THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG ON THIS SHEET'S ORIGINAL PAGE SIZE

SAN RAFAEL CITY SCHOOLS

SRCS SUN VALLEY ES HVAC FA

75 HAPPY LN
SAN RAFAEL, CA 94901

AGENCY APPROVAL:

DSA #01-121954
FILE #21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

3546 CONCOURS STREET
ONTARIO, CA 91764
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PROJECT TEAM

OWNER
SAN RAFAEL CITY SCHOOLS
310 NOVA ALBION WAY SAN RAFAEL, CA 94903
415 492-3200

ARCHITECTURAL
HMC ARCHITECTS
333 W SAN CARLOS ST. SUITE 750 SAN JOSE, CA 95110
408 977-9160

STRUCTURAL
HOBACH-LEWIN, INC.
260 SHERIDIAN AVE PALO ALTO, CA 94306
650 617-5930

MECHANICAL
LP Consulting Engineers, INC.
1209 Pleasant Grove Blvd Roseville, CA 95678
916 771-0778

PLUMBING
LP Consulting Engineers, INC.
1209 Pleasant Grove Blvd Roseville, CA 95678
916 771-0778

ELECTRICAL
LP Consulting Engineers, INC.
1209 Pleasant Grove Blvd Roseville, CA 95678
916 771-0778

FIRE ALARM
LP Consulting Engineers, INC.
1209 Pleasant Grove Blvd Roseville, CA 95678
916 771-0778

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SRCS SUN VALLEY ES HVAC FA

SHEET NAME:
COVER SHEET

DSA SUBMITTAL

DATE: **2024.10.01**
CLIENT PROJ NO:

SHEET:

G0.10

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PLEASE RECYCLE

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GENERAL NOTES

1. CONSTRUCTION DOCUMENTS DESCRIBE THE PRODUCTS, SYSTEMS, QUANTITIES, CONFIGURATION, AND PERFORMANCE SPECIFICATIONS THAT DELIVER THE OVERALL DESIGN INTENT OF THE PROJECT.
2. THE CONSTRUCTION DOCUMENT DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY BOTH.
3. PERFORMANCE BY THE CONSTRUCTION TEAM SHALL BE CONSISTENT WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AS NECESSARY TO DELIVER THE INDICATED RESULTS OF THE DESIGN INTENT.
4. VERIFY ALL DIMENSIONS, LOCATIONS OF EXISTING UTILITIES, AND CONDITIONS ON THE JOB SITE PRIOR TO THE START OF WORK OR PORTIONS OF THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE CONSTRUCTION DOCUMENTS. EXISTING CONDITIONS ARE INDICATED AS A RESULT OF FIELD OBSERVATIONS, INFORMATION SHOWN ON AVAILABLE DOCUMENTS AND FIELD CONDITIONS AT THE TIME OF PREPARATION.
5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES, ORDINANCES, REGULATIONS AND LAWS.
6. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND SCAFFOLDING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN.
8. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
9. DETAILS MARKED 'TYPICAL' SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY NOTED OTHERWISE.
10. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMAIN FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION.
11. PRIOR TO THE START OF WORK THE CONTRACTOR SHALL COORDINATE BETWEEN THE REQUIREMENTS OF ALL DISCIPLINES HEREIN AND BETWEEN THE REQUIREMENTS OF ALL DRAWINGS AND SPECIFICATIONS IN ORDER THAT ALL ITEMS SATISFACTORILY RELATE TO ONE ANOTHER. NOTIFY ARCHITECT IMMEDIATELY REGARDING ANY ITEMS THAT CANNOT BE COORDINATED.
12. CONTRACTOR SHALL EXCERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING, CONDUIT, ETC. AND TO PREVENT HAZARD TO PERSONNEL AND/OR TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
13. CHANGES TO THE APPROVED DRAWINGS AND/OR SPECIFICATIONS SHALL BE MADE BY ADDENDA OR A CHANGE ORDER.
14. CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE EXISTING OR NEW STRUCTURAL ELEMENTS SHALL NOT TO BE STARTED UNTIL THE DETAILS HAVE BEEN REVIEWED AND APPROVED BY THE ARCHITECT, AND STRUCTURAL ENGINEER OF RECORD.
15. ALL WORK SHALL CONFORM TO 2022 EDITION TITLE 24, CALIFORNIA CODE OF REGULATION (CCR)
16. THE LIMIT OF WORK LINE SHOWS THESE DRAWINGS IS AN APPROXIMATE LIMIT OF WORK ONLY. REFER TO CONSULTANT DRAWINGS FOR ADDITIONAL WORK, INCLUDING BUT NOT LIMITED TO INSTALLATION OF CONDUIT, MANHOLES, PULLBOXES, ETC WHICH ARE TO BE PART OF THIS WORK, ALTHOUGH OCCURING OUTSIDE OF SHOWN LIMIT OF WORK LINES.
17. FABRICATION AND INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT BE STARTED UNTIL CONTRACTOR'S DRAWINGS, SPECIFICATIONS, AND ENGINEERING CALCULATIONS FOR THE ACTUAL SYSTEMS TO BE INSTALLED HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT OR STRUCTURAL ENGINEER AND APPROVED BY THE DSA. LIST DEFERRED SUBMITTAL ITEMS FOR THIS PROJECT.
18. CHANGE TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY DSA, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24 CCR.
19. A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY DSA SHALL PROVIDE CONTINUOUS INSPECTION OF WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR. INSPECTOR TO BE CLASS 1.
20. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT. THE REPORTS SHALL BE SUBMITTED TO ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, OWNER, INSPECTOR OR RECORD, AND THE DSA FIELD ENGINEER. THE REPORTS OF ANY FAILURES OF TESTS AND INSPECTIONS ARE TO BE SUBMITTED TO DSA DISTRICT STRUCTURAL ENGINEER.
21. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
22. SAFETY DURING CONSTRUCTION SHALL COMPLY WITH CFC CHAPTER 33.
23. 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 DSA APPROVED 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)
24. CONTRACTOR IS TO REVIEW AND COMPLY WITH ALL REQUIREMENTS AND MITIGATION MEASURES SET FORTH IN BOTH THE ENVIRONMENTAL IMPACT REPORT (ADDENDUM TO THE ENVIRONMENTAL IMPACT REPORT | SCH NO. 2002071120) INCLUDING ATTACHED BIOLOGICAL RESOURCES TECHNICAL REPORT.
25. NO DUMPING OR PLACING OF ANY DIRT OR DEBRIS SHALL BE ALLOWED OUTSIDE OF THE CONTRACTORS LIMIT OF WORK AREA.

CODES

PARTIAL LIST OF APPLICABLE CODES

2022	CALIFORNIA ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.
2022	CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R. (2021 INTERNATIONAL BUILDING CODE VOLUMES 1 & 2 AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R. (2020 NATIONAL ELECTRICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R. (2021 UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R. (2021 UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R.
2022	CALIFORNIA HISTORICAL BUILDING CODE (CHBC), PART 8, TITLE 24 C.C.R.
2022	CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R. (2021 INTERNATIONAL FIRE CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 C.C.R. (2021 INTERNATIONAL EXISTING CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 C.C.R.
2022	CALIFORNIA REFERENCED STANDARDS, PART 12,TITLE 24 C.C.R.
TITLE 19	C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.
2019	ASME A17.1/B44-19 SAFETY CODE FOR ELEVATORS AND ESCALATORS
2020	ASME 18.1 - SAFETY STANDARD FOR PLATFORM LIFTS AND STAIRWAY CHAIR LIFTS

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	STANDARD FOR AUTOMATIC FIRE SPRINKLER SYSTEMS (CA AMENDED)	2022 ED.
NFPA 14	STANDARD FOR STANDPIPE AND HOSE SYSTEMS (CA AMENDED)	2019 ED.
NFPA 17	STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 ED.
NFPA 17A	STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS	2021 ED.
NFPA 20	STANDARD FOR STATIONARY PUMPS FOR FIRE PROTECTION	2019 ED.
NFPA 22	STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION	2013 ED.
NFPA 24	STANDARD FOR THE INSTALLATION OF PRIVATE FIRE MAINS AND THEIR APPURTENANCES (CA AMENDED)	2019 ED.
NFPA 72	NATIONAL FIRE ALARM & SIGNALING CODE (CA AMENDED)	2022 ED.
NFPA 80	STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES	2019 ED.
NFPA 2001	STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CA AMENDED)	2018 ED.
UL 300	STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT	2005 (R2014)
UL 464	AUDIBLE SIGNAL APPLIANCES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES	2003 ED.
UL 521	STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS	1999 ED. (R2005)
UL 1971	STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED	2002 ED. (R2018)
ICC 300	STANDARD FOR BLEACHERS, FOLDING AND TELESCOPING SEATING AND GRANDSTANDS	2017 ED.

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.
SEE CALIFORNIA BUILDING CODE, CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS.

STATEMENT OF GENERAL CONFORMANCE

( ) THE DRAWINGS OR SHEETS LISTED ON THE INDEX SHEET
( ) THIS DRAWING PAGE OF SPECIFICATIONS/CALCULATIONS

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 1. (TITLE 24, PART 1, SECTION 4-317 (B))

I CERTIFY THAT:

ALL DRAWINGS OR SHEETS LISTED ON THE SHEET INDEX IS/ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN AND HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS.

SIGNATURE
ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE

DATE

JOHN P GRAMLING
PRINT NAME

C-32706
LICENSE NUMBER

12-31-25
EXPIRATION DATE

PROJECT DESCRIPTION

GENERAL DESCRIPTION OF WORK

THE SCOPE OF WORK INCLUDES:

- REPLACEMENT OF EXISTING MECHANICAL UNITS WITH NEW ALL-ELECTRIC HEAT PUMP HVAC UNITS IN WING A, B, AND C. INSTALLATION OF FENCING ENCLOSURE FOR EXTERIOR UNITS, AND ASSOCIATE SITE WORK.
- UPGRADING EXISTING FIRE ALARM IN WING A, B, AND C.

PROJECT DATA

PROJECT ADDRESS

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT INFORMATION

BUILDING NAME: A

TYPE OF CONSTRUCTION: TYPE V-B

OCCUPANCY: B & E

AUTOMATIC FIRE SPRINKLER SYSTEM: NO

NUMBER OF STORIES: 1

FLOOR AREA: 7,700 SQ. FT.

BUILDING NAME: B

TYPE OF CONSTRUCTION: TYPE V-B

OCCUPANCY: E

AUTOMATIC FIRE SPRINKLER SYSTEM: NO

NUMBER OF STORIES: 1

FLOOR AREA: 2,460 SQ. FT.

BUILDING NAME: C

TYPE OF CONSTRUCTION: TYPE V-B

OCCUPANCY: E

AUTOMATIC FIRE SPRINKLER SYSTEM: NO

NUMBER OF STORIES: 1

FLOOR AREA: 4,658 SQ. FT.

DRAWING INDEX

SHEET INDEX

SHEET INDEX

SYMBOL LEGEND

NORTH ARROW
TN / PN
TICK INDICATES PLAN NORTH
ARROW INDICATES TRUE NORTH

ELEVATION CALLOUT (TYPICAL FOR EXTERIOR)
1 / AX.XX
LOCATION ON SHEET
SHEET WHERE ELEVATION IS DRAWN

ELEVATION CALLOUT (TYPICAL FOR INTERIOR)
A1 / A2 / A3 / A4 / AX.XX
LOCATION ON SHEET
SHEET WHERE ELEVATION IS DRAWN

ELEVATION CALLOUT - ALT. (FOR EXTERIOR AND INTERIOR)
18/AX.XX
LOCATION & SHEET WHERE ELEVATION IS DRAWN

SECTION CALLOUT
SIM / 1 / AX.XX
INDICATES A SIMILAR CONDITION
LOCATION ON SHEET
SHEET WHERE SECTION IS DRAWN

DETAIL CALLOUT
SIM / 1 / AX.XX
INDICATES A SIMILAR CONDITION
LOCATION ON SHEET
SHEET WHERE SECTION IS DRAWN

CONTROL OR DATUM POINT
FIRST FLOOR / +0' - 0"
NAME OF ELEVATION (IF APPLICABLE)
ELEVATION ABOVE FINISHED FLOOR

GRID BUBBLE
0 / 0
EXISTING BUILDING GRID SYMBOL
GRID NUMBER
NEW BUILDING GRID SYMBOL

DOOR CALLOUT
101A
DOOR NUMBER

INTERIOR FINISH CALLOUT
FA
MATERIAL FINISH TYPE
(SEE FINISH SCHEDULE)

WINDOW CALLOUT
09-WF1
WINDOW NUMBER
(SEE WINDOW SCHEDULE)

WALL TYPE CALLOUT
AS6A / AS4A / 55 / 1FB
WALL TYPE MARK - SEE A10.11
WALL STC RATING
WALL FIRE RATING TYPE

MATCHLINE REFERENCE
X / X
LOCATION ON SHEET
SHEET WHERE PLAN IS DRAWN

KEYNOTE
?
KEYNOTE NUMBER (SEE LEGEND ON SHEET)

ROOM EXITING INFORMATION
OFFICE / 1001 / 150 SF / OL / OLF / OT / 2
AREA (SQ FT)
OCCUPANT LOAD (AREA DIVIDED BY LOAD FACTOR)
OCCUPANT LOAD FACTOR (REFER TO TABLE 1004.5)
OCCUPANCY TYPE
NUMBER OF EXITS REQUIRED (REFER TO TABLE 1006.2.1)

WIC CASEWORK TAG
WI999 / L / WD / HT / DP
MANUFACTURER REFERENCE AND MODEL NUMBER
LOCK
CABINET DEPTH
CABINET HEIGHT
CABINET WIDTH

DISCIPLINE	
G	GENERAL
C	CIVIL
L	LANDSCAPE
A	ARCHITECTURE
I	INTERIORS
Q	EQUIPMENT
S	STRUCTURAL
P	PLUMBING
M	MECHANICAL
E	ELECTRICAL
FA	FIRE ALARM
T	TELECOM
AV	AV EQUIPMENT
K	KITCHEN
FP	FIRE PROTECTION

SHEET TYPE	
0	CODE ANALYSIS, NOTES
1	SITE PLAN
2	FLOOR PLAN
3	CEILING PLAN
4	ROOF PLAN
5	EXTERIOR ELEVATIONS
6	SECTIONS
7	ENLARGED PLANS
8	INTERIOR ELEVATIONS
9	SCHEDULES
10	DETAILS

BUILDING LETTER, SEGMENT, (USER DEFINED)
USED ONLY IF REQUIRED. IF NOT, COLUMN IS OMITTED.

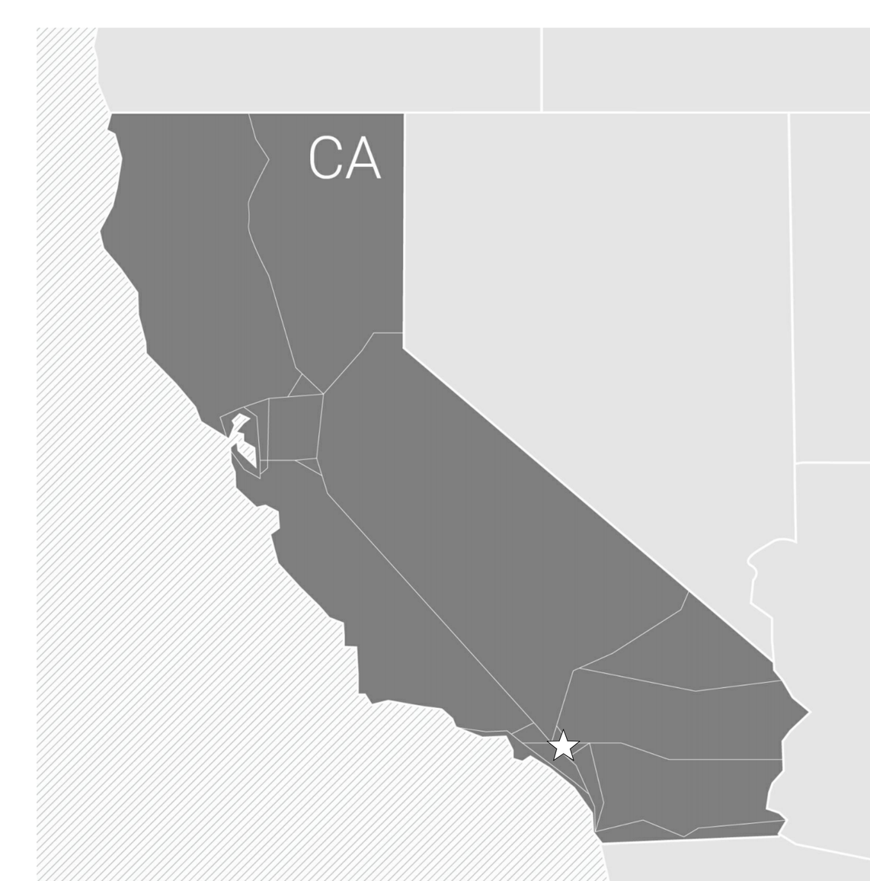
DISCIPLINE / SHEET TYPE / SERIES / ORDER / USER DEFINED (IF APPLICABLE)
A A 1 . 1 1 A . A
BULIDING LETTER (IF APPLICABLE) / FLOOR LEVEL OR SEQUENTIAL ORDER / SEGMENT (IF APPLICABLE)

ABBREVIATIONS

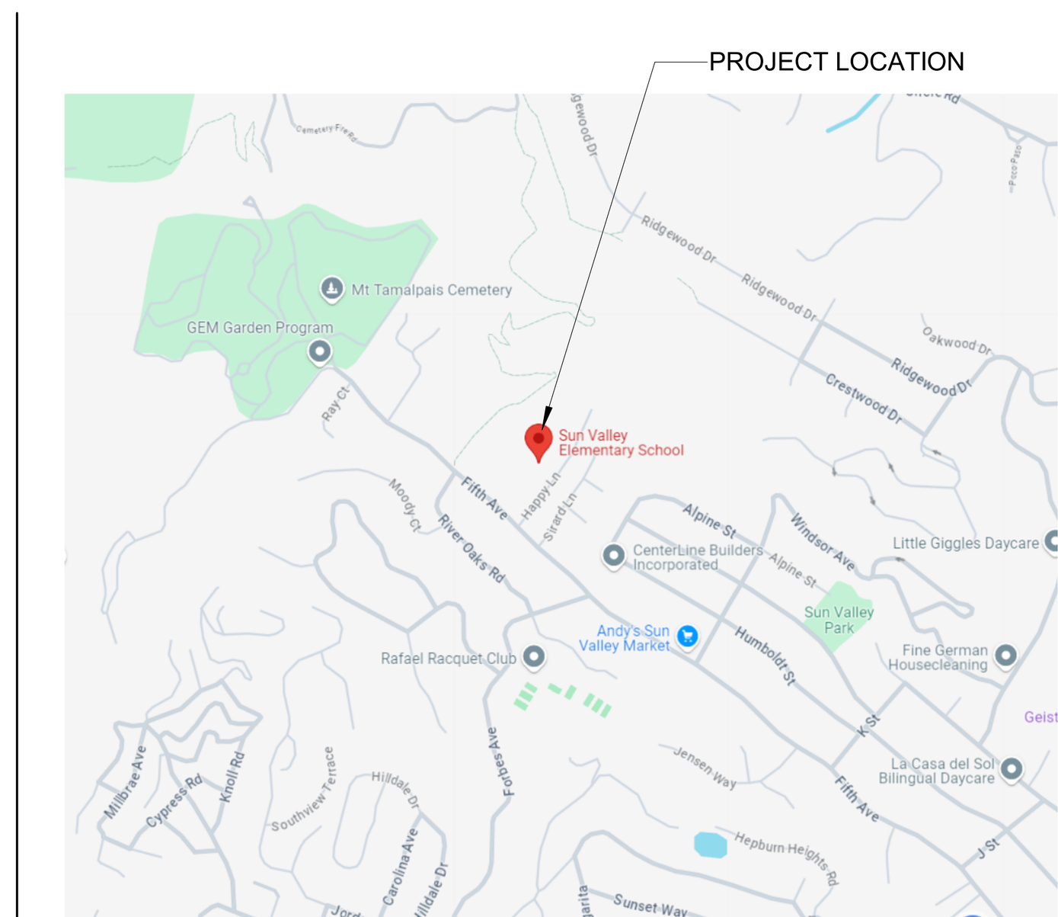
(E)	EXISTING
AB	ANCHOR BOLT
AC PAVING	ASPHALTIC CONCRETE PAVING
ACC	ACCESS/ACCESSIBLE
ACP	ACOUSTICAL CEILING PANEL
ACT	ACOUSTICAL CEILING TILE
ADJ	ADJACENT/ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
AHU	AIR HANDLING UNIT
ARCH	ARCHITECTURAL
ATT	ATTENUATION
AUTO	AUTOMATIC
BD	BOARD
BLCG	BLOCKING
BUR	BUILT UP ROOFING
CABT	CABINET
CF	CUBIC FEET
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CG	CORNER GUARD
CJ	CONTROL JOINT
CL	CENTER LINE
CLF	CHAIN LINK FENCE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMP	COMPRESSION / COMPOSITE
CF	CUBIC FEET
COORD	COORDINATE
CORR	CORRUGATED
CT	CERAMIC TILE
CTSK	COUNTER SKUNK
CW	CURTAINWALL
DEPR	DEPRESSED / DEPRESSION
DF	DRINKING FOUNTAIN
DIM	DIMENSION
DISP	DISPENSER
DS	DOWNSPOUT
DTL	DETAIL
DW	DISHWASHER
E/W	EACH WAY
EIFS SYSTEM	EXTERIOR INSULATION FINISH
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION / ELEVATOR
ENCL	ENCLOSE / ENCLOSURE
EOS	EDGE OF SLAB
EP	ELECTRICAL PANEL
EQ	EQUAL
ESC	EXCUTCHEON
EWC	ELECTRIC WATER COOLER
EXP	EXPOSED
FA	FIRE ALARM
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER W/ CABINET
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FSH	FLAT HEAD SCREW
FIN	FINISH
FLR	FLOOR
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FP	FIREPROOFING
FR	FIRE RATED
FRG	FIRE RATED GLASS
FRP	FIBERGLASS REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FS	FINISH SURFACE
FTG	FOOTING
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GL	GLASS TYPE
GLB	GLUE LAMINATED BEAM
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTIC
HB	HOSE BIBB
HD	HEAVY DUTY
HDR	HEADER
HDWR	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HP	HIGH POINT
HSS	HOLLOW STEEL SECTION
ID	INSIDE DIAMTER
INT	INTERIOR
INV	INVERT
LANDS	LANDSCAPE
LAV	LAVATORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LT WT	LIGHT WEIGHT
LVR	LOUVER
MACH	MACHINE
MB	MACHINE BOLT
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MFR	MANUFACTURER
MH	MANHOLE
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NIC	NOT IN CONTRACT
NR	NON RATED
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
O/	OVER
O/A	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OFVI	OWNER FURNISHED, VENDOR INSTALLED
OH	OPPOSITE HAND
OPER	OPERABLE
OPNG	OPENING
ORD	OVERFLOW ROOF DRAIN
P/L	PROPERTY LINE
PA	PUBLIC ADDRESS
PAF	POWDER ACTUATED FASTENER PAVING
PCC	PORTLAND CEMENT CONCRETE PAVING
PED	PEDESTRIAN
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PH	PANIC HARDWARE
PIV	POST INDICATOR VALVE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PNL	PANEL
PNT	PAINT / PAINTED
POC	POINT OF CONNECTION
POLY ISO	POLYISOCYANURATE
PREFIN	PREFINISHED
PREP	PREP / PREPARATION
PTC	POST TENSIONED CONCRETE
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PTS	PNEUMATIC TUBE STATION / SYSTEM
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QT	QUARRY TILE
R	RADIUS, RISER
RB	RESILIENT BASE
RD	ROOF DRAIN
RECEPT	ECEPTACLE
REF	REFERENCE
REFL	REFLECT(ED), (IVE)
REFL	REFLECT(ED), (IVE)
REFR	REFRIGERATOR
REINF	REINFORCE/REINFORCED/ REINFORCEMENT
REM	REMOVE
RH	ROUND HEAD
RHS	ROUND HEAD SCREW
RO	ROUGH OPENING
ROW	RIGHT OF WAY
SCH	SCHEDULE (FOR PIPE)
SCHED	SCHEDULE / SCHEDULING
SD	STORM DRAIN / SOAP DISPENSER
SECT	SECTION
SG	SAFETY GLASS
SHT	SHEET
SHTG	SHEATHING
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPOSAL
SOV	SHUT OFF VALVE
SPEC	SPECIFICATIONS
SS	STAINLESS STEEL
STC	SOUND TRAMISSION CLASS
STL	STEEL
STSMS SCREW	SELF TAPPING SHEET METAL
SUSP	SUSPENDED
SV	SHEET VINYL
SYM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
TO	TOP OF
TOC	TOP OF CURB / CONCRETE
TOP	TOP OF PARAPET
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPD	TOILET PAPER DISPENSER
TS	TACKABLE SURFACE
U/C	UNDER CABINET (OR COUNTER
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
VAC	VACUUM
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VIF	VERIFY IN FIELD
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
WB	WOOD BASE
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WGT	WEIGHT
WH	WATER HEATER
WP	WATERPROOFING/WALL PROTECTION
WR	WATER RESISTANT
WRGB	WATER RESISTANT GYPSUM BOARD
WS	WOOD SCREW
WSCT	WAINSCOT
WWF	WELDED WIRE FABRIC

NOTE:
OTHER ABBREVIATIONS USED ON THESE DRAWINGS ARE CONSIDERED STANDARDS IN THE BUILDING INDUSTRY. CONTACT ARCHITECT FOR NECESSARY CLARIFICATION.

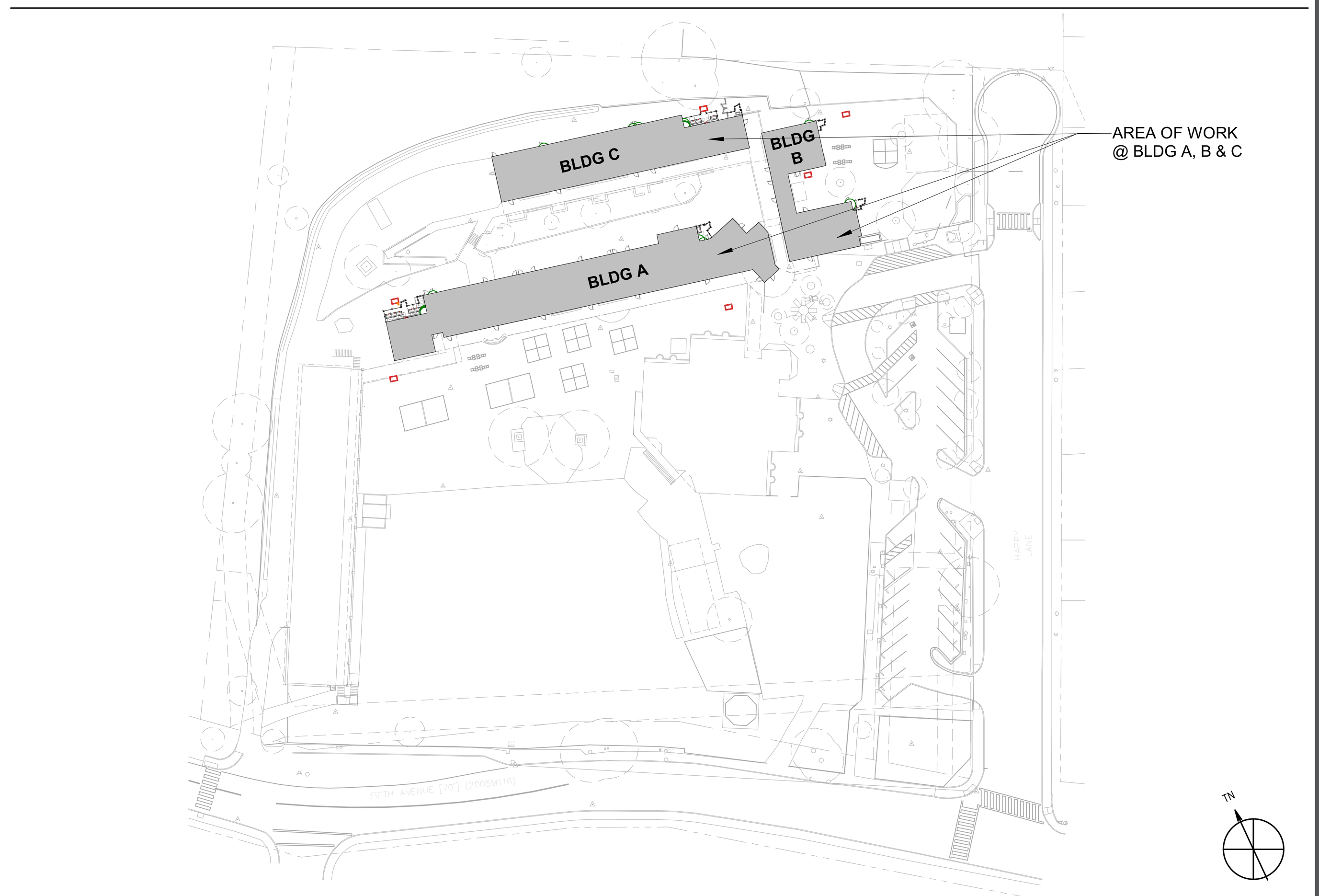
STATE MAP



VICINITY MAP



OVERALL SITE PLAN



AGENCY APPROVAL:
DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

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3546 CONCOURS STREET
ONTARIO, CA 91764
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ISSUE

Δ	DESCRIPTION	DATE

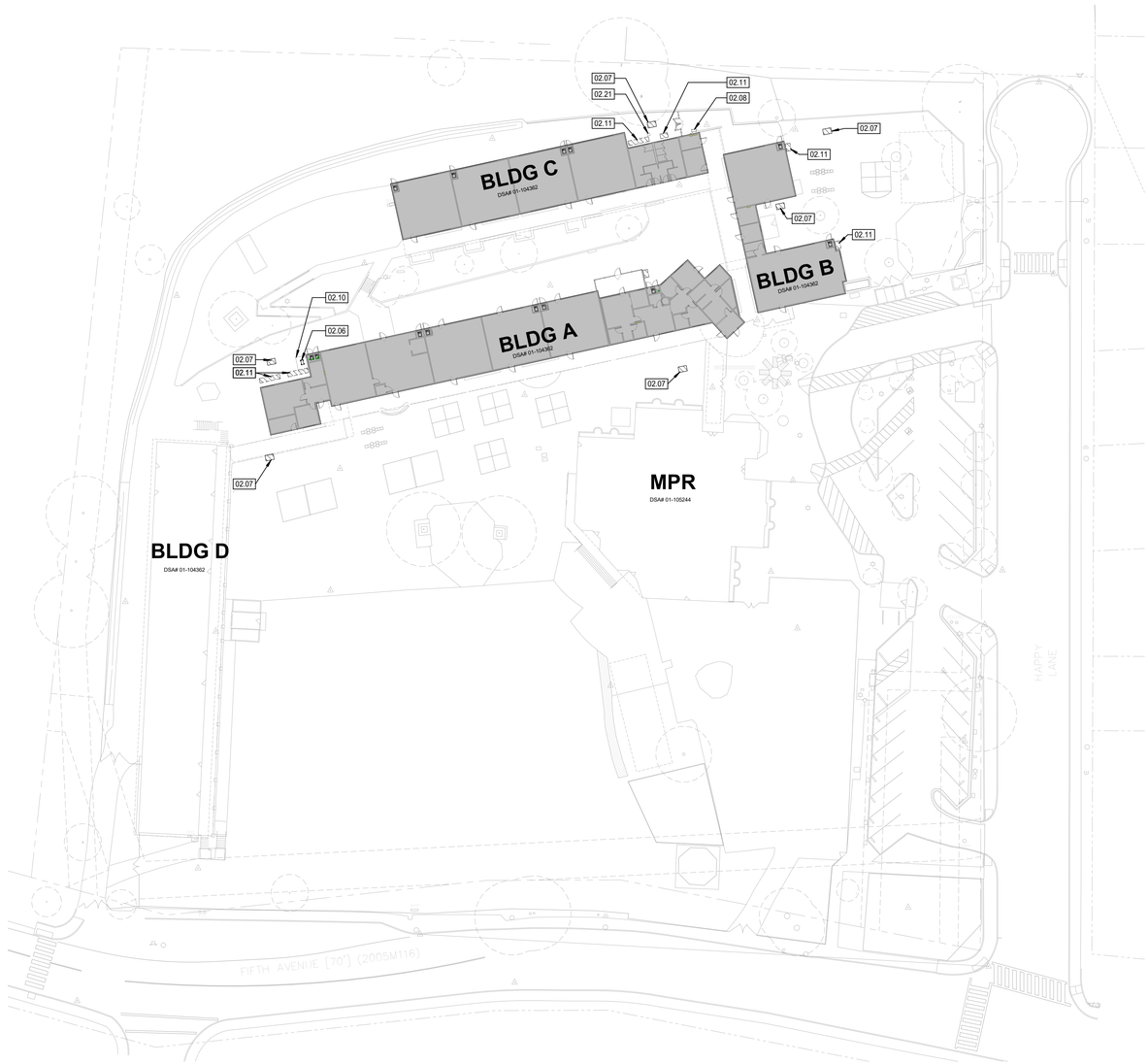
FACILITY:
75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SRCS SUN VALLEY ES HVAC FA

SHEET NAME:
PROJECT DATA SHEET

DSA SUBMITTAL
FILE NO.: 21-39 | A NO.: 01-121954
DATE: 2024.10.01 | CLIENT PROJ NO:
SHEET:
G0.11

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG ON FULL SHEETS ORIGINAL PAGE SIZE



LEGEND

- (E) BLDGS TO BE UPGRADED
- EXISTING BUILDING / ELEMENTS TO REMAIN
- (E) ASPHALT PAVING TO BE REMOVED AS REQ'D FOR NEW CONCRETE PADS & ELECTRICAL UNDERGROUND PULLBOX, SEE SHEET A1.11 CAMPUS SITE PLAN.
- (E) CHAINLINK FENCE & GATE TO REMAIN

KEYNOTES

02.06	(E) MECHANICAL EQUIPMENT & CONCRETE PAD TO BE REMOVED, PATCH GROUND COVER & SUBGRADE TO MATCH (E) ADJACENT CONCRETE PAVING | MECH ELECT
02.07	(E) ASPHALT PAVING & SUBGRADE TO BE REMOVED AS REQ'D FOR UNDERGROUND PULL BOX | ELECT
02.08	(E) MECH EQUIPMENT ON (E) CONCRETE PAD TO REMAIN
02.10	(E) CHAINLINK FENCE, GATE, & POST FOOTING TO BE REMOVED
02.11	(E) ASPHALT PAVING & SUBGRADE TO BE REMOVED AS REQ'D FOR CONCRETE PAD | MECH
02.21	(E) CATCH BASIN TO REMAIN

NOTES

1. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS
2. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE ALARM DRAWINGS FOR MORE INFORMATION.
3. CONTRACTOR IS RESPONSIBLE FOR REPAIR/ REPLACEMENT OF ALL HARDSCAPE AND PLANTING DUE TO DEMOLITION WORK AND OUTSIDE OF LIMIT OF WORK LINE FOR CONNECTION OF UNDERGROUND UTILITIES
4. ALL EXCAVATIONS SPOILS, INCLUDING, BUT NOT LIMITED TO CONCRETE AND PAVEMENT EXCAVATION, SHALL BE EXPORTED AND DISPOSED OF BY THE CONTRACTOR.
5. EXISTING STRUCTURES, CONCRETE, PAVEMENT, FENCES, CURBS, UTILITY BOXES, LIGHTS, GATES ETC. NOT CALLED OUT IN PLANS TO BE REMOVED OR TO REMAIN SHALL BE PROTECTED IN PLACE.
6. CONTRACTOR TO PROVIDE TREE PROTECTION AS NECESSARY DURING CONSTRUCTION TO PRESERVE EXISTING TREES. TREES NOT IDENTIFIED AS TO BE REMOVED OR TO REMAIN ARE ASSUMED TO REMAIN.
7. WHERE TRENCHING OCCURS FOR UNDERGROUND CONDUIT PATHWAY, CONTRACTOR SHALL REPAIR AND RESTORE EXISITING PAVEMENT AND LANDSCAPE TO ORIGINAL CONDITIONS.

SITE DEMOLITION PLAN 1 — 1/32" = 1'-0"

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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SITE DEMOLITION PLAN

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DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:

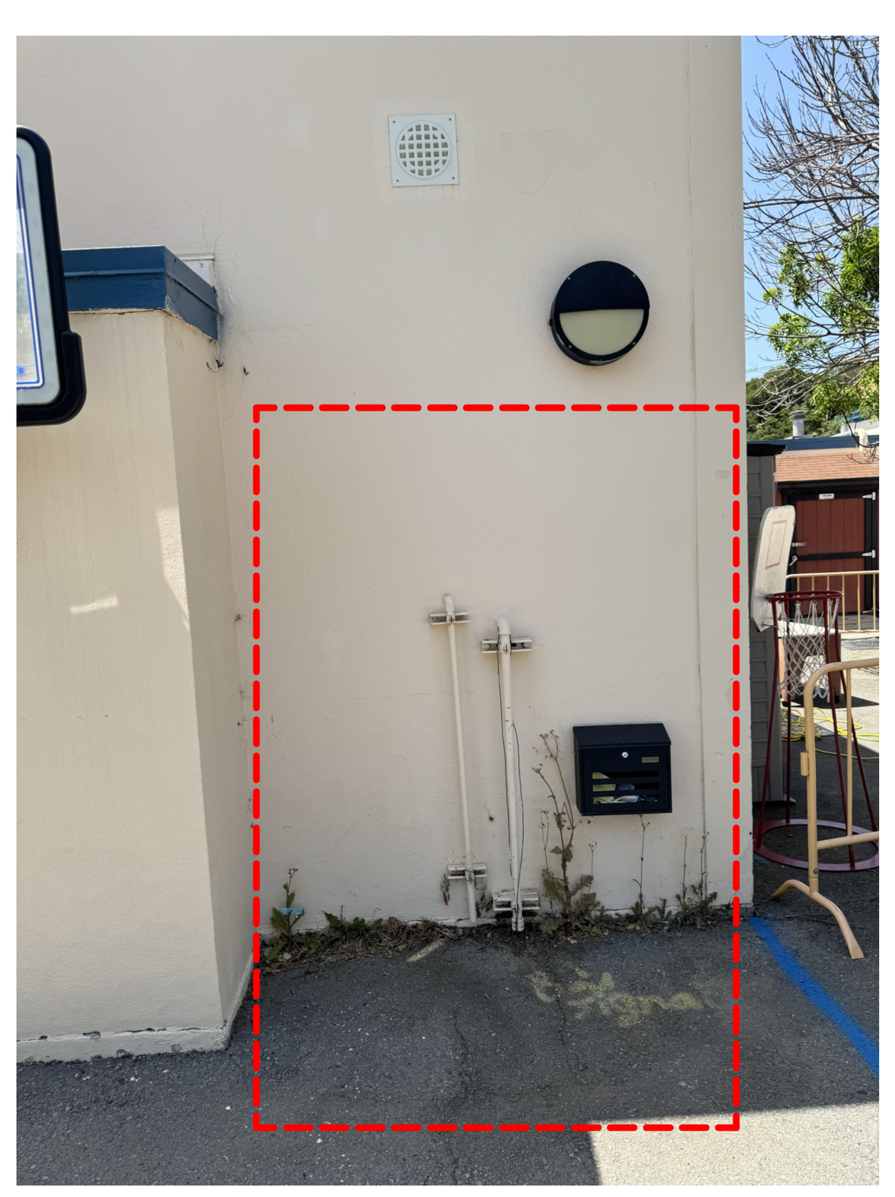
A1.01

PROPOSED LOCATION FOR EXT MECH UNITS ON GRADE

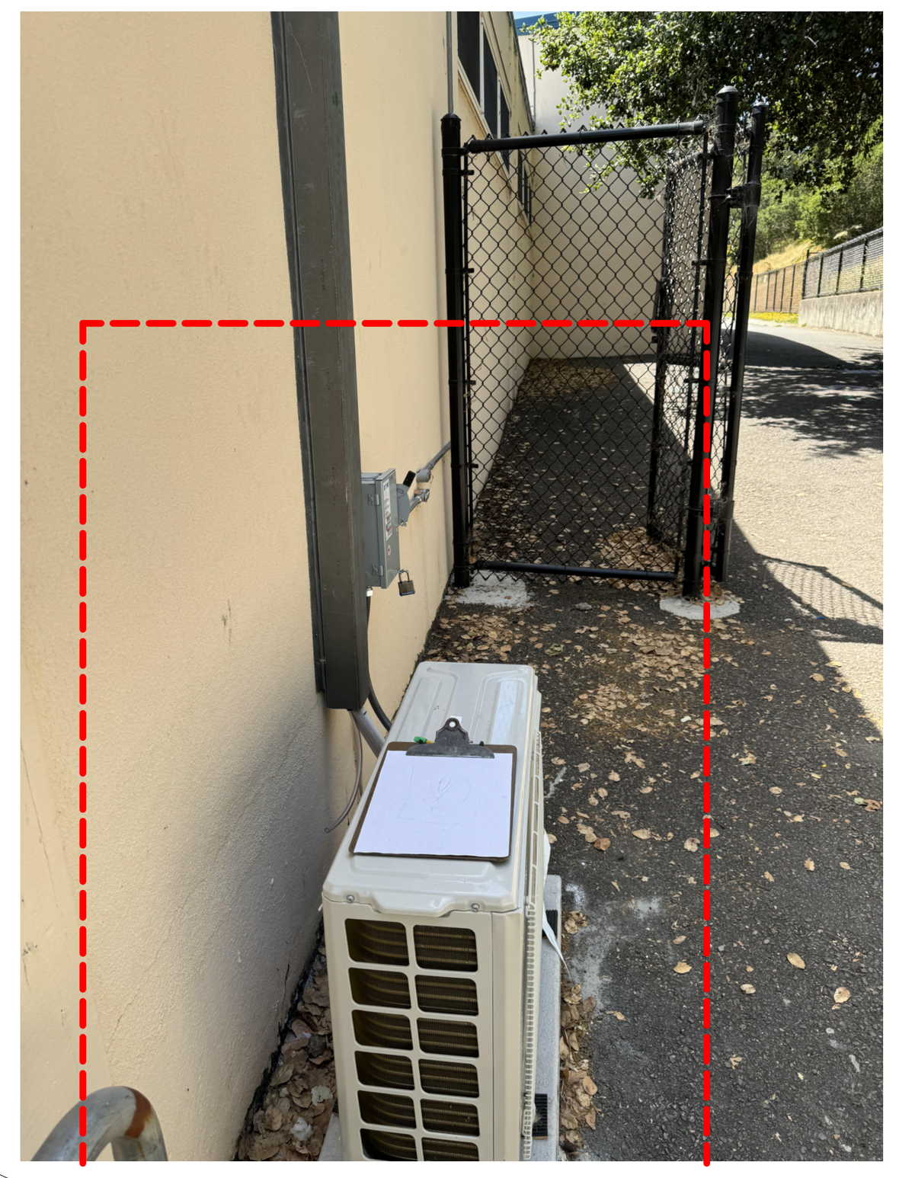
PROPOSED LOCATION FOR EXT MECH UNITS ON GRADE

PROPOSED LOCATION FOR EXT MECH UNITS ON GRADE

PROPOSED LOCATION FOR EXT MECH UNITS ON GRADE

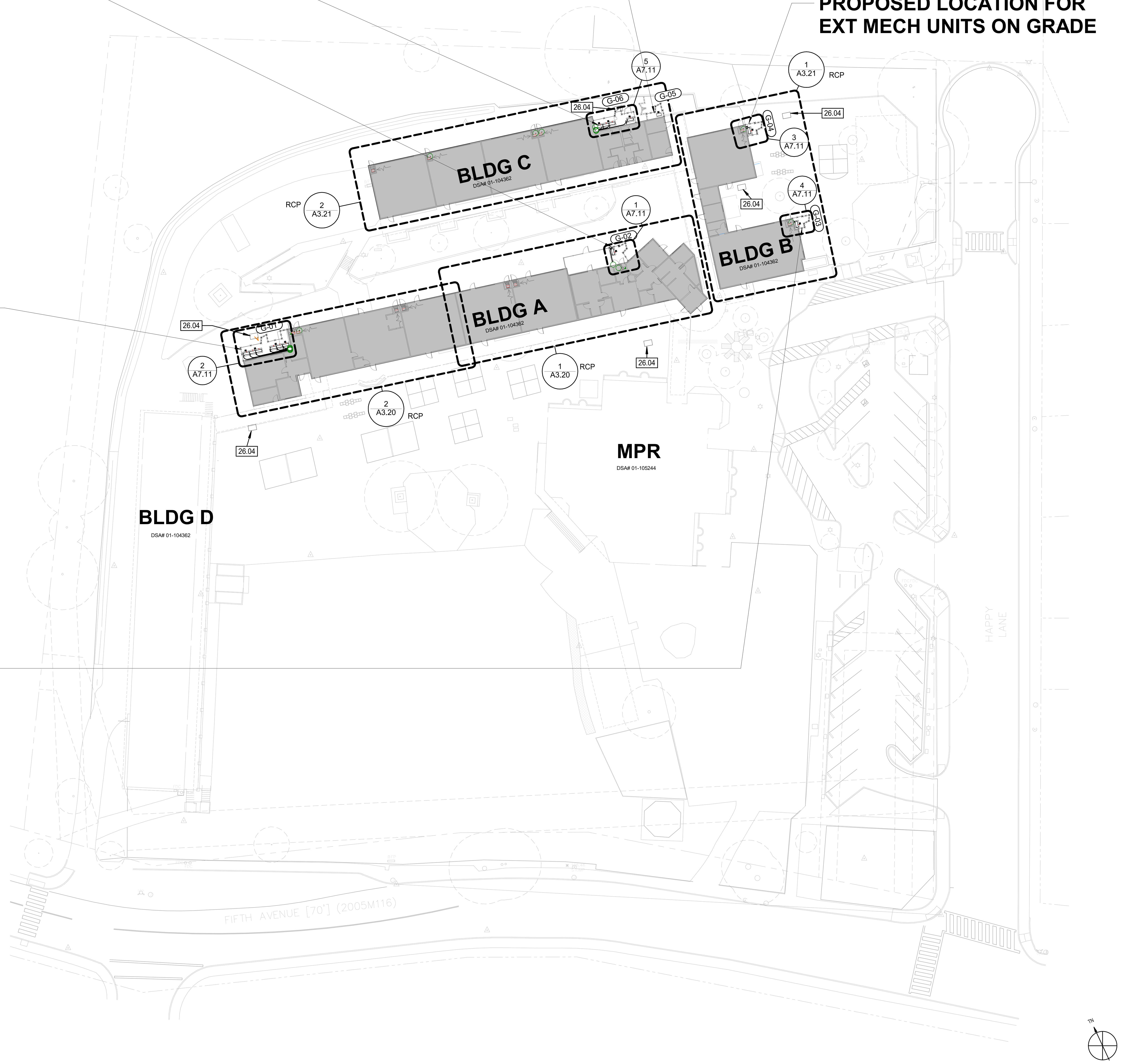


PROPOSED LOCATION FOR NEW FENCING & GATE AROUND (E) MECH UNIT ON GRADE



GATE SCHEDULE							
GATE	WIDTH	HEIGHT	GATE MATERIAL	HARDWARE GROUP	PANIC HARDWARE	DETAIL	COMMENTS
G-01	4' - 0"	6' - 0"	CHAIN-LINK	1	NO	1/A10.01	
G-02	4' - 0"	6' - 0"	CHAIN-LINK	1	NO	1/A10.01	
G-03	4' - 0"	6' - 0"	CHAIN-LINK	1	NO	1/A10.01	
G-04	4' - 0"	6' - 0"	CHAIN-LINK	1	NO	1/A10.01	
G-05	4' - 0"	6' - 0"	CHAIN-LINK	1	NO	1/A10.01	
G-06	4' - 0"	6' - 0"	CHAIN-LINK	1	NO	1/A10.01	

PROPOSED LOCATION FOR EXT MECH UNITS ON GRADE



CAMPUS SITE PLAN 1
1/32" = 1'-0"

LEGEND

(E) BLDGS TO BE UPGRADED

EXISTING BUILDING / ELEMENTS TO REMAIN

BLACK VINYL CHAINLINK FENCE AND GATE @MECHANICAL YARD

(E) CHAINLINK FENCE & GATE TO REMAIN

AGENCY APPROVAL:
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KEYNOTES

26.04 ELECTRICAL UNDERGROUND PULL BOX W/ GROUND COVER, TRENCH AS REQ'D FOR CONDUIT PATHWAY AND PATCH PAVEMENT & SUBGRADE AND LANDSCAPE TO MATCH (E) | ELEC

NOTES

1. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS
2. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE ALARM DRAWINGS FOR MORE INFORMATION.
3. CONTRACTOR IS RESPONSIBLE FOR REPAIR/ REPLACEMENT OF ALL HARDSCAPE AND PLANTING DUE TO DEMOLITION WORK AND OUTSIDE OF LIMIT OF WORK LINE FOR CONNECTION OF UNDERGROUND UTILITIES

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SHEET NAME:
CAMPUS SITE PLAN

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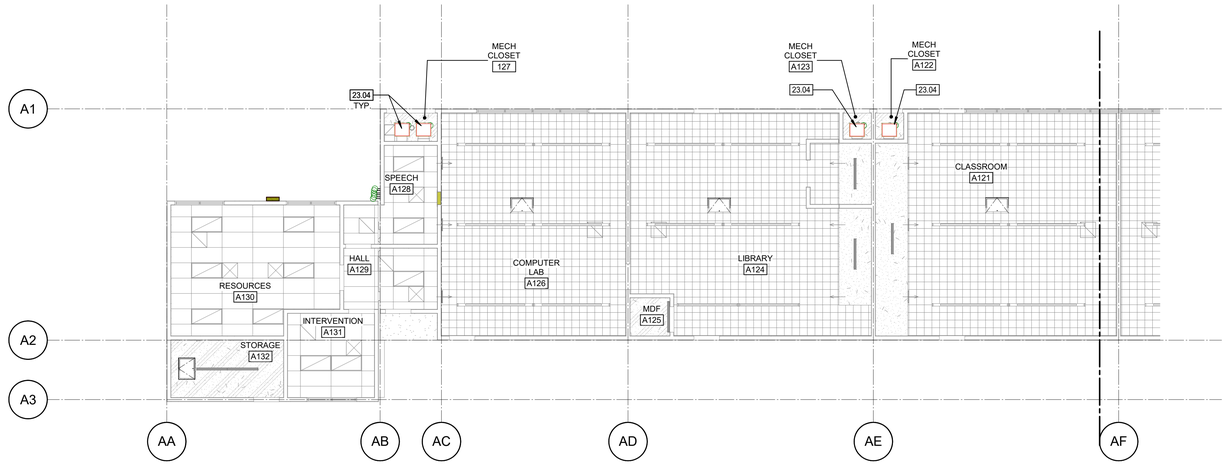
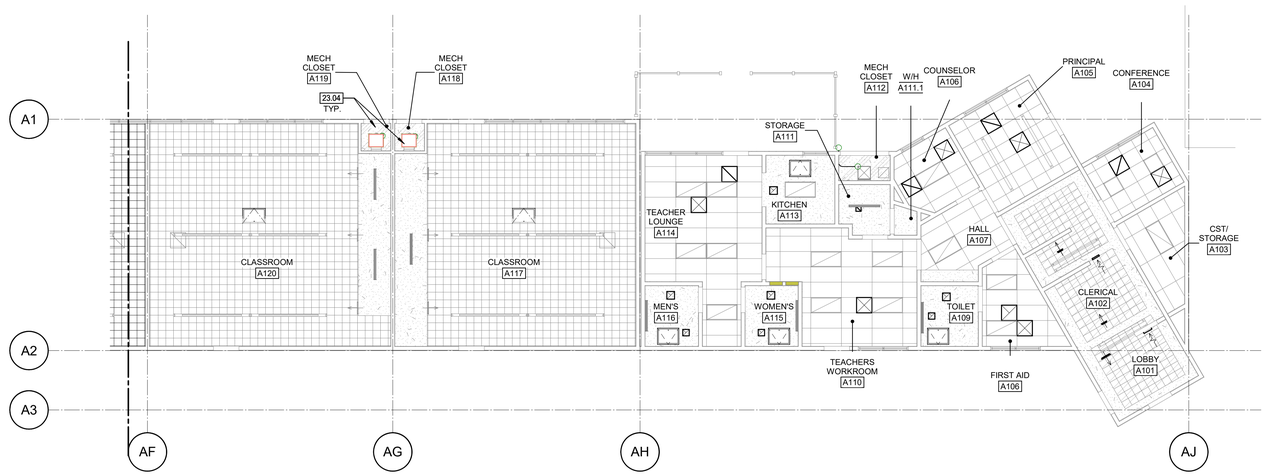


BLDG A 1ST FLOOR - SEGMENT B - RCP

2

1/8" = 1'-0"



BLDG A 1ST FLOOR - SEGMENT A - RCP

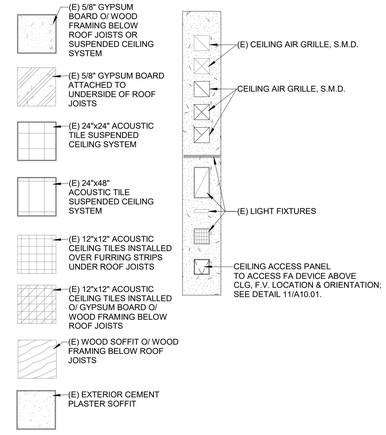
1

1/8" = 1'-0"

LEGEND- RCP'S

BUILDING ELEMENTS

EXISTING ELEMENT / NON RATED WALL TO REMAIN



NOTES

1. LOCATE ALL FIRE ALARM DEVICES IN CENTER OF ACOUSTIC CEILING TILE IF POSSIBLE, VIF.
2. PROVIDE CEILING ACCESS PANELS AT (E) CEILINGS WHERE ACCESS IS REQUIRED TO FIRE ALARM DEVICES ABOVE CEILINGS.
3. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS.
4. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE ALARM DRAWINGS FOR MORE INFORMATION.
5. REMOVE (E) ELEMENTS AS REQUIRED FOR DEMOLITION AND NEW WORK; REINSTALL OR PATCH / PAINT TO MATCH (E) CONDITIONS.
6. (E) CEILING TYPES ARE BASED ON RECORD DRAWINGS AND VERIFY IN FIELD.
7. SEE DETAIL 12/A10.01 WHERE WALL BLOCKING IS REQ'D.

KEYNOTES

23.04 FAN COIL UNIT AND DUCTS AS REQ'D FOR A COMPLETE AND OPERABLE SYSTEM | MECH

TN
PN

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SAN RAFAEL, CA 94901

PROJECT:

SRCS SUN VALLEY ES HVAC FA

SHEET NAME:

BLDG A 1ST FLOOR - REFLECTED CEILING PLAN

DSA SUBMITTAL

FILE NO.: 21-39	A NO.: 01-121954
DATE: 2024.10.01	CLIENT PROJ NO:

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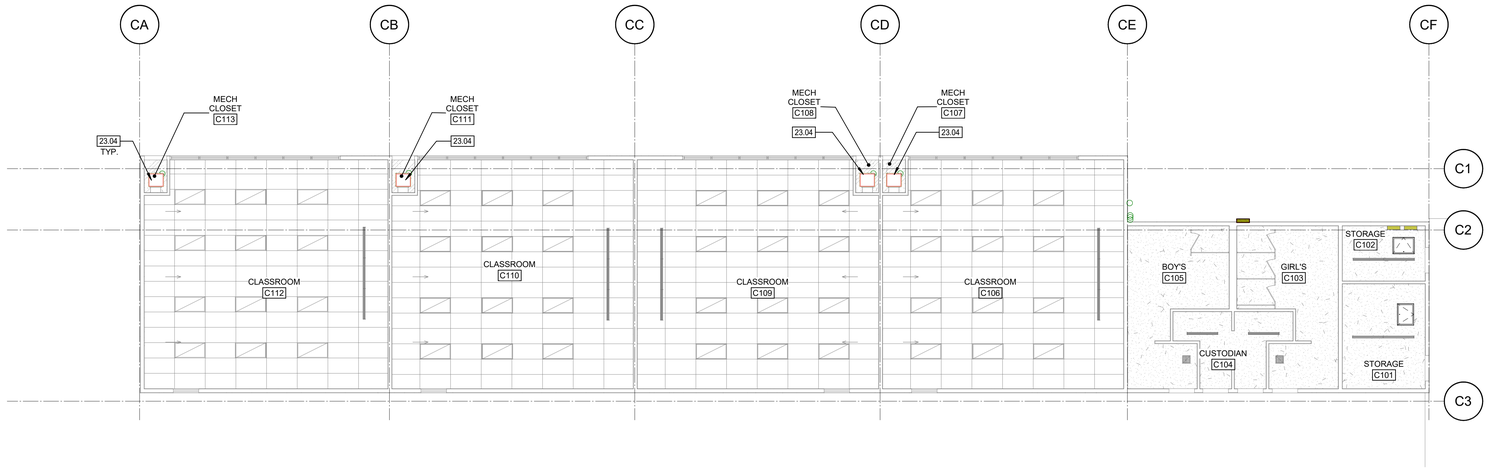
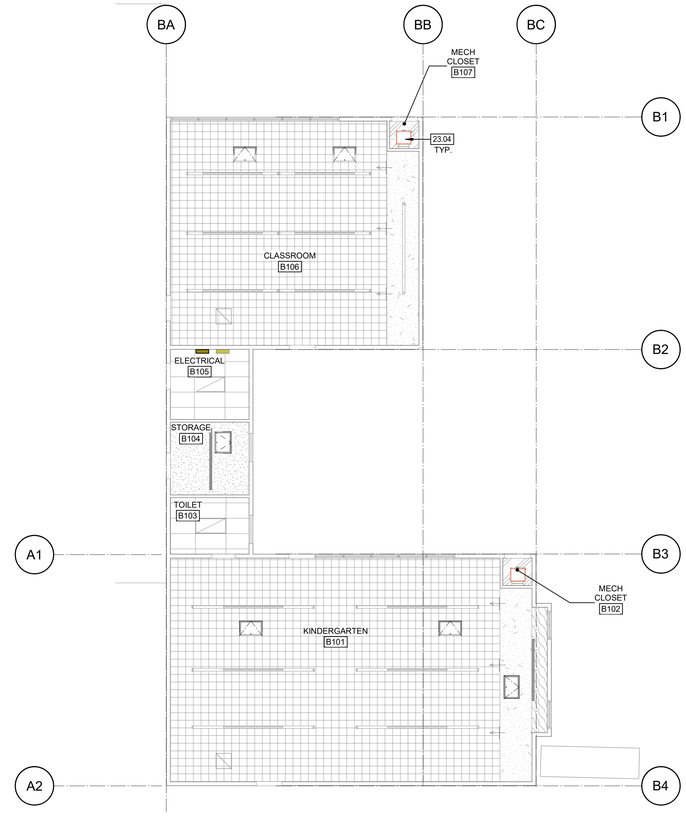


BLDG C 1ST FLOOR - RCP

2

1/8" = 1'-0"



BLDG B 1ST FLOOR - RCP

1

1/8" = 1'-0"

LEGEND- RCP'S

BUILDING ELEMENTS

EXISTING ELEMENT / NON RATED WALL TO REMAIN

- (E) 5/8" GYPSUM BOARD O/ WOOD FRAMING BELOW ROOF JOISTS OR SUSPENDED CEILING SYSTEM
- (E) 5/8" GYPSUM BOARD ATTACHED TO UNDERSIDE OF ROOF JOISTS
- (E) 24"x24" ACOUSTIC TILE SUSPENDED CEILING SYSTEM
- (E) 24"x48" ACOUSTIC TILE SUSPENDED CEILING SYSTEM
- (E) 12"x12" ACOUSTIC CEILING TILES INSTALLED OVER FURRING STRIPS UNDER ROOF JOISTS
- (E) 12"x12" ACOUSTIC CEILING TILES INSTALLED O/ GYPSUM BOARD O/ WOOD FRAMING BELOW ROOF JOISTS
- (E) WOOD SOFFIT O/ WOOD FRAMING BELOW ROOF JOISTS
- (E) EXTERIOR CEMENT PLASTER SOFFIT

- (E) CEILING AIR GRILLE, S.M.D.
- CEILING AIR GRILLE, S.M.D.
- (E) LIGHT FIXTURES
- CEILING ACCESS PANEL TO ACCESS FA DEVICE ABOVE CEILING, F.V. LOCATIONS & ORIENTATION; SEE DETAIL 11/A10.01.

KEYNOTES

23.04 FAN COIL UNIT AND DUCTS AS REQ'D FOR A COMPLETE AND OPERABLE SYSTEM | MECH

NOTES

1. LOCATE ALL FIRE ALARM DEVICES IN CENTER OF ACOUSTIC CEILING TILE IF POSSIBLE, VIF.
2. PROVIDE CEILING ACCESS PANELS AT (E) CEILINGS WHERE ACCESS IS REQUIRED TO FIRE ALARM DEVICES ABOVE CEILINGS.
3. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS.
4. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE ALARM DRAWINGS FOR MORE INFORMATION.
5. REMOVE (E) ELEMENTS AS REQUIRED FOR DEMOLITION AND NEW WORK; REINSTALL OR PATCH / PAINT TO MATCH (E) CONDITIONS.
6. (E) CEILING TYPES ARE BASED ON RECORD DRAWINGS AND VERIFY IN FIELD.
7. SEE DETAIL 12/A10.01 WHERE WALL BLOCKING IS REQ'D.

TN

PN

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SAN RAFAEL, CA 94901

PROJECT:

SRCS SUN VALLEY ES HVAC FA

SHEET NAME:

BLDG B & C 1ST FLOOR - REFLECTED CEILING PLAN

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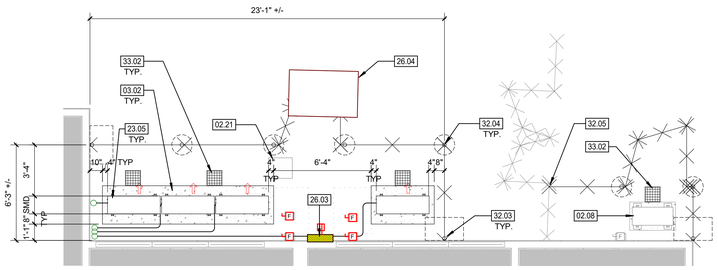
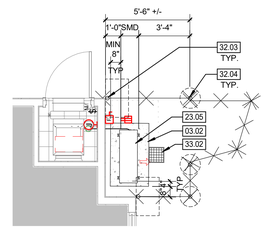
LEGEND

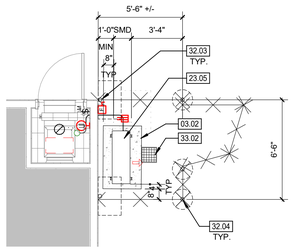
- EXISTING ELEMENT/ NON RATED WALL TO REMAIN
- BLACK VINYL CHAINLINK FENCE AND GATE @MECHANICAL YARD
- (E) CHAINLINK FENCE AND GATE TO REMAIN
- EXISTING BUILDINGS TO BE UPGRADED



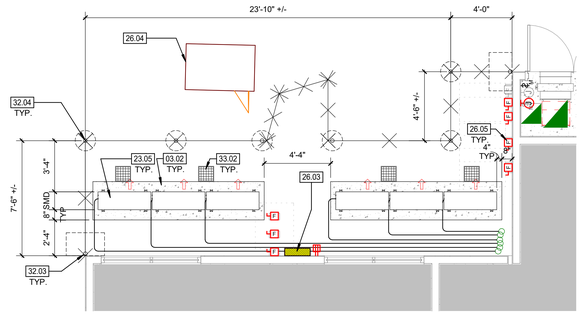
MECH YARD - BLDG C NORTH **5** 1/4" = 1'-0"



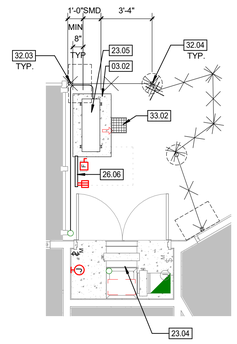
MECH YARD - BLDG B EAST. **4** 1/4" = 1'-0"



MECH YARD - BLDG B EAST **3** 1/4" = 1'-0"



MECH YARD - BLDG A NORTHWEST **2** 1/4" = 1'-0"



MECH YARD - BLDG A NORTHEAST **1** 1/4" = 1'-0"

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KEYNOTES

02.08	(E) MECH EQUIPMENT ON (E) CONCRETE PAD TO REMAIN
02.21	(E) CATCH BASIN TO REMAIN
03.02	CONCRETE HOUSING PAD | MECH
23.04	FAN COIL UNIT AND DUCTS AS REQ'D FOR A COMPLETE AND OPERABLE SYSTEM | MECH
23.05	MECHANICAL EQUIPMENT | MECH
26.03	ELEC PANEL | ELEC
26.04	ELECTRICAL UNDERGROUND PULL BOX W/ GROUND COVER, TRENCH AS REQ'D FOR CONDUIT PATHWAY AND PATCH PAVEMENT & SUBGRADE AND LANDSCAPE TO MATCH (E) | ELEC
26.05	DISCONNECT SWITCH | ELEC
26.06	ELECTRICAL EQUIPMENT | ELEC
32.03	CHAINLINK FENCE POST & FOOTING ADJACENT TO (E) BLDG, SEE DETAIL 9/A10.01
32.04	CHAINLINK FENCE POST & FOOTING, SEE DETAIL 1/A10.01
32.05	CHAINLINK FENCE TO BE CONNECTED TO (E) CHAINLINK FENCE POST.
33.02	AREA DRAIN W/ CONDENSATE SUMP BELOW, SEE DETAIL 10/A10.01

NOTES

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SRCS SUN VALLEY ES HVAC FA

SHEET NAME:

MECH YARD ENLARGED PLANS

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FILE NO.: **21-39** | A NO.: **01-121954**

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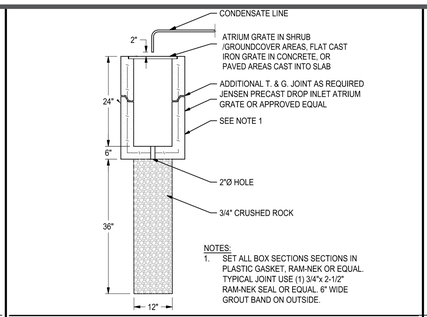
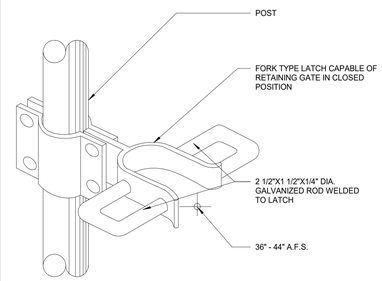
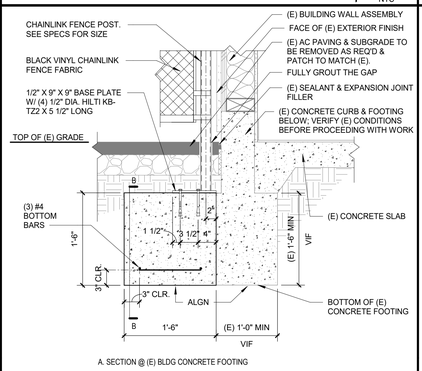


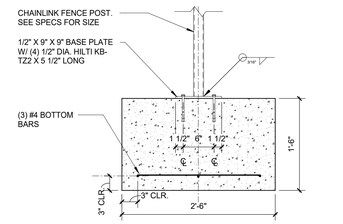
CONDENSATE SUMP | 10
NTS



CHAINLINK FORK LATCH | 5
1/2" = 1'-0"



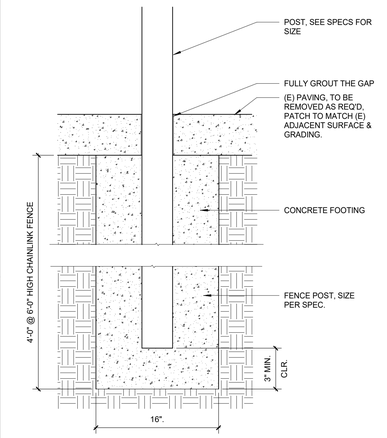
A. SECTION @ (E) BLDG CONCRETE FOOTING



B. SECTION @ CHAINLINK FENCE POST FOOTING

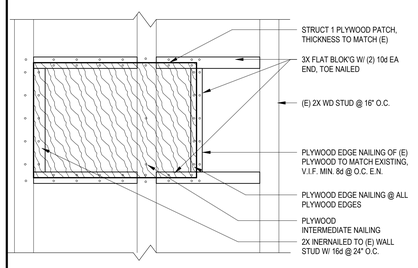
NOTE:
1. FENCE AND FENCE FOOTING ARE NOT PART OF DSA STRUCTURAL APPROVAL

CHAINLINK FENCE POST FOOTING @BLDG | 8
1" = 1'-0"

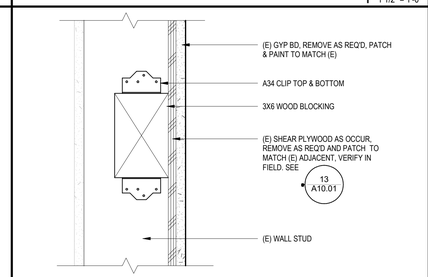


NOTE:
1. FENCE AND FENCE FOOTING ARE NOT PART OF DSA STRUCTURAL APPROVAL

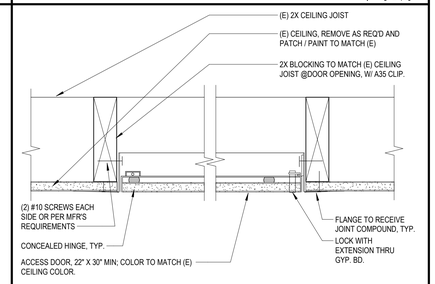
CHAINLINK FENCE POST FOOTING | 3
1/4" = 1'-0"



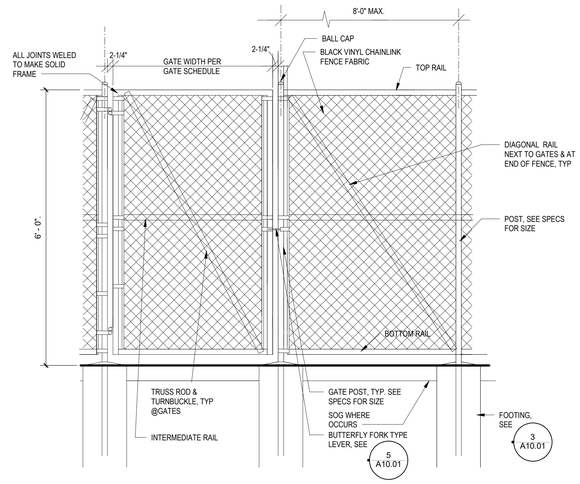
SHEAR WALL PATCHING | 13
1 1/2" = 1'-0"



TYPICAL BLOCKING | 12
3" = 1'-0"



ACCESS PANEL @(E) CEILING | 11
3" = 1'-0"



NOTE:
1. FENCE AND FENCE FOOTING ARE NOT PART OF DSA STRUCTURAL APPROVAL

CHAINLINK FENCE / SINGLE GATE ELEVATION | 1
3/4" = 1'-0"

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PROJECT:

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SHEET NAME:

DETAILS

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SHEET:

A10.01

FAN COIL UNIT SCHEDULE

TYPE	MARK	NOMINAL TONS	DUCT CONFIG.	ELECTRICAL					SUPPLY FAN					COOLING (R410A)				HEATING			FILTER TYPE	OPERATING WEIGHT	MANUFACTURER	MODEL	NOTES
				VOLTAGE	PHASE	RLA	MCA	MOCP	MOTOR HP	DRIVE/ SPEEDS	CFM	ESP (IN WC)	OUTSIDE AIR (CFM)	TYPE	TOTAL COOLING CAPACITY	SENSIBLE COOLING CAPACITY	E.A. DB/WB (°F)	TYPE	CAPACITY AT 17°F (BTU/H)	CAPACITY AT 47°F (BTU/H)					
FC	A1	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	305	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A2	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	270	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A3	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	340	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A4	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	345	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A5	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	345	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A6	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	345	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A7	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	300	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	B1	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	355	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	B2	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	530	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C1	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	355	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C2	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	355	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C3	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	355	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C4	4	VERTICAL	208	1	52	5.63	15	0.25	VARIABLE	1,190	0.5	355	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.

SPLIT HEAT PUMP SCHEDULE

TYPE	MARK	ELECTRICAL				SEER / EER	COP	HSPF	COOLING CAPACITY	HEATING CAPACITY	SUMMER AMBIENT DB/WB TEMP. (°F)	WINTER AMBIENT DB TEMP. (°F)	REFRIGERANT TYPE	REFRIG. LINE SIZE (LIQ/SUC)	SERVICE	OPERATING WEIGHT	MANUFACTURER	MODEL	NOTES
		VOLTAGE	PHASE	MCA	MOCP														
HP	A1	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A2	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A3	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A4	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A5	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A6	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A7	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	B1	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	B2	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C1	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C2	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C3	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C4	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.

EQUIPMENT ANCHORAGE NOTES

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.1.17 THROUGH 1617A.1.20 & 1617A.1.23 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 ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

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 THROUGH 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., 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.
☐	☐	☐	☐	OPTION 2: SHALL COMPLY WITH THE APPLICABLE HCAI PRE-APPROVAL (OPM#) #0043-13.

DEMAND CONTROL VENTILATION OSA SCHEDULE

AC UNIT	MIN OSA CFM	MAX OSA CFM
FC-A1	120	305
FC-A2	105	270
FC-A3	135	340
FC-A4	135	345
FC-A5	135	345
FC-A6	135	345
FC-A7	300	300
FC-B1	140	355
FC-B2	210	530
FC-C1	140	355
FC-C2	140	355
FC-C3	140	355
FC-C4	140	355

* OSA TO BE PER 2019 BUILDING ENERGY EFFICIENCY STANDARDS TITLE 24, PART 6, SECTION 120.1, REQUIREMENTS.

* DEMAND VENTILATION CONTROLS SHALL MAINTAIN CO2 CONCENTRATIONS LESS THAN OR EQUAL TO 600 PPM PLUS THE OUTDOOR AIR CO2 CONCENTRATION IN ALL ROOMS WITH CO2 SENSORS.

MECHANICAL LEGEND

SYMBOL	ITEM	ABBR.
	SUPPLY AIR	SA
	RETURN AIR	RA
	EXHAUST AIR	EA
	OUTSIDE AIR	OSA
	TRANSFER AIR	TA
1 / M-2	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
AC / 1	EQUIPMENT DESIGNATION UNIT ABBREVIATION NUMBER	
A 10x10 120 (CRD / FD)	GRILLE DESIGNATION NECK SIZE CFM FIRE DAMPER WHERE REQ'D	
	ACOUSTIC LINED DUCT	L
	TURNING VANES	TV
	DUCT FLEXIBLE CONNECTION	
	DUCT RISER	
	DUCT DROP	
	RECTANGULAR TO ROUND FITTING	
	VOLUME CONTROL DAMPER	VD
FD	FIRE DAMPER W/ ACCESS	FD
FSD	FIRE SMOKE DAMPER W/ ACCESS	FSD
CRD	CEILING RADIATION DAMPER	CRD
	OPPOSED BLADE DAMPER	OBD
	BACKDRAFT DAMPER	BDD
M	MOTORIZED DAMPER	
T	THERMOSTAT @ +48" AFF (MAX.) (TOP OF BOX)	T-STAT
S	SENSOR @ +48" AFF	
SP	STATIC PRESSURE SENSOR @ +48" AFF	
CO	CARBON MONOXIDE SENSOR @ +48" AFF	
CO2	CARBON DIOXIDE SENSOR @ +48" AFF	
TC	TIMECLOCK @ +48" AFF	
TCP	TEMPERATURE CONTROL PANEL	TCP
SD	DUCT SMOKE DETECTOR	SD
	PIPE RISER / DROP	(R) / (D)
	FROM ABOVE	(FA)
	FROM BELOW	(FB)
	TO ABOVE	(TA)
	TO BELOW	(TB)
	ABOVE FINISHED FLOOR	AFF
	UNLESS OTHERWISE NOTED	UON
	TYPICAL	(TYP)
	BOTTOM OF DUCT	BOD
	UNDERCUT DOOR 3/4"	UCD
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD/POC
	REFRIGERANT LIQUID	RL
	REFRIGERANT SUCTION	RS
	DEMOLISHED/DEMO	

MECHANICAL SPECIFICATIONS

1. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
   A. 2022 CALIFORNIA BUILDING CODE
   B. 2022 CALIFORNIA MECHANICAL CODE
   C. 2022 CALIFORNIA PLUMBING CODE
   D. 2022 CALIFORNIA ELECTRICAL CODE
   E. 2022 CALIFORNIA GREEN BUILDING STANDARDS
   F. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS - TITLE 24
   G. NATIONAL FIRE PROTECTION ASSOCIATION
   H. CALIFORNIA STATE FIRE MARSHAL
2. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.
3. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF MECHANICAL EQUIPMENT.
4. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER.
5. THE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER.
6. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.
7. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS MECHANICAL CONTROL SYSTEM COMPONENTS, FIRE/SMOKE DAMPERS, SMOKE DETECTORS, ETC., OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.
8. CHECK ALL PIPE AND DUCTWORK FOR LEAKS AND EXCESSIVE AIR LOSS AND NOISE. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY.
9. GALVANIZED STEEL DUCTS SHALL BE ASTM A 653/A 653M GALVANIZED STEEL SHEET, FORMING STEEL (FS) DESIGNATION, WITH G90/Z275 ZINC COATING.
10. FABRICATE, SUPPORT AND SEAL DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR 4" STATIC PRESSURE UPSTREAM OF TERMINAL UNITS (VAV, CAV BOXES) AND 2" STATIC PRESSURE DOWNSTREAM OF TERMINAL UNITS (VAV, CAV BOXES).
11. CONSTRUCT DUCTWORK T'S, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN 1-1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE RECTANGULAR ELBOWS MUST BE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER INSULATION.
12. COMBINATION FIRE AND SMOKE DAMPERS SHALL MEET THE REQUIREMENTS OF NFPA 90A, UL 555, UL 555S, AND AS INDICATED. PROVIDE FACTORY SLEEVE AND COLLAR FOR EACH DAMPER.
13. ALL INSULATION AND LINER PRODUCTS SURFACE BURNING CHARACTERISTICS: FLAME SPREAD/SMOKE DEVELOPED INDEX OF 25/50, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, OR UL 723.
14. DUCT INSULATION BLANKET (INTERIOR APPLICATIONS):
    A. INSULATION: ASTM C553; FLEXIBLE, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DUCT APPLICATION: 2" THICK, 3/4 LB. DENSITY.
    B. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96; 0.02 PERM. SECURE WITH PRESSURE SENSITIVE TAPE.
15. DUCT INSULATION BOARD (EXTERIOR APPLICATIONS):
    A. INSULATION: ASTM C 612; RIGID, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F (0.036 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DENSITY: 3.0 LB/CU FT (48 KG/CU M).
    B. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96; 0.04 PERM. SECURE WITH PRESSURE SENSITIVE TAPE.
    C. ALUMINUM JACKET: ASTM B 209 (ASTM B 209M). THICKNESS: 0.016 INCH (0.40 MM) SHEET. FINISH: SMOOTH. JOINING: LONGITUDINAL SLIP JOINTS AND 2 INCH (50 MM) LAPS. FITTINGS: 0.016 INCH (0.4 MM) THICK DIE SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER. METAL JACKET BANDS: 3/8 INCH (10 MM) WIDE; 0.015 INCH (0.38 MM) THICK ALUMINUM.
16. DUCT LINER:
    A. INSULATION: INCOMBUSTIBLE GLASS FIBER COMPLYING WITH ASTM C 1071; FLEXIBLE BLANKET; WITH ACRYLIC POLYMER SHOWN TO BE FUNGUS AND BACTERIA RESISTANT BY TESTING TO ASTM G 21 IMPREGNATED SURFACE AND EDGE COAT. APPARENT THERMAL CONDUCTIVITY: MAXIMUM OF 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C). DUCT APPLICATION: 1-1/2" THICK, 1-1/2 POUND DENSITY. SERVICE TEMPERATURE: UP TO 250 DEGREES F (121 DEGREES C). RATED VELOCITY ON COATED AIR SIDE FOR AIR EROSION: 5,000 FPM (25.4 M/S), MINIMUM.
    B. LINER FASTENERS: GALVANIZED STEEL, SHEET METAL WELD PINS OR CLINCH PINS AND WASHERS.
17. INSULATED FLEXIBLE DUCTS
    A. FLEXIBLE DUCTS SHALL BE U.L. LISTED AND SHALL COMPLY WITH UMC STANDARD 6-1.
    B. THE MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5 FEET PER CMC SECTION 603.4.1 DUCTWORK SHALL BE EXTENDED TO FULL LENGTH WHENEVER POSSIBLE WITHOUT SEVERE BENDS OR KINKS. BENDS SHALL BE MADE TO MAINTAIN R/W EQUAL TO 1.5.
    C. BLACK POLYMER FILM SUPPORTED BY HELICALLY WOUND SPRING STEEL WIRE; FIBERGLASS INSULATION; POLYETHYLENE VAPOR BARRIER FILM.
       a. PRESSURE RATING: 4 INCHES WG POSITIVE PRESSURE AND 1 INCH NEGATIVE PRESSURE.
       b. INSULATION SHALL BE 1-1/2 INCH THICK FIBERGLASS.
       c. MAXIMUM VELOCITY: 4000 FPM (20.3 M/SEC).
       d. TEMPERATURE RANGE: -20 DEGREES F TO 175 DEGREES F (-28 DEGREES C TO 79 DEGREES C).
18. SEAL ALL STANDING SEAMS AND TRANSVERSE JOINTS IN ALL SHEETMETAL DUCTWORK WITH HARDCAST IRON GRIP PREMIUM FLEXIBLE WATER BASED DUCT SEALANT.
19. DURING CONSTRUCTION PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM.
20. ALL BRANCH DUCTS SHALL HAVE BALANCING DAMPERS WITH ACCESSIBLE LOCKING TYPE QUADRANT. WHERE DAMPER IS INACCESSIBLE, PROVIDE YOUNG REGULATOR MODEL 270-301 CABLE KIT WITH EITHER 830A-CC (RECTANGULAR) OR 5020-CC (ROUND) DAMPER.
21. PERFORM TOTAL SYSTEMS BALANCE IN ACCORDANCE WITH AABC, ASHRAE STD 111, OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.
22. THE INSTALLATION OF DUCT SMOKE DETECTORS FOR AUTOMATIC SHUTDOWN OF AIR MOVING SYSTEMS AS REQUIRED BY CMC SECTION 608 OR AS REQUIRED FOR THE OPERATION OF FIRE SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT'S STANDARD "FIRE PROTECTION DESIGN GUIDELINES FOR SMOKE CONTROL WITHIN BUILDINGS". DUCT SMOKE DETECTORS SHALL BE SUPERVISED BY FIRE-DETECTION OR ALARM SYSTEMS WHEN PROVIDED FOR THE BUILDING IN ACCORDANCE WITH CMC 609.1/ CFC 907.3.1/NFPA 72 17.7.4. WHERE AIR DUCT SMOKE DETECTORS SERVING AIR MOVING SYSTEMS ARE INSTALLED WITHIN CONDCEALED SPACES, AND/OR DROP CEILING AREAS, THE DETECOR SHALL BE PROVIDED WITH THE UNIT SERVED. SAID REMOTE ALARM LED DEVICE SHALL BE LABELED TO CLEARLY IDENTIFY THE UNIT SERVED (AC-1, ETC.). WHERE AIR DUCT SMOKE DETECTORS SERVING AIR-MOVING SYSTEMS ARE INSTALLED IN CONCEALED SPACES, AND/OR DROP CEILING AREAS MORE THAN 10 FEET ABOVE THE FINISHED FLOOR, THE DETECTOR SHALL BE PROVIDED WITH A REMOTE TEST AND RESET SWITCH, SAID REMOTE TEST AND RESET SWITCH SHALL BE ATTACHED TO AN ADJACENT WALL OR STRUCTURAL COLUMN AT A MAXIMUM HEIGHT OF 6 FEET ABOVE FINISHED FLOOR. PRIOR TO MECHANICAL PERMIT FINAL, A SMOKE DETECTOR SHUT-OFF TEST WILL BE REQUIRED.
23. COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATION EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.

MECHANICAL SHEET INDEX

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

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SAN RAFAEL, CA 94901

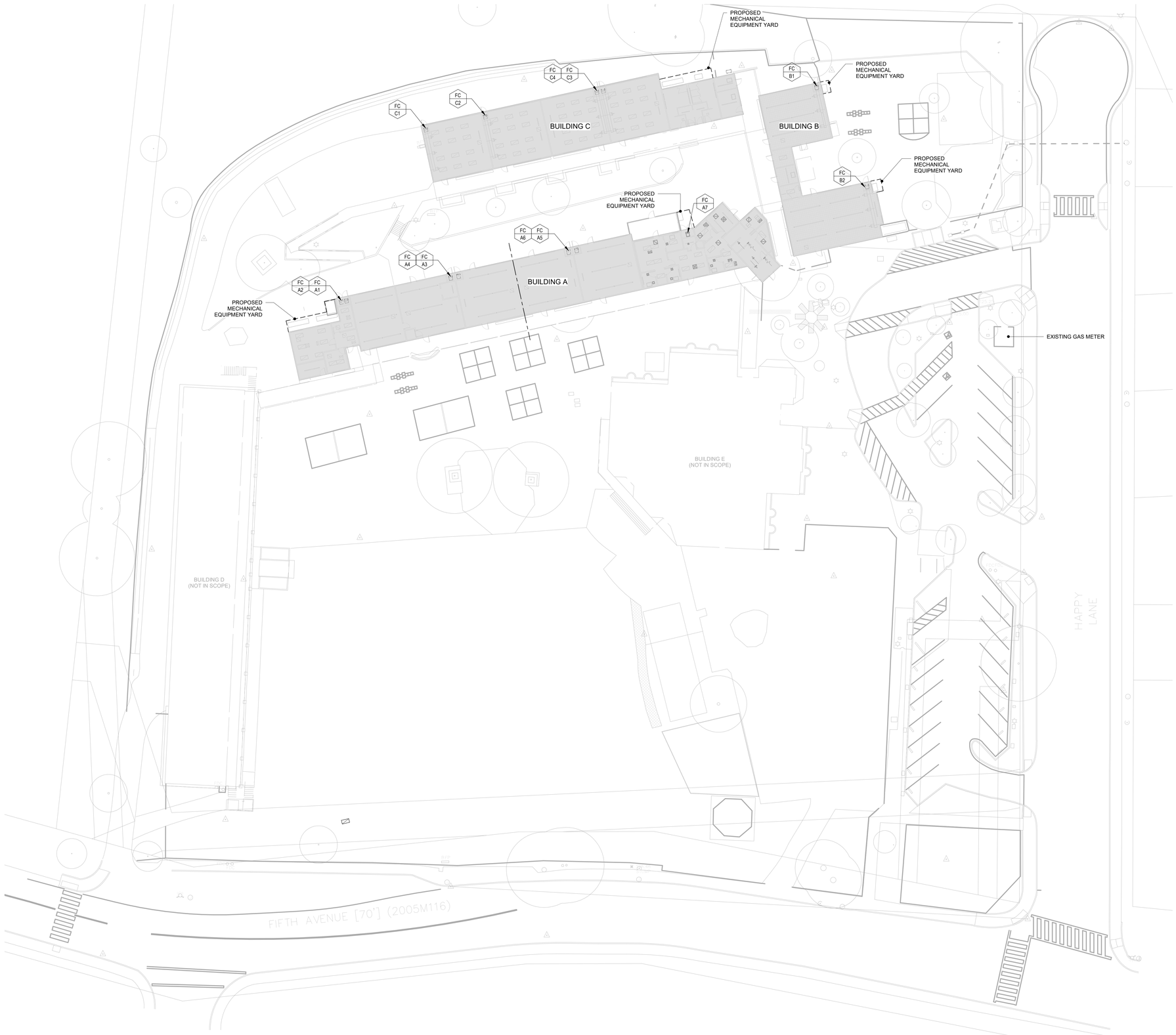
PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
MECHANICAL SCHEDULES, LEGEND AND NOTES

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:
M0.01



1 MECHANICAL SITE PLAN

SCALE: 3/64" = 1'-0"

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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SHEET NAME:

MECHANICAL SITE PLAN

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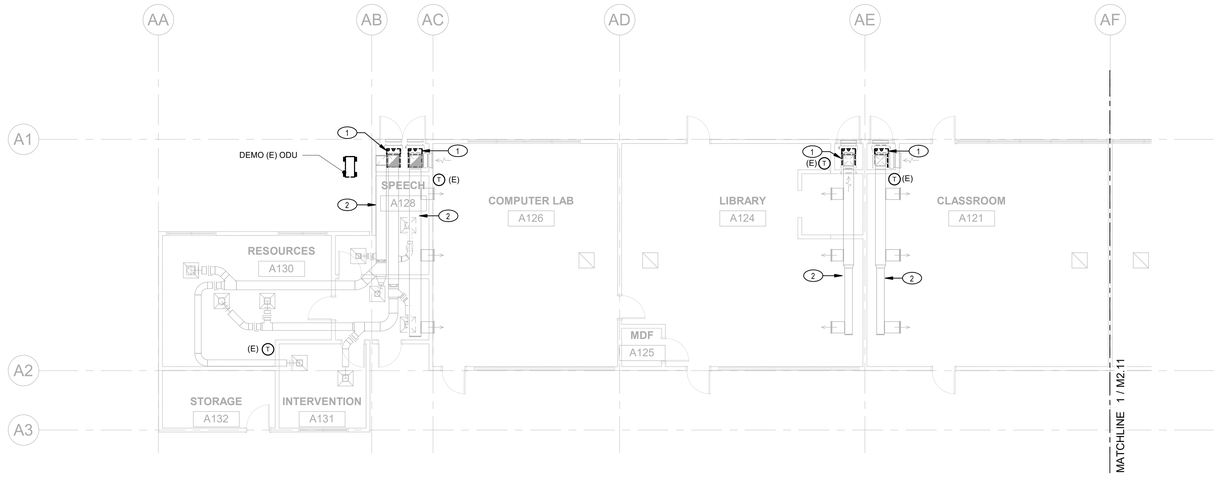
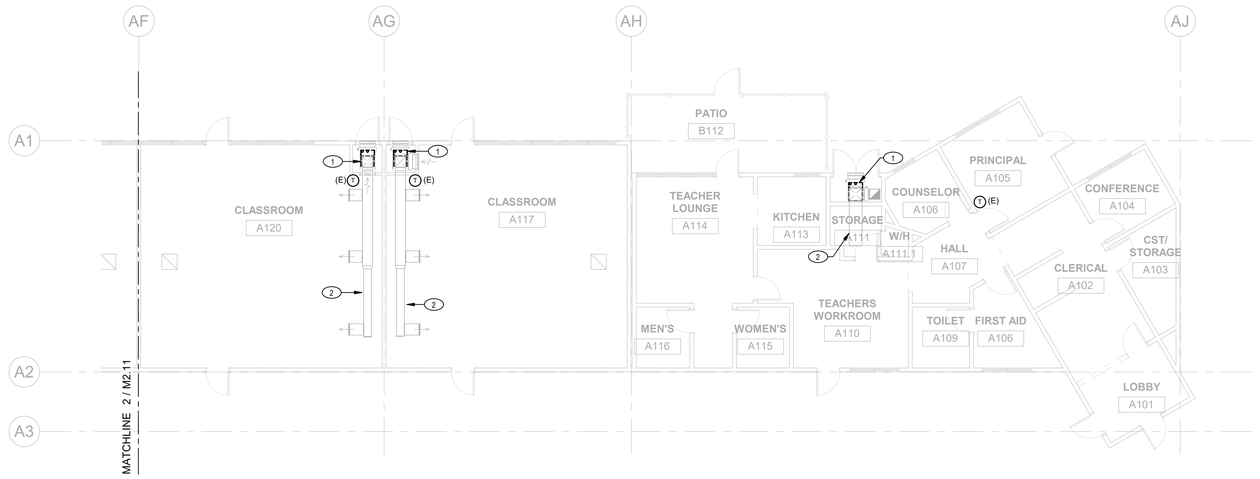


2 MECHANICAL BLDG A FLOOR PLAN SEG B - DEMOLITION

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



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B ALL HVAC EQUIPMENT, DUCTWORK, CONTROLS AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.

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2 (E) DUCTWORK AND DIFFUSERS TO REMAIN IN PLACE.

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FILE # 21-39

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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

MECHANICAL BLDG A FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

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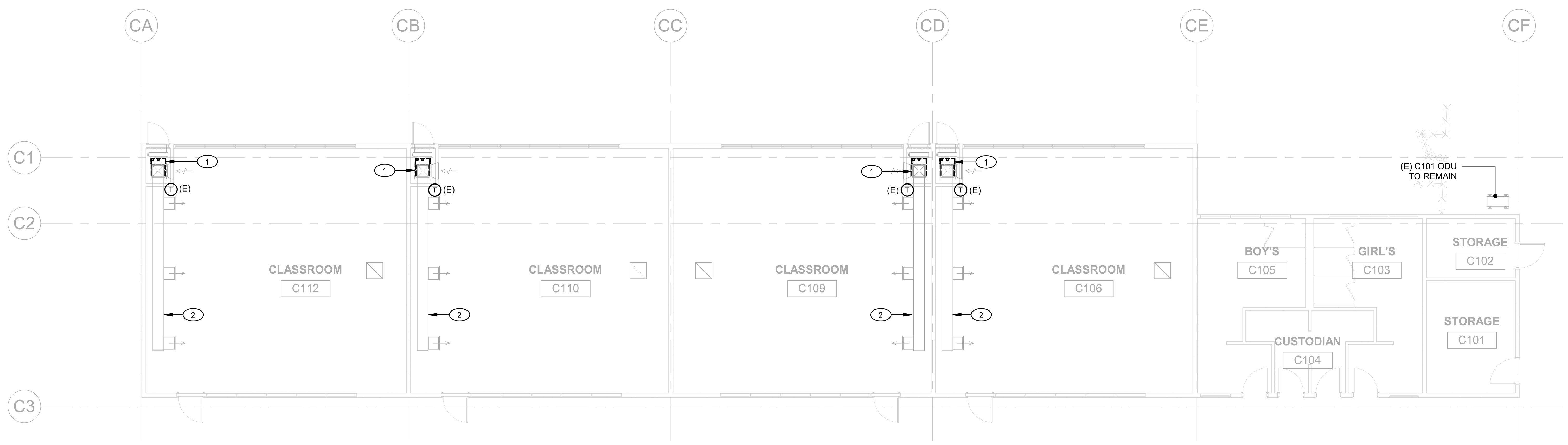
M2.11



2 MECHANICAL BLDG C FLOOR PLAN - DEMOLITION

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

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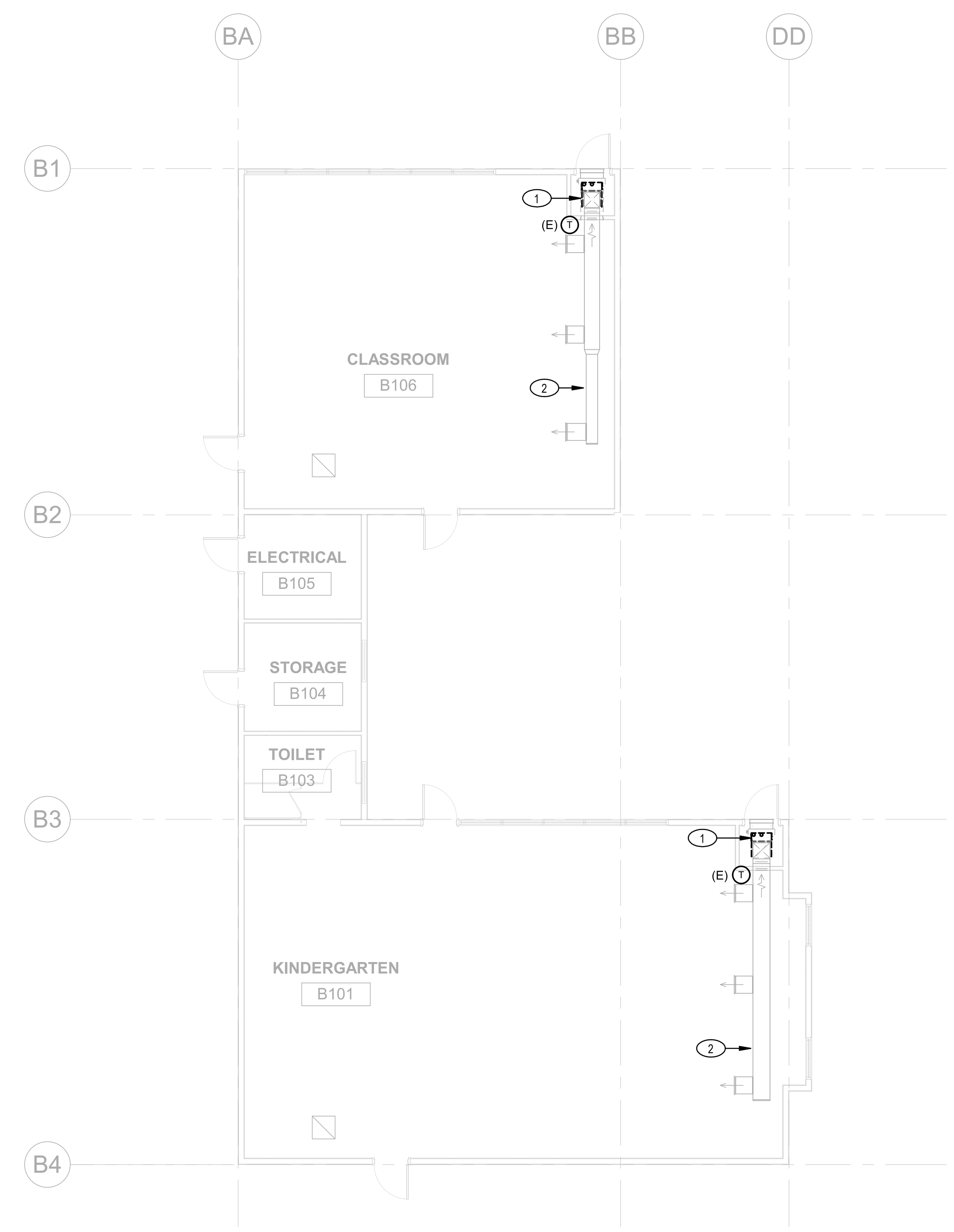

1 MECHANICAL BLDG B FLOOR PLAN - DEMOLITION

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

AGENCY APPROVAL:

DSA # 01-121954
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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

MECHANICAL BLDG B & C FLOOR PLAN - DEMOLITION

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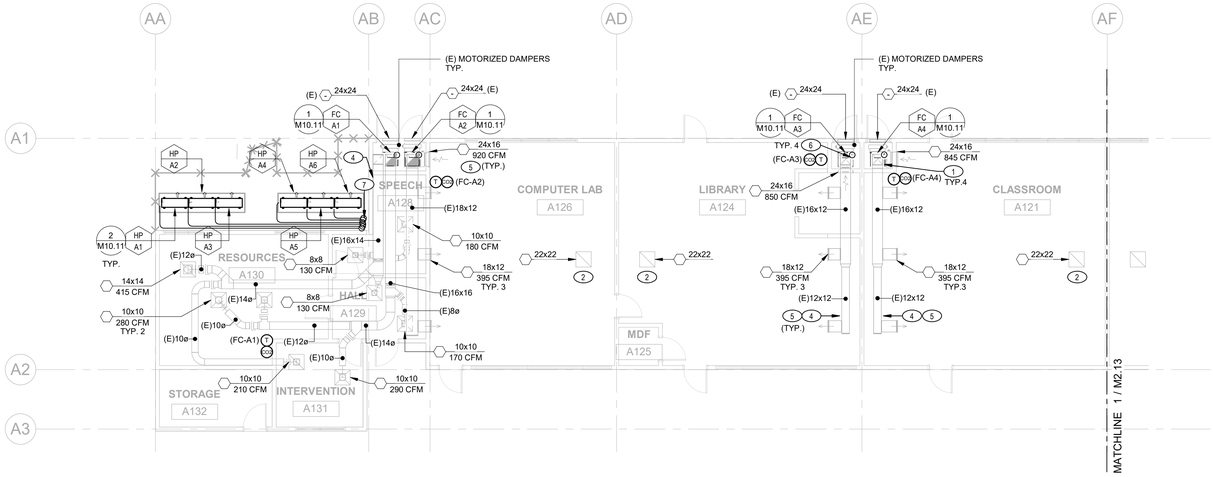
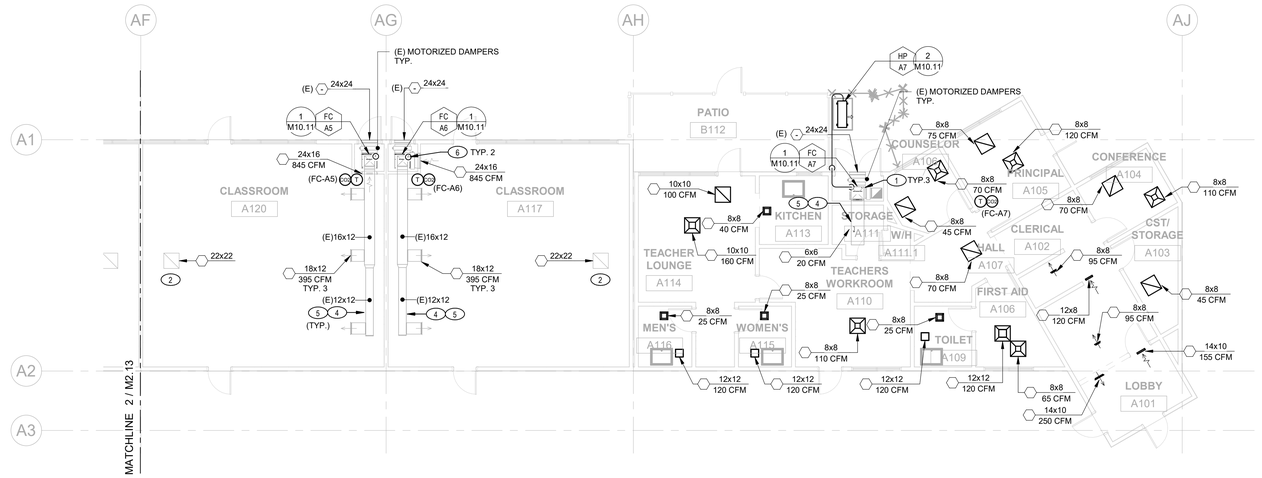


2 MECHANICAL BLDG A FLOOR PLAN SEG B

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



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KEYNOTES (#)

1 RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL.

2 EXISTING GRILLE AND GRAVITY HOOD TO REMAIN IN PLACE.

3 REFRIGERANT LINE SIZES PER MANUFACTURER.

4 (E) DUCTWORK AND DIFFUSERS TO REMAIN IN PLACE.

5 RE-BALANCE (E) AIR INLET/OUTLET TO AIR QUANTITY SHOWN.

6 REFRIGERANT PIPING FROM ROOF ABOVE.

7 COORDINATE NEW REFRIGERANT PIPING RISER LOCATION WITH EXISTING SYSTEMS TO AVOID CONFLICT WITH EXISTING SYSTEMS.

NOTES

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FILE # 21-39

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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

MECHANICAL BLDG A FLOOR PLAN

DSA SUBMITTAL

DATE: **2024.10.01**

CLIENT PROJ NO:

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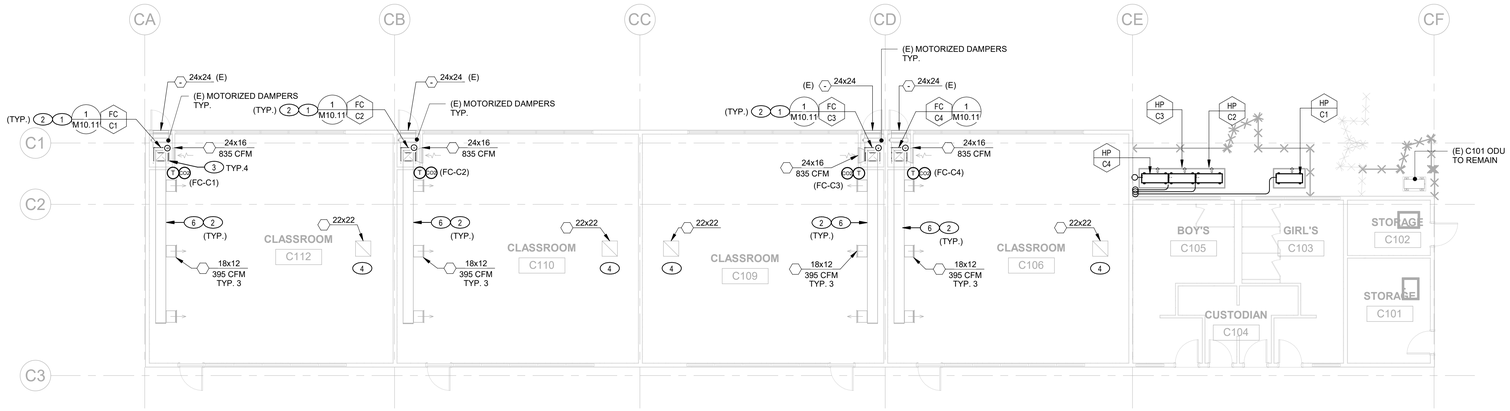
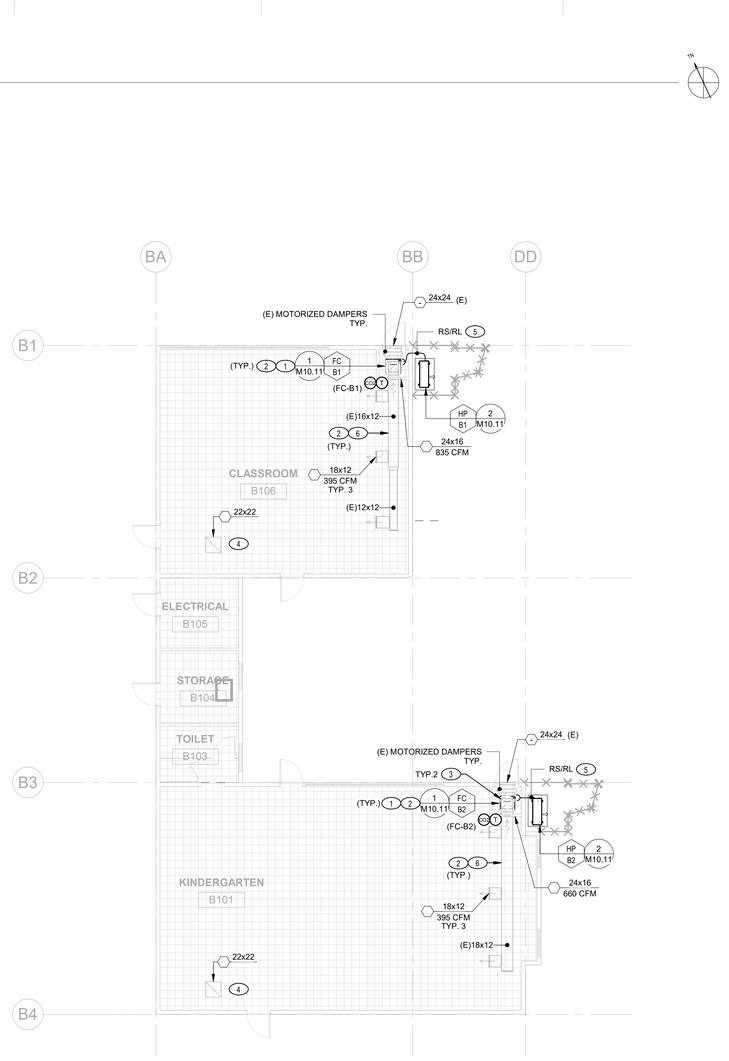
M2.13



2 MECHANICAL BLDG C FLOOR PLAN

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



1 MECHANICAL BLDG B FLOOR PLAN

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KEYNOTES (#)

1 INSTALL NEW FAN COIL. PROVIDE NECESSARY DUCT, FITTINGS, OFFSETS, AND TRANSITIONS FOR A COMPLETE AND OPERABLE SYSTEM.

2 RE-BALANCE (E) AIR INLET/OUTLET TO AIR QUANTITY SHOWN.

3 RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL.

4 EXISTING GRILLE AND GRAVITY HOOD TO REMAIN IN PLACE.

5 REFRIGERANT LINE SIZES PER MANUFACTURER.

6 (E) DUCTWORK AND DIFFUSERS TO REMAIN IN PLACE.

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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

MECHANICAL BLDG B & C FLOOR PLAN

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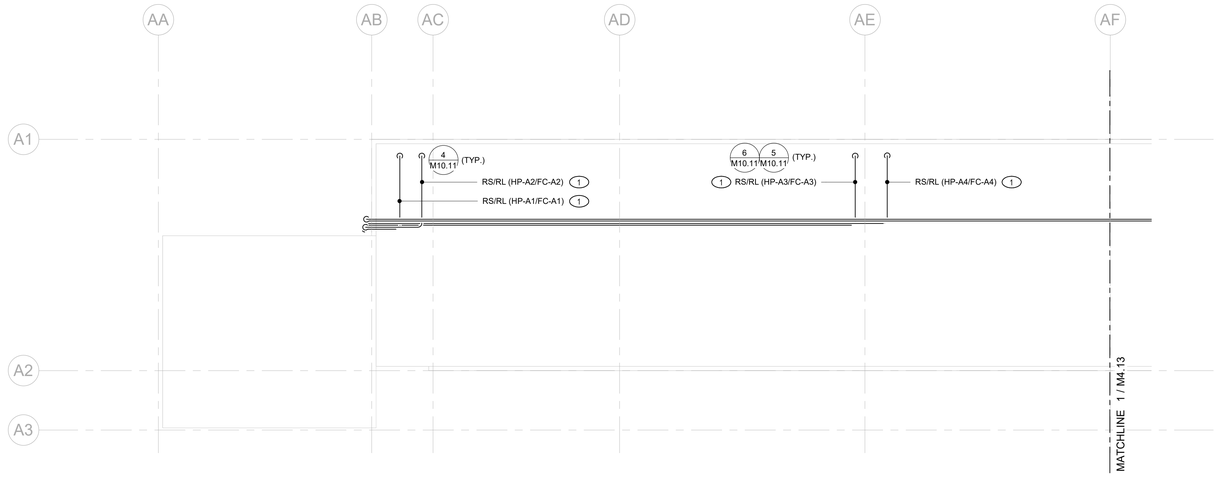

2 MECHANICAL BLDG A ROOF PLAN SEG B

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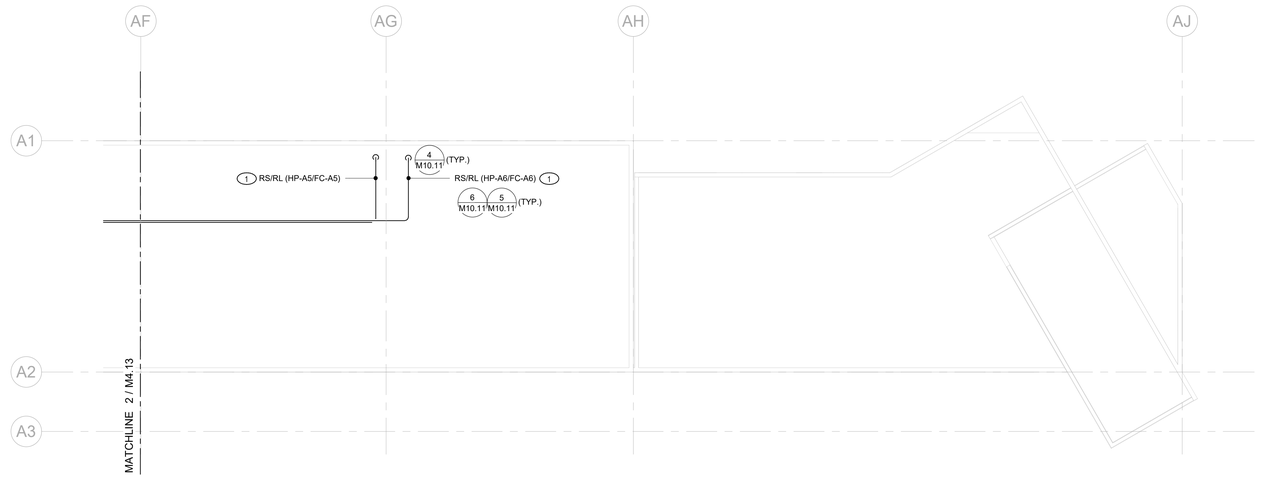

1 MECHANICAL BLDG A ROOF PLAN SEG A

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1 LIQUID AND SUCTION REFRIGERANT PIPING LINE SET ROUTED ON ROOF, SIZE PER MANUFACTURER'S RECOMMENDATION. SEE DETAILS 5/M10.11 & 6/M10.11 FOR PIPE ON ROOF ATTACHMENT DETAILS.

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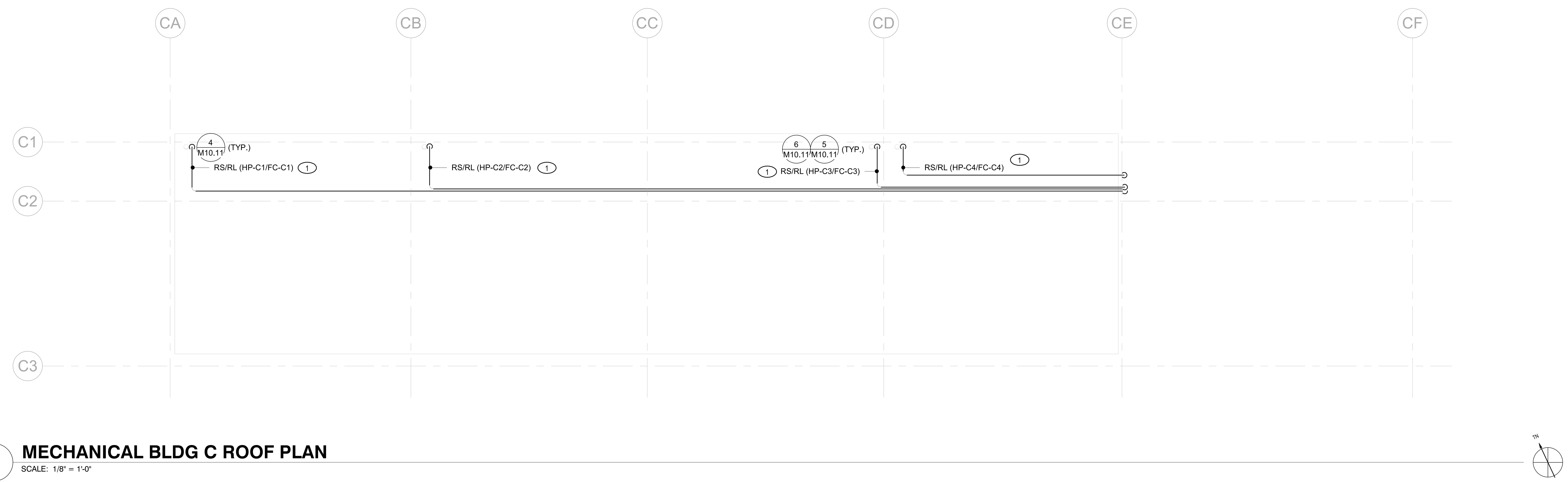

2 MECHANICAL BLDG C ROOF PLAN

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

AGENCY APPROVAL:

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Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER
JASON DEDORA
M 34661
REN. 12-31-25
MECHANICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

MECHANICAL BLDG C ROOF PLAN

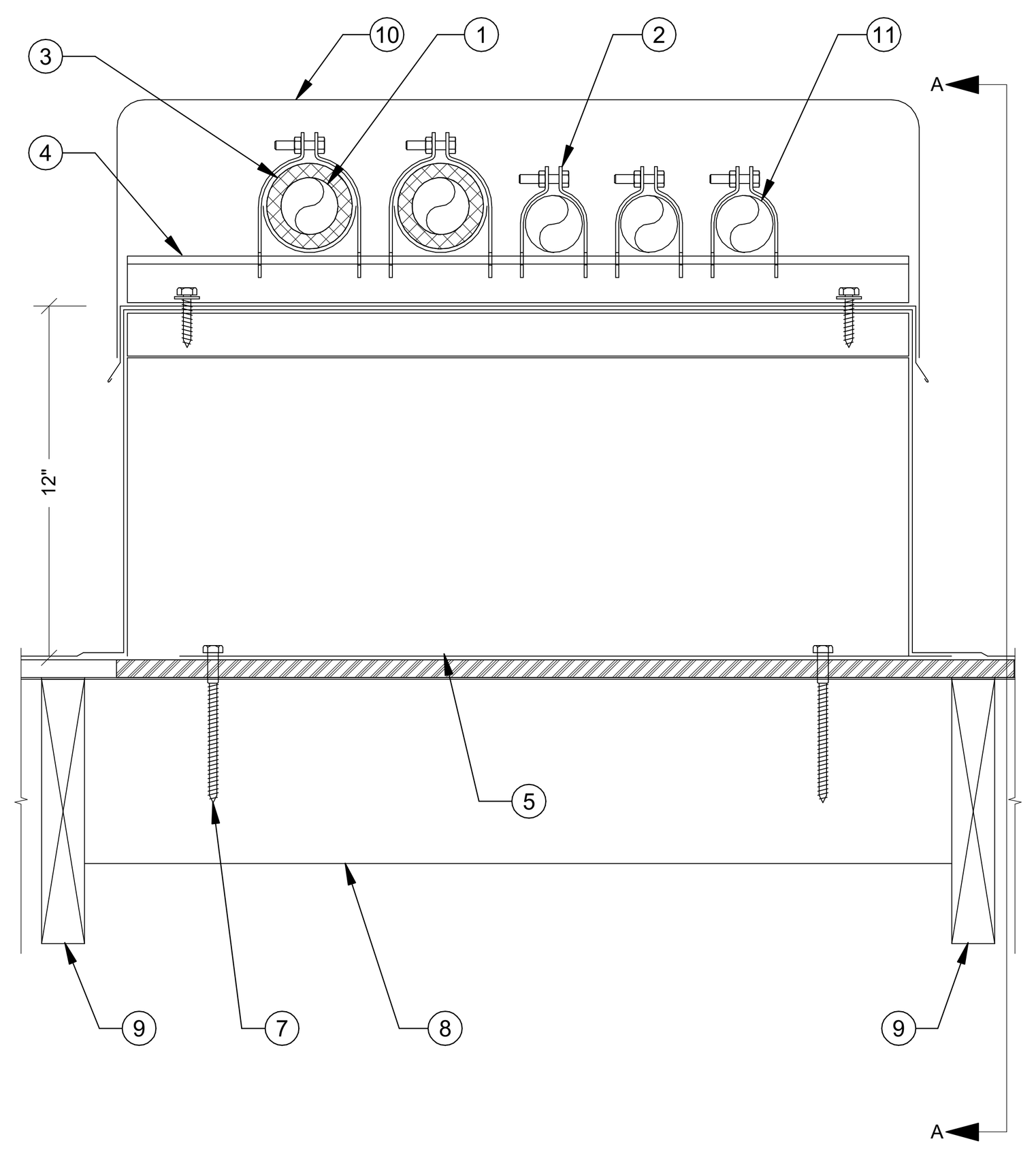
DSA SUBMITTAL

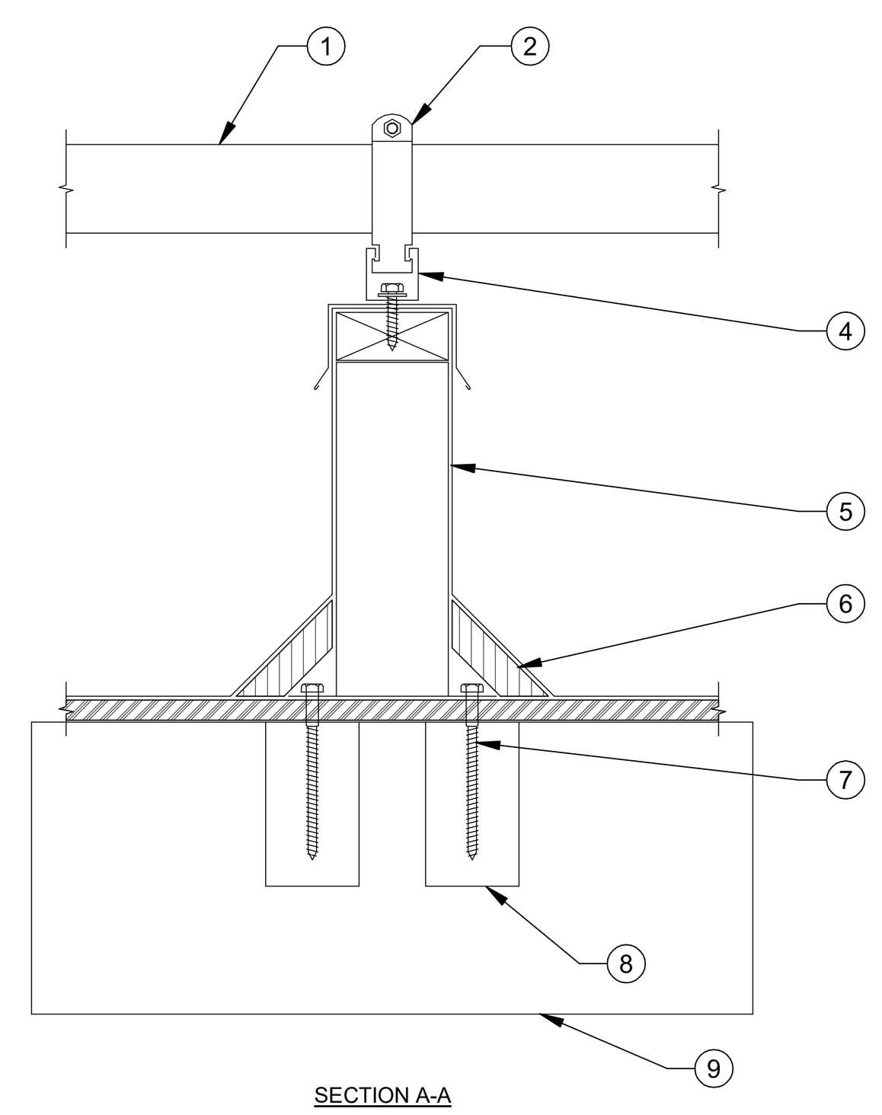
DATE: 2024.10.1 | CLIENT PROJ NO:

SHEET:

M4.14

1. PIPE, SEE PLAN FOR SIZE AND ROUTING.
2. PIPE CLAMP, B-LINE SERIES B2000 OR EQUAL.
3. PIPE INSULATION WHERE APPLICABLE, SEE SPECIFICATIONS. PROVIDE INSULATION PROTECTION SADDLE, MIN. 12" LONG, B-LINE B3151 OR EQUAL. MAY BE SUBSTITUTED FOR PRE-INSULATED CALCIUM SILICATE SHIELD SUPPORT, B-LINE B338 OR EQUAL.
4. 1-5/8" x 1-5/8" x 12 GA UNISTRUT CHANNEL, B-LINE V22 OR EQUAL, SECURE TO CURB WITH (2) 3/8"ø WOOD SCREWS WITH WASHER AT EACH END, MIN. 1" EMBED.
5. 12" HIGH PREFAB/ 18 GA. GALV. STEEL SUPPORT CURB WITH 1-1/2" PRESSURE TREATED WOOD NAILER AND SHEET METAL COUNTERFLASHING, PATE MODEL ES-2 OR EQUAL.
6. CANT STRIP, BOTH LONG SIDES OF CURB.
7. 3/8"ø LAG SCREW WITH MIN. 4" EMBED INTO BLOCKING, MAX. 24" O.C., MAX. 2" FROM ENDS, MIN. (2) EACH SIDE OF CURB.
8. 4x6 BLOCKING BETWEEN JOISTS WITH U46 HANGERS EACH END.
9. (E) 2x10 ROOF FRAMING.
10. COVER PIPING WITH SHROUD; SEE 2/M0.04 FOR SHROUD ATTACHMENT.
11. EMS CONRTOLS CONDUIT, MECHANICAL CONTRACTOR TO COORDINATE WITH CONTROLS CONTRACTOR.



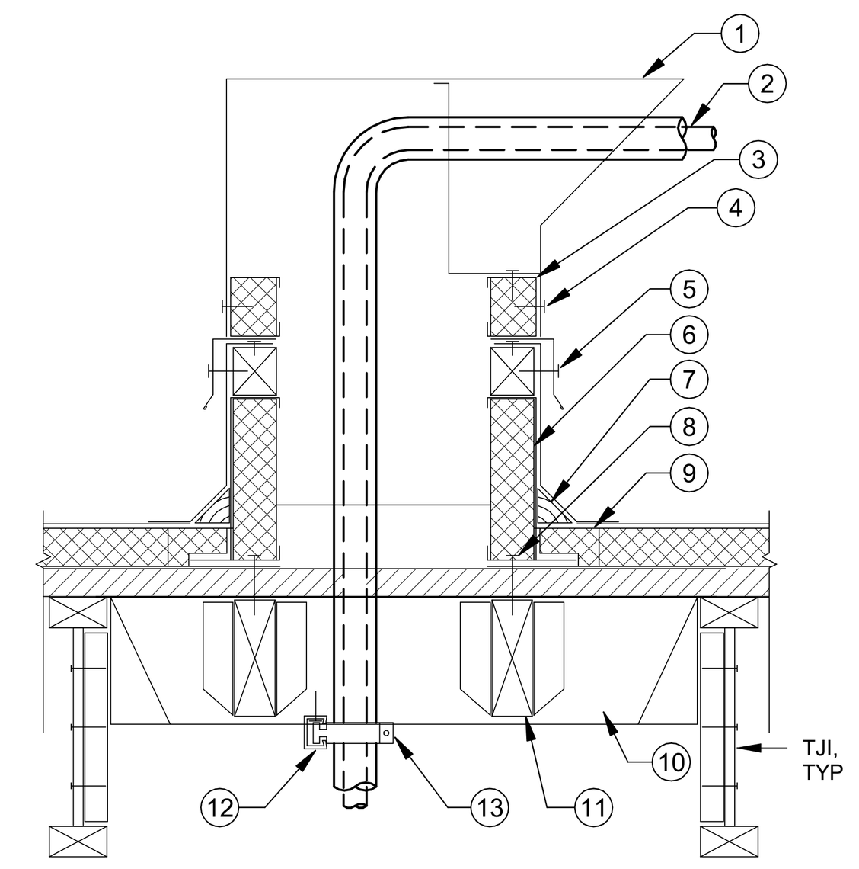


SECTION A-A

NOTES:
A. SUPPORT SPACING TO BE 40'-0" O.C. MAX AND WITHIN 2'-0" FROM ENDS.
B. WRAP INSULATED PIPING EXPOSED TO OUTDOORS WITH ALUMINUM JACKETING.

ANCHORED PIPE SUPPORT ON ROOF | NTS | 7

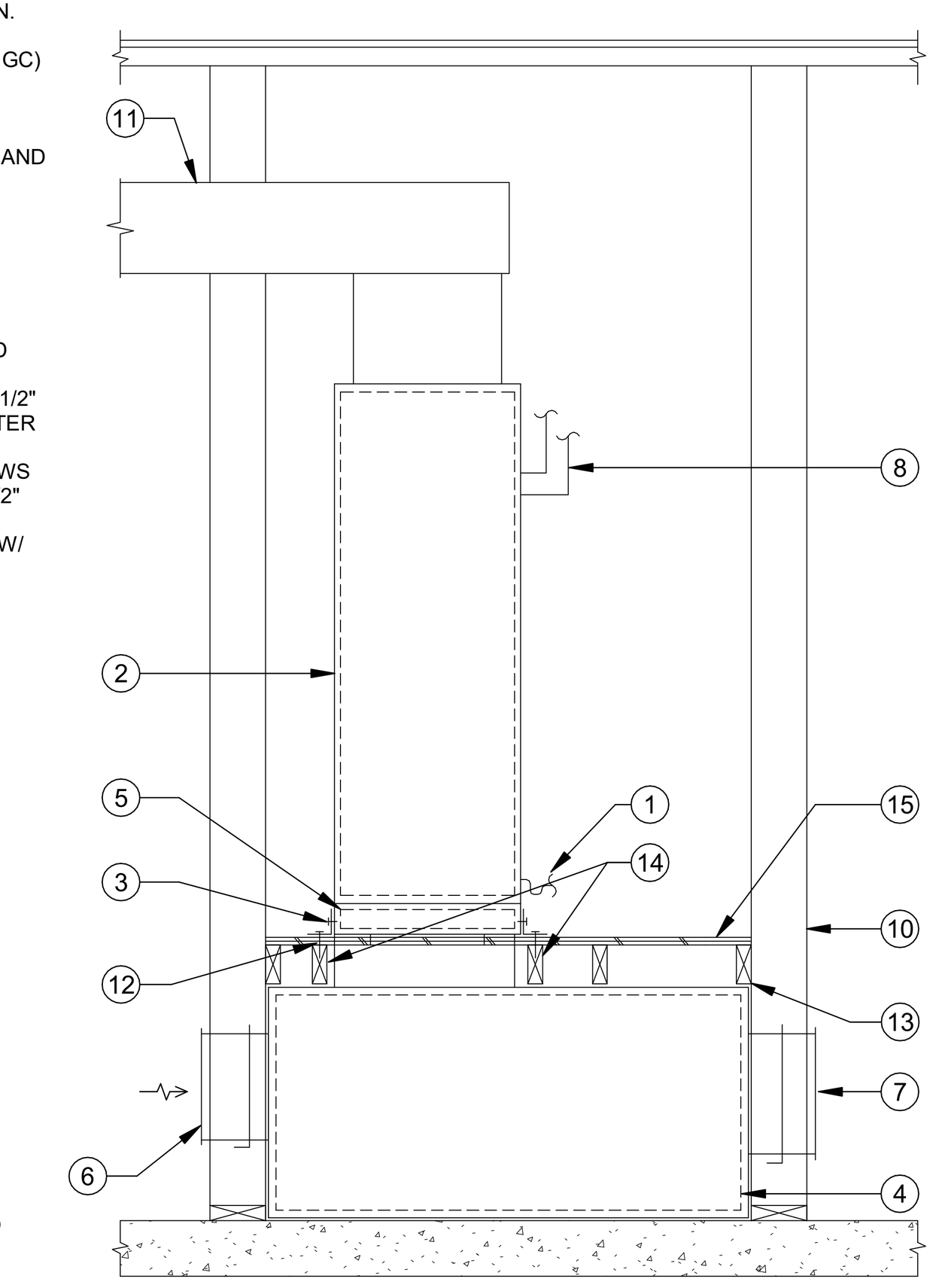
1. "PATE" MODEL PHA-2 24"x12" PIPE HOOD ASSEMBLEY WITH REMOVEABLE TOP COVER, FACE PLATE AND (3) SIDED BODY. REQUIRES ASSEMBLY AFTER INSTALLATION OF PIPING. CAULK ALL JOINTS/SEAMS WITH FLEXIBLE WATER PROOF SEALANT. FASTEN SEAMS WITH # 12 GALV. SMS AT 6" O.C.
2. REFRIGERANT PIPING PER MANUFACTURER.
3. MOUNTING BASE FURNISHED WITH PIPE HOOD ASSEMBLY.
4. SECURE HOOD TO MOUNTING BASE WITH 1/4" GALV. HEX HEAD SMS AT 12" O.C., MIN. (2) PER SIDE.
5. SECURE MOUNTING BASE TO CURB WITH 1/4" LAG SCREWS 12" O.C., MIN. (2) PER SIDE.
6. "PATE" MODEL PC-2 INSULATED ROOF CURB, 24"x12" x 12" HIGH.
7. CANT STRIP.
8. SECURE ROOF CURB TO BLOCKING WITH 1/4" LAG SCREWS WITH 2" MIN PENETRATION, 12" O.C., MIN (2) PER SIDE.
9. INFILL WITH (E) ROOF INSULATION REMOVED FOR ADDITION OF CURB.
10. 2x6 BLOCKING BETWEEN RAFTERS WITH "SIMPSON" HU46 HANGER EACH END.
11. 2x6 BLOCKING BETWEEN (N) BLOCKING WITH "SIMPSON" HU46 HANGER EACH END.
12. 1-5/8" "B-LINE" B22 CHANNEL SECURE TO BOTTOM OF BLOCKING WITH (2) 1/4" LAG SCREWS, MIN 2" PENETRATION.
13. "B-LINE" B1999 PIPE CLAMP WITH ISOLATOR CUSHION.



NOTE:
PIPE PENETRATION THROUGH FACE PLATE WILL NEED TO BE FIELD CUT.

REFRIGERANT PIPE PENETRATION AT ROOF | NTS | 4

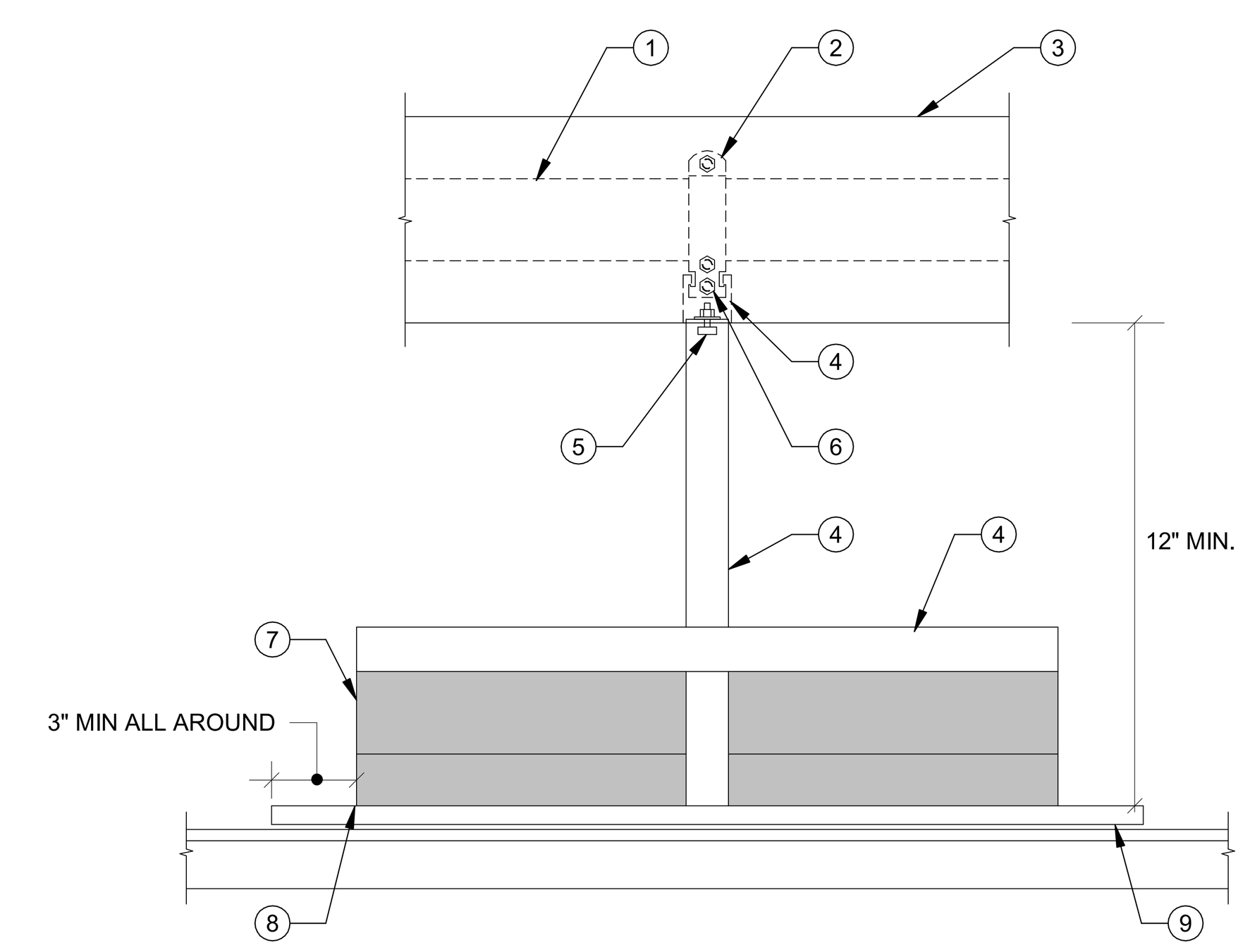
1. 3/4" CONDENSATE PIPING, SEE PLUMBING PLANS FOR ROUTING.
2. FAN COIL UNIT, SEE SCHEDULES.
3. 2"x2"x1/4" ANGLE IRON SUPPORT (2 SIDES), BOLT THRU UNIT W/ 3/8"ø x 2-1/2" SMS (3 MIN. PER SIDE).
4. (E) 24" HIGH FURNACE UNIT PLATFORM (BY GC) AND SHEET METAL MIXED AIR PLENUM.
5. BOTTOM INLET FILTER RACK BY FURNACE MFGR.
6. (E) RETURN AIR DUCT, SEE PLAN FOR SIZE AND ROUTING.
7. (E) OUTSIDE AIR LOUVER WITH VOLUME DAMPER.
8. LIQUID AND SUCTION REFRIGERANT LINES, ROUTE & SIZE PER MFGR.
9. 2x4 CONT TOP PL.
10. EXTERIOR WALL.
11. SUPPLY AIR DUCT, SEE PLAN FOR SIZE AND ROUTING.
12. SECURE ANGLE TO PLATFORM W/ 3/8"ø x 3-1/2" LONG LAG SCREWS (3 MIN. PER SIDE) CENTER ON WIDTH OF JOISTS.
13. JOIST ADJACENT TO WALL W/ (2) #12 SCREWS @ 16" OC MAX TO TOP PL OR STUDS W/ 1 1/2" MIN EMBED.
14. (E) 4x6 MINIMUM (V.I.F.) OR INSTALL (N) 4x6 W/ LUS46 HANGER INTO (E) LEDGER.
15. (E) PLATFORM.



NOTE:
1. INSTALL TO MAINTAIN ACCESS TO DAMPERS, ACTUATORS, FILTERS AND ACCESS DOORS.

FAN COIL MOUNTING | NTS | 1

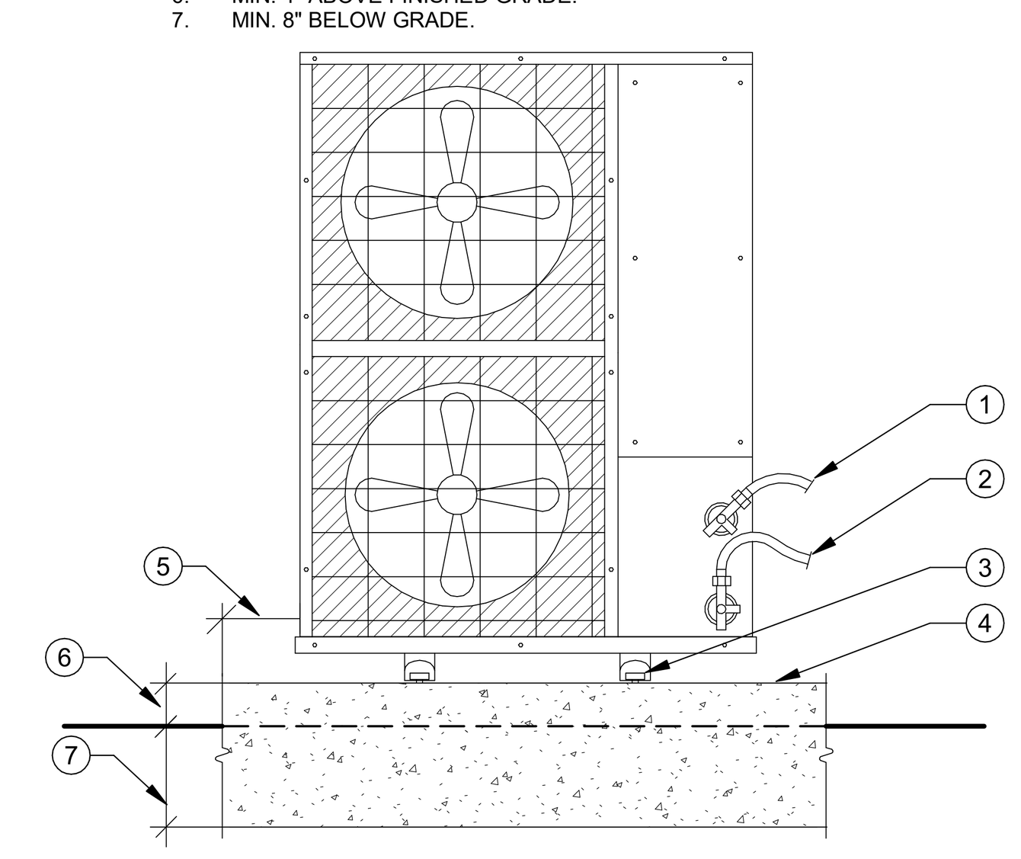
1. REFRIGERANT PIPING, TYP.
2. "B-LINE" B-2000 PIPE CLAMP.
3. 16 GA. GALV SHEET METAL COVER OVER REFRIGERANT LINES.
4. 1-5/8" GALV CHANNEL
5. SECURE ANGLE TO CHANNEL W/ SPRING NUT AND BOLT.
6. SECURE COVER TO ANGLE WITH (2) #10 TEK SCREWS (TYP.)
7. "B-LINE" DURABLOCK DBDS SUPPORT BASE W/ B22SH OR EQUAL. MIN 12" HIGH. LENGTH AS REQUIRED.
8. SET IN MASTIC ON WALK PAD.
9. 1/2" THICK TRAFFIC PAD, SPOT ADHERED IN ROOFING MASTIC. AT BUILT-UP ROOF, PROVIDE ROOFING MFRS ACCEPTABLE PAD & CEMENT PER MFRS RECOMMENDATIONS.



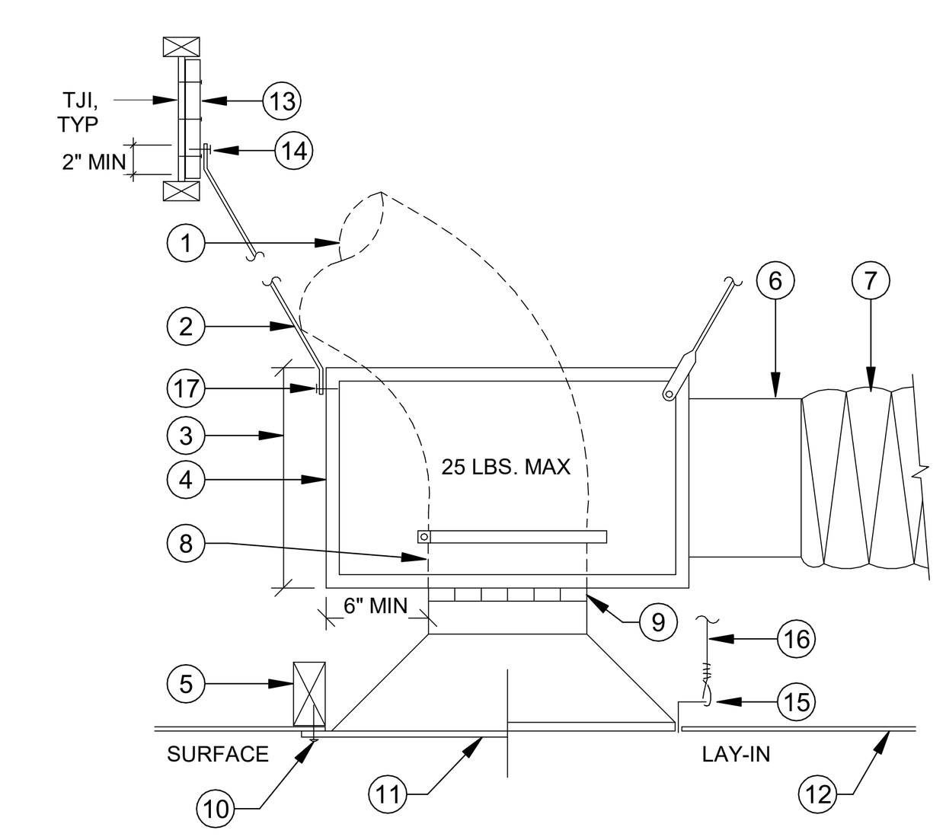
NOTES:
A. REFRIGERANT LINE SUPPORTS SPACED AT MAX. 5'-0" O.C.
B. 25 LB MAX LOAD PER REFRIGERANT LINE SUPPORT. BEARING CAPACITY OF SPECIFIED SUPPORT IS 500 LBS.

REFRIGERANT PIPING ON ROOF | NTS | 5

1. REFRIGERANT SUCTION LINE.
2. REFRIGERANT SUPPLY LINE.
3. 3/8"DIAMETER STAINLESS STEEL 'HILTI' TZ2 EXPANSION ANCHORS, ONE AT EACH CORNER, 2-5/16" NOMINAL EMBEDMENT, TYP. MIN. 6" FROM EDGE OF CONCRETE PAD.
4. 4" MIN CONCRETE PAD W/ #4 @ 12" O.C. EACH WAY, TOP AND BOTTOM BY GC (F'C = 3000 PSI MIN).
5. MIN. 6" ALL AROUND UNIT.
6. MIN. 4" ABOVE FINISHED GRADE.
7. MIN. 8" BELOW GRADE.



CONDENSING UNIT MOUNTING DETAIL | NTS | 2



1. ℄ OF ELBOW RADIUS MINIMUM 150% OF DUCT DIAMETER.
2. SUPPORT W/(4) 1-1/2 x 24 GA SHEET METAL STRAPS. SECURE STRAPS TO PLENUM & STRUCTURE ABOVE.
3. (BRANCH SIZE + 2") X (NECK SIZE +2")
4. CUSHIONHEAD BOX WITH MINIMUM 1" ACOUSTIC LINING.
5. 2x WOOD BLOCKING OR NAILER.
6. METAL SLEEVE OR SPIN-IN FITTING.
7. INSULATED FLEXIBLE AIR DUCT, SEE MECHANICAL PLAN FOR SIZE.
8. TRANSITION (AS REQUIRED).
9. AIR CONTROL GRID SET AT 90° TO AIR STREAM OR PLANE OF ELBOW. (WHERE APPLICABLE)
10. REGISTER SCREW, SECURE PER DIFFUSER MNFG. REQUIREMENTS.
11. TYPICAL SQUARE NECK SUPPLY, RETURN OR EXHAUST AIR DIFFUSER.
12. FINISHED CEILING, SEE ARCH. DRAWINGS.
13. 2x10 FILLER BLOCKING WITH (6) 10d BACK NAILED THRU WEB, TYP.
14. 1/4"øx1-1/4" LAG BOLT, @ 1" O.C. TYP. 2.
15. 90° ANGLE BRACKET WITH (2) HOLES, ATTACH TO LAY-IN DIFFUSER/GRILLE WITH #12x3/4" SM SCREW. PROVIDE # 10 SCREWS TO CEILING RUNNER, (2) EACH SIDE MIN.
16. (1) 12 GA. WIRE PER IR 25-2.19 SECTION 1.8.2, ATTACHED TO STRUCTURE , WITH 1/4"ø EYE BOLT WITH 1-1/2" MIN PENETRATION INTO 2x RAFTERS ABOVE.
17. #12x3/4" SM SCREW (TYP).

NOTES:
1. WHERE FULL 150% ℄ RADIUS IS NOT POSSIBLE. THE CUSHIONHEAD IS REQ'D.
2. VERIFY CEILING TYPE, PROVIDE APPROPRIATE DIFFUSER FRAME & INSTALLATION.

DIFFUSER / GRILLE MOUNTING | NTS | 6

DIMENSION OF LONGEST SIDE, INCHES	SHEET METAL GAGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1) AT JOINTS: MIN. HT. IN.	DRIVE SLIP / PLAIN S SLIP RECOM-MENDED GAGE	HEMMED S SLIP RECOM-MENDED GAGE	ALTER'N T BAR SLIP RECOM-MENDED GAGE	REIN-FROCED BAR SLIP RECOM-MENDED GAGE
UP THRU 12	26	NONE REQUIRED	1	26	26	24	24
13 - 18	24	NONE REQUIRED	1	24	24	24	24
19 - 30	24	1" x 1" x 1/8" @ 60 IN.	1		24	24	24
31 - 42	22	1" x 1" x 1/8" @ 60 IN.	1			22	22

(1) TRANSVERSE REINFORCING SIZE IS DETERMINED BY DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

DUCT CONSTRUCTION STANDARDS | NTS | 3

AGENCY APPROVAL:
DSA # 01-121954
FILE # 21-39

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Δ DESCRIPTION DATE

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SAN RAFAEL, CA 94901

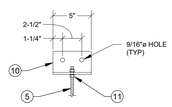
PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
MECHANICAL DETAILS

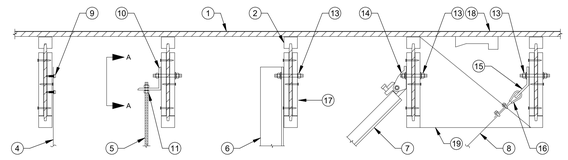
DSA SUBMITTAL

DATE: 2024.10.01
CLIENT PROJ NO:
SHEET:
M10.11

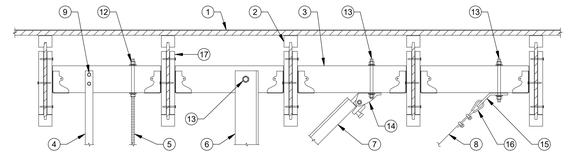
1. FLOOR/ROOF, SEE STRUCTURAL DRAWINGS.
2. FLOOR/ROOF FRAMING, SEE STRUCTURAL DRAWINGS.
3. 4x4 BLOCKING BETWEEN JOISTS W/ U44 HANGERS AT EACH END, TYP.
4. 1" x 20 GA. GALV. SHEET METAL STRAP
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
6. 3"x3"x1/4" GALVANIZED STEEL ANGLE.
7. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
8. 3/32"ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7x19 STRAND CORE.
9. (2) #12 x 2" WOOD SCREWS, 2" O.C. MIN.
10. 3"x3"x1/4" x 5" LONG GALVANIZED STEEL ANGLE, ATTACH TO FRAMING WITH (2) 1/2"ø BOLTS OR THREADED ROD WITH NUTS AND WASHER.
11. NUT, TOP AND BOTTOM.
12. NUT AND WASHER, TOP AND BOTTOM.
13. 3/8"ø THREADED ROD THROUGH SUPPORT MEMBER WITH NUT AND WASHER EA END, 6" MIN TO END OF JOIST.
14. UNIVERSAL SWAY BRACE UPPER ATTACHMENT, B-LINE TOLCO FIG. 980 OR EQUAL.
15. 2"x3"x1/4" x 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL.
16. CABLE THIMBLE AND CABLE CLIPS.
17. 2x WEB STIFFENER FILLER BLOCKING, BOTH SIDES OF TJI WITH (6) 10d NAILS, (3) EACH SIDE. INSTALL FILLER BLOCKING AND NAILS PER ICC ESR-2994, TYP.
18. A35 W/ #6 x 1/2" WOOD SCREW INTO EXISTING ROOF PLY.
19. 2x FULL DEPTH BLOCKING W/ HU HANGER EA END 6" MAX FROM BRACE ATTACHMENT.



VIEW A-A



AT FRAMING MEMBERS

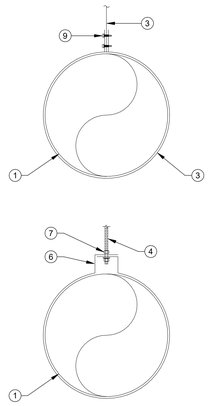


BETWEEN FRAMING MEMBERS

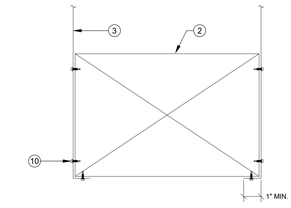
HANGER UPPER ATTACHMENTS	NTS	1

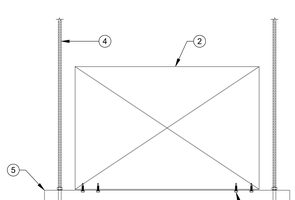
1. ROUND DUCT, SEE PLAN FOR SIZE AND ROUTING.
2. RECTANGULAR DUCT, SEE PLAN FOR SIZE AND ROUTING.
3. 1" x 20 GA. GALV. SHEET METAL STRAP.
4. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
5. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
6. 1" x 20 GA GALV. SHEET METAL STRAP WITH 3"x2" HIGH FLANGE.
7. NUT AND WASHER, TOP AND BOTTOM.
8. NUT, TOP AND BOTTOM WITH UNISTRUT SQUARE WASHER, B-LINE MODEL B201ZN OR EQUAL.
9. (2) #10 TEK SCREWS.
10. (3) #10 TEK SCREWS, EA SIDE.
11. (2) #10 TEK SCREWS, EA SIDE.

NOTES:
A. HANGER SPACING TO BE AT MAXIMUM 8FT O.C.
B. DUCTWORK WITH A CROSS-SECTIONAL AREA OF LESS THAN 6 SQUARE FEET AND WEIGHT OF 20 LBs/FT OR LESS DO NOT REQUIRE SEISMIC BRACING PER CBC SECTION 1617A.1.25 AND ASCE 7, SECTION 13.6.6 (EXCEPTION 2)



ROUND DUCT





RECTANGULAR DUCT

DUCT HANGERS (<6 SF & <=20 PLF)	NTS	2

AGENCY APPROVAL:

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DATE: **2024.10.01**

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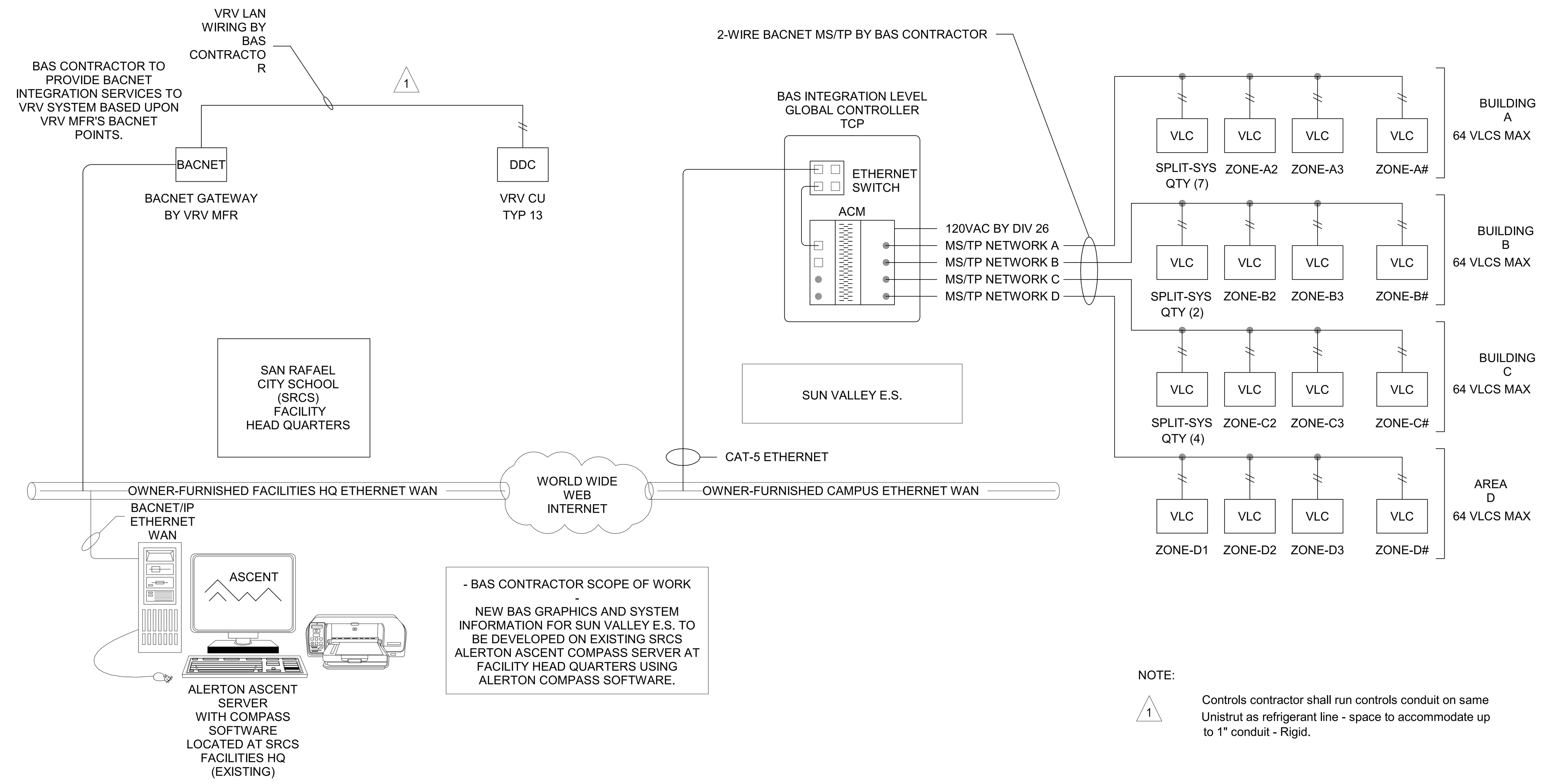
M10.12



NOTE:

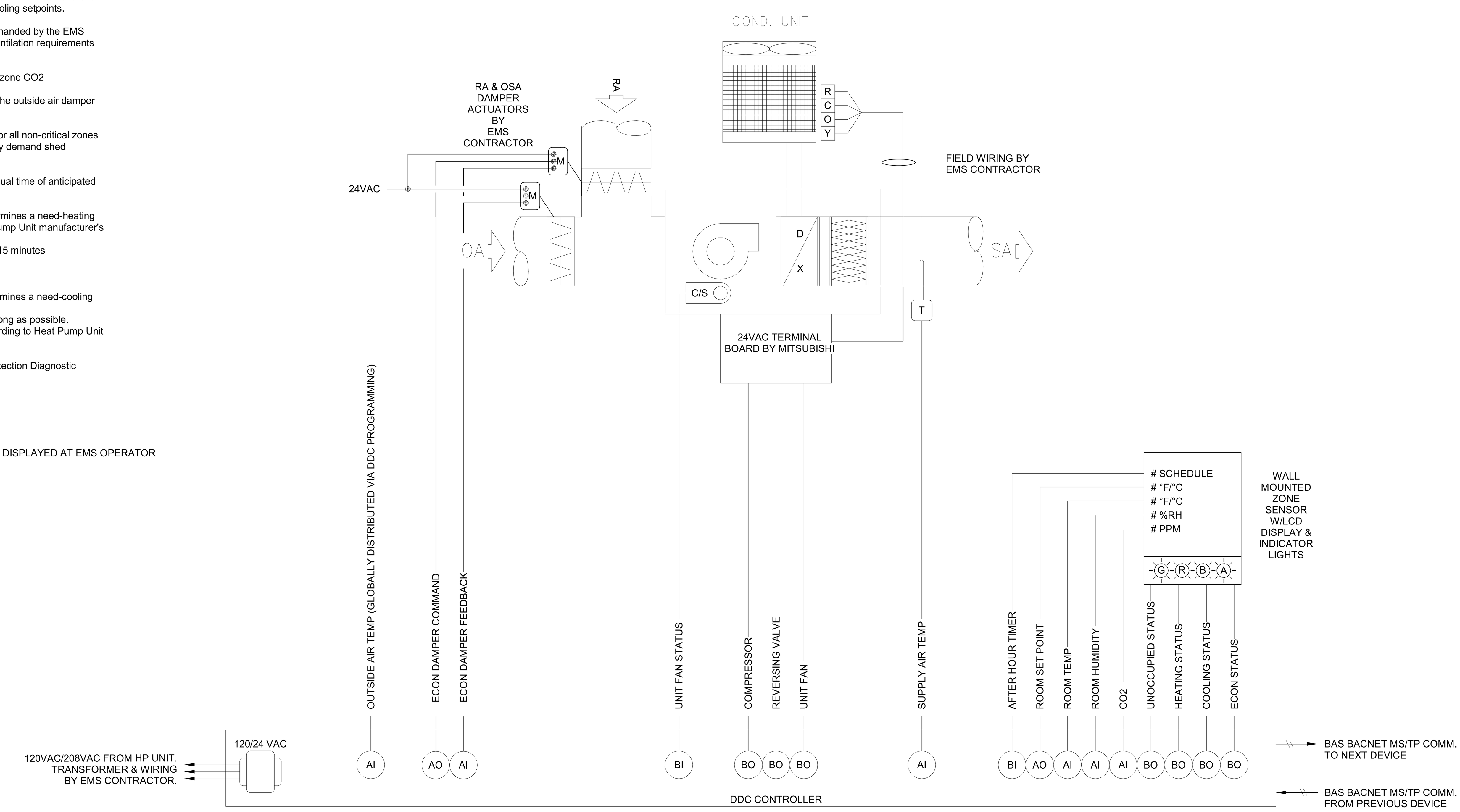
1 Controls contractor shall run controls conduit on same Unistrut as refrigerant line - space to accommodate up to 1" conduit - Rigid.

1 ALERTON BACNET BAS SYSTEM - NETWORK ARCHITECTURE

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

HEAT PUMP UNIT WITH ECONOMIZER, DEMAND CONTROL VENTILATION

1. SYSTEM OVERVIEW
a. Each Heat Pump unit will be directly controlled by its own dedicated EMS (Energy Management System) unitary controller.
b. EMS unitary controller will be connected to a wall mounted electronic zone temperature sensor with integral relative humidity sensor and CO2 sensor.
c. Electronic zone temperature sensor shall have a touch screen LCD interface which includes: 1) digital pushbuttons for warmer/cooler setpoint control; 2) visual display of room temperature, room humidity, room CO2 and ambient OSA temperature; and 3) digital pushbutton after-hours override timer control, with user adjustable duration. The after-hours override duration shall have the ability to be limited from the front-end.
2. UNIT FAN OPERATION
b. When the zone is in Occupied Mode or in Afterhours Mode, the fan shall run continuously, unless Vacant Mode has been triggered.
c. During the Unoccupied Mode as determined by EMS time schedule, the unit fan cycles with demand and the temperature is controlled by the unoccupied space temperature heating and cooling setpoints.
3. Minimum Outdoor Air Ventilation
a. During Occupied Mode or Afterhours Mode, the economizer damper shall be commanded by the EMS unitary controller to maintain a position which satisfies the Minimum Outdoor Air ventilation requirements for the zone. Damper position(s) determined by Air Balancing Contractor.
4. DEMAND CONTROL VENTILATION
a. EMS unitary controller will be connected to a wall mounted CO2 sensor to monitor zone CO2 concentration.
b. During Occupied Mode or Afterhours Mode, the EMS unitary controller shall reset the outside air damper minimum position to maintain the CO2 concentration below 600 ppm.
5. AUTOMATIC DEMAND REDUCTION CONTROLS
a. EMS shall be programmed with capability to implement centralized demand shed for all non-critical zones upon call for Automatic Demand Reduction. Critical zones shall not be impacted by demand shed conservation measures.
6. ZONE PRE-OCCUPANCY PURGE
g. The EMS shall schedule the zone to be in Occupied Mode one hour prior to the actual time of anticipated occupancy.
7. HEATING OPERATION
a. The controller compares the heating setpoint with the space temperature and determines a need-heating control signal to engage the compressor and reversing valve (according to Heat Pump Unit manufacturer's instruction for heating cycle) to maintain the room set point.
b. If further heating is required after compressor/reversing valve heating is active for 15 minutes (adjustable), engage auxiliary electric heat.
c. Economizer to be commanded to Min CFM setpoint during heating mode.
8. COOLING OPERATION
a. The controller compares the cooling setpoint with the space temperature and determines a need-cooling signal.
b. The first stage of cooling will enable the economizer to provide free cooling for as long as possible.
c. The second stage of cooling will enable the compressor and reversing valve (according to Heat Pump Unit manufacturer's instruction for cooling cycle) to maintain the room set point.
9. FAULT DETECTION DIAGNOSTICS
k. The EMS DDC Controller shall monitor the following economizer actuator Fault Detection Diagnostic conditions and broadcast results via EMS network:
- Temperature Sensor Failure/Fault
- Economizer not economizing when enabled
- Economizer economizing when disabled
- Economizer damper modulation failure
- Excess outdoor air
10. MONITORING - THE FOLLOWING CONDITIONS SHALL BE MONITORED AND DISPLAYED AT EMS OPERATOR Workstation/Graphical User Interface:
a. Supply air temperature.
b. Room temperature.
c. Room humidity.
d. Room CO2 concentration.
e. Current mode (heating/cooling/fan).
f. Supply air temperature attained last time unit was in heating.
g. Supply air temperature attained last time unit was in cooling.
h. Current command status of fan, compressor, reversing valve and aux heat.
i. Run time meters on fan, compressor, reversing valve and aux heat.
j. Fan Status thru Current Switch.
k. Economizer actuator feedback status.



2 HEAT PUMP UNIT W/ DEMAND CONTROL VENTILATION

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

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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SHEET NAME:

MECHANICAL CONTROLS

DSA SUBMITTAL

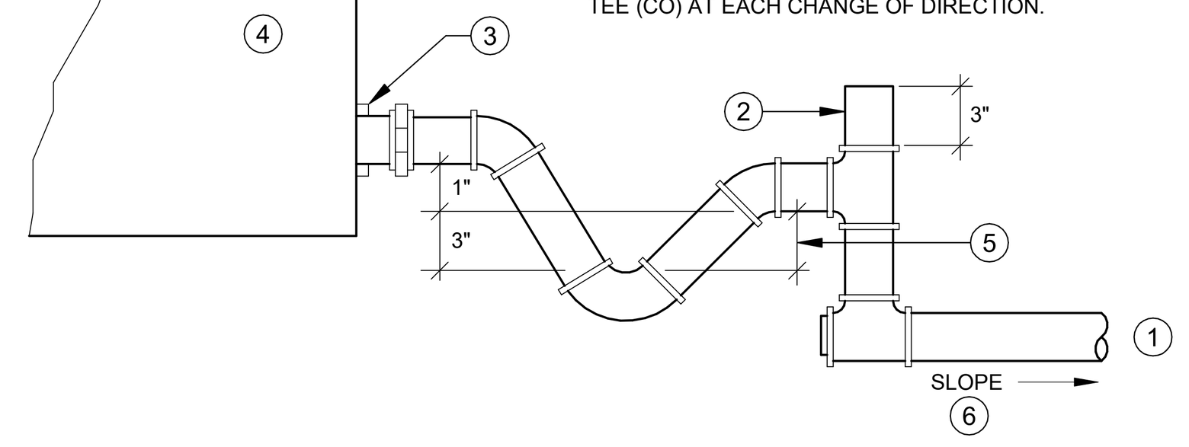
DATE: 2024.10.01

CLIENT PROJ NO:

SHEET:

M10.13

PLEASE RECYCLE



1. SEE PLAN FOR CONTINUATION.
2. OPEN TEE.
3. CONNECTION TO DRAIN STUB. NEOPRENE COVERED HOSE AT UNITS MOUNTED ON VIBRATION ISOLATERS NIPPLES & UNION AT ALL OTHERS.
4. MECH. EQUIPMENT CASING.
5. DEEP TRAP SEAL. MAKE UP TRAP OUT OF NIPPLES AND FITTINGS. DELETE IF UNIT IS EQUIPED WITH AN INTERNAL TRAP.
6. SLOPE HORIZONTAL LINE 1/8" PER FOOT (MIN) PLUG TEE (CO) AT EACH CHANGE OF DIRECTION.

CONDENSATE DRAIN CONNECTION | NTS | 3

PIPE HANGER SCHEDULE

MATERIALS	TYPES OF JOINTS	HORIZONTAL	VERTICAL
CAST-IRON HUBLESS	CAST-IRON HUBLESS	EVERY OTHER JOINT, UNLESS OVER 4 FEET THEN SUPPORT EACH JOINT; NOTES 1,2,3,4	BASE AND EACH FLOOR, NOT TO EXCEED 15 FEET
COPPER TUBE AND PIPE	SOLDERED OR BRAZED	1-1/2 INCHES AND SMALLER, 6 FEET; 2 INCHES AND LARGER, 10 FEET	EACH FLOOR, NOT TO EXCEED 10 FEET; NOTE 5
STEEL PIPE FOR GAS	THREADED OR WELDED	1/2 INCH, 6 FEET; 3/4 INCH AND 1 INCH, 8 FEET; 1-1/4 INCHES AND LARGER, 10 FEET; NOTE 7	1/2 INCH, 6 FEET; 3/4 INCH AND 1 INCH, 8 FEET; 1-1/4 INCHES AND LARGER, EVERY FLOOR; NOTE 7
SCHEDULE 40 PVC AND ABS DWV	SOLVENT CEMENTED	ALL SIZES, 4 FEET; ALLOW FOR EXPANSION EVERY 30 FEET; NOTES 3,6	BASE AND EACH FLOOR; PROVIDE MID-STORY GUIDES; PROVIDE FOR EXPANSION EVERY 30 FEET; NOTE 6
CPVC	SOLVENT CEMENTED	1 INCH AND SMALLER, 3 FEET; 1-1/4 INCHES AND LARGER, 4 FEET	BASE AND EACH FLOOR; PROVIDE MID-STORY GUIDES; NOTE 6
PEX	COLD EXPANSION, INSERT AND COMPRESSION	1 INCH AND SMALLER, 32 INCHES; 1-1/4 INCHES AND LARGER, 4 FEET	BASE AND EACH FLOOR; PROVIDE MID-STORY GUIDES
POLYPROPYLENE (PP)	FUSION WELD	1 INCH AND SMALLER, 32 INCHES; 1-1/4 INCHES AND LARGER, 4 FEET	BASE AND EACH FLOOR; PROVIDE MID-STORY GUIDES

NOTES:
1. HANGER SPACING PER CPC TABLE 313.3.
2. SEISMIC BRACING SPACING NOT TO EXCEED 40FT O.C. AND 2FT FROM CHANGES IN DIRECTION.
3. SEISMIC BRACING IS NOT REQUIRED FOR THE FOLLOWING CONDITIONS PER CBC 1617A.1.26 AND ASCE 7, SECTION 13.6.7.3 (EXCEPTION 2):
   A. PIPING CONTAINING HAZARDOUS CONTENTS (EX: NATURAL GAS, PROPANE, MEDICAL GASES) WITH AN Ip>1.0 WHERE:
      a. PIPE SIZE IS 1" OR LESS, AND
      b. PIPE IS SUPPORTED BY INDIVIDUAL HANGER NOT EXCEEDING 12", AND
      c. TOTAL WEIGHT SUPPORTED BY INDIVIDUAL HANGER IS 50 POUNDS OR LESS.
   B. ALL OTHER PIPING NOT CONTAINING HAZARDOUS CONTENTS WITH AN Ip=1.0 WHERE:
      a. PIPE SIZE IS 3" OR LESS, AND
      b. PIPE IS SUPPORTED BY INDIVIDUAL HANGER NOT EXCEEDING 12", AND
      c. TOTAL WEIGHT SUPPORTED BY INDIVIDUAL HANGER IS 50 POUNDS OR LESS.
4. SUPPORT ADJACENT TO JOINT, NOT TO EXCEED 18".
5. SUPPORT AT EACH HORIZONTAL BRANCH CONNECTION.
6. HANGERS SHALL NOT BE PLACED ON THE COUPLING.
7. SEE THE APPROPRIATE IAPMO INSTALLATION STANDARD FOR EXPANSION AND OTHER SPECIAL REQUIREMENTS.

HANGER ROD SIZING

PER 2022 CPC TABLE 313.6

PIPE AND TUBE SIZE (IN)	ROD SIZE (IN)
1/2"ø - 4"ø	3/8"ø
5"ø - 8"ø	1/2"ø
10"ø -12"ø	5/8"ø

EQUIPMENT ANCHORAGE NOTES

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.1.17 THROUGH 1617A.1.20 & 1617A.1.23 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 ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

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 THROUGH 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., 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 THE APPLICABLE HCAI PRE-APPROVAL (OPM#) #0043-13.

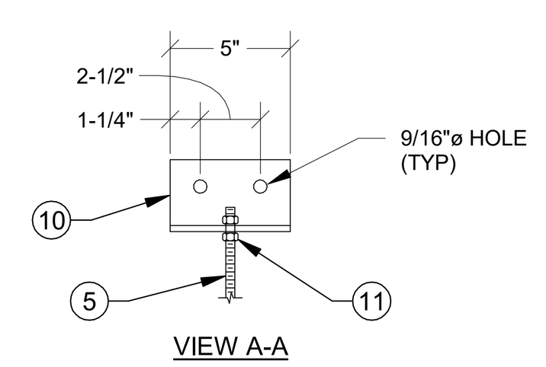
PLUMBING SPECIFICATIONS

1. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
   A. 2022 CALIFORNIA BUILDING CODE
   B. 2022 CALIFORNIA MECHANICAL CODE
   C. 2022 CALIFORNIA PLUMBING CODE
   D. 2022 CALIFORNIA ELECTRICAL CODE
   E. 2022 CALIFORNIA GREEN BUILDING STANDARDS
   F. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS - TITLE 24
   G. NATIONAL FIRE PROTECTION ASSOCIATION
   H. CALIFORNIA STATE FIRE MARSHAL
2. DRAWINGS ARE SCHEMATIC AND DIAGRAMMATIC. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT, PIPING, AND OTHER PLUMBING WORK. USE JUDGEMENT AND CARE TO INSTALL PLUMBING WORK TO FIT THE JOB CONDITIONS WITHIN THE BUILDING CONSTRUCTION AND FINISHES, AND TO FUNCTION PROPERLY.
3. CONTRACTOR SHALL EXAMINE THE SITE, VERIFY DIMENSIONS AND LOCATIONS WITH DRAWINGS, CHECK UTILITY CONNECTION LOCATIONS, AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND LIMITATIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF THE CONTRACTOR'S MISUNDERSTANDING OF THE AMOUNT OF WORK INVOLVED OR HIS LACK OF KNOWLEDGE OF ANY SITE CONDITION WHICH MAY AFFECT HIS WORK. ANY APPARENT VARIANCE OF THE DRAWINGS OR SPECIFICATIONS FROM THE EXISTING CONDITIONS AT THE SITE SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL ORGANIZE HIS WORK SO THAT THE PROGRESS OF THE PLUMBING WORK WILL CONFORM TO THE PROGRESS OF THE OTHER TRADES, AND SHALL COMPLETE THE ENTIRE INSTALLATION AS SOON AS THE CONDITIONS OF THE BUILDING WILL PERMIT. ANY COST RESULTING FROM DEFECTIVE OR ILL TIMED WORK PERFORMED UNDER THIS SECTION SHALL BE BORNE BY THIS CONTRACTOR.
5. THE WORK SHALL ALSO INCLUDE THE COMPLETION OF DETAILS OF PLUMBING WORK NOT MENTIONED OR SHOWN WHICH ARE NECESSARY FOR THE SUCCESSFUL OPERATION OF PLUMBING SYSTEMS DESCRIBED ON THE DRAWINGS OR REQUIRED BY THESE SPECIFICATIONS. FURNISH AND INSTALL ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED WHICH IS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
6. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.
7. THE PLUMBING CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF PLUMBING EQUIPMENT.
8. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.
9. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.
10. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS PLUMBING COMPONENTS OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.
11. CHECK ALL SYSTEMS FOR LEAKS AND EXCESSIVE NOISE. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER THAT THE SYSTEM IS FUNCTIONING PROPERLY.
12. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
13. PLUMBING EQUIPMENT AND PIPING SHALL NOT BE WITHIN ELECTRICAL OR LOW VOLTAGE EQUIPMENT DEDICATED SPACE. NO PIPING WILL BE ALLOWED ABOVE EQUIPMENT'S DEDICATED SPACE.
14. ALL EXPOSED MATERIAL SHALL BE PREPARED WITH A PRIME COAT AND THEN PAINTED, COLOR BY ARCHITECT.
15. NEW BUILDINGS 10,000 SQUARE FEET AND ABOVE TO BE COMMISSIONED PER REQUIREMENTS LISTED IN CALGREEN SECTION 5.410.2.
16. ADHESIVES, SEALANTS AND CAULKS USED ON THE PROJECT SHALL MEET THE REQUIREMENTS LISTED IN CALGREEN SECTION 5.504.4.1.
17. FOR NEW BUILDINGS IN EXCESS OF 50,000 SQUARE FEET, OR WATER CONSUMPTION IN EXCESS OF 1,000 GAL/DAY, PROVIDE WATER SUB-METERS AS REQUIRED PER CALGREEN SECTION 5.303.1.1.
18. PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH WATER CONSERVING REQUIREMENTS LISTED IN CALGREEN SECTION 5.303.3.
19. COORDINATE ALL NEW OR CHANGING UTILITY SERVICES WITH UTILITY PROVIDER AS SOON AS POSSIBLE. ANY COST RESULTING FROM WORK PERFORMED PRIOR TO COORDINATING WITH UTILITY COMPANY WHICH DOES NOT COMPLY WITH UTILITY COMPANY REQUIREMENTS SHALL BE BORNE BY THIS CONTRACTOR.
20. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, FIXTURE MOUNTING HEIGHTS AND CBC ACCESSIBILITY REQUIREMENTS.

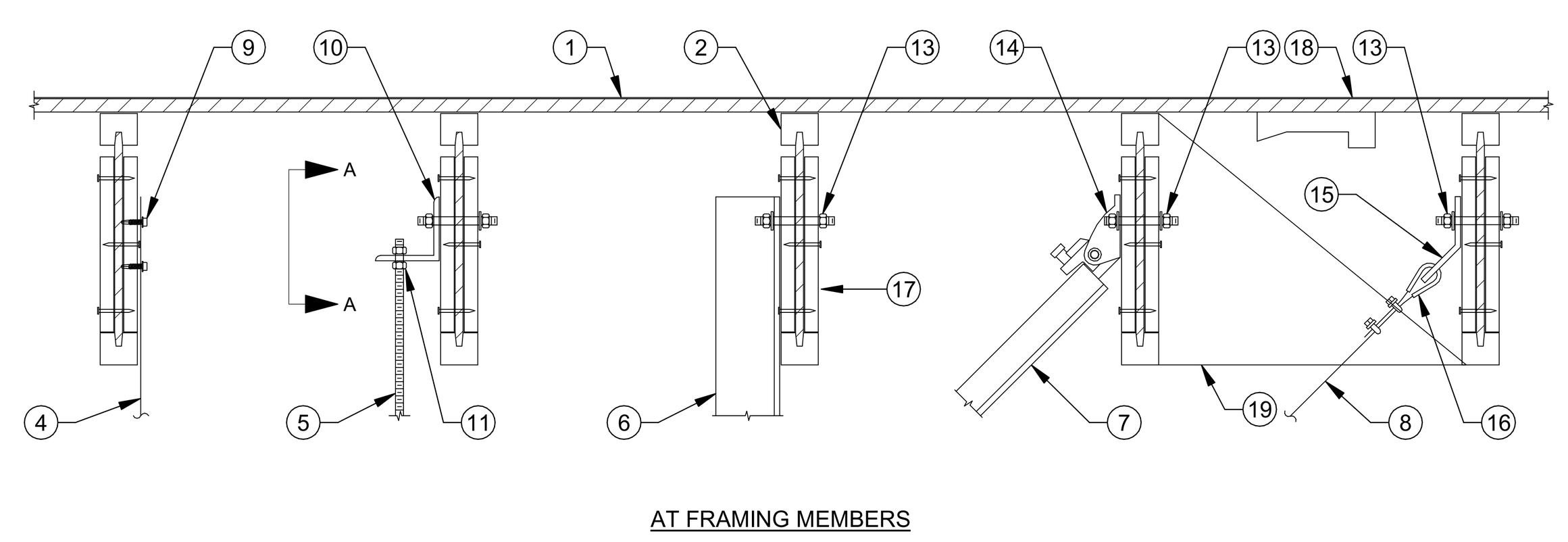
PLUMBING LEGEND

SYMBOL	ITEM	ABBR.
WH / 1	EQUIPMENT DESIGNATION / UNIT ABBREVIATION; NUMBER	
WC-1	FIXTURE DESIGNATION / UNIT ABBREVIATION; NUMBER	
1 / P-1	DETAIL DESIGNATION; DETAIL NUMBER; SHEET NO. WHERE SHOWN	
	DOMESTIC COLD WATER	CW
	DOMESTIC HOT WATER	HW
	DOMESTIC HOT WATER RETURN	HWR
V	VENT	V
G	GAS	G
MG	MEDIUM PRESSURE GAS	MG
LPG	LIQUID PROPANE GAS	LPG
S	SEWER	S
GW	GREASE WASTE	GW
AV	ACID VENT	AV
AW	ACID WASTE	AW
SD	STORM DRAIN	SD
RD	ROOF DRAIN	RD
OD	OVERFLOW DRAIN	OD
C	CONDENSATE DRAIN	C
SCD	SECONDARY CONDENSATE DRAIN	SCD
T&P	TEMPERATURE & PRESSURE RELIEF	T&P
D	DRAIN	D
FS	FIRE SPRINKLER	FS
	PIPE CAP	
	PIPE RISER / DROP	(R)/(D)
	SHUT-OFF VALVE IN BOX	SOV
FCO	FLOOR CLEANOUT	FCO
COTG	CLEANOUT TO GRADE	COTG
	WALL CLEANOUT	WCO
	CLEANOUT	CO
	HOSE BIBB	HB
	OVERFLOW DRAIN OUTLET	
	BALL VALVE	BV
	GATE VALVE	GV
	CHECK VALVE	CHK.V
	MIXING VALVE	TMV
	SHUT-OFF COCK	SOC
	CIRCULATION PUMP	CP
	BALANCING VALVE	BLV
	TRAP PRIMER	TP
	PRESSURE REDUCING VALVE	PRV
	GAS PRESSURE REGULATOR	GPR
EV	AUTOMATIC EARTHQUAKE VALVE	EV
	TYPICAL	(TYP)
	VENT THRU ROOF	VTR
	UNDERGROUND	UG
	UNDER FLOOR	UF
	ABOVE CEILING	AB.C.
	TO ABOVE / BELOW	TA / TB
	FROM ABOVE / BELOW	FA / FB
	CONTINUATION	CONT.
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD / POC
	DEMOLISHED/DEMO	

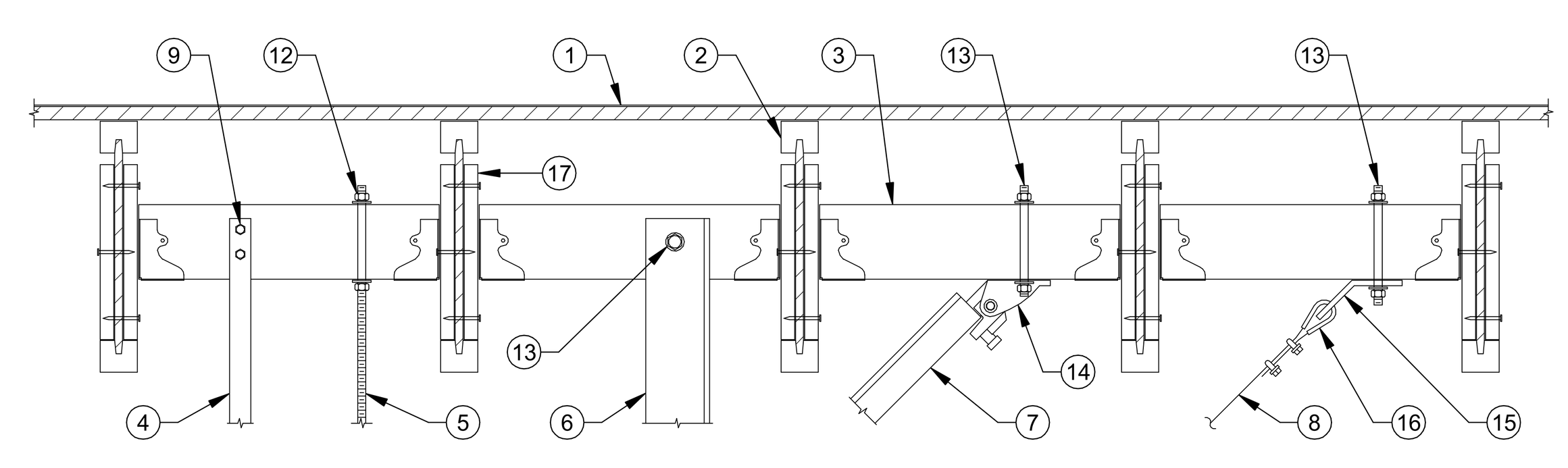
1. FLOOR/ROOF, SEE STRUCTURAL DRAWINGS.
2. FLOOR/ROOF FRAMING, SEE STRUCTURAL DRAWINGS.
3. 4x4 BLOCKING BETWEEN JOISTS W/ U44 HANGERS AT EACH END, TYP.
4. 1" x 20 GA. GALV. SHEET METAL STRAP
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
6. 3"x3"x1/4" GALVANIZED STEEL ANGLE.
7. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
8. 3/32"ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7x19 STRAND CORE.
9. (2) #12 x 2" WOOD SCREWS, 2" O.C. MIN.
10. 3"x3"x1/4" x 5" LONG GALVANIZED STEEL ANGLE, ATTACH TO FRAMING WITH (2) 1/2"ø BOLTS OR THREADED ROD WITH NUTS AND WASHER.
11. NUT, TOP AND BOTTOM.
12. NUT AND WASHER, TOP AND BOTTOM.
13. 3/8"ø THREADED ROD THROUGH SUPPORT MEMBER WITH NUT AND WASHER EA END, 6" MIN TO END OF JOIST.
14. UNIVERSAL SWAY BRACE UPPER ATTACHMENT, B-LINE TOLCO FIG. 980 OR EQUAL.
15. 2"x3"x1/4" x 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL.
16. CABLE THIMBLE AND CABLE CLIPS.
17. 2x WEB STIFFENER FILLER BLOCKING, BOTH SIDES OF TJI WITH (6) 10d NAILS, (3) EACH SIDE, INSTALL FILLER BLOCKING AND NAILS PER ICC ESR-2994, TYP.
18. A35 W/ #6 x 1/2" WOOD SCREW INTO EXISTING ROOF PLY.
19. 2x FULL DEPTH BLOCKING W/ HU HANGER EA END 6" MAX FROM BRACE ATTACHMENT.



VIEW A-A



AT FRAMING MEMBERS



BETWEEN FRAMING MEMBERS

HANGER UPPER ATTACHMENTS | NTS | 1

1. PIPE, SEE PLAN FOR SIZE AND ROUTING.
2. PIPE INSULATION WHERE APPLICABLE, SEE SPECIFICATIONS. PROVIDE INSULATION PROTECTION SADDLE, MIN. 12" LONG, B-LINE B3151 OR EQUAL. MAY BE SUBSTITUTED FOR PRE-INSULATED CALCIUM SILICATE SHIELD SUPPORT, B-LINE B338 OR EQUAL.
3. STANDARD CLEVIS PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3100 OR EQUAL.
4. ADJUSTABLE 'J' PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3690 OR EQUAL.
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
6. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
7. ROD STIFFENER, B-LINE TOLCO MODEL 98B OR EQUAL, MIN. 1" FROM TOP AND BOTTOM OF UNISTRUT AND MAX. 28" O.C., TORQUE TO 10 FT-LBS.
8. 3/32"ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7x19 STRAND CORE.
9. 2"x3"x1/4" X 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL.
10. CABLE THIMBLE AND CABLE CLIPS.
11. NUT AND WASHER, TOP AND BOTTOM.
12. NUT, TOP AND BOTTOM WITH UNISTRUT SQUARE WASHER, B-LINE MODEL B201ZN OR EQUAL.
13. PIPE CLAMP, B-LINE SERIES B2000 OR EQUAL.
14. LENGTH FROM PIPE SUPPORT POINT TO THE CONNECTION AT T HE SUPPORTING STRUCTURE NOT TO EXCEED 12".

NOTES:
A. HANGER SPACING PER CPC TABLE 313.3.
B. SEISMIC BRACING SPACING NOT TO EXCEED 40FT O.C. AND 2FT FROM CHANGES IN DIRECTION.
C. SEISMIC BRACING IS NOT REQUIRED FOR THE FOLLOWING CONDITIONS PER CBC 1617A.1.26 AND ASCE 7, SECTION 13.6.7.3 (EXCEPTION 2):
   a. PIPING CONTAINING HAZARDOUS CONTENTS (EX: NATURAL GAS, PROPANE, MEDICAL GASES) WITH AN Ip>1.0 WHERE:
      1. PIPE SIZE IS 1" OR LESS, AND
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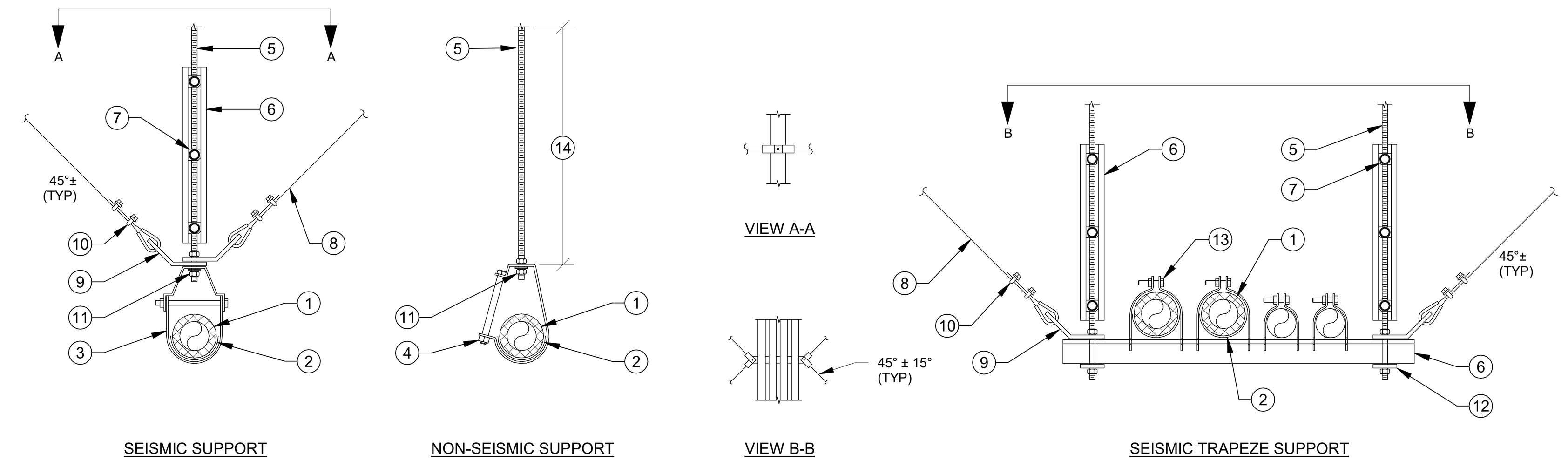
      3. TOTAL WEIGHT SUPPORTED BY INDIVIDUAL HANGER IS 50 LBS OR LESS.
   b. ALL OTHER PIPING NOT CONTAINING HAZARDOUS CONTENTS WITH AN Ip=1.0 WHERE:
      1. PIPE SIZE IS 3" OR LESS, AND
      2. PIPE IS SUPPORTED BY INDIVIDUAL HANGER NOT EXCEEDING 12", AND
      3. TOTAL WEIGHT SUPPORTED BY INDIVIDUAL HANGER IS 50 LBS OR LESS.
D. PROVIDE ROD STIFFENERS ONLY WHERE ROD LENGTH FROM SEISMIC BRACING TO UPPER ATTACHMENT EXCEEDS 18".



SEISMIC SUPPORT — NON-SEISMIC SUPPORT — VIEW B-B — SEISMIC TRAPEZE SUPPORT

PIPE HANGER DETAIL | NTS | 2

PLUMBING SHEET INDEX

AGENCY APPROVAL:
DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-004-000
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER
JASON DEDORA
M 34661
REN. 12-31-23
MECHANICAL
STATE OF CALIFORNIA

FACILITY:
75 HAPPY LN
SAN RAFAEL, CA 94901

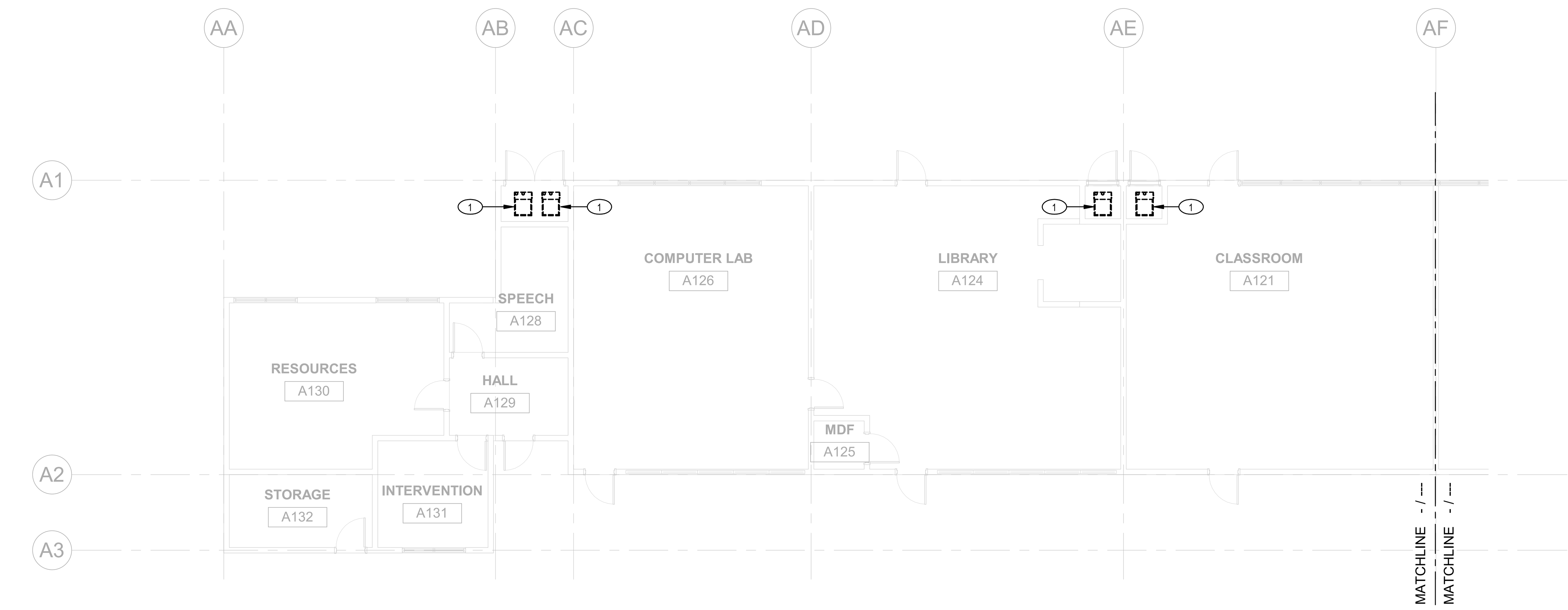
PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
PLUMBING LEGEND AND NOTES

DSA SUBMITTAL

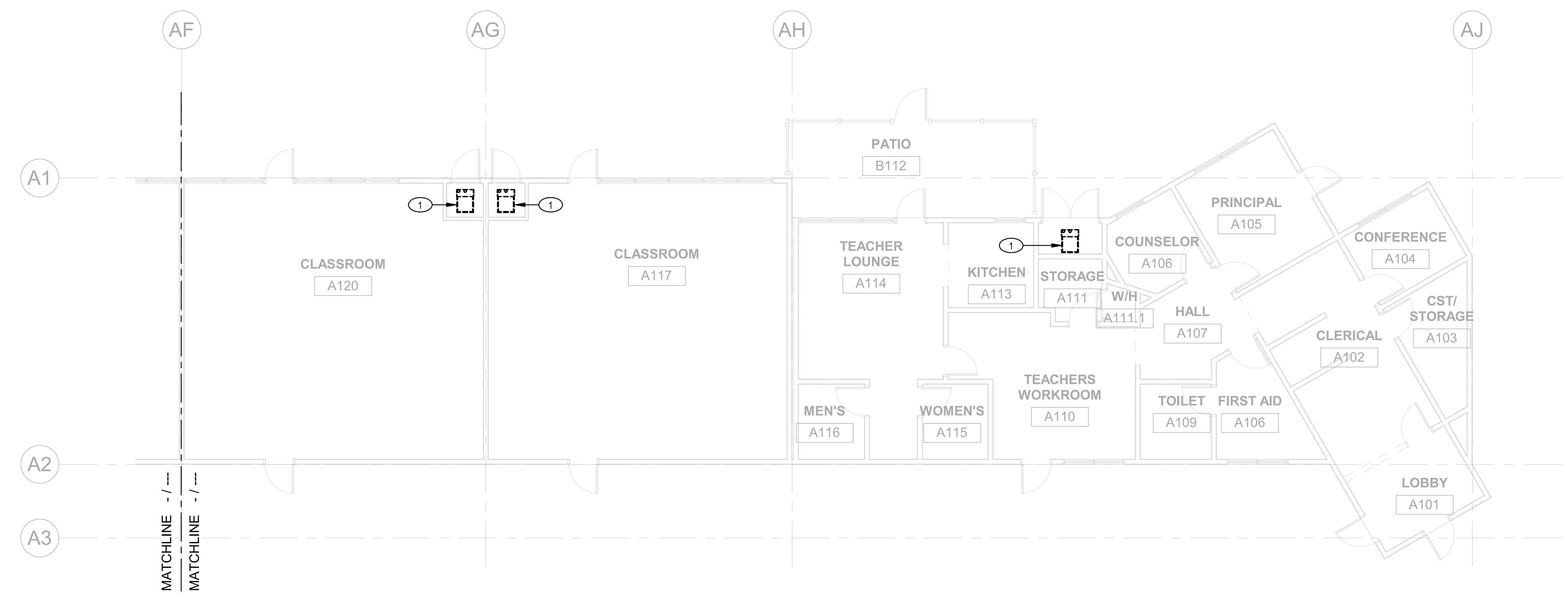
DATE: **24.10.01** | CLIENT PROJ NO:

SHEET:
P0.1



2 PLUMBING BLDG A FLOOR PLAN SEG B - DEMOLITION

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



1 PLUMBING BLDG A FLOOR PLAN SEG A - DEMOLITION

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

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL PLUMBING EQUIPMENT, FIXTURES, AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

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9/12/2024 8:08:20 AM

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

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ISSUE

△	DESCRIPTION	DATE

KEYNOTES

1 EXISTING FURNACE AND RELATED GAS PIPING, FLUES, AND ACCESSORIES TO BE REMOVED. CAP GAS PIPING IN MECHANICAL ROOM. PATCH FLUE ROOF OPENING TO MATCH EXISTING. CONDENSATE PIPING TO REMAIN FOR RECONNECTION TO NEW FAN COIL.

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER JASON DEDORA M 34661 REN. 12-31-25 MECHANICAL STATE OF CALIFORNIA

FACILITY:

**75 HAPPY LN
SAN RAFAEL, CA 94901**

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

PLUMBING BLDG A FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:

P2.11

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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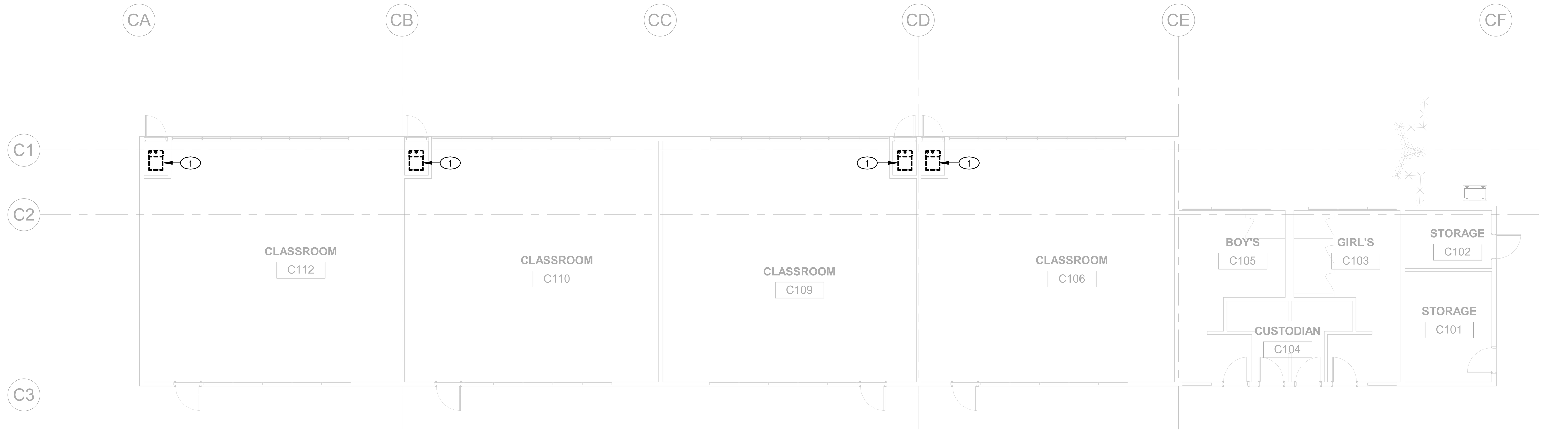
ISSUE

DESCRIPTION	DATE



2 **PLUMBING BLDG C FLOOR PLAN - DEMOLITION**
SCALE: 1/8" = 1'-0"

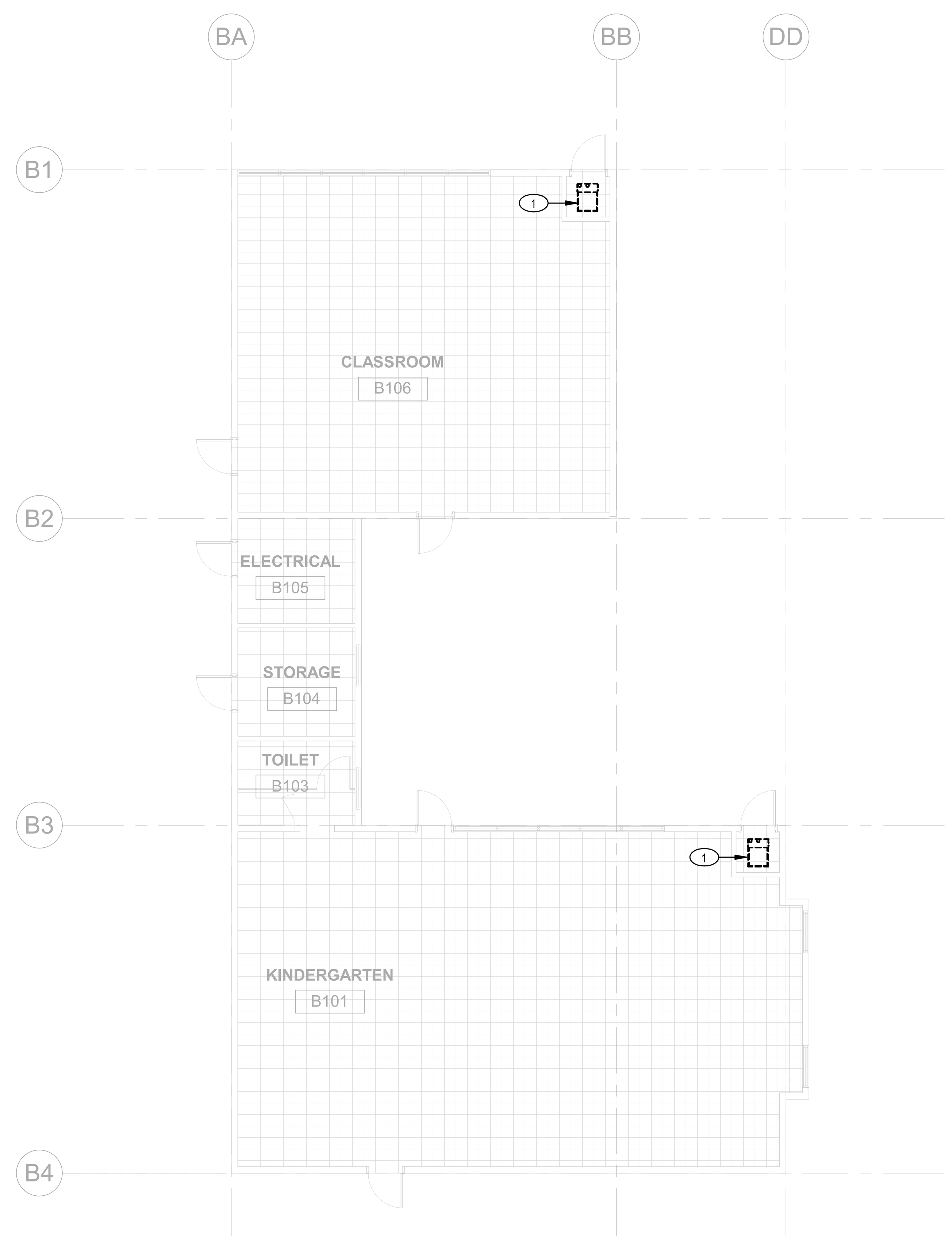
GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL PLUMBING EQUIPMENT, FIXTURES, AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.

KEYNOTES

1 EXISTING FURNACE AND RELATED GAS PIPING, FLUES, AND ACCESSORIES TO BE REMOVED. CAP GAS PIPING IN MECHANICAL ROOM. PATCH FLUE ROOF OPENING TO MATCH EXISTING. CONDENSATE PIPING TO REMAIN FOR RECONNECTION TO NEW FAN COIL.

NOTES



1 **PLUMBING BLDG B FLOOR PLAN - DEMOLITION**
SCALE: 1/8" = 1'-0"

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
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Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER JASON DEDORA M 34661 REN. 12-31-25 MECHANICAL STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
PLUMBING BLDG B & C FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

DATE: 2024.10.01 CLIENT PROJ NO:

SHEET:

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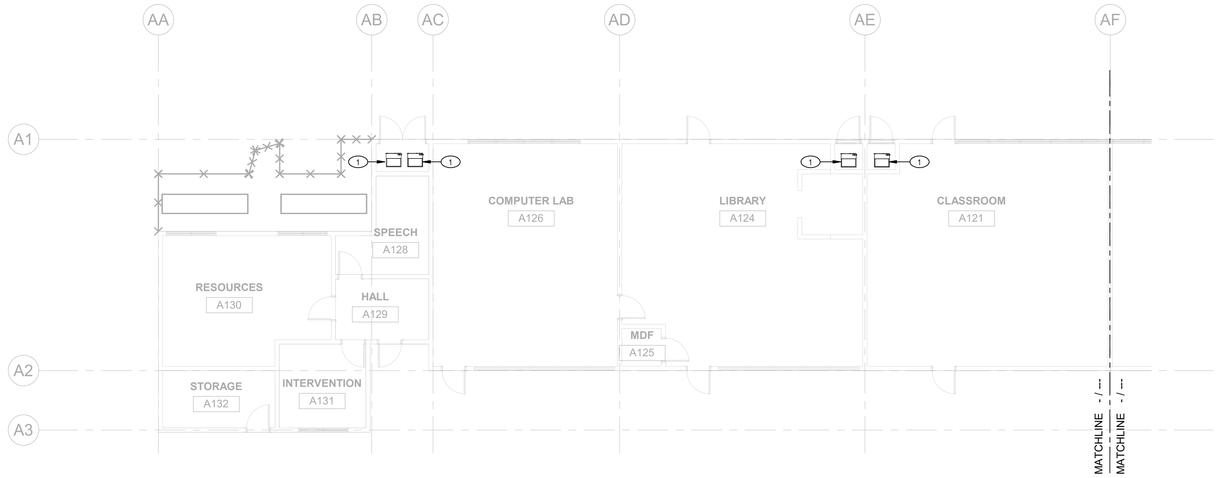
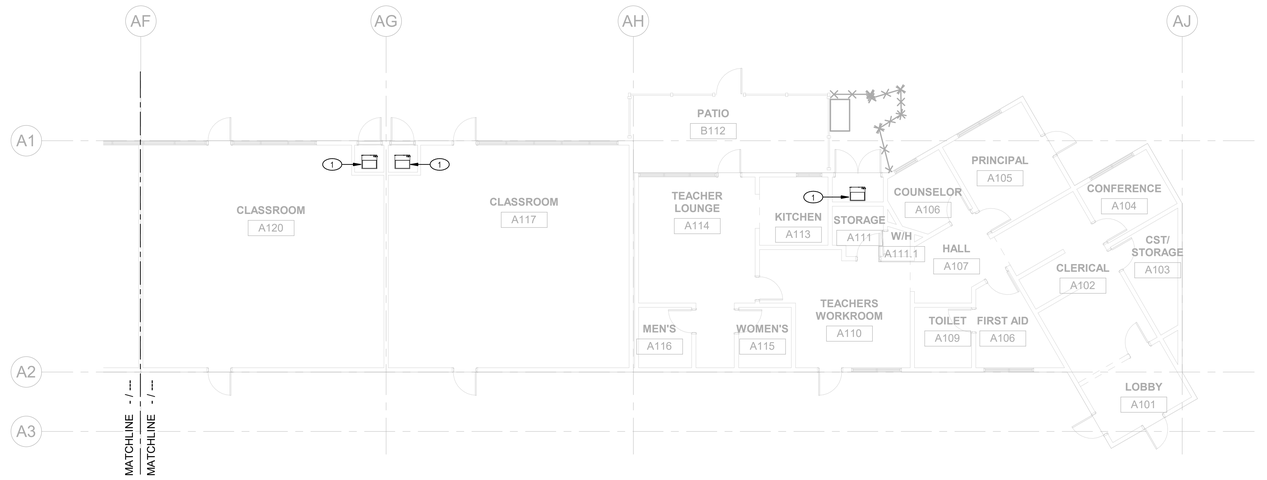


2 PLUMBING BLDG A FLOOR PLAN SEG B

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



1 PLUMBING BLDG A FLOOR PLAN SEG A

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

GENERAL NOTES

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B. ALL PLUMBING EQUIPMENT, FIXTURES, AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.

KEYNOTES (#)

1 RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL. PROVIDE THE NECESSARY PIPING, FITTINGS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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ISSUE

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SUN VALLEY ES HVAC FA

SHEET NAME:

PLUMBING BLDG A FLOOR PLAN

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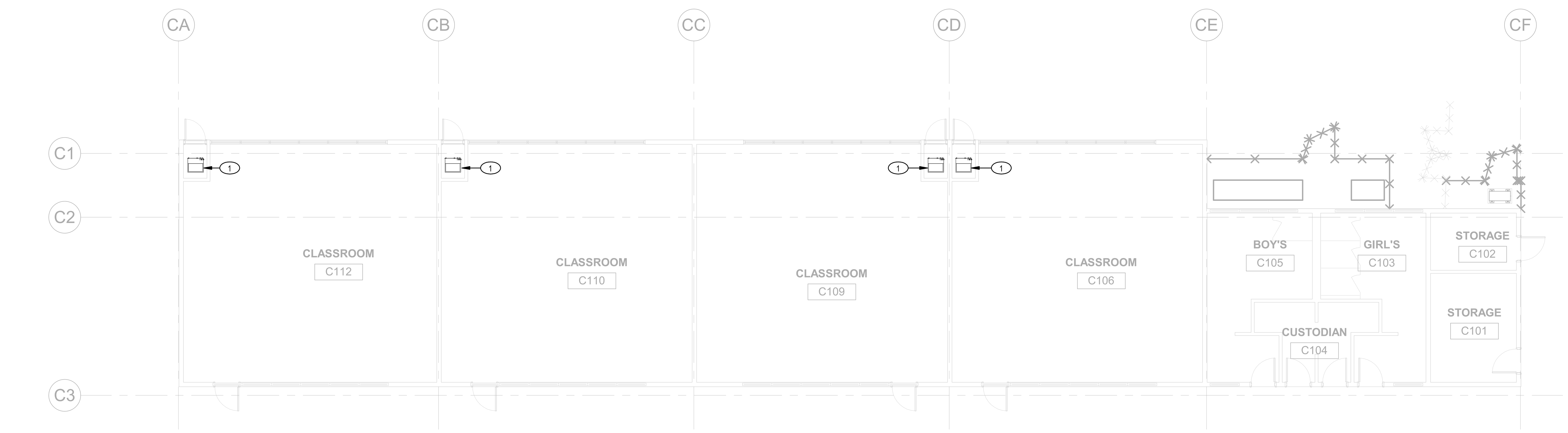
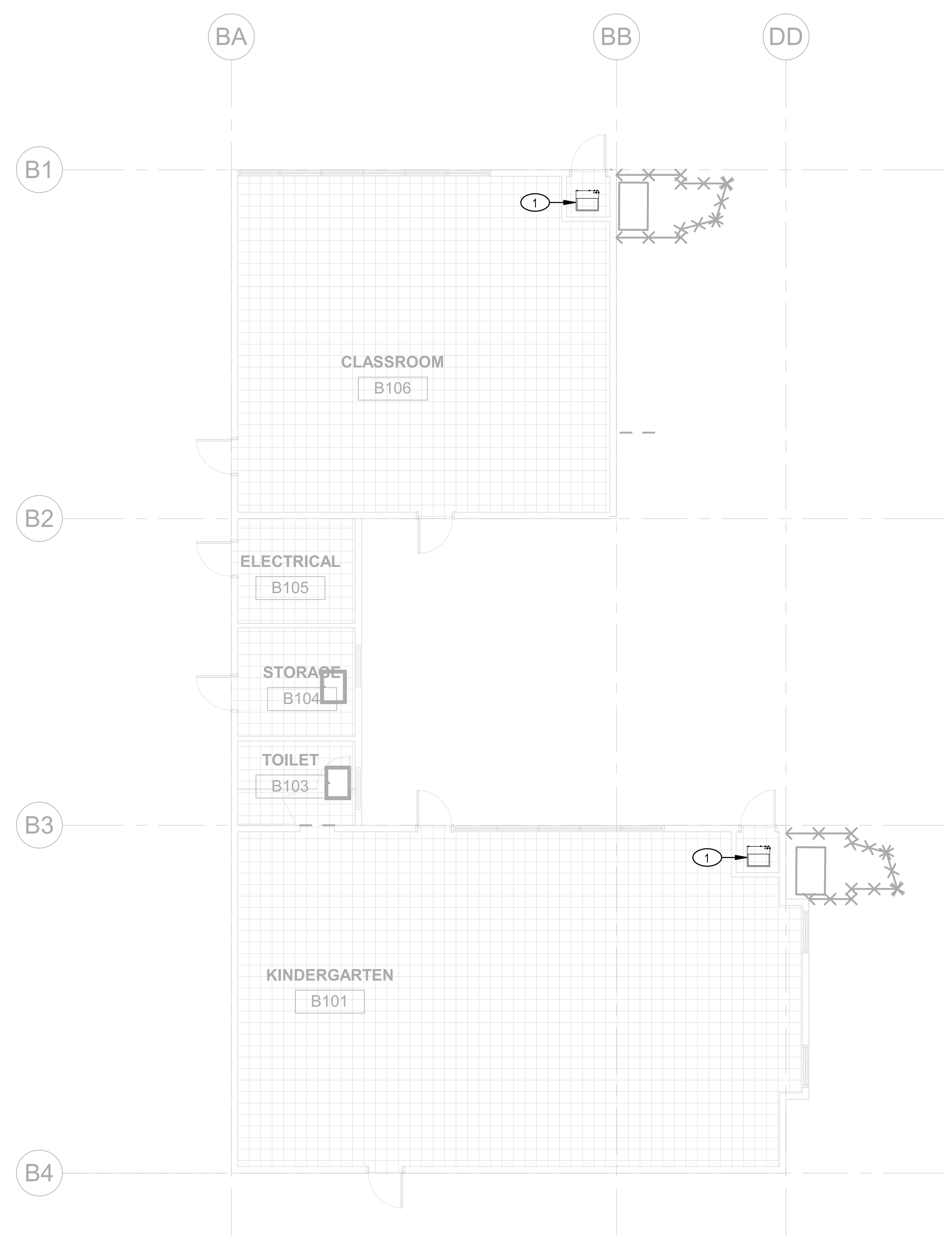


2 PLUMBING BLDG C FLOOR PLAN

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

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL PLUMBING EQUIPMENT, FIXTURES, AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.



1 PLUMBING BLDG B FLOOR PLAN

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

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ISSUE

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KEYNOTES

1 RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL. PROVIDE THE NECESSARY PIPING, FITTINGS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.

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UTILITIES SERVICE AND UNDERGROUND TRENCHING NOTES

1. UNDERGROUND TRENCHING:

A. USE EXTREME CAUTION WHEN DIGGING TO AVOID BURIED ELECTRICAL CABLES. CALL UNDERGROUND SERVICE ALERT (U.S.A.) 800-277-2600, 48 HOURS BEFORE DIGGING.

B. BEFORE START OF ANY UNDERGROUND TRENCHING FOR CONDUIT RUNS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH ALL PLANS OF OTHER TRADES (ARCHITECTURAL, CIVIL, LANDSCAPE), AND SITE CONDITIONS TO AVOID CONFLICT.

C. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. COORDINATE WITH CIVIL, LANDSCAPE AND ARCHITECTURAL SITE PLAN PRIOR TO THE TRENCHING, ETC. AND THE INSTALLATION OF THE ELECTRICAL SYSTEM.

D. ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC, UL LISTED FOR DIRECT BURIAL, AND TERMINATED WITH FACTORY END BELL FITTINGS. ALL ELBOWS, BENDS AND TURNS TRANSITIONING TO GRADE SHALL BE INSTALLED USING PER MANUFACTURED 40-MIL PVC COATED GALVANIZED STEEL ELBOWS AND OFFSETS.

E. ALL UNDERGROUND SERVICE CONDUITS SHALL BE SEALED TO COMPLY WITH CEC 230.8.

F. PROVIDE 24" MINIMUM COVERAGE FOR UNDERGROUND CONDUITS, UNLESS OTHERWISE NOTED. THE EXCEPTION IS FOR PG&E SERVICE CONDUITS WHICH SHALL HAVE A 36" MINIMUM SEPARATION BETWEEN THE POWER AND LOW VOLTAGE SYSTEM UNDERGROUND CONDUITS. TRENCHES SHALL ALL BE INSTALLED WITH A RED POLYETHYLENE WARNING RIBBON LABELED "ELECTRICAL", LOCATED 8" BELOW GRADE IN THE TRENCH.

G. PROVIDE UNDERGROUND TRACER WHERE NON-METAL CONDUITS ARE INSTALLED.

H. PROVIDE "PARTEX" IDENTIFICATION TAGS TO IDENTIFY UNDERGROUND CIRCUITS.

I. ALL UNDERGROUND SPLICES SHALL BE MADE WATERPROOF BY PROVIDING WITH "SPLICE-KOTE" SPLICE KITS OR OTHER ACCEPTED METHODS. ALL FUSE HOLDERS SHALL BE WATERTIGHT.

J. ALL UNDERGROUND RACEWAYS SHALL BE PROVIDED WITH A #8 AWG MINIMUM SIZE COPPER EQUIPMENT GROUNDING CONDUCTOR, WHETHER SHOWN ON PLAN OR NOT, UNLESS OTHERWISE NOTED.

K. THE CONTRACTOR SHALL BE RESPONSIBLE UNDER THIS CONTRACT TO REPAIR AND REPLACE ANY AND ALL DAMAGES TO EXISTING PCC (PORTLAND CEMENT CONCRETE) WALKS, AC PAVING, UTILITIES, TREES, TURF, PLANTED AREAS AND OTHER FACILITIES RESULTING FROM THIS PROJECT. WHEN CUTTING OR TRENCHING THROUGH EXISTING CONCRETE SIDEWALKS, DRIVEWAYS, AND WALKWAYS, THE CONTRACTOR SHALL BE REQUIRED TO COMPLETELY REPLACE ENTIRE SECTIONS OF CONCRETE PANELS FROM SCORE MARK TO SCORE MARK AFFECTED BY THE CONSTRUCTION WORK. ALL SIDEWALKS, DRIVEWAYS, AND WALKWAYS SHALL BE REPLACED TO MATCH ADJACENT CONDITION AND AS DIRECTED BY THE ARCHITECT.

EQUIPMENT ANCHORAGE NOTES

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 ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

APPLICABLE CODE: 2022 CBC

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.
☐	☐	☐	☐	OPTION 2: SHALL COMPLY WITH HCAi (OSHPD) PRE-APPROVAL (OPM#) #________________, AS INDICATED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS.

GENERAL NOTES

ALL GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

1. THESE GENERAL NOTES ARE INTENDED TO ASSIST THE CONTRACTOR IN THE EXECUTION OF THE ELECTRICAL WORK AND TO BE INCLUDED IN CONJUNCTION WITH THE CONTRACT DOCUMENT DRAWINGS AND SPECIFICATION REQUIREMENTS. SOME OF THE GENERAL NOTES ARE EXCERPTS FROM THE SPECIFICATION.
2. PROCURE PERMITS AND LICENSES REQUIRED. PAY ALL NECESSARY FEES AND ARRANGE FOR INSPECTIONS REQUIRED BY LOCAL CODES AND ORDINANCES AND UTILITY COMPANIES.
3. COORDINATE ALL ELECTRICAL SERVICES WITH THE RESPECTIVE UTILITY COMPANIES AND PROVIDE ALL TRENCHING, CONDUITS, WIRING, METER FACILITIES AND OUTLETS REQUIRED BY THEM.
4. WORKMANSHIP SHALL BE OF THE HIGHEST GRADE. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING WITH THE ACCEPTANCE OF THE ARCHITECT.
5. INSTALL ALL EQUIPMENT, CONDUITS, OUTLETS, AND FIXTURES IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF ALL APPLICABLE CODES (CEC, STATE, COUNTY AND CITY).
6. DO NOT SCALE PLANS FOR FIXTURES, DEVICES, OR APPLIANCE LOCATIONS. USE FIGURED DIMENSIONS IF GIVEN OR CHECK MECHANICAL AND ARCHITECTURAL PLANS. ALSO REFER TO ACTUAL ON-SITE CONDITIONS.
7. ALL MATERIAL AND EQUIPMENT IS TO BE LISTED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND CEC 110.3.
8. ALL ELECTRICAL DEVICES AND EQUIPMENT, FIXTURES, CONDUITS AND WIRING SHOWN ON THESE PLANS ARE NEW, UNLESS OTHERWISE NOTED.
9. OUTLET BOXES INSTALLED IN FIRE WALLS SHALL BE ONE-PIECE STEEL AND INSTALLED IN SEPARATE (STAGGERED) STUD PENETRATIONS, MINIMUM 24 INCHES HORIZONTAL SEPARATION. FIRE WALLS SHALL BE MADE IN ACCORDANCE WITH CBC AND ELECTRICAL CODES.
10. THE FINAL LOCATION OF ALL OUTLETS SHALL BE VERIFIED WITH THE ARCHITECT AND/OR OWNER AT TIME OF CONSTRUCTION.
11. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE WEATHER-PROTECTED.
12. CONTRACTOR SHALL VERIFY THAT ALL LIGHTING FIXTURES, CEILING TRIMS, AND FRAMES ARE COMPATIBLE WITH CEILING SYSTEM INSTALLED.
13. CONTRACTOR SHALL COORDINATE LIGHT FIXTURE LOCATIONS AND INSTALLATIONS WITH THE MECHANICAL CONTRACTOR. MAINTAIN REQUIRED CLEARANCES (MINIMUM 3 INCHES) BETWEEN THE LIGHT FIXTURES AND MECHANICAL DUCTS OR EQUIPMENT FOR PROPER OPERATION, INSTALLATION AND/OR REMOVAL OF FIXTURES.
14. BEFORE SUBMITTING FOR ARCHITECT'S REVIEW AND PLACING ORDER FOR THE LIGHT FIXTURES. THE CONTRACTOR SHALL VERIFY THE VOLTAGE OF ALL THE LIGHTING FIXTURES TO MATCH THE VOLTAGE OF THE SERVICE PANEL, WHETHER THE VOLTAGE FOR THE LIGHT FIXTURES ARE SHOWN ON THE PLAN OR NOT.
15. PLACEMENT AND CIRCUITING OF EXIT SIGNS AND EGRESS LIGHTING COMPLY WITH CBC REQUIREMENTS.
16. ALL CONDUIT SHALL BE ROUTED CONCEALED UNLESS NOTED ON PLAN OR ACCEPTED BY THE ARCHITECT.
17. PROVIDE ALL NECESSARY SLEEVES AND INSERTS FOR ALL WORK PASSING THROUGH OR ATTACHING TO WALLS, FLOORS, OR CEILINGS.
18. ALL WIRING SHALL BE INSTALLED IN RIGID METALLIC CONDUIT, UNLESS OTHERWISE NOTED. CONDUITS INSTALLED CONCEALED IN WALL AND CEILING MAY BE EMT WITH STEEL COMPRESSION TYPE FITTINGS. PVC WHERE INSTALLED UNDERGROUND AND/OR UNDER SLAB. ALL EXPOSED CONDUITS SHALL BE RIGID STEEL CONDUITS WITH THREADED TYPE FITTINGS. INSTALL ALL CONDUITS IN ACCORDANCE WITH CECA STANDARDS OF INSTALLATION.
19. ELECTRICAL NON-METALLIC TUBING (ENT) AND MC CABLE ARE NOT PERMITTED TO BE USED FOR THIS PROJECT, NO EXCEPTIONS.
20. WHERE EXISTING CONDUITS, CONCEALED OR EXPOSED, AND (WIREMOLD) SURFACE RACEWAY IS NOT IN PLACE AS SHOWN ON PLANS, PROVIDE NEW CONDUITS AND (WIREMOLD) SURFACE RACEWAY FOR THE NEW WORK. VERIFY EXISTING CONDITION ON SITE AND PROVIDE ALL NECESSARY NEW MATERIAL, APPARATUS, AND WORK THAT ARE REQUIRED TO BE INCLUDED IN THE BID PACKAGE.
21. CONDUCTORS, #8 AND LARGER, SHALL BE STRANDED COPPER WITH THHN/THWN INSULATION, UNLESS OTHERWISE NOTED.
22. PROVIDE WORKING CLEARANCE PER CEC 110.26 FOR SERVICE PANEL, SUBPANELS, MOTOR DISCONNECT SWITCHES, CONTROL SECTIONS. HVAC EQUIPMENT, APPLIANCES, ETC.
23. PROVIDE A WARNING LABEL (SIGN) CLEARLY VISIBLE TO QUALIFIED PERSONS TO COMPLY WITH NEC AND CEC 116.16 OF POTENTIAL ELECTRIC ARC FLASH HAZARDS AT SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS AND MOTOR CONTROL CENTERS THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER CEC SECTION 110.24(A).
24. BUILDING SERVICE AND SUBPANELS TO COMPLY WITH CEC 110.9 AND 110.10 INTERRUPTING RATING AND BRACING. PROVIDE A.I.C. CALCULATIONS FOR SUBPANELS IF INTERRUPTING RATING TO BE USED IS LOWER THAN MAIN SERVICE RATING.
25. ALL APPLIANCES SHALL COMPLY WITH CEC ARTICLE 422. APPLIANCE CONTROL AND PROTECTION PER CEC 422-III; BRANCH CIRCUITS PER 422-II.
26. BUILDING EXPANSION JOINTS MAY OR MAY NOT BE INDICATED ON THE ELECTRICAL DRAWINGS. VERIFY THE LOCATIONS OF ALL APPLICABLE BUILDING EXPANSION JOINTS WITH THE ARCHITECTURAL DRAWINGS. WIRING METHODS ACROSS EXPANSIONS JOINTS SHALL INCLUDE USE OF FLEXIBLE FITTINGS OR OTHER DEVICES AS APPROPRIATE TO EACH APPLICATION. IN NO CASE SHALL CONDUIT CROSS SUCH A JOINT IN BUILDING CONSTRUCTION WITHOUT USE OF THE APPROPRIATE WIRING METHODS.
27. CONTRACTOR SHALL SIZE ALL THE INTERIOR AND EXTERIOR BUILDING PULL BOXES AND UNDERGROUND PULL BOXES PER CEC 314.16 AND COMPLY WITH CEC 314.28 FOR INSTALLATION OF RACEWAYS AND WIRING AS REQUIRED BY CODE, UNLESS OTHERWISE NOTED.
28. WHERE ACCESSIBILITY IS NOT AVAILABLE TO ELECTRICAL OUTLETS, DEVICES AND/OR EQUIPMENT, COORDINATE WITH THE ARCHITECT FOR PROVISIONS TO PROVIDE ACCESSIBILITY TO THEM.
29. CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL DRAWINGS AND PROVIDES ALL CONDUITS AND CONTROL WIRING AND POWER WIRING SHOWN ON THE MECHANICAL DRAWINGS THAT IS NOT SHOWN ON THE ELECTRICAL PLANS.
30. CONTRACTOR SHALL REFER TO THE MECHANICAL DRAWINGS AND COORDINATE FOR THE EQUIPMENT LOCATIONS. COORDINATE ROOF PENETRATION WITH THE MECHANICAL CONTRACTOR FOR MECHANICAL CONNECTIONS. ENTER ROOF MOUNTED UNITS THROUGH EQUIPMENT MOUNTING CURES WHERE POSSIBLE. VERIFY ON-SITE.
31. PROVIDE CONVENIENCE OUTLET WITHIN 25 FEET OF MECHANICAL EQUIPMENT PER U.M.C. WHERE LOCATED OUTSIDE, PROVIDE WEATHERPROOF AND GFCI CONVENIENCE OUTLET. SECURE ROOF MOUNTED OUTLET TO THE MECHANICAL EQUIPMENT. VERIFY LOCATION IN FIELD WITH THE MECHANICAL CONTRACTOR.
32. VERIFY SINGLE-POINT CONNECTIONS TO ROOF MOUNTED HVAC UNITS WITH MECHANICAL CONTRACTOR ON-SITE PRIOR TO ELECTRICAL ROUGH-IN. PROVIDE DUAL DISCONNECTS IF TWO-POINT CONNECTIONS IS REQUIRED, WHETHER SHOWN ON PLANS OR NOT.
33. VERIFY SINGLE-POINT CONNECTIONS TO ROOF MOUNTED HVAC UNITS WITH MECHANICAL CONTRACTOR ON-SITE PRIOR TO ELECTRICAL ROUGH-IN. PROVIDE DUAL DISCONNECTS IF TWO-POINT CONNECTIONS IS REQUIRED, WHETHER SHOWN ON PLANS OR NOT.
34. COORDINATE THE HVAC EQUIPMENT FOR FUSES REQUIRE. WHERE FUSES ARE REQUIRED, VERIFY FUSE SIZE ON-SITE AND PROVIDE FOR HVAC EQUIPMENT PER UNIT NAMEPLATE SPECIFICATIONS.
35. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430-IX AND 440.11.
36. MOTOR STARTERS FOR HVAC EQUIPMENT ARE PROVIDED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.
37. ALL CONNECTIONS FROM THE DISCONNECT SWITCHES TO HVAC UNITS SHALL BE COPPER CONDUCTORS. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430-VII, 430-VIII, AND 440-II.
38. VERIFY LOCATION AND HEIGHT OF ALL MECHANICAL OR FIXTURE EQUIPMENT OUTLETS WITH SUPPLIER PRIOR TO ANY ROUGH-IN WORK. PROVIDE ALL RUNS AND CONNECTIONS TO EQUIPMENT.
39. ALL TERMINATION PROVISIONS OF EQUIPMENT, INCLUDING CIRCUITS RATED 100 AMPERES OR LESS SHALL BE RATED AT 60 DEGREE, CENTIGRADE PER CEC 110.14(c).
40. ALL LIGHT FIXTURES INSTALLED OVER FOOD HANDLING OR FOOD PREPARATION AREAS, OPEN FOOD STORAGE, AND UTENSIL WASHING AREAS SHALL BE OF SHATTERPROOF CONSTRUCTION OR SHALL BE PROTECTED WITH SHATTERPROOF SHIELDS AND SHALL BE READILY CLEANABLE.

DEMOLITION GENERAL NOTES

ALL DEMOLITION GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

1. ALL EXISTING EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., WHERE SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DOCUMENTS AND LIMITED SITE SURVEYS AND ARE SHOWN FOR CLARITY. IT SHALL BE REGARDED AS AN APPROXIMATION ONLY. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES. THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. PRIOR TO SUBMITTING BID AND BEFORE START OF ANY ELECTRICAL WORK, CONTRACTOR SHALL VERIFY ON-SITE ALL EXISTING LOCATIONS AND CONDITIONS TO ASCERTAIN ALL WORK REQUIRED.
2. EXISTING ELECTRICAL MAIN SERVICE IS BEING REPLACED WITH NEW THAT IS TO BE INCLUDED IN THE SCOPE OF WORK. CONTRACTOR SHALL VERIFY AND COORDINATE. THE SEQUENCE OF WORK WITH THE LOCAL UTILITY COMPANY. THE OWNER/DISTRICT'S REPRESENTATIVE AND OTHER TRADES AT THE EARLIEST START OF CONSTRUCTION FOR ALL REQUIREMENT AND SCHEDULE THE REQUIRED WORK FOR A SMOOTH AND TIMELY TRANSFORMATION FROM THE EXISTING SERVICE TO THE NEW SERVICE TO ENSURE THAT ALL WORK PROCEED WITH A MINIMUM OF INTERFERENCE AND DELAY. LIMIT THE ELECTRICAL SHUTDOWN TO A MINIMAL SO IT WILL NOT AFFECT THE EXISTING FACILITY'S NORMAL DAILY FUNCTIONS AND OPERATION.
3. CAUSE AS LITTLE INTERFERENCE OR INTERRUPTION OF EXISTING UTIILITIES AND/OR OTHER EXISTING FACILITY'S SYSTEMS AND SERVICES AS POSSIBLE. CONTRACTOR SHALL NOTIFY THE OWNER/DISTRICT'S REPRESENTATIVE AT LEAST 72 HOURS TO SCHEDULE ALL NECESSARY SHUTDOWN. SHUTDOWN WORK SHALL BE PERFORMED AFTER THE NORMAL OPERATION HOURS OF THE FACILITY, IF SO DIRECTED BY THE OWNER/DISTRICT'S REPRESENTATIVE.
4. ALL REMOVED AND/OR DEMOLISHED ELECTRICAL MATERIALS AND EQUIPMENT TO BE ACCOMPLISHED UNDER THIS CONTRACT, WHICH IN THE OPINION OF THE OWNER/DISTRICT'S REPRESENTATIVE ARE DEEM SALVAGEABLE, SHALL REMAIN THE PROPERTY OF THE OWNER/DISTRICT. ALL ELECTRICAL MATERIAL AND EQUIPMENT CONSIDERED NOT SALVAGEABLE SHALL BE REMOVED FROM THE SITE AND DISPOSED BY THE CONTRACTOR ACCORDINGLY.
5. WHERE REMOVAL OF AN EXISTING SYSTEM'S DEVICE WILL RESULT IN LOSS OF CIRCUIT CONTINUITY, THE ISOLATED PORTIONS OF THE CIRCUIT SHALL BE RECONNECTED TO PROVIDE SERVICE TO ALL REMAINING DEVICES. IF SITE CONDITIONS MAKE RECONNECTION IMPOSSIBLE, CONNECTION SHALL BE MADE FROM AN ADJACENT AVAILABLE DEVICE AS NOTED AND/OR AS DIRECTED BY THE ARCHITECT AND/OR THE OWNER/DISTRICT'S REPRESENTATIVE.
6. WHERE EXISTING CONCEALED CONDUITS, WHETHER SHOWN OR NOT, OR SPECIFIED TO BE REUSED, WHICH BECAME EXPOSED DUE TO CONSTRUCTION CHANGES. IT SHALL BE REROUTED TO THE NEAREST AVAILABLE REUSED OUTLET.
7. ALL EXISTING EXPOSED CONDUITS AND/OR WIRING THAT ARE DETERMINED BY THE DISTRICT AND ARCHITECT TO BE MAINTAINED FOR EXISTING SYSTEM FUNCTION AND CONTINUITY, WHETHER SHOWN ON PLAN OR NOT, ARE TO BE REROUTED, CONCEALED IN WALL AND/OR CEILING FOR A CLEAN FINISHED SURFACE WITH NO EXPOSED CONDUITS AND/OR WIRING WITHIN THE REMODELED AREA.
8. REMOVE ALL EXISTING EXPOSED CONDUITS, WIRING, ELECTRICAL OUTLETS, DEVICES AND EQUIPMENT THAT ARE DETERMINED BY THE DISTRICT AND ARCHITECT TO BE NON FUNCTIONAL AND/OR NOT BEING USED FROM WITHIN THE REMODELED ARE FOR A CLEAN FINISHED SURFACE.
9. WHERE EXISTING WIRING OR EQUIPMENT IS ABANDONED AS A RESULT OF THIS CONTRACT, IT SHALL BE REMOVED INSOFAR AS POSSIBLE, THIS INCLUDES BUT IS NOT LIMITED TO:
   A. REMOVE ALL WIRE AND CABLE.
   B. REMOVE ALL DEVICES AND EQUIPMENT.
   C. REMOVE ALL EXPOSED CONDUIT AND CONDUIT IN ACCESSIBLE CONCEALED AREA, AS FAR AS POSSIBLE.
   D. CUT OFF AND CAP ALL ABANDONED CONDUIT. STUBS SHALL NOT BE PROTRUDED ABOVE FLOOR AND/OR FINISHED WALLS AND CEILINGS.
10. WHEREVER EXISTING ELECTRICAL DEVICES, PANELS, CONDUITS, CABLES, ETC., CONFLICT WITH REMODEL WORK, WHETHER SHOWN OR NOT, RELOCATE THESE ITEMS AS DIRECTED BY THE ARCHITECT AND/OR OWNER/DISTRICT'S REPRESENTATIVE.
11. WHERE SHOWN ON PLAN FOR REMOVAL OF EXISTING CONDUITS. REMOVE ALL PORTIONS OF CONDUITS WHERE IT IS ACCESSIBLE AND ABANDON PORTIONS OF CONDUITS WHERE IT IS INACCESSIBLE. CUT AND/OR FINISHED WALLS AND CEILINGS.
12. CONTRACTOR SHALL UPDATE WITH NEW TYPED WRITTEN PANEL DIRECTORIES TO EXISTING PANELS INVOLVED IN THIS RENOVATION WORK THAT SHALL REFLECT ALL CHANGES TO THE CIRCUIT DESIGNATIONS.
13. PROVIDE AND INSTALL PROTECTIVE COVERING OVER EXISTING EQUIPMENT IN AREA WHEN INSTALLING ANY NEW WORK.
14. COORDINATE WITH OTHER TRADES AND PROMPTLY TRANSMIT ALL INFORMATION REQUIRED BY THEM. COORDINATE THE SEQUENCE OF DEMOLITION WITH OTHER TRADES TO ENSURE THAT ALL WORK PROCEEDS WITH A MINIMUM OF INTERFERENCE AND DELAY.
15. REFER TO MECHANICAL AND PLUMBING DRAWING FOR HEATERS, EXHAUST FANS, WATER HEATERS, PUMPS, AND ETC., WHICH REQUIRE TO BE DISCONNECTED BY THE ELECTRICAL CONTRACTOR FOR REMOVAL OR ABANDONMENT BY THE MECHANICAL AND/OR PLUMBING CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE SEQUENCE FOR WORK WITH THE MECHANICAL AND/OR PLUMBING FOR REMOVAL OF ALL APPLICABLE STARTERS. DISCONNECT SWITCHES AND ASSOCIATED CONDUIT AND WIRING.
16. ALL LIGHT FIXTURES INDICATED AS RELOCATED SHALL BE CLEANED AND RE-LAMPED PRIOR TO THE RE-INSTALLATION.

ELECTRICAL ABBREVIATIONS

ABBREV	DESCRIPTION
A, AMP	AMPERES
AC	ABOVE COUNTER
AF/AT	AMPERE FRAME / AMPERE TRIP
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AS/AF	AMPERE SWITCH / AMPERE FUSE
AT	AMPERE TRIP RATING OF BREAKER
AUTO	AUTOMATIC
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BMS	BUILDING MANAGEMENT SYSTEM
C, CDT	CONDUIT
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CEC	CALIFORNIA ELECTRICAL CODE
CFL	COMPACT FLUORESCENT
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
cmil	CIRCULAR MIL
CO	CONDUIT ONLY w/PULL STRING
CSFM	CALIFORNIA STATE FIRE MARSHALL
CT	CURRENT TRANSFORMER
CU	COPPER
DET	DETAIL
DISC	DISCONNECT
DIST	DISTRIBUTION
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEV, EL	ELEVATION
EM, EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NONMETALLIC TUBING
EOL	END OF LINE RESISTOR
EPO	EMERGENCY POWER OFF
EQPT	EQUIPMENT
EV	ELECTRIC VEHICLE
EVSE	ELECTRIC VEHICLE SUPPLY EQUIPMENT
EXH	EXHAUST
(E)	EXISTING
(F)	FUTURE
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FF	FINISHED FLOOR
FG	FINISHED GRADE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
FMC	FLEXIBLE METAL CONDUIT
FMT	FLEXIBLE METAL TUBING
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND-FAULT CURRENT INTERRUPTER
GFPE	GROUND-FAULT PROTECTION OF EQUIPMENT
GND	GROUND
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HVAC	HEATING, VENTILATION & AIR CONDITIONING
Hz	HERTZ (cycle per second)
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
ISC, SC	SHORT CIRCUIT
ISOL	ISOLATED
JBOX	JUNCTION BOX
kcmil	ONE THOUSAND CIRCULAR MILS
kV	KILOVOLTS
kW	KILOWATTS
kVA	KILOVOLT-AMPERES
LED	LIGHT-EMITTING DIODE
LCP	LIGHTING CONTROL PANEL
LPG	LIQUEFIED PETROLEUM GAS
LRC	LOCKED-ROTOR CURRENT
LSIG	LONG-TIME, SHORT-TIME, INSTANTANEOUS & EQUIPMENT GROUND-FAULT PROTECTION
LTG	LIGHTING

ABBREV	DESCRIPTION
MAX	MAXIMUM
MC	METAL-CLAD CABLE
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MGB	MAIN GROUND BAR
MG SET	MOTOR-GENERATOR SET
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPOE	MINIMUM POINT OF ENTRY
MS	MOTION SENSOR
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE CABLE
MW	MEGAWATTS
(N)	NEW
NECA	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORIES
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PH, P	PHASE OR POLE
PB	PULL BOX
PF	POWER FACTOR
PFB	PROVIDE FOR FUTURE BREAKER
PIV	POST INDICATOR VALVE
PLC	PROGRAMMABLE LOGIC CONTROLLERS
PNL	PANEL
PoE	POWER OVER INTERNET
PV	PHOTOVOLTAICS
PVC	POLYVINYL CHLORIDE
PWR	POWER
(R)	RELOCATED
RCP	REFLECTED CEILING PLAN
REC, RECPT	RECEPTACLE
REQD	REQUIRED
RGSC	RIGID GALVANIZED STEEL CONDUIT
RMC	RIGID METAL CONDUIT
RMS	ROOT-MEAN-SQUARE
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCR	SILICON CONTROLLED RECTIFIER
SHLD	SHIELDED
SPD	SURGE-PROTECTIVE DEVICE
SPECS	SPECIFICATIONS
SW	SWITCH
T, XFMR	TRANSFORMER
TEMP	TEMPORARY
THHN	THERMOPLASTIC, HEAT RESISTANT CABLE, NYLON JACKET OUTER SHEATH
THWN	THERMOPLASTIC, HEAT AND MOISTURE RESISTANT CABLE, NYLON JACKET OUTER SHEATH
TR	TAMPER-RESISTANT
TS	TAMPER SWITCH
TSTAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
UGPS	UNDERGROUND PULL SECTION
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
VFD	VARIABLE FREQUENCY DRIVE
V	VOLTS
VA	VOLT-AMPERE
Vac	VOLTS ALTERNATING CURRENT
Vdc	VOLTS DIRECT CURRENT
VNEM	VIRTUAL NET ENERGY METERING
W	WATTS
W-hr	WATT-HOUR
w/	WITH
WP	WEATHERPROOF
WPL	WEATHERPROOF LOCKING
WPU	WEATHERPROOF WHILE IN USE
WR	WEATHER RESISTANT
(X)	REMOVE OR DEMO

APPLICABLE CODES AND STANDARDS

- "2022 CALIFORNIA BUILDING CODE" (CBC).
- "2022 CALIFORNIA ELECTRICAL CODE" (CEC).
- "2022 CALIFORNIA ENERGY CODE" (TITLE 24 - PART 6).
- "2022 CALIFORNIA GREEN BUILDING STANDARDS CODE" - CALGreen (TITLE 24 - PART 11).

PROJECT ELECTRICAL SCOPE OF WORK

DESCRIPTION:
PROVIDE NEW ELECTRICAL PANELS TO SERVICE THE NEW MECHANICAL EQUIPMENT LOCATED AT THE EXTERIOR OF THE EXISTING BUILDINGS, AND PROVIDE ELECTRICAL CONNECTION TO MECHANICAL UPGRADES IN THE EXISTING BUILDINGS.

ELECTRICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
E0.01	ELECTRICAL ABBREVIATIONS, SHEET INDEX & NOTES
E0.02	ELECTRICAL SYMBOL LEGEND
E1.11	ELECTRICAL SITE PLAN
E2.11	ELECTRICAL BLDG A 1ST FLOOR PLAN - DEMOLITION
E2.12	ELECTRICAL BLDG B & C 1ST FLOOR PLAN - DEMOLITION
E2.13	ELECTRICAL BLDG A 1ST FLOOR PLAN
E2.14	ELECTRICAL BLDG B & C 1ST FLOOR PLAN
E6.01	ELECTRICAL ONE-LINE DIAGRAM
E6.02	ELECTRICAL SCHEDULES
E6.03	ELECTRICAL PANEL SCHEDULES
E6.04	ELECTRICAL PANEL SCHEDULES
E10.11	ELECTRICAL DETAILS
E10.12	ELECTRICAL DETAILS

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

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PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
ELECTRICAL ABBREVIATIONS, SHEET INDEX & NOTES

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:
E0.01

PLEASE RECYCLE

ELECTRICAL SYMBOL LEGEND

ALL SYMBOLS SHOWN IN THIS LEGEND ARE NOT NECESSARY USED ON PLANS IF NOT REQUIRED

POWER

SYMBOL	DESCRIPTION
	MAIN SWITCHBOARD OR DISTRIBUTION PANEL, PAD OR FLOOR MOUNTED, AS NOTED
	RECESSED MOUNTED LIGHTING OR DISTRIBUTION PANEL
	SURFACE MOUNTED LIGHTING OR DISTRIBUTION PANEL
	RECESSED TERMINAL CABINET w/ 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO
	SURFACE MOUNTED TERMINAL CABINET w/ 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO
T	DISTRIBUTION TRANSFORMER, MOUNTING AND SIZE AS NOTED
	NON-FUSED DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER DISCONNECT SWITCH
F	FUSED DISCONNECT SWITCH; SIZE DISCONNECT AND FUSES PER UNIT LABEL
	MOTOR STARTER/CONTROLLER
	COMBINATION CIRCUIT BREAKER DISCONNECT/MOTOR STARTER
	COMBINATION FUSIBLE DISCONNECT/MOTOR CONTROLLER; PROVIDE FUSES PER MANUFACTURER'S REQUIREMENTS. "NF" INDICATES NON-FUSED
	POWER POINT OF CONNECTION
A	DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO. SUBSCRIPT TEXT WHERE OCCURS, SEE RECEPTACLE SUBSCRIPT LEGEND BELOW.
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER TOP [1]
	ISOLATED GROUND DUPLEX RECEPTACLE, 20A, 125V @ +16" TO BOTTOM OF BOX, UNO.
	DEDICATED DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	GFCI DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	GFCI DUPLEX RECEPTACLE OUTLET MOUNTED ABOVE COUNTER TOP AND/OR SINK BACKSPLASH [1]
	ISOLATED GROUND GFCI DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	DEDICATED GFCI DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	FOURPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO.
	FOURPLEX RECEPTACLE OUTLET MOUNTED ABOVE COUNTER TOP [1]
	ISOLATED GROUNDED DOUBLE DUPLEX RECEPTACLE 20A, 125V @ +16" TO BOTTOM OF BOX, UNO
	DEDICATED DOUBLE DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	GFCI DOUBLE DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	GFCI DOUBLE DUPLEX RECEPTACLE OUTLET MOUNTED ABOVE COUNTER TOP AND/OR SINK BACKSPLASH [1]
	ISOLATED GROUND GFCI DOUBLE DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	DEDICATED GFCI DOUBLE DUPLEX RECEPTACLE OUTLET 20A, 125V, @ +16" TO BOTTOM OF BOX, UNO
	SPECIAL RECEPTACLE OUTLET, SIZE AND NEMA CONFIGURATION AS NOTED, MOUNTED @ +16" TO BOTTOM OF BOX, UNO
	FLOOR MOUNTED DUPLEX RECEPTACLE, 20A, 125V FLUSH IN FINISHED FLOOR
	FLOOR MOUNTED DOUBLE DUPLEX RECEPTACLE, 20A, 125V FLUSH IN FINISHED FLOOR
	CEILING MOUNTED DUPLEX RECEPTACLE, 20A, 125V
	CEILING MOUNTED DOUBLE DUPLEX RECEPTACLE, 20A, 125V
	FLOOR MOUNTED COMBINATION DUPLEX RECEPTACLE / TELECOM
	FLOOR MOUNTED COMBINATION DOUBLE DUPLEX RECEPTACLE / TELECOM
P T	FLOOR MOUNTED COMBINATION POWER AND TELECOM WITH WHIP FOR PARTITION FURNITURE
P T	POWER / TELECOM WITH WHIP FOR PARTITION FURNITURE
J	WALL MOUNTED JUNCTION BOX - SIZE AS REQUIRED BY CODE
J	CEILING JUNCTION BOX - SIZE AS REQUIRED BY CODE
J	FLOOR MOUNTED JUNCTION BOX - SIZE AS REQUIRED BY CODE
J	PLUGMOLD
	POWER POLE
	CEILING EXHAUST FAN
EV EV	ELECTRIC VEHICLE CHARGING STATION, DUAL PORT & SINGLE PORT
$T	THERMAL OVERLOAD SWITCH
$M	MOTOR RATED SWITCH

RECEPTACLE SUBSCRIPT LEGEND (APPLIES TO ALL RECEPTACLES)

C	CONTROLLED/UNCONTROLLED [2]
LC	LOCKING COVER
TR	TAMPER-RESISTANT
U	USB (UNIVERSAL SERIAL BUS)
WP	WEATHERPROOF
WPU	WEATHERPROOF WHILE IN USE

FOOTNOTES:

[1] PROVIDE 44" MAX. TO TOP OF BOX AT AREAS WITH FORWARD ACCESSIBLE APPROACH KNEE CLEARANCE, OR PROVIDE 46" MAX. TO TOP OF BOX AT AREAS WITH PARALLEL ACCESSIBLE APPROACH (PER CBC 11B-308).

[2] FOR DUPLEX RECEPTACLES: ONE HALF IS CONTROLLED, AND ONE HALF IS UNCONTROLLED. PLACE CONTROLLED HALF AT BOTTOM. FOR DOUBLE DUPLEX RECEPTACLES: ONE DUPLEX IS CONTROLLED, AND ONE DUPLEX IS UNCONTROLLED. PLACE CONTROLLED DUPLEX AT RIGHT.

LIGHTING

SYMBOL	DESCRIPTION
	LED LUMINAIRE - T-BAR LAY-IN
	LED LUMINAIRE - RECESSED IN GYPBOARD
	LED LUMINAIRE - SURFACE
	LED LUMINAIRE - SUSPENDED
	LED LUMINAIRE - SURFACE OR SUSPENDED STRIP
	LED LUMINAIRE - RECESSED DOWNLIGHT
	LED LUMINAIRE - RECESSED WALLWASH
	LED LUMINAIRE - SURFACE
	LED LUMINAIRE - WALL
	LED LUMINAIRE - PENDANT
J	TRACK LIGHT - SUSPENDED OR SURFACE MOUNTED
	CONTINUOUS LINEAR LED TAPE OR LED COVE LIGHT
	HATCHED LUMINAIRE INDICATES AN EMERGENCY LUMINAIRE CONNECTED TO A EMERGENCY POWER DISTRIBUTION SYSTEM, OR INTEGRAL EMERGENCY BATTERY BACK-UP
	SINGLE FACE EXIT SIGN. SEE LIGHTING FIXTURE SCHEDULE FOR SPECIFICATION. DIRECTIONAL ARROW AS INDICATED ON PLANS. (CEILING OR WALL)
	DOUBLE FACE EXIT SIGN. SEE LIGHTING FIXTURE SCHEDULE FOR SPECIFICATION. DIRECTIONAL ARROW AS INDICATED ON PLANS. (CEILING OR WALL)
	COMBINATION EMERGENCY EXIT SIGN WITH DUAL HEAD LIGHTS WITH EMERGENCY BATTERY BACK-UP
	BATTERY POWERED EMERGENCY EGRESS LUMINAIRE - SURFACE MOUNTED
	SPOT/FLOOD LUMINAIRE - CEILING
	SPOT/FLOOD LUMINAIRE - ABOVE GROUND
	EXTERIOR POLE FIXTURE - SINGLE HEAD
	EXTERIOR POLE FIXTURE - TWIN HEAD
	EXTERIOR PATHWAY POST-TOP POLE FIXTURE
	BOLLARD FIXTURE
	STEP LUMINAIRE

LIGHTING CONTROLS

SYMBOL	DESCRIPTION
$	SINGLE POLE TOGGLE SWITCH, 20A, 120-277V @ +46" TO TOP OF BOX, UNO [1]
$3	THREE WAY TOGGLE SWITCH, 20A, 120-277V @ +46" TO TOP OF BOX, UNO [1]
$a,b,c	SUBSCRIPTS "a b c" DESIGNATE THE QUANTITY OF SWITCHES AT EACH LOCATION (TYPICAL FOR ALL SWITCH TYPES) [1]
$K	SINGLE POLE KEYED BARREL SWITCH 20A, 120-277V @ +46" TO TOP OF BOX, UNO [1]
	WALL MOUNTED PUSH BUTTON @ +46" TO TOP OF BOX, UNO [1]
D	WALL MOUNTED DIMMER SWITCH @ +46" TO TOP OF BOX, UNO [1]
OR	DIGITAL WALL CONTROL OVERRIDE SWITCH. RUN CABLING BACK TO LIGHTING CONTROL PANEL. MOUNTED @ +46" TO TOP OF BOX, UNO [1]
OS	WALL MOUNTED OCCUPANCY SENSOR. DUAL TECHNOLOGY, PASSIVE INFRA-RED OR ULTRASONIC, MOUNTED @ +46" TO TOP OF BOX, UNO [1]
OS	CEILING, OR PENDANT, MOUNTED OCCUPANCY SENSOR. DUAL TECHNOLOGY, PASSIVE INFRA-RED OR ULTRASONIC
OS	CORNER MOUNT OCCUPANCY SENSOR. DUAL TECHNOLOGY, PASSIVE INFRA-RED OR ULTRASONIC
DL	PHOTOCONTROL DAYLIGHT SENSOR

TAGS AND LEADERS

SYMBOL	DESCRIPTION
X	KEY NOTE
G2 L1-11a	LIGHT FIXTURE TAG : FIXTURE TYPE PANEL NAME - CIRCUIT# / SWITCHLEG
X	FEEDER DESIGNATION TAG
X	KITCHEN EQUIPMENT DESIGNATION TAG
x Ex.1	DETAIL DESIGNATION: TOP LETTER INDICATES DETAIL NUMBER, BOTTOM LETTER / NUMBER INDICATES SHEET NUMBER
REF x	MECHANICAL OR PLUMBING EQUIPMENT TAG
	BRACKET
	LEADERS

ONE LINE DIAGRAM

SYMBOL	DESCRIPTION
(N) PANEL "A" 100A	PANEL IDENTIFICATION
100A 3P	CIRCUIT BREAKER
250AF 200AT	CIRCUIT BREAKER WITH BREAKER TRIPING UNIT
100A 3P	FUSED SWITCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GROUND
	UNDERGROUND TERMINATION SERVICE LUG
M	UTILITY METER WITH CURRENT TRANSFORMER COMPARTMENT METER SOCKET
M	CUSTOMER-OWNED MULTIFUNCTION METER WITH CURRENT TRANSFORMERS
	MOTOR
	TRANSFORMER WITH GROUND
	UFER GROUND
	BOND TO COLD WATER PIPE, GAS PIPE, BUILDING STEEL
	AUTOMATIC TRANSFER SWITCH
	NEUTRAL LINK
SPD	SURGE PROTECTIVE DEVICE

CIRCUITS

SYMBOL	DESCRIPTION
	STUB
	CONTINUATION
	CONDUIT RISER - UP
	CONDUIT DROP - DOWN
	CONDUIT CONCEALED IN CEILING OR WALL.
	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
	EXISTING CONDUIT TO REMAIN.
	CONDUIT & CONDUCTORS FOR LOW VOLTAGE MOTION SENSORS
	EXISTING CONDUIT AND/OR CONDUCTORS TO BE REMOVED. UNDERGROUND CONDUIT MAY BE ABANDONED IN PLACE.
	HOMERUN TO PANELBOARD OR TERMINAL CABINET w/ CONDUCTORS AS NOTED
#	CIRCUIT CONDUTORS: LONG TICK INDICATES NEUTRAL CONDUCTOR; SHORT TICKS INDICATE PHASE CONDUCTORS; TICK MARK WITH A DOT ON THE END INDICATES EQUIPMENT GROUNDING CONDUCTOR. NUMBER BY TICKS INDICATES WIRE GAUGE OTHER THAN 12 AWG CU. NO TICKS INDICATES 2 #12 CU, 1 #12 CU GND, IN 1/2" CONDUIT. OTHERS AS NOTED ON PLAN. NOTE: PROVIDE A CODE SIZED EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS FOR THIS PROJECT, WHETHER SHOWN ON PLAN OR NOT.
	FLEXIBLE CONDUIT, 6'-0" LONG MAX. w/ #12 CU GROUND UNO.

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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Δ	DESCRIPTION	DATE

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SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL SYMBOL LEGEND

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:

E0.02

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THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

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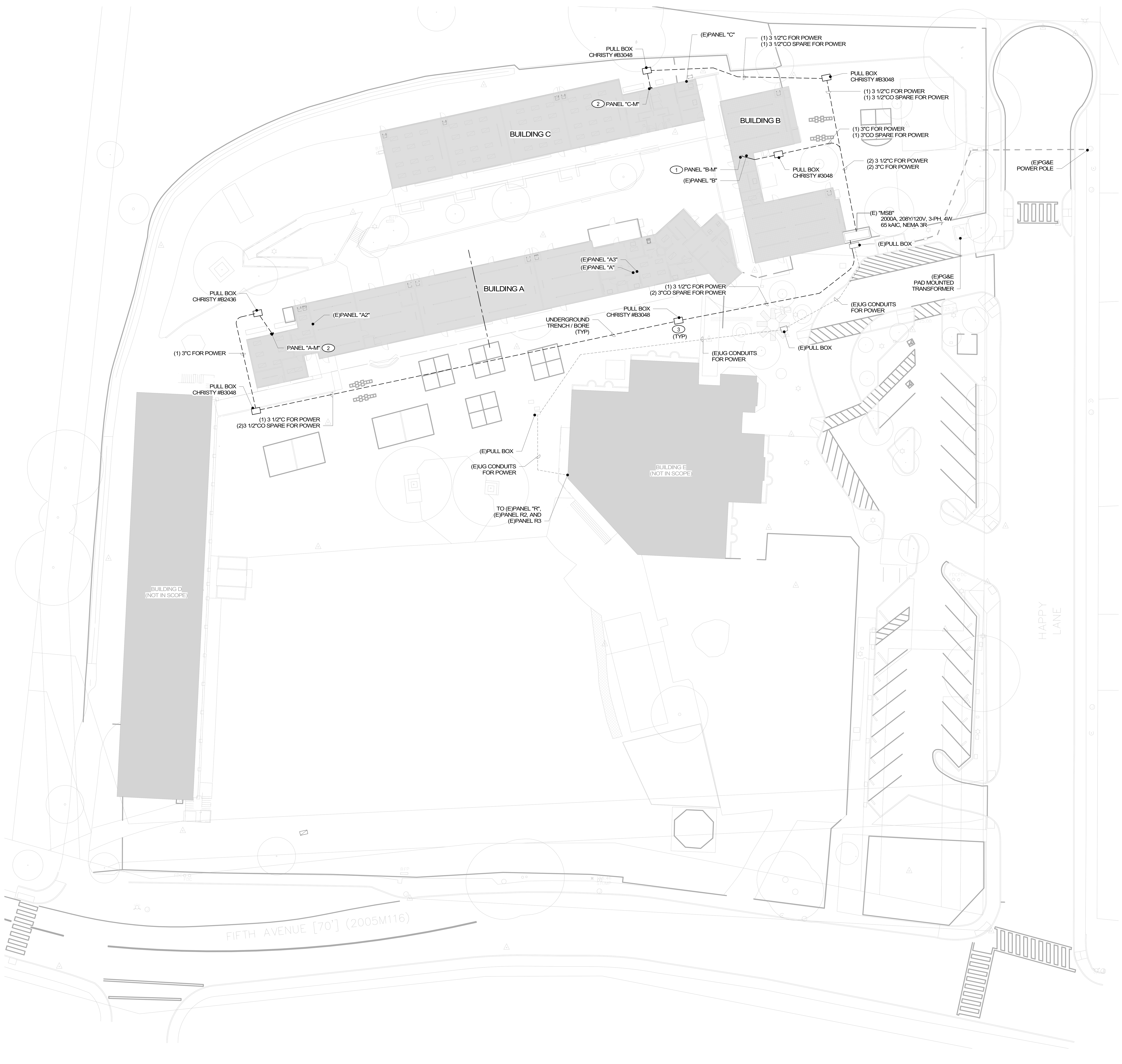

1 **ELECTRICAL SITE PLAN**
SCALE: 3/64" = 1'-0"

GENERAL NOTES

A. ALL ELECTRICAL CONDUCTORS IN PARALLEL SHALL COMPLY WITH CEC 310.10 (H).

B. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT. THE MATERIAL USED FOR CORROSION PROTECTION SHALL BE CALIFORNIA CODE APPROVED AND LABELED.

C. VOLTAGE DROP SHOWN ON THE ELECTRICAL ONE-LINE IS FOR PLAN CHECK PURPOSES. CONTRACTOR SHALL MEASURE ACTUAL FEEDER LENGTHS AND CALCULATE VOLTAGE DROP CALCULATIONS FOR ALL FEEDERS AND CIRCUIT GROUNDING, CEC 215.2(A)(2).

D. EXTERIOR ELECTRICAL OUTLETS INDICATED WEATHERPROOF WHILE IN USE "WPU" SHALL BE PROVIDED WITH WEATHERPROOF COVER, DIE-CAST METAL AND/OR AS INDICATED ON ELECTRICAL SPECIFICATION SECTION 26 27 26.

E. CONDUIT UNDERGROUND PATHWAYS SHALL BE FULLY COORDINATED WITH EXISTING UNDERGROUND UTILITIES. REFER TO SHEET E0.01 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL TRENCH DETAIL 2/E10.11. GENRAL CONTRACTOR TO VERIFY THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

F. UNDERGROUND PULL BOXES SHOWN ON THE PLAN SHALL BE VERIFIED BASED ON FINAL CONDUIT QUANTITY AND SIZES. ALL UNDERGROUND PULL BOXES SHALL BE SIZE PER CEC ARTICLE 314.28.

G. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.

H. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.

KEYNOTES

1 ELECTRICAL PANEL SURFACE MOUNTED. SEE DETAIL 2/E10.12.
2 ELECTRICAL PANEL SURFACE MOUNTED. SEE DETAIL 1/E10.12.
3 UNDERGROUND PULL BOX, SEE TYPICAL DETAIL 1/E10.11.

AGENCY APPROVAL:
DSA # 01-121954
FILE # 21-39

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RAMI S. ZEIDAN
No. E 16762
EXP. 9-30-26
ELECTRICAL
STATE OF CALIFORNIA

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75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
ELECTRICAL SITE PLAN

DSA SUBMITTAL

DATE: 2024.10.01
CLIENT PROJ NO:
SHEET:
E1.11

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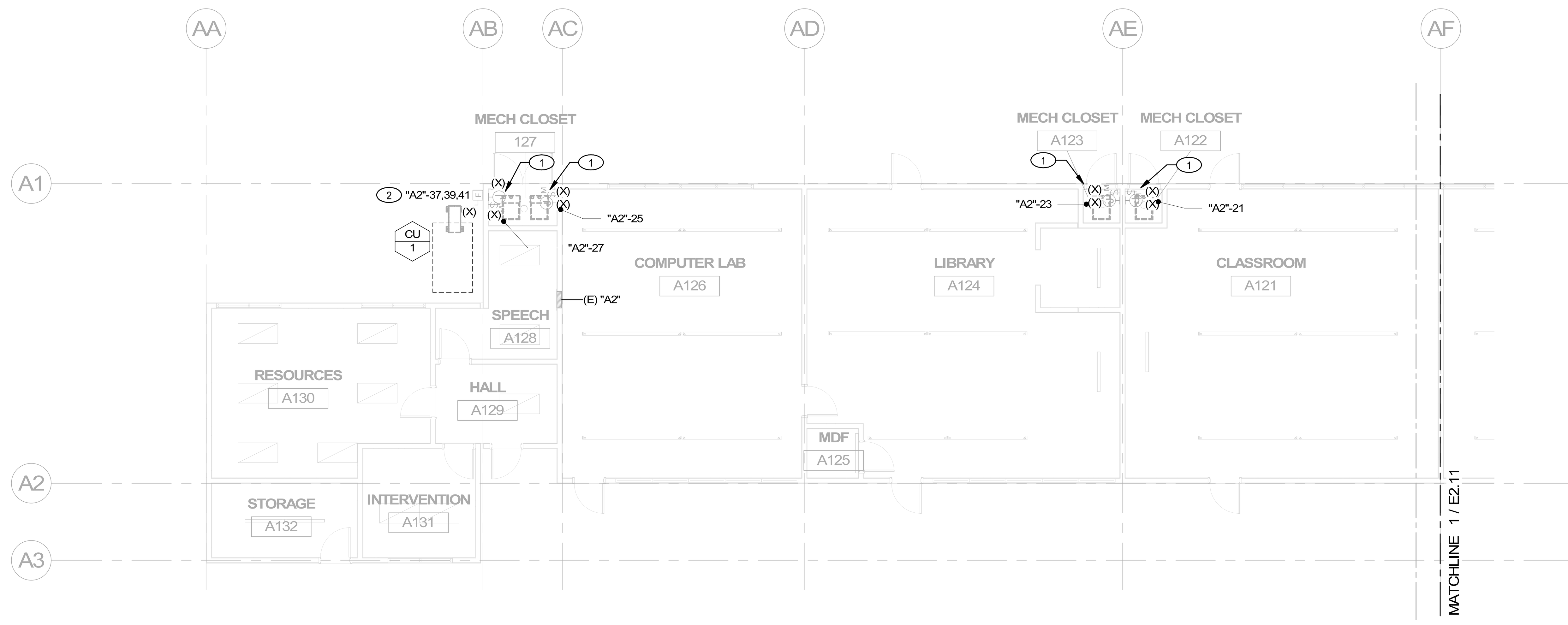
FILE # 21-39



2 ELECTRICAL BLDG A FLOOR PLAN SEG B - DEMOLITION
SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT IS EXISTING (E) TO REMAIN UNCHANGED UNLESS NOTED OTHERWISE AS DEMO (X).

B. CONTRACTOR SHALL COORDINATE WITH ARCHITECT, AND ALL PARTIES INVOLVED FOR THE DEMOLITION OF PANEL, REMOVAL OF CONDUCTORS, AND THE REMOVAL OR CONDUITS TO BE ABANDONED PRIOR TO DEMOLITION.

C. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

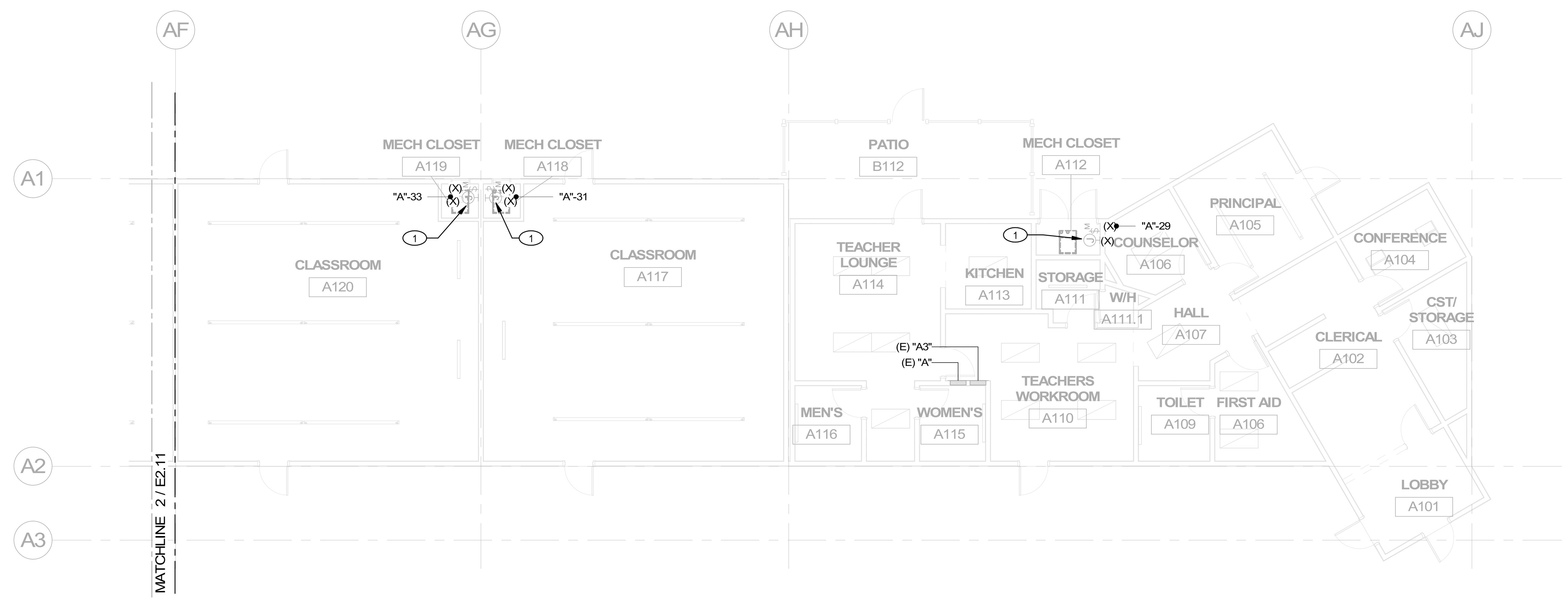
D. REFER TO ADDITIONAL DEMOLITION GENERAL NOTES ON COVER SHEET E0.01 AND ELECTRICAL SPECIFICATION SECTION 26 05 05.

E. CIRCUIT SHOWN ON THE EXISTING FURNACE BEING DEMO ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY CIRCUITS PRIOR TO DEMOLITION WORK.

KEYNOTES

1 DISCONNECT 120V CIRCUIT THAT SERVES THE EXISTING FURNACE BEING DEMOLISHED. REMOVE WIRES BACK TO SOURCE PANEL AND CONDUIT TO REMAIN IN PLACE.

2 DISCONNECT OUTDOOR MECHANICAL UNIT AND ASSOCIATED INDOOR UNIT, REMOVE DISCONNECT SWITCH AND WIRES. REMOVE CONDUIT TO THE NEAREST JUNCTION BOX LOCATED ABOVE CEILING SPACE. PATCH EXISTING WALL AS NECESSARY.



1 ELECTRICAL BLDG A FLOOR PLAN SEG A - DEMOLITION
SCALE: 1/8" = 1'-0"

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FACILITY:
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PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
ELECTRICAL BLDG A 1ST FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

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E2.11

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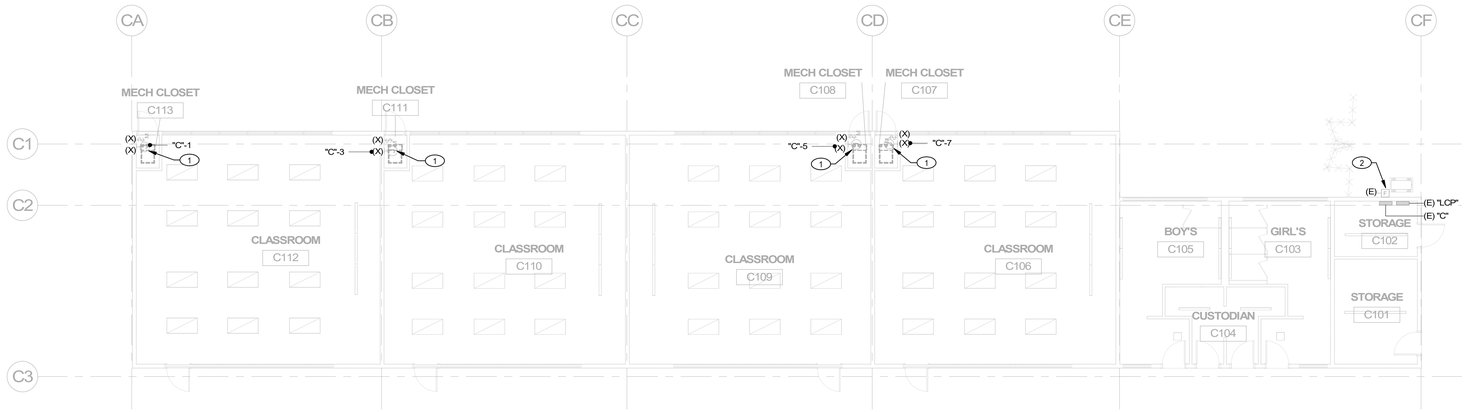
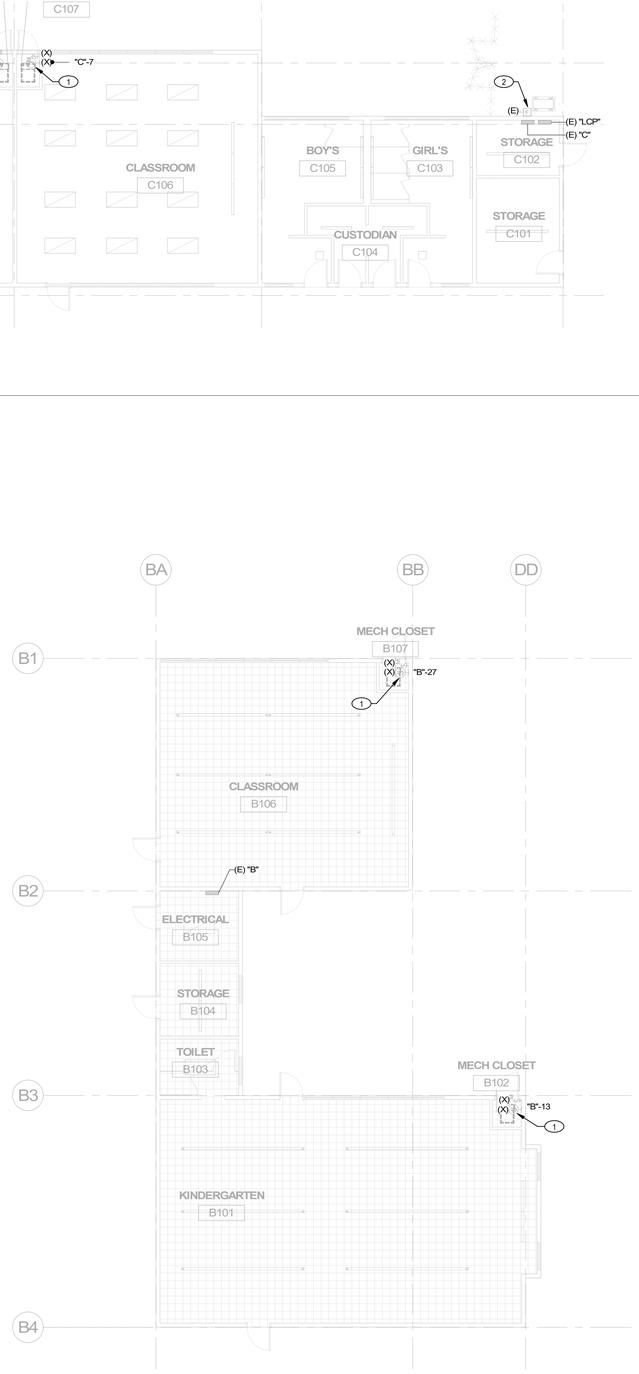


2 ELECTRICAL BLDG C FLOOR PLAN - DEMOLITION

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



1 ELECTRICAL BLDG B FLOOR PLAN - DEMOLITION

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

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT IS EXISTING (E) TO REMAIN UNCHANGED UNLESS NOTED OTHERWISE AS DEMO (X).

B. CONTRACTOR SHALL COORDINATE WITH ARCHITECT, AND ALL PARTIES INVOLVED FOR THE DEMOLITION OF PANEL, REMOVAL OF CONDUCTORS, AND THE REMOVAL OR CONDUITS TO BE ABANDONED PRIOR TO DEMOLITION.

C. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

D. REFER TO ADDITIONAL DEMOLITION GENERAL NOTES ON COVER SHEET E0.01 AND ELECTRICAL SPECIFICATION SECTION 26 05 05.

E. CIRCUIT SHOWN ON THE EXISTING FURNACE BEING DEMO ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY CIRCUITS PRIOR TO DEMOLITION WORK.

KEYNOTES (#)

1 DISCONNECT 120V CIRCUIT THAT SERVES THE EXISTING FURNACE BEING DEMOLISHED. REMOVE WIRES BACK TO SOURCE PANEL AND CONDUIT TO REMAIN IN PLACE.

2 ELECTRICAL CONNECTION FOR EXISTING MECHANICAL UNIT IS EXISTING TO REMAIN.

AGENCY APPROVAL:

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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL BLDG B & C 1ST FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

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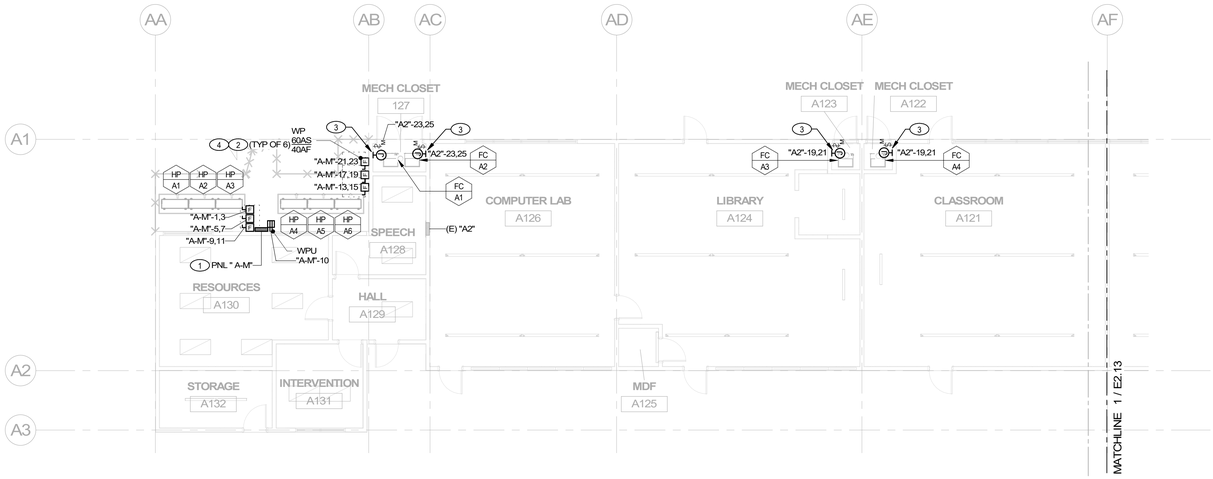
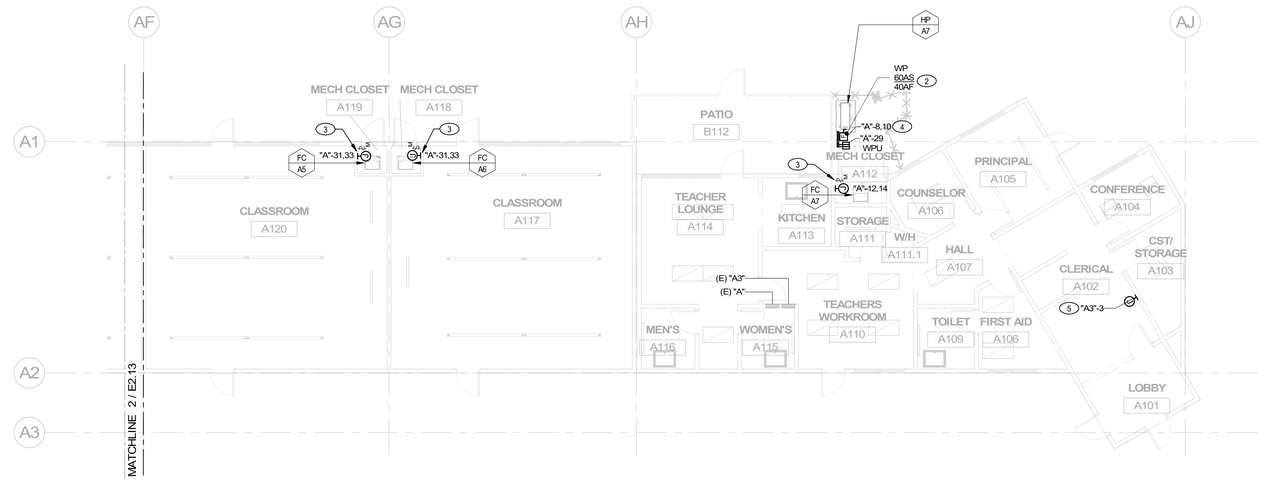


2 ELECTRICAL BLDG A FLOOR PLAN SEG B

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



1 ELECTRICAL BLDG A FLOOR PLAN SEG A

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

GENERAL NOTES

A. ALL ELECTRICAL CONDUCTORS IN PARALLEL SHALL COMPLY WITH CEC 310.10 (H).

B. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT AND FITTINGS. THE MATERIAL USED FOR CORROSION PROTECTION SHALL BE CALIFORNIA CODE APPROVED AND LABELED.

C. ALL ELECTRICAL CABLING WORKING SPACE SHALL COMPLY WITH CEC 110.72.

D. ALL ELECTRICAL EQUIPMENT WORKING SPACE SHALL COMPLY WITH CEC ARTICLE 110.34 ARTICLE 110.34(C), AND 110.73.

E. ALL CONDUCTOR BENDING RADIUS SHALL BE PER CEC 300.34.

F. ARC-FLASH WARNING LABELS SHALL BE PROVIDED ON ALL ELECTRICAL EQUIPMENT AS REQUIRED PER CEC 110.26(A).

G. ALL ELECTRICAL PENETRATIONS GOING THROUGH SHEARWALL(S) SHALL BE FULLY COORDINATED WITH STRUCTURAL DRAWINGS, ARCHITECTURAL DRAWINGS AND OTHER PARTIES INVOLVED PRIOR TO INSTALLATION AND ROUGH INSTALLATION.

H. PER CEC 408.4(A) CIRCUITS DIRECTORY OR CIRCUIT IDENTIFICATION. EVERY CIRCUIT AND CIRCUIT MODIFICATION SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. EX; SOUTH, NORTH, ETC, ROOM#, ROOM NAME, MACHINE#, OR LOCATION WITH-IN BUILDING.

I. PER CEC 408.4(B) SOURCE OF SUPPLY. ALL PANELBOARDS SUPPLIED BY A FEEDER, SHALL BE MARKED TO INDICATE WHERE THE POWER ORIGINATES.

J. EXTERIOR ELECTRICAL OUTLETS INDICATED WEATHERPROOF WHILE IN USE "WPU" SHALL BE PROVIDED WITH WEATHERPROOF COVER, DIE-CAST METAL AND/OR AS INDICATED ON ELECTRICAL SPECIFICATION 26 27 26.

K. CONDUIT UNDERGROUND PATHWAYS SHALL BE FULLY COORDINATED WITH EXISTING UNDERGROUND UTILITES. REFER TO SHEET E0.01 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL TRENCH DETAIL 3/E10.11 AND 4/E10.11. GENRAL CONTRACTOR TO VERIFY THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

L. UNDERGROUND PULL BOXES SHOWN ON THE PLAN SHALL BE VERIFIED BASED ON FINAL CONDUIT QUANTITY AND SIZES. ALL UNDERGROUND PULL BOXES SHALL BE SIZE PER CEC ARTICLE 314.28.

M. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.

N. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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KEYNOTES (#)

1 NEW PANELBOARD, NEMA 3R. REFER TO DETAIL 1/E10.12.

2 NEW DISCONNECT, NEMA 3R. REFER TO DETAIL 7/E10.12.

3 PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 15 MOCP, MOTOR RATED DISCONNECT FOR FAN COIL UNIT. REFER TO M0.01 FOR ADDITIONAL INFORMATION.

4 PROVIDE 208V, 1-PH, 2#8 CU, 1#10 CU GND, 3/4"C, 29 MCA, 40 MOCP, 60AS/40AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.01 FOR ADDITIONAL INFORMATION.

5 PROVIDE 120V, 2#12 CU, 1#12 CU GND IN 3/4"C OR WIREMOLD SURFACE MOUNTED (MATCH EXISTING WEREMOLD TYPE/SERIES) FOR NEW FIRE ALARM CONTROL PANEL. MOUNT JUNCTION BOX AT +70" AFF. REFER TO FIRE ALARM DRAWINGS AND FIRE ALARM CONTROL PANEL INSTALLATION MANUAL FOR POINT OF CONNECTION AND ADDITIONAL CONDUIT AND WIRE REQUIREMENTS.

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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL BLDG A 1ST FLOOR PLAN

DSA SUBMITTAL

DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:

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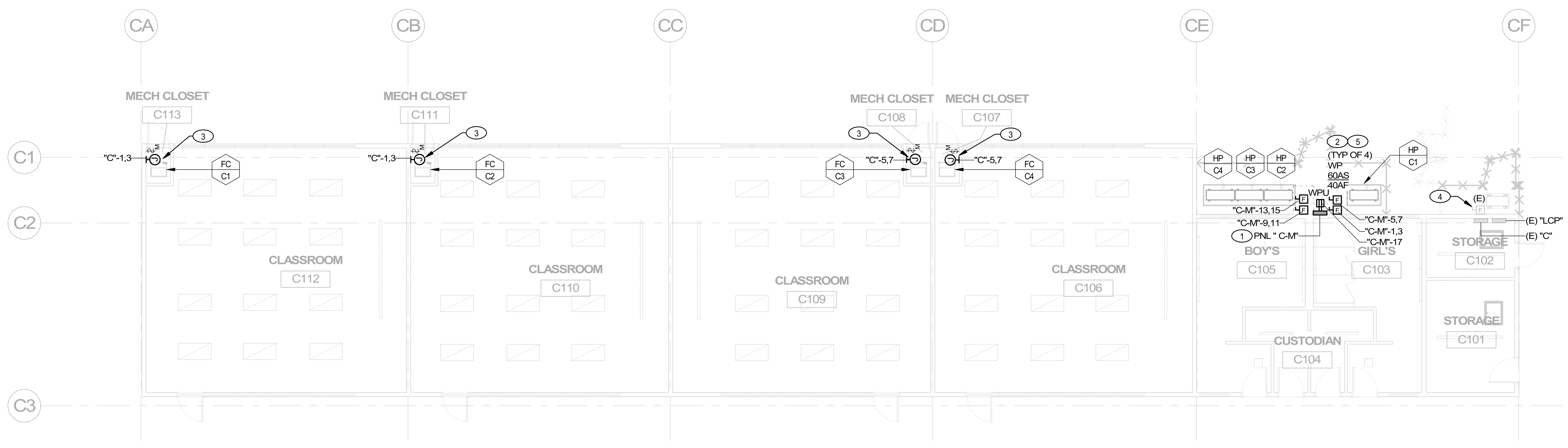
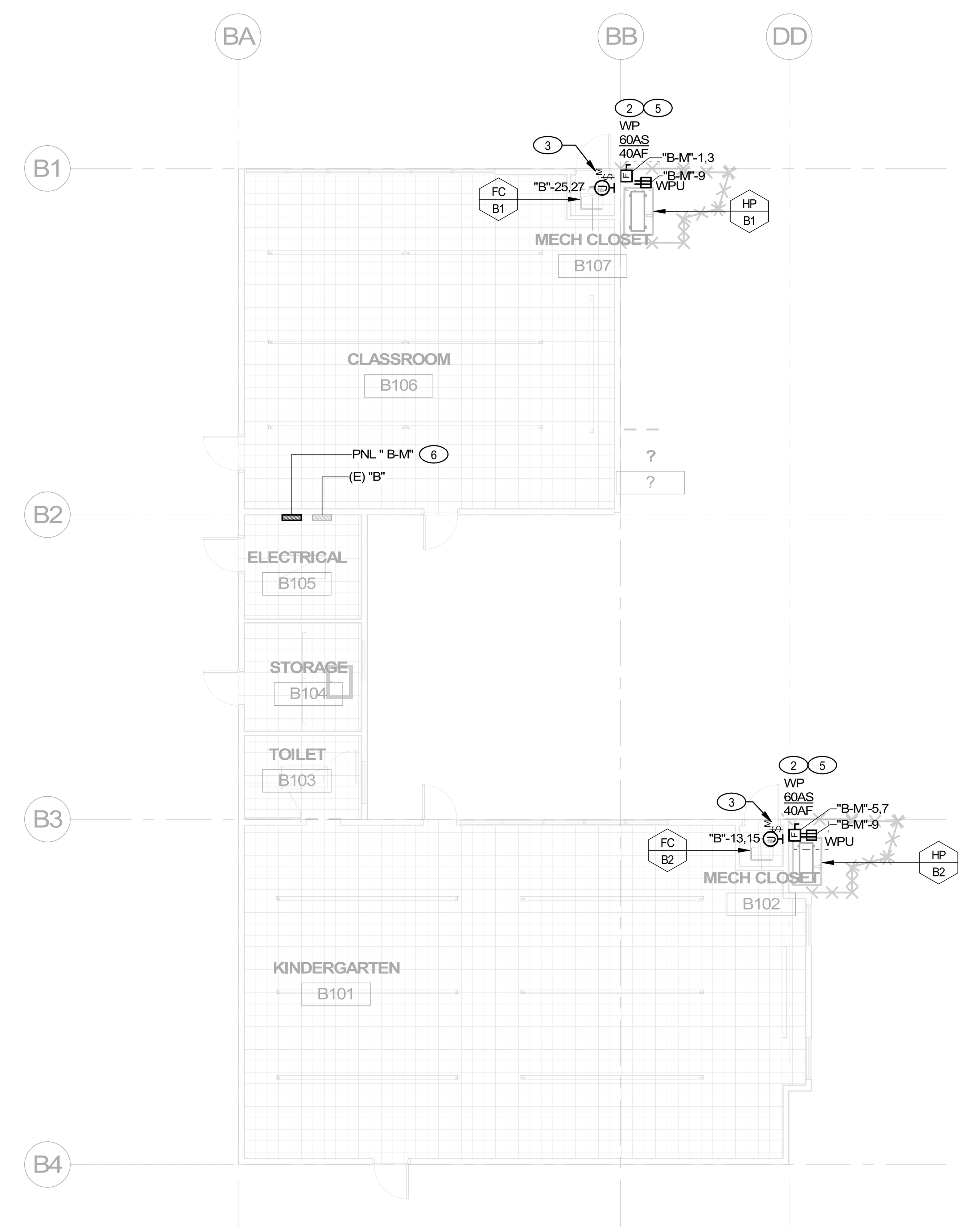


2 ELECTRICAL BLDG C FLOOR PLAN

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



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KEYNOTES

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2 NEW DISCONNECT, NEMA 3R. REFER TO DETAIL 7/E10.12.

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6 NEW PANELBOARD, NEMA 1. REFER TO DETAIL 2/E10.12.

AGENCY APPROVAL:

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FACILITY:

**75 HAPPY LN
SAN RAFAEL, CA 94901**

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL BLDG B & C 1ST FLOOR PLAN

DSA SUBMITTAL

DATE: 2024.10.01 | CLIENT PROJ NO:

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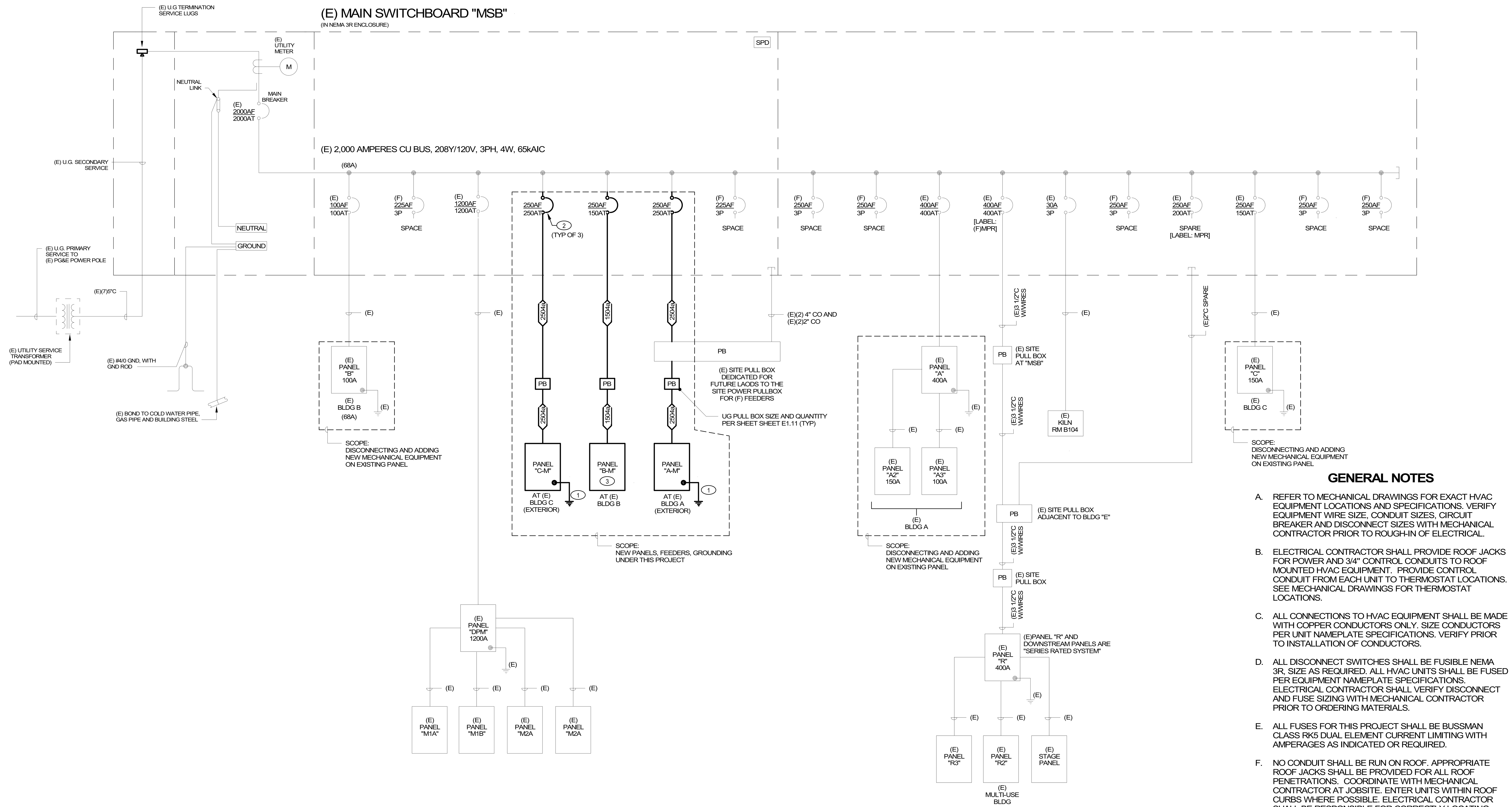

GENERAL NOTES

A. REFER TO MECHANICAL DRAWINGS FOR EXACT HVAC EQUIPMENT LOCATIONS AND SPECIFICATIONS. VERIFY EQUIPMENT WIRE SIZE, CONDUIT SIZES, CIRCUIT BREAKER AND DISCONNECT SIZES WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN OF ELECTRICAL.

B. ELECTRICAL CONTRACTOR SHALL PROVIDE ROOF JACKS FOR POWER AND 3/4" CONTROL CONDUITS TO ROOF MOUNTED HVAC EQUIPMENT. PROVIDE CONTROL CONDUIT FROM EACH UNIT TO THERMOSTAT LOCATIONS. SEE MECHANICAL DRAWINGS FOR THERMOSTAT LOCATIONS.

C. ALL CONNECTIONS TO HVAC EQUIPMENT SHALL BE MADE WITH COPPER CONDUCTORS ONLY. SIZE CONDUCTORS PER UNIT NAMEPLATE SPECIFICATIONS. VERIFY PRIOR TO INSTALLATION OF CONDUCTORS.

D. ALL DISCONNECT SWITCHES SHALL BE FUSIBLE NEMA 3R, SIZE AS REQUIRED. ALL HVAC UNITS SHALL BE FUSED PER EQUIPMENT NAMEPLATE SPECIFICATIONS. ELECTRICAL CONTRACTOR SHALL VERIFY DISCONNECT AND FUSE SIZING WITH MECHANICAL CONTRACTOR PRIOR TO ORDERING MATERIALS.

E. ALL FUSES FOR THIS PROJECT SHALL BE BUSSMAN CLASS RK5 DUAL ELEMENT CURRENT LIMITING WITH AMPERAGES AS INDICATED OR REQUIRED.

F. NO CONDUIT SHALL BE RUN ON ROOF. APPROPRIATE ROOF JACKS SHALL BE PROVIDED FOR ALL ROOF PENETRATIONS. COORDINATE WITH MECHANICAL CONTRACTOR AT JOBSITE. ENTER UNITS WITHIN ROOF CURBS WHERE POSSIBLE. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY LOCATING ROOF PENETRATIONS.

G. LOCATE NEMA 3R ROOF RECEPTACLES SO THAT NO MECHANICAL UNIT IS FURTHER THAN 20 FT FROM A RECEPTACLE. PROVIDE ALL NECESSARY HARDWARE FOR RECEPTACLE OUTLET SUPPORT.

H. REFER TO MECHANICAL DRAWINGS FOR CONTROL WIRING. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT AND ROOF PENETRATIONS FOR CONTROL WIRING AS REQUIRED. COORDINATE WITH MECHANICAL CONTRACTOR AT JOBSITE.

I. FIRE SEAL ALL FIRE ASSEMBLY PENETRATIONS FOR CONDUITS WITH AN APPROVED FIRE SEALANT AFTER CONDUIT INSTALLATION. FIRE SEAL SHALL PROVIDE EQUAL FIRE RATING AS ASSEMBLY PENETRATED.

J. MAXIMUM AVAILABLE FAULT CURRENT (AFC) SHALL BE FIELD MARKED ON ALL SERVICE EQUIPMENT, LEGIBLY, AND SHALL INCLUDE DATE AFC CALCULATION WAS PERFORMED, IN COMPLIANCE WITH CEC 2016 SECTION 110.24(A).

KEYNOTES

1. PROVIDE 3/4" X 10' CU GROUND ROD AND 1#6 CU GROUNDING ELECTRODE CONDUCTOR. SEE DETAIL 3/E10.11.
2. PROVIDE NEW BREAKER. BREAKER TO MATCH EXISTING FRAME AND EXISTING AIC RATING.
3. PROVIDE GROUNDING ELECTRODE CONDUCTOR #6 TO EXISTING BUILDING GROUNDING BUS BAR.

VOLTAGE DROP CALCULATIONS

Project: SRCS Sun Valley ES HVAC Upgrades

Note: Enter Nominal Conductor Sizes except as below: 1/0 = 101, 2/0 = 102, 3/0 = 103, 4/0 = 104

Circuit			Raceway	Conductor				Load		Line-to-Neutral		Line-to-Line	
Designation	Voltage	Phase	Metalic (M) or Non-Metalic (NM)	Material (AL) or (CU)	Nominal Size	Parallel Runs	Length in Feet	AMPS	Power Factor	Volt Drop	%	Volt Drop	%
PNL "A-M"	208	3	NM	CU	350	1	450	155.0	85%			6.45	3.10
PNL "B-M"	208	3	NM	CU	101	1	190	110.0	85%			4.53	2.18
PNL "C-M"	208	3	NM	CU	350	1	350	140.0	85%			4.53	2.18

EXISTING ELECTRICAL SERVICE LOAD CALCULATION

EXISTING MAXIMUM PEAK DEMAND LOAD FOR THE MONTH OF MARCH 2007				
(SOURCE: PG&E PREVIOUS 12 MONTHS DATA)			120.0	KVA
PLUS 25% OF EXISTING CONNECTED LOAD			30.0	KVA
TOTAL EXISTING CONNECTED LOAD			= 150.0	KVA
REMOVED EXISTING LOAD				
MEHCANICAL EQUIPMENT		2.0		KVA
-		0.00		KVA
TOTAL LOAD REMOVED		= 2.0		KVA
TOTAL EXISTING LOAD MINUS REMOVED LOAD			= 148.0	KVA
ADD NEW LOAD				
SUPPLY FANS	1.2	KVA EA X 8	9.6	KVA
HP/FC	8.3	KVA EA X 15	124.3	KVA
25% OF LARGEST NEW MOTOR=	6.0	KVA @ 25% =	1.5	KVA
TOTAL ADDED LOAD			= 135.4	KVA
EXISTING AND ADDED TOTAL SERVICE LOAD			= 283.4	KVA
283.4 KVA @ 120/208 VOLT , 3 PHASE = 787 AMPERES				

THEREFORE: EXISTING MAIN 2000 AMP SERVICE HAS THE CAPACITY FOR THE NEW ADDED LOAD.

1 **ONE-LINE DIAGRAM**

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

AGENCY APPROVAL:
DSA # 01-121954
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FACILITY:
75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
ELECTRICAL ONE-LINE DIAGRAM

DSA SUBMITTAL

DATE: 2024.10.01 | CLIENT PROJ NO:

SHEET:
E6.01

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

ONE LINE DIAGRAM FEEDER SCHEDULE

ALL FEEDERS SHOWN IN THIS FEEDER SCHEDULE ARE NOT NECESSARY USED ON THE ONE-LINE DIAGRAM OR PLANS IF NOT REQUIRED

3Ø, 3W + GND CIRCUITS

FEEDER TAG	RATING	CONDUIT		PHASE CONDUCTORS	EQUIP. GND. CONDUCTOR (EGC)
		EMT	PVC		
	(AMPS)			(COPPER)	(NEC TABLE 250.122)
203	20	3/4"C	1"C	(3) #12	#12
253	25	3/4"C	1"C	(3) #10	#10
303	30	3/4"C	1"C	(3) #10	#10
403	40	3/4"C	1"C	(3) #8	#10
453	45	1"C	1"C	(3) #6	#10
503	50	1"C	1"C	(3) #6	#10
603	60	1-1/4"C	1-1/4"C	(3) #4	#10
703	70	1-1/4"C	1-1/4"C	(3) #4	#8
803	80	1-1/4"C	1-1/2"C	(3) #2	#8
903	90	1-1/4"C	1-1/2"C	(3) #2	#8
1003	100	1-1/2"C	2"C	(3) #1	#8
1253	125	1-1/2"C	2"C	(3) #1	#6
1503	150	2"C	2"C	(3) #1/0	#6
1753	175	2"C	2"C	(3) #2/0	#6
2003	200	2"C	2-1/2"C	(3) #3/0	#6
2253	225	2-1/2"C	2-1/2"C	(3) #4/0	#4
2503	250	2-1/2"C	3"C	(3) #250 KCMIL	#4
3003	300	3"C	3"C	(3) #350 KCMIL	#4
3503	350	3"C	3-1/2"C	(3) #500 KCMIL	#3
4003	400	(2) 2"C	(2) 2-1/2"C	(3) #3/0 (EACH)	#3 (EACH)
4503	450	(2) 2-1/2"C	(2) 2-1/2"C	(3) #4/0 (EACH)	#2 (EACH)
5003	500	(2) 2-1/2"C	(2) 3"C	(3) #250 KCMIL (EACH)	#2 (EACH)
6003	600	(2) 3"C	(2) 3"C	(3) #350 KCMIL (EACH)	#1 (EACH)
7003	700	(2) 3"C	(2) 3-1/2"C	(3) #500 KCMIL	#1/0 (EACH)
8003	800	(3) 2-1/2"C	(3) 3"C	(3) #300 KCMIL (EACH)	#1/0 (EACH)
10003	1000	(3) 3"C	(3) 3-1/2"C	(3) #400 KCMIL (EACH)	#2/0 (EACH)
12003	1200	(4) 3"C	(4) 3"C	(3) #350 KCMIL (EACH)	#3/0 (EACH)
16003	1600	(5) 3"C	(5) 3-1/2"C	(3) #400 KCMIL (EACH)	#4/0 (EACH)
20003	2000	(6) 3"C	(6) 3-1/2"C	(3) #400 KCMIL (EACH)	#250 KCMIL (EACH)
25003	2500	(7) 3"C	(7) 3-1/2"C	(3) #500 KCMIL (EACH)	#350 KCMIL (EACH)
30003	3000	(8) 3"C	(8) 3-1/2"C	(3) #500 KCMIL (EACH)	#400 KCMIL (EACH)
40003	4000	(10) 3-1/2"C	(10) 4"C	(3) #600 KCMIL (EACH)	#500 KCMIL (EACH)

3Ø, 4W + GND CIRCUITS

FEEDER TAG	RATING	CONDUIT		PHASE, NEUTRAL CONDUCTORS	EQUIP. GND. CONDUCTOR (EGC)
		EMT	PVC		
	(AMPS)			(COPPER)	(NEC TABLE 250.122)
204	20	3/4"C	1"C	(4) #12	#12
254	25	3/4"C	1"C	(4) #10	#10
304	30	3/4"C	1"C	(4) #10	#10
404	40	1"C	1"C	(4) #8	#10
454	45	1"C	1-1/4"C	(4) #6	#10
504	50	1"C	1-1/4"C	(4) #6	#10
604	60	1-1/4"C	1-1/4"C	(4) #4	#10
704	70	1-1/4"C	1-1/4"C	(4) #4	#8
804	80	1-1/2"C	1-1/2"C	(4) #2	#8
904	90	1-1/2"C	1-1/2"C	(4) #2	#8
1004	100	2"C	2"C	(4) #1	#8
1254	125	2"C	2"C	(4) #1	#6
1504	150	2"C	2"C	(4) #1/0	#6
1754	175	2"C	2-1/2"C	(4) #2/0	#6
2004	200	2-1/2"C	2-1/2"C	(4) #3/0	#6
2254	225	2-1/2"C	3"C	(4) #4/0	#4
2504	250	2-1/2"C	3"C	(4) #250 KCMIL	#4
3004	300	3"C	3-1/2"C	(4) #350 KCMIL	#4
3504	350	3-1/2"C	4"C	(4) #500 KCMIL	#3
4004	400	(2) 2-1/2"C	(2) 2-1/2"C	(4) #3/0 (EACH)	#3 (EACH)
4504	450	(2) 2-1/2"C	(2) 3"C	(4) #4/0 (EACH)	#2 (EACH)
5004	500	(2) 2-1/2"C	(2) 3"C	(4) #250 KCMIL (EACH)	#2 (EACH)
6004	600	(2) 3"C	(2) 3-1/2"C	(4) #350 KCMIL (EACH)	#1 (EACH)
7004	700	(2) 3-1/2"C	(2) 4"C	(4) #500 KCMIL	#1/0 (EACH)
8004	800	(3) 3"C	(3) 3-1/2"C	(4) #300 KCMIL (EACH)	#1/0 (EACH)
10004	1000	(3) 3"C	(3) 3-1/2"C	(4) #400 KCMIL (EACH)	#2/0 (EACH)
12004	1200	(4) 3"C	(4) 3-1/2"C	(4) #350 KCMIL (EACH)	#3/0 (EACH)
16004	1600	(5) 3"C	(5) 3-1/2"C	(4) #400 KCMIL (EACH)	#4/0 (EACH)
20004	2000	(6) 3"C	(6) 3-1/2"C	(4) #400 KCMIL (EACH)	#250 KCMIL (EACH)
25004	2500	(7) 3-1/2"C	(7) 4"C	(4) #500 KCMIL (EACH)	#350 KCMIL (EACH)
30004	3000	(8) 3-1/2"C	(8) 4"C	(4) #500 KCMIL (EACH)	#400 KCMIL (EACH)
40004	4000	(10) 4"C	(10) 4"C	(4) #600 KCMIL (EACH)	#500 KCMIL (EACH)

3Ø, 3W + GND CIRCUITS ADJUSTED FOR VOLTAGE DROP

3Ø, 4W + GND CIRCUITS ADJUSTED FOR VOLTAGE DROP / UNDERGROUND

1504a	150	3"C	3"C	(4) #1/0	#6
2504a	250	3 1/2"C	3 1/2"C	(4) #350 KCMIL	#2

NOTES:

A. ALL CONDUCTORS SHALL BE DUAL RATED THHN/THWN, 90°/75°, 600V, COPPER WHERE INSTALLED UNDERGROUND OR IN WET LOCATIONS.

B. CONDUCTOR SIZES ARE BASED ON 2020 NEC TABLE 310.16, COPPER.

C. ALL CIRCUITS 100A AND LOWER ARE SIZED FROM THE 60° COLUMN (NEC 110.14(C)). ALL OTHER CIRCUITS ARE SIZED FROM THE 75° COLUMN.

D. PVC CONDUIT HAS BEEN SIZED BASED ON TABLE C.1 - SCHEDULE 80.

E. WHERE UNGROUNDED CONDUCTORS ARE INCREASED FROM THE MINIMUM SIZE DUE TO VOLTAGE DROP, THE EGC SHALL BE UPSIZED PROPORTIONATELY ACCORDING TO CIRCULAR MIL (NEC 250.122(B)).

MISCELLANEOUS

PS	PRIMARY SERVICE	N/A	N/A	PULL STRING	N/A
SEC	SECONDARY SERVICE	N/A	N/A	N/A	N/A
EXIST	EXISTING FEEDER	N/A	N/A	(E) CONDUCTORS	(E)

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

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Δ	DESCRIPTION	DATE

CONSULTANT:

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MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER
RAMI S. ZEIDAN
No. E 16762
EXP. 9-30-26
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL SCHEDULES

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:

E6.02

Autodesk Docs://3584004000 SRCS Sun Valley ES HVAC & FA R22/24-2054_SRCS Sun Valley ES_MEP+FA_r22.rvt
9/20/2024 10:37:49 AM

THE USE SHOWN ABOVE IS FOR ELECTRONIC PLOTTING ONLY. SHEETS ORIGINAL SPACE SIZE

(E) Branch Panel: A3

Location: TEACHERS WORKROOM A110 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: A | **Phases:** 3 | **Mains Type:** MLO
Mounting: Recessed | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) FACP	20 A	1	250			0			1	20 A	**SPARE**	2
3	**[1] [2] FACP**	20 A	1		**300**			0		1	20 A	SPARE	4
5	SPARE	20 A	1			0			0	1	20 A	SPARE	6
7	SPARE	20 A	1	0			0			1	20 A	SPARE	8
9	(E) LTG - OFFICE	20 A	1		500			0		1	20 A	SPARE	10
11	(E) CEILING FAN	20 A	1			500			0	1	20 A	SPARE	12
13	(E) REC - RESTROOM	20 A	1	540			0			1	20 A	SPARE	14
15	(E) REC - IDF RM	20 A	1		1,080			0		1	20 A	SPARE	16
17	PFB	--	1			--			--	1	--	PFB	18
19	PFB	--	1	--			--			1	--	PFB	20
21	PFB	--	1		--			--		1	--	PFB	22
23	PFB	--	1			--			--	1	--	PFB	24
		Total Load:		790 VA		1,867 VA		500 VA					
		Total Amps:		7 A		16 A		4 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	300 VA	100.00%	300 VA		
Spare	2870 VA	100.00%	2870 VA	**Total Conn. Load:**	3,156 VA
				Total Est. Demand:	3,156 VA
				Total Conn. Current:	9 A
				Total Est. Demand Current:	9 A

Notes:
[1] PROVIDE NEW BREAKER. NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING. [2] BREAKER ASSIGNED FOR FIRE ALARM SYSTEM SHALL BE PAINTED RED/ MARKED WITH RED AND BE PROVIDED WITH A LOCK-ON DEVICE.

(E) Branch Panel: B

Location: ELECTRICAL B105 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: MSB | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | **MCB Rating:**

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) EMS PANEL	20 A	1	200			720			1	20 A	REC - CLASS RM	2
3	(E) EXTERIOR FAN	20 A	1		200			720		1	20 A	REC - CLASS RM	4
5	**SPARE**	20 A	1			0			720	1	20 A	REC - CLASS RM	6
7	(E) REC - FAN COIL	20 A	1	180			720			1	20 A	REC - CLASS RM	8
9	(E) LTG	20 A	1		500			720		1	20 A	REC - CLASS RM	10
11	(E) LTG - CLASS RM 101	20 A	1			200			1,000	2	20 A	(E) LTG - PARKING LOT	12
13	**[1] FC - B2**	**15 A**	**2**	**499**			1,000			--	--	--	14
15	**--**	**--**	**--**		**499**			1,000		2	20 A	(E) LTG - PARKING LOT	16
17	(E) TRASH FORK LIFT	20 A	1			1,200			1,000	--	--	--	18
19	(E) REC - TRASH AREA	20 A	1	360			1,000			2	20 A	(E) LTG - F PARKING LOT	20
21	(E) EXHAUST FAN #6	20 A	1		350			1,000		--	--	--	22
23	FAEP - B	20 A	1			500			1,000	2	20 A	(E) LTG - F PARKING LOT	24
25	**[1] FC - B1**	**15 A**	**2**	**499**			1,000			--	--	--	26
27	**--**	**--**	**--**		**499**			1,000		1	20 A	(E) LTG - COVER WALKWAY	28
29	(E) REC FAN COIL	20 A	1			360			1,000	1	20 A	(E) LTG - COVER WALKWAY	30
31	(E) TRASH COMPACTOR	20 A	2	1,200			1,000			1	20 A	(E) LTG - F COVER WALKWAY	32
33	--	--	--		1,200			1,000		1	20 A	(E) LTG - F COVER WALKWAY	34
35	PFB	--	1			--			100	1	20 A	(E) TIME CLOCK CONTROL (LCP)	36
37	PFB	--	1	--			--			1	--	PFB	38
39	PFB	--	1		--			--		1	--	PFB	40
41	PFB	--	1			--			--	1	--	PFB	42
43	MAIN CIRCUIT BREAKER PHYSICAL LOCATION	100 A	3	0			--			1	--	NON-SPACE	44
45	--	--	--		0			--		1	--	NON-SPACE	46
47	--	--	--			0			--	1	--	NON-SPACE	48
		Total Load:		8,334 VA		8,644 VA		7,080 VA					
		Total Amps:		71 A		74 A		59 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	1996 VA	112.50%	2246 VA		
Spare	22150 VA	100.00%	22150 VA	**Total Conn. Load:**	24,054 VA
				Total Est. Demand:	24,293 VA
				Total Conn. Current:	67 A
				Total Est. Demand Current:	67 A

Notes:
[1] PROVIDE NEW BREAKER. NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

(E) Branch Panel: A

Location: TEACHERS WORKROOM A110 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: MSB | **Phases:** 3 | **Mains Type:** MCB
Mounting: RECESSED | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: Type 1 | **MCB Rating:**

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) REC - COPY MACHINE	20 A	1	1,000				720		1	20 A	(E) LTG - CLASSROOMS	2
3	SPARE	20 A	1		0				720	1	20 A	(E) LTG - CLASSROOMS	4
5	(E) EF - 7	20 A	1			500				1	20 A	(E) LTG - CLASSROOMS	6
7	(E) EF - 2	20 A	1	500			**2,413**			**2**	**40 A**	**[1] HP - 7**	8
9	**SPARE**	20 A	1		0			**2,413**		--	--	--	10
11	(E) REC - KITCHEN	20 A	1			1,080			**499**	**2**	**20 A**	**[1] FC - 7**	12
13	(E) REC - KITCHEN	20 A	1	1,080			**499**			--	--	--	14
15	(E) STOVE	20 A	1		500			540		1	20 A	(E) REC - OFFICE	16
17	(E) REC - DISH WASHER	20 A	1			1,200			540	1	20 A	(E) REC - OFFICE	18
19	(E) IWH	20 A	1	1,500			540			1	20 A	(E) REC - OFFICE	20
21	(E) REC -GARBAGE DISPOSAL	20 A	1		0			540		1	20 A	(E) REC - OFFICE	22
23	SPARE	20 A	1			0			540	1	20 A	(E) REC - OFFICE	24
25	(E) REC - CLASSROOMS	20 A	1	720			900			1	20 A	(E) REC - REFRIGERATOR	26
27	(E) REC - CLASSROOMS	20 A	1		720			540		1	20 A	(E) REC	28
29	**REC - EXTERIOR AT MECH EQUIPMENT**	20 A	1			**180**			540	1	20 A	(E) REC	30
31	**[1] FC - 5 & FC - 6**	**20 A**	**2**	**998**			1,000			1	20 A	(E) REC - COPY MACHINE	32
33	--	--	--		**998**			540		1	20 A	(E) REC	34
35	(E) REC - FAN COILS	20 A	1			540			0	1	20 A	SPARE	36
37	(E) PANLE "A2"	150 A	3	6,865			790			3	100 A	(E) PANEL "A3"	38
39	--	--	--		9,561			1,867		--	--	--	40
41	--	--	--			7,902			500	--	--	--	42
		Total Load:		19,389 VA		18,819 VA			14,716 VA				
		Total Amps:		167 A		162 A			123 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	11812 VA	110.21%	13019 VA		
Power	300 VA	100.00%	300 VA	**Total Conn. Load:**	52,908 VA
Receptacle	180 VA	100.00%	180 VA	**Total Est. Demand:**	54,079 VA
Spare	41086 VA	100.00%	41086 VA	**Total Conn. Current:**	147 A
				Total Est. Demand Current:	150 A

Notes:
[1] PROVIDE NEW BREAKER. NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

(E) Branch Panel: A2

Location: SPEECH A128 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: A | **Phases:** 3 | **Mains Type:** MLO
Mounting: RECESSED | **Wires:** 4 | **Mains Rating:** 150 A
Enclosure: Type 1

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) REC - COMPUTER LAB	20 A	1	1,080			540			1	20 A	(E) REC - CLASSROOM	2
3	(E) REC - COMPUTER LAB	20 A	1		1,080			540		1	20 A	(E) REC - CLASSROOM	4
5	(E) REC - COMPUTER LAB	20 A	1			720			1,080	1	20 A	(E) REC	6
7	(E) REC - COMPUTER LAB	20 A	1	720			0			1	20 A	SPARE	8
9	(E) REC - OFFICE	20 A	1		720			0		1	20 A	SPARE	10
11	(E) REC - OFFICE	20 A	1			720			0	1	20 A	SPARE	12
13	(E) REC - COMPUTER LAB	20 A	1	720			1,500			1	20 A	(E) LTG - CLASSROOM	14
15	(E) REC - COMPUTER LAB	20 A	1		720			1,500		1	20 A	(E) LTG - CLASSROOM	16
17	(E) REC - MDF	20 A	1			720			380	1	20 A	(E) REC - EF - 9	18
19	**[1] FC - A3 & FA - A4**	**20 A**	**2**	**998**			380			1	20 A	(E) REC - EF - 8	20
21	**--**	**--**	**--**		**998**			0		1	20 A	SPARE	22
23	**[1] FC - A1 & FA - A2**	**20 A**	**2**			**998**			0	1	20 A	SPARE	24
25	**--**	**--**	**--**	**998**			0			1	20 A	SPARE	26
27	(E) REC - FAN COILS	20 A	1		720			0		1	20 A	SPARE	28
29	SPARE	20 A	1			0			--	1	--	PFB	30
31	SPARE	20 A	1	0			--			1	--	PFB	32
33	(E) IWH	40 A	2		3,328			--		1	--	PFB	34
35	--	--	--			3,328			--	1	--	PFB	36
37	**(E) CU - 1 BEING DEMO (BECOMES SPARE)**	35 A	3	0			--			1	--	PFB	38
39	--	--	--		0			--		1	--	PFB	40
41	--	--	--			0			--	1	--	PFB	42
		Total Load:		6,865 VA		9,561 VA			7,902 VA				
		Total Amps:		57 A		81 A			67 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	3992 VA	106.25%	4242 VA		
Spare	20496 VA	100.00%	20496 VA	**Total Conn. Load:**	24,320 VA
				Total Est. Demand:	24,561 VA
				Total Conn. Current:	68 A
				Total Est. Demand Current:	68 A

Notes:
[1] PROVIDE NEW BREAKER. NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

(E) PANEL "A3"	(E) PANEL "A"
(E) PANEL "B"	(E) PANEL "A2"

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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Δ	DESCRIPTION	DATE

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REGISTERED PROFESSIONAL ENGINEER
SAMI S. ZEIDAN
No. E 16762
EXP. 9-30-26
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL PANEL SCHEDULES

DSA SUBMITTAL

DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:

E6.03

Autodesk Docs://3584004000 SRCS Sun Valley ES HVAC & FA R22\24-2054_SRCS Sun Valley ES_MEP+FA_r22.rvt
9/20/2024 10:27:51 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" LONG WHEN PLOTTED ON ANSI D SHEETS (ORIGINAL SHEET SIZE)

Branch Panel: B-M

Location: ELECTRICAL B105
Supply From: MSB
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - B1	40 A	2	2,413			0			2	45 A	SPARE	2
3	--	--	--		2,413			0		--	--	--	4
5	HP - B2	40 A	2			2,413			0	2	45 A	SPARE	6
7	--	--	--	2,413			0			--	--	--	8
9	REC - EXTERIOR AT MECHANICAL EQUIPMENT	20 A	1		360			0		1	20 A	SPARE	10
11	SPARE	20 A	1			0			0	1	20 A	SPARE	12
13	SPARE	20 A	1	0			0			1	20 A	SPARE	14
15	SPARE	20 A	1		0			0		1	20 A	SPARE	16
17	SPARE	20 A	1			0			0	1	20 A	SPARE	18
19	PFB	--	1	--			--			1	--	PFB	20
21	PFB	--	1		--			--		1	--	PFB	22
23	PFB	--	1			--			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	PFB	--	1	--			--			1	--	PFB	38
39	PFB	--	1		--			--		1	--	PFB	40
41	PFB	--	1			--			--	1	--	PFB	42
		Total Load:		4,826 VA		2,757 VA		2,413 VA					
		Total Amps:		41 A		23 A		20 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	9652 VA	112.50%	10859 VA		
Receptacle	360 VA	100.00%	360 VA	**Total Conn. Load:**	9,995 VA
				Total Est. Demand:	11,201 VA
				Total Conn. Current:	28 A
				Total Est. Demand Current:	31 A

Notes:

(E) Branch Panel: C

Location: STORAGE C102
Supply From: MSB
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 150 A
MCB Rating:

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	**[1] FC - C1 & FC - C2**	**20 A**	**2**	**998**			1,080			1	20 A	(E) REC CLASSROOMS	2
3	**--**	**--**	**--**		**998**			1,080		1	20 A	(E) REC CLASSROOMS	4
5	**[1] FC - C4 & FC - C5**	**20 A**	**2**			**998**			720	1	20 A	(E) REC CLASSROOMS	6
7	**--**	**--**	**--**	998			540			1	20 A	(E) REC CLASSROOMS	8
9	(E) EF - 1	20 A	1		670			1,080		1	20 A	(E) REC CLASSROOMS	10
11	SPARE	20 A	1			0			1,080	1	20 A	(E) REC CLASSROOMS	12
13	(E) REC - STRG, RESTROOMS	20 A	1	1,080			1,000			1	20 A	(E) LOAD	14
15	(E) REC - CLASSROOMS	20 A	1		900			1,000		1	20 A	(E) LOAD	16
17	(E) LTG - RESTROOMS	20 A	1			760			1,000	1	20 A	(E) LOAD	18
19	(E) LTG - CLASSROOMS	20 A	1	1,500			0			1	20 A	SPARE	20
21	(E) LTG - CLASSROOMS	20 A	1		1,500			0		1	20 A	SPARE	22
23	(E) LTG - CLASSROOMS	20 A	1			1,500			0	1	20 A	SPARE	24
25	(E) LTG - CLASSROOMS	20 A	1	1,500			0			1	20 A	SPARE	26
27	(E) LOAD	20 A	1		0			0		1	20 A	SPARE	28
29	(E) LOAD	20 A	1			0			--	1	--	PFB	30
31	(E) LOAD	20 A	1	0			--			1	--	PFB	32
33	(E) LOAD	20 A	1		0			--		1	--	PFB	34
35	(E) LOAD	20 A	1			0			--	1	--	PFB	36
37	PFB	--	1	--			--			1	--	PFB	38
39	PFB	--	1		--			--		1	--	PFB	40
41	PFB	--	1			--			--	1	--	PFB	42
		Total Load:		8,619 VA			7,185 VA		6,016 VA				
		Total Amps:		73 A			61 A		50 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	3992 VA	106.25%	4242 VA		
Spare	17990 VA	100.00%	17990 VA	**Total Conn. Load:**	21,818 VA
				Total Est. Demand:	22,059 VA
				Total Conn. Current:	61 A
				Total Est. Demand Current:	61 A

Notes:
[1] PROVIDE NEW BREAKER. NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

Branch Panel: C-M

Location:
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 250 A
MCB Rating: 250 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - C1	40 A	2	2,413			0			2	60 A	SPARE	2
3	--	--	--		2,413			0		--	--	--	4
5	HP - C2	40 A	2			2,413			0	2	60 A	SPARE	6
7	--	--	--	2,413			0			--	--	--	8
9	HP - C3	40 A	2		2,413			0		1	20 A	SPARE	10
11	--	--	--			2,413			0	1	20 A	SPARE	12
13	HP - C4	40 A	2	2,413			0			1	20 A	SPARE	14
15	--	--	--		2,413			0		1	20 A	SPARE	16
17	REC - EXTERIOR AT MECHANICAL EQUIPMENT	20 A	1			180			0	1	20 A	SPARE	18
19	SPARE	20 A	1	0			0			1	20 A	SPARE	20
21	PFB	--	1		--			--		1	--	PFB	22
23	PFB	--	1			--			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	PFB	--	1	--			--			1	--	PFB	38
39	PFB	--	1		--			--		1	--	PFB	40
41	PFB	--	1			--			--	1	--	PFB	42
		Total Load:		7,239 VA		7,239 VA		4,997 VA					
		Total Amps:		63 A		63 A		42 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	19304 VA	106.25%	20511 VA		
Receptacle	180 VA	100.00%	180 VA	**Total Conn. Load:**	19,475 VA
				Total Est. Demand:	20,682 VA
				Total Conn. Current:	54 A
				Total Est. Demand Current:	57 A

Notes:

Branch Panel: A-M

Location:
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 250 A
MCB Rating: 250 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - A1	40 A	2	2,413			0			2	60 A	SPARE	2
3	--	--	--		2,413			0		--	--	--	4
5	HP - A2	40 A	2			2,413			0	2	60 A	SPARE	6
7	--	--	--	2,413			0			--	--	--	8
9	HP - A3	40 A	2		2,413			180		1	20 A	REC - EXTERIOR AT MECHANICAL EQUIPMENT	10
11	--	--	--			2,413			0	1	20 A	SPARE	12
13	HP - A4	40 A	2	2,413			0			1	20 A	SPARE	14
15	--	--	--		2,413			0		1	20 A	SPARE	16
17	HP - A5	40 A	2			2,413			0	1	20 A	SPARE	18
19	--	--	--	2,413			0			1	20 A	SPARE	20
21	HP - A6	40 A	2		2,413			0		1	20 A	SPARE	22
23	--	--	--			2,413			0	1	20 A	SPARE	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	PFB	--	1	--			--			1	--	PFB	38
39	PFB	--	1		--			--		1	--	PFB	40
41	PFB	--	1			--			--	1	--	PFB	42
		Total Load:		9,652 VA			9,823 VA		9,652 VA				
		Total Amps:		80 A			82 A		80 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	28956 VA	104.17%	30163 VA		
Receptacle	180 VA	100.00%	180 VA	**Total Conn. Load:**	29,127 VA
				Total Est. Demand:	30,334 VA
				Total Conn. Current:	81 A
				Total Est. Demand Current:	84 A

Notes:

PANEL "B-M"	(E) PANEL "C"
PANEL "C-M"	PANEL "A-M"

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL PANEL SCHEDULES

DSA SUBMITTAL

DATE: **2024.10.01**

CLIENT PROJ NO:

SHEET:

E6.04

PLEASE RECYCLE

Autodesk Docs://3584004000 SRCS Sun Valley ES HVAC & FA R22\24-2054_SRCS Sun Valley ES_MEP+FA_r22.rvt
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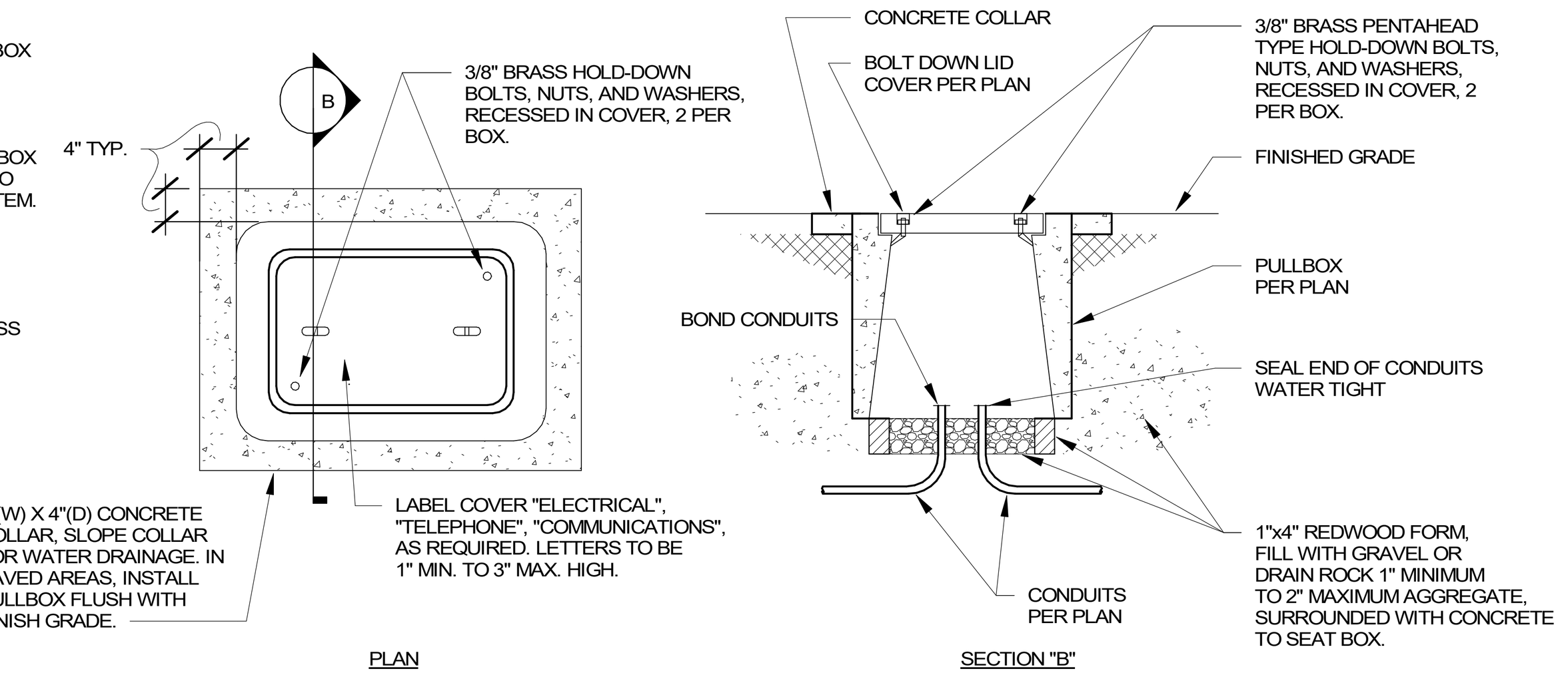
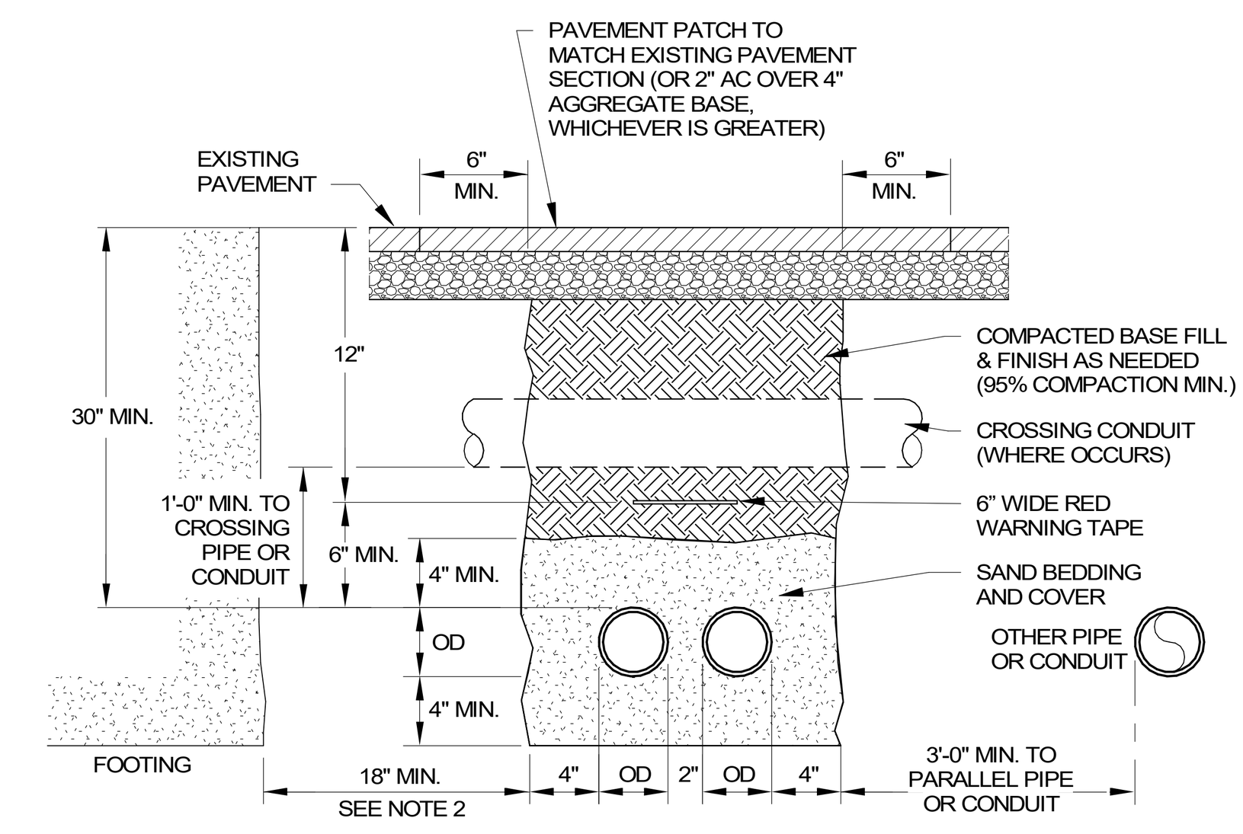
NOTES:
1. ALL SPLICES WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH AN INSULATING AND ENCAPSULATING RESIN PACK, SCOTCHCAST 4 OR EQUAL.
2. ALL CONDUIT WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH RTV DUCT SEAL TO PREVENT WATER ENTERING CONDUIT SYSTEM.
3. ALL CONDUCTORS AND CABLES ARE TO BE GROUPED AND WIRE TIED EVERY 6" PER CONDUIT FILL.
4. PROVIDE TWO 12" EXTENSION RINGS UNLESS NOTED OTHERWISE.



UNDERGROUND CONCRETE PULLBOX DETAIL | NTS | 1



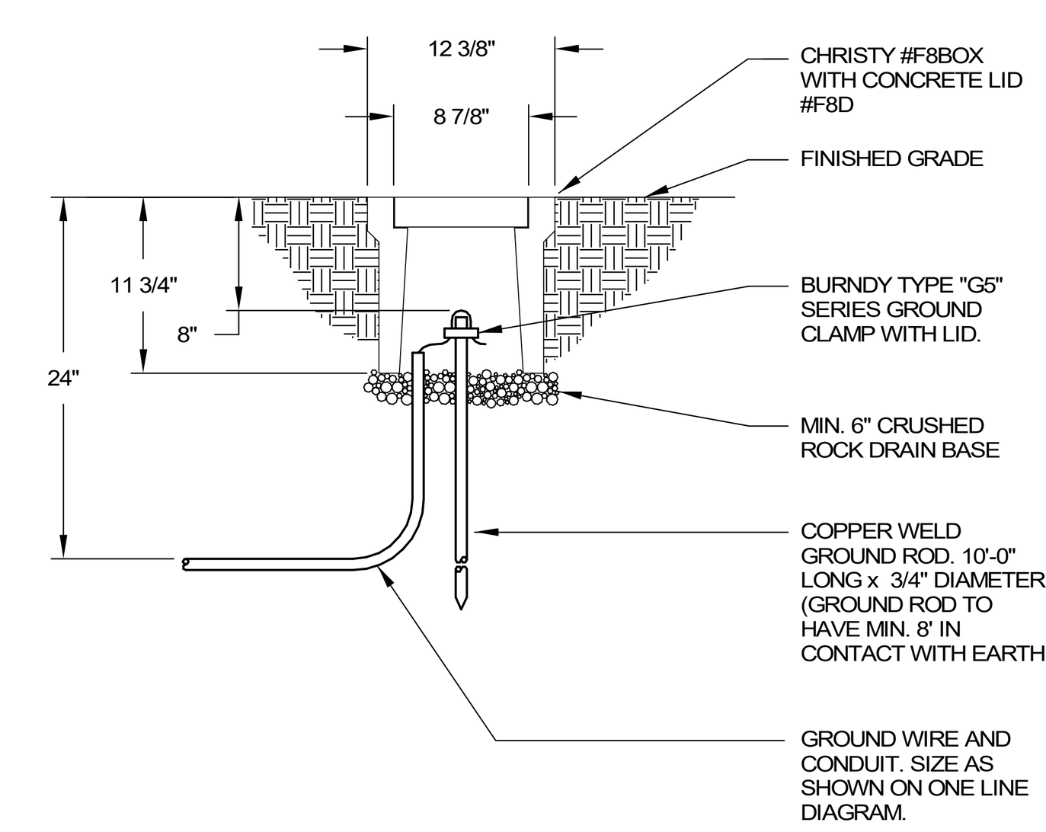
NOTES:

1. TRENCHING LOCATED IN PAVED AREAS - ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.
2. ALL PIPES AND TRENCHES MUST ALSO CONFORM WITH CBC 1809A.14

TYPICAL TRENCH DETAIL AT PAVEMENT | NTS | 2

KEY NOTES:

1. SIZE OF CONDUCTOR SHALL COMPLY WITH CEC TABLE 250.94, AND AS INDICATED ON ONE LINE DIAGRAM, WHICHEVER IS LARGER.
2. GROUND RESISTANCE SHALL BE TESTED BY AN INDEPENDENT TESTING COMPANY WITH A MEGGER UNIT OR AN OTHERWISE ACCEPTABLE METHOD BY THE INSPECTOR OF RECORD. IF RESISTANCE TO GROUND IS TESTED TO EXCEED 25 OHMS, INSTALL ADDITIONAL GROUND RODS SEPARATED BY MINIMUM 10' AND RETEST AS REQUIRED.
3. ALL WORK AS SHOWN ON THE GROUNDING DETAIL AND AS STATED HEREIN, WHETHER SHOWN OR NOT ON ELECTRICAL DRAWINGS, SHALL BE DONE BY THE SITE ELECTRICAL CONTRACTOR AND SHALL BE INCLUDED IN THE CONTRACT.



GROUNDING ROD DETAIL | NTS | 3

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

ELECTRICAL DETAILS

DSA SUBMITTAL

DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:

E10.11

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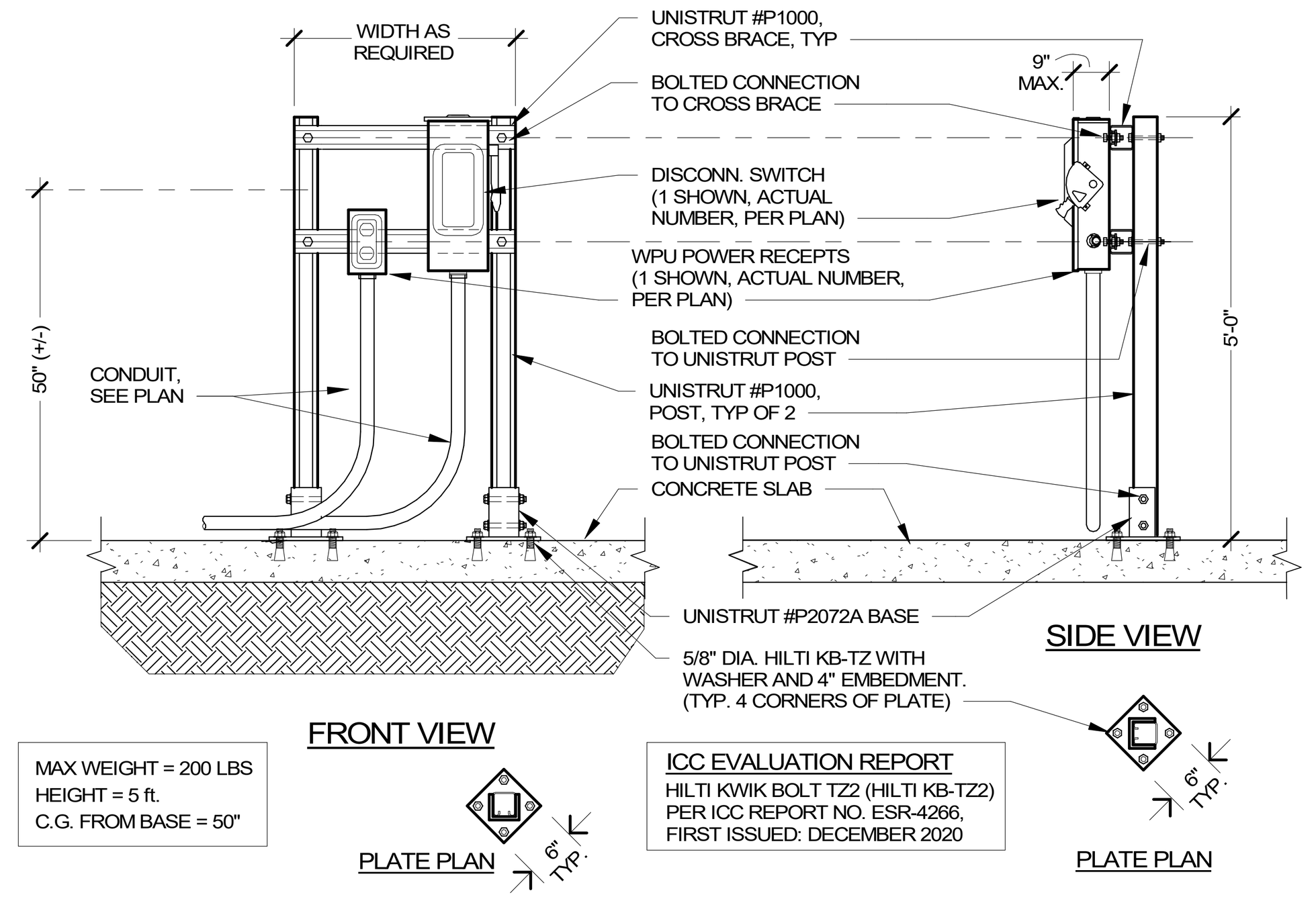


MAX WEIGHT = 200 LBS
HEIGHT = 5 ft.
C.G. FROM BASE = 50"

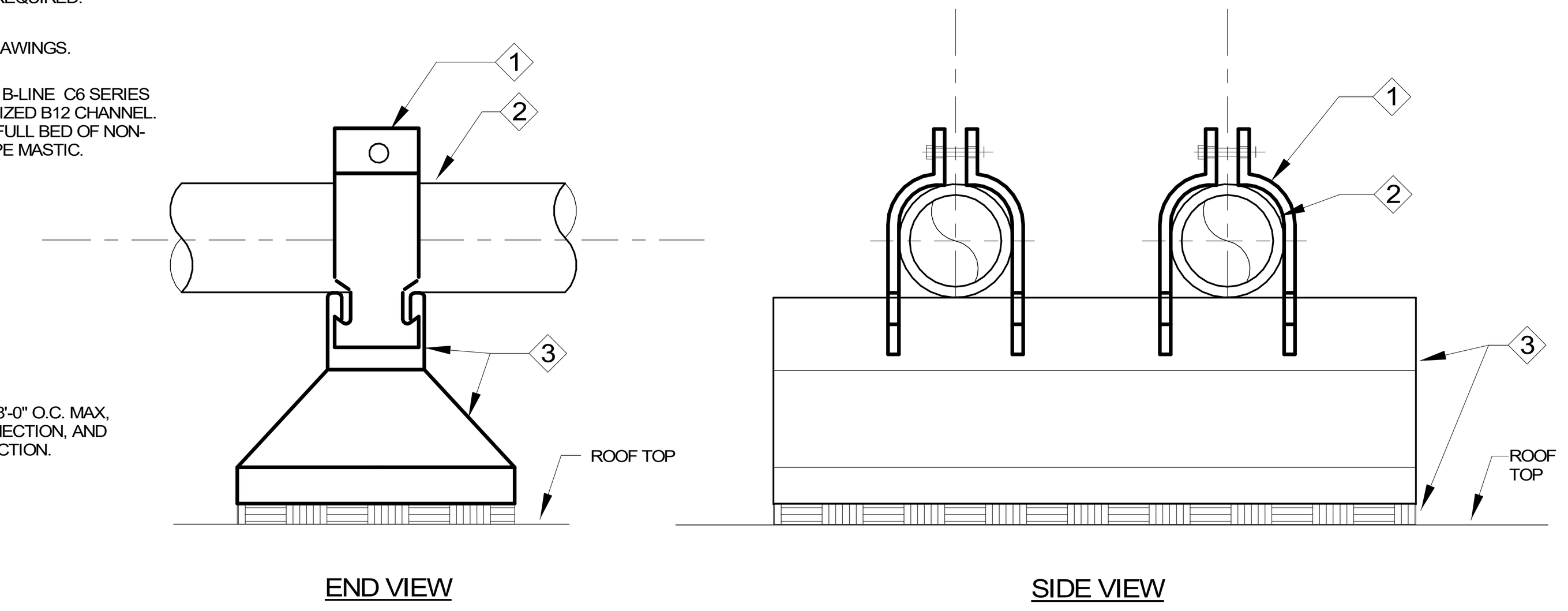
ICC EVALUATION REPORT
HILTI KWIK BOLT TZ2 (HILTI KB-TZ2)
PER ICC REPORT NO. ESR-4266,
FIRST ISSUED: DECEMBER 2020

OUTDOOR DISCONNECT SWITCH & RECEPTACLE MOUNTING DETAIL	NTS	7

KEY NOTES:

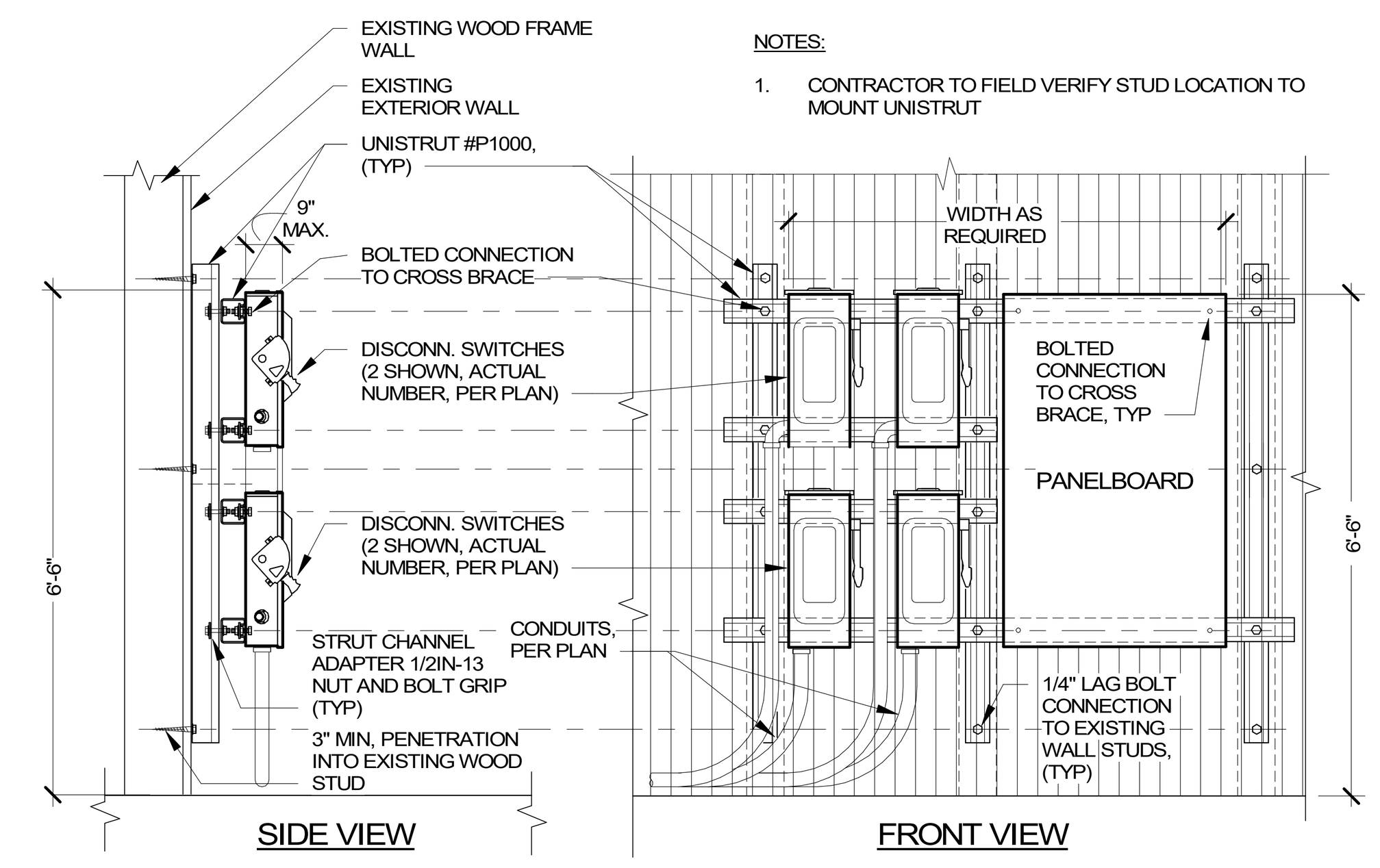
1. HOT-DIPPED GALVANIZED UNISTRUT CONDUIT CLAMP. SIZE AS REQUIRED.
2. CONDUIT AS NOTED ON DRAWINGS.
3. ROOFTOP SUPPORT BASE, B-LINE C6 SERIES WITH HOT-DIPPED GALVANIZED B12 CHANNEL. SECURE TO ROOF WITH A FULL BED OF NON-HARDENING ADHESIVE TYPE MASTIC.

NOTE:
INSTALL SUPPORT BLOCK 8'-0" O.C. MAX. WITHIN 36" OF A BOX CONNECTION, AND AT EACH CHANGE OF DIRECTION.



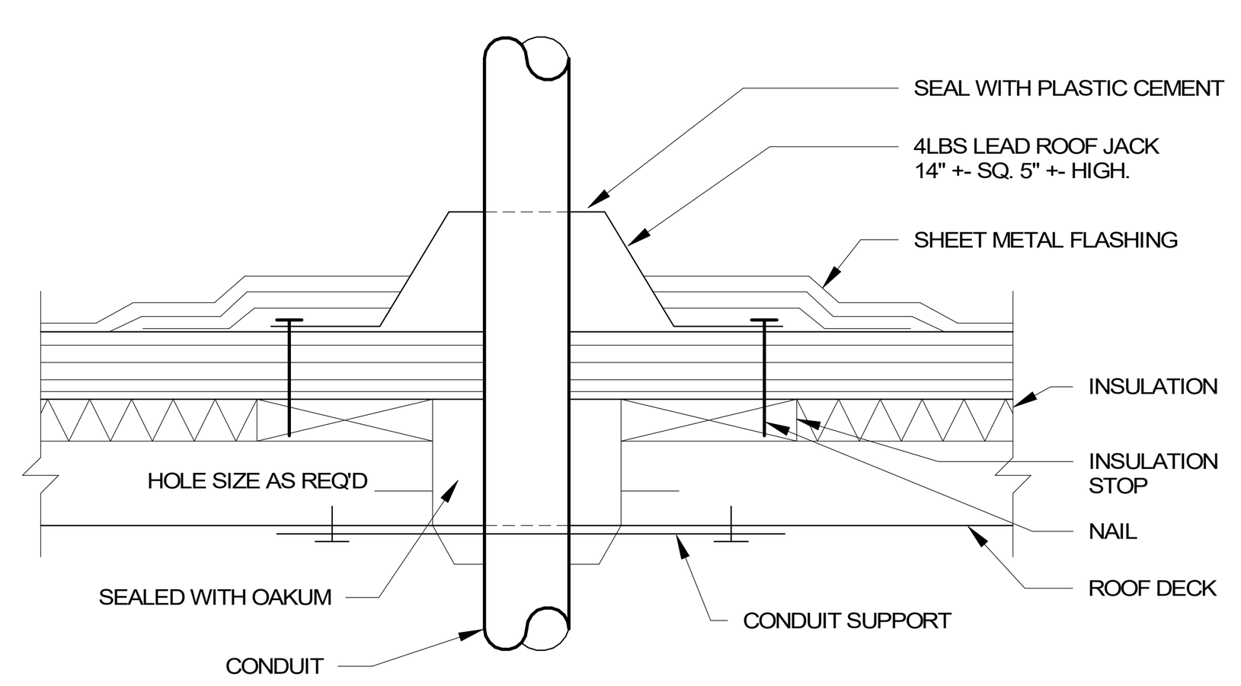
ROOF CONDUIT SUPPORT DETAIL	NTS	4

NOTES:
1. CONTRACTOR TO FIELD VERIFY STUD LOCATION TO MOUNT UNISTRUT



PANEL MAX WEIGHT = 240 LBS
DISCONNECT MAX WEIGHT = 20 LBS

SURFACE MTD PANEL & DISCONN(S) WALL MOUNTING DETAIL	NTS	1



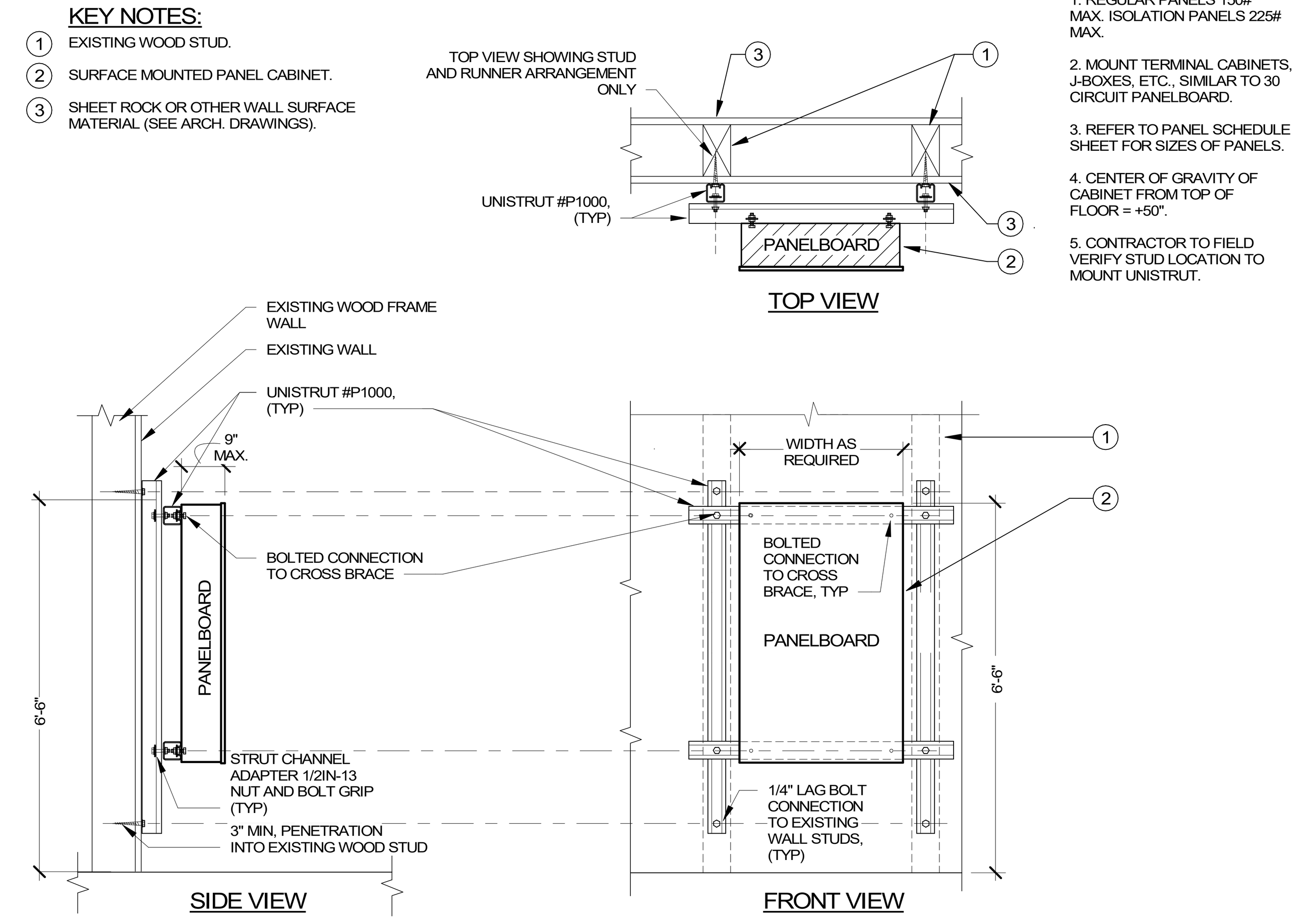
NOTES:
SEALANT TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR

ROOF CONDUIT PENETRATION DETAIL	NTS	5

KEY NOTES:

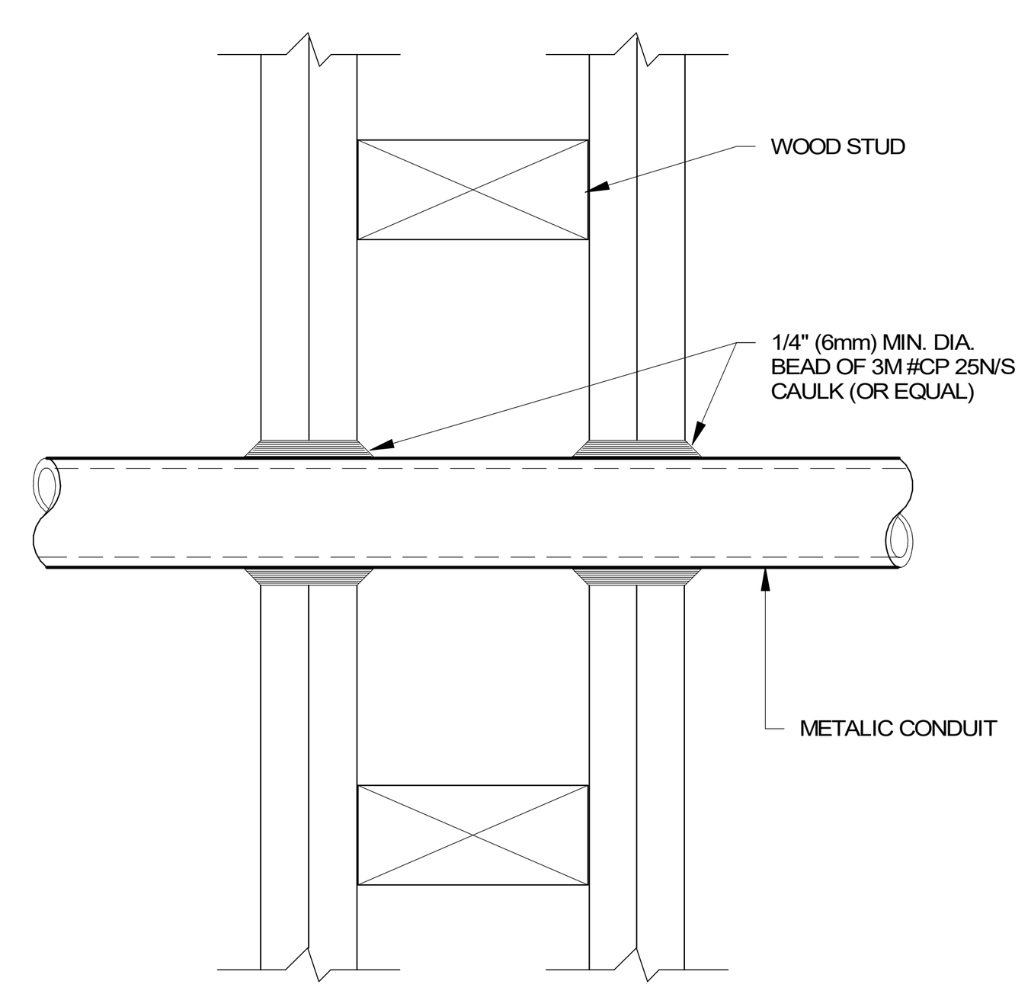
1. EXISTING WOOD STUD.
2. SURFACE MOUNTED PANEL CABINET.
3. SHEET ROCK OR OTHER WALL SURFACE MATERIAL (SEE ARCH. DRAWINGS).

NOTES:
1. REGULAR PANELS 150# MAX. ISOLATION PANELS 225# MAX.
2. MOUNT TERMINAL CABINETS, J-BOXES, ETC., SIMILAR TO 30 CIRCUIT PANELBOARD.
3. REFER TO PANEL SCHEDULE SHEET FOR SIZES OF PANELS.
4. CENTER OF GRAVITY OF CABINET FROM TOP OF FLOOR = +50".
5. CONTRACTOR TO FIELD VERIFY STUD LOCATION TO MOUNT UNISTRUT.



PANEL MAX WEIGHT = 200 LBS

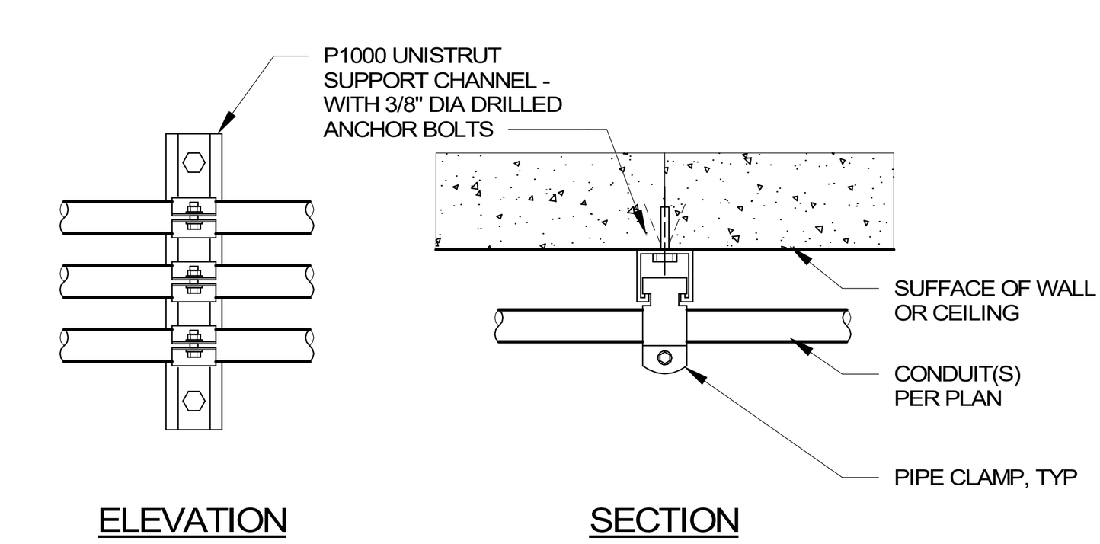
SURFACE PANELBOARD/CABINET WOOD FRAMING MOUNTING DETAIL	NTS	2



WOOD STUD WALL

NOTES:
1. THE CAULK IS TO BE FORCED INTO THE ANNULAR SPACE TO THE MAXIMUM EXTENT POSSIBLE FLUSH WITH THE EXTERIOR OF THE PENETRATION SURFACE.
2. FINISH CAULKING WITH A 1/4" (6mm) MINIMUM BEAD OF CP 25N/S CAULK APPLIED TO THE PERIMETER OF THE CONDUIT/PIPE AT ITS EGRESS FROM THE WALL.
3. THE MAXIMUM ANNULAR SPACE IS NOT TO EXCEED 3/16" (5mm).
4. INSTALL 3M FIRESTOP ON BOTH SIDES OF THE WALL
5. THESE RECOMMENDATIONS ARE BASED ON PRODUCT PERFORMANCE PER ASTM. E-814 (UL 1479) FIRE TEST AND UL THROUGH-PENETRATION FIRESTOP SYSTEM #WL1001.

CONDUIT PENETRATION FIRESTOP DETAIL - WOOD FRAMING	NTS	6



RACEWAY SUPPORT AT CONCRETE CEILING / WALL	NTS	3

AGENCY APPROVAL:
DSA # 01-121954
FILE # 21-39

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DATE: 2024.10.01
CLIENT PROJ NO:

SHEET:
E10.12

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FIRE ALARM ABBREVIATIONS/SYMBOLS

SYMBOL	DESCRIPTIONS	SYMBOL	DESCRIPTIONS
A	ABOVE CEILING	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
AFF	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AHJ	AUTHORITY HAVING JURISDICTION	NPU	NETWORK PROCESSING UNIT
ALM	ALARM	NTS	NOT TO SCALE
ANN	ANNUNCIATOR	PAP	PRE-ACTION PANEL
BMS	BUILDING MANAGEMENT SYSTEM	PAP	PRE-ACTION PANEL
C	CONDUIT	PB	PULL BOX
CBC	CALIFORNIA BUILDING CODE	(R)	RELOCATE / RELOCATED
CEC	CALIFORNIA ELECTRICAL CODE	(RC)	EXISTING TO REMOVE AND COVER
CFC	CALIFORNIA FIRE CODE	(RD)	EXISTING DEVICE TO BE RELOCATED
CM	CEILING MOUNTED	(RL)	RELOCATED DEVICE
CD	CANDELA RATING	(RR)	REMOVE EXISTING & REPLACE WITH NEW
DET	DETECTOR	SCC	STATUS COMMAND CENTER
DGP	DATA GATHERING PANEL	SLC	SIGNALING LINE CIRCUIT
(E)	EXISTING TO REMAIN	SMK	SMOKE
EC	EMPTY CONDUIT	SUPV	SUPERVISORY
EM	EMERGENCY	TOS	TOP OF SHAFT
EMT	ELECTRICAL METALLIC TUBING	TRBL	TROUBLE
EOL	END OF LINE	TS	TAMPER SWITCH
EPO	EMERGENCY POWER OFF	TYP	TYPICAL
FAA	FIRE ALARM ANNUNCIATOR	UNO	UNLESS NOTED OTHERWISE
FACP	FIRE ALARM CONTROL PANEL	VCC	VOICE COMMAND CENTER
FAPS	REMOTE FIRE ALARM POWER SUPPLY	VT	VALVE TAMPER
FATC	FIRE ALARM TERMINAL CABINET	W	WATTAGE
FBO	FURNISHED BY OTHERS	W/	WITH
FCC	FIRE COMMAND CENTER	W/O	WITHOUT
FSD	FIRE SMOKE DAMPER	WF	WATERFLOW
FTR	FIRE ALARM TRANSPONDER	WG	WIRE GUARD
GB	GROUND BOX	WP	WEATHERPROOF
H	HIGH HUMIDITY	(X)	REMOVE
HT	HEIGHT	XFMR	TRANSFORMER
HVAC	HEATING VENTILATION & AIR CONDITIONING		
IMS	INFORMATION MANAGEMENT SYSTEM		
MAX	MAXIMUM		
MIN	MINIMUM		
(N)	NEW		
N/A	NOT APPLICABLE		
NA	NOT AVAILABLE		
NAC	NOTIFICATION APPLIANCE CIRCUIT		
NDU	NETWORK DISPLAY UNIT		

FIRE ALARM GENERAL DEMO NOTES

1. ALL EXISTING FIRE ALARM EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., WHERE SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DOCUMENTS AND LIMITED SITE SURVEY AND ARE SHOWN FOR CLARITY. IT SHALL BE REGARDED AS AN APPROXIMATION ONLY. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. PRIOR TO SUBMITTING BID AND BEFORE START OF ANY ELECTRICAL WORK, CONTRACTOR SHALL VERIFY ON-SITE ALL EXISTING LOCATIONS AND CONDITIONS TO ASCERTAIN ALL WORK REQUIRED.
2. EXISTING FIRE ALARM SYSTEM SHALL REMAIN ACTIVE UNTIL CONSTRUCTION IS COMPLETED. CAUSE AS LITTLE INTERFERENCE OR INTERRUPTION OF EXISTING FIRE ALARM SYSTEMS AND/OR OTHER EXISTING FACILITY'S SYSTEMS AND SERVICES AS POSSIBLE. CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AT LEAST 72 HOURS TO SCHEDULE ALL NECESSARY SHUTDOWNS. SHUTDOWN WORK SHALL BE PERFORMED AFTER THE NORMAL OPERATION HOURS OF THE FACILITY, IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE.
3. FIRE WATCH IN CONFORMANCE WITH THE CALIFORNIA FIRE CODE SHALL BE PROVIDED AT THE DIRECTION OF THE CONTRACTOR FOR EVERY OFF-LINE BUILDING. THE BUILDING OWNER SHALL ASSIST WITH FIRE WATCH ACTIVITIES DURING BUILDING HOURS AND WHENEVER THE BUILDING IS OCCUPIED . THE CONTRACTOR SHALL PROVIDE ALL FIRE WATCH ACTIVITIES AFTER BUILDING HOURS AND WHENEVER THE BUILDING IS NOT OCCUPIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING AND MAINTAINING ALL FIRE WATCH LOGS.
4. ALL REMOVED AND/OR DEMOLISHED ELECTRICAL MATERIALS AND EQUIPMENT TO BE ACCOMPLISHED UNDER THIS CONTRACT, WHICH IN THE OPINION OF THE OWNER'S REPRESENTATIVE ARE DEEMED SALVAGEABLE, SHALL REMAIN THE PROPERTY OF THE OWNER. ALL FIRE ALARM MATERIAL AND EQUIPMENT CONSIDERED NOT SALVAGEABLE SHALL BE REMOVED FROM THE SITE AND DISPOSED BY THE CONTRACTOR ACCORDINGLY.
5. WHERE REMOVAL OF AN EXISTING SYSTEM'S DEVICE WILL RESULT IN LOSS OF CIRCUIT CONTINUITY, THE ISOLATED PORTIONS OF THE CIRCUIT SHALL BE RECONNECTED TO PROVIDE SERVICE TO ALL REMAINING DEVICES. IF SITE CONDITIONS MAKE RECONNECTION IMPOSSIBLE, CONNECTION SHALL BE MADE FROM AN ADJACENT AVAILABLE DEVICE AS NOTED AND/OR AS DIRECTED BY THE ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE.
6. WHEREVER EXISTING DEVICES, PANELS, CONDUITS, CABLES, ETC., CONFLICT WITH REMODEL WORK, WHETHER SHOWN OR NOT, RELOCATE THESE ITEMS AS DIRECTED BY THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE AND REPAIR ALL SURFACES.
7. COORDINATE WITH OTHER TRADES AND PROMPTLY TRANSMIT ALL INFORMATION REQUIRED BY THEM. COORDINATE THE SEQUENCE OF DEMOLITION WITH OTHER TRADES TO ENSURE THAT ALL WORK PROCEEDS WITH A MINIMUM OF INTERFERENCE AND DELAY.
8. WHERE EXISTING WIRING OR EQUIPMENT IS ABANDONED AS A RESULT OF THIS CONTRACT, IT SHALL BE REMOVED INSOFAR AS POSSIBLE. THIS INCLUDES BUT IS NOT LIMITED TO:
   a. REMOVE ALL WIRE AND CABLE.
   b. REMOVE ALL DEVICES AND EQUIPMENT.
   c. REMOVE ALL EXPOSED CONDUIT AND CONDUIT IN ACCESSIBLE CONCEALED AREA, AS FAR AS POSSIBLE.
   d. CUT OFF AND CAP ALL ABANDONED CONDUIT. STUBS SHALL NOT BE PROTRUDED ABOVE FLOOR AND/OR FINISHED WALLS AND CEILINGS.

FIRE ALARM GENERAL NOTES

1. THE INTENT OF THESE DRAWINGS AND/OR SPECIFICATIONS DESCRIBE A COMPLETE, FUNCTIONING FIRE ALARM SYSTEM (INCLUDING VOICE EVACUATION PER SB575) WITH DEVICES, WIRING AND FIRE ALARM CONTROL PANEL TO MEET THE REQUIREMENTS OF NFPA 72 AND 2016 CALIFORNIA FIRE CODE AND APPLICABLE LOCAL FIRE MARSHALL REGULATIONS AND REQUIREMENTS.
2. LOCATIONS OF EXISTING EQUIPMENT AND DEVICES SHOWN ON THESE PLANS ARE BASED ON AVAILABLE AS-BUILT PLANS AND LIMITED SITE SURVEYS. CONTRACTOR SHALL THOROUGHLY INSPECT THE EXISTING SYSTEM AND SITE CONDITIONS BEFORE BID. ADVISE THE SCHOOL'S REPRESENTATIVE OF ALL CONDITIONS REQUIRING IMMEDIATE ATTENTION OR MIGHT CAUSE DIFFICULTIES THAT ARE NOT ADDRESSED, OR INFERRED TO, IN THE CONTRACT DRAWINGS AND SPECIFICATIONS PRIOR TO NEW CONSTRUCTION AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
3. CONTRACTOR SHALL SUBMIT ANY ALTERATIONS OF THE APPROVED CONSTRUCTION DOCUMENTS TO THE SPECIAL INSPECTOR AND OWNER FOR NEW APPROVALS. START INSTALLATION OF THE SYSTEM AFTER DETAILED PLANS, SPECIFICATIONS, NEW SHOP DRAWINGS AND SUBMITTALS HAS BEEN APPROVED BY AHJ. CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR ANY DELAY.
4. FIRE WATCH IN CONFORMANCE WITH THE CALIFORNIA FIRE CODE SHALL BE PROVIDED AT THE DIRECTION OF THE CONTRACTOR FOR EVERY OFF-LINE BUILDING. THE BUILDING SHALL ASSIST WITH FIRE WATCH ACTIVITIES DURING BUILDING HOURS AND WHENEVER THE BUILDING IS OCCUPIED. THE CONTRACTOR SHALL PROVIDE ALL FIRE WATCH ACTIVITIES AFTER BUILDING HOURS AND WHENEVER THE BUILDING IS NOT OCCUPIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING AND MAINTAINING ALL FIRE WATCH LOGS.
5. REQUEST FOR ADDITIONAL COSTS ASSOCIATED WITH RE-USE OF ANY EXISTING SYSTEM COMPONENT, INCLUDING CONDUITS, BOXES, CONTROL PANELS, ETC. WILL NOT BE CONSIDERED.
6. NO KNOWN EXISTING CEILING OR ATTIC SPACE IN ROOMS OR AREA WITH HARD CEILING. IF CEILING OR ATTIC SPACE OCCUR DURING FIELD CONSTRUCTION THAT REQUIRE ADDING DETECTORS ABOVE THE CEILING OR ATTIC SPACE, PROVIDE A CONSTRUCTION CHANGE DOCUMENT, ORA SEPARATE SHEET OF PLANS SHALL BE SUBMITTED TO AND APPROVED BY OWNER BEFORE PROCEEDING WITH THE WORK.
7. THE FIRE ALARM SYSTEM SHALL CONFORM TO THE CALIFORNIA FIRE CODE, ARTICLE 907, CBC 305 AND CALIFORNIA ELECTRICAL CODE, ARTICLE 760.
8. FIRE ALARM SYSTEM SHALL TRANSMIT ALARM, SUPERVISORY AND TROUBLE SIGNAL TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72 AND CBC 907.6.6.3.
9. CONTRACTOR SHALL PROVIDE A COMPLETE AND FUNCTIONAL CODE COMPLIANT SYSTEM WITH ALL REQUIRED HARDWARE, DEVICES, PROGRAMMING AND POINT/DEVICE DESCRIPTION SCHEDULES.
10. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.3.
11. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.
12. INSTALLATION OF THE FIRE ALARM SYSTEM SHALL NOT BE STARTED UNTIL DETAILED SPECIFICATIONS, INCLUDING CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM HAVE BEEN APPROVED BY THE CALIFORNIA STATE FIRE MARSHAL, AND THE LOCAL FIRE MARSHAL.
13. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE ENFORCING AGENCY AND SPECIAL INSPECTOR. THE BUILDING SHALL NOT BE IN OPERATION UNTIL THE IOR AND THE LOCAL FIRE MARSHAL HAS VERIFIED AND/OR SIGNED OFF ON OPERATIONAL CAPACITY OF THE FIRE ALARM SYSTEM.
14. ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/OR TESTING.
15. CONTRACTOR SHALL SUBMIT THE SPECIAL INSPECTOR NFPA CERTIFICATE OF COMPLIANCE FORM TO THE BUILDING REPRESENTATIVE FOR SUBMISSION TO THE FIRE DEPARTMENT.
16. BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION, THE SYSTEM INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE INSPECTOR OF RECORD TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND COMPLETELY TESTED IN ACCORDANCE WITH THE 2022 NFPA 72, SECTION 7.5.2 AND 7.6.
17. CONTRACTOR SHALL PROVIDE INTELLIGIBILITY TESTING USING INTELLIGIBILITY METERS APPROVED FOR SUCH USE. REFERENCE NFPA 72 CHAPTER 24. AN STI SCORE OF 7.0 IS A MINIMUM REQUIREMENT. CONTRACTOR SHALL IDENTIFY ALL ACOUSTICALLY DISTINGUISHABLE SPACES (ADS) ON CONTRACTOR SHOP DRAWINGS.
18. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
19. PROVIDE FIRE ALARM AUDIBLE SOUND LEVEL AT LEAST 15 DBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIED AREA, BUT NOT LESS THAN 75 DBA AT 10 FEET OR MORE THAN 120 DBA IN TOTAL, THROUGHOUT. SYNCHRONIZED TEMPORAL CODE 3 SOUND. (NFPA 72, 18.4.2.1)
20. WALL MOUNTED VISIBLE NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND THEIR TOPS AT 96" MAXIMUM FROM FINISHED FLOOR.
21. WALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 90" MINIMUM FROM FINISHED FLOOR AND NO CLOSER THAN 6" TO A HORIZONTAL STRUCTURE.
22. A FLASHING VISUAL WARNING DEVICE HAVING A FREQUENCY OF NOT MORE THAN 60 FLASHES PER MINUTE [TWO (2) FLASHES OR LESS THAN ONE (1) FLASH PER SECOND] SHALL BE INSTALLED TO WARN THE HEARING-IMPAIRED AS SHOWN ON THE DRAWINGS. FLASHING VISUAL WARNING DEVICES VIEWABLE WITHIN THE SAME INTERIOR SPACE SHALL BE SYNCHRONIZED. (NFPA 72, 2022, 18.5.3.6, A18.5.3.6 AND 18.5.5.5.7)
23. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1' FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM, DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
24. LOCATE SMOKE AND HEAT DETECTORS AT LEAST ONE FOOT AWAY FROM FLUORESCENT LIGHT FIXTURES.
25. CONTRACTOR SHALL AFFIX TO EACH FIELD DEVICE A DEVICE LABEL. DEVICE LABEL SHALL BE ARRANGED FOLLOWING DETAIL "FIRE ALARM CIRCUIT IDENTIFIERS". INITIATION DEVICES CONNECTED TO EQUIPMENT BY OTHERS SHALL HAVE A LABEL AFFIXED TO MODULE INDICATING THE EQUIPMENT CONNECTED.
26. ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER APPROVED LAB TESTING CRITERIA. APPROVED TYPES OF MATERIALS SHALL BE IDENTIFIED WITHIN THE PROJECT SPECIFICATIONS WITHIN THE FIRE ALARM SECTION.
27. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATER TIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
28. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
29. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT OR RACEWAY WHEN PASSING THROUGH A FLOOR OR WALL TO A HEIGHT OF 7 FEET ABOVE THE FLOOR. FIRE ALARM WIRING ABOVE CEILING SHALL BE SUPPORTED BY THE BUILDING STRUCTURE SO AS NOT TO DAMAGE THE CABLE.
30. NO SPLICES SHALL BE ALLOWED FOR FIRE ALARM SYSTEM UNDERGROUND CABLES.
31. NEW FIRE ALARM WIRING SHALL NOT BE INSTALLED IN ANY RACEWAY WITH WIRING IN EXCESS OF 24 VOLT.
32. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
33. ALL FIRE ALARM EQUIPMENT BRANCH CIRCUITS SHALL BE DEDICATED AS PER NFPA 72, 10.6.5.1 AND ITS LOCATION BE CLEARLY LABELED AT THE FIRE ALARM CONTROL PANEL.
34. ALL FIRE ALARM EQUIPMENT POWER SOURCE CIRCUITS SHALL BE IDENTIFIED AT THE POWER SOURCE PER NFPA 72, 10.6.5.2. USING A RED CLEARLY MARKED DISCONNECT WITH LOCK-ON CAPABILITY. COORDINATE WITH ELECTRICAL.
35. MICROPHONES ASSOCIATED WITH EMERGENCY VOICE ALARM COMMUNICATION SYSTEMS (EVAC) SHALL BE ACCESSIBLE FOR USE, INSTALLED IN COMPLIANCE WITH CBC SECTIONS 11B-305 AND 11B-308.
36. WHERE ACCESSIBILITY IS NOT AVAILABLE TO THE NEW FIRE ALARM DEVICES LOCATED ABOVE THE CEILING/ATTIC SPACES, PROVIDE ACCESS PANELS TO THESE DEVICES, COORDINATE PRIOR TO THE EXECUTION OF WORK.
37. THE CONTRACTOR SHALL PROVIDE AS-BUILT SHOP DRAWINGS INDICATING CIRCUITING OF ALL DETECTOR AS AND OTHER DEVICES IN ALL THE BUILDINGS OF THIS PROJECT. AS-BUILT DRAWINGS SHALL BE STORED IN FIRE ALARM DOCUMENT CABINET INSTALLED ADJACENT TO FIRE ALARM CONTROL PANEL OR LOCATION APPROVED BY AUTHORITY HAVING JURISDICTION.
38. PROVIDE DOCUMENTATION CABINET TO BE INSTALLED PROXIMAL TO FACP (NFPA 72, 7.7.2.1). ALL RECORD DOCUMENTATION SHALL BE STORED IN THE DOCUMENTATION CABINET (NFPA 72 7.7.2.3). THE DOCUMENTATION CABINET TO BE PROMINENTLY LABELED "SYSTEM RECORD DOCUMENTS" (NFPA 72 7.7.2.5).
39. THE PREFERRED INSTALLATION METHOD OF CONDUCTORS TO NEW FIRE ALARM APPLIANCES SHALL BE INSTALLED INSIDE OF CONDUIT ATTACHED FLUSH TO WALLS AND CEILINGS. INSTALLING CONTRACTOR SHALL PATCH, REPAIR AND MATCH ALL FINISHES OF EXISTING ASSEMBLIES TO THEIR ORIGINAL CONDITION.

EQUIPMENT ANCHORAGE NOTES

APPLICABLE CODE: 2022 CBC

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 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 ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

APPLICABLE CODE: 2022 CBC

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 PRE-APPROVAL (OPM#) #_______. AS INCLUDED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS.

GOVERNING CODES & APPLICABLE STANDARDS

TITLE 24 CODES:

1. 2022 CALIFORNIA BUILDING STANDARD ADMINISTRATIVE CODE (CAC), (PART 1, TITLE 24, CCR).
2. 2022 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 AND 2 (PART 2, TITLE 24, CCR). (2021 EDITION INTERNATIONAL BUILDING CODE WITH 2022 CALIFORNIA AMENDMENTS.)
3. 2022 CALIFORNIA ELECTRICAL CODE, (PART 3, TITLE 24, CCR). (2020 EDITION NATIONAL ELECTRICAL CODE WITH 2022 CALIFORNIA AMENDMENTS).
4. 2022 CALIFORNIA MECHANICAL CODE (CMC), (PART 4, TITLE 24, CCR). (2021 EDITION IAPMO UNIFORM MECHANICAL CODE WITH 2022 CALIFORNIA AMENDMENTS).
5. 2022 CALIFORNIA PLUMBING CODE (CPC), (PART 5, TITLE 24, CCR). (2021 EDITION IAPMO UNIFORM PLUMBING CODE WITH 2022 CALIFORNIA AMENDMENTS).
6. 2022 CALIFORNIA ENERGY CODE, (PART 6, TITLE 24. CCR). (2022 EDITION CALIFORNIA ENERGY COMMISSION BUILDING ENERGY EFFICIENCY STANDARDS).
7. 2022 CALIFORNIA FIRE CODE (CFC), (PART 9, TITLE 24, CCR). (2021 EDITION INTERNATIONAL FIRE CODE WITH 2022 CALIFORNIA AMENDMENTS).
8. 2022 CALIFORNIA REFERENCE CODE, (PART 12, TITLE 24. CCR).

REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS:

1. 2022 CBC, CHAPTER 35.
2. 2022 CFC, CHAPTER 80.
3. 2022 NFPA 72. AS AMENDED.

FIRE ALARM MONITORING NOTE

AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AS AMENDED BY ARTICLE 91. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX OR UUJS BY UNDERWRITERS LABORATORY OR SHALL MEET THE REQUIREMENTS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY DISTRICT.

SCOPE OF WORK AND BUILDING INFORMATION

1. PROVIDE AND EXPAND NEW FIRE ALARM SYSTEM TO EXISTING CAMPUS BUILDINGS.

OCCUPANCY CLASSIFICATION: BUILDING A: B & E, BUILDING B & C: E

TYPE OF CONSTRUCTION: V-B

NUMBER OF STORIES: 1 STORY

SPRINKLER PROTECTION: NO

ALTERNATIVE PROTECTION: NOT APPLICABLE

TYPE OF SYSTEM: MANUAL, AUTOMATIC FIRE ALARM SYSTEM

FIRE ALARM SHEET INDEX

FIRE ALARM DEVICE LEGEND

SYMBOL	QTY	EXISTING	MANUFACTURER	PART NO	DESCRIPTION	CSFM
FACU	1	EXISTING	SIEMENS	FC2025-US	ASSEMBLY,FIRE ALARM CONTROL PANEL, ADDRESSABLE	7165-0067:0264
	1	EXISTING	SIEMENS	FCI2016-U1	PERIPHERY BOARD (252 PTS)	7165-0067:0264
	1	EXISTING	SIEMENS	FCM2018-U2	CARD, STANDARD OPERATING UNIT	7165-0067:0264
NAC	2	EXISTING	NOTIFIER	FCPS-24S6	6-AMP, 24-VOLT POWER SUPPLY	7315-0028:0225
	2	EXISTING	NOTIFIER	FCPS-24S6 MAIN BOARD	FIRE ALARM POWER SUPPLY MAIN BOARD	7315-0028:0225
FAA	1	EXISTING	SIEMENS	FT2014-U3	REMOTE DISPLAY (BLACK)	7165-0067:0264
FACU	1	NEW	SIEMENS	FV920-EK	CERBERUS PRO VOICE ELECTRONICS KIT CONSISTS OF: ONE VCC2001-A1 VOICE CPU CARD, ONE VCC2002-A1 VOICE I/O CARD, ONE VCI2001-U1 50W VOICE AMPLIFIER CARD, ONE VCA2002-A1 VOICE CARD CAGE, ONE FCA2031-A1 CONNECTION MODULE (MONET), ONE VTO2001-U3 OPTION MODULE (24 SWITCHES), ONE VTO2004-U3 OPTION MODULE (MICROPHONE)	7165-0067:0264
	1	NEW	SIEMENS	VCA2002-A1	VOICE CARD CAGE VOICE SYSTEM CARD CAGE USED TO SUPPORT MOUNTING AND FIELD WIRING FOR VCC2001 VOICE CPU CARDS, VCC2002 VOICE I/O CARDS, AND VCI2001 AMPLIFIER CARDS. EACH CARD CAGE SUPPORTS ONE VCC2001 VOICE CPU, ONE VCC2002 VOICE I/O AND ONE TO FOUR VCI2001 50W AMPLIFIERS.	7165-0067:0264
	1	NEW	SIEMENS	VTO2004-U3	OPTION MODULE (MICROPHONE) CERBERUS PRO MICROPHONE MODULE USED ON FV922/FV924 TO ADD A PAGING MICROPHONE. THE VTO2004-U3 CAN BE EITHER A MAIN MICROPHONE INSTALLED IN THE MAIN SYSTEM ENCLOSURE, OR AS A REMOTE MICROPHONE IN A REMOTE ENCLOSURE. UP TO TWO MICROPHONES ARE SUPPORTED FOR EACH FV922/FV924.	7165-0067:0264
	1	NEW	SIEMENS	VCC2001-A1	VOICE CPU CARD VOICE CPU CARD WHICH SUPERVISES AND CONTROLS ALL VOICE MODULES AND FUNCTIONS. THIS CARD GETS MOUNTED IN THE VCA2002 CARD CAGE (2ND SLOT FROM THE LEFT), AND WORKS WITH THE VCC2002 VOICE I/O CARD TO CONTROL THE VOICE SYSTEM.	7165-0067:0264
	1	NEW	SIEMENS	FCA2031-A1	CONNECTION MODULE (MONET) USED FOR COMMUNICATION BETWEEN AN FCI2018/FCI2019 OPERATING UNIT AND EITHER THE VCC2001 VOICE CPU (FOR FIRE/VOICE PANELS) OR THE FN2012 ETHERNET SWITCH (FOR FIRE ONLY PANELS). THE FCA2031 MOUNTS IN POSITION 1 ON AN FCI2018/FCI2019 OPERATING UNIT.	7165-0067:0264
	1	NEW	SIEMENS	VCI2001-U1 (25/70.7V)	VOICE AMPLIFIER CARD 50 WATT AMPLIFIER CARD FOR THE VOICE SYSTEM. THE VCI2001 GETS MOUNTED IN THE VCA2002 CARD CAGE, WITH ALL SPEAKER ZONE WIRING CONNECTED TO THE CARD CAGE. UP TO FOUR VCI2001 AMPLIFIERS ARE SUPPORTED ON A SINGLE SYSTEM.	7165-0067:0264
	1	NEW	SIEMENS	VCC2002-A1	VOICE I/O CARD INPUT/OUTPUT CARD FOR THE VOICE SYSTEM. THE VCC2002 GETS MOUNTED IN THE VCA2002 CARD CAGE (1ST SLOT ON THE LEFT), AND WORKS WITH THE VCC2001 TO CONTROL THE VOICE SYSTEM. IT SUPPORTS TWO LOCAL AUDIO INPUTS (FOR MICROPHONES OR EXTERNAL LOW-LEVEL AUDIO SIGNALS) AND ONE LOW-LEVEL AUDIO OUTPUT, WITH ALL AUDIO SIGNAL WIRING CONNECTED TO THE CARD CAGE.	7165-0067:0264
	1	NEW	SIEMENS	VTO2001-U3	OPTION MODULE (24 SWITCHES) CERBERUS PRO SWITCH MODULE USED ON FV922/FV924 TO ADD MANUAL VOICE CONTROL. UP TO FOUR VTO2001-U3S CAN BE SUPPORTED ON A SINGLE PANEL ENCLOSURE ROW.	7165-0067:0264
F	23	NEW	SIEMENS	XMS-D	MANUAL STATION -DUAL ACTION	7150-0067:0512
	1	NEW	PEDESTAL PRO	42-2LP	LOW PROFILE PEDESTAL: 42 IN OVERALL HEIGHT, BLACK PEDESTAL	-
H	43	NEW	SIEMENS	HI921	HEAT DETECTOR	7270-0067:0262
S	73	NEW	SIEMENS	OP921 W/DB-11	SMOKE DETECTOR W/6" BASE	7272-0067:0258 7300-0067:0134
	16	NEW	SIEMENS	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF	7125-0067:0254
C	17	NEW	SIEMENS	SE-MC-CW	SE SPEAKER / SPEAKER-STROBE: MULTI-CANDELA CEILING, WHITE	7125-0067:0254
	14	NEW	SIEMENS	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE	7135-0067:0505

FIRE ALARM CABLE SCHEDULE

TYPE	DESCRIPTION		JACKET COAT	SERVES	ENVIRONMENT USE	NOTES
A	2#16 UTP	FPLR, SOLID	RED/BLK	SLC INTELLIGENT LOOP	INTERIOR	
B	2#14 UTP	FPLR, SOLID	RED/BLK	NAC STROBE	INTERIOR	
C	2#16 STP	FPLR, SOLID	RED/BLK	VOICE (SPEAKER)	INTERIOR	
D	2#16 UTP	FPLR, SOLID	RED/BLK	IDC CIRCUIT	INTERIOR	
E	4#16 UTP	FPLR, SOLID	RED/BLK	FAA RS485 COMM	INTERIOR	
P	2#14 UTP	FPLR, SOLID	RED/BLK	24VDC POWER	INTERIOR	
S	4#16 UTP	FPLR, SOLID	RED/BLK	SBUS	INTERIOR	
AU	2#16 UTP	WP#AQ225	RED/BLK	SLC ADDRESS LOOP	EXTERIOR/UDGND	DIRECT BURIAL CABLE
BU	2#14 UTP	WP#AQ226	RED/BLK	NAC STROBE (VISUAL)	EXTERIOR/UDGND	DIRECT BURIAL CABLE
CU	2#14 STP	WP#AQ294	RED/BLK	NAC VOICE (VISUAL)	EXTERIOR/UDGND	DIRECT BURIAL CABLE
DU	2#16 UTP	WP#AQ225	RED/BLK	INITIATE DEVICE CIRCUIT	EXTERIOR/UDGND	DIRECT BURIAL CABLE
EU	4#16 UTP	WP#AQ225	RED/BLK	FAA RS485 COMM	EXTERIOR/UDGND	DIRECT BURIAL CABLE
PU	2#14 UTP	WP#AQ226	RED/BLK	24VDC POWER	EXTERIOR/UDGND	DIRECT BURIAL CABLE
RU	2#16 UTP	WP#AQ225	RED/BLK	SPEAKER RISER	EXTERIOR/UDGND	DIRECT BURIAL CABLE

NOTES:
1. ALL CONDUCTORS SHALL BE COPPER AND SOLID - STRANDED CONDUCTOR IS NOT ACCEPTABLE.
2. MINIMUM CONDUIT SIZE IS 3/4" - CONCEALED IN CEILING SPACE OR APPROPRIATE WALLS.
3. ALL SURFACE ROUTED RACEWAYS SHALL BE WIREMOLD OR APPROVED EQUAL.

CABLE ABBREVIATIONS:

STP	SHIELDED TWISTED PAIR	PA	PUBLIC ADDRESS
SLC	SIGNAL LINE CIRCUIT	UTP	UNSHIELDED TWISTED PAIR
NAC	NOTIFICATION APPLIANCE CIRCUIT	WP	WEST PENN (CABLE MANUFACTURER)
IDC	INITIATE DEVICE CIRCUIT		

DEVICE DESIGNATION LEGEND

INITIATING DEVICES

EXAMPLE:

L1D001

- DEVICE REFERENCE NUMBER
- DEVICE TYPE: D = DETECTORS, M = MODULES
- SIGNALING LINE CIRCUIT
- DEVICE SYMBOL (SMOKE SENSOR)

AUDIBLE / VISUAL DEVICES

EXAMPLE:

110CD
N1-1-1

- APPLIANCE CANDELA RATING
- APPLIANCE REFERENCE NUMBER
- CIRCUIT REFERENCE NUMBER
- FACP/POWER SUPPLY REFERENCE NUMBER
- DEVICE SYMBOL (SMOKE SENSOR)

STYLE:4
CLASS:B

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER
RAMI S. ZEIDAN
No. E 16762
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

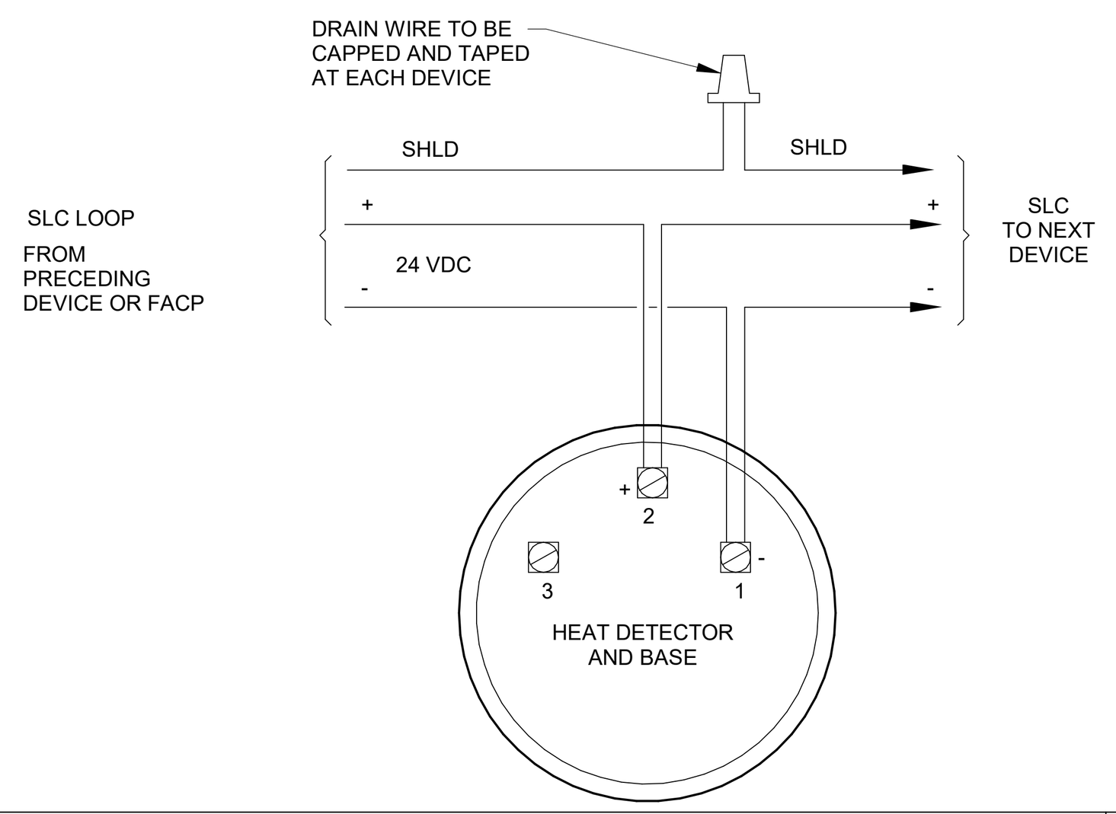
FIRE ALARM LEGEND, ABBREVIATIONS, AND NOTES

DSA SUBMITTAL

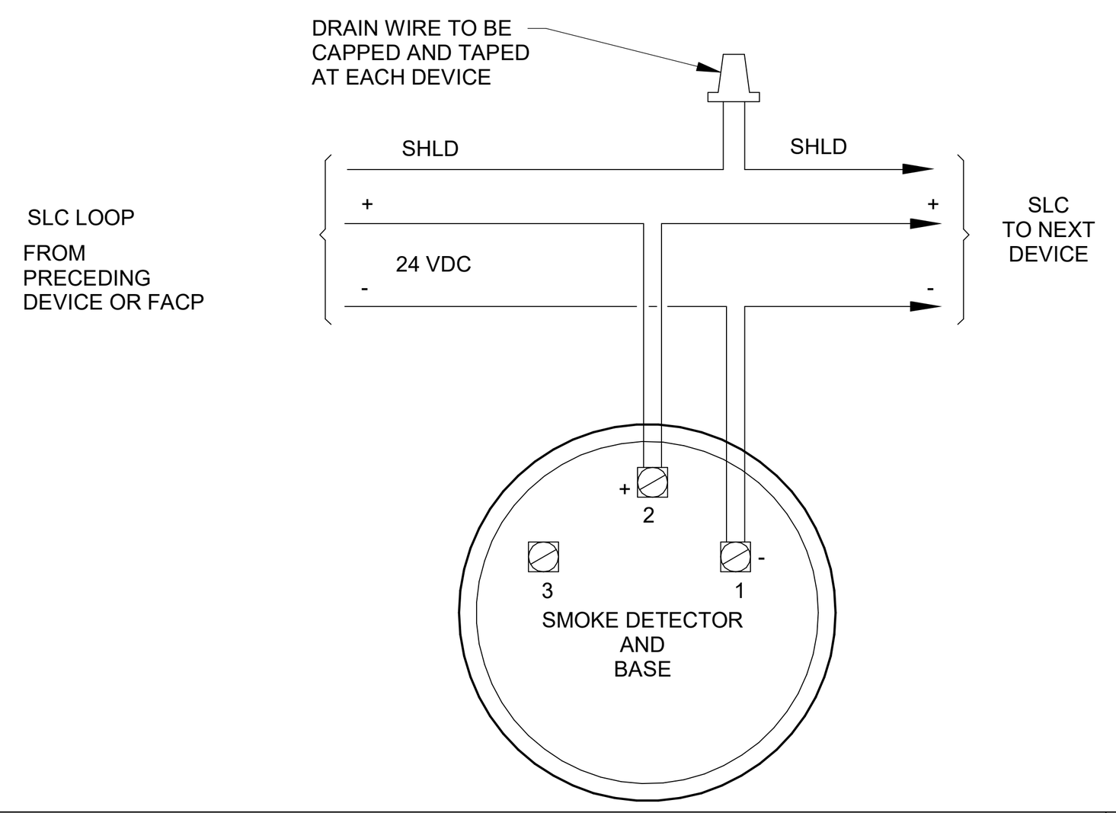
DATE: 2024.10.01 | CLIENT PROJ NO:

SHEET:

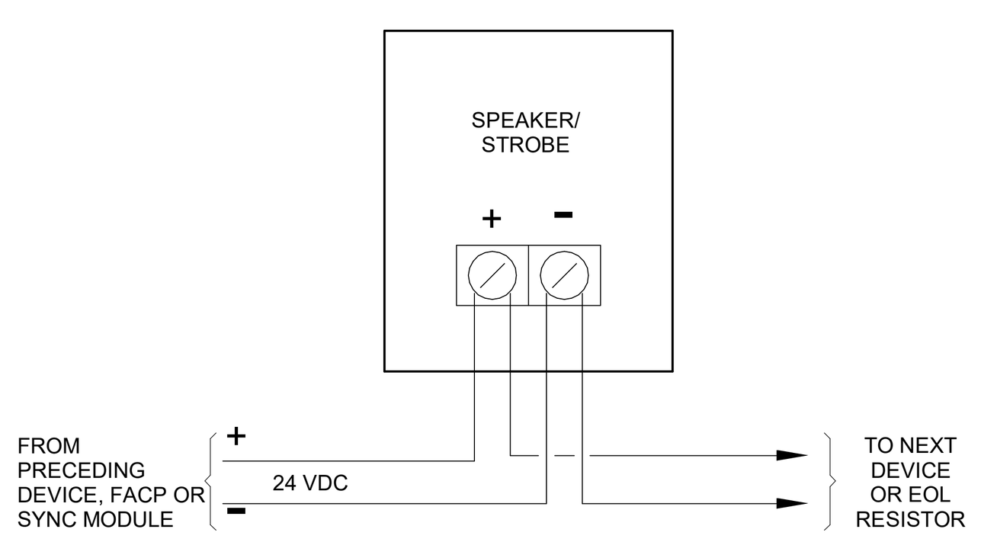
FA0.01



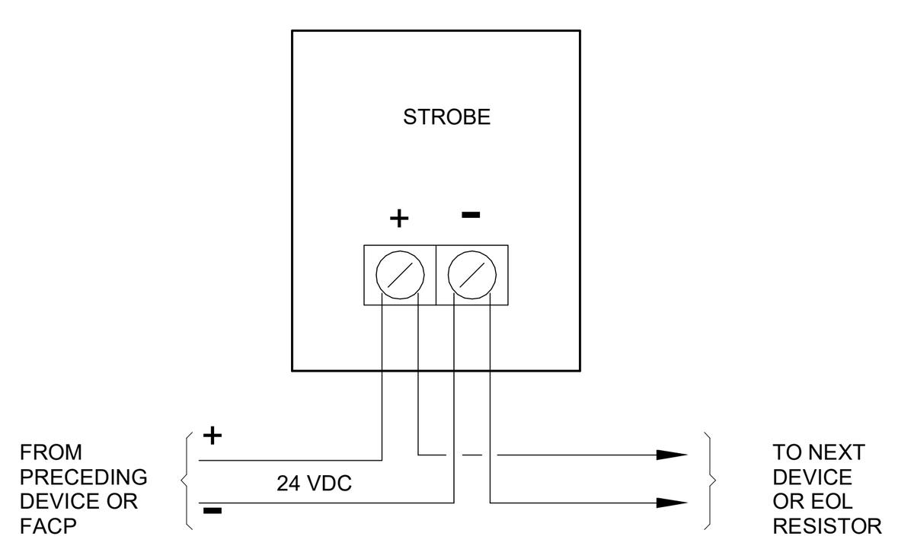
FIRE ALARM HEAT DETECTOR POINT TO POINT DIAGRAM | NTS | 9



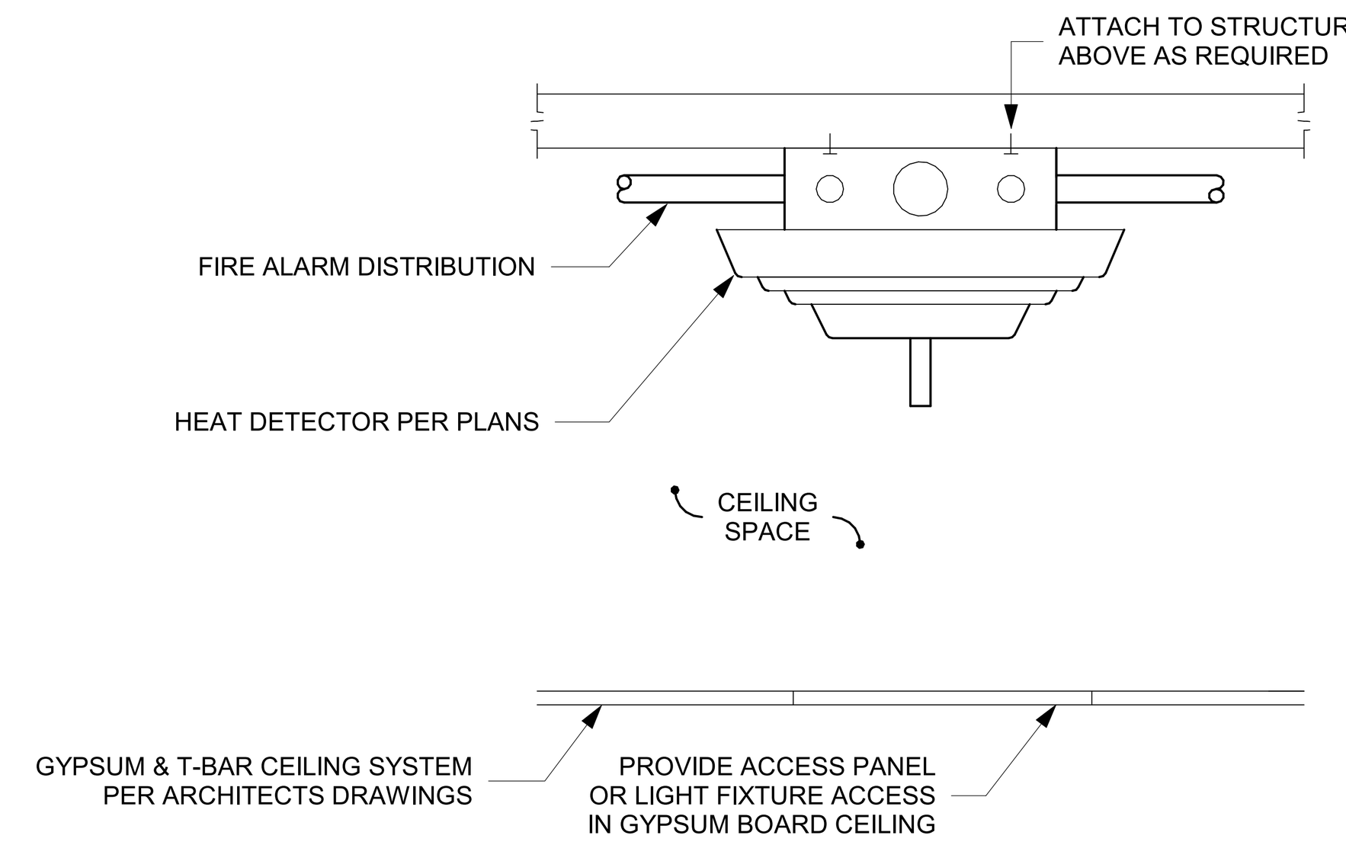
SMOKE DETECTOR POINT TO POINT DIAGRAM | NTS | 10



FIRE ALARM HORN STROBE POINT TO POINT DIAGRAM | NTS | 11

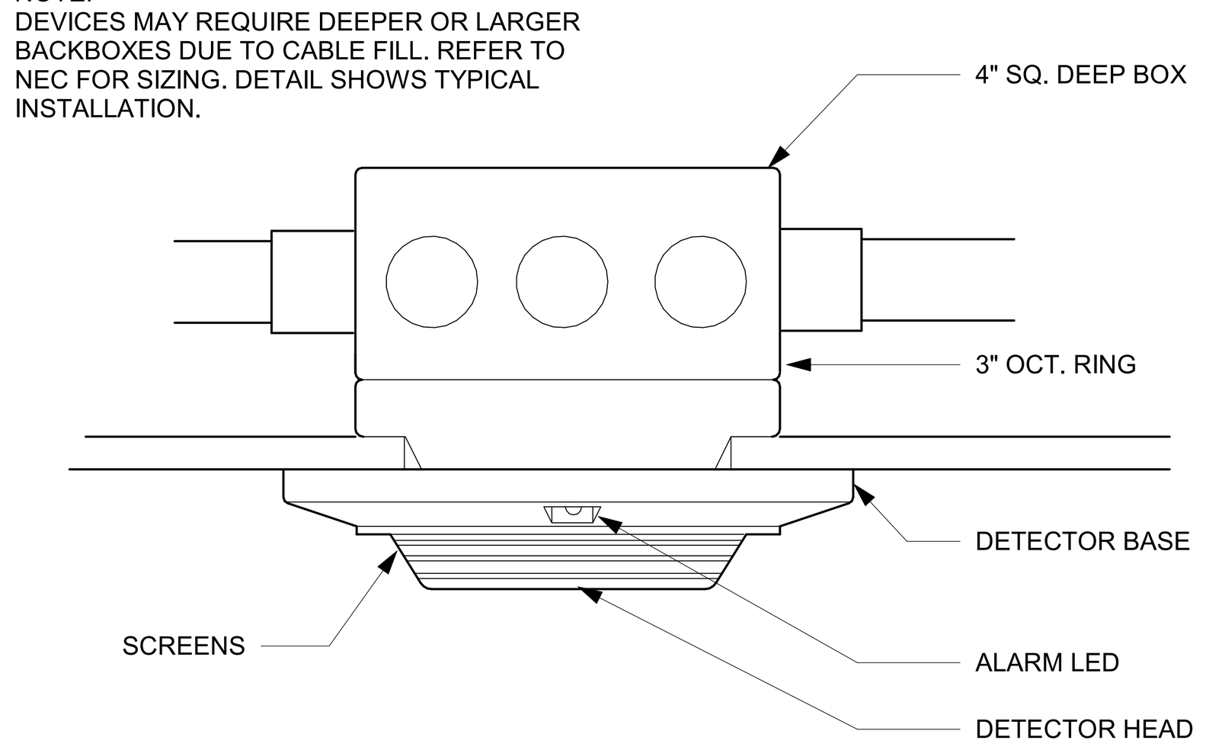


FIRE ALARM STROBE POINT TO POINT DIAGRAM | NTS | 12



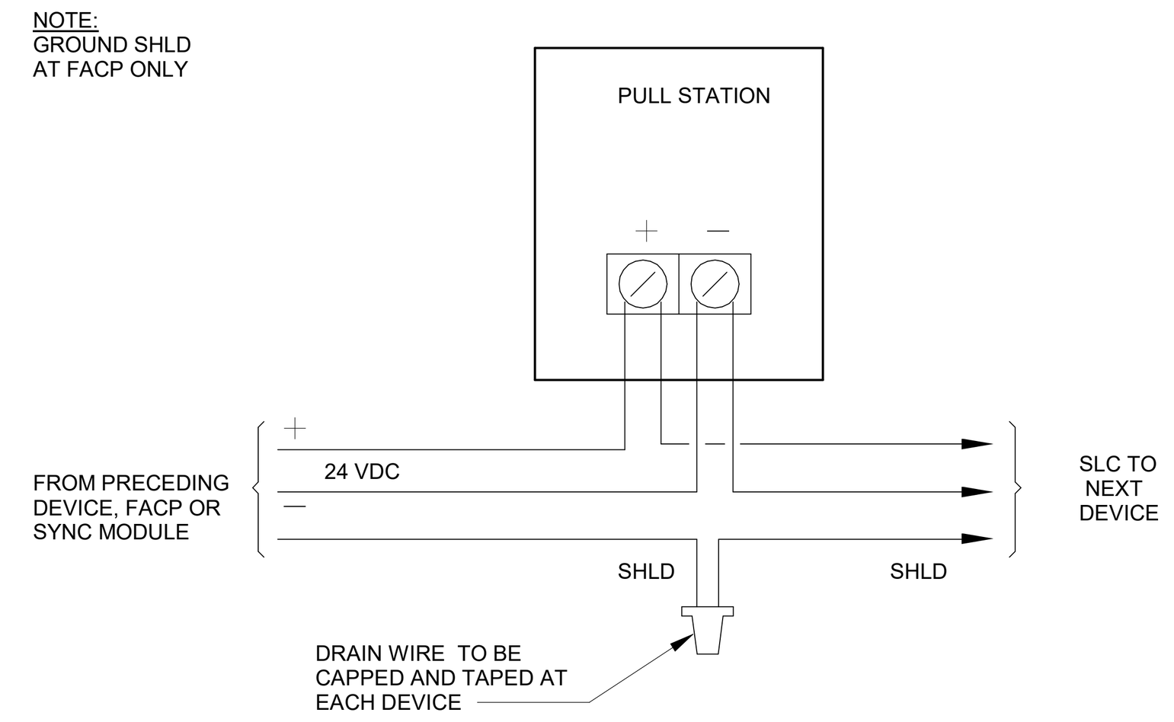
FIRE ALARM DETECTOR MOUNTING DETAIL (ABOVE CEILING) | NTS | 6

NOTE:
DEVICES MAY REQUIRE DEEPER OR LARGER BACKBOXES DUE TO CABLE FILL. REFER TO NEC FOR SIZING. DETAIL SHOWS TYPICAL INSTALLATION.



FIRE ALARM DETECTOR MOUNTING DETAIL (BELOW CEILING) | NTS | 7

NOTE:
GROUND SHLD AT FACP ONLY



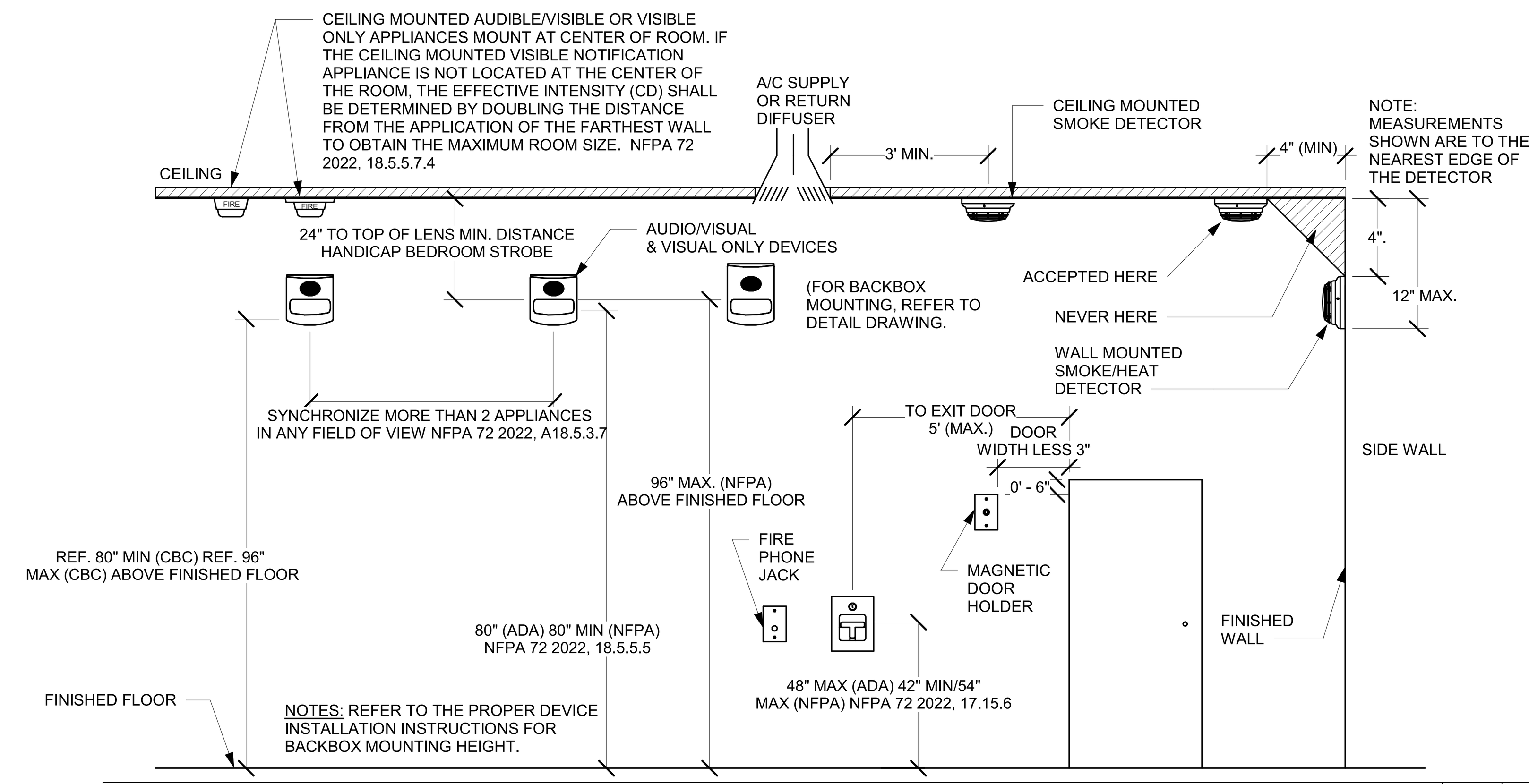
FIRE ALARM MANUAL PULL STATION POINT TO POINT DIAGRAM | NTS | 8

CTRL. UNIT ANNUNCIATION | NOTIFICATION | FIRE SAFETY CONTROL

SYSTEM OUTPUTS:
A – ACTUATE FACP ALARM SIGNAL CONDITION
B – ACTUATE FACP SUPERVISORY SIGNAL CONDITION
C – ACTUATE FACP TROUBLE SIGNAL CONDITION
E – ACTUATE ANNUNCIATOR ALARM SIGNAL CONDITION
F – ACTUATE ANNUNCIATOR SUPERVISORY SIGNAL CONDITION
G – ACTUATE ANNUNCIATOR TROUBLE SIGNAL CONDITION
I – TRANSMIT ALARM CONDITION SIGNAL TO SUPERVISORY STATION
J – TRANSMIT SUPERVISORY CONDITION SIGNAL TO SUPERVISORY STATION
K – TRANSMIT TROUBLE CONDITION SIGNAL TO SUPERVISORY STATION
Q – ACTUATE FIRE ALARM NOTIFICATION SIGNAL
R – ACTUATE FIRE ALARM CONTROL SUPERVISORY SIGNAL
S – ACTUATE FIRE ALARM CONTROL TROUBLE SIGNAL

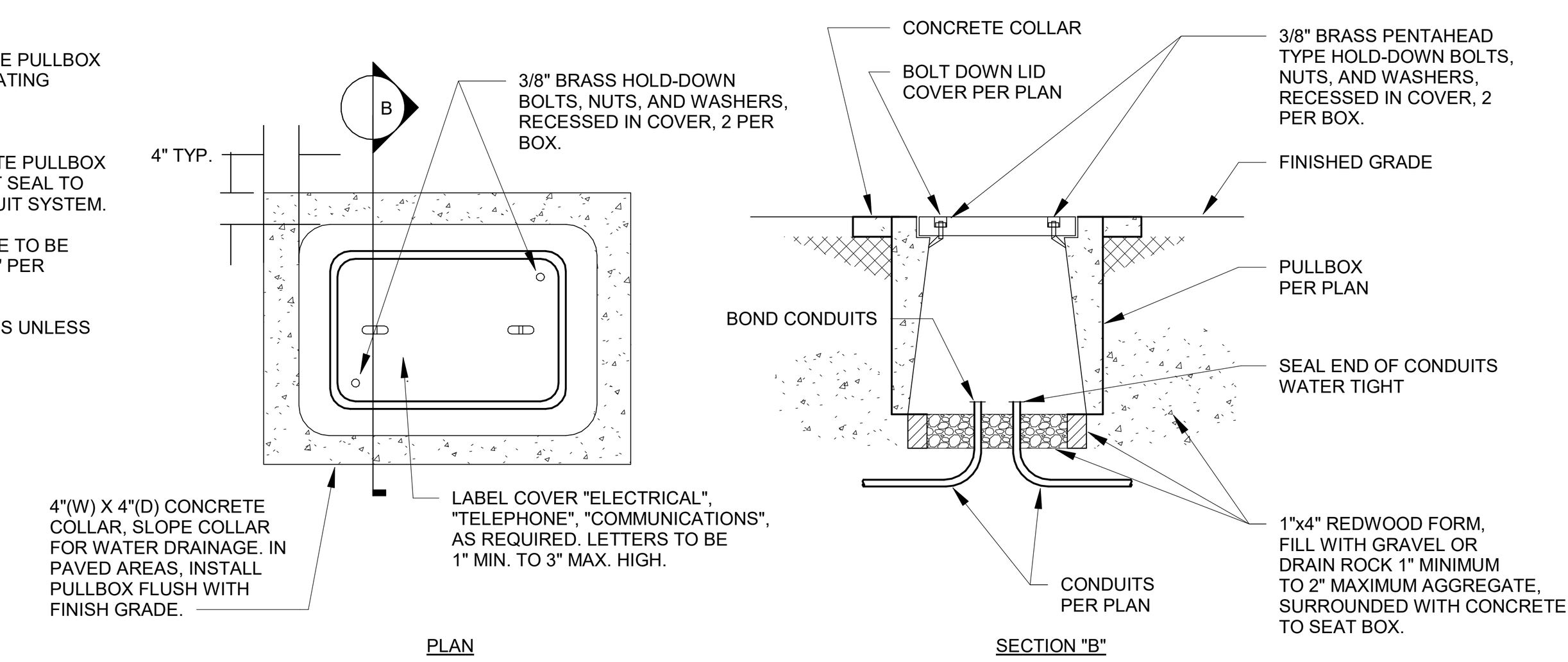
	SYSTEM INPUTS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ		REMARKS
1	SYSTEM ALARM CONDITION																																					1	
2	SMOKE SENSOR/DETECTOR	•				•				•								•																				2	
3	HEAT SENSOR/DETECTOR	•				•				•								•																				3	
4	MANUAL PULL STATION	•				•				•								•																				4	
5																																						5	
6																																						6	
7																																						7	
8																																						8	
9	SYSTEM SUPERVISORY CONDITION																																					9	
10																																						10	
11																																						11	
12																																						12	
13																																						13	
14																																						14	
15																																						15	
16	SYSTEM TROUBLE CONDITION																																					16	
17	FIRE ALARM AC POWER FAILURE			•				•												•																		17	
18	OPEN CIRCUIT OR GROUND FAULT			•				•												•																		18	
19	FIRE ALARM SYSTEM LOW BATTERY			•				•												•																		19	
20																																						20	
21																																						21	
22																																						22	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ		

13 FIRE ALARM SEQUENCE OF OPERATIONS
SCALE: 1/4" = 1'-0"

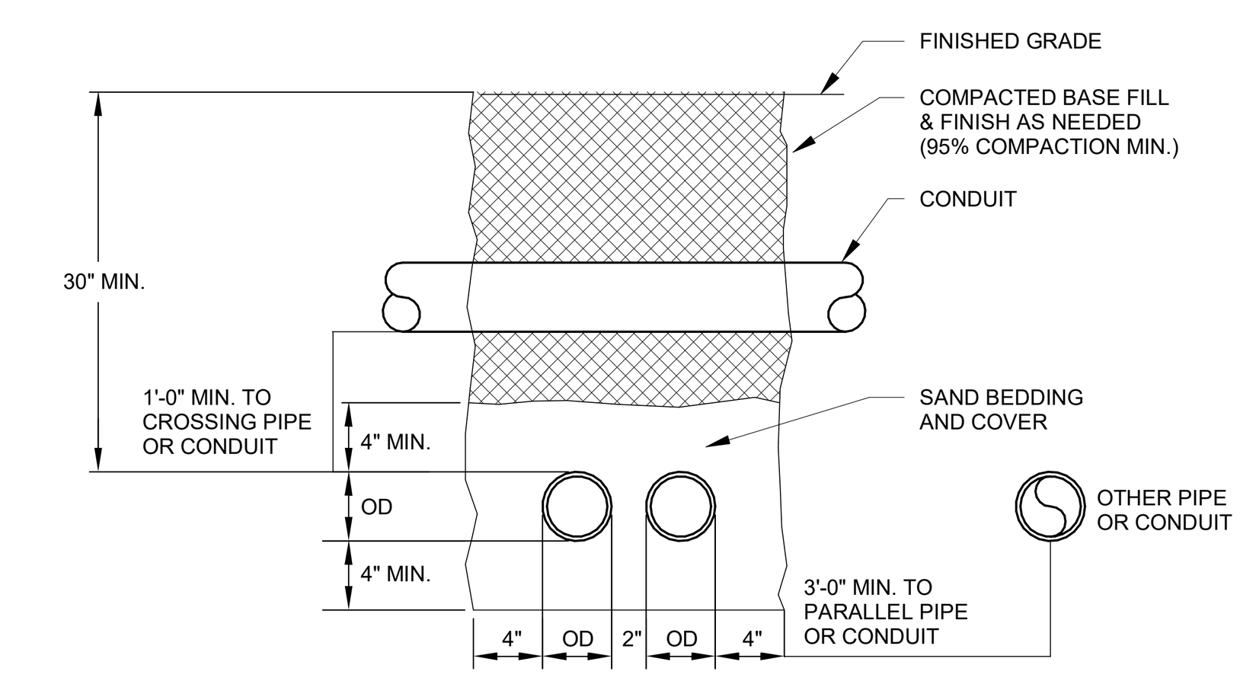


EQUIPMENT MOUNTING HEIGHTS | NTS | 1

NOTES:
1. ALL SPLICES WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH AN INSULATING AND ENCAPSULATING RESIN PACK, SCOTCHCAST 4 OR EQUAL.
2. ALL CONDUIT WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH RTV DUCT SEAL TO PREVENT WATER ENTERING CONDUIT SYSTEM.
3. ALL CONDUCTORS AND CABLES ARE TO BE GROUPED AND WIRE TIED EVERY 6" PER CONDUIT FILL.
4. PROVIDE TWO 12" EXTENSION RINGS UNLESS NOTED OTHERWISE.



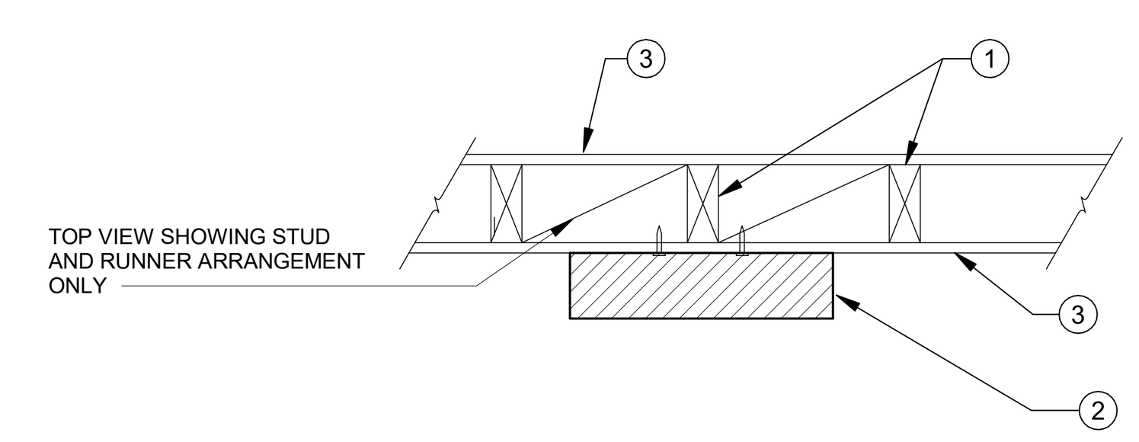
UNDERGROUND CONCRETE PULLBOX DETAIL | NTS | 2



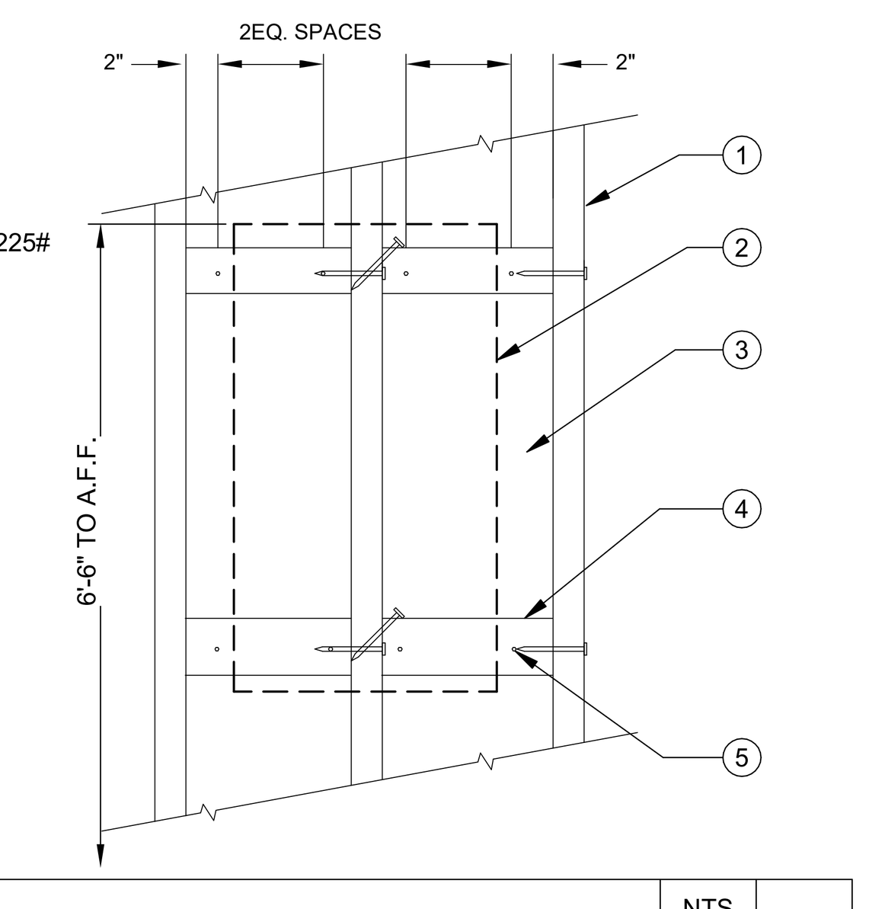
NOTE:
TRENCHING LOCATED IN PAVED AREAS - ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.

TYPICAL TRENCH DETAIL | NTS | 3

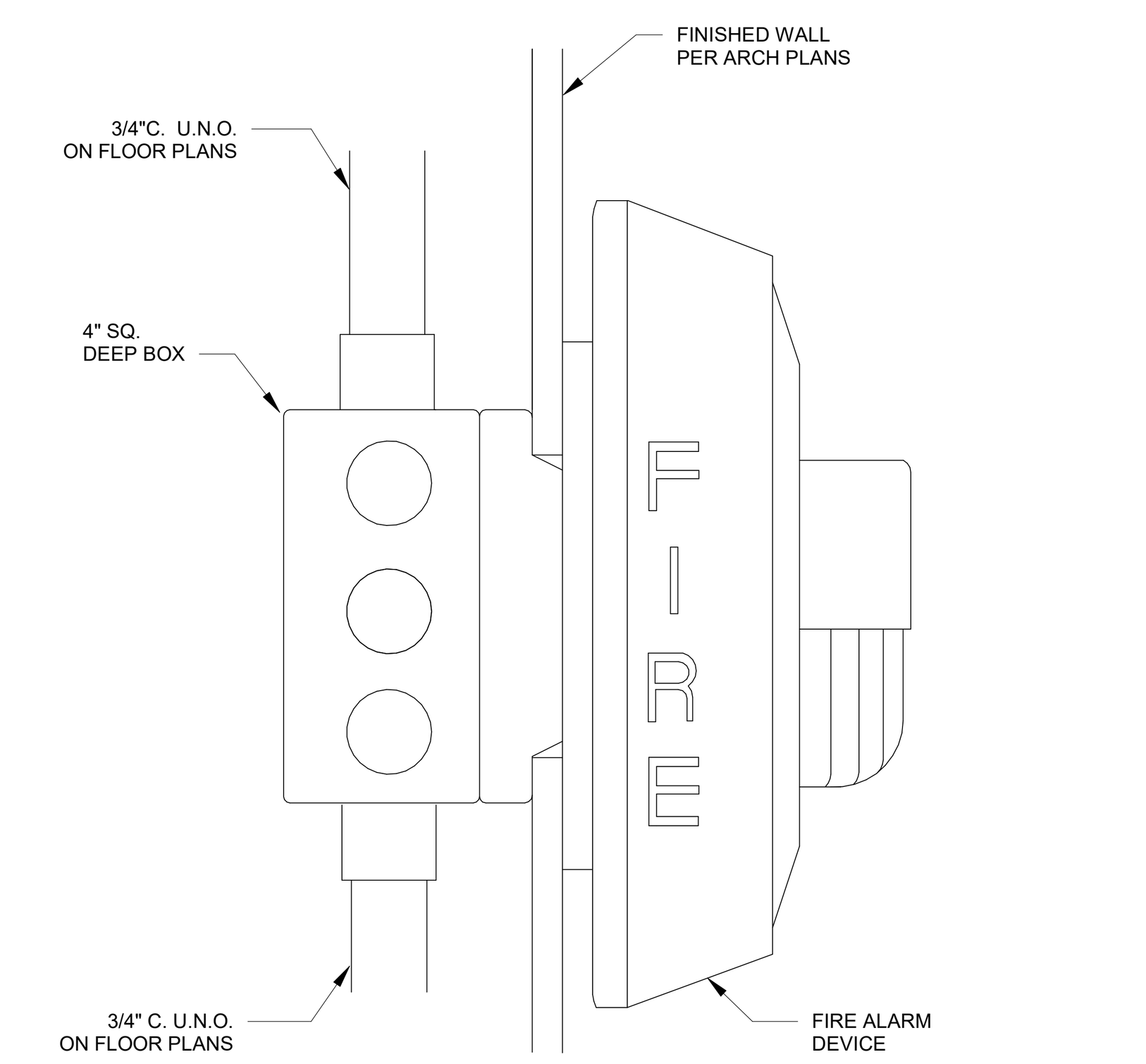
KEY NOTES:
1. WOOD STUD.
2. SURFACE MOUNTED PANEL CABINET.
3. SHEET ROCK OR OTHER WALL SURFACE MATERIAL (SEE ARCH. DRAWINGS).
4. WOOD STUDS FASTENED TO VERTICALSTUDS AT EACH END WITH TWO16D NAILS AT EACH END
5. 5/16" x 2 1/2" LAG SCREWS WITH 1" (BY ELECTRICAL CONTRACTOR)



NOTES:
1. REGULAR PANEL 150 # MAX. ISOLATION PANELS 225# MAX.
2. MOUNT TERMINAL CABINETS, J-BOXES, ETC., SIMILAR TO 30 CIRCUIT PANELBOARD.
3. REFER TO PANEL SCHEDULE SHEET FOR SIZES OF PANELS.
4. CENTER OF GRAVITY OF CABINET FROM TOP OF FLOOR = ± 50".



SURFACE PANEL/CABINET-WOOD FRAME | NTS | 5



NOTE:
1. DEVICES MAY REQUIRE DEEPER OR LARGER BACKBOXES DUE TO CABLE FILL. REFER TO NEC FOR SIZING, DETAIL SHOWS TYPICAL INSTALLATION.
2. REFER TO 1/FA0.2 FOR BACKBOX/DEVICE MOUNTING HEIGHTS.

FIRE ALARM DEVICE MOUNTED ON WALL (TYP.) | NTS | 4

AGENCY APPROVAL:
DSA # 01-121954
FILE # 21-39

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3584-004-000
333 W. SAN CARLOS STREET, STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

CONSULTANT:
LP CONSULTING ENGINEERS
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1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER RAMI S. ZEIDAN No. E 16762 EXP. 9-30-24 ELECTRICAL STATE OF CALIFORNIA

FACILITY:
75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
FIRE ALARM DETAILS AND SEQUENCE OF OPERATIONS

DSA SUBMITTAL

DATE: 2024.10.01 | CLIENT PROJ NO:

SHEET:
FA0.02

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

PANEL P2 (FV920-EK) BATTERY CALCULATION

(SECONDARY POWER SOURCE REQUIREMENTS)

					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
PANEL COMPONENTS		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
		1	FCA2031-A1	Connection Module (MoNet) Used for communication between an FCI2018/FCI2019 operating unit and either the VCC2001 Voice CPU (for fire/voice panels) or the FN2012 Ethernet Switch (for fire only panels). The FCA2031 mounts in Position 1 on an FCI2018/FCI2019 operating unit.	0		0.1	.1
		1	FCI2018-UI Main Board	Desigo Fire Alarm Control Panel 504 Point Main Board	0		0	
		1	VCC2001-A1	Voice CPU Card Voice CPU card which supervises and controls all voice modules and functions. This card gets mounted in the VCA2002 card cage (2nd slot from the left), and works with the VCC2002 Voice I/O card to control the voice system.	0.2	.2	0.21	.21
		1	VCC2002-A1	Voice I/O Card Input/Output card for the Voice system. The VCC2002 gets mounted in the VCA2002 card cage (1st slot on the left), and works with the VCC2001 to control the voice system. It supports two local audio inputs (for microphones or external low-level audio signals) and one low-level audio output, with all audio signal wiring connected to the card cage.	0.151	.151	0.156	.156
		1	VCI2001-U1 (25/70.7V)	Voice Amplifier Card 50 Watt amplifier card for the Voice system. The VCI2001 gets mounted in the VCA2002 card cage, with all speaker zone wiring connected to the card cage. Up to four VCI2001 amplifiers are supported on a single system.	0.33	.33	3.2	**3.2**
		1	VTO2001-U3	Option module (24 switches) Cerberus PRO switch module used on FV922/FV924 to add manual voice control. Up to four VTO2001-U3s can be supported on a single panel enclosure row.	0.017	.017	0.143	.143
		1	VTO2004-U3	Option module (microphone) Cerberus PRO microphone module used on FV922/FV924 to add a paging microphone. The VTO2004-U3 can be either a main microphone installed in the main system enclosure, or as a remote microphone in a remote enclosure. Up to two microphones are supported for each FV922/FV924.	0.029	.029	0.054	.054
		1	ZIC-8B	(8) NAC ZONES CODED OR NON CODED ONE CARD SLOT CC-5/CC-2	0.105	.105	0.105	.105
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P2•L1	H	43	HI921	Heat Detector	0.0003	.0129	0.0003	.0129
	S	75	OP921 w/DB-11	Smoke Detector w/6" Base	0.00025	.01875	0.00041	.03075
	F	21	XMS-D	MANUAL STATION -DUAL ACTION	0.0005	.0105	0.0005	.0105
P2•N1	C	1	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 15cd	0		0.117	.117
	C	2	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 30cd	0		0.18	.36
		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
		5	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	0		0.03	.15
P2•N2	C	2	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 30cd	0		0.18	.36
		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
		2	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	0		0.03	.06
P2•N3	C	1	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	0		0.297	.297
		1	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	.684
P2•N4	C	2	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	0		0.297	.594
		1	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	.684
P2•N5		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
P2•N6	C	2	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	0		0.297	.594
		1	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	.684
P2•N7	C	1	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 15cd	0		0.117	.117
		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
		2	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	0		0.03	.06
		1	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 30cd	0		0.04	.04
P2•S1	C	6	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 0.25w	0		0	
	C	5	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 0.5w	0		0	
		11	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 1w	0		0	
P2•S2	C	6	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 0.5w	0		0	
		7	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 1w	0		0	
					TOTAL STANDBY (A)	.87415	TOTAL ALARM (A)	**4.29515**
					REQUIRED STANDBY TIME = 24 HOURS			
					REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)				.87415	24		**20.98**	
SECONDARY ALARM LOAD (A)				**4.29515**	0.25		**3.57**	
STANDBY AND ALARM SUBTOTAL (AMP HOURS)					**24.55**			
DERATING FACTOR					1.25			
SECONDARY LOAD REQUIREMENTS (AMP HOURS)					**30.69**			

***RECOMMENDED BATTERY SIZES NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.**

*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.

PANEL P1 (FC2025-US) BATTERY CALCULATION

(SECONDARY POWER SOURCE REQUIREMENTS)

					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
PANEL COMPONENTS		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
		1	FCI2016-U1	Periphery board (252 pts)	0.11	.11	0.136	.136
		1	FCM2018-U2	CARD, Standard Operating Unit	0.125	.125	0.166	.166
		1	FP2016-U1	CARD, 170 Watt Power Supply	0		0	
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
					TOTAL STANDBY (A)	.235	TOTAL ALARM (A)	.302
					REQUIRED STANDBY TIME = 24 HOURS			
					REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)				.235	24		**5.64**	
SECONDARY ALARM LOAD (A)				.302	0.25		.08	
STANDBY AND ALARM SUBTOTAL (AMP HOURS)					**5.72**			
DERATING FACTOR					1.25			
SECONDARY LOAD REQUIREMENTS (AMP HOURS)					**7.14**			

*RECOMMENDED BATTERY SIZES NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.

*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.

PANEL P3 (FCPS-24S6) BATTERY CALCULATION

(SECONDARY POWER SOURCE REQUIREMENTS)

***PANEL POWER REQUIREMENT OF 6.936A EXCEEDS AVAILABLE CAPACITY OF 6A**

					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
PANEL COMPONENTS		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
		1	FCPS-24S6 MAIN BOARD	Fire Alarm Power Supply Main Board	0.091	.091	0.145	.145
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P3•N1	C	1	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 95cd	0		0.398	.398
		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
		2	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	0		0.03	.06
P3•N2	C	1	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	0		0.297	.297
		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
P3•N3	C	1	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	0		0.297	.297
		2	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	**.368**
		2	SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	0		0.03	.06
P3•N4	C	3	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	0		0.297	.891
		1	SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	0		0.684	.684
					TOTAL STANDBY (A)	.091	TOTAL ALARM (A)	**6.936**
					REQUIRED STANDBY TIME = 24 HOURS			
					REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)				.091	24		**2.18**	
SECONDARY ALARM LOAD (A)				**6.936**	0.25		**.73**	
STANDBY AND ALARM SUBTOTAL (AMP HOURS)					**3.92**			
DERATING FACTOR					1.25			
SECONDARY LOAD REQUIREMENTS (AMP HOURS)					**4.9**			

PROVIDE (2) 12V 7AH BATTERIES

*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.

P2 N1 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.73**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.67**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**8.48 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.995**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	141	Spare Current (A):	.005
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	0.866991	Spare Current (A) Percent:	.25 %

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	5	0.03	.15
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 15cd	1	0.117	.117
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 30cd	2	0.18	.36
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	2	0.684	**.368**

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N2 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.54**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.86**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**7.57 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.788**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	141	Spare Current (A):	.212
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	0.863753	Spare Current (A) Percent:	**0.60 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	2	0.03	.06
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 30cd	2	0.18	.36
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	2	0.684	**.368**

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N3 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.94**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.46**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**9.53 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.665**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	190	Spare Current (A):	.335
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.167073	Spare Current (A) Percent:	**6.75 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	1	0.297	.297
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	2	0.684	**.368**

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N4 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.53**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.87**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**7.50 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.278**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	195	Spare Current (A):	.722
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.197184	Spare Current (A) Percent:	**36.10 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	2	0.297	.594
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N5 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.41**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.99**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**6.91 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	.981
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	234	Spare Current (A):	**.019**
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.435952	Spare Current (A) Percent:	**50.95 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	1	0.297	.297
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N6 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.78**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.62**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**8.70 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.011**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	286	Spare Current (A):	.989
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.75593	Spare Current (A) Percent:	**49.45 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	1	0.03	.03
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	1	0.297	.297
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N7 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.59**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.81**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**7.80 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	.871
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	298	Spare Current (A):	**.129**
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.827748	Spare Current (A) Percent:	**56.45 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	1	0.03	.03
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 30cd	1	0.04	.04
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 15cd	1	0.117	.117
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P2 N8 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.19**
	Min. Operational Voltage:	16	End Of Line Voltage:	**9.21**
	Max. Circuit Current (A):	2	Voltage Drop Percent:	**5.82 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	.684
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	283	Spare Current (A):	**.316**
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.736285	Spare Current (A) Percent:	**65.80 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P3 N1 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.33**
	Min. Operational Voltage:	16	End Of Line Voltage:	**9.07**
	Max. Circuit Current (A):	3	Voltage Drop Percent:	**6.54 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.826**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	119	Spare Current (A):	**.174**
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	0.730814	Spare Current (A) Percent:	**39.13 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	2	0.03	.06
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 95cd	1	0.398	.398
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	2	0.684	**.368**

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P3 N2 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**2.01**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.39**
	Max. Circuit Current (A):	3	Voltage Drop Percent:	**9.85 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**2.379**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	138	Spare Current (A):	.621
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	0.844685	Spare Current (A) Percent:	**20.70 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	1	0.03	.03
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	1	0.297	.297
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	3	0.684	**2.052**

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P3 N3 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**.5**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.9**
	Max. Circuit Current (A):	3	Voltage Drop Percent:	**7.33 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.308**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	186	Spare Current (A):	**.692**
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.143872	Spare Current (A) Percent:	**56.40 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SLSWW-F	SLSWW-F ST,WALL,WHT,FIRE 15cd	1	0.03	.03
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	2	0.297	.594
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

P3 N4 LUMP SUM REPORT

	CIRCUIT SETTINGS		TOTALS	
	Starting Calculation Voltage:	20.4	Max. Voltage Drop:	**2.01**
	Min. Operational Voltage:	16	End Of Line Voltage:	**8.39**
	Max. Circuit Current (A):	3	Voltage Drop Percent:	**9.87 %**
	Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	**.278**
Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded	Total Circuit Length (Ft):	257	Spare Current (A):	**.722**
Distance measured using drawn segment lengths with 10.00 % additional length calculated	Total Circuit Resistance (Ω):	1.575916	Spare Current (A) Percent:	**57.40 %**

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SE-MC-CW	SE Speaker / Speaker-Strobe: Multi-Candela Ceiling, White 75cd	2	0.297	.594
		SET-185-R-WP	SET SPEAKER HI CANDELA WALL RED WEATHERPROOF 185cd	1	0.684	.684

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

1 FIRE ALARM BATTERY CALCULATIONS

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

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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Job #: 24-2054

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SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
FIRE ALARM CALCULATIONS

DSA SUBMITTAL

DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:
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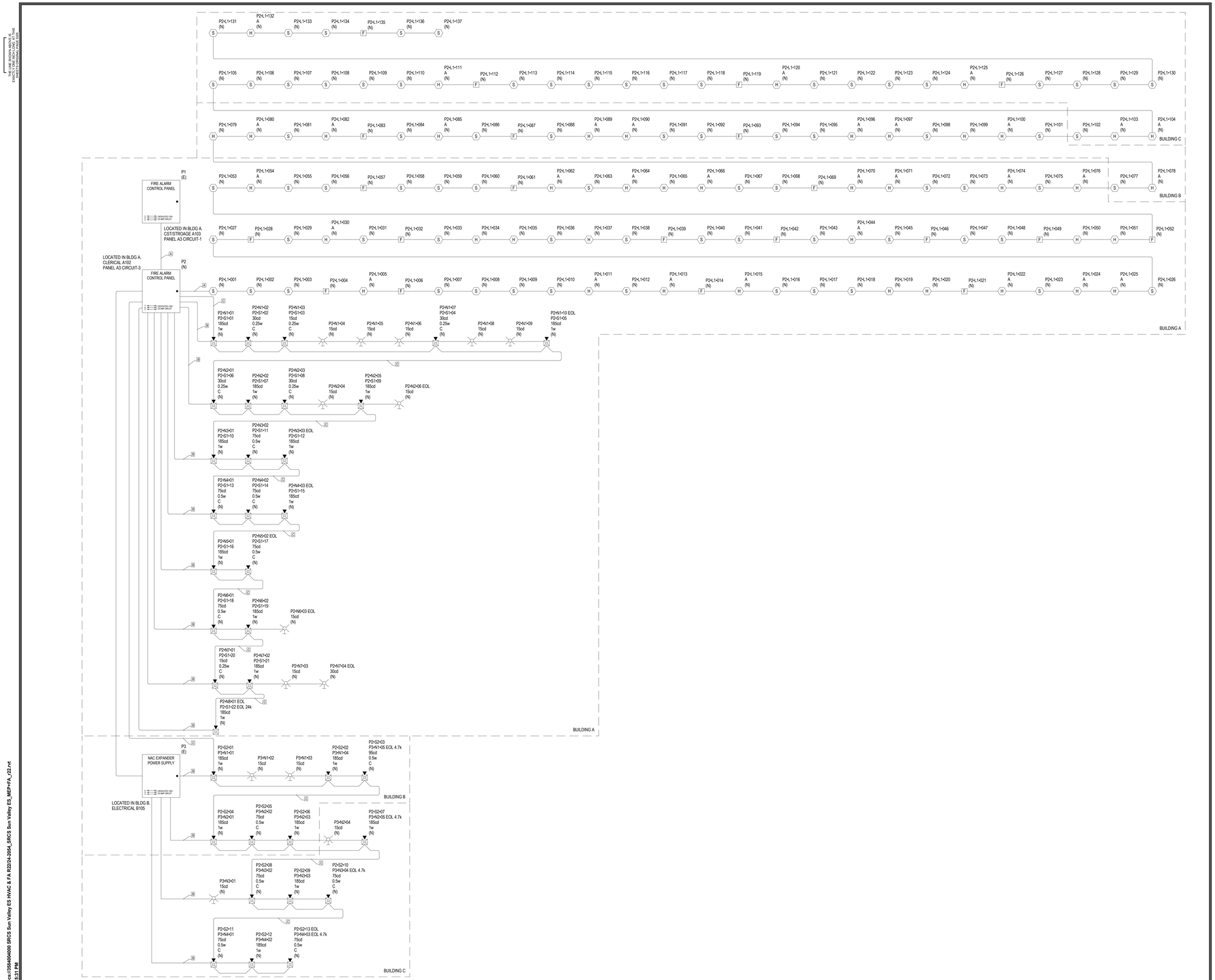

1 FIRE ALARM RISER DIAGRAM AND BATTERY CALCULATIONS

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

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

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SHEET NAME:

FIRE ALARM RISER DIAGRAM

DSA SUBMITTAL

DATE: **2024.10.01**

CLIENT PROJ NO:

SHEET:

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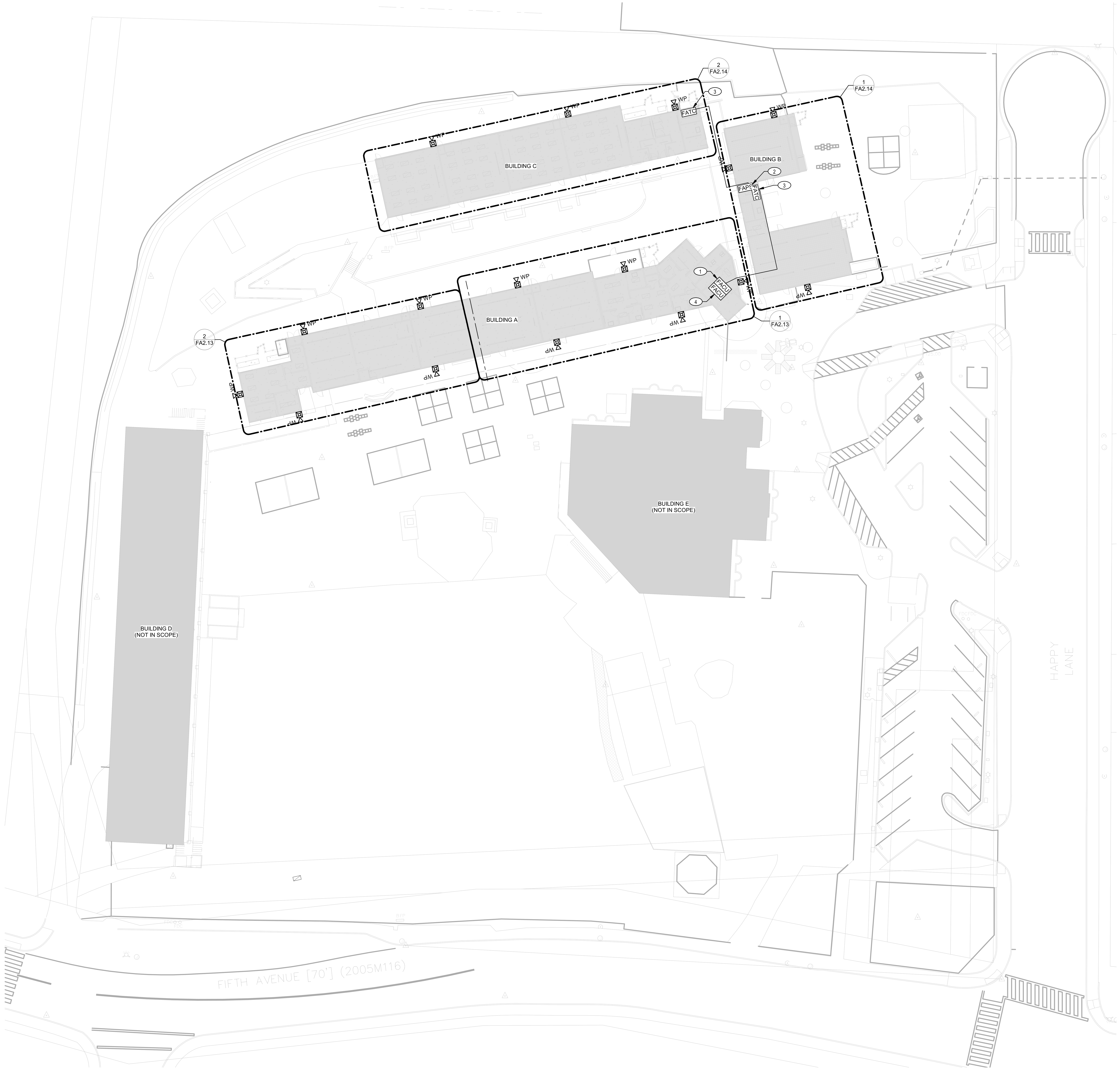

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.

KEYNOTES

1. EXISTING MAIN CAMPUS FIRE ALARM CONTROL UNIT.
2. EXISTING FIRE ALARM POWER SUPPLY TO REMAIN AND BE REUSED IF IN GOOD WORKING CONDITION.
3. EXISTING FIRE ALARM TERMINAL CABINET.
4. NEW VOICE EVACUATION FIRE ALARM CONTROL UNIT W/ MIC. PROVIDE DEDICATED 120VAC CIRCUIT.

1 **FIRE ALARM SITE PLAN**
SCALE: 3/64" = 1'-0"

0 21 42 64

AGENCY APPROVAL:
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PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
FIRE ALARM SITE PLAN

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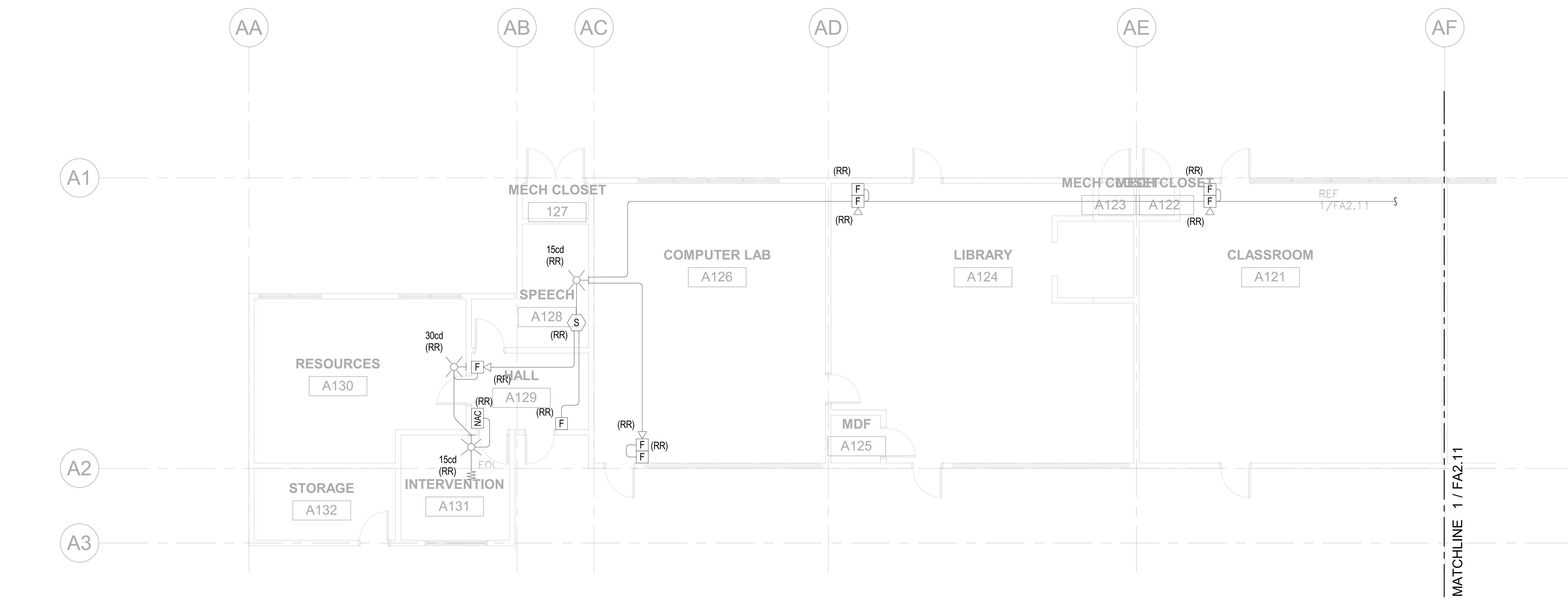
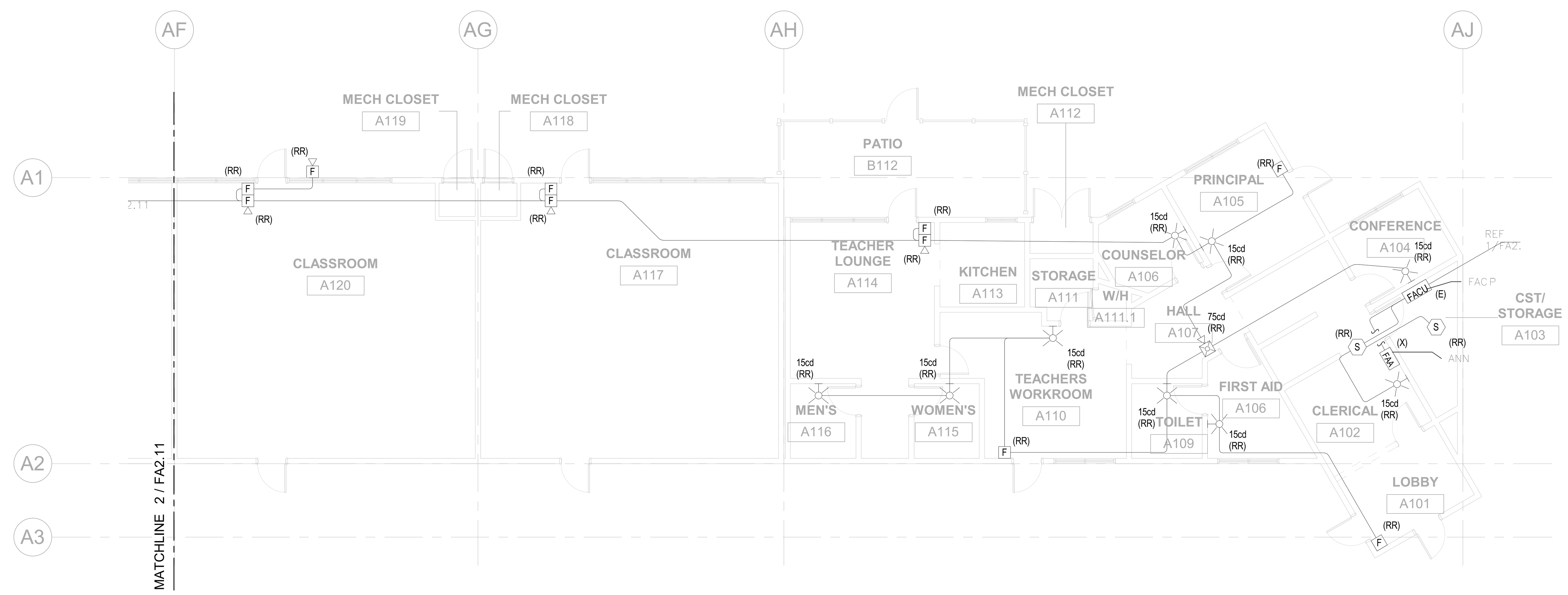
2. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.



2 FIRE ALARM BLDG A FLOOR PLAN SEG B - DEMOLITION
SCALE: 1/8" = 1'-0"



1 FIRE ALARM BLDG A FLOOR PLAN SEG A - DEMOLITION
SCALE: 1/8" = 1'-0"

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FACILITY:
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SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
FIRE ALARM BLDG A FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

DATE: 2024.10.01
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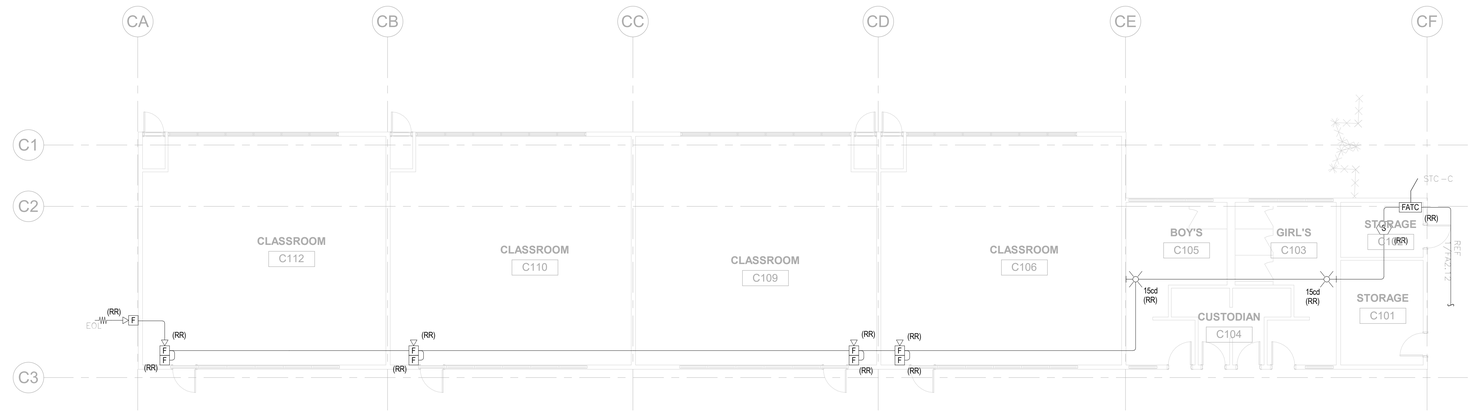
GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.



2 FIRE ALARM BLDG C FLOOR PLAN - DEMOLITION

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

0 4 8 12 16

1 FIRE ALARM BLDG B FLOOR PLAN - DEMOLITION

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

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PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

FIRE ALARM BLDG B & C FLOOR PLAN - DEMOLITION

DSA SUBMITTAL

DATE: **2024.10.01**

CLIENT PROJ NO:

SHEET:

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GENERAL NOTES

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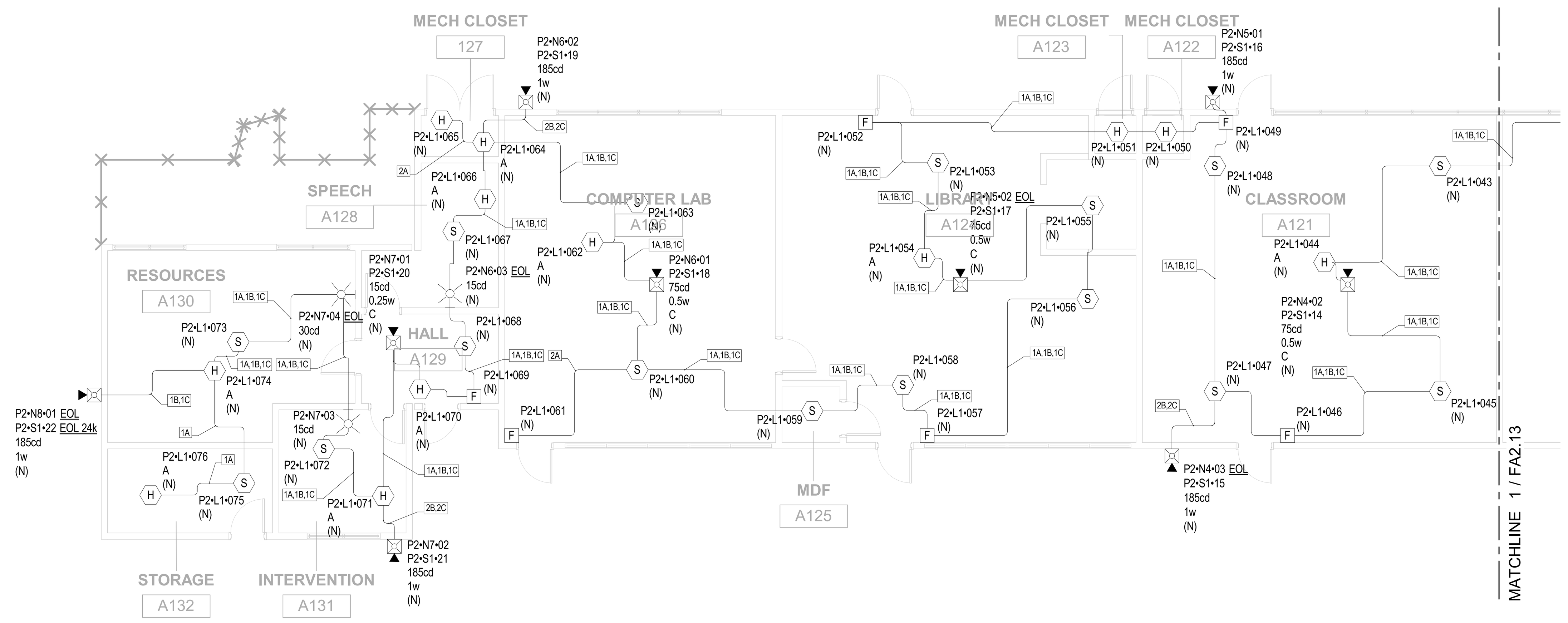
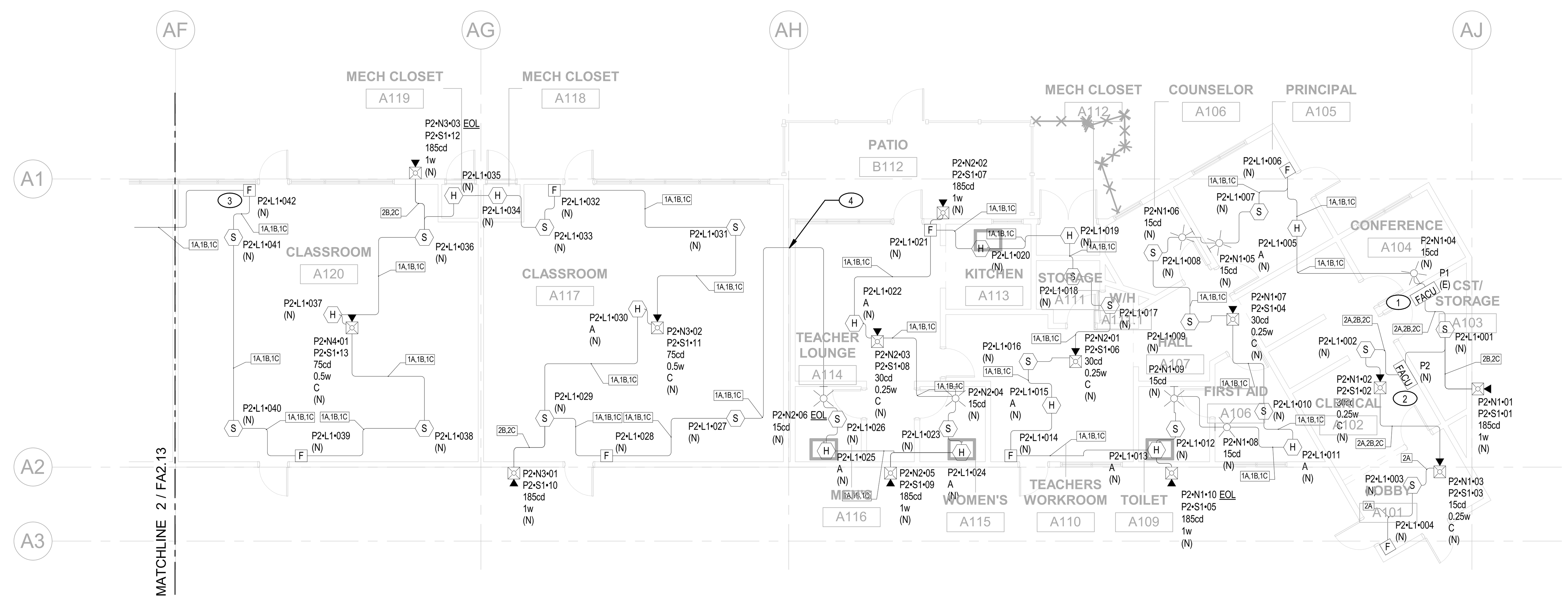
2. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.



2 FIRE ALARM BLDG A FLOOR PLAN SEG B
SCALE: 1/8" = 1'-0"



1 FIRE ALARM BLDG A FLOOR PLAN SEG A
SCALE: 1/8" = 1'-0"

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KEYNOTES

1. EXISTING MAIN CAMPUS FIRE ALARM CONTROL UNIT.
2. NEW VOICE EVACUATION FIRE ALARM CONTROL UNIT W/ MIC. PROVIDE DEDICATED 120VAC CIRCUIT.
3. PULL STATION SHALL BE MOUNTED ON 42" PEDESTAL.
4. ROUTE NEW FIRE ALARM CIRCUITS THROUGH EXISTING CONDUIT CROSSING THROUGH STRUCTURAL SEPARATION.

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER — RAMI S. ZEIDAN — No. E 16762 — EXP. 9-30-24 — ELECTRICAL — STATE OF CALIFORNIA

FACILITY:
75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:
SUN VALLEY ES HVAC FA

SHEET NAME:
FIRE ALARM BLDG A FLOOR PLAN

DSA SUBMITTAL

DATE: 2024.10.01
CLIENT PROJ NO:

SHEET:
FA2.13

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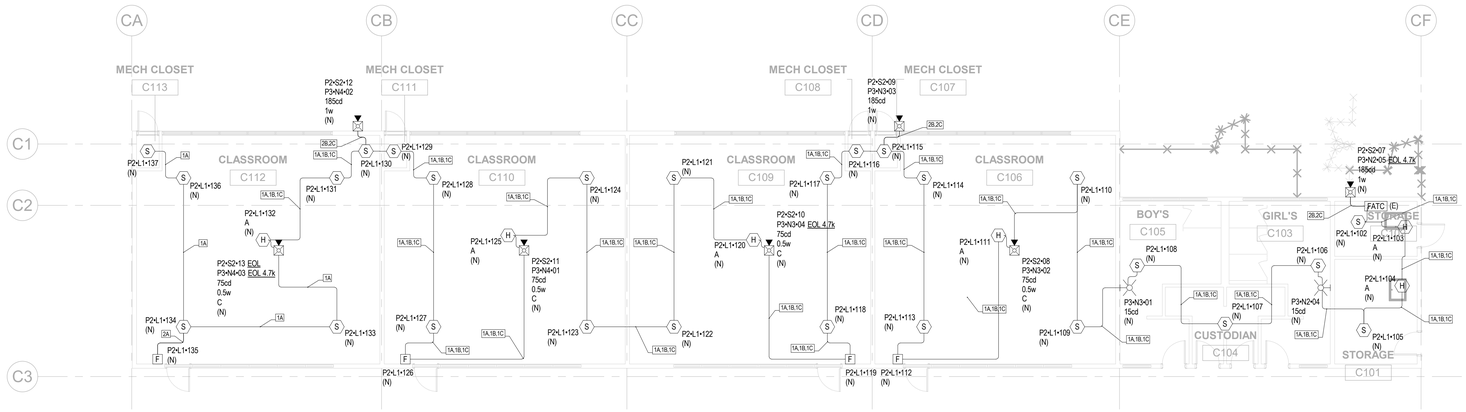
GENERAL NOTES

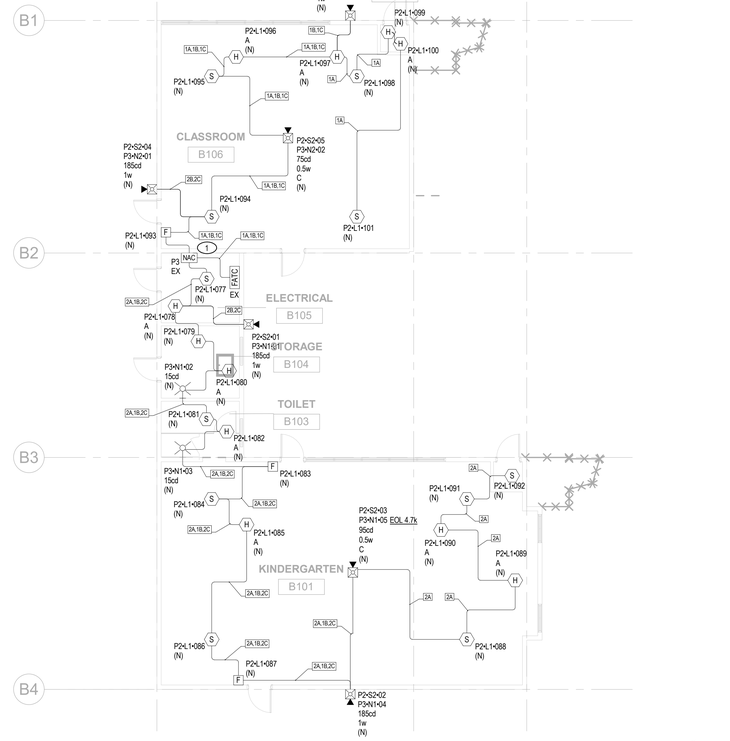
1. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40 PVC.



2 FIRE ALARM BLDG C FLOOR PLAN

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

0 4 8 12 16



1 FIRE ALARM BLDG B FLOOR PLAN

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

0 4 8 12 16

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA. 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES (#)

1 EXISTING FIRE ALARM POWER SUPPLY TO REMAIN AND BE REUSED IF IN GOOD WORKING CONDITION.

NOTES

CONSULTANT:

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MEP & FS / Sustainability / CxA

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REGISTERED PROFESSIONAL ENGINEER
DAVID T. S. ZEIGLER
No. E 16762
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

FIRE ALARM BLDG B & C FLOOR PLAN

DSA SUBMITTAL

DATE: **2024.10.01**

CLIENT PROJ NO:

SHEET:

FA2.14

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

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ISSUE

Δ	DESCRIPTION	DATE

STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)2 for alterations.			
Project Name: Sun Valley ES		**Report Page:**	**(Page 1 of 37)**
Project Address:	75 Happy Ln	**Date Prepared:**	9/9/2024

A. GENERAL INFORMATION

01	Project Location (city)	San Rafael	04	Total Conditioned Floor Area	12886
02	Climate Zone	2	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

● Classroom ● Library ● Office ● Support Areas ● Warehouse ● All Other Occupancies

B. PROJECT SCOPE

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

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

STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: Sun Valley ES	**Report Page:**	**(Page 2 of 37)**
	Date Prepared:	9/9/2024

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		AND		COMPLIES
Mandatory Measures Compliance (See Table Q for Details)										COMPLIES					

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Space Conditioning System Information

01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat
FC-A1	1	Single zone	Alteration		☐
FC-A2	1	Single zone	Alteration		☐
FC-A3	1	Single zone	Alteration		☐
FC-A4	1	Single zone	Alteration		☐

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STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Space Conditioning System Information

01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat
FC-A5	1	Single zone	Alteration		☐
FC-A6	1	Single zone	Alteration		☐
FC-A7	1	Single zone	Alteration		☐
FC-B1	1	Single zone	Alteration		☐
FC-B2	1	Single zone	Alteration		☐
FC-C1	1	Single zone	Alteration		☐
FC-C2	1	Single zone	Alteration		☐
FC-C3	1	Single zone	Alteration		☐
FC-C4	1	Single zone	Alteration		☐

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

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

01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2, 140.4(a)2 and 170.2(c)3aii	Equipment Type per Tables 110.2 and Title 20	Smallest Size Available[1] 140.4(a) and 170.2(c)1	Equipment Sizing per Mechanical Schedule (kBtu/h) 140.4(a&b), 170.2(c)1 & 170.2(c)2						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
				Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
FC-A1	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	42.25	48	10.28	10.64
FC-A2	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	42.83	48	8.86	18.39
FC-A3	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	42.39	48	11.24	12.07
FC-A4	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.64	48	24.12	27.64
FC-A5	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.9	48	24.12	27.94
FC-A6	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.9	48	24.12	27.94
FC-A7	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	45.66	48	37.78	32.5

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STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

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

01	02	03	04	05	06	07	08	09	10	11
FC-B1	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.78	48	24.92	33.13
FC-B2	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	46.32	48	37.19	49.26
FC-C1	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.79	48	24.97	33.2
FC-C2	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.75	48	24.71	32.85
FC-C3	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.76	48	24.73	32.89
FC-C4	Unitary Heat Pumps	Air-cooled, split (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2	34.7	50	0	44.75	48	24.71	32.85

[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).

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Mechanical Systems

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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	02	03	04	05	06	07	08	09
		Heating Mode				Cooling Mode		
Name or Item Tag	Size Category (Btu/h)	Rating Condition (°F)	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency
FC-A1	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-A2	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-A3	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-A4	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-A5	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-A6	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-A7	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-B1	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-B2	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-C1	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-C2	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-C3	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16
FC-C4	<65,000		HSPF2	7.5	8.9	SEER2	14.3	16

G. PUMPS

This section does not apply to this project.

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

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

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

System Name	FC-A1	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h

01	02	03	04	05	06	07	08	09	10	11
						Allowance		Design		
Fan Name or Item Tag	Fan Type	Qty	Component	Airflow through Component (%)	Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method	Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away	1,190		276		Manufacturer provided		0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment	1,190		165				
			Hydronic/DX cooling coil or heat pump coil	1,190		165				
			Economizer Return Damper	1,190		55				
			Supply Fan System	1,190		165				
Supply Fan Base Allowance (kW)			Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)			Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)	0.18

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Mechanical Systems

CALIFORNIA ENERGY COMMISSION

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-A2	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h

01	02	03	04	05	06	07	08	09	10	11
						Allowance		Design		
Fan Name or Item Tag	Fan Type	Qty	Component	Airflow through Component (%)	Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method	Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away	1,190		276		Manufacturer provided		0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment	1,190		165				
			Hydronic/DX cooling coil or heat pump coil	1,190		165				
			Economizer Return Damper	1,190		55				
			Supply Fan System	1,190		165				
Supply Fan Base Allowance (kW)			Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)			Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)	0.18

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Mechanical Systems

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-A3	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h

01	02	03	04	05	06	07	08	09	10	11
						Allowance		Design		
Fan Name or Item Tag	Fan Type	Qty	Component	Airflow through Component (%)	Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method	Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away	1,190		276		Manufacturer provided		0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment	1,190		165				
			Hydronic/DX cooling coil or heat pump coil	1,190		165				
			Economizer Return Damper	1,190		55				
			Supply Fan System	1,190		165				
Supply Fan Base Allowance (kW)			Exhuast/Return/Relief/Transfer Fan Base Allowance(kW)			Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)	0.18

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REGISTERED PROFESSIONAL ENGINEER
JASON DEDORA
M 34661
REN 12-31-23
MECHANICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

TITLE 24 COMPLIANCE CALCULATIONS

DSA SUBMITTAL

TITLE 24 COMPLIANCE SHEET INDEX

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:

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Mechanical Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
Project Name: Sun Valley ES	**Report Page:** (Page 12 of 37)
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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-A6	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-A5	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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Mechanical Systems
CALIFORNIA ENERGY COMMISSION

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-A4	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-B2	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-B1	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-A7	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-C3	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-C2	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-C1	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
									Allowance		Design				
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)						Fan System Allowance (kW)[3]		1	Fan System Electrical Output (kW)			0.18

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AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

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408 977 9160 / www.hmcarchitects.com

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CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
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JASON DEDORA
M 34584
REN 12-31-24
MECHANICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

TITLE 24 COMPLIANCE CALCULATIONS

DSA SUBMITTAL

DATE: **2024.10.01** | CLIENT PROJ NO:

SHEET:

T24.2

STATE OF CALIFORNIA
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I. SYSTEM CONTROLS

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

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats 110.2(b) & (c)[1], 120.2(a) 160.3(a)2A or 141.0(b)2E & 180.2(b)2	Shut-Off Controls 120.2(e) & 160.3(a)2D	Isolation Zone Controls 120.2(g) & 160.3(a)2F	Demand Response 110.12 120.2(b) & 160.3(a)2B	Supply Air Temp. Reset 140.4(f) & 170.2(c)4D	Window Interlocks per 140.4(n) & 170.2(c)4D
FC-A1	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-A2	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-A3	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-A4	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-A5	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-A6	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-A7	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-B1	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project

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

01	02	03	04	05	06	07	08	09	10	11
Fan System Name	Qty	Hours of Operation per Year	Design Supply Airflow Rate	Outdoor Airflow	% Outdoor Air at Full Design Airflow	Exemptions to Exhaust Air Heat Recovery Requirement per 140.4(q) & 170.2(c)4O	Exhaust Air Heat Recovery 140.4(q) & 170.2(c)4O	Type Of Heat Recovery Rating	Required Recovery Ratio	Energy Recovery Bypass

Fan Energy Index (FEI)

01	02	03
Name or Item Tag	FEI Exception	FEI
FC-A1	Altered Fan System	
FC-A2	Altered Fan System	
FC-A3	Altered Fan System	
FC-A4	Altered Fan System	
FC-A5	Altered Fan System	
FC-A6	Altered Fan System	
FC-A7	Altered Fan System	
FC-B1	Altered Fan System	
FC-B2	Altered Fan System	
FC-C1	Altered Fan System	
FC-C2	Altered Fan System	
FC-C3	Altered Fan System	
FC-C4	Altered Fan System	

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H. FAN SYSTEMS & AIR ECONOMIZERS

System Name	FC-C4	Quantity	1	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	1,190	Site Elevation	40	Economizer	NA: Altered packaged AC or HP <54 kBtu/h
01	02	03	04			05		06	07	08	09			10	11
						Allowance				Design					
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Component Allowance	Fan Allowance (watt/cfm)[3]	Design Electrical Input Power Method			Motor Nameplate Horsepower	Design Electrical Input Power (kW)
SF	Supply	1	Base Allowance for system serving spaces <=6 floors away			1,190			276		Manufacturer provided				0.18
			MERV 13-16 Filter upstream of thermal conditioning equipment			1,190			165						
			Hydronic/DX cooling coil or heat pump coil			1,190			165						
			Economizer Return Damper			1,190			55						
			Supply Fan System			1,190			165						
Supply Fan Base Allowance (kW)			Exhaust/Return/Relief/Transfer Fan Base Allowance(kW)							Fan System Allowance (kW)[3]	1		Fan System Electrical Output (kW)		0.18

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

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J. VENTILATION AND INDOOR AIR QUALITY

04		05			06			07	
System Name	FC-A3	System Design OA CFM Airflow[1]		133	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Library	Library - reading room/ stacks	860			129	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
MDF	Telephone closet	25			3.8	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				133	18	Ventilation for this System Complies?		Yes

04		05			06			07	
System Name	FC-A4	System Design OA CFM Airflow[1]		342	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		

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J. VENTILATION AND INDOOR AIR QUALITY

04		05			06			07	
System Name	FC-A1	System Design OA CFM Airflow[1]		120	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Classrooms	Classroom (ages 5-18)	797			302.9	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				303	18	Ventilation for this System Complies?		Yes

04		05			06			07	
System Name	FC-A2	System Design OA CFM Airflow[1]		105	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Classrooms - Computer Lab	Computer Lab	700			105	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				105	18	Ventilation for this System Complies?		Yes

Generated Date/Time: Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Report Version: 2022.0.000 Schema Version: rev 20220101 | Compliance ID: EnergyPro-4955-0924-3298 Report Generated: 2024-09-09 15:10:27

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
Project Name: Sun Valley ES	**Report Page:** (Page 22 of 37)
	Date Prepared: 9/9/2024

I. SYSTEM CONTROLS

FC-B2	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-C1	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-C2	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-C3	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project
FC-C4	Single zone	<= 25,000 ft²	Setback	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	EMCS	NA: Alteration	NA: Alteration Project

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

J. VENTILATION AND INDOOR AIR QUALITY

This 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:\t24ref\nolink/[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.
Nonresidential and Hotel/ Motel Multifamily Common Use Ventilation Systems		

Generated Date/Time: Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Report Version: 2022.0.000 Schema Version: rev 20220101 | Compliance ID: EnergyPro-4955-0924-3298 Report Generated: 2024-09-09 15:10:27

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
Project Name: Sun Valley ES	**Report Page:** (Page 27 of 37)
	Date Prepared: 9/9/2024

J. VENTILATION AND INDOOR AIR QUALITY

Lobby	Main Entry Lobby	100			50	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Conference	Conference/ meeting	86			43	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Hall	Corridor	100			15	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Kitchen	Kitchenettes	80			0	24	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				296	18	Ventilation for this System Complies?		Yes

04		05			06			07	
System Name	FC-B1	System Design OA CFM Airflow[1]		353	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		

Generated Date/Time: Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Report Version: 2022.0.000 Schema Version: rev 20220101 | Compliance ID: EnergyPro-4955-0924-3298 Report Generated: 2024-09-09 15:10:27

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
Project Name: Sun Valley ES	**Report Page:** (Page 26 of 37)
	Date Prepared: 9/9/2024

J. VENTILATION AND INDOOR AIR QUALITY

Classrooms	Classroom (ages 5-18)	900			342	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				342	18	Ventilation for this System Complies?		Yes

04		05			06			07	
System Name	FC-A7	System Design OA CFM Airflow[1]		506	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Office	Office space	1123			168.4	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Restrooms	Toilet, public	169	3		0	210	210	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
Storage	Occupiable storage rooms for dry materials	127			19	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Report Version: 2022.0.000 Schema Version: rev 20220101 | Compliance ID: EnergyPro-4955-0924-3298 Report Generated: 2024-09-09 15:10:27

STATE OF CALIFORNIA
Mechanical Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
Project Name: Sun Valley ES	**Report Page:** (Page 25 of 37)
	Date Prepared: 9/9/2024

J. VENTILATION AND INDOOR AIR QUALITY

Classrooms	Classroom (ages 5-18)	900			342	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				342	18	Ventilation for this System Complies?		Yes

04		05			06			07	
System Name	FC-A5	System Design OA CFM Airflow[1]		342	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Classrooms	Classroom (ages 5-18)	900			342	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				342	18	Ventilation for this System Complies?		Yes

04		05			06			07	
System Name	FC-A6	System Design OA CFM Airflow[1]		342	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		

Generated Date/Time: Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance | Report Version: 2022.0.000 Schema Version: rev 20220101 | Compliance ID: EnergyPro-4955-0924-3298 Report Generated: 2024-09-09 15:10:27

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA. 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER JASON DEDORA M-34584 REN 12-31-24 MECHANICAL STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

TITLE 24 COMPLIANCE CALCULATIONS

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:

T24.3

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

J. VENTILATION AND INDOOR AIR QUALITY

Classroom	Classroom (ages 5-18)	930			353.4	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				353	18	Ventilation for this System Complies?		Yes
04		05			06			07	
System Name	FC-B2	System Design OA CFM Airflow[1]		528	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Classroom	Classroom (ages 5-18)	1390			528.2	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				528	18	Ventilation for this System Complies?		Yes
04		05			06			07	
System Name	FC-C1	System Design OA CFM Airflow[1]		354	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		

J. VENTILATION AND INDOOR AIR QUALITY

Classroom	Classroom (ages 5-18)	932			354.2	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				354	18	Ventilation for this System Complies?		Yes
04		05			06			07	
System Name	FC-C2	System Design OA CFM Airflow[1]		350	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Classroom	Classroom (ages 5-18)	922			350.4	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				350	18	Ventilation for this System Complies?		Yes
04		05			06			07	
System Name	FC-C3	System Design OA CFM Airflow[1]		351	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		

J. VENTILATION AND INDOOR AIR QUALITY

Classroom	Classroom (ages 5-18)	923			350.7	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				351	18	Ventilation for this System Complies?		Yes
04		05			06			07	
System Name	FC-C4	System Design OA CFM Airflow[1]		350	System Design Transfer Air CFM		0	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]	
								Provided	
08	09	10	11	12	13	14	15	16	
Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)3[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[6] 160.2(c)5D 160.2(c)5E 160.2(c)5D	
	Occupancy Type[4]	Conditioned Floor Area (ft^2)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
Classroom	Classroom (ages 5-18)	922			350.4	0	0	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Not required space type
17	Total System Required Min OA CFM				350	18	Ventilation for this System Complies?		Yes

[1] *FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system*

[2] *Air filtration requirements apply to the following three system types per 120.1(c)1A: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.*

[3] *Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.*

[4] *See Standards Tables 120.1-A and 120.1-B.*

[5] *For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.*

[6] *120.2(e)3 requires systems serving rooms that are required by 130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by 130.1(c).*

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This section does not apply to this project.

M. COOLING TOWERS

This section does not apply to this project.

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.	4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump;
NRCA-MCH-03-A - Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes'. If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".	4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump;

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

NRCA-MCH-05-A - Air Economizer Controls	4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump;

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

NRCA-MCH-11-A Automatic Demand Shed Controls	4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump;

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

NRCA-MCH-12-A FDD for Packaged Direct Expansion Units	4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump;
NRCA-MCH-18-A Energy Management Control Systems	4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump; 4 Ton Trane Heat Pump;

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCV forms required for this project.

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	Yes	Plan sheet or construction document location
		M-Sheets

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 24-2054

REGISTERED PROFESSIONAL ENGINEER
JASON DEDORA
M 34661
REN. 12-31-23
MECHANICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

TITLE 24 COMPLIANCE CALCULATIONS

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

SHEET:

T24.4

PLEASE RECYCLE

Autodesk Docs://3584004000 SRCS Sun Valley ES HVAC & FA R22/24-2054_SRCS Sun Valley ES_MEP+FA_r22.rvt
9/9/2024 3:46:58 PM

STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: Sun Valley ES		**Report Page:**	**(Page 37 of 37)**
Project Address:	75 Happy Ln	**Date Prepared:**	9/9/2024

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name: Marcos Hernandez	Documentation Author Signature:
Company:	Signature Date: 2024-09-09
Address: 1209 Pleasant Grove Blvd	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Roseville CA 95678	Phone: (916) 771-0778

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: Jason DeDora	Responsible Designer Signature:
Company: LP Consulting Engineers	Date Signed: 2024-09-09
Address: 1209 Pleasant Grove Blvd.	License: M34661
City/State/Zip: Roseville CA 95678	Phone: (916) 771-0778

AGENCY APPROVAL:

DSA # 01-121954
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-004-000

333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

△	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
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REGISTERED PROFESSIONAL ENGINEER
JASON DEDORA
M 34661
REN. 12-31-23
MECHANICAL
STATE OF CALIFORNIA

FACILITY:

75 HAPPY LN
SAN RAFAEL, CA 94901

PROJECT:

SUN VALLEY ES HVAC FA

SHEET NAME:

TITLE 24 COMPLIANCE CALCULATIONS

DSA SUBMITTAL

DATE: **2024.10.01** CLIENT PROJ NO:

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