HVAC IMPROVEMENTS
AT
MARTIN LUTHER KING JR MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT

601 LILLY ST, MADERA, CA 93638

DSA FILE NO: 20-30

PTN: 65243-161

DSA APP. NO. 02-122085

GENERAL

PROJECT ADDRESS:
601 LILLY ST, MADERA, CA 93638

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF THE REMOVAL AND REPLACEMENT OF FIVE (5) ROOFTOP PACKAGE HEATING/COOLING UNITS AT THE GYM, TWO (2) ROOFTOP PACKAGE HEATING/COOLING UNITS AT THE MULTI-PURPOSE EAST ROOF WELL, TWO (2) ROOFTOP PACKAGE HEATING/COOLING UNITS AT THE MULTI-PURPOSE WEST ROOF WELL, AND THREE (3) ROOFTOP PACKAGE HEATING/COOLING UNITS AT THE MULTI-PURPOSE NORTH ROOF WELL. RELATED SCOPE INCLUDES EQUIPMENT INSTALLATION, DUCTWORK, GAS PIPING, HYDRONIC PIPING, ELECTRICAL PANELS, ELECTRICAL POWER, AND CONTROLS.

ENFORCING AGENCY

DIVISION OF THE STATE ARCHITECT / OFFICE OF REGULATION SERVICES (DSA / ORS), SACRAMENTO OFFICE

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)
AMERICAN WITH DISABILITIES ACT

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. 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 APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR A CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
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 CLASS 3 INSPECTOR REQUIRED FOR THIS PROJECT SHALL BE EMPLOYED BY OWNER AND APPROVED BY ARCHITECT, STRUCTURAL ENGINEER, AND DSA. INSPECTOR SHALL BE IN ACCORDANCE WITH SECTION 4-333(c). THE DUTY OF THE INSPECTOR SHALL BE IN ACCORDANCE WITH TITLE 24 SECTION 4-342, PART I.
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. ADDENDA MUST BE SIGNED BY ARCHITECT AND APPROVED BY DSA.
12. 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.
13. 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.
14. CONSTRUCTION CHANGE DOCUMENTS MUST BE SIGNED BY THE FOLLOWING: • ARCHITECT OR ENGINEER OF RECORD • STRUCTURAL ENGINEER (WHEN APPLICABLE) • DELEGATED PROFESSIONAL ENGINEER.
15. MATERIALS AND THEIR INSTALLATION SHALL COMPLY WITH APPLICABLE CODES, STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
16. THESE PLANS AND SPECIFICATIONS WILL COMPLY WITH CFC CHAPTER 33-FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.
17. DSA IS NOT SUBJECT TO ARBITRATION.
18. A "DSA CERTIFIED" PROJECT INSPECTOR 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. A MINIMUM CLASS 3 INSPECTOR IS REQUIRED.
19. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
20. 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).
21. ALL WORK SHALL CONFORM TO 2022 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
22. PER DSA IR 11B-6 "ACCESSIBILITY REVIEW OF MECHANICAL (HVAC) PROJECTS: PER CBC SECTION 11B-202.4 EXCEPTION 7, PROJECTS CONSISTING ONLY OF HVAC WORK ARE NOT REQUIRED TO COMPLY WITH CBC SECTION 11B-202.4 UNLESS THEY AFFECT THE USABILITY OF THE BUILDING OR FACILITY. HVAC "ONLY" MEANS PROJECTS WHERE THE WORK AND RELATED COMPONENTS ARE SPECIFIC TO THE HVAC SYSTEM REPLACEMENT OR INSTALLATION. SUCH PROJECTS MAY ALSO INCLUDE IMPROVEMENTS THAT ARE NECESSARY FOR THE INSTALLATION OF THE EQUIPMENT, SUCH AS REROOFING LIMITED TO ROOFING MATERIAL REPLACEMENT, THE INSTALLATION OF NEW EQUIPMENT CURBS, OR THE ADDITION OF SUPPORT MEMBERS TO THE EXISTING STRUCTURAL SYSTEM TO DISTRIBUTE THE WEIGHT OF THE NEW EQUIPMENT. THESE IMPROVEMENTS ARE INCIDENTAL TO THE INSTALLATION OF THE HVAC EQUIPMENT, AND AS A RESULT, DO NOT REQUIRE THE APPLICATION OF CBC SECTION 11B-202.4.

GENERAL

MECHANICAL/PLUMBING

ARCHITECTURAL

STRUCTURAL

ELECTRICAL

NUMBER OF SHEETS = 20

SHEET INDEX

PROJECT INFORMATION

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

1446 TOLLHOUSE RD, SUITE 102
CLOVIS, CA 93611
(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

REVIEW BY:

DRAWN 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.: 02-122085 FILE NO.: 20-30

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:

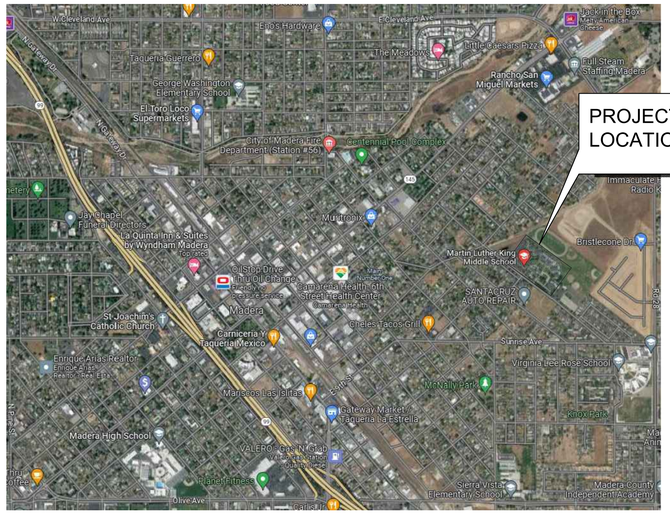
☒ ALL DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX
☐ THIS DRAWING OR PAGE

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



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122085 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 06/27/2024

NET POSITIVE consulting engineers
www.NPCeng.com
559.940.7293

REGISTERED PROFESSIONAL ENGINEER
No. C-34089
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
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638

PROJECT NO: 1340

DATE: 05/13/2024

SHEET TITLE:
COVER SHEET

SHEET NO:
G001

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

VENTILATION AIR SUPPLY CALCULATIONS

VENTILATION CALCULATION PER CMC 403.2.1

MIN.OSA = Rp x Pz + Ra x Az

Rp = OUTDOOR AIRFLOW RATE PER PERSON
Pz = NUMBER OF PEOPLE IN ZONE
Ra = OUTDOOR AIRFLOW RATE REQUIRED PER SQ. FT. PER TABLE 402.1
Az = ZONE FLOOR AREA

DCV VENTILATION CALCULATION PER CEC 120.1-A

MIN. DCV OSA = R_A X A_Z

R_A= MINIMUM VENTILATION AIR RATE FOR DCV (CFM/FT^2)
A_Z= ZONE FLOOR AREA

EXHAUST CALCULATION PER CMC TABLE 403.7

LOCKER ROOMS FOR ATHLETIC FACILITIES
EXHAUST RATE: 0.5 CFM/FT^2

BATHROOMS
EXHAUST RATE: 50 CFM/UNIT (INTERMITTENT USE)

SHOWER ROOMS
EXHAUST RATE: 50 CFM/UNIT (INTERMITTENT USE)

APPLICABLE UNITS: AC-17.1

GYM (1/3) - VENTILATION CALC.
Rp = 20
Pz = 19
Ra = 0.18
Az = 2603.3
MIN OSA = 20 x 19 + 0.18 x 2603.3 = 848.6 CFM OSA

UNIT TOTAL OSA ≈ 850 CFM

DCV CALC:
Ra = 0.15
Az = 2603.3
MIN DCV OSA = 0.15 X 2603.3 ≈ 395 CFM

UNIT TOTAL DCV OSA ≈ 395 CFM

APPLICABLE UNITS: AC-17.2

GYM (1/3) - VENTILATION CALC.
Rp = 20
Pz = 19
Ra = 0.18
Az = 2603.3
MIN OSA = 20 x 19 + 0.18 x 2603.3 = 848.6 CFM OSA

UNIT TOTAL OSA ≈ 850 CFM

DCV CALC:
Ra = 0.15
Az = 2603.3
MIN DCV OSA = 0.15 X 2603.3 ≈ 395 CFM

UNIT TOTAL DCV OSA ≈ 395 CFM

APPLICABLE UNITS: AC-17.3

GYM (1/3) - VENTILATION CALC.
Rp = 20
Pz = 19
Ra = 0.18
Az = 2603.3
MIN OSA = 20 x 19 + 0.18 x 2603.3 = 848.6 CFM OSA

UNIT TOTAL OSA ≈ 850 CFM

DCV CALC:
Ra = 0.15
Az = 2603.3
MIN DCV OSA = 0.15 X 2603.3 ≈ 395 CFM

UNIT TOTAL DCV OSA ≈ 395 CFM

APPLICABLE UNITS: HP-23

OFFICE (I-11) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.06
Az = 197.8
MIN OSA = 5 x 1 + 0.06 x 197.8 = 16.9 CFM OSA

DCV CALC:
Ra = 0
Az = 197.8
MIN DCV OSA = 0 X 197.8 = 0 CFM

SHOWER ROOM - EXHAUST CALC.
AREA = 186.3
MIN EA= 0.5 X 186.3 = 93.15
MIN OSA = MIN EA ≈ 95 CFM OSA

DCV CALC:
Ra = 0
Az = 186.3
MIN DCV OSA = 0 X 186.3 = 0 CFM

BATHROOM (I-10) - EXHAUST CALC.
AREA = 44.1
MIN EA= 0.5 X 186.3 = 22.05
MIN OSA = MIN EA ≈ 25 CFM OSA

DCV CALC:
Ra = 0
Az = 44.1
MIN DCV OSA = 0 X 44.1 = 0 CFM

HALLWAY (I-8) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.06
Az = 426.4
MIN OSA = 5 x 1 + 0.06 x 426.4 = 30.6 CFM OSA

DCV CALC:
Ra = 0
Az = 426.4
MIN DCV OSA = 0 X 426.4 = 0 CFM

UNIT TOTAL OSA ≈ 165 CFM

UNIT TOTAL DCV OSA = 0 CFM

APPLICABLE UNITS: HP-21

OFFICE (I-27) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.06
Az = 212.6
MIN OSA = 5 x 1 + 0.06 x 212.6 = 17.8 CFM OSA

DCV CALC:
Ra = 0
Az = 212.6
MIN DCV OSA = 0 X 212.6 = 0 CFM

SHOWER ROOM (I-25) - EXHAUST CALC.
AREA = 180
MIN EA= 0.5 X 180 = 90
MIN OSA = MIN EA ≈ 90 CFM OSA

DCV CALC:
Ra = 0
Az = 180
MIN DCV OSA = 0 X 180 = 0 CFM

BATHROOM (I-26) - EXHAUST CALC.
AREA = 43.2
MIN EA= 0.5 X 43.2 = 21.6
MIN OSA = MIN EA ≈ 25 CFM OSA

DCV CALC:
Ra = 0
Az = 43.2
MIN DCV OSA = 0 X 43.2 = 0 CFM

UNIT TOTAL OSA ≈ 130 CFM

UNIT TOTAL DCV OSA = 0 CFM

APPLICABLE UNITS: AC-19.1

MPR (1/4) - VENTILATION CALC.
Rp = 7.5
Pz = 115
Ra = 0.06
Az = 1145
MIN OSA = 7.5 x 115 + 0.06 x 1145 = 931.2 CFM OSA

UNIT TOTAL OSA ≈ 935 CFM

DCV CALC:
Ra = 0.15
Az = 1145
MIN DCV OSA = 0.15 X 1145 = 171.75 CFM

UNIT TOTAL DCV OSA ≈ 175 CFM

APPLICABLE UNITS: AC-19.2

MPR (1/4) - VENTILATION CALC.
Rp = 7.5
Pz = 115
Ra = 0.06
Az = 1145
MIN OSA = 7.5 x 115 + 0.06 x 1145 = 931.2 CFM OSA

UNIT TOTAL OSA ≈ 935 CFM

DCV CALC:
Ra = 0.15
Az = 1145
MIN DCV OSA = 0.15 X 1145 = 171.75 CFM

UNIT TOTAL DCV OSA ≈ 175 CFM

APPLICABLE UNITS: AC-19.3

MPR (1/4) - VENTILATION CALC.
Rp = 7.5
Pz = 115
Ra = 0.06
Az = 1145
MIN OSA = 7.5 x 115 + 0.06 x 1145 = 931.2 CFM OSA

UNIT TOTAL OSA ≈ 935 CFM

DCV CALC:
Ra = 0.15
Az = 1145
MIN DCV OSA = 0.15 X 1145 = 171.75 CFM

UNIT TOTAL DCV OSA ≈ 175 CFM

APPLICABLE UNITS: AC-19.4

MPR (1/4) - VENTILATION CALC.
Rp = 7.5
Pz = 115
Ra = 0.06
Az = 1145
MIN OSA = 7.5 x 115 + 0.06 x 1145 = 931.2 CFM OSA

DCV CALC:
Ra = 0.15
Az = 1145
MIN DCV OSA = 0.15 X 1145 = 171.75 CFM

BOY'S RESTROOM (J8) - EXHAUST CALC.
AREA = 160.3
MIN EA= 0.5 X 43.2 = 80.15
MIN OSA = MIN EA ≈ 80 CFM OSA

DCV CALC:
Ra = 0
Az = 160.3
MIN DCV OSA = 0 X 160.3 = 0 CFM

GIRL'S RESTROOM (J9) - EXHAUST CALC.
AREA = 158.8
MIN EA= 0.5 X 43.2 = 79.4
MIN OSA = MIN EA ≈ 80 CFM OSA

DCV CALC:
Ra = 0
Az = 158.8
MIN DCV OSA = 0 X 158.8 = 0 CFM

CORRIDOR (J6) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.06
Az = 279.4
MIN OSA = 5 x 1 + 0.06 x 279.4 = 21.8 CFM OSA

DCV CALC:
Ra = 0
Az = 279.4
MIN DCV OSA = 0 X 279.4 = 0 CFM

DRESSING ROOM (J7) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.06
Az = 156.1
MIN OSA = 5 x 1 + 0.06 x 156.1 = 14.4 CFM OSA

DCV CALC:
Ra = 0
Az = 156.1
MIN DCV OSA = 0 X 156.1 = 171.75 CFM

UNIT TOTAL OSA ≈ 1130 CFM

UNIT TOTAL DCV OSA ≈ 175 CFM

APPLICABLE UNITS: AC-19.5 (BAND/CHORAL)

BAND/CHORAL (J10) - VENTILATION CALC.
Rp = 10
Pz = 60
Ra = 0.06
Az = 1710
MIN OSA = 10 x 60 + 0.06 x 1710 = 702.6 CFM OSA

DCV CALC:
Ra = 0.15
Az = 1710
MIN DCV OSA = 0.15 X 1710 ≈ 260 CFM

UNIFORM STORAGE (J11) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.12
Az = 220.5
MIN OSA = 5 x 1 + 0.12 x 220.5 = 31.5 CFM OSA

DCV CALC:
Ra = 0
Az = 220.5
MIN DCV OSA = 0 X 220.5 = 0 CFM

OFFICE (J12) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.06
Az = 130.9
MIN OSA = 5 x 1 + 0.06 x 130.9 = 12.9 CFM OSA

DCV CALC:
Ra = 0
Az = 130.9
MIN DCV OSA = 0 X 130.9 = 0 CFM

MUSIC STORAGE (J13) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.12
Az = 135.3
MIN OSA = 5 x 1 + 0.12 x 135.3 = 21.2 CFM OSA

DCV CALC:
Ra = 0
Az = 135.3
MIN DCV OSA = 0 X 135.3 = 0 CFM

STORAGE (J15) - VENTILATION CALC.
Rp = 5
Pz = 1
Ra = 0.12
Az = 423.7
MIN OSA = 5 x 1 + 0.12 x 423.7 = 55.8 CFM OSA

DCV CALC:
Ra = 0
Az = 423.7
MIN DCV OSA = 0 X 423.7 = 0 CFM

UNIT TOTAL OSA ≈ 825 CFM

UNIT TOTAL DCV OSA ≈ 260

APPLICABLE UNITS: AC-22 (STAFF DINING)

STAFF DINING (J16) - VENTILATION CALC.
Rp = 7.5
Pz = 39
Ra = 0.18
Az = 557.1
MIN OSA = 7.5 x 39 + 0.18 x 557.1 = 392.8 CFM OSA

UNIT TOTAL OSA ≈ 395 CFM

DCV CALC:
Ra = 0.15
Az = 557.1
MIN DCV OSA = 0.15 X 557.1 ≈ 85 CFM

UNIT TOTAL DCV OSA ≈ 85 CFM

APPLICABLE UNITS: AC-23 (STAGE)

STAGE (J5) - VENTILATION CALC.
Rp = 10
Pz = 60
Ra = 0.06
Az = 910.8
MIN OSA = 10 x 60 + 0.06 x 910.8 = 654.7 CFM OSA

UNIT TOTAL OSA ≈ 655 CFM

DCV CALC:
Ra = 0.15
Az = 910.8
MIN DCV OSA = 0.15 X 910.8 ≈ 140 CFM

UNIT TOTAL DCV OSA ≈ 140 CFM

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 2019 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.

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.

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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DATE: 06/27/2024

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REGISTERED PROFESSIONAL ENGINEER
JONATHAN C. SCHLINT
M35933
Exp. 06-30-26
MECHANICAL
STATE OF CALIFORNIA

REVISIONS:

Symbol	Description
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PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

DATE: 05/13/2024
SHEET TITLE:
MECHANICAL LEGEND & NOTES

SHEET NO:
M001

REVIEW BY:
DRAWN BY:

MECHANICAL SCHEDULES

PACKAGE AIR CONDITIONING SCHEDULE

DESIGNATION		AC-17.1	AC-17.2	AC-17.3	AC-19.1	AC-19.2	AC-19.3	AC-19.4	AC-19.5	AC-22	AC-23
VOLTS/PHASE		460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	208/1	208/3
F.L.A.		16.2	16.2	16.2	18.6	18.6	18.6	18.6	18.6	-	-
MCA/MOCP (AMPS)		18/20	18/20	18/20	21/25	21/25	21/25	21/25	21/25	12/15	12/15
EXISTING UNIT MCA/MOCP		31/40	31/40	31/40	26/30	26/30	26/30	26/30	26/30	21/30	17.4 (FLA)
SEER/EER @ ARI		15.9/12.1	15.9/12.1	15.9/12.1	16.6/12.1	16.6/12.1	16.6/12.1	16.6/12.1	16.6/12.1	17.5/13	17.5/13
BLOWER	SUPPLY AIR (CFM)	2300	2300	2300	3000	3000	3000	3000	3000	1000	1200
	EXT. S P (IN. WC)	0.91	0.91	0.91	1.052	1.052	1.052	1.052	1.052	0.842	0.85
	MIN. OSA (CFM)	850	850	850	935	935	935	1130	825	395	655
	DCV MIN. OSA (CFM)	395	395	395	175	175	175	175	260	85	140
	HP	0.74	0.74	0.74	1.199	1.199	1.199	1.199	1.199	0.4	0.5
	RPM	1026	1026	1026	1205	1205	1205	1205	1205	886	928
	DRIVE	VARIABLE DIRECT	VARIABLE DIRECT	VARIABLE DIRECT	VARIABLE DIRECT	VARIABLE DIRECT	VARIABLE DIRECT	VARIABLE DIRECT	VARIABLE DIRECT	DIRECT	DIRECT
COOLING	SENSIBLE (MBH)	52.32	52.32	52.32	66.69	66.69	66.69	66.69	66.69	22.48	27.43
	TOTAL (MBH)	68.5	68.5	68.5	84.97	84.97	84.97	84.97	84.97	30.89	33.63
	EADB/EAWB (OF)	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67	80/67
	AMBIENT AIR (OF)	105	105	105	105	105	105	105	105	105	105
	REFRIGERANT	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
HEATING	INPUT CAP. (MBH)	80.0	80.0	80.0	120.0	120.0	120.0	120.0	120.0	60.0	60.0
	OUTPUT CAP. (MBH)	64.8	64.8	64.8	97.2	97.2	97.2	97.2	97.2	48.6	48.6
	FUEL	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS
	AFUE (%)	81	81	81	81	81	81	81	81	81	81
FILTERS	QTY./SIZE (RETURN)	2 / 18x24x2	2 / 18x24x2	2 / 18x24x2	2 / 18x24x2	2 / 18x24x2	2 / 18x24x2	2 / 18x24x2	2 / 18x24x2	2 / 20x30x2	2 / 20x30x2
	TYPE	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13	MERV 13
	P D (IN WC)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
MANUFACTURER		TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE
TYPE		GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC	GAS/ELECTRIC
MODEL NUMBER		YHJ072A4S0L	YHJ072A4S0L	YHJ072A4S0L	YHJ090A4S0L	YHJ090A4S0L	YHJ090A4S0L	YHJ090A4S0L	YHJ090A4S0L	YHC037E4RXA	YHC037E4RXA
LOCATION		GYM	GYM	GYM	MPR	MPR	MPR	MPR	MPR	MPR	MPR
OPER. WT (LBS)		1307	1307	1307	1318	1318	1318	1318	1318	767	767
EXISTING UNIT WT (LBS)		1350	1350	1350	1000	1000	1000	1000	1000	450	460
ACCESSORIES		1, 2, 6, 7	1, 2, 6, 7	1, 2, 6, 7	1, 3, 6, 7, 8	1, 3, 6, 7, 8	1, 3, 6, 7, 8	1, 3, 6, 7, 8	1, 3, 6, 7, 8	4, 5, 7, 8	4, 5, 7, 8

1 - SPRING ISOLATORS, AND PROGRAMMABLE THERMOSTAT.

2 - PROVIDE MICROMETL 0-100% MODULATING ECONOMIZER & POWERED EXHAUST MODULE. PROVIDE SEPARATE POWER CONNECTION. 460V/3, 1 HP, 2.8 FLA, 5.6 MCA, 10.1 MOCP.

3 - PROVIDE MICROMETL 0-100% MODULATING ECONOMIZER & POWERED EXHAUST MODULE. PROVIDE SEPARATE POWER CONNECTION. 460V/3, 1 HP, 2.8 FLA, 3.5 MCA, 6.3 MOCP.

4 - PROVIDE MICROMETL 0-100% MODULATING ECONOMIZER & POWERED EXHAUST MODULE. PROVIDE SEPARATE POWER CONNECTION. 460V/3, 1/2 HP, 1.5 FLA, 1.9 MCA, 3.4 MOCP.

5 - PROVIDE MICROMETL CURB FOR ROOFTOP INSTALL.

6 - CO2 SENSOR FOR DEMAND CONTROL VENTILATION.

7 - MOUNT PER DETAIL 1/M800.

8 - MOUNT SPRING ISOLATOR PER DETAIL 5/M800.

EXHAUST FAN SCHEDULE

DESIGNATION	EF-28	EF-30
CFM	2600	1600
EXT. S P (IN. WC)	0.30	0.30
(E) HP/ (E) BHP	.5 / .3	.33 / .2
HP/ BHP	0.33 / .032	.33 / .25
(E) VOLTS/ (E) PHASE	115/1	115/1
VOLTS/ PHASE	115/1	115/1
MCA/MOCP	9/15	9/15
RPM	619	1040
SONES	6.9	9.5
DRIVE	BELT	BELT
MOUNTING	ROOF	ROOF
MANUFACTURER	GREENHECK	GREENHECK
TYPE	CENTRIFUGAL	CENTRIFUGAL
MODEL NUMBER	CUBE-200	CUBE-140
CONTROL	EMS	EMS
LOCATION	GYM	GYM
OPER. WT. (LBS)	100	70
EXISTING OPER. WT. (LBS)	104	60
ACCESSORIES	1, 2	1, 2

1. PROVIDE BACKDRAFT DAMPER, ROUND DUCT CONNECTOR, AND SPEED CONTROLLER.

2. MOUNT PER DETAIL 6/M800.

MAKE-UP AIR UNIT SCHEDULE

DESIGNATION		MUA-25
BLOWER	SUPPLY AIR (CFM)	7,000
	TOTAL SP (IN WC)	0.8
	HP/BRAKE HP	5 / 4.27
	VOLTS/PHASE	460/3
	MCA/MOCP	10.6 / 15
	R.P.M.	1413
	ISOLATOR DEFLEC (IN)	-
EVAPORATIVE	MEDIA DEPTH	12"
	TYPE	CELDEK
	EADB/EAWB (OF)	103.6 / 73.7
	LADB/LAWB (OF)	77.0 / 73.7
HEATING	INPUT (MBH)	250.0
	OUTPUT (MBH)	202.5
	FUEL	NATURAL GAS
	AFUE (%)	81.0
FILTERS	QUANTITY/SIZE	6 / 20x20x2
	EFFICIENCY (%)	MERV 13
	TYPE	SUPPLY
	FINAL PD (IN WC)	0.242
MANUFACTURER		GREENHECK
TYPE		DIR. EVAP. & IND. GAS
MODEL NUMBER		IGX-P122-H22-MF-I
CONTROL		NOTE 1
LOCATION		ROOF
OPER. WT. (LBS)		2160
EXISTING OPER. WT.		2600
ACCESSORIES		1, 2, 3, 4, 5

1 - CONTROL PANEL W/ "VENT", "HEAT", AND "COOL"

2 - DOUBLE WALL CONSTRUCTION

3 - STAINLESS STEEL HEAT EXCHANGER

4 - LOUVERED INTAKE W/ WEATHERHOOD

5 - MOUNT PER DETAIL 2/M800.

PACKAGE HEAT PUMP SCHEDULE

DESIGNATION		HP-21	HP-23
VOLTS / PHASE		208-230 / 1	208-230 / 3
MCA / MOCP		19.5 / 30	19.5 / 30
EXISTING UNIT MCA / MOCP		18 / 25	18 / 25
FLA		-	-
EER2/SEER		11/15	11/15
BLOWER	SUPPLY AIR (CFM)	800	800
	EXTERNAL SP (IN. WC)	0.5	0.5
	MIN. O.S.A.	130	165
	HP	0.5	0.5
	DRIVE	VARIABLE DIRECT	VARIABLE DIRECT
COOLING	NOMINAL TONS	2	2
	TOTAL (MBH)	23.8	23.8
	SENSIBLE (MBH)	23.8	23.8
	REFRIGERANT TYPE	R-410	R-410
	EADB/EAWB (°F)	80 / 67	80 / 67
	AMBIENT AIR (°F)	105	105
HEATING	CAPACITY @ 47°F (MBH)	23	23
	HSPF2	7.25	7.25
FILTERS	QTY/ SIZE	1 / -	1 / -
	EFFICIENCY	MERV-13	MERV-13
MANUFACTURER		TRANE	TRANE
TYPE		HEAT PUMP	HEAT PUMP
MODEL NUMBER		4WCZ5024E	4WCZ5024E
*OPER. WT (LBS)		410	410
EXITING UNIT OPER. WT (LBS)		405	460
ACCESSORIES		1, 2	1, 2

*OPERATING WEIGHT INCLUDES BASE UNIT, ECONOMIZER & ACCESSORIES.

1-INCLUDE MANUFACTURER CURB, INTEGRATED ECONOMIZER, AND FILTER RACK.

2-MOUNT PER DETAIL 7/M800.

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REVISIONS:

Symbol	Description

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Symbol	Description

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Symbol	Description

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PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

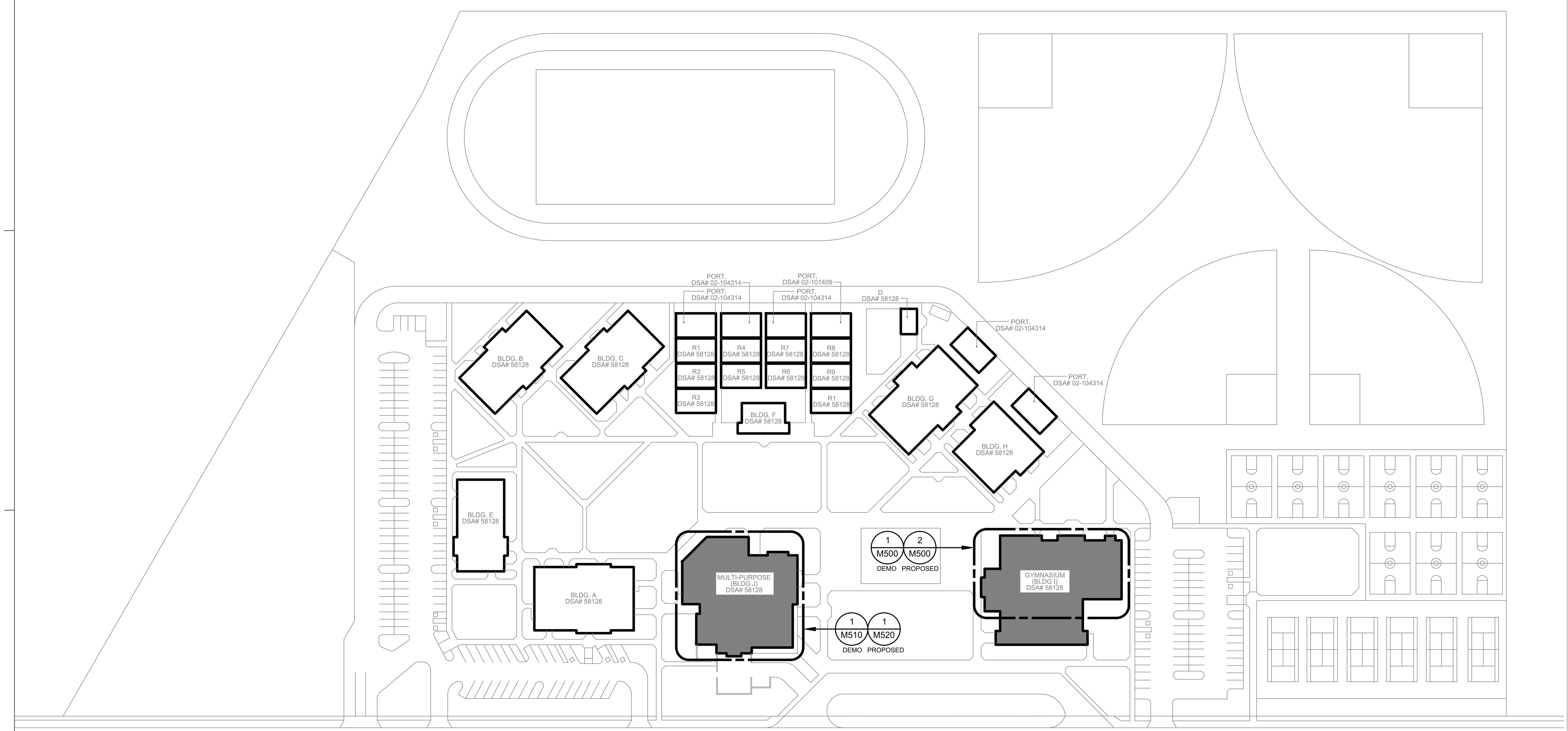
DATE: 05/13/2024
SHEET TITLE:
MECHANICAL SCHEDULES

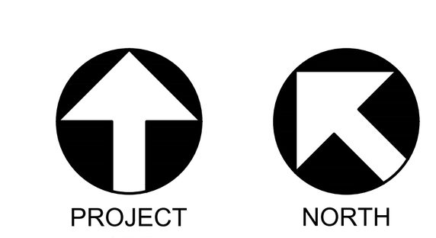
SHEET NO:
M002

REVIEW BY:
DRAWN BY:

LEGEND

☐	BUILDING NOT IN SCOPE
■	BUILDING IN SCOPE





MECHANICAL SITE PLAN

1" = 60'-0"

1

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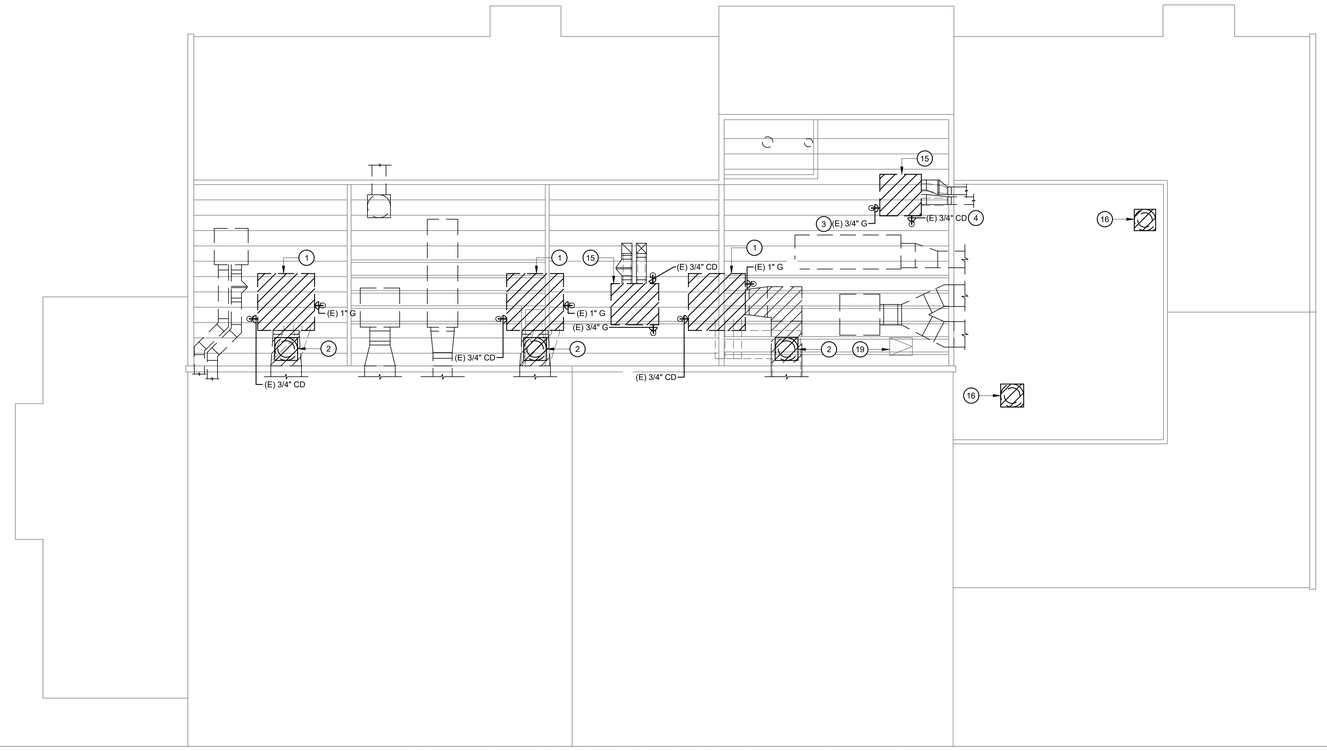
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

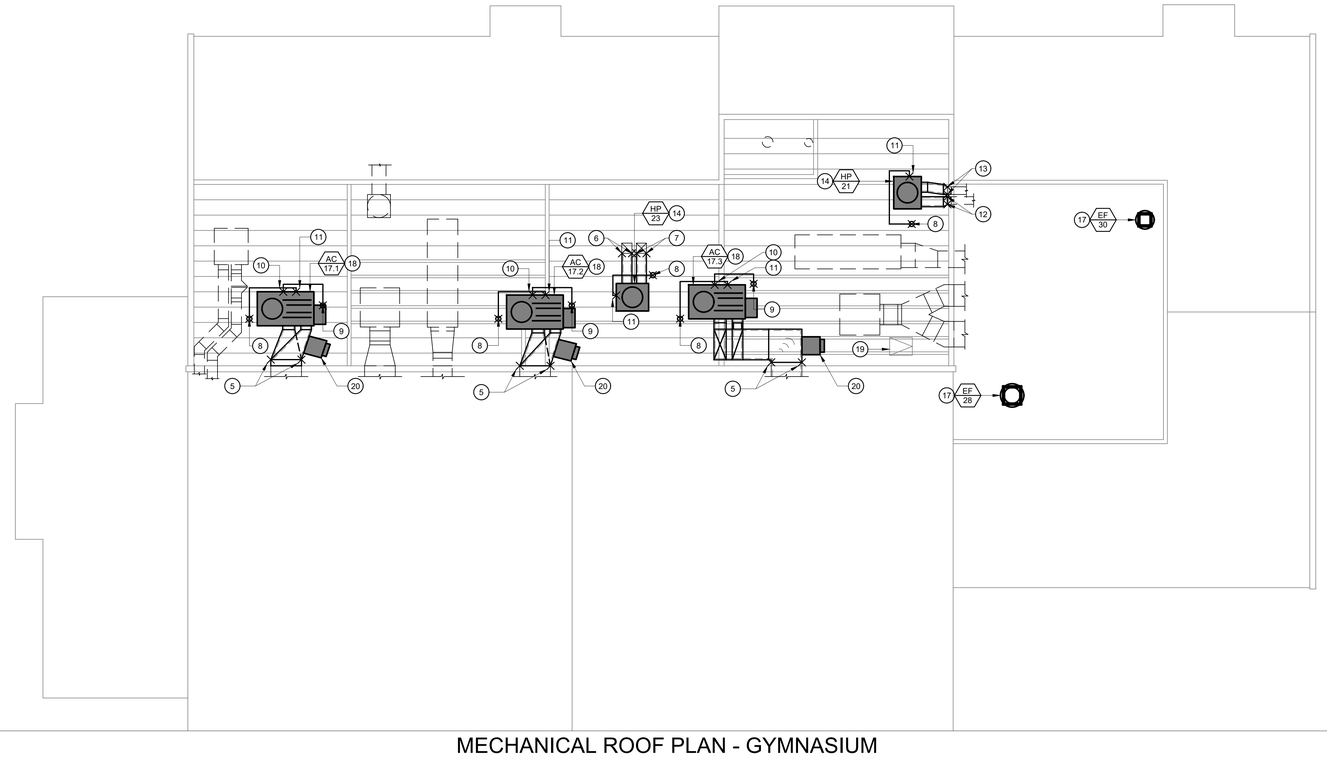
DATE: 05/13/2024
SHEET TITLE:
MECHANICAL SITE PLAN

SHEET NO:
M100



MECHANICAL DEMOLITION ROOF PLAN - GYMNASIUM

1/8" = 1'-0" | 1



MECHANICAL ROOF PLAN - GYMNASIUM

1/8" = 1'-0" | 2

KEYNOTES

1. REMOVE (E) PACKAGE UNIT AND (E) SPRING ISOLATORS. PRESERVE (E) PLATFORM. REMOVE (E) SHEET METAL CURB CAP.
2. REMOVE (E) DUCT-MOUNTED EXHAUST FAN AND ADJOINING DUCTWORK WHERE SHOWN HATCHED.
3. REMOVE (E) GAS LINE BACK TO DROP DOWN THRU ROOF. (TYP.)
4. REMOVE (E) CONDENSATE LINE BACK TO DROP DOWN THRU ROOF. (TYP.)
5. POC OF EXISTING 48"X12" RA & 48"X14" SA DUCT TO (N) 33"X18" RA & 33"X18" SA DUCT.
6. POC OF EXISTING 16"X16" RA DUCT TO (N) 16"X12" RA DUCT.
7. POC OF EXISTING 16"X16" SA DUCT TO (N) 16"X12" SA DUCT.
8. POC OF (E) 3/4"CD TO (N) 3/4"CD.
9. POC OF (E) 1"G TO (N) 3/4"G.
10. POC OF (N) 3/4"G TO 1/2"G CONNECTION AT (N) PACKAGE UNIT. CONNECT (N) GAS WITH SOV & DIRT LEG PER DETAIL 3/M800.
11. POC OF (N) 3/4"CD TO 3/4"CD CONNECTION AT (N) PACKAGE UNIT. CONNECT (N) CONDENSATE W/ TRAP PER DETAIL 4/M800.
12. POC OF EXISTING 12"X12" SA TO (N) 16"X12" SA.
13. POC OF EXISTING 12"X12" RA TO (N) 16"X12" RA.
14. INSTALL (N) PACKAGE HEAT PUMP ON (E) PLATFORM PER DETAIL 7/M800. INSTALL NEW SHEET METAL CURB CAP.
15. REMOVE (E) PACKAGE HEAT PUMP. PRESERVE (E) PLATFORM. PRESERVE (E) DUCTWORK. REMOVE (E) DUCT BYPASS IN (E) DUCTWORK FROM HEAT PUMP. REMOVE (E) SHEET METAL CURB CAP.
16. REMOVE (E) EF. PRESERVE (E) EQUIPMENT CURB.
17. MOUNT (N) EF ON (E) EQUIPMENT CURB PER DETAIL 6/M800.
18. INSTALL (N) PACKAGE AC UNIT ON (E) PLATFORM PER DETAIL 1/M800. INSTALL NEW SHEET METAL CURB CAP.
19. (E) ROOF ACCESS HATCH.
20. (N) POWERED EXHAUST FAN MOUNTED ON RETURN AIR DUCT. SUPPORT PER DETAIL 8/M800.

GENERAL NOTES

A. ALL EXISTING PARAPETS EXCEED 42" IN HEIGHT ABOVE ROOF STRUCTURE.

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DATE: 06/27/2024

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LICENSED PROFESSIONAL ENGINEER
BRIAN C. SILVA
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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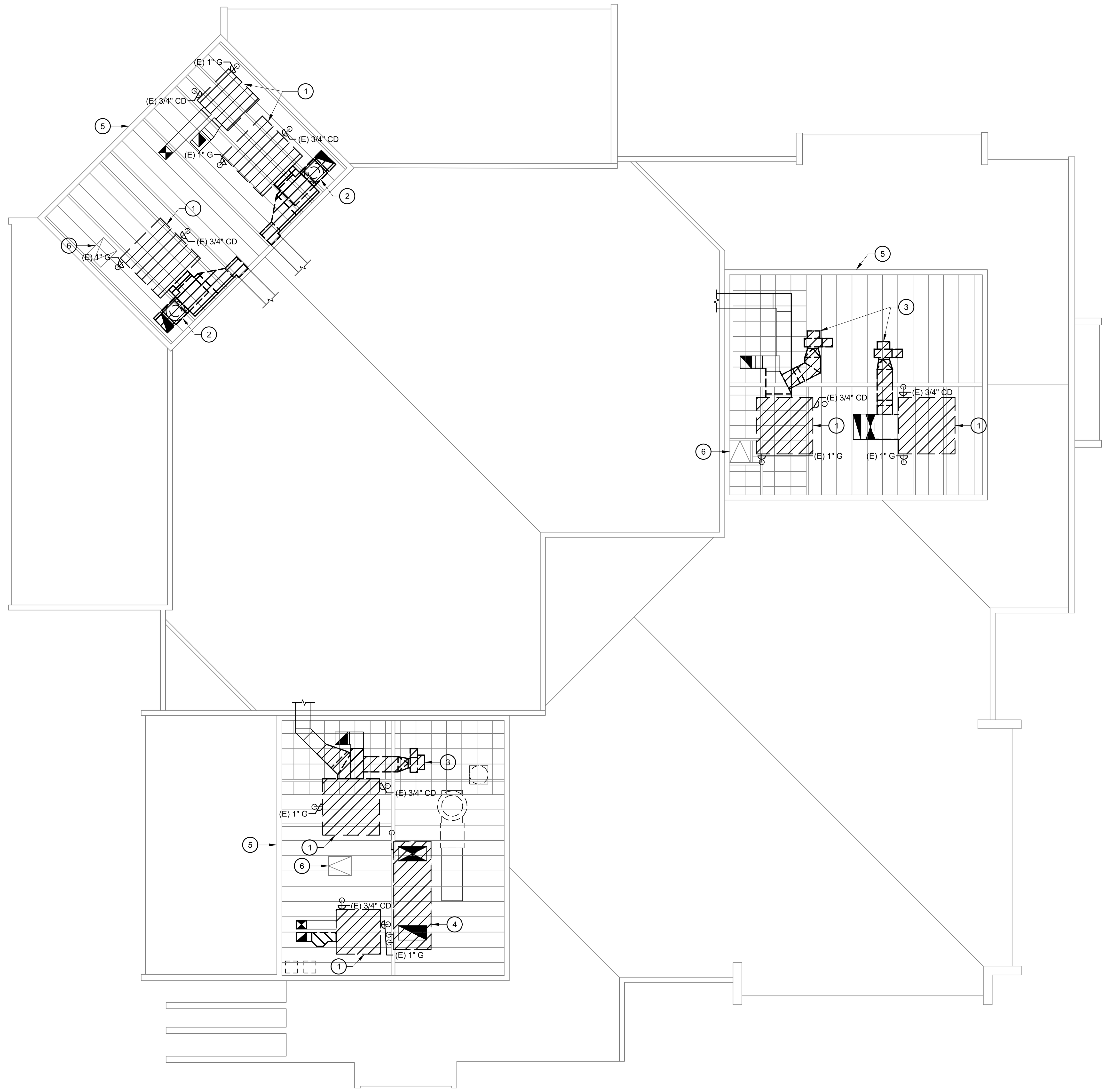
PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

DATE: 05/13/2024
SHEET TITLE:
MECHANICAL ROOF PLAN - GYMNASIUM
SHEET NO:
M500

DRAWN BY:
REVIEW BY:



PROJECT NORTH

NORTH

MECHANICAL DEMOLITION ROOF PLAN - MULTI-PURPOSE

1/8" = 1'-0"

1

KEYNOTES

1. REMOVE (E) PACKAGE UNIT AND (E) SPRING ISOLATORS. PRESERVE (E) PLATFORM. REMOVE (E) SHEET METAL CAP.
2. REMOVE (E) DUCT-MOUNTED EXHAUST FAN AND ADJOINING DUCTWORK WHERE SHOWN HATCHED.
3. REMOVE (E) UTILITY SET FAN AND ADJOINING DUCTWORK WHERE SHOWN HATCHED.
4. REMOVE (E) MUA UNIT AND (E) CURB. DISCONNECT (E) CW AND (E) CONDENSATE CONNECTIONS IN PREPARATION FOR CONNECTION TO (N) MUA UNIT.
5. REMOVE (E) BIRD SCREEN ABOVE MECHANICAL WELL AND SALVAGE FOR REINSTALLATION AFTER WORK.
6. (E) ROOF ACCESS HATCH.

GENERAL NOTES

A. ALL EXISTING PARAPETS EXCEED 42" IN HEIGHT ABOVE ROOF STRUCTURE.

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PROJECT NAME:
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MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638

PROJECT NO: 1340

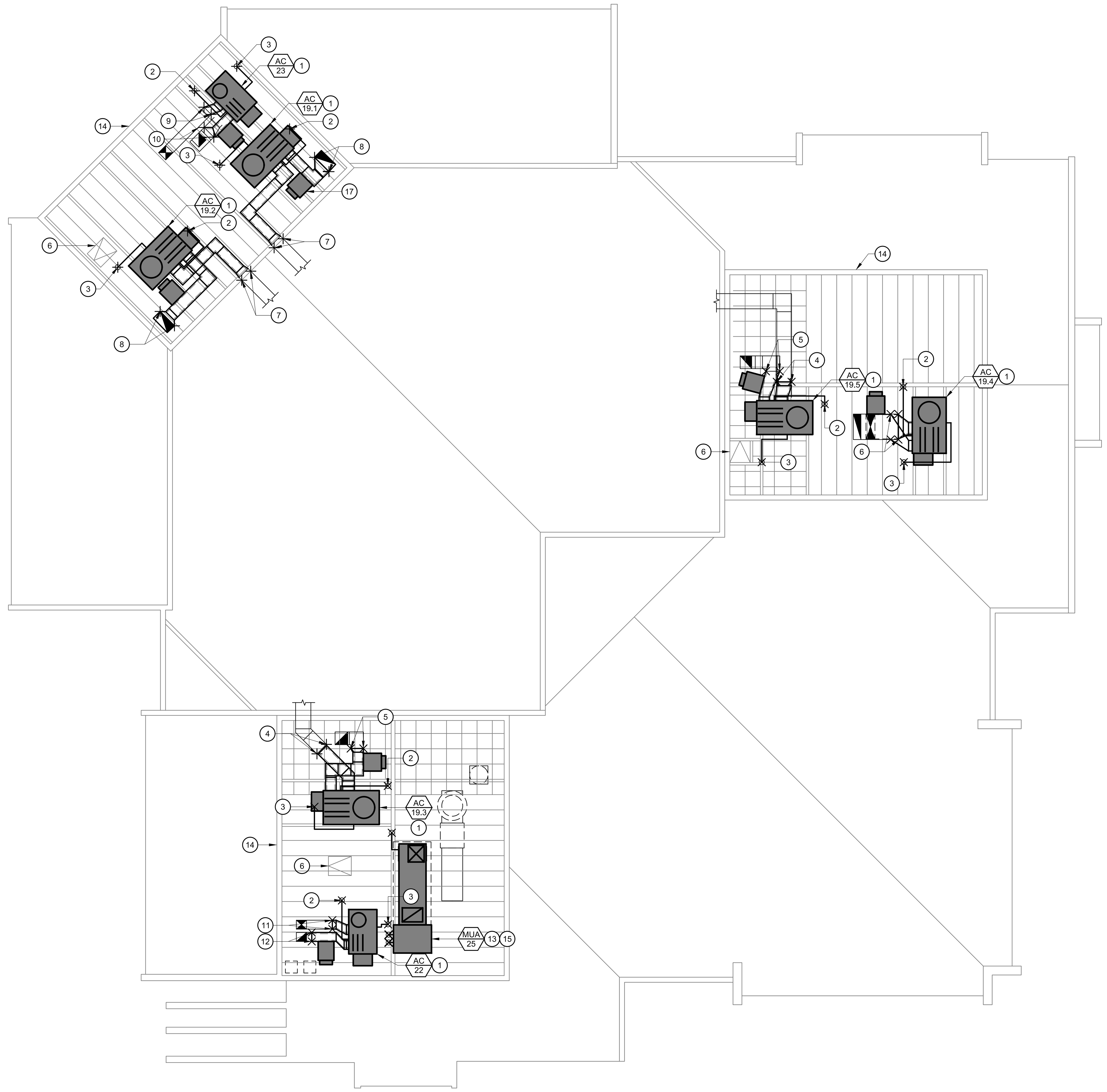
DATE: 05/13/2024

SHEET TITLE:
MECHANICAL DEMOLITION ROOF PLAN - MULTI-PURPOSE

SHEET NO:
M510

DRAWN BY:

REVIEW BY:



KEYNOTES

1. INSTALL (N) PACKAGE UNIT ON (E) PLATFORM PER DETAIL 1/M800. MOUNT (N) PACKAGE UNIT ON (N) SPRING ISOLATORS PER DETAIL 5/M800. INSTALL (N) SHEET METAL CAP ON (E) PLATFORM.
2. POC OF (E) 3/4"CD TO (N) 3/4"CD. CONNECT (N) CONDENSATE W/ TRAP PER DETAIL 4/M800.
3. POC OF (E) 1"G TO (N) 3/4"G. CONNECT (N) GAS WITH SOV & DIRT LEG PER DETAIL 3/M800.
4. POC OF (E) 24"X16" SA DUCT TO (N) 32-1/4"X19-3/16" SA DUCT.
5. POC OF (E) 20"X20" RA DUCT TO (N) 32-1/4"X16-3/4" RA DUCT.
6. POC OF (E) 40"X12" SA & RA DUCT TO (N) 32-1/4"X19-3/16" SA & 32-1/4"X16-3/4" RA DUCT.
7. POC OF (E) 20"X20" SA DUCT TO (N) 32-1/4"X19-3/16" SA DUCT.
8. POC OF (E) 32"X14" RA DUCT TO (N) 32-1/4"X16-3/4" RA DUCT.
9. POC OF (E) 16"X16" SA DUCT TO (N) 17-1/4"X14-3/4" SA DUCT.
10. POC OF (E) 16"X16" RA DUCT TO (N) 23-1/4"X13-1/4" RA DUCT.
11. POC OF (E) 16"X14" SA DUCT TO (N) 17-1/4"X14-3/4" SA DUCT.
12. POC OF (E) 16"X14" RA DUCT TO (N) 23-1/4"X13-1/4" RA DUCT.
13. INSTALL (N) MUA UNIT ON (N) CURB PER DETAIL 2/M800.
14. REINSTALL (E) BIRD SCREEN ABOVE MECHANICAL WELL TO MATCH EXISTING CONDITIONS.
15. CONNECT (N) MUA TO (E) DUCT SMOKE DETECTOR IN ATTIC SPACE ABOVE KITCHEN.
16. (E) ROOF ACCESS PANEL.
17. (N) POWERED EXHAUST FAN MOUNTED ON RETURN AIR DUCT. SUPPORT PER DETAIL 8/M800 (TYP).

GENERAL NOTES

A. ALL EXISTING PARAPETS EXCEED 42" IN HEIGHT ABOVE ROOF STRUCTURE.

PROJECT NORTH
NORTH

MECHANICAL ROOF PLAN - MULTI-PURPOSE
1/8" = 1'-0"
1

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REGISTERED PROFESSIONAL ENGINEER
JONATHAN C. SCHLUNT
M35055
Exp. 06-30-26
MECHANICAL
STATE OF CALIFORNIA

REVISIONS:

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Symbol	Description
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Symbol	Description
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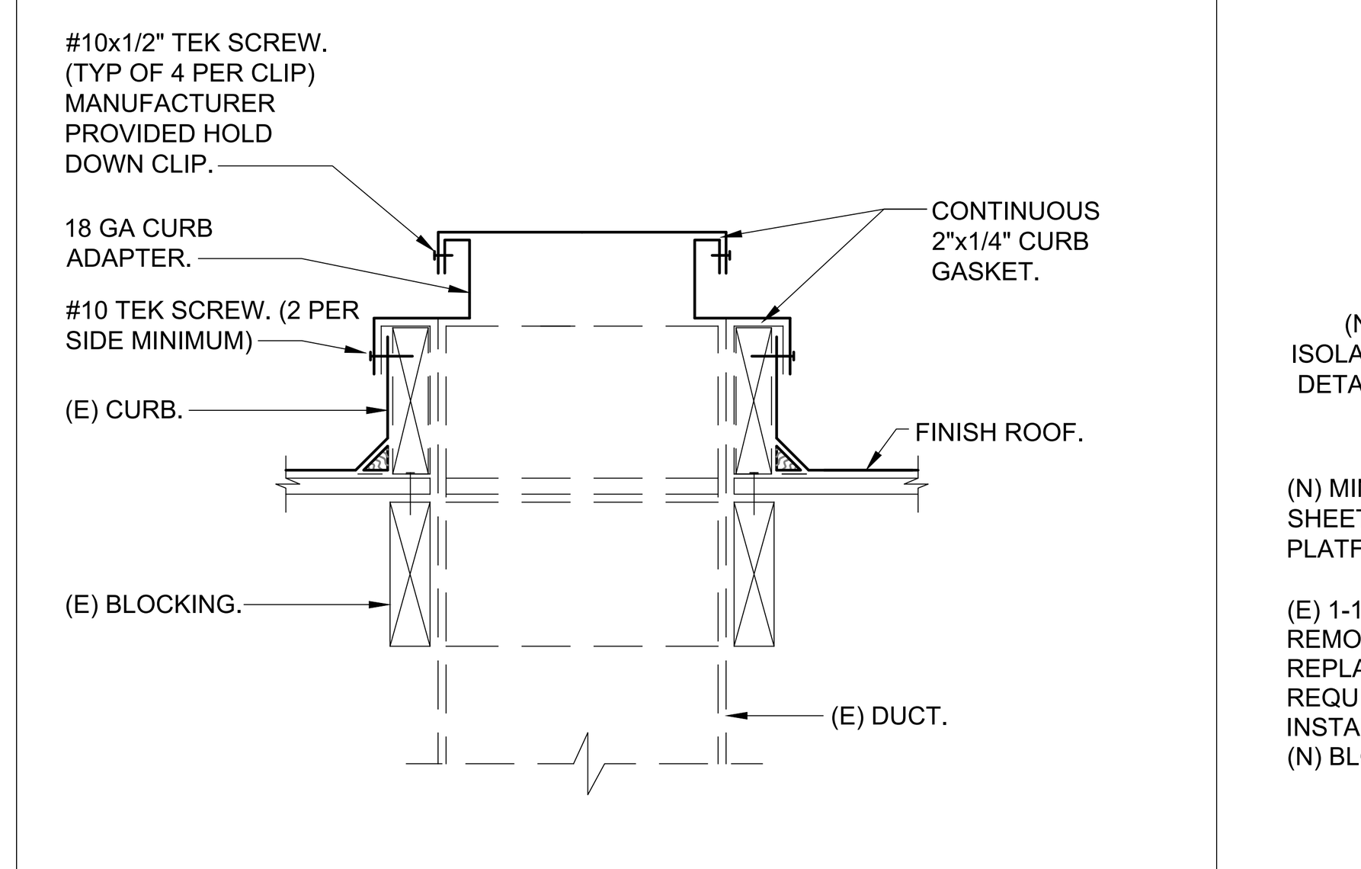
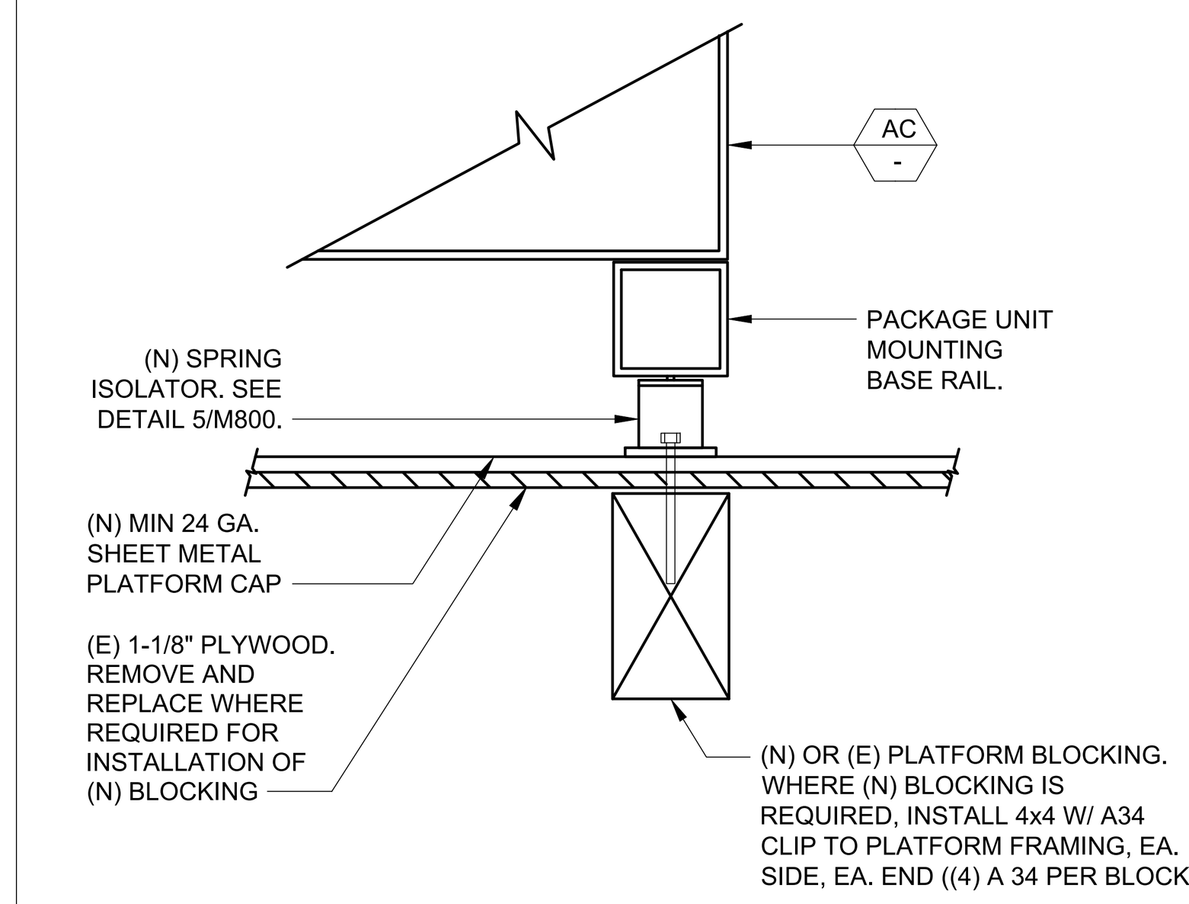
PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

DATE: 05/13/2024
SHEET TITLE:
MECHANICAL ROOF PLAN - MULTI-PURPOSE

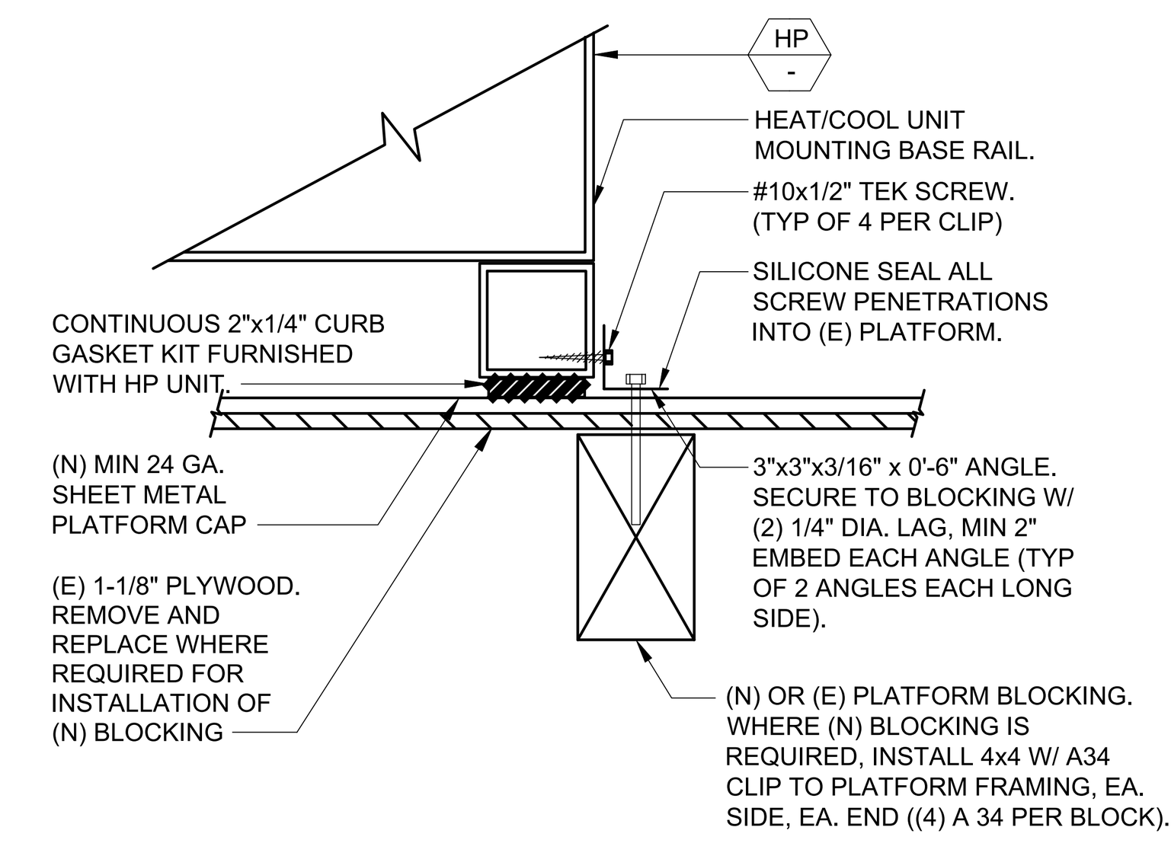
SHEET NO:
M520



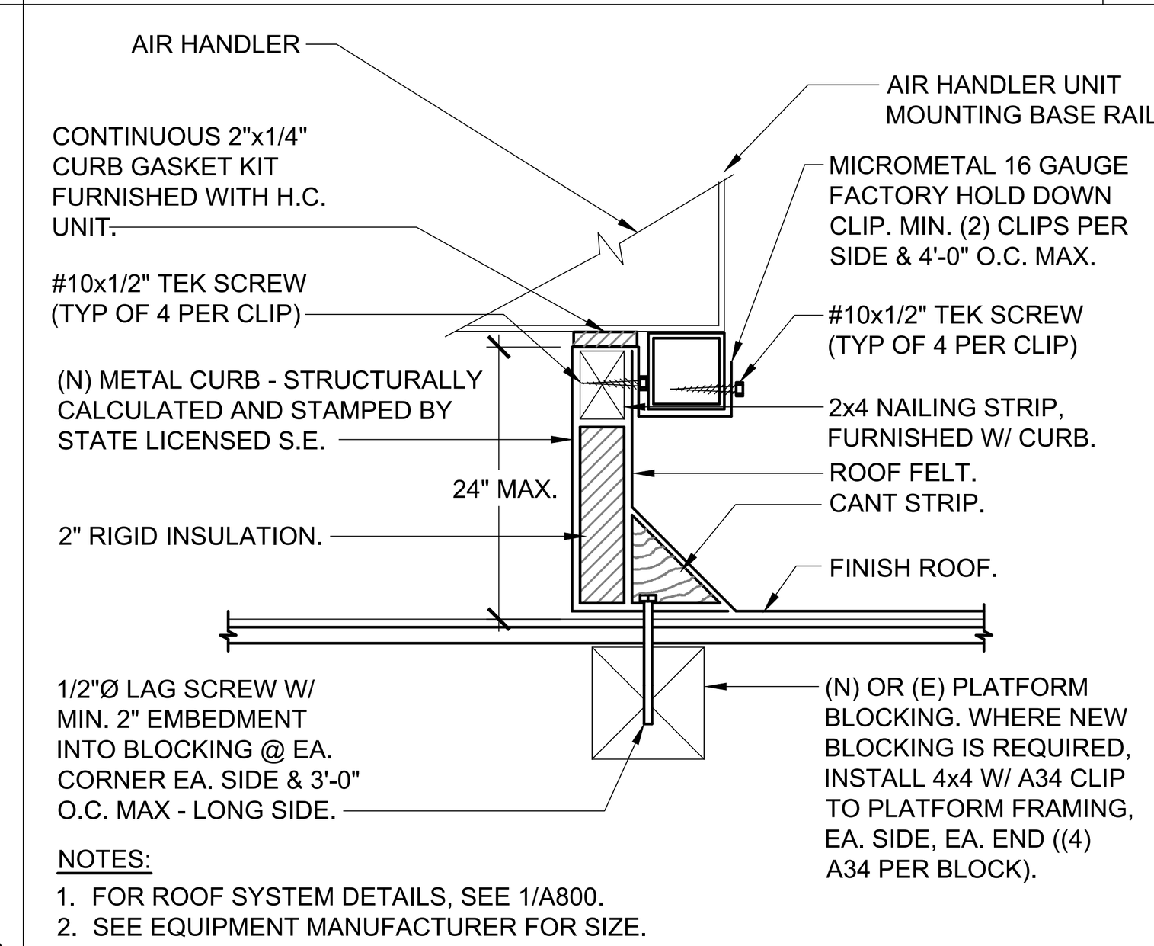
CURB ADAPTER NTS 6



PACKAGE UNIT ON (E) PLATFORM NTS 1

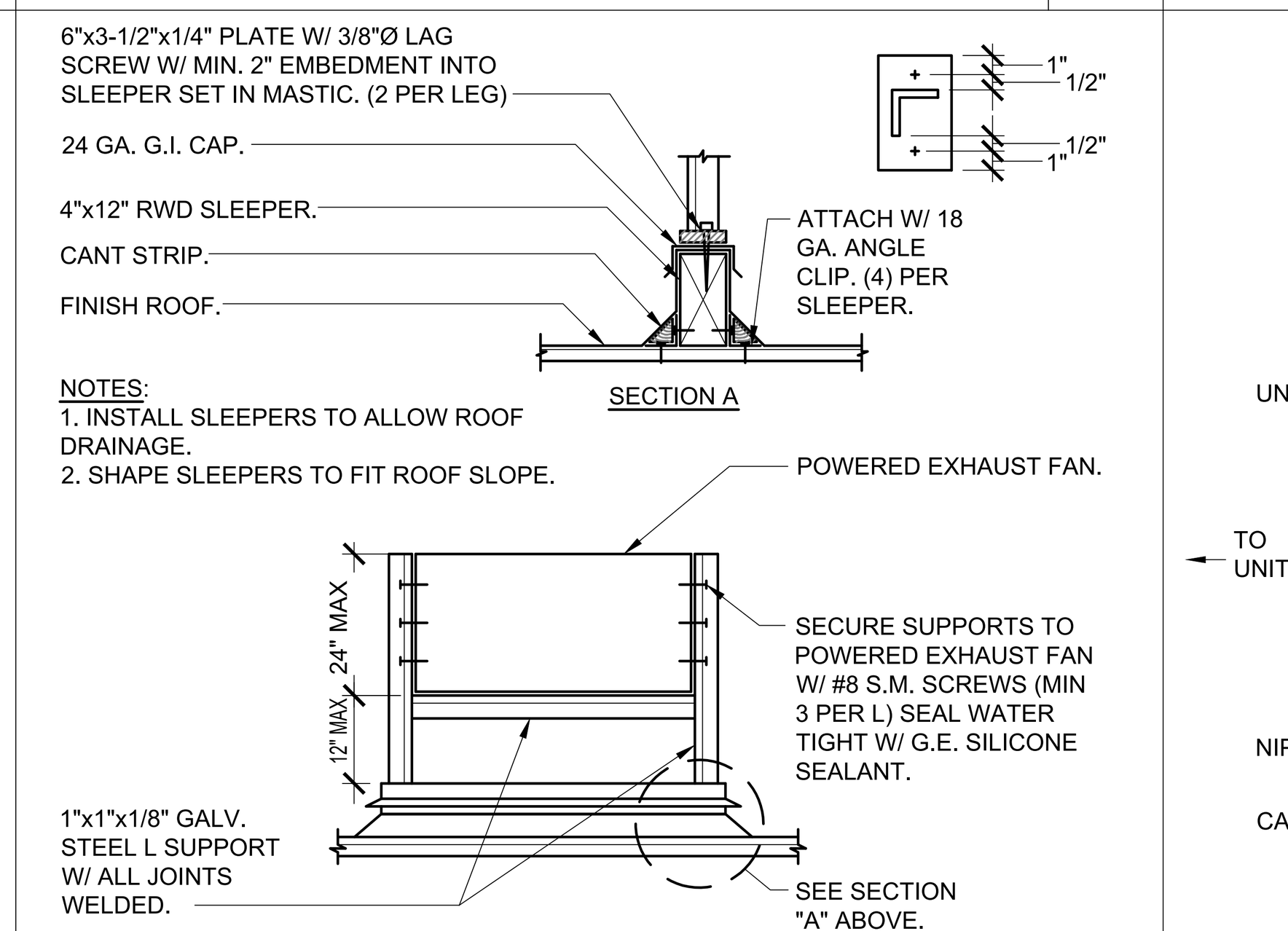


HEAT PUMP ON (E) PLATFORM NTS 7



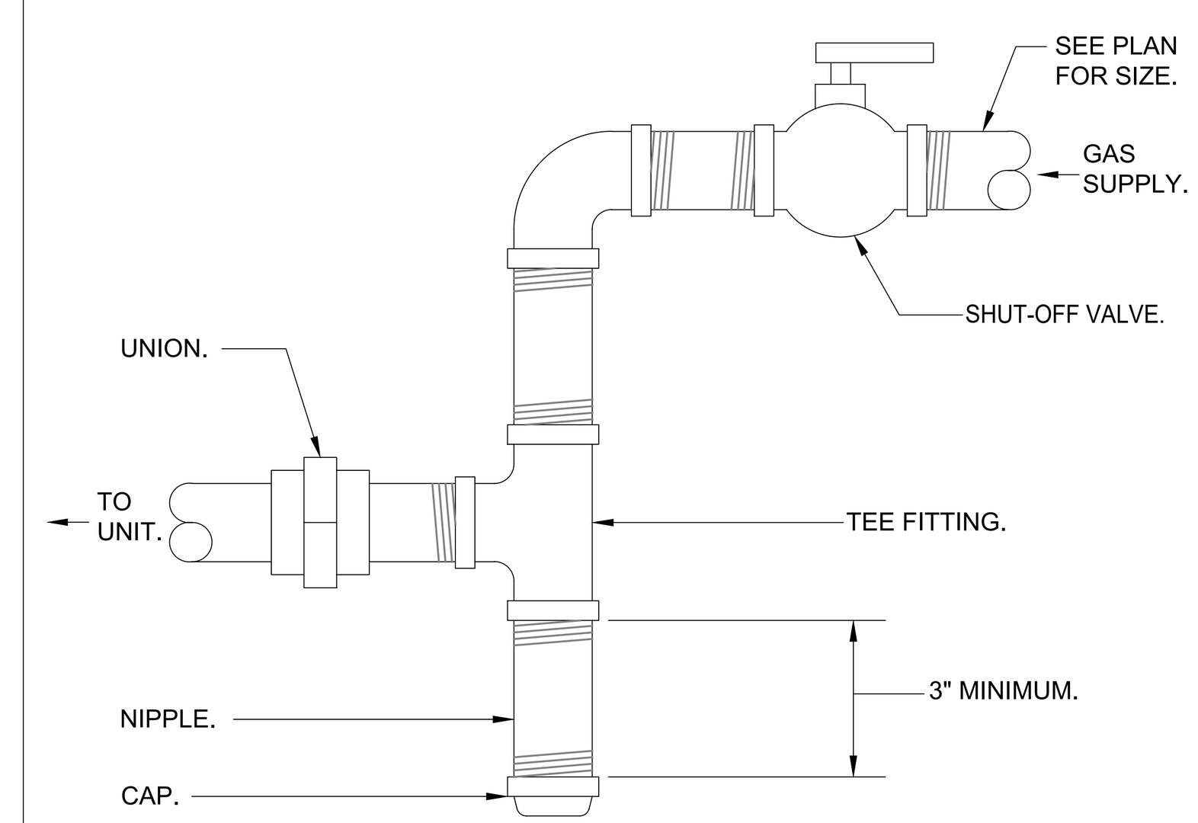
NOTES:
1. FOR ROOF SYSTEM DETAILS, SEE 1/A800.
2. SEE EQUIPMENT MANUFACTURER FOR SIZE.

EQUIPMENT CURB - WOOD ROOF NTS 2

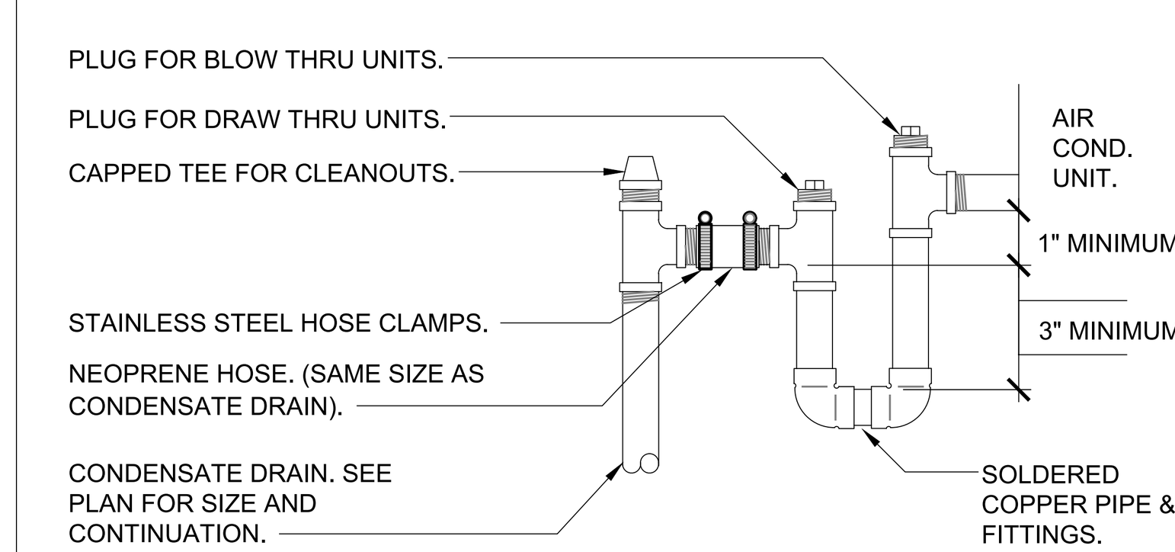


NOTES:
1. INSTALL SLEEPERS TO ALLOW ROOF DRAINAGE.
2. SHAPE SLEEPERS TO FIT ROOF SLOPE.

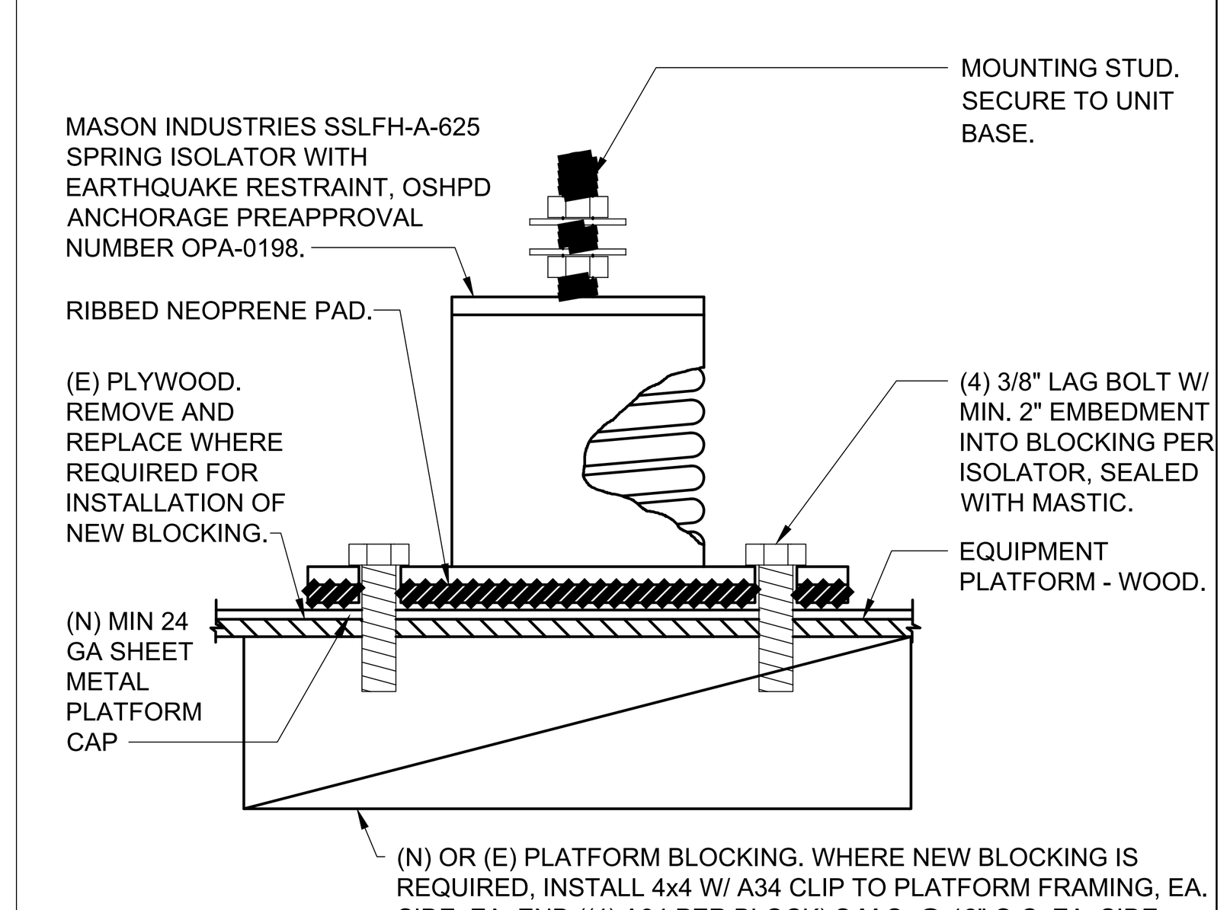
DUCT ON ROOF - RECTANGULAR NTS 8



GAS DIRT LEG NTS 3



CONDENSATE DRAIN CONNECTION DETAIL NTS 4



SPRING ISOLATOR ON WOOD PLATFORM NTS 5

26 21 16 11
27 22 17 12
28 23 18 13
29 24 19 14
30 25 20 15 10

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Symbol	Description
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PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

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

DRAWN BY:
REVIEW BY:

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.

A. GENERAL INFORMATION

01	Project Location (city)	MADERA	04	Total Conditioned Floor Area	18523
02	Climate Zone	13	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

• 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 Air System(s)	02 Wet System Components	03 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

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		02		03		04		05		06		07		08	09
System Summary 110.1, 110.2, 140.4, 170.2(c)	AND	Pumps 140.4(k), 170.2(c)4I	AND	Fans/ Economizers 140.4(c), 140.4(e), 170.2(c)	AND	System Controls 110.2, 120.2, 140.4(f), 170.2(c)	AND	Ventilation 120.1, 160.2	AND	Terminal Box Controls 140.4(d), 170.2(c)4B	AND	Distribution 120.3, 140.4(l), 160.2, 160.3	AND	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	Yes	AND		AND	Yes	AND		COMPLIES with Exceptional Conditions
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.

The permit applicant has indicated on Table J that ventilation calculations have been attached or included elsewhere on the plans.

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 System Name	02 Quantity	03 System Serving	04 System Status	05 Space Type	06 Utilizing Recovered Heat
AC-17.1	1	Single zone	New/ Addition	School or Classroom	☐

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Space Conditioning System Information

01 System Name	02 Quantity	03 System Serving	04 System Status	05 Space Type	06 Utilizing Recovered Heat
AC-17.2	1	Single zone	New/ Addition	School or Classroom	☐
AC-17.3	1	Single zone	New/ Addition	School or Classroom	☐
AC-19.1	1	Single zone	New/ Addition	School or Classroom	☐
19.2	1	Single zone	New/ Addition	School or Classroom	☐
AC-19.3	1	Single zone	New/ Addition	School or Classroom	☐
AC-19.4	1	Single zone	New/ Addition	School or Classroom	☐
AC-19.5	1	Single zone	New/ Addition	School or Classroom	☐
AC-22	1	Single zone	New/ Addition	School or Classroom	☐
AC-23	1	Single zone	New/ Addition	School or Classroom	☐
HP-21	1	Single zone	New/ Addition	School or Classroom	☐
HP-23	1	Single zone	New/ Addition	School or Classroom	☐

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 Name or Item Tag	02 Equipment Category per Tables 110.2, 140.4(a)2 and 170.2(c)3aii	03 Equipment Type per Tables 110.2 and Title 20	04 Smallest Size Available[1] 140.4(a) and 170.2(c)1	05 Heating Output[2,3] Per Design (kBtu/h)	06 Heating Output Rated (kBtu/h)	07 Supp. Heating Output (kBtu/h)	08 Cooling Output[2,3] Sensible Per Design (kBtu/h)	09 Cooling Output Rated (kBtu/h)	10 Load Calculations[3,4] Total Heating Load (kBtu/h)	11 Total Sensible Cooling Load (kBtu/h)
				Equipment Sizing per Mechanical Schedule (kBtu/h) 140.4(a&b), 170.2(c)1 & 170.2(c)2						
AC-17.1	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				52.32	68.5		72.73
AC-17.2	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				52.32	68.5		72.73
AC-17.3	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				52.32	68.5		72.73
AC-19.1	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				66.69	84.97		47.32
19.2	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				66.69	84.97		47.32
AC-19.3	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				66.69	84.97		47.32
AC-19.4	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				66.69	84.97		66.81
AC-19.5	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				66.69	84.97		74.98
AC-22	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				22.48	30.89		34.21
AC-23	Unitary AC/ Cond. (no elec. resistance)	AC, air-cooled pkg (3 phase)	Yes				27.43	33.63		45.7
HP-21	Unitary Heat Pumps	Air-cooled, pkg (1phase)	Yes	23	23	0	23.8	23.8	10.89	10.62

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
HP-23	Unitary Heat Pumps	Air-cooled, pkg (1phase)	Yes	23	23	0	23.8	23.8	16.37	15.13

[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 Name or Item Tag	02 Size Category (Btu/h)	03 Heating Mode: Rating Condition (°F)	04 Efficiency Unit	05 Minimum Efficiency Required per Tables 110.2 / Title 20	06 Design Efficiency	07 Cooling Mode: Efficiency Unit	08 Minimum Efficiency Required per Tables 110.2 / Title 20	09 Design Efficiency
AC-17.1	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 15.9
AC-17.2	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 15.9
AC-17.3	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 15.9
AC-19.1	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 16.6
19.2	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 16.6
AC-19.3	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 16.6
AC-19.4	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 16.6

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

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 Name or Item Tag	02 Size Category (Btu/h)	03 Heating Mode: Rating Condition (°F)	04 Efficiency Unit	05 Minimum Efficiency Required per Tables 110.2 / Title 20	06 Design Efficiency	07 Cooling Mode: Efficiency Unit	08 Minimum Efficiency Required per Tables 110.2 / Title 20	09 Design Efficiency
AC-19.5	>=65,000 and <135,000					EER / IEER	11 / 14.6	12.1 / 16.6
AC-22	<65,000					SEER	13	17.5
AC-23	<65,000					SEER	13	17.5
HP-21	<65,000		HSPF2	6.7	7.25	SEER2	13.4	15
HP-23	<65,000		HSPF2	6.7	7.25	SEER2	13.4	15

G. PUMPS

This section does not apply to this project.

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	AC-17.1	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	2,300	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-17.1	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.55
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.55			

System Name	AC-17.2	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	2,300	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-17.2	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.55
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.55			

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	AC-17.3	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	2,300	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-17.3	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.55
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.55			

System Name	AC-19.1	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	3,000	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-19.1	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.89
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.89			

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	AC-19.2	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	3,000	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-19.2	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.89
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.89			

System Name	AC-19.3	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	3,000	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-19.3	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.89
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.89			

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	AC-19.4	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	3,000	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-19.4	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.89
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.89			

System Name	AC-19.5	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	3,000	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-19.5	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.89
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.89			

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	AC-22	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,000	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-22	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.3
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.3			

System Name	AC-23	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,200	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
AC-23	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.37
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.37			

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	HP-21	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	800	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
HP-21	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.37
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.37			

System Name	HP-23	Quantity	1	Fan System Status	New	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	800	Site Elevation	272	Economizer	Differential Temperature

01 Fan Name or Item Tag	02 Fan Type	03 Qty	04 Component	05 Airflow through Component (%)	06 Water Gauge (w.g)	07 Allowance: Component Allowance	08 Allowance: Fan Allowance (watt/cfm)[3]	09 Design: Design Electrical Input Power Method	10 Motor Nameplate Horsepower	11 Design Electrical Input Power (kW)
HP-23	Supply	1	Hydronic/DX cooling coil or heat pump coil	100		0.13	0.139	Manufacturer provided		0.37
Supply Fan Base Allowance (kW)	0.232	Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)	0	Fan System Allowance (kW)[3]		Fan System Electrical Output (kW)	0.37			

[1] FOOTNOTES: Fans serving spaces with design background noise goals below NC35

H. FAN SYSTEMS & AIR ECONOMIZERS

[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.
[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..

Fan Energy Index (FEI)

01 Name or Item Tag	02 FEI Exception	03 FEI
AC-17.1	Embedded Fan <5HP or <4.1kW	
AC-17.2	Embedded Fan <5HP or <4.1kW	
AC-17.3	Embedded Fan <5HP or <4.1kW	
AC-19.1	Embedded Fan <5HP or <4.1kW	
AC-19.2	Embedded Fan <5HP or <4.1kW	
AC-19.3	Embedded Fan <5HP or <4.1kW	
AC-19.4	Embedded Fan <5HP or <4.1kW	
AC-19.5	Embedded Fan <5HP or <4.1kW	
AC-22	Embedded Fan <5HP or <4.1kW	
AC-23	Embedded Fan <5HP or <4.1kW	
HP-21	Embedded Fan <5HP or <4.1kW	
HP-23	Embedded Fan <5HP or <4.1kW	

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 System Name	02 System Zoning	03 Conditioned Floor Area Being Served (ft²)	04 Thermostats 110.2(b) & (c)[1], 120.2(a) 160.3(a)2A or 141.0(b)2E & 180.2(b)2	05 Shut-Off Controls 120.2(e) & 160.3(a)2D	06 Isolation Zone Controls 120.2(g) & 160.3(a)2F	07 Demand Response 110.12 120.2(b) & 160.3(a)2B	08 Supply Air Temp. Reset 140.4(f) & 170.2(c)4D	09 Window Interlocks per 140.4(n) & 170.2(c)4D
AC-17.1	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-17.2	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-17.3	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-19.1	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-19.2	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-19.3	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-19.4	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-19.5	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-22	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
AC-23	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows
HP-21	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows

I. SYSTEM CONTROLS

HP-23	Single zone	<= 25,000 ft²	EMCS	EMCS	EMCS	EMCS	NA: Single Zone	NA: No operable windows

[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 table is used to demonstrate compliance with mandatory ventilation requirements in 120.1 120.2(e)3B 140.4(p) and 140.4(q) for all nonresidential and hotel/motel and d:t24refnolink/]160.2, 160.3(a)3D, 170.2(a)4N, 170.2(a)4O for high-rise residential occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☒	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☐	Check this box if the project included Nonresidential, Hotel/Motel Spaces or Multifamily Common Use Spaces
	☐	
03	☐	Check the box if the project is using natural ventilation in any nonresidential or hotel/motel spaces to meet required ventilation rates per 120.1(c)2.

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This table is used to show compliance with mandatory pipe insulation requirements found in 120.3 and mandatory requirements found in 120.4(g) for duct sealing.

01	☐	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service. Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space shall have a Class I or Class II vapor retarder. All penetrations and joints of which shall be sealed.

Duct Leakage Testing

The answers to the questions below apply to the following duct systems:	EXISTING DUCTWORK	**NR/ Common Use:** Duct leakage testing shall not exceed 15% per NA7.5.3 required for these systems?	No

L. DISTRIBUTION (DUCTWORK and PIPING)

		Dwelling Units: Total duct leakage of duct system shall not exceed 15% or duct system to outside shall not exceed 10% per RA3.1.4 required for systems?	---
		Duct leakage testing per CMC Section 603.10.1 required for these systems?	No
11	No	The scope of the project includes only duct systems serving healthcare facilities	
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.	
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.	
14	Yes	The combined surface area of the ducts is more than 25% of the total surface area of the entire duct system:	
15	No	The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.	
16	Yes	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.	
17	Yes	All Ductwork and plenums with pressure class ratings shall be constructed to Seal Class A	
18	Yes	All ductwork is an extension of an existing duct system	
19	No	Ductwork serving individual dwelling unit	
20	Yes	< 25 ft of new or replacement space conditioning ducts installed	
21	R-0.0	Duct Insulation R-value	
22	Yes	Ductwork Existing To Remain	
23	Yes	Duct System Connected To Altered Space Conditioning System	

M. COOLING TOWERS

This section does not apply to this project.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-122085 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 06/27/2024

NET POSITIVE
consulting engineers
www.NPCeng.com
559.940.7293

REGISTERED PROFESSIONAL ENGINEER — NATHAN C. SCHLICHT — M35955 — Exp. 06-30-26 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS:

Symbol	Description
--/--/----	---
Symbol	Description
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Symbol	Description
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PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

DATE: 05/13/2024
SHEET TITLE:
TITLE 24 DOCUMENTATION
SHEET NO:
M900

REVIEW BY:
DRAWN BY:

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: 1340 - MLK MIDDLE SCHOOL - HVAC IMPROVEMENTS	**Report Page:**	**(Page 17 of 19)**
	Date Prepared:	2023-10-25T13:43:18-04:00

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/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

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-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.	
NRCA-MCH-05-A - Air Economizer Controls	AC-17.1; AC-17.2; AC-17.3; AC-19.1; AC-19.2; AC-19.3; AC-19.4; AC-19.5; AC-22; AC-23; HP-21; HP-23
NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance	HP-21; HP-23
NRCA-MCH-18-A Energy Management Control Systems	AC-17.1; AC-17.2; AC-17.3; AC-19.1; AC-19.2; AC-19.3; AC-19.4; AC-19.5; AC-22; AC-23; HP-21; HP-23

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
Project Name: 1340 - MLK MIDDLE SCHOOL - HVAC IMPROVEMENTS	**Report Page:**	**(Page 18 of 19)**
	Date Prepared:	2023-10-25T13:43:18-04:00

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)		N/A
Duct Insulation per 120.4		M001
Heat Pump with Supplemental electric Resistance Heater Controls per 110.2(b)		NA
The air duct and plenum system is designed per 120.4(a)-(f)		NA
Kitchen range hoods shall be rated for sound in accordance with Section 7.2 of ASHRAE 62.2		N/A

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Generated Date/Time: | Documentation Software: Energy Code Ace
Report Version: 2022.0.000 | Schema Version: rev 20220101 | Compliance ID: 151296-1023-0002 | Report Generated: 2023-10-25 10:43:23

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: 1340 - MLK MIDDLE SCHOOL - HVAC IMPROVEMENTS	**Report Page:**	**(Page 19 of 19)**
Project Address: 601 LILLY ST, MADERA, CA 93638	**Date Prepared:**	2023-10-25T13:43:18-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Jarrett Steele	Documentation Author Signature:
Company: Net Positive Consulting Engineering	Signature Date: 10/25/2023
Address: 1446 Tollhouse Rd, Ste 102	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Clovis/CA/93611	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 Engineering	Date Signed: 10/25/2023
Address: 1446 Tollhouse Rd, Ste 102	License: M36955
City/State/Zip: Clovis/CA/93611	Phone: 559-940-7293

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Generated Date/Time: | Documentation Software: Energy Code Ace
Report Version: 2022.0.000 | Schema Version: rev 20220101 | Compliance ID: 151296-1023-0002 | Report Generated: 2023-10-25 10:43:23

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DATE: 06/27/2024

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LICENSED PROFESSIONAL ENGINEER JONATHAN C. SCHLUNDT No. M36955 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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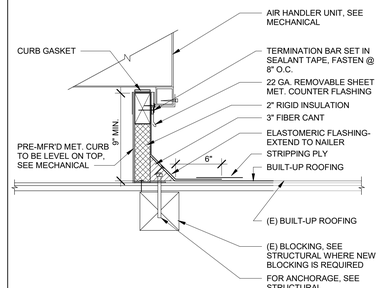
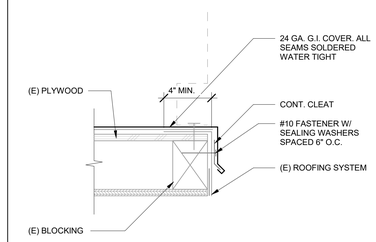
PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

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

SHEET NO:
M901



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



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

IDENTIFICATION STAMP
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APP: 02-122085 INC:
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DATE: 06/27/2024

MARK	DATE	DESCRIPTION
	05/13/24	DSA BACKCHECK

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

HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638

DRAWING TITLE
DETAILS

PROJECT NO.
23-12939

DRAWING
A800

2. STRUCTURAL WOOD

A. MATERIALS: (UNLESS OTHERWISE NOTED ON DRAWINGS)
   1. ALL DIMENSIONED LUMBER: DOUGLAS FIR #1
   2. L.V.L. MATERIAL: 1.9E-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 ½ OF THE SHANK DIAMETER. THE LEAD HOLE RECEIVING THE THREADED PORTION SHALL BE NO MORE THAN ½ 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 696, 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.

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 = 0.558 S_1 = 0.231
SITE CLASS	D (DEFAULT)
SPECTRAL RESPONSE COEFFICIENTS	S_{DS} = 0.521
SEISMIC DESIGN CATEGORY	D

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PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638

PROJECT NO: 1340

DATE: 05/13/2024

SHEET TITLE:
GENERAL NOTES

SHEET NO:
S100

REGISTERED PROFESSIONAL ENGINEER
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No. S6790
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PARRISH HANSEN
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PARTIAL ROOF FRAMING PLAN - GYMNASIUM

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

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MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 1340

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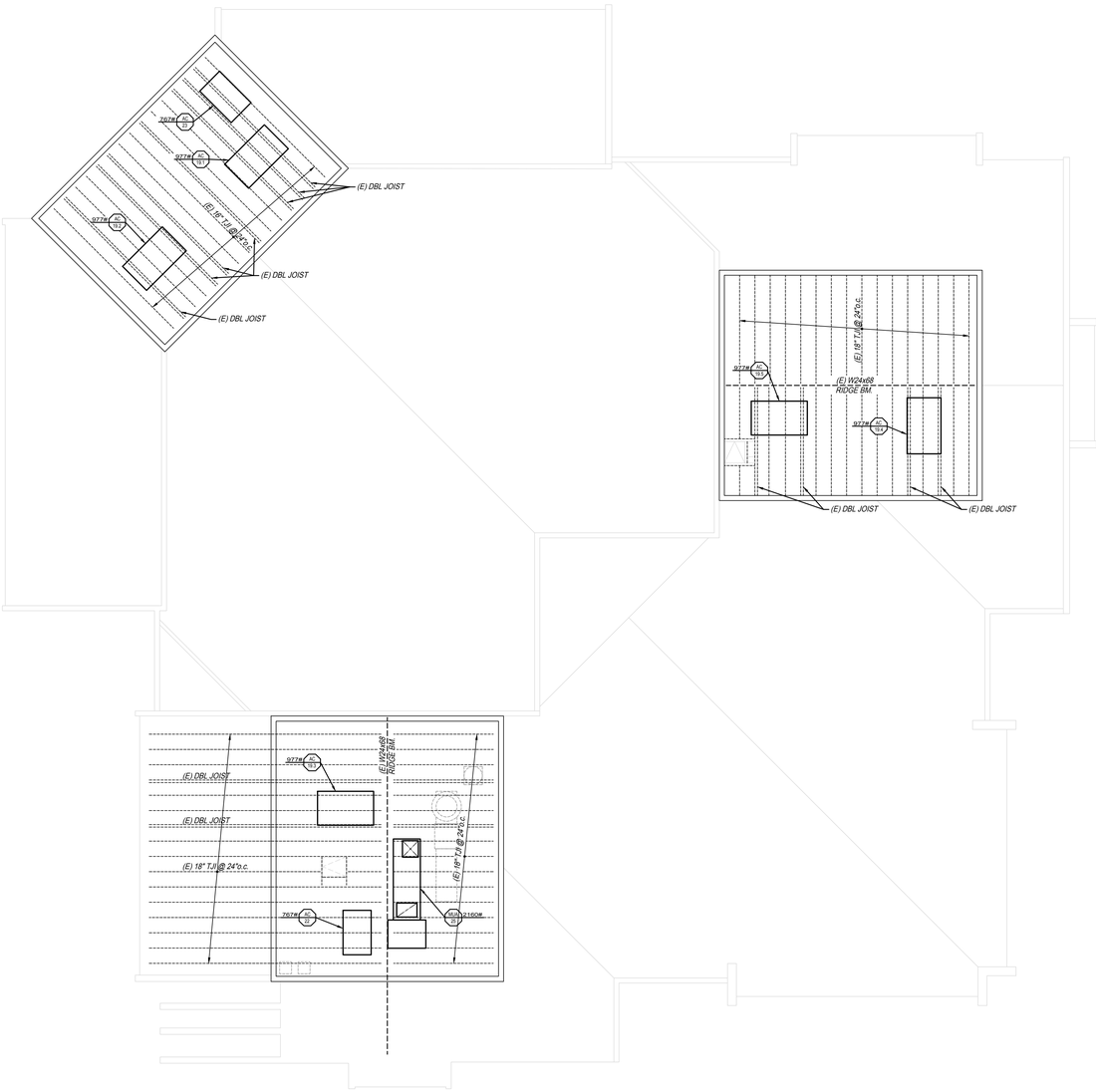
DATE: 05/13/2024
SHEET TITLE:
PARTIAL ROOF FRAMING PLAN - GYMNASIUM
SHEET NO:
S500



PARTIAL ROOF FRAMING PLAN - MULTI-PURPOSE

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

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Symbol	Description

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PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638

PROJECT NO: 1340

DATE: 05/13/2024

SHEET TITLE:
PARTIAL ROOF FRAMING PLAN - MULTI-PURPOSE

SHEET NO:
S520

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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.
J	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 T	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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REGISTERED PROFESSIONAL ENGINEER
STEFFAN R. KIFER
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REFIK
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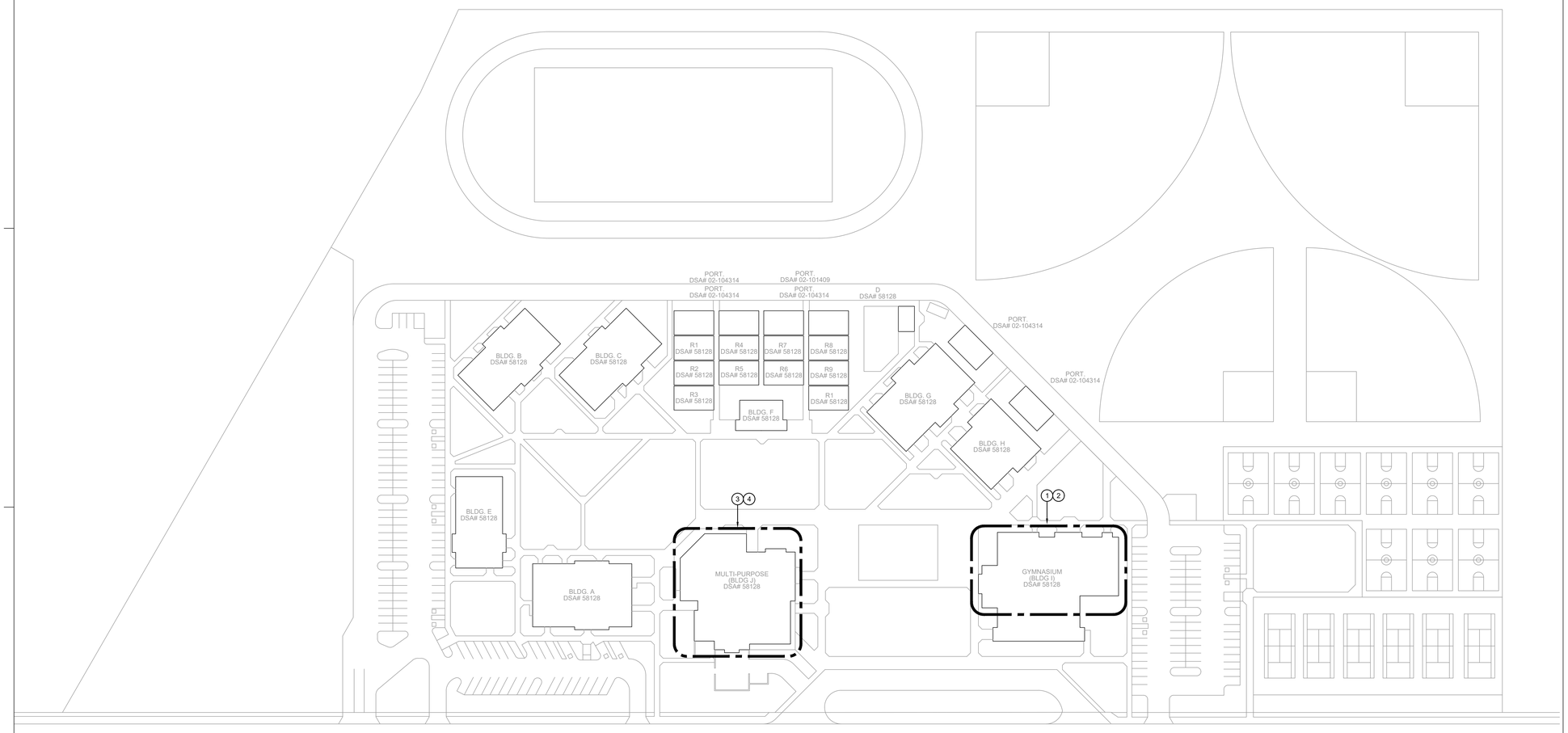
PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 223-0165.1340

DATE: 05/13/2024
SHEET TITLE:
NOTES AND SPECIFICATIONS

SHEET NO:
E1.0

LEGEND AND KEYNOTES:

1. **FOR WORK IN THIS AREA, SEE ROOF DEMOLITION PLAN - GYMNASIUM ON SHEET [1/E2.1].**
2. **FOR WORK IN THIS AREA, SEE ROOF POWER PLAN - GYMNASIUM ON SHEET [2/E2.1].**
3. **FOR WORK IN THIS AREA, SEE ROOF DEMOLITION PLAN - MULTI PURPOSE ON SHEET [E2.2].**
4. **FOR WORK IN THIS AREA, SEE ROOF POWER PLAN - MULTI PURPOSE ON SHEET [E2.3].**



OVERALL SITE PLAN

1" = 60'-0" | 1

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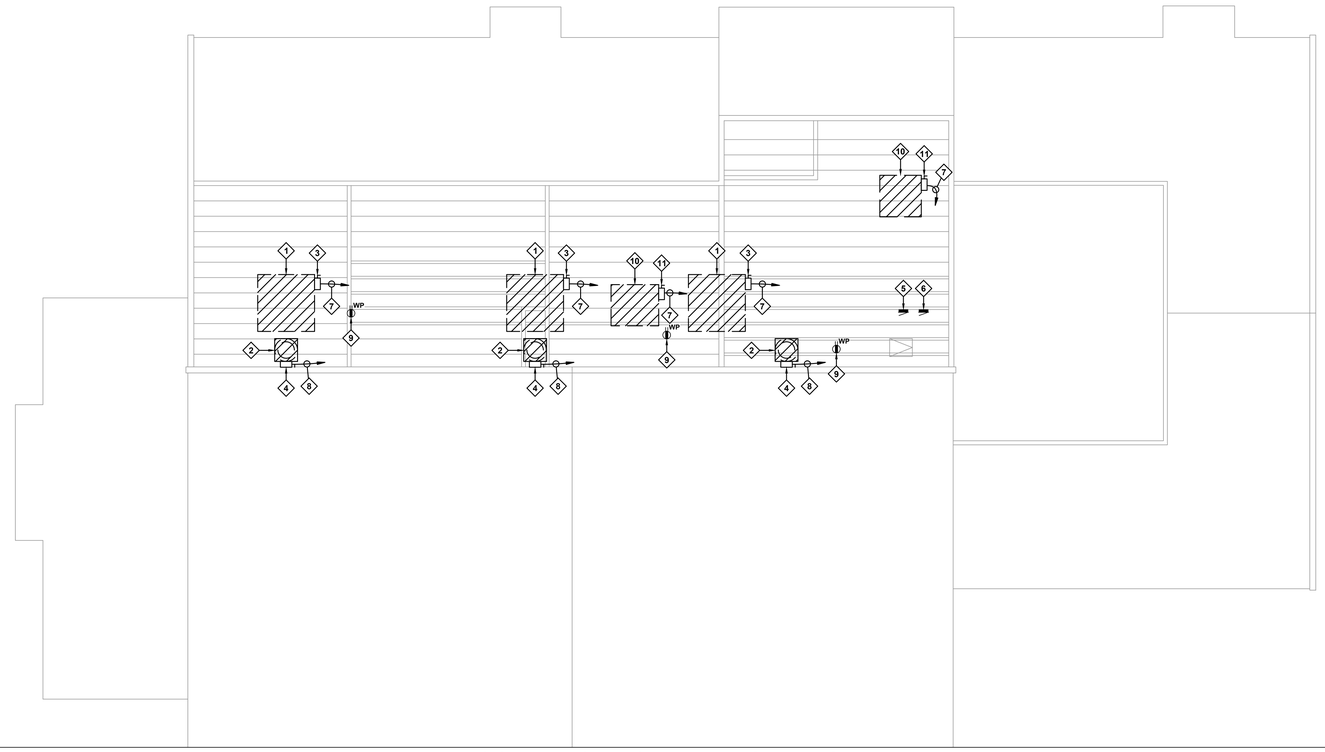
601 LILLY ST. MADERA, CA 93638

PROJECT NO: 223-0165.1340

DATE: 05/13/2024
SHEET TITLE:
OVERALL SITE PLAN

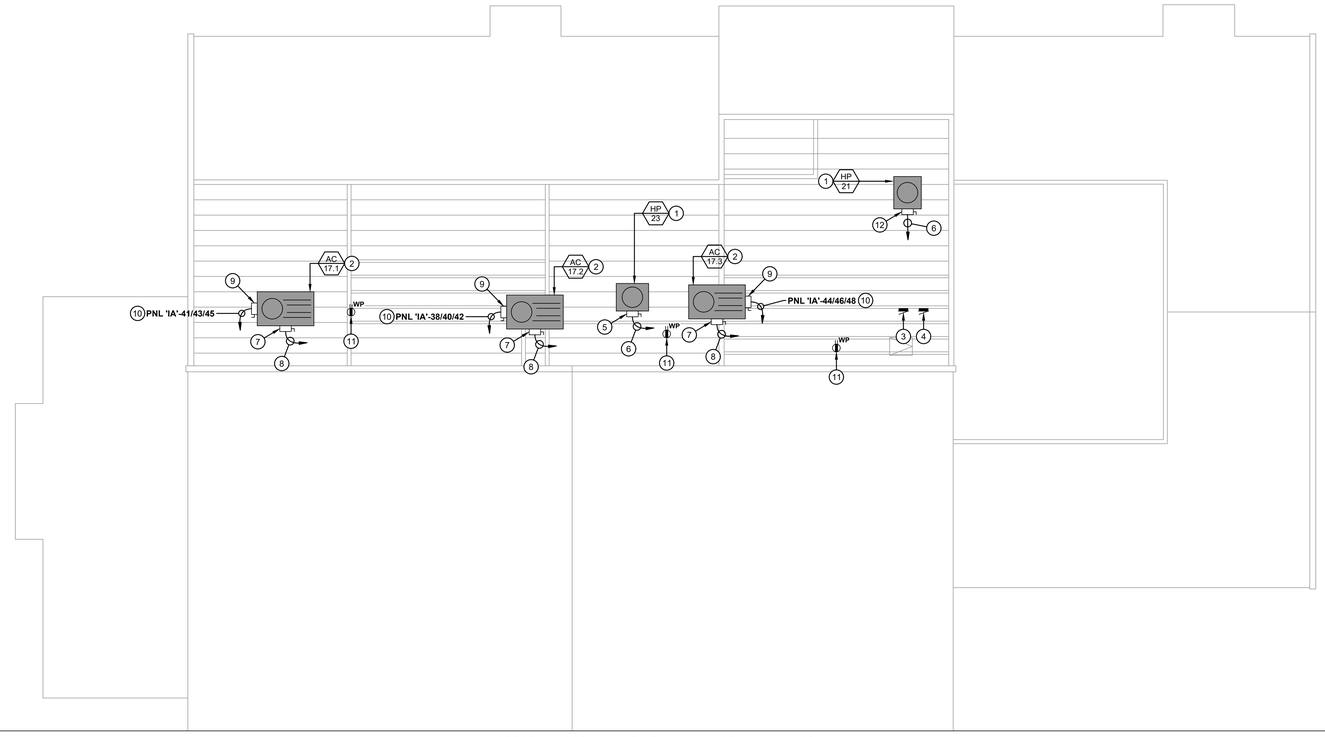
SHEET NO:
E2.0



NORTH

ROOF DEMOLITION PLAN - GYMNASIUM

1/8" = 1'-0" | 1



NORTH

ROOF POWER PLAN - GYMNASIUM

1/8" = 1'-0" | 2

DEMOLITION KEYNOTES:

1. DISCONNECT EXISTING PACKAGE UNIT FOR DEMOLITION. DEMO EXISTING CONDUIT AND CONDUCTORS BETWEEN DISCONNECT AND PACKAGE UNIT.
2. DISCONNECT EXISTING EXHAUST FAN FOR DEMOLITION. DEMO EXISTING CONDUIT AND CONDUCTORS BETWEEN DISCONNECT AND EXHAUST FAN.
3. DEMO EXISTING PACKAGE UNIT DISCONNECT.
4. DEMO EXISTING EXHAUST FAN DISCONNECT.
5. PRESERVE EXISTING DISTRIBUTION PANEL '1A', LOCATED IN ELECTRICAL ROOM.
6. PRESERVE EXISTING DISTRIBUTION PANEL '1B', LOCATED IN ELECTRICAL ROOM.
7. PRESERVE EXISTING CONDUIT AND DEMO EXISTING CONDUCTORS.
8. DEMO EXISTING CONDUIT AND CONDUCTORS.
9. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.
10. DISCONNECT EXISTING PACKAGE HEAT PUMP FOR DEMOLITION. DEMO EXISTING CONDUIT AND CONDUCTORS BETWEEN DISCONNECT AND PACKAGE HEAT PUMP.
11. DEMO EXISTING PACKAGE HEAT PUMP DISCONNECT.

LEGEND AND KEYNOTES:

1. NEW HEAT PUMP. TERMINATE NEW HEAT PUMP BRANCH CIRCUIT PER MANUFACTURER'S REQUIREMENTS
2. NEW PACKAGE UNIT. TERMINATE NEW PACKAGE UNIT BRANCH CIRCUIT PER MANUFACTURER'S REQUIREMENTS
3. EXISTING DISTRIBUTION PANEL 'IA', LOCATED IN ELECTRICAL ROOM. PROVIDE (3) 15A, 3-POLE CIRCUIT BREAKERS FOR NEW PACKAGE UNIT POWER EXHAUST MODULE.
4. EXISTING DISTRIBUTION PANEL 'IB', LOCATED IN ELECTRICAL ROOM.
5. PROVIDE NEW 30A, 240V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 3#10 CU AND 1#10 CU GND BETWEEN DISCONNECT AND HEAT PUMP.
6. PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT TO SOURCE PANEL 'IB'. MIN. 3/4"C WITH 3#10 CU AND 1#10 CU GND.
7. PROVIDE NEW 30A, 480V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 3#12 CU AND 1#12 CU GND BETWEEN DISCONNECT AND PACKAGE UNIT.
8. PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT TO SOURCE PANEL 'IA' MIN. 3/4"C WITH 3#12 CU AND 1#12 CU GND.
9. PROVIDE NEW 30A, 480V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 3#12 CU AND 1#12 CU GND BETWEEN DISCONNECT AND POWER EXHAUST MODULE.
10. PROVIDE (1) 3/4"C WITH 3#12 CU AND 1#12 CU GND BETWEEN DISCONNECT AND PANEL 'IA' PER DETAILS [A/E3.0] & [B/E3.0].
11. EXISTING WEATHER RESISTANT GFCI RECEPTACLE WITH WHILE-IN-USE WEATHERPROOF COVER.
12. PROVIDE NEW 30A, 240V, 1-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 2#10 CU AND 1#10 CU GND BETWEEN DISCONNECT AND HEAT PUMP.

IDENTIFICATION STAMP
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DATE: 06/27/2024

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559.940.7293

REVISIONS:

Symbol	Description

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REGISTERED PROFESSIONAL ENGINEER
STEPHAN R. REFIK
No. E23239
ELECTRICAL
STATE OF CALIFORNIA

REFIK
ELECTRICAL ENGINEERS
1500 SHAW AVENUE
CLOVIS, CA 93611
(559) 484-2049

PROJECT NAME:
HVAC IMPROVEMENTS AT
MARTIN LUTHER KING JR. MIDDLE SCHOOL
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638

PROJECT NO: 223-0165.1340

DATE: 05/13/2024

SHEET TITLE:
ROOF POWER PLAN - GYMNASIUM

SHEET NO:
E2.1

DEMOLITION KEYNOTES:

1. DISCONNECT EXISTING PACKAGE UNIT FOR DEMOLITION. DEMO EXISTING CONDUIT AND CONDUCTORS BETWEEN DISCONNECT AND PACKAGE UNIT.
2. DISCONNECT EXISTING MAKE UP AIR UNIT FOR DEMOLITION. DEMO EXISTING CONDUIT AND CONDUCTORS BETWEEN DISCONNECT AND MAKE UP AIR UNIT UNIT.
3. DISCONNECT EXISTING EXHAUST FAN UNIT FOR DEMOLITION. DEMO EXISTING CONDUIT AND CONDUCTORS.
4. DEMO EXISTING PACKAGE UNIT DISCONNECT.
5. DEMO EXISTING MAKE UP AIR UNIT DISCONNECT.
6. PRESERVE EXISTING CONDUIT AND DEMO EXISTING CONDUCTORS.
7. PRESERVE EXISTING DISTRIBUTION PANEL 'JC' LOCATED IN ROOM 'J11'.
8. PRESERVE EXISTING DISTRIBUTION PANEL 'JK-1' LOCATED IN HALLWAY.
9. PRESERVE EXISTING DISTRIBUTION PANEL 'JK-2' LOCATED IN HALLWAY.
10. PRESERVE EXISTING DISTRIBUTION PANEL 'JA' LOCATED IN ELECTRICAL ROOM.
11. PRESERVE EXISTING DISTRIBUTION PANEL 'JB' LOCATED IN ELECTRICAL ROOM.
12. PRESERVE EXISTING WEATHER RESISTANT GFCI RECEPTACLE.

NORTH

ROOF DEMOLITION PLAN - MULTI-PURPOSE

1/8" = 1'-0" | 1

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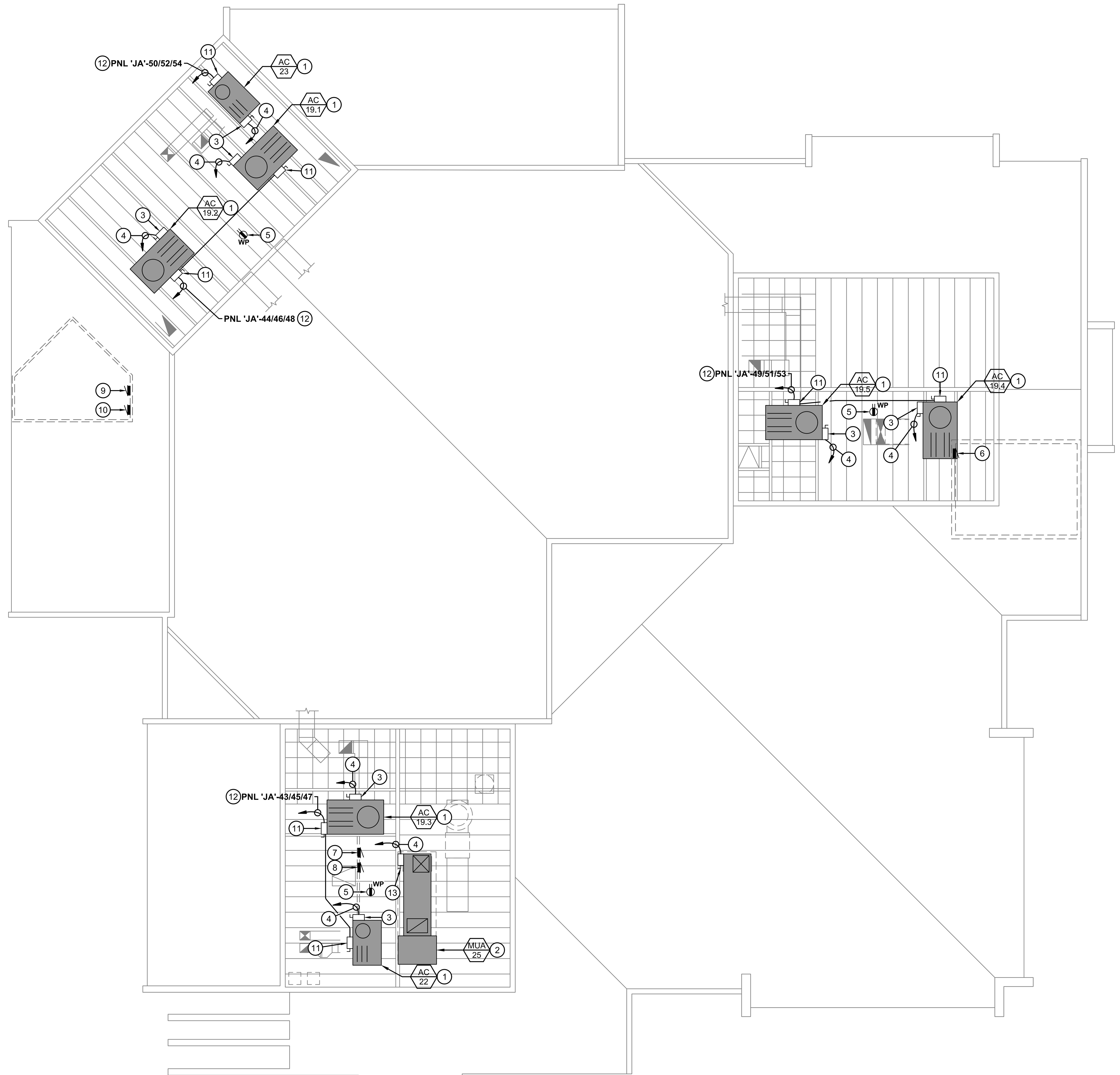
MADERA UNIFIED SCHOOL DISTRICT
601 LILLY ST, MADERA, CA 93638
PROJECT NO: 223-0165.1340

DATE: 05/13/2024
SHEET TITLE:
ROOF
DEMOLITION PLAN
- MULTI PURPOSE
SHEET NO:
E2.2



LEGEND AND KEYNOTES:

1. NEW PACKAGE UNIT. TERMINATE NEW PACKAGE UNIT BRANCH CIRCUIT PER MANUFACTURE'S REQUIREMENTS
2. NEW MAKE UP AIR UNIT. TERMINATE NEW MAKE UP AIR UNIT BRANCH CIRCUIT PER MANUFACTURER'S REQUIREMENTS
3. PROVIDE NEW 30A, 480V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 3#10 CU AND 1#10 CU GND BETWEEN DISCONNECT AND PACKAGE UNIT.
4. PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT MIN. 3/4"C WITH 3#10 CU AND 1#10 CU GND TO SOURCE PANEL. FIELD VERIFY EXISTING CONDUIT SIZE.
5. EXISTING WEATHER RESISTANT GFCI RECEPTACLE WITH WHILE-IN-USE WEATHERPROOF COVER.
6. PRESERVE EXISTING DISTRIBUTION PANEL 'JC' LOCATED IN ROOM 'J11'.
7. PRESERVE EXISTING DISTRIBUTION PANEL 'JK-1' LOCATED IN HALLWAY.
8. PRESERVE EXISTING DISTRIBUTION PANEL 'JK-2' LOCATED IN HALLWAY.
9. EXISTING DISTRIBUTION PANEL 'JA', LOCATED IN ELECTRICAL ROOM. PROVIDE (4) 15A, 3-POLE CIRCUIT BREAKERS FOR NEW PACKAGE UNIT POWER EXHAUST MODULE.
10. PRESERVE EXISTING DISTRIBUTION PANEL 'JB' LOCATED IN ELECTRICAL ROOM.
11. PROVIDE NEW 30A, 480V, 3-POLE, NEMA 3R FUSED DISCONNECT FOR POWER EXHAUST MODULE. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 3#12 CU AND 1#12 CU GND BETWEEN DISCONNECT AND POWER EXHAUST MODULE.
12. PROVIDE (1) 3/4"C WITH 3#12 CU AND 1#12 CU GND BETWEEN DISCONNECT AND PANEL 'JA' PER DETAILS [A/E3.0] & [B/E3.0].
13. PROVIDE NEW 30A, 480V, 3-POLE, NEMA 3R FUSED DISCONNECT. SIZE FUSES PER MECHANICAL UNIT NAMEPLATE. PROVIDE (1) 3/4" FLEX CONDUIT WITH 3#12 CU AND 1#12 CU GND BETWEEN DISCONNECT AND MAKE UP AIR UNIT.

NORTH

ROOF POWER PLAN - MULTI-PURPOSE 1/8" = 1'-0" 1

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REGISTERED PROFESSIONAL ENGINEER
STEFFAN R. KIFER
No. E23239
ELECTRICAL
STATE OF CALIFORNIA

[illegible]

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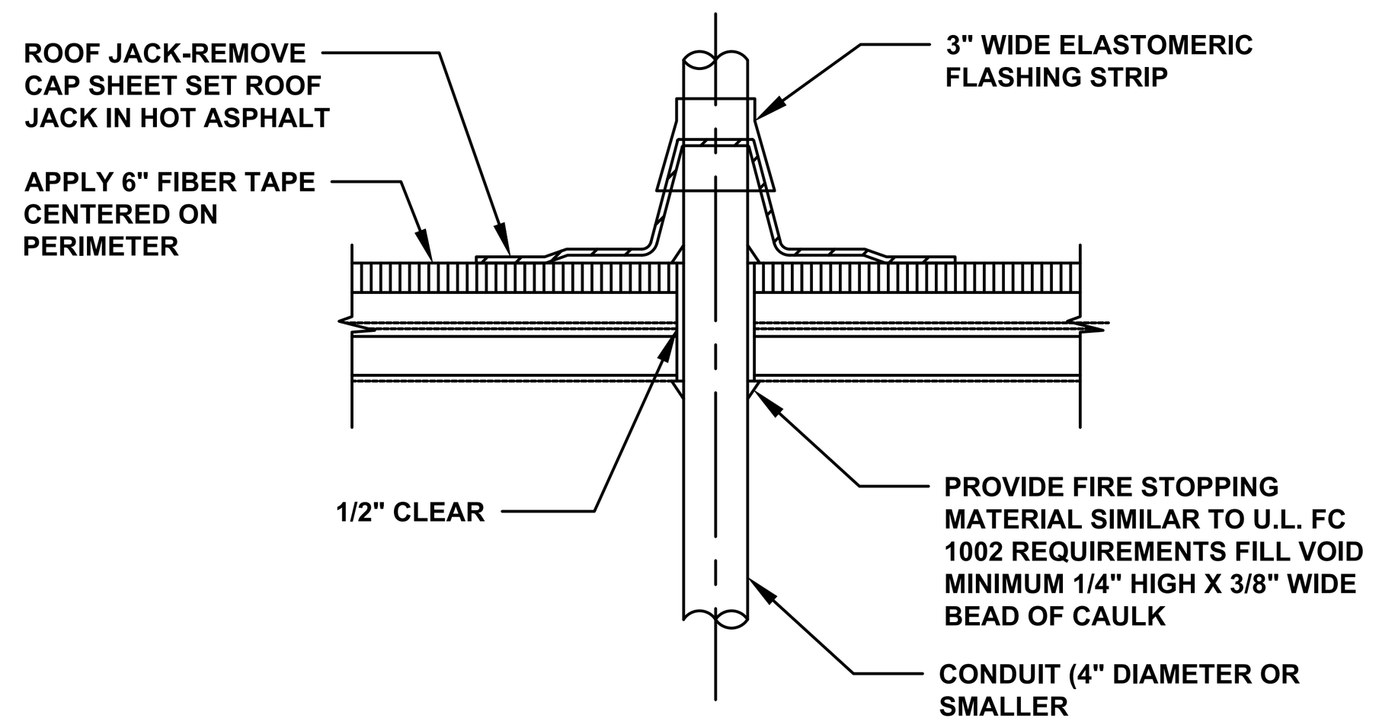
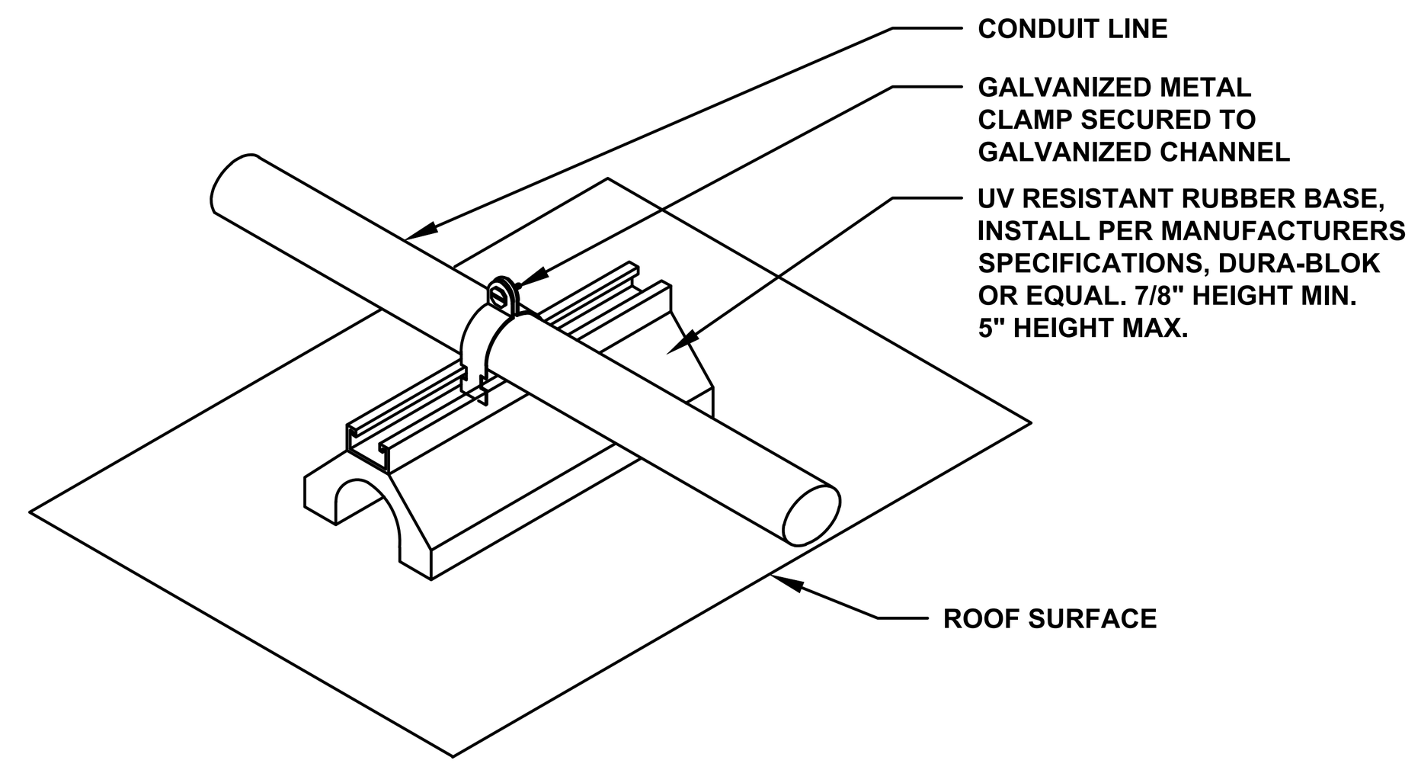
PROJECT NO: 223-0165.1340

DATE: 05/13/2024
SHEET TITLE:
ROOF POWER PLAN - MULTI PURPOSE
SHEET NO:
E2.3



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

A / E3.0 CONDUIT THRU ROOF DETAIL
NO SCALE



B / E3.0 ROOF PIPE SUPPORT
NO SCALE

Site Name: *MLK MUSD HVAC* — MANUFACTURER: *SQUARE D OR EQUAL*
Panel Name: *JA* — PHASE: 3 — WIRE: *4*
VOLTAGE: 277/ 480 Volts AC — BUS RATING: 400 AMPS
MAIN BREAKER: 400 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	Lights M.U. Stage	20	1	Ex.	800	1.25	1.00	6820			1.00	1.00	5820					2
3	Lights M.U. Stage	20	1	Ex.	800	1.25	1.00		6820		1.00	1.00	5820	Ex.	3	40	A/C Unit (AC-19.1)	4
5	Lights - Kitchen	20	1	Ex.	800	1.25	1.00			6820	1.00	1.00	5820					6
7	Lights - Band Room	20	1	Ex.	800	1.25	1.00	6820			1.00	1.00	5820					8
9	Lights - Din Rm/Rr	20	1	Ex.	800	1.25	1.00		6820		1.00	1.00	5820	Ex.	3	40	A/C Unit (AC-19.2)	10
11	Exterior Lights Photo Cell	20	1	Ex.	800	1.25	1.00			6820	1.00	1.00	5820					12
13	Exterior Lights	20	1	Ex.	1200	1.25	1.00	7320			1.00	1.00	5820					14
15	Exit Lights	20	1	Ex.	400	1.25	1.00		6320		1.00	1.00	5820	Ex.	3	40	A/C Unit (AC-19.3)	16
17	Spare	20	1	Ex.		1.00	1.00			5820	1.00	1.00	5820					18
19	Spare	20	1	Ex.		1.00	1.00	5820			1.00	1.00	5820					20
21	Spare	20	1	Ex.		1.00	1.00		5820		1.00	1.00	5820	Ex.	3	40	A/C Unit (AC-19.4)	22
23					4434	1.00	1.00			10254	1.00	1.00	5820					24
25	Exhaust Hood/Hood Air	20	3	Ex.	4434	1.00	1.00	11709			1.00	1.25	5820					26
27					4434	1.00	1.00		11709		1.00	1.25	5820	Ex.	3	40	A/C Unit (AC-19.5)	28
29					2938	1.00	1.00			10213	1.00	1.25	5820					30
31	Make Up Air (MUA-25)	20	3	Ex.	2938	1.00	1.00	36194			1.00	1.00	33256					32
33					2938	1.00	1.00		36194		1.00	1.00	33256	Ex.	3	150	XFMR #11	34
35	Unlabeled	20	1	Ex.	1920	1.00	1.00		4434	35176	1.00	1.00	33256					36
37	Unlabeled	20	1	Ex.	1920	1.00	1.00	24090			1.00	1.00	22170					38
39	Unlabeled	20	1	Ex.	1920	1.00	1.00		24090		1.00	1.00	22170	Ex.	3	100	XFMR #12	40
41	Unlabeled	20	1	Ex.	1920	1.00	1.00			24090	1.00	1.00	22170					42
43					1497	1.00	1.00	3437			1.00	1.00	1940					44
45	Power Exhaust Modules (For AC-19.3 & AC-22)	15	3	New	1497	1.00	1.00		3437		1.00	1.00	1940	New	3	15	Power Exhaust Modules (For AC-19.1 & AC-19.2)	46
47					1497	1.00	1.00			3437	1.00	1.00	1940					48
49					1940	1.00	1.00	2467			1.00	1.00	527					50
51	Power Exhaust Modules (For AC-19.4 & AC-19.5)	15	3	New	1940	1.00	1.00		2467		1.00	1.00	527	New	3	15	Power Exhaust Modules (For AC-23)	52
53					1940	1.00	1.00			2467	1.00	1.00	527					54
								PHASE A	PHASE B	PHASE C								
								104677	108111	105097	VA							
										TOTAL	KVA	317.89						
											AMPS	382.36						

C / E3.0 PANEL 'JA' SCHEDULE
NO SCALE

Site Name: *MLK MUSD HVAC* — MANUFACTURER: *SQUARE D OR EQUAL*
Panel Name: *IA* — PHASE: 3 — WIRE: *4*
VOLTAGE: 277/ 480 Volts AC — BUS RATING: 600 AMPS
MAIN BREAKER: 600 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	Gym Lights	20	1	Ex.	1000	1.25	1.00	5684			1.00	1.00	4434					2
3	Gym Lights	20	1	Ex.	1000	1.25	1.00		5684		1.00	1.00	4434	Ex.	3	20	Evaporative Cooler	4
5	Gym Lights	20	1	Ex.	1000	1.25	1.00			5684	1.00	1.00	4434					6
7	Lights	20	1	Ex.	800	1.25	1.00	5434			1.00	1.00	4434					8
9	Lights	20	1	Ex.	800	1.25	1.00		5434		1.00	1.00	4434	Ex.	3	20	Evaporative Cooler	10
11	Lights	20	1	Ex.	800	1.25	1.00			5434	1.00	1.00	4434					12
13	Exit Lts Via Photo Cell	20	1	Ex.	400	1.25	1.00	6735			1.25	1.00	4988					14
15	Exit Lts Via #1 Time Clock	20	1	Ex.	400	1.25	1.00		6735		1.25	1.00	4988	Ex.	3	50	A/C Unit (AC-17.1)	16
17	Exit Lights	20	1	Ex.	400	1.25	1.00			6735	1.25	1.00	4988					18
19	Site Lts. Via #2 Time Clock	20	1	Ex.	1200	1.25	1.00	6488			1.00	1.00	4988					20
21	Site Lts. Via #3 Time Clock	20	1	Ex.	1200	1.25	1.00		6488		1.00	1.00	4988	Ex.	3	50	A/C Unit (AC-17.2)	22
23	Spare	20	1	Ex.		1.00	1.00			4988	1.00	1.00	4988					24
25	Spare	20	1	Ex.		1.00	1.00	4988			1.00	1.00	4988					26
27	Spare	20	1	Ex.		1.00	1.00		4988		1.00	1.00	4988	Ex.	3	50	A/C Unit (AC-17.3)	28
29					4434	1.00	1.00			9422	1.00	1.00	4988					30
31	MUA	20	3	Ex.	4434	1.00	1.00	48775			1.00	1.00	44341					32
33					4434	1.00	1.00		48775		1.00	1.00	44341	Ex.	3	200	XFMR "I"	34
35					4434	1.00	1.00			48775	1.00	1.00	44341					36
37	MUA	20	3	Ex.	4434	1.00	1.00	5986			1.00	1.00	1552					38
39					4434	1.00	1.00		5986		1.00	1.00	1552	New	3	15	Power Exhaust Modules (For AC-17.2)	40
41					1552	1.00	1.00			3104	1.00	1.00	1552					42
43	Power Exhaust Modules (For AC-17.1)	15	3	New	1552	1.00	1.00	3104			1.00	1.00	1552					44
45					1552	1.00	1.00		3104		1.00	1.00	1552	New	3	15	Power Exhaust Modules (For AC-17.3)	46
47	—	—	—	—		1.00	1.00			1552	1.00	1.00	1552					48
								PHASE A	PHASE B	PHASE C								
								87194	87194	85694	VA							
										TOTAL	KVA	260.08						
											AMPS	312.83						

D / E3.0 PANEL 'IA' SCHEDULE
NO SCALE

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REVISIONS:

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--/--/----	---
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REGISTERED PROFESSIONAL ENGINEER
STEFFAN R. KIFER
No. E23239
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STATE OF CALIFORNIA
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601 LILLY ST, MADERA, CA 93638
PROJECT NO: 223-0165.1340

DATE: 05/13/2024
SHEET TITLE:
DETAILS & SCHEDULES

SHEET NO:
E3.0