024

SHEET TITLE:
ROOF FIRE ALARM PLAN - JOE FLORES GYM

SHEET NO:
F2.0



NORTH

ROOF FIRE ALARM PLAN - FIELD HOUSE

1/4" = 1'-0"

1

FIRE KEYNOTES AND LEGEND:

(1)	T-TAP EXISTING SLC CIRCUIT FROM ADDRESSABLE INPUT MODULE AT NAC EXPANDER PANEL AND EXTEND "FA" CABLING TO PROPOSED DUCT DETECTORS.
(2)	PROVIDE #12 CABLING FOR 24V AUXILIARY POWER FROM NAC EXPANDER PANEL TO DUCT DETECTORS AND BETWEEN DUCT DETECTORS.
(3)	PROVIDE "FA" CABLING BETWEEN ADDRESSABLE INPUT MODULE AND DUCT DETECTOR FOR MONITORING DUCT DETECTOR.
(4)	CONTRACTOR TO VERIFY LOCATION OF EXISTING NAC EXPANDER PANEL.
NAC#	(E) NAC EXPANDER PANEL
S L#D## XX	DUCT DETECTOR (L#D## DENOTES ADDRESS, XX DENOTES DEVICE TYPE) MODEL #: SYSTEM SENSOR D4120 CSFM #: 3242-1653:0207
AIM L#M## XX	ADDRESSABLE INPUT MODULE (L#M## DENOTES ADDRESS, XX DENOTES DEVICE TYPE) MODEL #: GAMEWELL PID-95 CSFM #: 7300-1703:0135

IDENTIFICATION STAMP
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REVISIONS:

Symbol	Description
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Symbol	Description
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Symbol	Description
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REGISTERED PROFESSIONAL ENGINEER
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(559) 484-2049

PROJECT NAME:
HVAC IMPROVEMENTS AT
MADERA HIGH SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
200 S L St, Madera, CA 93637
PROJECT NO: 1336

DATE: 05/13/2024
SHEET TITLE:
ROOF FIRE ALARM PLAN - FIELD HOUSE

SHEET NO:
F3.0