GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

SAN RAFAEL HIGH SCHOOL

FIRE ALARM SYSTEM UPGRADE

150 3RD ST, SAN RAFAEL, CA 94901

FILE: 21-H1
APPL: 01-120972

SAN RAFAEL CITY SCHOOLS

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF GOVERNING CODES LISTED IN "APPLICABLE CODES" AND ALL GOVERNING LOCAL CODES AND REGULATIONS.
2. THE OWNER / ARCHITECT HAVE OBTAINED APPROVAL OF THE PRIMARY AUTHORITY HAVING JURISDICTION (DSA, HCAI, CITY BUILDING PERMIT). CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL OTHER REQUIRED PERMITS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. UNLESS STATED OTHERWISE IN THE SPECIFICATIONS, SPECIAL INSPECTION IS REQUIRED FOR SHOP AND FIELD STRUCTURAL WELDING.
4. WHERE INCORPORATED IN THE CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COPIES OF HCAI OR DSA PRE-APPROVALS FOR PRE-APPROVED ITEMS OR SYSTEMS INCORPORATED INTO THE CONSTRUCTION AND DISTRIBUTE TO OWNER'S REPRESENTATIVE, ARCHITECT AND INSPECTOR.
5. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO FURNISH AND AND INSTALL ALL MATERIALS AND WORK DESCRIBED, DEPICTED OR DETAILED WITHIN THESE DOCUMENTS REGARDLESS OF THE LOCATION OF THAT MATERIAL OR WORK WITHIN THE DOCUMENTS OR OMISSION (WHETHER DELIBERATE OR ACCIDENTAL) OF THAT MATERIAL OR WORK BY A SUBCONTRACTOR ON HIS/HER BID.
6. THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL CONSIDER THESE DOCUMENTS IN THEIR ENTIRETY. DISCREPANCIES OR CONTRADICTIONS BETWEEN PORTIONS OF THESE DOCUMENTS MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AT LEAST 72 HOURS PRIOR TO BID OPENING FOR CLARIFICATION. OTHERWISE, THE MOST RESTRICTIVE REQUIREMENT SHALL BE IN FORCE AT NO ADDITIONAL COST TO THE OWNER.
7. THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR THE SAFETY OF ALL PERSONS ON OR ABOUT THE CONSTRUCTION SITE, IN ACCORDANCE WITH APPLICABLE LAWS AND CODES. CONTRACTOR ESTABLISH PROCEDURES TO ASSURE ALL PERSONS ENTERING A POSSIBLY HAZARDOUS AREA, INCLUDING WORKERS, SUBCONTRACTORS, OTHER CONTRACTORS, VISTORS, AND OTHERS ARE AWARE OF APPROPRIATE / REQUIRED SAFETY PROCEDURES. COMPLY WITH LOCAL, STATE, AND FEDERAL SAFETY STANDARDS, INCLUDING OSHA REQUIREMENTS AND WITH THE SAFETY PROVISIONS OF THE LATEST MANUAL OF ACCIDENT PREVENTION PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA.
8. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING TEMPORARY FENCING AND GATES, SIGNAGE, SECURITY LIGHTING OR OTHER SECURITY AND CONTROL MEASURES NECESSARY TO PROVIDE FOR THE SAFETY OF THE PUBLIC AND FACILITY USERS UNTIL THE COMPLETION OF THE WORK.
9. THE CONTRACTOR IS RESPONSIBLE TO FOR PROTECTION OF ADJACENT PROPERTY AND SHALL REPAIR AND / OR REPLACE ALL PROPERTY DAMAGED DURING THE COURSE ON THE WORK.
10. THE CONTRACTOR SHALL LIMIT HIS / HER ACTIVITY TO THE AREA DESCRIBED WITHIN THE DOCUMENTS UNLESS OTHERWISE PERMITTED BY THE OWNER'S REPRESENTATIVE.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY ITEMS DAMAGED OR DISTURBED DURING THE COURSE OF THE WORK. INSTALLATION SHALL MATCH EXISTING IN KIND, QUALITY, AND PERFORMANCE.
12. WHERE EXISTING CONSTRUCTION AND FINISHES ARE CUT, DAMAGED, OR REMODELED, PATCH WITH MATERIALS TO MATCH IN KIND, QUALITY, PERFORMANCE CHARACTERISTICS, AND APPEARANCE.
13. ALL DIMENSIONS ARE TO FACE OF STUD, UNLESS OTHERWISE NOTED. DIMENSIONS NOTED AS "CLR" MEAN CLEAR DIMENSION TO FACE OF FINISH. VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES FOUND.
14. VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS. NOTIFY ARCHITECT OF ANY DISCREPANCIES FOUND. VERIFY DIMENSIONS OF ALL OWNER-FURNISHED ITEMS, INCLUDING FURNITURE AND EQUIPMENT, TO ENSURE PROPER COORDINATION WITH CONSTRUCTION.
15. ALL ITEMS IN THESE DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
16. ALL UTILITIES REQUIRED FOR THE CONTINUOUS OPERATION OF ALL OCCUPIED EXISTING FACILITIES SHALL BE MAINTAINED IN SERVICE AT ALL TIMES. ANY SHUT DOWNS FOR NEW CONNECTIONS MUST BE COORDINATED WITH THE OWNER'S REPRESENTATIVE TWO WEEKS PRIOR TO THE REQUESTED SHUT DOWN.
17. COORDINATION WITH OTHER CONTRACTS: IF ANY PART OF THIS CONTRACTOR'S WORK DEPENDS UPON THE WORK OF A SEPARATE CONTRACTOR, THIS CONTRACTOR SHALL INSPECT SUCH OTHER WORK AND PROMPTLY REPORT IN WRITING TO THE OWNER'S REPRESENTATIVE ANY DEFECTS IN SUCH OTHER WORK THAT RENDER IT UNSUITABLE TO RECEIVE THE WORK OF THIS CONTRACTOR. FAILURE OF THIS CONTRACTOR TO SO INSPECT AND REPORT SHALL CONSTITUTE AN ACCEPTANCE OF THE OTHER CONTRACTOR'S WORK, EXCEPT AS TO DEFECTS WHICH MAY DEVELOP IN OTHER CONTRACTOR'S WORK AFTER EXECUTION OF THIS CONTRACTOR'S WORK.
18. COORDINATION OF SCHEDULE: PORTIONS OF THIS WORK MAY BE REQUIRED TO BE COMPLETED ON SCHEDULE IN ORDER TO AVOID DELAY TO OTHER CONTRACTORS OR OWNERS OPERATIONS. CONTRACTOR SHALL STRICTLY ADHER TO ESTABLISHED COMPLETION DATES AS DESIGNATED IN THE SPECIFICATIONS AND COORDINATE WORK SCHEDULE WITH THE OWNER'S REPRESENTATIVE AND OTHER CONTRACTORS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND LIQUIDATED DAMAGES.
19. SCHEDULE ALL WORK WITH THE OWNER'S REPRESENTATIVE, INCLUDING CONSTRUCTION ACCESS AND STORAGE, AND WORK OUTSIDE THE "EXTENT OF WORK" SET FORTH IN THESE DOCUMENTS. THE CONSTRUCTION SCHEDULE SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO THE START OF CONSTRUCTION.
20. CONSTRUCTION PROCEDURES SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO THE START OF CONSTRUCTION.
21. DEMOLITION IS NOT NECESSARILY LIMITED TO ONLY WHAT IS SHOWN ON THIS OR OTHER DRAWINGS OR AS OUTLINED IN THE SPECIFICATIONS. THE INTENT IS TO INDICATE GENERAL SCOPE OF DEMOLITION REQUIRED. CONTRACTOR SHALL INCLUDE ALL MISCELLANEOUS DEMOLITON, CUTTING AND PATCHING REQUIRED TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
22. ALL ITEMS IDENTIFIED TO BE SALVAGED SHALL BE DELIVERED IN GOOD CONDITION TO A PLACE OF STORAGE AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ALL OTHER ITEMS MUST BE DISPOSED OF OFF-SITE IN A LEGAL MANNER.
23. ARCHITECT IS NOT RESPONSIBLE FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL OR DISPOSAL OF, OR EXPOSURE OF PERSONS TO, HAZARDOUS MATERIALS OR TOXIC SUBSTANCES IN ANY FORM AT THE PROJECT SITE. TO THE EXTENT THESE DOCUMENTS RELATE TO SUCH ISSUES, ARCHITECT'S PARTICIPATION IS SOLELY ADMINISTRATIVE WITHOUT ANY RESPONSIBILITY FOR THE CONTENT OR EXECUTION OF SUCH DOCUMENTS.
24. DETAIL DRAWINGS WITH REFERENCES TO FIRE-RATED ASSEMBLIES OR CONSTRUCTION WHICH HAVE BEEN TESTED BY UNDERWRITERS LABORATORIES, THE CALIFORNIA BUILDING CODE OR ANY OTHER APPROVED TESTING AGENCY, SHALL BE CONSTRUED TO INCLUDE ALL WORK AND PROCEDURES CONTAINED IN THE REFERENCED ASSEMBLY DESCRIPTION..
25. ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED CONSTRUCTION SHALL BE FIRE STOPPED AND SEALED TO MAINTAIN THE REQUIRED RATING.
26. CONTRACTOR TO MAINTAIN CONTEMPORANEOUSLY RECORDED "AS-BUILT" INFORMATION OF ALL WORK, WHICH SHALL BE MARKED IN COLOR ON THE DRAWINGS AND SPECIFICATIONS. A SCANNED PDF OF THE "AS-BUILT" DRAWINGS AND SPECIFICATIONS SHALL BE TURNED OVER TO THE OWNER'S REPRESENTATIVE PRIOR TO FINAL APPLICATION FOR PAYMENT. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
27. CONTRACTOR SHALL PROVIDE TEMPORARY PROTECTION AND DUST COVERS ADJACENT TO OCCUPIED AREAS AS REQUIRED TO CONTAIN DUST AND DEBRIS WITHIN CONSTRUCTION AREA. BROOM CLEAN ALL AREAS, INLCUDING SIDEWALKS AND DRIVEWAYS EACH DAY. KEEP DIRT AND DUST TO A MINIMUM.
28. WORK SHALL BE EXECUTED IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST POSSIBLE DISTURBANCE TO PUBLIC AND TO OCCUPANTS OF EXISTING BUILDING.
29. CLEAN ALL EXPOSED SURFACES AND NEW EQUIPMENT AFTER COMPLETION.

ADMINISTRATIVE NOTES

1. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO ***CONSTRUCT THE SCOPE OF THE PROJECT*** IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS SUCH THAT THE FINISHED WORK WILL NOT COMPLY WITH THE SAID TITLE 24, CALIFORNIA CODE OF REGULATIONS, CONSTRUCTION CHANGE DOCUMENTS DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.
2. A COPY OF PARTS 1 AND 2, TITLE 24 C.C.R. SHALL BE KEPT ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONSTRUCTION CHANGE DOCUMENT AND ADDENDA TO BE SIGNED BY THE ARCHITECT AND THE OWNER AND APPROVED BY DSA. CONSTRUCTION CHANGE DOCUMENTS ARE NOT VALID UNTIL APPROVED BY DSA PER SECTION 4-338, PART 1, TITLE 24.
4. ALL TESTS TO CONFROM TO THE REQUIREMENTS OF SECTION 4-335, PART 1, TITLE 24.
5. TESTS OF MATERIALS AND TESTING LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335 OF PART 1, TITLE 24 AND THE DISTRICT SHALL EMPLOY AND PAY THE LABORATORY. COSTS OF RE-TEST MAY BE BACK CHARGED TO THE CONTRACTOR.
6. DSA SHALL BE NOTIFIED AT THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24.
7. THIS PROJECT REQUIRES A DSA CERTIFIED PROJECT INSPECTOR. INSPECTOR SHALL BE APPROVED BY DSA. INSPECTION SHALL BE IN ACCORDANCE WITH SECTION 4-333(B). THE DUTY OF THE INSPECTOR SHALL BE IN ACCORDANCE WITH SECTION 4-342, PART 1, TITLE 24.
8. SUPERVISION OF CONSTRUCTION BY DSA SHALL BE IN ACCORDANCE WITH SECTION 4-334, PART 1, TITLE 24.
9. CONTRACTOR, INSPECTOR, ARCHITECT, AND ENGINEERS SHALL SUBMIT VERIFIED REPORTS (FORM DSA-6 IN ACCORDANCE WITH SECTION 4-336 AND 4-343, PART 1, TITLE 24.
10. THE ARCHITECT AND THE STRUCTURAL ENGINEER SHALL PERFORM THEIR DUTIES IN ACCORDANCE WITH SECTION 4-333(A) AND 4-341, PART 1, TITLE 24.
11. THE CONTRACTOR SHALL PERFORM HIS DUTIES IN ACCORDANCE WITH SECTION 4-343, PART 1, TITLE 24.

APPLICABLE CODES

ALL WORK PERFORMED UNDER THIS CONTRACT IS TO CONFORM TO THE FOLLOWING CODES AND REGULATIONS:

2022 CALIFORNIA BUILDING ADMINISTRATIVE CODE,
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24, CCR BASED ON THE 2021 INTERNATIONAL BUILDING CODE (IBC) WITH 2021 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24, CCR BASED ON THE 2020 NATIONAL ELECTRICAL CODE (NEC) WITH 2020 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24, CCR BASED ON THE 2021 UNIFORM MECHANICAL CODE (UMC) WITH 2021 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24, CCR BASED ON THE 2021 UNIFORM PLUMBING CODE (UPC) WITH 2021 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ENERGY EFFICIENCY STANDARDS (ENERGY CODE), PART 6, TITLE 24 CCR

2022 SAFETY CODE FOR ELEVATORS AND ESCALATORS
(ASME A17.1-2019)

2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24, CCR BASED ON THE 2021 INTERNATIONAL FIRE CODE (IFC) WITH 2022 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 CCR
(2021 IEB CODE AND 2022 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA GREEN BUILDING CODE (CALGreen), PART 11, TITLE 24, CCR

2022 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 CCR

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

NFPA 13	INSTALLATION OF SPRINKLER SYSTEMS	2022 EDITION
NFPA 14	INSTALLATION OF STANDPIPE SYSTEMS	2019 EDITION
NFPA 17	STANDARD FOR DRY CHEMICAL EXTINGUISHING SYS.	2021 EDITION
NFPA 17A	STANDARD FOR WET CHEMICAL SYS.	2021 EDITION
NFPA 20	INSTALLATION OF STATIONARY PUMPS	2019 EDITION
NFPA 24	INSTALLATION OF PRIVATE FIRE MAINS	2019 EDITION
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE	2022 EDITION
NFPA 80	FIRE DOORS AND OTHER OPENING PROTECTIVES	2019 EDITION
NFPA 92	STANDARD FOR SMOKE CONTROL SYSTEMS	2018 EDITION
NFPA 253	CRITICAL RADIANT FLUX OF FLOOR COVERING SYS	2019 EDITION
NFPA 2001	CLEAN AGENT FIRE EXTINGUISHING SYSTEM	2018 EDITION

REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS - 2022 CBC CHAPTER 35 AND 2022 CFC CHAPTER 45

THE ABOVE CODES AND REGULATIONS REFER TO THE LATEST EDITION OR REVISION IN FORCE ON THE DATE OF THE CONTRACT, UNLESS OTHERWISE STATED. NOTHING ON THE DRAWINGS IS TO BE CONSTRUED AS REQUIRING OR PERMITTING WORK THAT IS CONTRARY TO THE LISTED CODES AND REGULATIONS, OR OTHER LOCAL, STATE OR FEDERAL CODES OR REGULATIONS WHICH MAY BE APPLICABLE.

COMPLIANCE WITH CFC CHAPTER 33, FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION, AND CBC CHAPTER 33, SAFETY DURING CONSTRUCTION WILL BE ENFORCED.

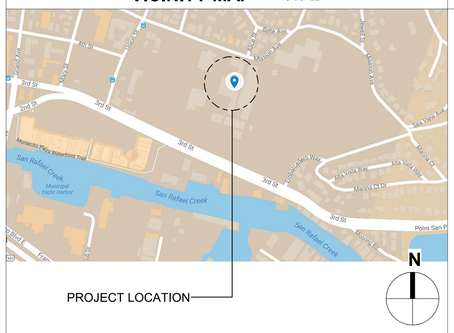
CARBON MONOXIDE DETECTION IS NOT REQUIRED PER CEBC EXCEPTION 503.15.1

ABBREVIATIONS

&	AND
@	AT
C	CENTERLINE
Ø, L	DIAMETER
#	POUND OR NUMBER
A/C	AIR CONDITIONING
AC	ASPHALTIC CONCRETE
ACOUS	ACOUSTICAL
ACT	ACOUSTIC CEILING TILE
ADD	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ALUM	ALUMINIUM
ANOD	ANODIZED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
BITUM	BITUMINOUS
BD	BOARD
BLDG	BUILDING
BLKG	BLOCKING
BOT	BOTTOM
BTWN	BETWEEN
BUR	BUILT-UP ROOFING
CAB	CABINET
CB	CATCH BASIN
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CG	CORNER GUARD
CJ	CONTROL JOINT
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPOSITION
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CT	CERAMIC TILE
CUST	CUSTODIAN
DBL	DOUBLE
DEMO	DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DI	DRAIN OR DROP INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DN	DOWN
DS	DOWNSPOUT
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
(E)	EXISTING
E	EAST
EA	EACH
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENCL	ENCLOSURE
EQ	EQUAL
EQUIP	EQUIPMENT
EVA	EMERGENCY VEHICLE ACCESS
EWC	ELECTRICAL WATER COOLER
EXP	EXPANSION
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FIN	FINISH
FLR	FLOOR
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOS	FACE OF STUD
FRP	FIBERGLASS REINFORCED
PANEL	
FT	FOOT OR FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GSM	GALVANIZED WHEET METAL
GYP	GYPSUM
HB	HOSE BIB
HC	HOLLOW CORE
HD	HEAD
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JT	JOINT
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LBS	POUNDS
LT	LIGHT
MAX	MAXIMUM
MB	MACHINE BOLT
MDF	MEDIUM DENSITY FIREBOARD
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MODULAR
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MUL	MULLION
(N)	NEW
N/A	NOT APPLICABLE
N	NORTH
NIC	NOT IN CONTRACT
NO or #	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O/	OVER
OC	ON CENTER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OPP	OPPOSITE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PR	PAIR
PTD	PAPER TOWEL DISPENSER
PVC	POLYVINYL CHLORIDE
(R)	RELOCATE
RB	RESILIENT OR RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCED
REQ	REQUIRED
RF	RESILIENT FLOORING
RM	ROOM
RO	ROUGH OPENING
RWL	RAIN WATER LEADER
S	SOUTH
SC	SOLID CORE
SCD	SEE CIVIL DRAWINGS
SCHED	SCHEDULE
SD	SOAP DISPENSER
SED	SEE ELECTRICAL DRAWINGS
SF	SQUARE FEET
SFPD	SEE FIRE PROTECTION DRAWINGS
SHT	SHEET
SIM	SIMILAR
SLD	SEE LANDSCAPE DRAWINGS
SMD	SEE MECHANICAL DRAWINGS
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPENSER
SPD	SEE PLUMBING DRAWINGS
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSD	SEE STRUCTURAL DRAWINGS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPEND
TEL	TELEPHONE
TEMP	TEMPORARY
THK	THICK
T.O.	TOP OF
TOC	TOP OF CURB
TOP	TOP OF PARAPET
TOS	TOP OF SLAB
TOW	TOP OF WALL
TPD	TOILET PAPER DISPENSER
TV	TELEVISION
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
W	WEST
w/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WH	WATER HEATER

VICINITY MAP

NO SCALE



OWNER

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SAN RAFAEL, CA 94903
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TEL. (412) 295-8211

CONSULTANTS

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OAKLAND, CA 94612
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O'MAHONEY & MYER
4340 REDWOOD HIGHWAY SUITE 245
SAN RAFAEL, CA 94903
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TEL. (415) 492-0420
FAX (415) 479-9662

DEFERRED APPROVALS

EXISTING CONDITIONS

SCOPE OF WORK

1. PROVIDE AND INSTALL NEW VOICE FIRE ALARM EQUIPMENT, DEVICES AND WIRING AT BUILDINGS AD, AR, LA, MU, TE, SC, PE AND PORTABLE CLASSROOMS.

2. TEMPORARY REMOVAL OF EXISTING SUSPENDED CEILINGS, WHERE OCCURS, FOR INSTALLATION OF NEW FIRE ALARM WIRING AND DEVICES.

INDEX OF DRAWINGS, 41 PAGES

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A1.01 SITE PLAN
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A6.02 AD BUILDING - REFLECTED CEILING PLAN - SECOND FLOOR
A6.03 AD BUILDING - REFLECTED CEILING PLAN - THIRD FLOOR
A6.04 AR BUILDING - REFLECTED CEILING PLANS
A6.05 LA BUILDING - REFLECTED CEILING PLAN FIRST FLOOR (BASEMENT)
A6.06 LA BUILDING - REFLECTED CEILING PLAN - SECOND FLOOR
A6.07 LA BUILDING - REFLECTED CEILING PLAN - THIRD FLOOR
A6.08 MU BUILDING - REFLECTED CEILING PLAN
A6.09 PE BUILDING - REFLECTED CEILING PLAN
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A6.11 TE BUILDING - REFLECTED CEILING PLANS
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ELECTRICAL
E0.01 GENERAL NOTES, LIST OF DRAWINGS, & SYMBOLS
E1.01 GENERAL SITE FIRE ALARM DEMOLITION
FE0.01 FIRE ALARM EQUIPMENT LIST, GENERAL NOTES & DETAILS
FE1.01 SITE PLAN - FIRE ALARM
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FE3.02 AD BLDG - FIRE ALARM PLAN SECOND LEVEL
FE3.03 AD BLDG - FIRE ALARM PLAN THIRD LEVEL
FE3.04 AR BLDG - FIRE ALARM PLANS
FE3.05 LA BLDG - FIRE ALARM PLAN BASEMENT LEVEL
FE3.06 LA BLDG - FIRE ALARM PLAN SECOND LEVEL
FE3.07 LA BLDG - FIRE ALARM PLAN THIRD LEVEL
FE3.08 MU BLDG - FIRE ALARM PLAN FIRST LEVEL
FE3.09 PE BLDG - FIRE ALARM PLAN FIRST LEVEL
FE3.10 SC BLDG - FIRE ALARM PLAN FIRST LEVEL
FE3.11 TE BLDG - FIRE ALARM PLANS
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FE5.01 RISER DIAGRAM - FIRE ALARM
FE5.02 RISER DIAGRAM - FIRE ALARM
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FE6.04 CALCULATIONS - FIRE ALARM
FE6.05 CALCULATIONS - FIRE ALARM
FE7.01 DETAILS

DSA APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED AS THE CERTIFICATION OF COMPLIANCE FOR THE FOLLOWING BUILDINGS AS REQUIRED BY THE FIELD ACT, EDUCATION CODE SECTION 17280-17316 AND SECTION 81130-81147

STATEMENT OF GENERAL CONFORMANCE

BELOW IS A STATEMENT OF GENERAL CONFORMANCE AS PER DSA IR A-18 AND OR IR A-19.

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

THE DRAWINGS OR SHEETS LISTED ON THE COVER OF INDEX SHEET HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:
1. DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTION 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)).

SIGNATURE OF ARCHITECT/ENGINEER — DATE: 9/14/23

W. LEE POLLARD
LICENSE # C-13315
EXP.: 11/30/23

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

This document is the property of the Owner and is not to be used without his written permission.

LICENSED ARCHITECT — W. LEE POLLARD — C-13315 — 11-30-2023 RENEWAL DATE — STATE OF CALIFORNIA

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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST; SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
TITLE SHEET

Client Project Number: Client Proj. #

Scale: 12" = 1'-0"
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
A0.01
Sheet 01 of 41

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GRAPHIC SCALES: 1/16" = 1'-0" · 1/8" = 1'-0" · 1/4" = 1'-0" · 1/2" = 1'-0" · 3/4" = 1'-0" · 1" = 1'-0" · 1 1/2" = 1'-0" · 3" = 1'-0"

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

BUILDING CODE ANALYSIS

ADMIN/COMMONS: ADMIN, COMMONS, KITCHEN
CONSTRUCTION TYPE: TYPE IIIB
AUTOMATIC SPRINKLERED: FULLY SPRINKLERED
STORIES: 2 STORIES
OCCUPANCY GROUP: B, A-2, F-1, E, M, S-1
TOTAL BUILDING AREA: 42,607 SF

STEAM BUILDING: SCIENCE, TECHNOLOGY & ARTS CLASSROOMS
CONSTRUCTION TYPE: TYPE IIIB
AUTOMATIC SPRINKLERED: FULLY SPRINKLERED
STORIES: 2 STORIES
OCCUPANCY GROUP: E, S-1
TOTAL BUILDING AREA: 18,566 SF

MADRONE: ADMIN, COMMONS, KITCHEN
CONSTRUCTION TYPE: TYPE IIIB
AUTOMATIC SPRINKLERED: FULLY SPRINKLERED
STORIES: 2 STORIES
OCCUPANCY GROUP: B, A-2, F-1, E, M, S-1
TOTAL BUILDING AREA: 42,607 SF

BUILDING A: THEATER AND CLASSROOMS
CONSTRUCTION TYPE: TYPE IIA NS
AUTOMATIC SPRINKLERED: SPRINKLERED BASEMENT ONLY
STORIES: 2 STORIES + BASEMENT
OCCUPANCY GROUP: A, E, B, S-1
TOTAL BUILDING AREA: 39,224 SF

BUILDING LA: LIBRARY & CLASSROOMS
CONSTRUCTION TYPE: TYPE IIA
AUTOMATIC SPRINKLERED: NON SPRINKLERED
STORIES: 2 STORIES + BASEMENT
OCCUPANCY GROUP: E
TOTAL BUILDING AREA: 51,382 SF

BUILDING F: SCIENCE CLASSROOMS
CONSTRUCTION TYPE: TYPE VA
AUTOMATIC SPRINKLERED: NON SPRINKLERED
STORIES: 1 STORY
OCCUPANCY GROUP: E
TOTAL BUILDING AREA: 14,263

BUILDING G: TECHNOLOGY CLASSROOMS
CONSTRUCTION TYPE: TYPE VA
AUTOMATIC SPRINKLERED: NON SPRINKLERED
STORIES: 2 STORIES
OCCUPANCY GROUP: E
TOTAL BUILDING AREA: 7,875SF

BUILDING J: MUSIC CLASSROOMS
CONSTRUCTION TYPE: TYPE VA
AUTOMATIC SPRINKLERED: NON SPRINKLERED
STORIES: 1 STORY + BASEMENT
OCCUPANCY GROUP: E
TOTAL BUILDING AREA: 9,100 SF

BUILDING P: GYMNASIUM & CLASSROOMS
CONSTRUCTION TYPE: TYPE VA
AUTOMATIC SPRINKLERED: SPRINKLERED BASEMENT ONLY
STORIES: 1 STORY + BASEMENT
OCCUPANCY GROUP: A-3, E, S-1
TOTAL BUILDING AREA: 43,857 SF

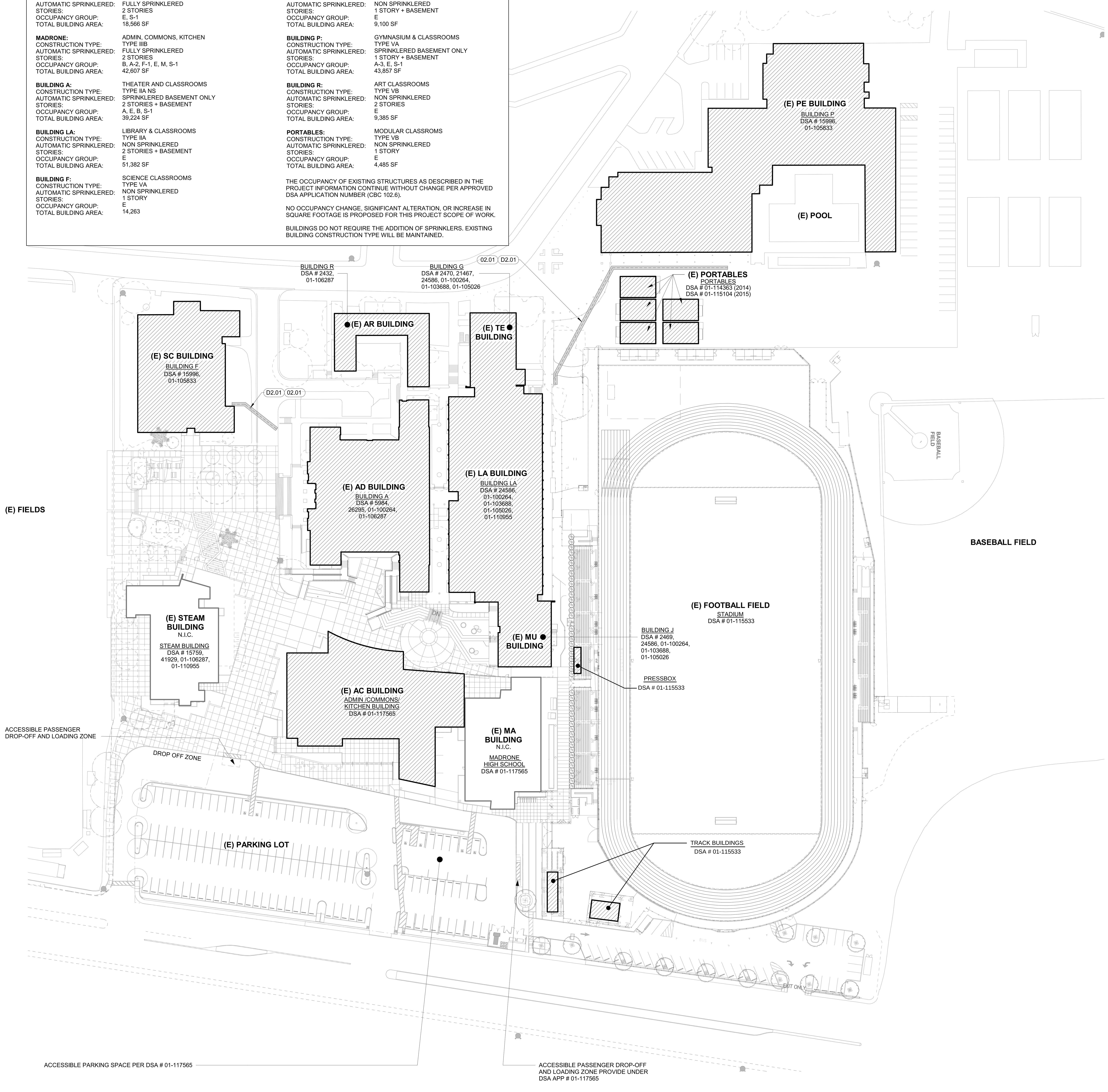
BUILDING R: ART CLASSROOMS
CONSTRUCTION TYPE: TYPE VB
AUTOMATIC SPRINKLERED: NON SPRINKLERED
STORIES: 2 STORIES
OCCUPANCY GROUP: E
TOTAL BUILDING AREA: 9,385 SF

PORTABLES: MODULAR CLASSROMS
CONSTRUCTION TYPE: TYPE VB
AUTOMATIC SPRINKLERED: NON SPRINKLERED
STORIES: 1 STORY
OCCUPANCY GROUP: E
TOTAL BUILDING AREA: 4,485 SF

THE OCCUPANCY OF EXISTING STRUCTURES AS DESCRIBED IN THE PROJECT INFORMATION CONTINUE WITHOUT CHANGE PER APPROVED DSA APPLICATION NUMBER (CBC 102.6).

NO OCCUPANCY CHANGE, SIGNIFICANT ALTERATION, OR INCREASE IN SQUARE FOOTAGE IS PROPOSED FOR THIS PROJECT SCOPE OF WORK.

BUILDINGS DO NOT REQUIRE THE ADDITION OF SPRINKLERS. EXISTING BUILDING CONSTRUCTION TYPE WILL BE MAINTAINED.



30 **OVERALL SITE PLAN**
1" = 50'-0"

BUILDING CERTIFICATION DATA

PROJECT NAME	DSA APP. #	APP. DATE	CLOSE DATE	CERTIFICATION
ADMINS/COMMONS	DSA # 01-117565 (2019)	6/21/2018	1/30/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
MADRONE	DSA # 01-117565 (2019)	6/21/2018	1/30/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
(E) CLASSROOMS				
STEAM BUILDING	DSA APPL # 01-119147	9/15/2020		
(N) CLASSROOMS				
BUILDING A	DSA # 5984			
(E) CLASSROOMS	DSA # 26295 (1965)			
	DSA # 01-100264 (1987)	2/19/1998	3/28/2003	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-106287 (2004)	5/17/2004	12/5/2013	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-118811 (2020)	2/25/2020	12/10/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
BUILDING LA	DSA # 24586 (1964)			
(E) LIBRARY/CLASSROOMS	DSA # 01-100264 (1987)	2/19/1998	3/28/2003	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-103688 (2001)			
	DSA # 01-105026 (2003)	11/14/2002	8/13/2012	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-110955 (2010)	10/1/2009	9/27/2012	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-116479 (2017)	2/6/2017	3/6/2018	TYPE 1, CERTIFICATION AND CLOSE OF FILE
BUILDING F	DSA # 15966 (1957)			
(E) CLASSROOMS	DSA # 01-105833 (2004)	12/2/2003	8/2/2012	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-118811 (2020)	2/25/2020	12/10/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
BUILDING G				
(E) CLASSROOMS	DSA # 2470 (1939)			
	DSA # 21467			
	DSA # 24586 (1964)			
	DSA # 01-100264 (1987)	2/19/1998	3/28/2003	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-103688 (2001)			
	DSA # 01-105026 (2003)	11/14/2002	8/13/2012	TYPE 1, CERTIFICATION AND CLOSE OF FILE
BUILDING J	DSA # 2469 (1939)			
(E) MUSIC/CLASSROOMS	DSA # 24586 (1964)			
	DSA # 01-100264 (1987)	2/19/1998	3/28/2003	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-103688 (2001)	4/24/2001	10/24/2007	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-105026 (2003)	11/14/2002	8/13/2012	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-118811 (2020)	2/25/2020	12/10/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
BUILDING P	DSA # 15618 (1958)			
(E) GYMANSIUM	DSA # 01-103688 (2001)	4/24/2001	10/24/2007	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-105833 (2004)	12/2/2003	8/2/2012	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-112267 (2013)	10/6/2011	5/16/2013	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-118811 (2020)	2/25/2020	12/10/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
BUILDING R	DSA # 2432 (1939)			
(E) CLASSROOMS	DSA # 01-100264 (1987)	2/19/1998	3/28/2003	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-106287 (2004)	5/17/2004	12/5/2013	TYPE 1, CERTIFICATION AND CLOSE OF FILE
	DSA # 01-114363 (2014)			
	DSA # 01-118811 (2020)	2/25/2020	12/10/2021	TYPE 1, CERTIFICATION AND CLOSE OF FILE
PORTABLES	DSA # 01-114363 (2014)	8/14/2014	6/23/2015	TYPE 1, CERTIFICATION AND CLOSE OF FILE
(E) CLASSROOMS	DSA # 01-115104 (2015)	7/14/2015	4/14/2016	TYPE 1, CERTIFICATION AND CLOSE OF FILE
PORTABLES	DSA # 01-117538 (2018)	4/11/2018	4/10/2019	TYPE 1, CERTIFICATION AND CLOSE OF FILE
(E) CLASSROOMS				
STADIUM PRESSBOX TRACK BUILDINGS	DSA # 01-115533 (2017)	2/16/2016	11/8/2018	TYPE 1, CERTIFICATION AND CLOSE OF FILE

KEYNOTES:

02.01	BACKFILL TRENCH AND COMPACT. PATCH AND REPAIR ASPHALT PAVING FOLLOWING INSTALLATION OF CONDUIT AND PULL BOX, TYP. SEE 10/A1.01, SED

DEMO KEYNOTES:

D2.01	REMOVE EXISTING ASPHALT CONCRETE PAVING AND EXCAVATE FOR INSTALLATION OF NEW CONDUIT.

GENERAL NOTES

1. SEE ELECTRICAL DRAWINGS FOR EXTENT OF WORK. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK
2. COODRINATE WITH THE ARCHITECT IF EXISTING CONDITIONS DIFFERED FROM THE CONSTRUCTION DOCUMENTS PRIOR TO START OF WORK
3. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA

SITE PLAN NOTES & LEGEND

1. NOTIFY ARCHITECT OF ANY IN THE FIELD DISCREPANCIES PRIOR TO START OF CONSTRUCTION.
2. ALL DIMENSIONS SHALL BE FACE OF STUD, UON. DIMENSIONS NOTED AS "CLR" REFER TO CLEAR DIMENSION FROM FACE OF FINISH.

BUILDINGS PART OF FIRE ALARM SCOPE

BUILDINGS NOT IN CONTRACT

SAWCUT AND REMOVE ASPHALT CONCRETE PAVING, EXCAVATE FOR NEW FIRE ALARM CONDUIT, SEE ELECTRICAL DRAWINGS

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SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

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LICENSED ARCHITECT · W. LEE POLLARD · C-13315 · 11-30-2023 RENEWAL DATE · STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
Oakland, CA 94612
510.446.2222 tel ¦ 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
SITE PLAN

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
A1.01

GRAPHIC SCALES: 1/16" = 1'-0" · 1/8" = 1'-0" · 1/4" = 1'-0" · 1/2" = 1'-0" · 3/4" = 1'-0" · 1" = 1'-0" · 1 1/2" = 1'-0" · 3" = 1'-0"

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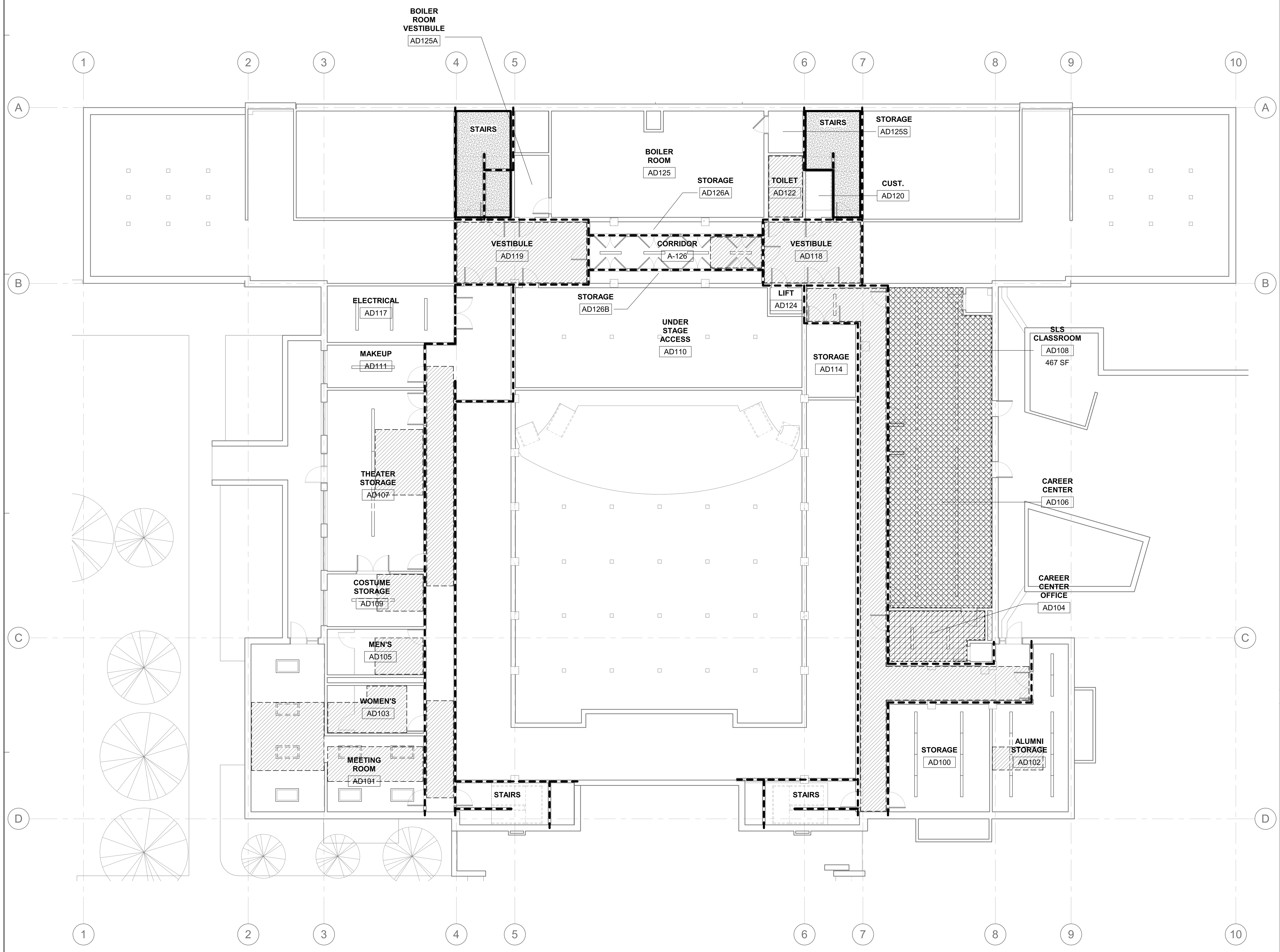
GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF, FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
2. SEE ELECTRICAL DRAWINGS FOR EXTENT OF WORK. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK
3. COORDINATE WITH THE ARCHITECT IF EXISTING CONDITIONS DIFFERED FROM THE CONSTRUCTION DOCUMENTS PRIOR TO START OF WORK
4. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA
5. SAW CUT AND REMOVE SECTION OF (E) GYP BD WALL FINISH FOR INSTALLATION OF CONDUIT AND WIRING AT NEW FA DEVICE LOCATIONS, SEE FA PLANS FOR EXACT LOCATION OF NEW WALL MOUNTED DEVICES. PATCH, REPAIR AND PAINT WALL TO MATCH ADJACENT.

RCP SYMBOL LEGEND

- (E) GLUED ON TILES AND GYP BOARD CEILING TO BE REMOVED AND REPLACED FOLLOWING COMPLETION OF FA WORK
- (E) GYP BOARD CEILING TO BE REMOVED AND REPLACED TO MATCH (E). FOLLOWING COMPLETION OF FA WORK PAINT TO MATCH ADJACENT
- (E) PLASTER CEILING
- (E) GYP BD CEILING, TYP. VIF
- DISCONNECT, REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURES. REINSTALL LIGHT FIXTURES. FOLLOWING COMPLETION OF FA WORK
- DISCONNECT, REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURES. REINSTALL LIGHT FIXTURES. FOLLOWING COMPLETION OF FA WORK
- 1 HOUR RATED CORRIDOR WALL



30 AD BUILDING REFLECTED CEILING PLAN - FIRST FLOOR (BASEMENT)
1/8" = 1'-0"

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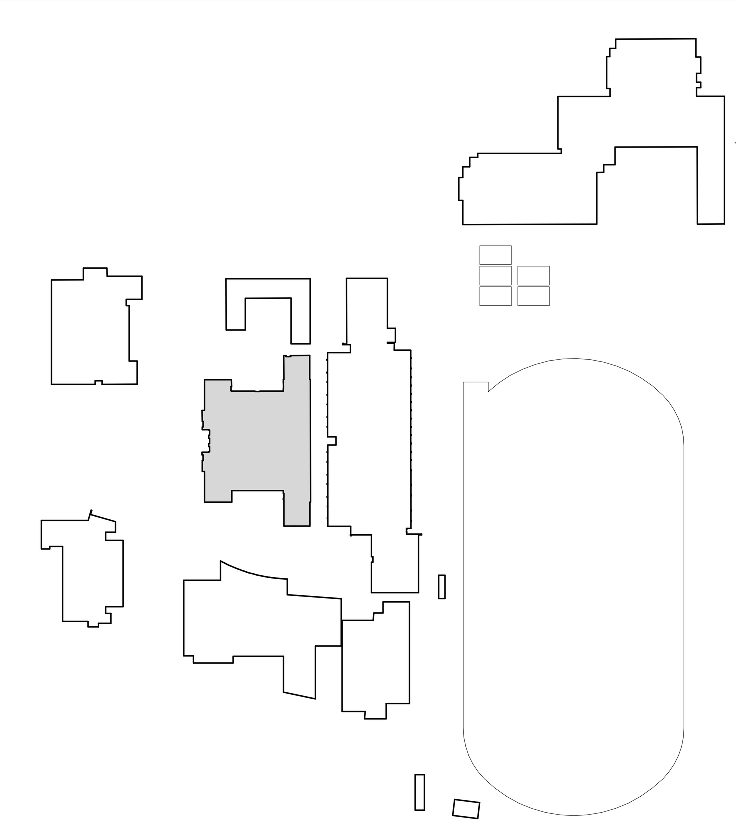
BUILDING LOCATION MAP



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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
AD BUILDING - REFLECTED CEILING PLAN - FIRST FLOOR (BASEMENT)

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

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GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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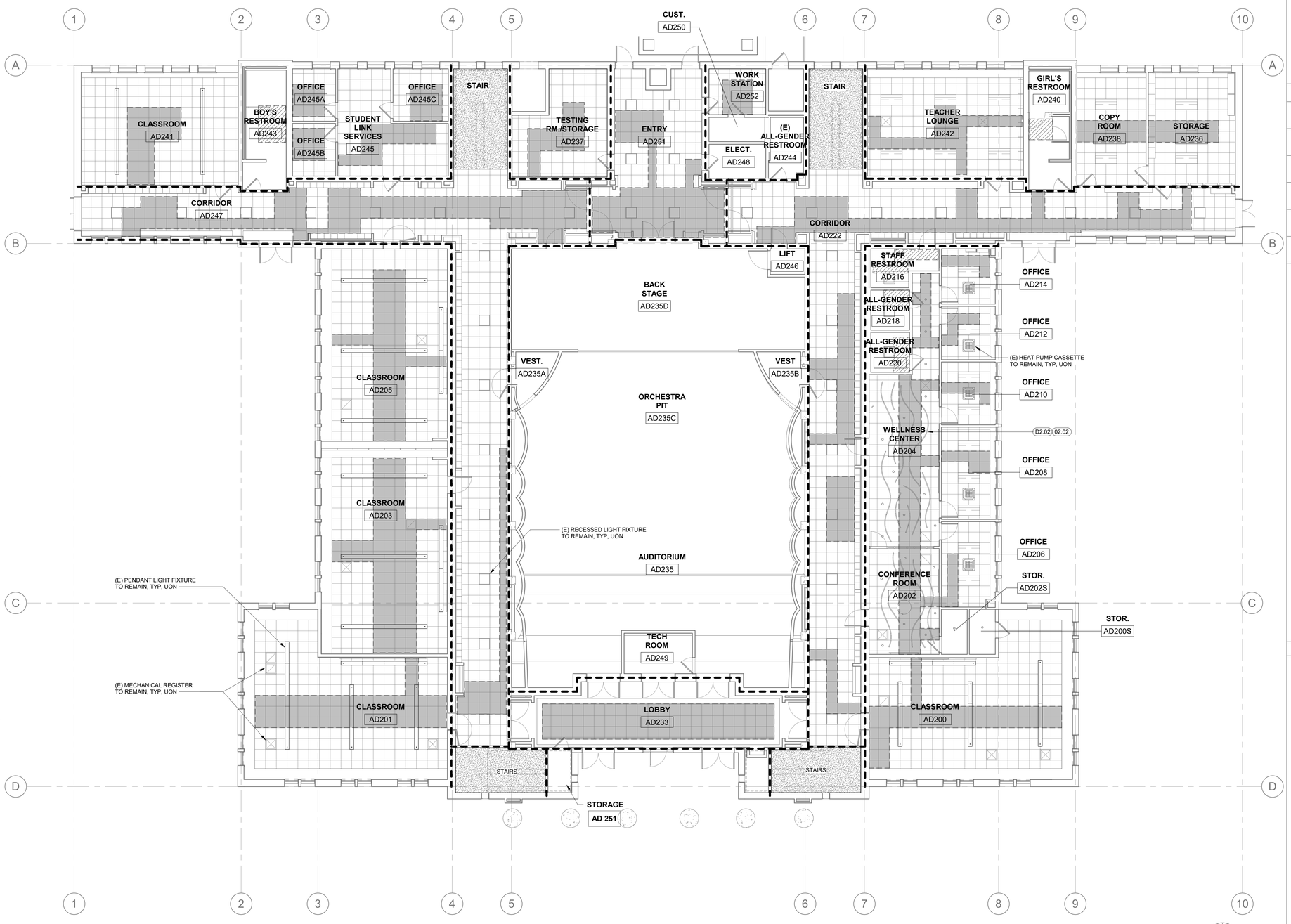


30 AD BUILDING REFLECTED CEILING PLAN - SECOND FLOOR
1/8" = 1'-0"

GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF. FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
2. SEE ELECTRICAL DRAWINGS FOR EXTENT OF WORK. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK
3. COORDINATE WITH THE ARCHITECT IF EXISTING CONDITIONS DIFFERED FROM THE CONSTRUCTION DOCUMENTS PRIOR TO START OF WORK
4. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA
5. SAW CUT AND REMOVE SECTION OF (E) GYP BD WALL FINISH FOR INSTALLATION OF CONDUIT AND WIRING AT NEW FA DEVICE LOCATIONS, SEE FA PLANS FOR EXACT LOCATION OF NEW WALL MOUNTED DEVICES. PATCH, REPAIR AND PAINT WALL TO MATCH ADJACENT.

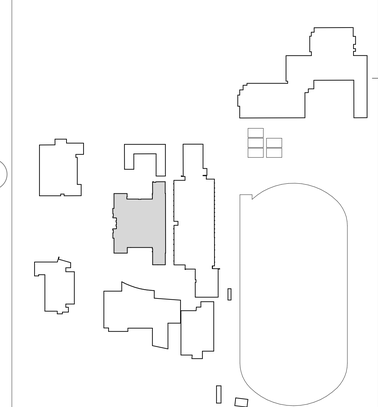
RCP SYMBOL LEGEND

- (E) SUSPENDED CEILING TO BE REMOVED AND REINSTALLED FOLLOWING COMPLETION OF FA WORK
- (E) PLASTER CEILING
- (E) GYP BD CEILING, TYP. VIF
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL

KEYNOTES:

D2.02	DISCONNECT, REMOVE AND SALVAGE (E) DECORATIVE PENDANT LIGHT FIXTURES AS REQUIRED FOR FA WORK.
D2.03	TEMPORARILY REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURE.
D2.04	TEMPORARILY REMOVE AND SALVAGE (E) ACOUSTICAL PANELS.
02.02	REINSTALL SALVAGED (E) DECORATIVE PENDANT LIGHT FIXTURE AT SAME LOCATION.
02.03	REINSTALL SALVAGED (E) SURFACE MOUNTED LIGHT FIXTURE AT SAME LOCATION, TYP.
02.04	REINSTALL SALVAGED (E) ACOUSTICAL PANELS AT SAME LOCATION, TYP.

BUILDING LOCATION MAP



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300 – 27th Street
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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
AD BUILDING - REFLECTED CEILING PLAN - SECOND FLOOR

Client Project Number: | Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
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Sheet 04 of 41

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GRAPHIC SCALES: 1/16" = 1'-0" | 1/8" = 1'-0" | 1/4" = 1'-0" | 1/2" = 1'-0" | 3/4" = 1'-0" | 1" = 1'-0" | 1 1/2" = 1'-0" | 3" = 1'-0"

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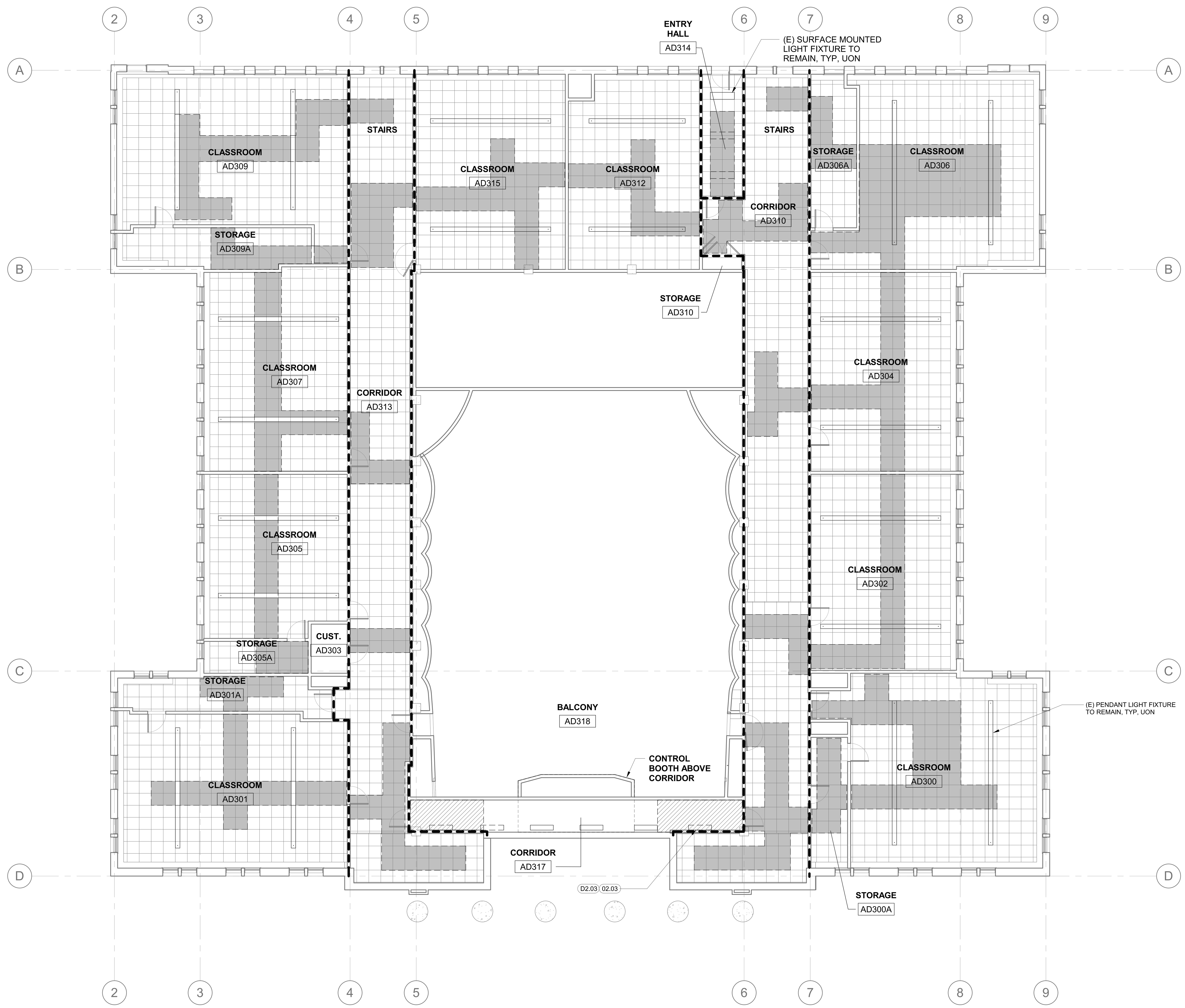

25 **AD BUILDING REFLECTED CEILING PLAN - THIRD FLOOR**
1/8" = 1'-0"

GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF, FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
2. SEE ELECTRICAL DRAWINGS FOR EXTENT OF WORK. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK
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5. SAW CUT AND REMOVE SECTION OF (E) GYP BD WALL FINISH FOR INSTALLATION OF CONDUIT AND WIRING AT NEW FA DEVICE LOCATIONS, SEE FA PLANS FOR EXACT LOCATION OF NEW WALL MOUNTED DEVICES. PATCH, REPAIR AND PAINT WALL TO MATCH ADJACENT.

RCP SYMBOL LEGEND

- (E) SUSPENDED CEILING TO BE REMOVED AND REINSTALLED FOLLOWING COMPLETION OF FA WORK
- (E) PLASTER CEILING
- (E) GYP BD CEILING, TYP. VIF
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL

KEYNOTES:

D2.02	DISCONNECT, REMOVE AND SALVAGE (E) DECORATIVE PENDANT LIGHT FIXTURES AS REQUIRED FOR FA WORK.
D2.03	TEMPORARILY REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURE.
D2.04	TEMPORARILY REMOVE AND SALVAGE (E) ACOUSTICAL PANELS.
02.02	REINSTALL SALVAGED (E) DECORATIVE PENDANT LIGHT FIXTURE AT SAME LOCATION.
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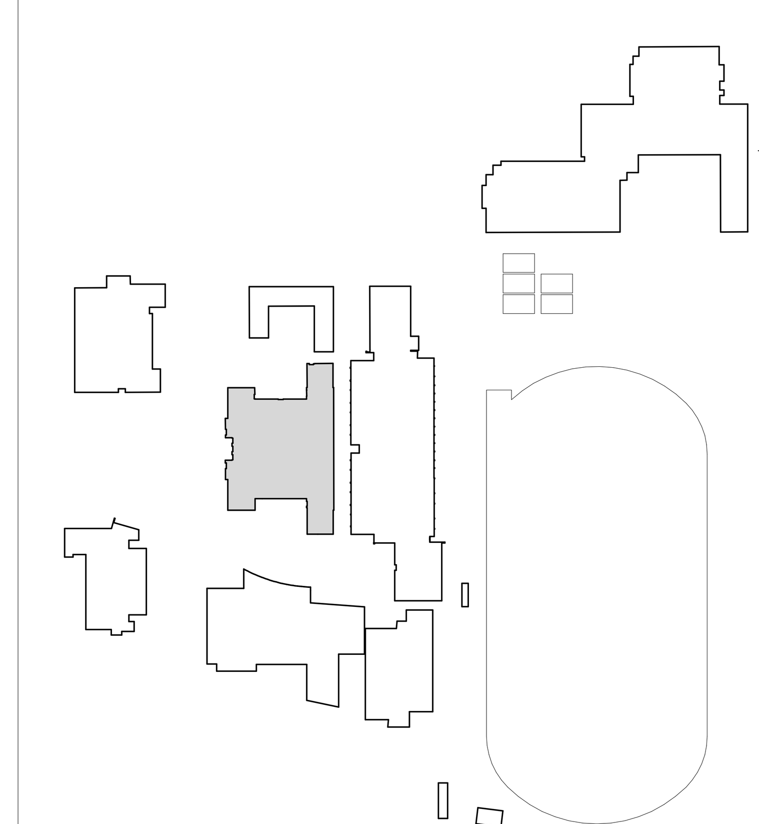
02.04	REINSTALL SALVAGED (E) ACOUSTICAL PANELS AT SAME LOCATION, TYP.

BUILDING LOCATION MAP



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SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

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LICENSED ARCHITECT W. LEE POLLARD C-13315 11-30-2023 RENEWAL DATE STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
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HY Architects Project number: 6020

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Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
AD BUILDING - REFLECTED CEILING PLAN - THIRD FLOOR

Client Project Number: | Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
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GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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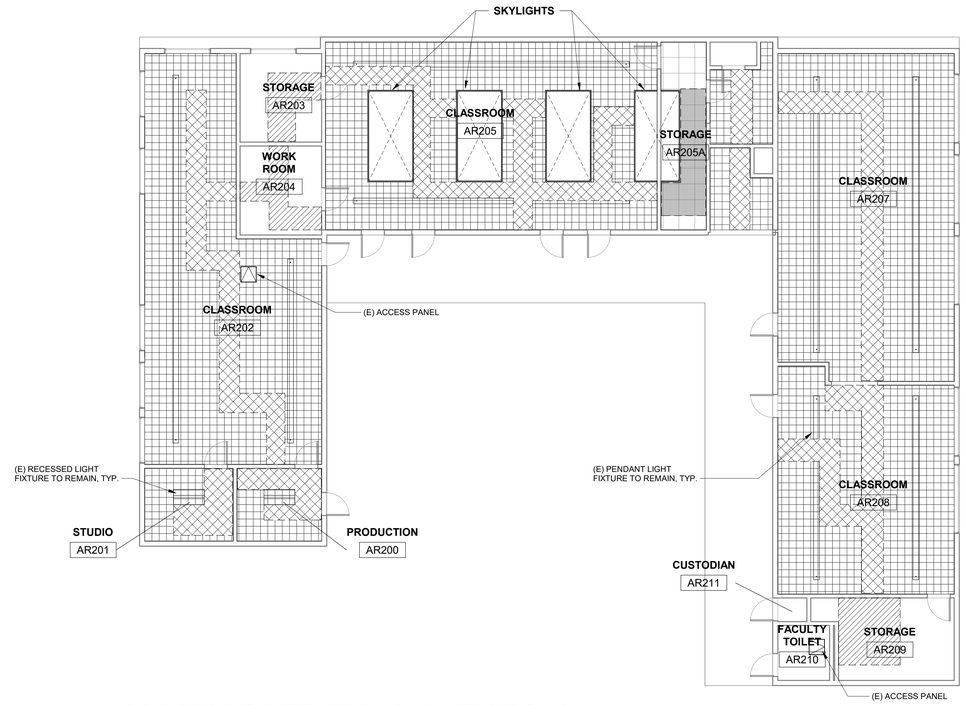
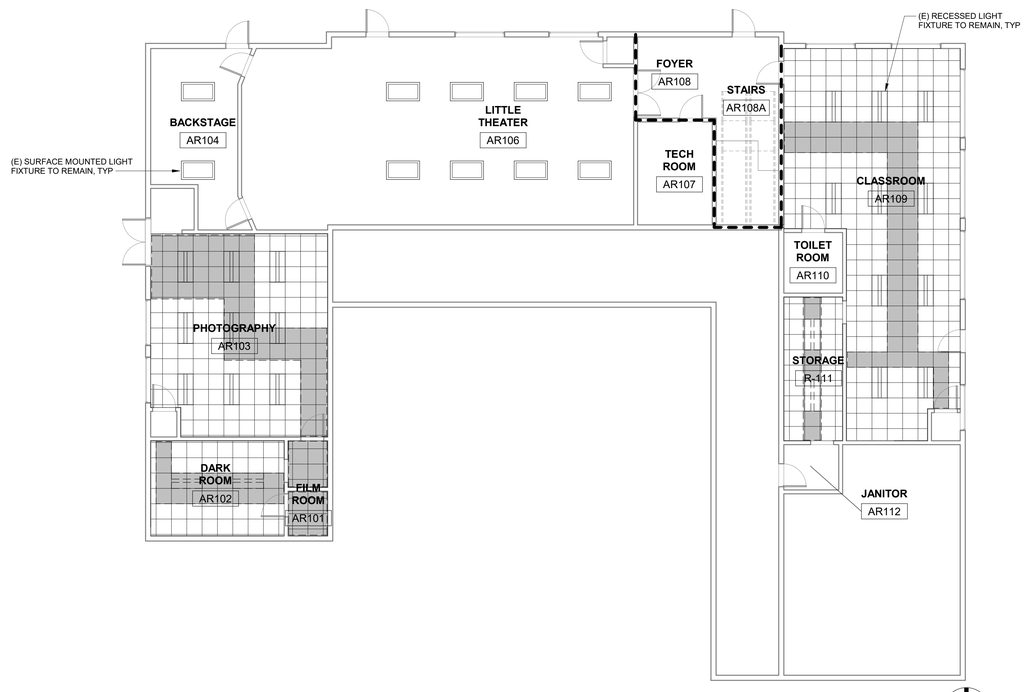


18 AR BUILDING REFLECTED CEILING PLAN - SECOND FLOOR

1/8" = 1'-0"



20 AR BUILDING REFLECTED CEILING PLAN - FIRST FLOOR

1/8" = 1'-0"

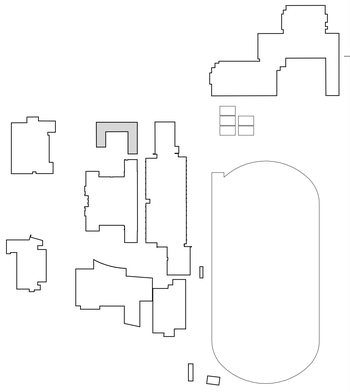
GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF. FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
2. SEE ELECTRICAL DRAWINGS FOR EXTENT OF WORK. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK
3. COORDINATE WITH THE ARCHITECT IF EXISTING CONDITIONS DIFFERED FROM THE CONSTRUCTION DOCUMENTS PRIOR TO START OF WORK
4. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA
5. SAW CUT AND REMOVE SECTION OF (E) GYP BD WALL FINISH FOR INSTALLATION OF CONDUIT AND WIRING AT NEW FA DEVICE LOCATIONS, SEE FA PLANS FOR EXACT LOCATION OF NEW WALL MOUNTED DEVICES. PATCH, REPAIR AND PAINT WALL TO MATCH ADJACENT.

RCP SYMBOL LEGEND

- (E) GLUED ON TILES AND GYP BOARD CEILING TO BE REMOVED AND REPLACED FOLLOWING COMPLETION OF FA WORK
- (E) GYP BOARD CEILING TO BE REMOVED AND REPLACED TO MATCH (E). FOLLOWING COMPLETION OF FA WORK PAINT TO MATCH ADJACENT
- (E) SUSPENDED CEILING TO BE REMOVED AND REINSTALLED FOLLOWING COMPLETION OF FA WORK
- (E) GYP BD CEILING, TYP. VIF
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL

BUILDING LOCATION MAP



SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

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LICENSED ARCHITECT
LEE POLEVOY
C-13315
11-30-2023
RENEWAL DATE
STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
Oakland, CA 94612
510.446.2222 tel | 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
AR BUILDING - REFLECTED CEILING PLANS

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
A6.04

Sheet 06 of 41

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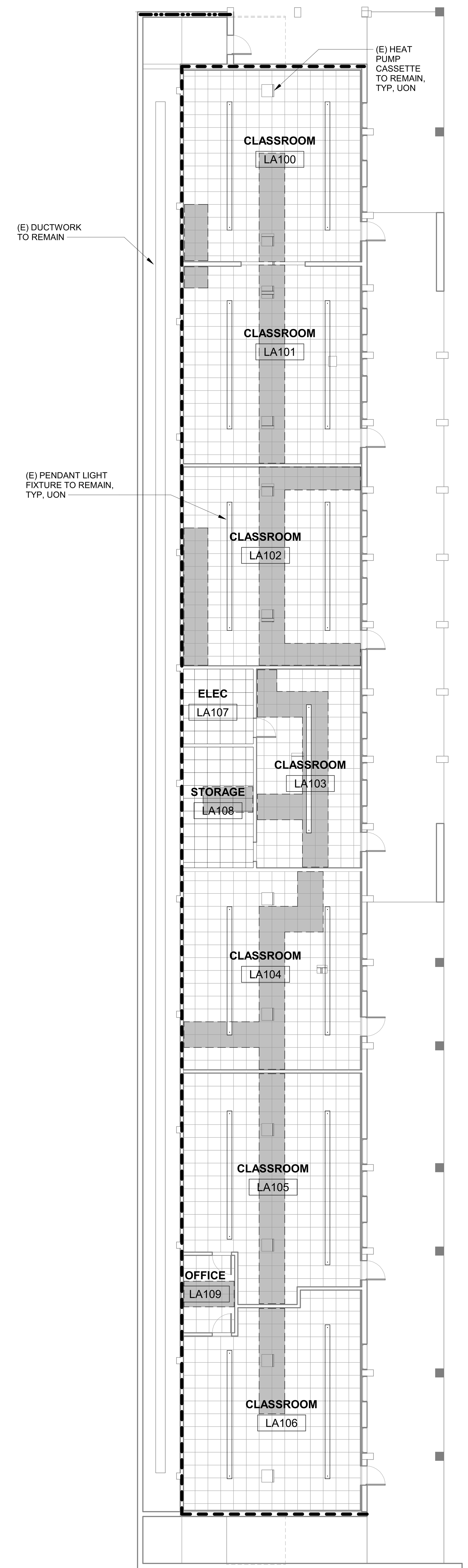
IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

GRAPHIC SCALES: 1/16" = 1'-0" | 1/8" = 1'-0" | 1/4" = 1'-0" | 1/2" = 1'-0" | 3/4" = 1'-0" | 1" = 1'-0" | 1 1/2" = 1'-0" | 3" = 1'-0"



15 **LA BUILDING REFLECTED CEILING PLAN - FIRST FLOOR (BASEMENT)**
1" = 10'-0"

GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF, FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
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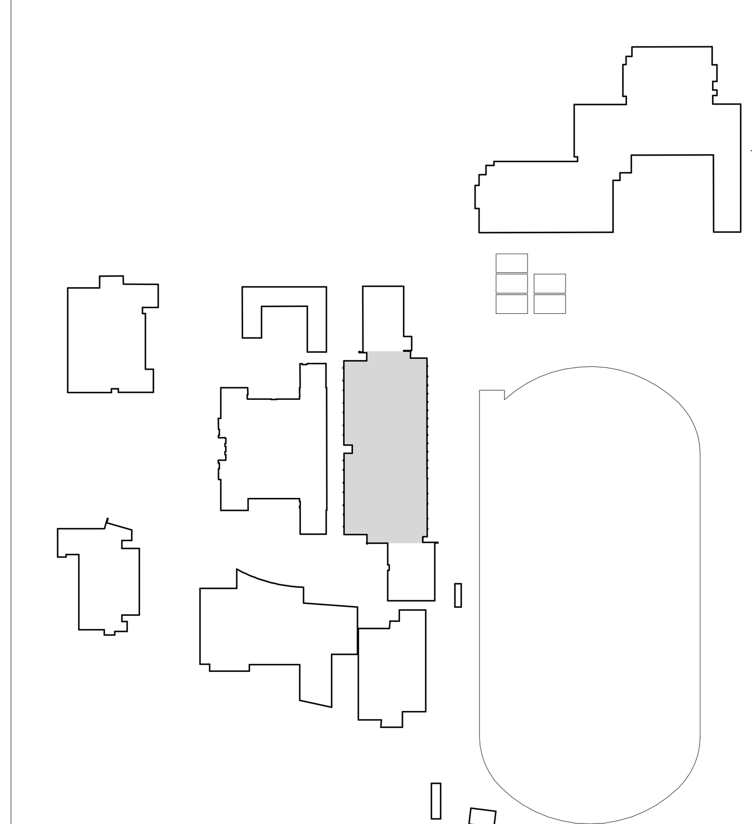
RCP SYMBOL LEGEND

- (E) SUSPENDED CEILING TO BE REMOVED AND REINSTALLED FOLLOWING COMPLETION OF FA WORK
- (E) GYP BD CEILING, TYP. VIF
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL

BUILDING LOCATION MAP



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Delta	Date	Revisions	By

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HIBSER YAMAUCHI Architects, Inc.
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Oakland, CA 94612
510.446.2222 tel | 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
LA BUILDING - REFLECTED CEILING PLAN FIRST FLOOR (BASEMENT)

Client Project Number: | Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
A6.05

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9/13/2023 6:07:14 PM

0 5' 50' 0 5' 25' 0 1' 12' 0 1' 6' 0 4' 0 1' 3' 0 2' 0 1'

GRAPHIC SCALES: 1/16" = 1'-0" | 1/8" = 1'-0" | 1/4" = 1'-0" | 1/2" = 1'-0" | 3/4" = 1'-0" | 1" = 1'-0" | 1 1/2" = 1'-0" | 3" = 1'-0"

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GENERAL RCP NOTES

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RCP SYMBOL LEGEND

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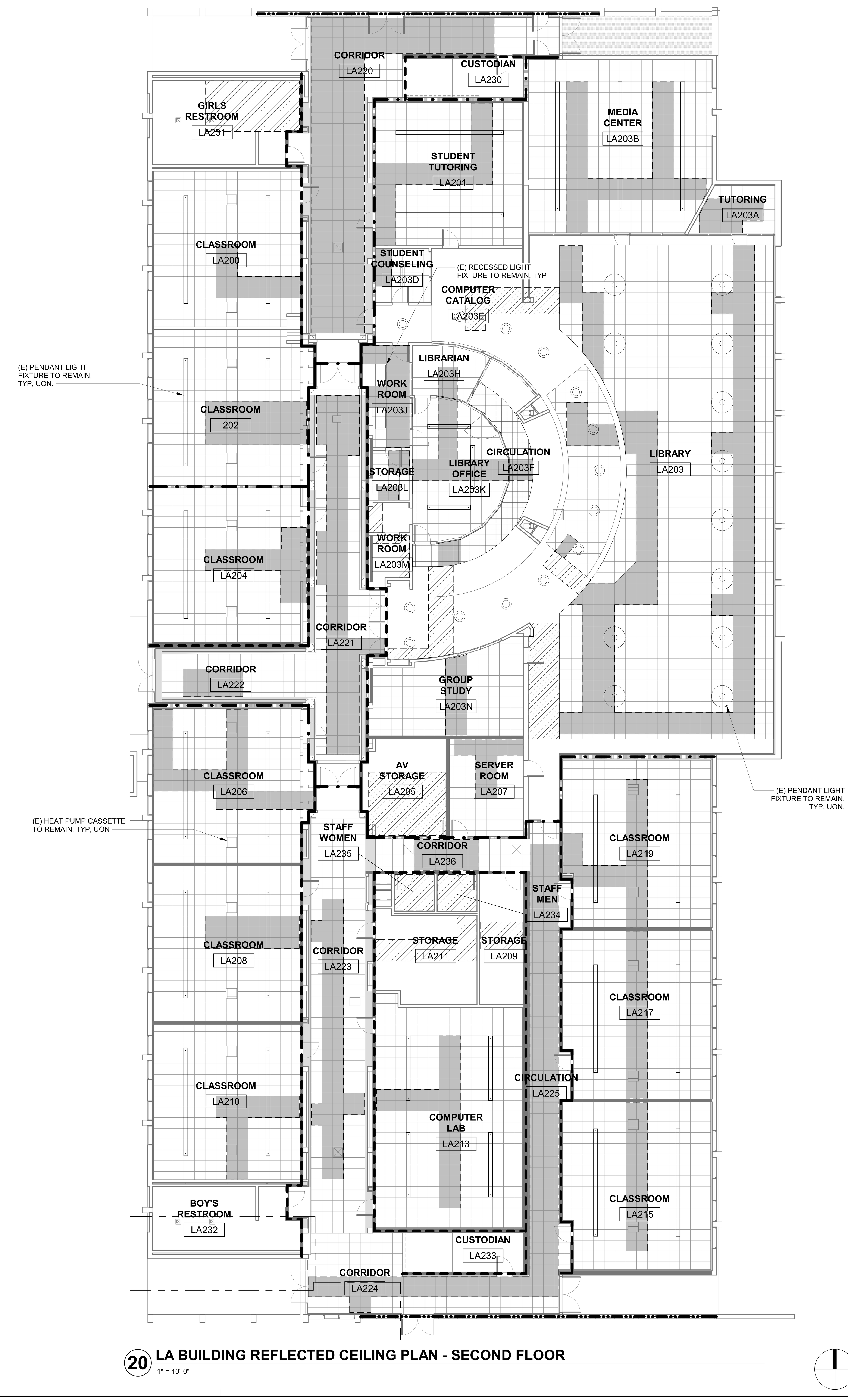
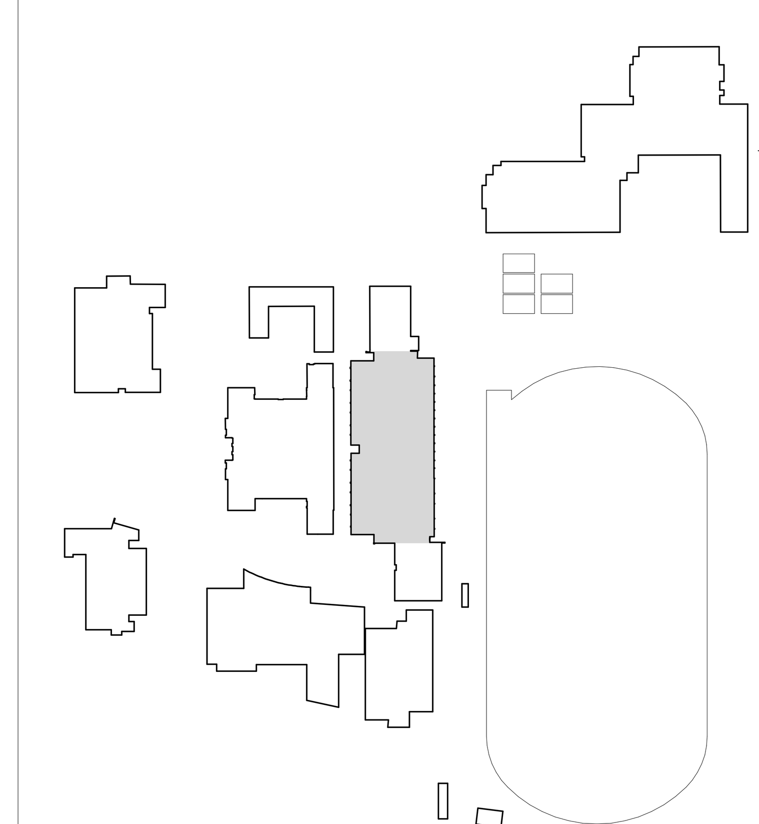
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL



20 LA BUILDING REFLECTED CEILING PLAN - SECOND FLOOR
1" = 10'-0"

BUILDING LOCATION MAP



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HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
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510.446.2222 tel | 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
LA BUILDING - REFLECTED CEILING PLAN - SECOND FLOOR

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
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GRAPHIC SCALES: 1/16" = 1'-0" | 1/8" = 1'-0" | 1/4" = 1'-0" | 1/2" = 1'-0" | 3/4" = 1'-0" | 1" = 1'-0" | 1 1/2" = 1'-0" | 3" = 1'-0"

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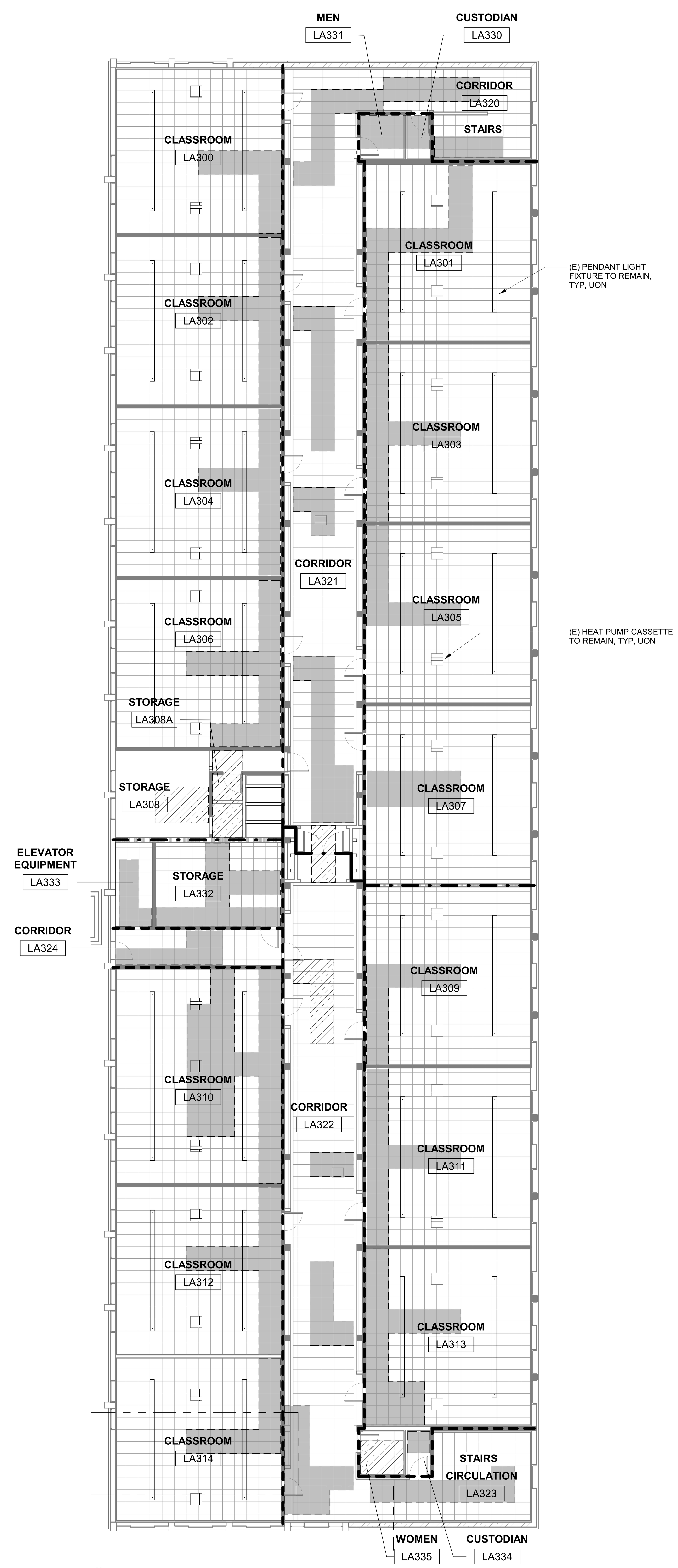
DATE: 11/7/2023



20 LA BUILDING REFLECTED CEILING PLAN - THIRD FLOOR
1" = 10'-0"

GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF, FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
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RCP SYMBOL LEGEND

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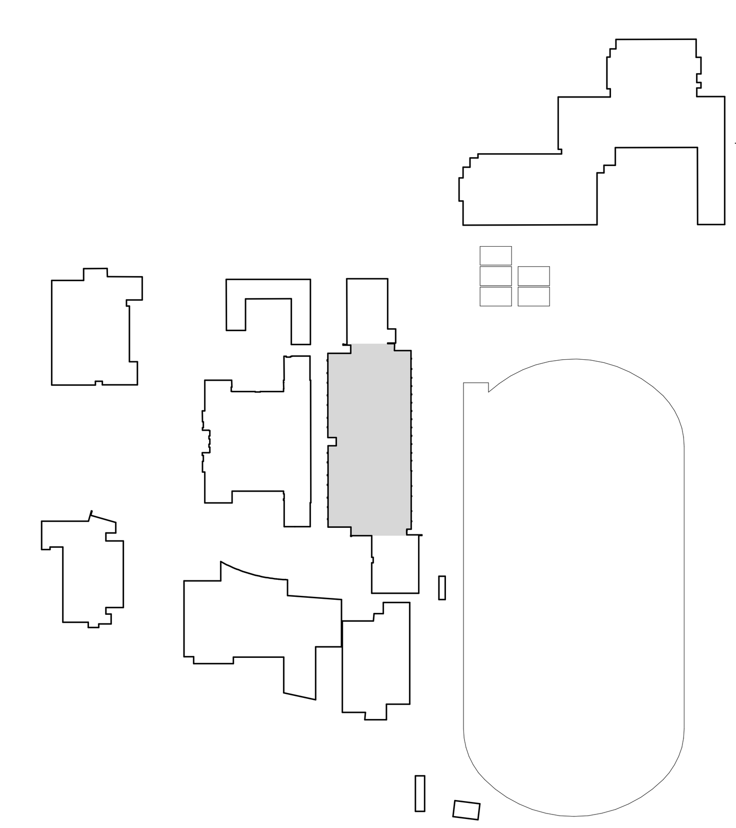
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL

BUILDING LOCATION MAP



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LICENSED ARCHITECT
LEE POLLACK
C-13315
11-30-2023
RENEWAL DATE
STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
Oakland, CA 94612
510.446.2222 tel | 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
LA BUILDING - REFLECTED CEILING PLAN - THIRD FLOOR

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
A6.07
Sheet 09 of 41

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9/13/2023 6:07:17 PM

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1")

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RCP SYMBOL LEGEND

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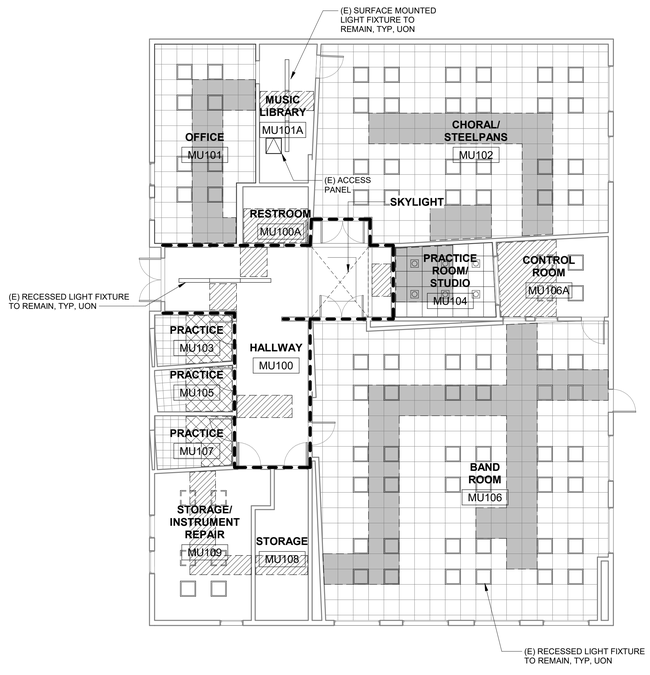
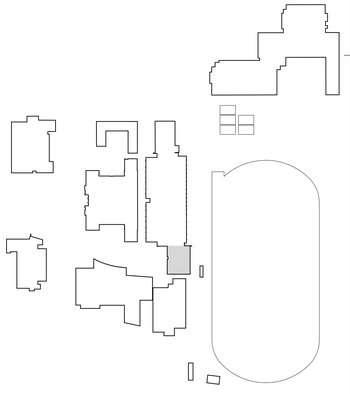
- DISCONNECT, REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURES. REINSTALL LIGHT FIXTURES. FOLLOWING COMPLETION OF FA WORK
- 1 HOUR RATED CORRIDOR WALL



15 **MU BUILDING REFLECTED CEILING PLAN**
1/8" = 1'-0"

BUILDING LOCATION MAP



SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

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LEE POLLAK
C-13315
11-30-2023
RENEWAL DATE
STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
Oakland, CA 94612
510.446.2222 tel ¦ 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
MU BUILDING - REFLECTED CEILING PLAN

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
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GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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DATE: 11/7/2023

GENERAL RCP NOTES

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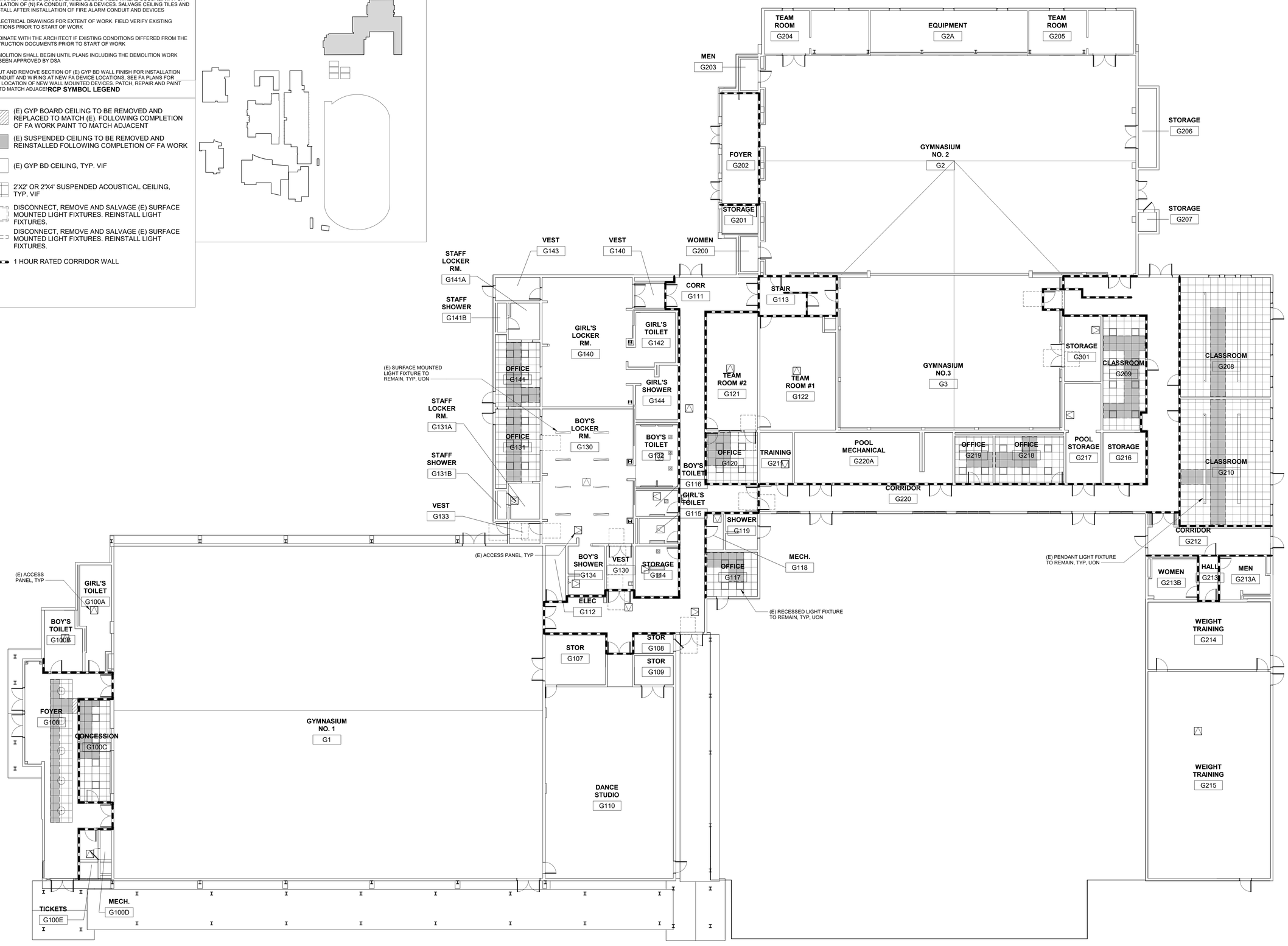
- DISCONNECT, REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURES. REINSTALL LIGHT FIXTURES.
- 1 HOUR RATED CORRIDOR WALL

BUILDING LOCATION MAP



30 PE BUILDING REFLECTED CEILING PLAN
1" = 10'-0"

SAN RAFAEL CITY SCHOOLS

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Delta	Date	Revisions	By

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300 – 27th Street
Oakland, CA 94612
510.446.2222 tel | 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
PE BUILDING - REFLECTED CEILING PLAN

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
A6.09

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GRAPHIC SCALES: 0 5' 50' 1/16" = 1'-0" | 0 5' 25' 1/8" = 1'-0" | 0 1' 12' 1/4" = 1'-0" | 0 1' 6' 1/2" = 1'-0" | 0 4' 3/4" = 1'-0" | 0 1' 3' 1" = 1'-0" | 0 2' 1 1/2" = 1'-0" | 0 1' 3" = 1'-0"

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SS ☐ FLS ☑ ACS ☐
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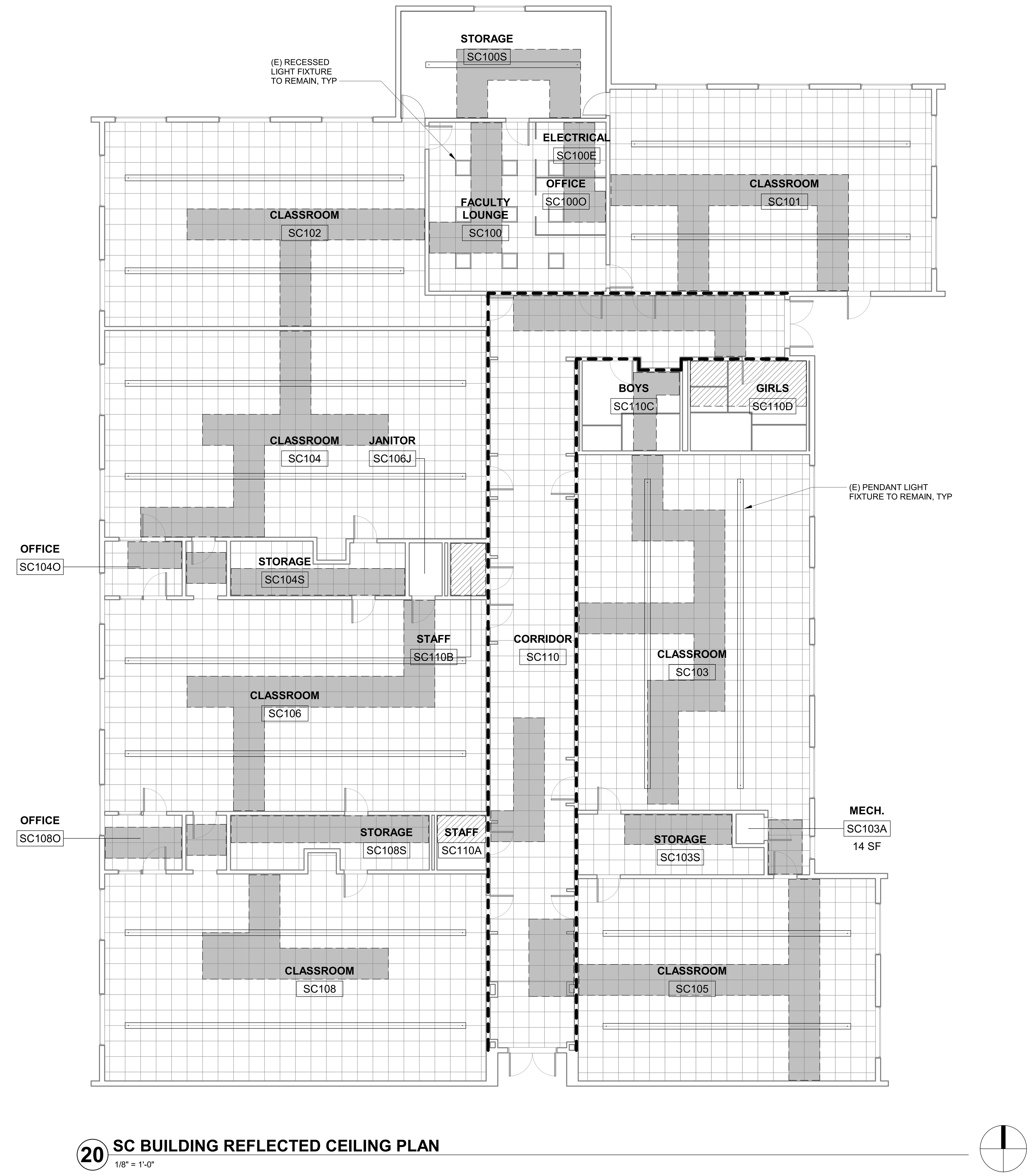
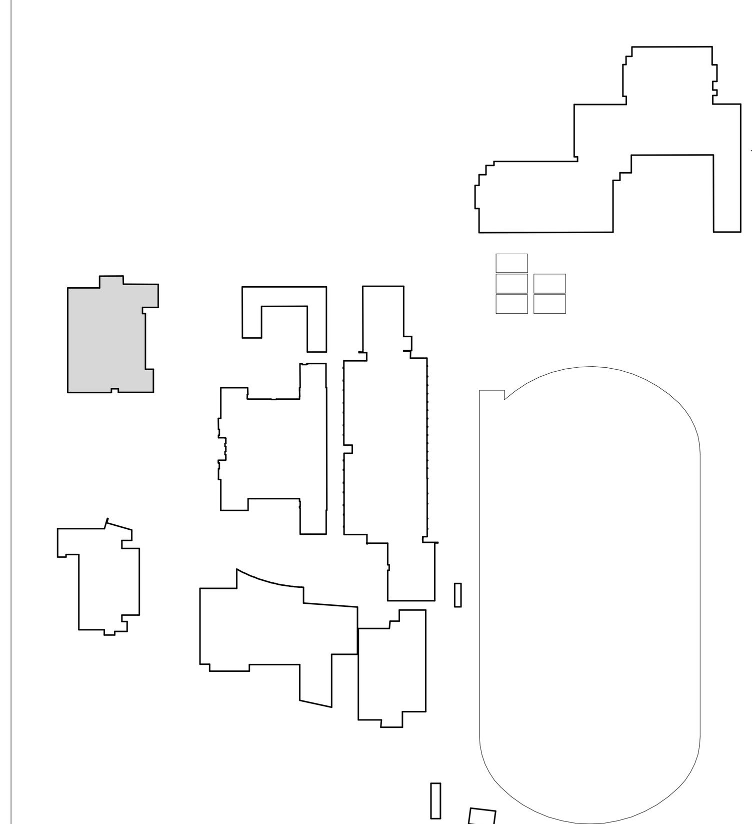


20 SC BUILDING REFLECTED CEILING PLAN
1/8" = 1'-0"

BUILDING LOCATION MAP



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LICENSED ARCHITECT · LEE POLLARD · C13315 · 11-30-2023 RENEWAL DATE · STATE OF CALIFORNIA

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510.446.2222 tel | 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
SC BUILDING - REFLECTED CEILING PLAN

Client Project Number: Client Proj. #

Scale: AS NOTED
Drawn By: AK
Checked By: MD
Issue Date: 05/30/23
Revit Version: 2023

Sheet
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Sheet 12 of 41

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GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1")

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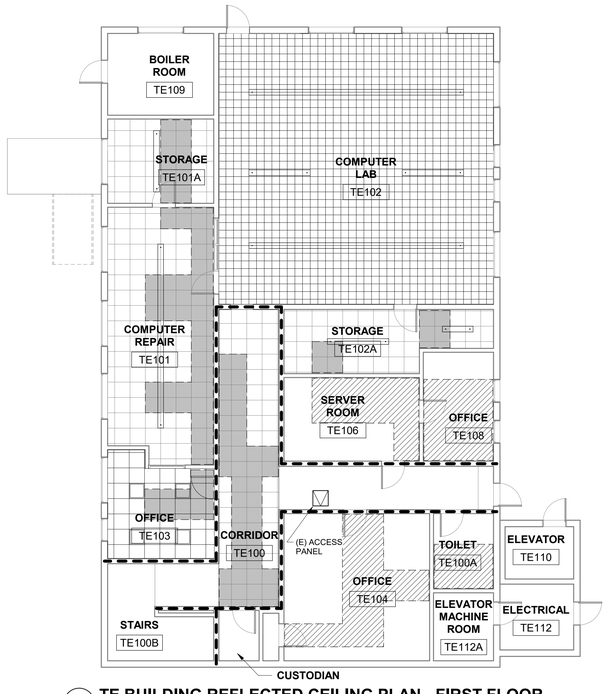
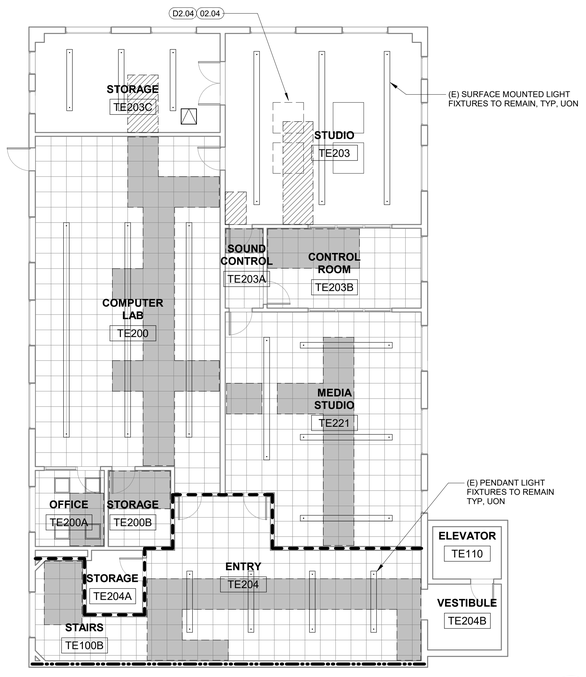


25 TE BUILDING REFLECTED CEILING PLAN - FIRST FLOOR
1/8" = 1'-0"



15 TE BUILDING REFLECTED CEILING PLAN - SECOND FLOOR
1/8" = 1'-0"

GENERAL RCP NOTES

1. TEMPORARILY REMOVE (E) SUSPENDED CEILING TILES WHERE OCCURS, VIF, FOR INSTALLATION OF (N) FA CONDUIT, WIRING & DEVICES. SALVAGE CEILING TILES AND RE-INSTALL AFTER INSTALLATION OF FIRE ALARM CONDUIT AND DEVICES
2. SEE ELECTRICAL DRAWINGS FOR EXTENT OF WORK. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK
3. COORDINATE WITH THE ARCHITECT IF EXISTING CONDITIONS DIFFERED FROM THE CONSTRUCTION DOCUMENTS PRIOR TO START OF WORK
4. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA
5. SAW CUT AND REMOVE SECTION OF (E) GYP BD WALL FINISH FOR INSTALLATION OF CONDUIT AND WIRING AT NEW FA DEVICE LOCATIONS, SEE FA PLANS FOR EXACT LOCATION OF NEW WALL MOUNTED DEVICES. PATCH, REPAIR AND PAINT WALL TO MATCH ADJACENT.

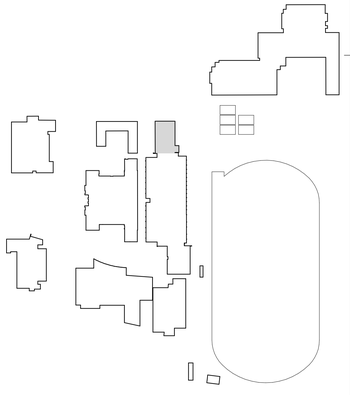
RCP SYMBOL LEGEND

- (E) GYP BOARD CEILING TO BE REMOVED AND REPLACED TO MATCH (E). FOLLOWING COMPLETION OF FA WORK PAINT TO MATCH ADJACENT
- (E) SUSPENDED CEILING TO BE REMOVED AND REINSTALLED FOLLOWING COMPLETION OF FA WORK
- (E) GYP BD CEILING, TYP. VIF
- 2'X2' OR 2'X4' SUSPENDED ACOUSTICAL CEILING, TYP, VIF
- 1 HOUR RATED CORRIDOR WALL

KEYNOTES:

D2.02	DISCONNECT, REMOVE AND SALVAGE (E) DECORATIVE PENDANT LIGHT FIXTURES AS REQUIRED FOR FA WORK.
D2.03	TEMPORARILY REMOVE AND SALVAGE (E) SURFACE MOUNTED LIGHT FIXTURE.
D2.04	TEMPORARILY REMOVE AND SALVAGE (E) ACOUSTICAL PANELS.
02.02	REINSTALL SALVAGED (E) DECORATIVE PENDANT LIGHT FIXTURE AT SAME LOCATION.
02.03	REINSTALL SALVAGED (E) SURFACE MOUNTED LIGHT FIXTURE AT SAME LOCATION, TYP.
02.04	REINSTALL SALVAGED (E) ACOUSTICAL PANELS AT SAME LOCATION, TYP.

BUILDING LOCATION MAP



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
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DATE: 11/7/2023

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Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
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Sheet 13 of 41

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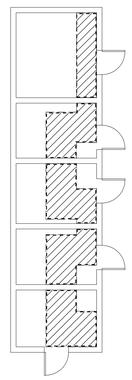
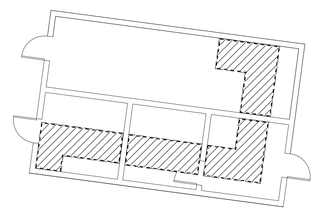
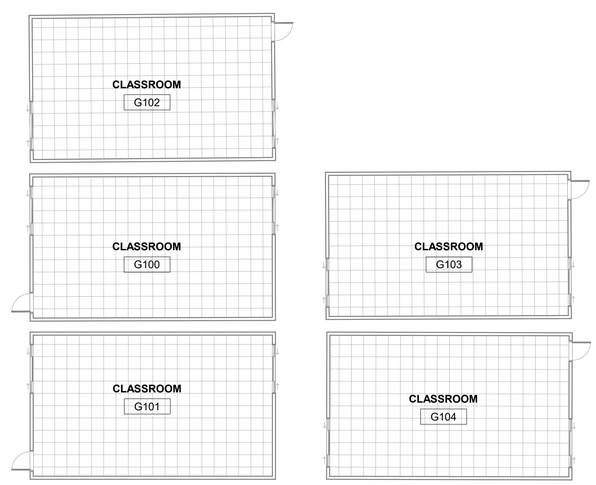




18 TRACK BUILDINGS
1/8" = 1'-0"



20 PORTABLES - REFLECTED CEILING PLAN
1" = 10'-0"

GENERAL RCP NOTES

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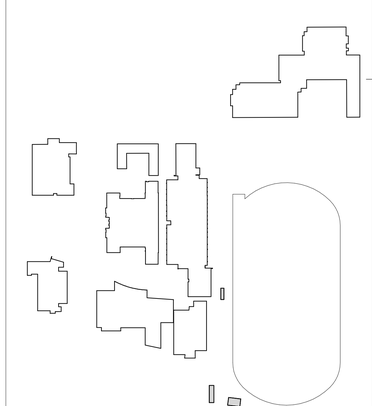
RCP SYMBOL LEGEND

(E) GYP BOARD CEILING TO BE REMOVED AND REPLACED TO MATCH (E). FOLLOWING COMPLETION OF FA WORK PAINT TO MATCH ADJACENT

(E) GYP BD CEILING, TYP. VIF

BUILDING LOCATION MAP



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HY Architects Project number: 6020

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150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM SYSTEM UPGRADE

Sheet Title
PORTABLES - REFLECTED CEILING PLAN

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ELECTRICAL SYMBOLS LIST

- MAIN SWITCHBOARD, DISTRIBUTION PANEL, OR MOTOR CONTROL CENTER
- SURFACE MOUNTED PANELBOARD OR EQUIPMENT AS NOTED ON DRAWINGS. 6' - 6" TO TOP
- FLUSH MOUNTED PANELBOARD OR EQUIPMENT AS NOTED ON DRAWINGS. 6' - 6" TO TOP.
- PAD MOUNTED UTILITY TRANSFORMER, PER UTILITY CO. REQUIREMENTS.
- CONDUIT AND WIRE CONCEALED IN CEILING OR WALL
- CONDUIT AND WIRE UNDERGROUND, OR CONCEALED UNDER SLAB
- CONDUIT AND WIRE RUN EXPOSED, PAINTED TO MATCH ALL ADJACENT FINISHES WITHIN FINISHED SPACES
- HOMERUN TO PANELBOARD OR TERMINAL BOARD, AS NOTED ON PLANS
- CROSSMARKS INDICATE QUANTITY OF #12 CONDUCTORS PLUS PARITY SIZED GROUND CONDUCTOR. NO HASHMARKS INDICATES (2) #12 PLUS PARITY SIZED GROUND CONDUCTOR.
  GROUND WIRE
- (#10) WIRE SIZE 10 AWG FOR ALL CONDUCTORS, INCLUDING GROUND WIRE THROUGHOUT THE COMPLETE CIRCUIT
- 20A 3PG 125V DUPLEX RECEPTACLE, UP 18" U.O.N. - 'WP' INDICATES WEATHERPROOF.
- 20A 3PG 125V DOUBLE DUPLEX RECEPTACLE, UP 18" U.O.N.
- 20A 3PG 125V DUPLEX RECEPTACLE, MOUNTED ABOVE COUNTER.
- 20A 3PG 125V DUPLEX RECEPTACLE, FLUSH CEILING MOUNT.
- SURFACE MOUNTED WIREMOLD RACEWAY WITH RECEPTACLES AS INDICATED ON PLANS
- SURFACE MOUNTED WIREMOLD RACEWAY RISER
- DATA OUTLET, WALL MOUNTED, UP 18" U.O.N.
- DATA OUTLET, WALL MOUNTED, MOUNTED ABOVE COUNTER.
- DATA OUTLET, FLUSH CEILING MOUNT.
  'AP' - ACCESS POINT
  'P' - PROJECTOR
- (1) PROJECT NUMBERED NOTE, OR SHEET NUMBERED, AS NOTED ON PLAN.
- COPPER GROUND ROD, 10' L x 3/4"Ø, SEE SPECS
- 100A 3P CIRCUIT BREAKER, INDICATES 100 AMP, 3 POLE
- (M) UTILITY METER
- CONDUCTOR LANDING LUGS
- CONDUIT TURN DOWN
- CONDUIT TURN UP
- CONTINUATION
- CONDUIT STUB
- (4004N) ELECTRICAL FEEDER TAG, PER COPPER FEEDER SCHEDULE
- (F / 1) MECHANICAL EQUIPMENT DESIGNATION, REFER TO MECHANICAL PLANS.
- (PNL / LA) ELECTRICAL EQUIPMENT TAG:
  EQUIPMENT PREFIX "PNL", "DP", "SWBD", "XFMR", "FA", "IDF"
  EQUIPMENT NAME
- (1/E0.01 / -) DETAIL OR SHEET REFERENCE CALLOUT. INDICATES DETAIL 1, SHEET E-0.1. WHEN ADJACENT EQUIPMENT, APPLIES TO EQUIPMENT IDENTIFIED ONLY.
- (1/E0.01 / TYP) DETAIL OR SHEET REFERENCE CALLOUT. INDICATES DETAIL 1, SHEET E-0.1. WHEN ADJACENT EQUIPMENT, APPLIES TO TYPICAL EQUIPMENT SERIES.

SEE FE0.01 FOR FIRE ALARM SYMBOLS

BRANCH CIRCUIT NOMENCLATURE

EXAMPLES:

LA1-3	1-POLE BRANCH CIRCUIT TO CB
LA1-1,3,5	1-POLE BRANCH CIRCUIT FOR MULTI CIRCUIT HOMERUNS TO SEPARATE CB'S.
LA1-[1,3]	2-POLE BRANCH CIRCUIT TO COMMON CB
LA1-[1,3,5]	3-POLE BRANCH CIRCUIT TO COMMON CB

ANCHORAGE NOTES

ELECTRICAL ANCHORAGE NOTES:

ALL 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 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16, CHAPTER 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 ELECTRICAL COMPONENTS SHALL BE 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 CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS.

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

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

ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

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 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (eg., 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.

ELECTRICAL DISTRIBUTION SYSTEMS ARE:
[X] - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.
[ ] - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #).

GENERAL DEMOLITION NOTES

1. THE EXISTING FIRE ALARM SYSTEMS IN AREAS OF WORK SHALL BE COMPLETELY REMOVED AND REPLACED WITH NEW AS SHOWN ON THE DRAWINGS AND SPECIFICATIONS. REMOVE ALL EXISTING FIRE ALARM CABLING THROUGH-OUT.
2. THE CONTRACTOR SHALL VERIFY IN THE FIELD ALL LINES, LEVELS, DIMENSIONS AND EXISTING CONDITIONS. THE INFORMATION ON THE DRAWINGS REGARDING EXISTING FIRE ALARM AND/OR ELECTRICAL EQUIPMENT AND BRANCH CIRCUITS IS THE RESULT OF FIELD SURVEY AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. IT IS INTENDED, HOWEVER, AS A GUIDE FOR USE IN VERIFICATION ONLY.
3. WHEREVER THE REMOVAL OF FIRE ALARM AND/OR EXISTING ELECTRICAL EQUIPMENT IS CALLED FOR AND ALL EQUIPMENT ON A PARTICULAR BRANCH CIRCUIT IS TO BE REMOVED, ALL CONDUIT AND WIRE BACK TO THE PANEL SHALL BE ENTIRELY REMOVED AND THE CIRCUIT IN PANEL SHALL BE MARKED "SPARE". THIS APPLIES TO SIGNAL AND COMMUNICATIONS SYSTEMS EQUIPMENT, CONDUIT, AND WIRE AS WELL.
4. WHEREVER THE REMOVAL OF FIRE ALARM AND/OR EXISTING ELECTRICAL EQUIPMENT IS CALLED FOR AND ALL EQUIPMENT ON A PARTICULAR BRANCH CIRCUIT IS NOT TO BE REMOVED, THE CIRCUIT SHALL BE MAINTAINED CONTINUOUS TO THE EXISTING EQUIPMENT IN USE WITH MINIMUM INTERRUPTIONS OF POWER. THIS APPLIES TO SIGNAL AND COMMUNICATIONS SYSTEMS EQUIPMENT, CONDUIT, AND WIRE AS WELL.
5. CARE SHALL BE TAKEN IN ORDER TO IDENTIFY AND PROTECT ALL EXISTING ELECTRICAL WORK THAT IS TO REMAIN.
6. THE ELECTRICAL CONTRACTOR SHALL REVISE EXISTING PANEL SCHEDULES TO CORRESPOND TO ACTUAL CONDITIONS AFTER ALL DEMOLITION AND NEW WORK IS COMPLETED.
7. REMOVE ALL ABANDONED CONDUIT AND WIRE ABOVE CEILINGS.
8. WHEN ELECTRICAL EQUIPMENT OR DEVICE IS REMOVED FROM AN EXISTING WALL OR CEILING WHICH IS TO REMAIN, PATCH ABANDONED OPENINGS TO MATCH EXISTING FINISH.
9. IN GENERAL, THE SITE DEMOLITION PLAN SHOWS GENERAL OUTLINE REQUIREMENTS FOR EXISTING FIRE ALARM SYSTEMS REMOVAL. HOWEVER, FOR EXISTING FIRE ALARM EQUIPMENT IN AREAS OF WORK, WHETHER SHOWN ON THE DRAWINGS OR NOT, SHALL BE REMOVED COMPLETELY (INCLUDING CONDUIT AND WIRES BACK TO THE LAST REMAINING DEVICE, OR RACEWAY, ETC..) UNLESS OTHERWISE NOTED. COORDINATE DEMOLITION WORK WITH ARCHITECT AND GENERAL CONTRACTOR.
10. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS, EQUIPMENT, ETC. REMAINING IN OPERATION WHICH IS BEING FED BY AN ABANDONED OUTLET. MAINTAINING CONTINUITY SHALL CONSIST OF REROUTING OF CONDUIT, WIRE, ETC. AS REQUIRED.
11. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO REMOVAL OF EXISTING FIRE ALARM EQUIPMENT AND TURN OVER REMOVED EQUIPMENT THAT THE OWNER REQUESTS, IN AS-FOUND CONDITION. EQUIPMENT THAT IS TO BE TURNED OVER SHALL BE BOXED AND TAGGED TO IDENTIFY THE SPECIFIC EQUIPMENT. EQUIPMENT TO BE TEMPORARILY REMOVED DUE TO THE CONSTRUCTION SHALL BE CLEANED AND RE-INSTALLED IN ITS ORIGINAL CONDITION OR AS REQUIRED.
12. IF ANY EQUIPMENT THAT IS SCHEDULED TO REMAIN IN OPERATION IS DAMAGED BY THE CONTRACTOR, IT SHALL BE REPLACED TO ITS ORIGINAL CONDITION SATISFACTORY TO THE OWNER AT CONTRACTOR'S EXPENSE.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
C	CONDUIT
CATV	CABLE TV
CB	CIRCUIT BREAKER
CO	CONDUIT ONLY
CU	COPPER
DP	DISTRIBUTION PANEL
E.C.	ELECTRICAL CONTRACTOR
E.G.C.	EQUIPMENT GROUNDING CONDUCTOR
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EQPT	EQUIPMENT
EXT	EXTERIOR
(E)	EXISTING
(ER)	EXISTING EQUIPMENT TO BE RELOCATED
(EX)	EXISTING EQUIPMENT TO BE DEMOLISHED
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAEP	FIRE ALARM EXPANDER PANEL
FMC	FLEXIBLE METALLIC CONDUIT
FO	FIBER OPTIC
FTL	FEED THROUGH LUGS
G.E.C.	GROUNDING ELECTRODE CONDUCTOR
GFI	GROUND FAULT CIRCUIT INTERRUPTING TYPE RECEPTACLE
INV	INVERTER, EM LIGHTING OR PHOTOVOLTAIC.
IDF	INTERMEDIATE DISTRIBUTION FRAME
L	LOCKABLE
LTG	LIGHTING
LV	LOW VOLTAGE
MC	METAL CLAD CABLING
MCB	MAIN CIRCUIT BREAKER
MDF	MAIN DISTRIBUTION FRAME
MFGR	MANUFACTURER
MLO	MAIN LUGS ONLY
MTD	MOUNTED
(N)	NEW
N.E.C.	NATIONAL ELECTRICAL CODE
NEU	NEUTRAL
NIEC	NOT IN ELECTRICAL CONTRACT
OAH	OVERALL HEIGHT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
P	INDICATES FIXTURES ON PHOTOCELL CONTROL
PA	PUBLIC ADDRESS
PNL	PANEL
RAMP	REMOTE AMPLIFIER PANEL
S.A.D.	SEE ARCHITECTURAL DRAWINGS
SIG	SIGNAL SYSTEM
SPD	SURGE PROTECTION DEVICE
STC	SIGNAL TERMINAL CABINET
SWBD	SWITCHBOARD
TELE	TELEPHONE
UFER	CONCRETE ENCASED CU G.E.C.
UON	UNLESS OTHERWISE NOTED
UG	UNDERGROUND
VAV	VAV BOX, SEE MECHANICAL DIVISION DRAWINGS FOR LOCATIONS. PROVIDE TOGGLE TYPE DISCONNECT SWITCH.
WP	WEATHER PROOF, NEMA 3R. EQUALS "WHILE IN USE" TYPE WHEN APPLIED TO EXTERIOR POWER RECEPTACLES
XFMR	TRANSFORMER

GENERAL ELECTRICAL NOTES

1. PRIOR TO BID THE CONTRACTOR SHALL VISIT THE SITE TO ADEQUATELY DETERMINE ALL PRE-EXISTING CONDITIONS. BY THE ACT OF SUBMITTING A BID, THE CONTRACTOR WILL BE DEEMED TO HAVE COMPLIED WITH THE FOREGOING, TO HAVE ACCEPTED SUCH CONDITIONS, AND TO HAVE MADE ALLOWANCES THEREFORE IN PREPARING THE BID.
2. PROVIDE PARITY SIZED GREEN GROUND WIRE IN ALL POWER CONDUITS, BRANCH CIRCUITS (POWER) AND HOMERUNS. PROVIDE ADDITIONAL ISOLATED GROUND, GREEN WITH YELLOW STRIPE, TO ALL ISOLATED GROUND RECEPTACLES.
3. PROVIDE PULLROPE IN ALL EMPTY CONDUITS THROUGHOUT THE PROJECT.
4. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATION & CONNECTION REQUIREMENTS OF ALL OUTLET, SWITCH, AND ELECTRICAL RELATED DEVICE MOUNTING HEIGHTS AND LOCATIONS. COORDINATE LOCATIONS OF ALL LUMINAIRE(S) AND JUNCTION BOXES WITH MECHANICAL DIVISION PRIOR TO ROUGH-IN. COORDINATE LOCATIONS OF ELECTRICAL DEVICES WITH FURNITURE PLANS PRIOR TO ROUGH-IN.
5. VERIFY EXACT CONNECTION REQUIREMENTS, OUTLET TYPE(S), MOUNTING HEIGHT(S) AND LOCATION(S) OF ALL OWNER-SUPPLIED EQUIPMENT, AND ALL EQUIPMENT PROVIDED UNDER OTHER SECTIONS OF THE SPECIFICATIONS, PRIOR TO ROUGH-IN. REFER TO ARCHITECTURAL DRAWINGS FOR EQUIPMENT LOCATIONS.
6. COORDINATE TRENCHING WITH OWNER AND OTHER TRADES BEFORE BEGINNING WORK.
7. ALL CONDUIT PENETRATIONS THROUGH FIRE-RATED WALLS AND FLOORS SHALL BE SEALED AND EQUIPPED WITH U.L. LISTED FIRE PENETRATION ASSEMBLIES TO MAINTAIN FIRE SEPARATION RATING.
8. DO NOT INSTALL ANY OUTLETS BACK TO BACK IN STUD WALLS OR DE-MOUNTABLE PARTITIONS.
9. CIRCUITRY AND CONDUIT ROUTING SHOWN ON THE PLANS IS DIAGRAMMATIC ONLY. THIS CONTRACTOR IS RESPONSIBLE FOR BECOMING COMPLETELY FAMILIAR WITH THE ARCHITECTURAL AND STRUCTURAL CONDITIONS AND LIMITATIONS IN THE BUILDING AND TO PROVIDE ALL LABOR, TOOLS AND MATERIALS REQUIRED TO PRODUCE A COMPLETELY CONCEALED INSTALLATION WHEREVER INDICATED ON THE PLANS.
10. MAINTAIN "AS-BUILT" RECORDS AT ALL TIMES, SHOWING EXACT LOCATION OF ALL UNDERGROUND AND/OR CONCEALED CONDUITS AND SERVICES INSTALLED UNDER THIS CONTRACT, INCLUDING CIRCUIT IDENTIFICATION WHERE APPLICABLE. PROVIDE OWNER WITH "AS-BUILT" DOCUMENTS AS INDICATED IN THE SPECIFICATIONS, AND/OR CALLED FOR IN THE SPECIFICATIONS.
11. DRAWINGS INDICATE THE LOCATION(S) OF DEVICES, AND EQUIPMENT, AND THE CIRCUIT NUMBER AND PANEL DESIGNATED TO SUPPLY THEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETELY CONNECTING ALL ELECTRICAL DEVICES TO CIRCUITS INDICATED ON THE DRAWINGS.
12. UNLESS OTHERWISE NOTED, ALL WORK SHOWN ON DRAWINGS IS NEW AND TO BE PROVIDED AND INSTALLED COMPLETE UNDER THIS CONTRACT.
13. ALL EQUIPMENT GROUNDING SHALL CONFORM TO ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE, LATEST EDITION.
14. ALL EXTERIOR CONDUIT ABOVE GRADE, INCLUDING ALL ROOF MOUNTED CONDUIT, SHALL BE GALVANIZED RIGID STEEL. COAT ALL EXPOSED THREADS WITH GALVANIZING PAINT. PAINT ALL SURFACE MOUNTED RACEWAYS AND PULLBOXES TO MATCH SURROUNDING CONDITIONS, AS DIRECTED BY THE ARCHITECT.
15. ALL ELECTRICAL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST EDITION OF THE N.E.C., AS WELL AS STATE, AND LOCAL CODES AND REQUIREMENTS.
16. ALL CONDUIT SHALL BE CONCEALED, UNLESS OTHERWISE NOTED.
17. THE CONTRACTOR SHALL PAY FOR ALL REQUIRED PERMITS AND INSPECTION FEES.
18. THE CONTRACTOR SHALL VERIFY ALL CRITICAL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.
19. ALL CONDUIT CONNECTORS TO OUTLET OR JUNCTION BOXES SHALL HAVE INSULATED THROATS (MANUFACTURED AS AN INTEGRAL PART OF THE CONNECTOR). AFTER-MARKET INSERTABLE THROATS ARE NOT ACCEPTABLE.
20. ALL CIRCUITS IN ALL JUNCTION BOXES AND DEVICES SHALL BE CLEARLY IDENTIFIED BY MEANS OF "EZ" NUMBERING TAGS OR EQUIVALENT, TO IDENTIFY THE CIRCUIT NUMBER OR RELAY SUPPLYING THE CONDUCTOR. ALL JUNCTION BOXES SHALL BE LABELED PER SPECIFICATIONS.
21. ALL SURFACE MOUNTED POWER AND SIGNAL BOXES IN FINISHED AREAS SHALL BE "WIREMOLD" TYPE, WITH MATCHING RACEWAYS. SURFACE MOUNTED STEEL JUNCTION BOXES AND/OR EMT ARE NOT ACCEPTABLE.
22. ALL LOCATIONS OF BARE METAL SURFACE MOUNTED CONDUIT, BOXES, PANEL COVERS, AND RELATED FITTINGS OR ACCESSORIES INSTALLED IN FINISHED AREAS (BOTH INTERIOR AND EXTERIOR) SHALL BE FINISH PAINTED TO MATCH THE SURFACE TO WHICH THEY ARE MOUNTED TO (AFTER INSTALLATION). PAINTING SHALL INCLUDE DIFFERENT COLORS AS REQUIRED TO MATCH EXISTING STRIPING OR OTHER BUILDING FEATURES TO WHICH THE EQUIPMENT IS ATTACHED AND VISIBLE. VERIFY EXACT JUNCTION BOX LOCATION(S) AND ROUTING OF EXPOSED RACEWAYS WITH THE ARCHITECT PRIOR TO ROUGH-IN.
23. PROVIDE A BLANK COVER PLATE (COLOR TO MATCH ADJACENT DEVICES OR AS SPECIFICALLY CALLED FOR IN SPECIFICATIONS) FOR ALL JUNCTION BOXES (NEW AND EXISTING) ON THE PROJECT WHEN NO DEVICE IS INSTALLED.
24. FOR OUTDOOR 15 AND 20-AMPERE, 125 AND 250-VOLT RECEPTACLES: RECEPTACLES LOCATED IN "WET" LOCATIONS SHALL HAVE "IN-USE" TYPE WEATHERPROOF COVER PLATES PROVIDED AND INSTALLED; RECEPTACLES LOCATED IN "DAMP" LOCATIONS SHALL HAVE "IN-USE" TYPE WEATHERPROOF COVER PLATES IN LOCATIONS DEEMED TO BE "IN-USE" WITH CORD AND PLUG ATTACHED.
25. TWO OR THREE DIFFERENT PHASES SUPPLIED BY A 3-PHASE PANEL MAY SHARE A SINGLE NEUTRAL ONLY IF CIRCUIT POSITIONS ARE ADJACENT IN THE PANEL. PROVIDE COMMON HANDLE-TIE ON BREAKERS FOR MULTI-WIRE BRANCH CIRCUITS, WITH COMMON NEUTRAL, PER NEC REQUIREMENTS.

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DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

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Delta	Date	Revisions	By

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Project

FIRE ALARM UPGRADE

Sheet Title

GENERAL NOTES, LIST OF DRAWINGS, & SYMBOLS

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	**E0.01**
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version:	2023	Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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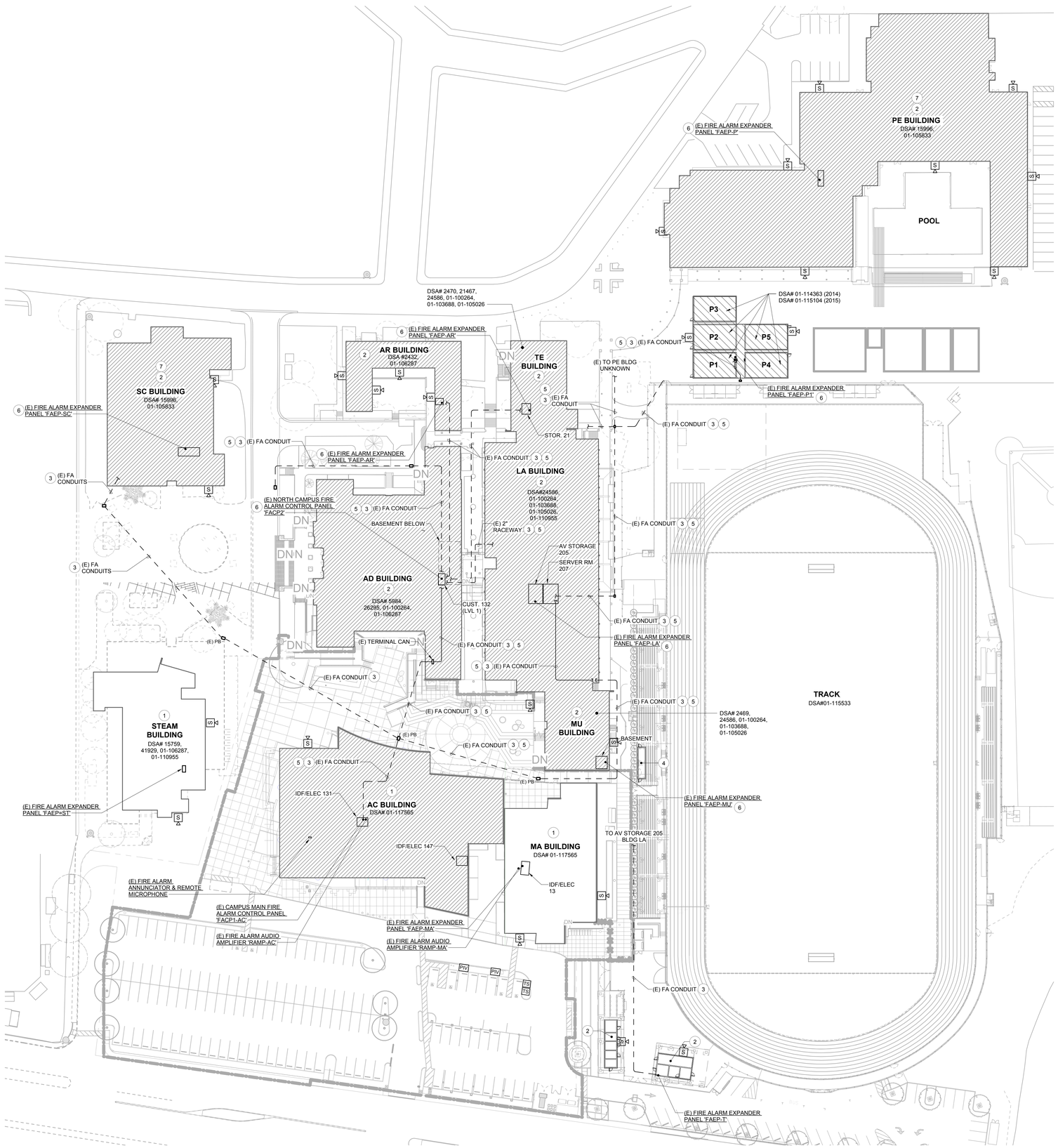

1 OVERALL SITE PLAN - DEMOLITION
1" = 40'-0"

NUMBERED SHEET NOTES

1. THE EXISTING VOICE EVACUATION FIRE ALARM SYSTEM IN THIS BUILDING SHALL REMAIN PROTECTED IN PLACE.
2. THE EXISTING MANUAL/AUTOMATIC FIRE ALARM SYSTEM (NON VOICE EVAC) IN THIS BUILDING SHALL BE REMOVED. ALL FIRE ALARM DEVICES AND WIRING SHALL BE COMPLETELY REMOVED. EXISTING RACEWAY MAY BE RE-USED, INTERCEPTED AND EXTENDED FOR NEW AS REQUIRED.
3. THE EXISTING SITE FIRE ALARM CONDUIT SYSTEM SHALL BE INVESTIGATED AND DOCUMENTED. THE CONTRACTOR SHALL INCLUDE 3 DAYS FOR EXISTING CONDUIT INVESTIGATION. THE INFORMATION SHALL BE DOCUMENTED AND SUBMITTED TO THE DESIGN TEAM FOR REVIEW.
4. THE EXISTING MANUAL/AUTOMATIC FIRE ALARM SYSTEM IN THIS STRUCTURE SHALL REMAIN PROTECTED IN PLACE. PROVIDE ALL WORK REQUIRED TO RE-CONNECT THESE BUILDING COMPLETE TO THE NEW FIRE ALARM CONTROL PANELS ON SITE.
5. COMPLETELY REMOVE THE EXISTING FIRE ALARM WIRING WITHIN THE EXISTING CONDUIT SYSTEM, FOR NEW FIBER OPTIC CONNECTIONS BETWEEN BUILDINGS, U.O.N.
6. THE EXISTING POWER SUPPLIES AND FIRE ALARM CONTROL EQUIPMENT SHALL BE COMPLETELY REMOVED. U.O.N.
7. EXISTING UNDERGROUND CONDUIT SYSTEMS TO THIS BUILDING IS UNKNOWN. SEE NEW SITE PLAN FOR NEW UNDERGROUND ROUTE TO THIS BUILDING.

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Project
FIRE ALARM UPGRADE

Sheet Title
GENERAL SITE FIRE ALARM DEMOLITION

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	E1.01
Checked By:	PJC	
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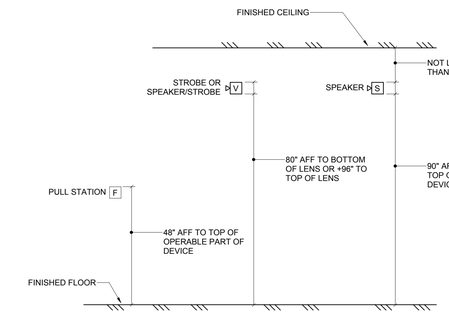
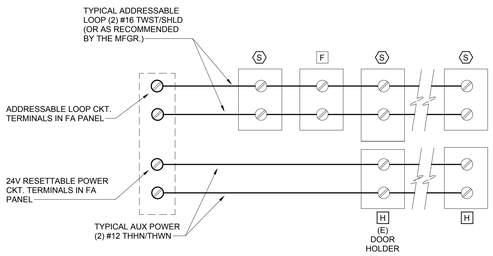
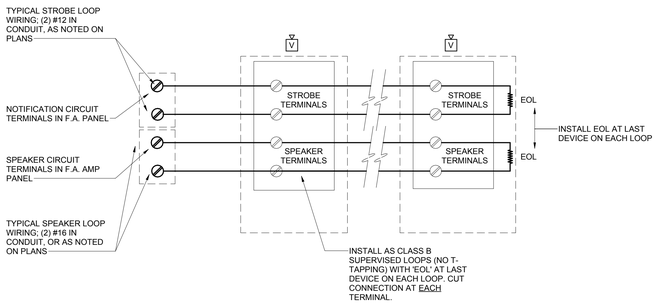


2 FIRE ALARM DEVICE MOUNTING HEIGHT DETAIL
12" = 1'-0"



3 TYPICAL ADDRESSABLE INITIATION LOOP WIRING
12" = 1'-0"



4 TYPICAL NOTIFICATION / SPEAKER CIRCUIT WIRING
12" = 1'-0"

SEQUENCE OF OPERATION MATRIX

		RESPONSE											
		ANNUNCIATE AT FIRE ALARM CONTROL PANEL (FACP)	ANNUNCIATE AT FIRE ALARM ANNUNCIATOR PANEL (FAAP)	ANNUNCIATE AT OFF-SITE MONITORING STATION	ANNUNCIATE AUDIBLE/VISUAL DEVICES IN ALL AREAS	SHUTDOWN OF APPLICABLE HVAC UNIT AND/OR MOTORIZED DAMPERS	RELEASE APPLICABLE MAGNETICALLY HELD DOORS	ACTIVATE ELEVATOR RECALL TO DESIGNATED FLOOR	FACILITY PERSONNEL TO NOTIFY FIRE DEPARTMENT			RELEASE FIRE SMOKE DAMPER ASSEMBLIES	ACTIVATE RELAY FOR ELEVATOR SHUNT TRIP
ACTIVATION OF INITIATION DEVICES	MANUAL PULL STATION	X	X	X	X	X	X	X	X			X	
	AREA SMOKE OR HEAT DETECTOR	X	X	X	X	X	X	X	X			X	
	SPECIAL EXTINGUISHING ANSUL SYSTEM	X	X	X	X	X	X	X	X			X	
	DUCT SMOKE DETECTOR	X	X	X	X	X	X	X	X			X	
	SPRINKLER FLOW SWITCH	X	X	X	X	X	X	X	X			X	
MALFUNCTION	INITIATION CIRCUITS	X	X	X									
	NOTIFICATION APPLIANCE CIRCUITS	X	X	X									
	FIRE ALARM CONTROL PANEL (FACP)	X	X	X									
	FIRE ALARM ANNUNICATOR PANEL (FAAP)	X	X	X									
	FIRE ALARM EXTENDER PANEL (FAEP) OR REMOTE AMPLIFIER	X	X	X									
	POWER FAILURE	X	X	X									
SUPERVISORY SWITCHES	SPRINKLER TAMPER SWITCH	X	X	X									
	POST INDICATOR VALVE	X	X	X									
	CHECK VALVE TAMPER SWITCH	X	X	X									
ELEVATOR	LOBBY SMOKE - PRI	X	X	X	X	X	X	X				X	
	LOBBY SMOKE - ALT	X	X	X	X	X	X	X				X	
	MACH. RM SMOKE DET.	X	X	X	X	X	X	X				X	
	MACH. RM HEAT DET.	X	X	X	X	X	X	X					X
	SHUNT TRIP CKT MONITOR		X	X									

SEQUENCE OF OPERATION NOTES

1. ACTIVATION OF ANY INITIATION DEVICE WILL PLACE THE FIRE ALARM CONTROL PANEL IN ALARM MODE AND WILL ACTIVATE ALL NOTIFICATION APPLIANCES. THE FIRE ALARM CONTROL PANEL SHALL DISPLAY THE ZONE (NON-ADDRESSABLE) OR DEVICE (ADDRESSABLE) OF THE ACTIVATED INITIATION DEVICE(S).
2. UPON ALARM CONDITION, AUTO-DIALER TO NOTIFY THE OFF-SITE MONITORING STATION, AND AUTHORIZED SCHOOL PERSONNEL SHALL NOTIFY THE FIRE DEPARTMENT AND INITIATE EVACUATION OF STUDENTS AND FACULTY AS PER THE SCHOOL'S EVACUATION PLAN.
3. WHEN THE PANEL IS ALARM CONDITION, THE NOTIFICATION APPLIANCES MAY BE DEACTIVATED ("SILENCED") AT THE FIRE ALARM CONTROL PANEL. ACTIVATION OF ANOTHER INITIATION DEVICE WILL PLACE THE CONTROL PANEL BACK IN ALARM CONDITION AND WILL AGAIN ACTIVATE ALL NOTIFICATION APPLIANCES.
4. FAILURE OF THE FIRE ALARM SYSTEM COMPONENTS, WIRING OR POWER SUPPLY SHALL PLACE THE FIRE ALARM CONTROL PANEL IN TROUBLE CONDITION. RESULTING IN AN AUDIBLE AND VISUAL (LED) ALARM AT THE FIRE ALARM CONTROL PANEL ONLY. THE AUDIBLE ALARM MAY BE SILENCED AT THE CONTROL PANEL, BUT THE VISUAL ALARM WILL REMAIN ACTIVE UNTIL THE FAILED CONDITIONS ARE CORRECTED AND CLEARED.
5. UPON TROUBLE CONDITION, AUTO-DIALER TO NOTIFY THE OFF-SITE MONITORING STATION, AND AUTHORIZED SCHOOL PERSONNEL SHALL NOTIFY THE AUTHORIZED TECHNICIAN TO CORRECT THE TROUBLE CONDITION.

DEVICE NUMBERING LEGEND

S31-8
- SPEAKER DEVICE #
- SPEAKER CIRCUIT #
- RELATED 'RAMP' #
- SPEAKER, VOICE LOOP

S31-8 / N31-5 / 15 / V / WP
- N31-5: STROBE DEVICE #
- STROBE NAC CIRCUIT #
- RELATED 'FACP' #
- NOTIFICATION (STROBE) LOOP
- STROBE CANDELLA RATING
- WEATHERPROOF DEVICE AND BACKBOX
- TYPICAL 1W TAP AT INTERIOR, 2W TAP AT EXTERIOR

S 300.15
- INITIATION DEVICE #
- '*DEVICE*' ADDRESS TYPE
- INITIATION LOOP #
- RELATED 'FACP'

R 30M.15
- INITIATION DEVICE #
- '*MODULE*' ADDRESS TYPE
- INITIATION LOOP #
- RELATED 'FACP'

GENERAL FIRE ALARM NOTES

1. FINAL FIRE ALARM TEST SHALL BE MADE WITH THE DSA INSPECTOR OF RECORD (IOR). LOCAL FIRE AUTHORITY SHALL BE NOTIFIED OF DATE AND TIME OF FINAL ALARM TESTING AND SHALL ASSIST/WITNESS SUCH TESTING WHEN ABLE. DSA/ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF (48) HOURS PRIOR TO THE FINAL INSPECTION AND/OR TESTING.
2. FIRE ALARM CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2. MONITORING SHALL BE TESTED AND VERIFIED AS SENDING THE CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT AND/OR PROVISIONS
3. UNDERGROUND AND EXTERIOR CONDUITS SHALL HAVE WATERTIGHT FITTINGS.
4. FIRE ALARM DEVICE MOUNTING HEIGHTS:
   a. PULL STATION: 48" TO TOP OF OPERATOR ABOVE FINISHED FLOOR
   b. SPEAKER INTERIOR/EXTERIOR: 90" MIN. TO TOP OF DEVICE ABOVE FINISHED FLOOR, OR 100" MAX TO TOP OF DEVICE, BUT NOT LESS THAN 6" FROM CEILING.
   c. WALL MOUNTED STROBE OR SPEAKER/STROBE : BETWEEN 80" TO BOTTOM OF DEVICE LENS TO +96" TO TOP OF DEVICE LENS ABOVE FINISH FLOOR, BUT NOT LESS THAN 6" FROM CEILING.
   d. CONTROL PANELS / ANNUNCIATORS: 48" TO BOTTOM OF EQUIPMENT.
5. AUDIBLE FIRE ALARM SYSTEM LEVEL SHALL BE AT LEAST 15dBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIABLE AREAS, OR 5 dBA ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, MEASURED AT 5 FEET ABOVE THE FLOOR. AUDIBLE SIGNALS SHALL NOT BE LESS THAN 75dBA AT 10 FEET, OR MORE THAN 110dBA AT THE MINIMUM HEARING DISTANCE.
6. AUDIBLE DEVICES SHALL BE SYNCHRONIZED TEMPORAL THREE DISTINCTIVE FIRE ALARM SOUND PER NFPA 72.
7. APPLICABLE CODES:
   a. CBC 2022; CEC 2022; CMC 2022; CFC 2022.
   b. STATE FIRE MARSHAL TITLE 19, PUBLIC SAFETY.
   c. NFPA 72, 2022 EDITION W/CA AMENDMENTS, FIRE ALARM CODE.
8. STROBES SHALL FLASH AT A RATE NOT EXCEEDING TWO FLASHES PER SECOND, AND NOT LESS THAN ONE FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELA. VISUAL DEVICES WITHIN 55 FEET OF EACH OTHER SHALL BE SYNCHRONIZED.
9. FIRE ALARM CONTRACTOR SHALL PROVIDE A COPY OF NFPA 72 SYSTEM RECORD OF COMPLETION, SYSTEM RECORD OF INSPECTION AND TESTING, AND THE "EMERGENCY COMMUNICATIONS SUPPLEMENTARY RECORD OF COMPLETION", TO THE INSPECTOR OF RECORD IOR/DSA, SCHOOL DISTRICT, ARCHITECT AND LOCAL FIRE AUTHORITY.
10. POWER SERVICE TO THE FACP, REMOTE POWER SUPPLIES, AND CENTRAL STATION AUTO DIALER SHALL BE ON A DEDICATED BRANCH CIRCUIT WITH A RED MARKING AND IDENTIFIED AS "FIRE ALARM CIRCUIT CONTROL".
11. INSTALL ALL WIRING IN CONDUIT, MIN. 3/4" CONDUIT. ALL FIRE ALARM SYSTEM WIRING SHALL BE FPL (FIRE POWER LIMITED) OR FPLP (FIRE POWER LIMITED PLENUM RATED) AS REQUIRED FOR APPLICATION. WIRING IN CONDUIT ABOVE GROUND MAY BE THHN OR THWN.
12. CONDUIT AND WIRING SHALL BE PER MANUFACTURERS REQUIREMENTS.
13. ALL FIRE ALARM COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICES/EQPT. SHALL EXCEED 20LBS. WITHOUT SPECIAL MOUNTING DETAILS.
14. INSTALLATION OF SYSTEM SHALL NOT BE STARTED UNTIL COMPLETE SET OF CONSTRUCTION DOCUMENTS (WITH DEVICE TYPES AND LISTINGS) HAVE BEEN REVIEWED AND APPROVED BY DSA.
15. A STAMPED SET OF APPROVED PLANS SHALL BE ON THE JOB SITE AT ALL TIMES AND SHALL BE USED FOR INSTALLATION.
16. ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND ARCHITECT/ENGINEER OF RECORD.
17. THE CONTRACTOR SHALL INSTALL AND ADJUST ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
18. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1 FOOT FROM FIRE SPRINKLER HEADS OR 3 FEET FROM ANY SUPPLY DIFFUSER. IN AREAS OF CONSTRUCTION OR POSSIBLE DAMAGE /CONTAMINATION, INSTALLED DEVICES SHALL BE COVERED UNTIL AREA IS READY TO BE TURNED OVER TO THE OWNER.
19. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE ALARM DEVICE. DO NOT SPLICE WIRE. THERE MUST BE AT LEAST 6" OF WIRE LEAD FROM THE BOX TO THE DEVICE. ALL BOXES TO BE SIZED PER CEC FOR PROPER VOLUME WITH INSTALLED WIRING AND DEVICES.
20. SUPERVISING STATION: 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 CFC CHAPTER 80. THE SUPERVISION STATION SHALL BE LISTED AS EITHER UUFX OR UUJS BY UNDERWRITERS LABORATORY OR SHALL MEET THE REQUIREMENTS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011.
21. A DOCUMENTATION CABINET SHALL BE INSTALLED ADJACENT TO THE FACP IN THE MAIN ELECTRICAL ROOM (NFPA 72, 7.7.2.1). SPACE AGE ELECTRONICS INC, ACERBOX FAD SERIES (#SSU00685 OR EQUAL).
22. ALL RECORD DOCUMENTATION SHALL BE STORED IN THE DOCUMENTATION CABINET (NFPA 72, 7.7.2.3): PROVIDE NAMEPLATE "FIRE ALARM SYSTEM RECORD DOCUMENTS" (NFPA 72, 7.7.2.5).
23. FIRE ALARM MANUAL PULLSTATIONS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72 17.14.5 AND SHALL MEET THE CALIFORNIA ACCESSIBILITY REQUIREMENTS OUTLINED IN THE CBC. ("CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE TO ACTIVATE THE CONTROLS SHALL BE NO GREATER THAN 5 POUNDS OF FORCE". REFER TO DSA ACCESSIBILITY STAFF FOR QUESTIONS OR CLARIFICATION.)

FIRE ALARM EQUIPMENT LIST

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL NUMBER	CSFM LISTING NUMBER
FACP-#	NEW NETWORKED FIRE ALARM CONTROL PANELS	NOTIFIER N16	7165-0028:0516
(E) FACP	EXISTING CAMPUS FIRE ALARM CONTROL PANEL	NOTIFIER NFS2-3030	7165-0028:0224
FAEP	FIRE ALARM EXPANDER PANEL	NOTIFIER ACPS-610 W/ CAB-PS1 CABINET	7135-0028:0248
RAMP-#	DIGITAL AUDIO AMPLIFIER W/ REMOTE MICROPHONE AND FIBER MODULE	NOTIFIER DAA2-5025	7165-0028:0234
M	ADDRESSABLE MONITOR MODULE	NOTIFIER FMM-1	7300-0028:0219
C R	ADDRESSABLE CONTROL / RELAY MODULE	NOTIFIER FCM-1 / FRM-1	7300-0028:0219
S	ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR	NOTIFIER FSP-951	7272-0028:0206
H	ADDRESSABLE FIX TEMPERATURE HEAT DETECTOR (135F)	NOTIFIER FST-951	7270-0028:0196
O	(E) LED ALARM INDICATOR	SIEMENS SIGA-LED-LG	-
H E	EXTERIOR ELEVATOR FIX TEMPERATURE HEAT DETECTOR (135F)	THERMOTECH 302-AW-135	7270-0021:0001
	ADDRESSABLE DETECTOR BASE / RELAY BASE 'R'	NOTIFIER B300 / B224RB	7300-1635:0109
D	ADDRESSABLE PHOTO DUCT SMOKE DETECTOR HOUSING WITH SMOKE DETECTOR (FSP-951), RELAY (FRM-1), SAMPLING TUBE. (DST __). WP ENCLOSURE (0H400OE-1). AND REMOTE KEY TEST SWITCH (RTS451KEY)	NOTIFIER DNRW	3240-1653:0209
F	ADDRESSABLE PULL STATION	NOTIFIER NBG-12LX	-
B T	ADDRESSABLE PROJECTED BEAM SMOKE DETECTOR TRANSMITTER/RECEIVER WITH REMOTE KEY TEST SWITCH	NOTIFIER FSB-200S	7260-0028:0228
B R	PROJECTED BEAM SMOKE DETECTOR REFLECTOR	-	-
S	VISUAL STROBE, WALL MOUNT, SELECTABLE CANDELA UL 1971 PUBLIC MODE NOTIFICATION	SYSTEM SENSOR SRL	7125-1653:0504 15cd 30cd 75cd
S	VISUAL STROBE, CEILING MOUNT, SELECTABLE CANDELA UL 1971 PUBLIC MODE NOTIFICATION	SYSTEM SENSOR SCRL	7125-1653:0504 15cd 30cd 75cd 110cd
V	COMBINATION VISUAL STROBE AND SPEAKER (1W TAP), WALL MOUNT, SELECTABLE CANDELA UL 1971 PUBLIC MODE NOTIFICATION	SYSTEM SENSOR SPSRL	7320-1653:0505 15cd 30cd 75cd 110cd
P V	COMBINATION VISUAL STROBE AND SPEAKER (1W TAP), CEILING MOUNT, SELECTABLE CANDELA UL 1971 PUBLIC MODE NOTIFICATION	SYSTEM SENSOR SPSCRL	7320-1653:0505 15cd 30cd 75cd 110cd
S	AUDIBLE SPEAKER (1W), WALL MOUNT	SYSTEM SENSOR SPRL	7320-1653:0505
WP S	OUTDOOR RATED, AUDIBLE SPEAKER (1W), WALL MOUNT	SYSTEM SENSOR SPRK	7320-1653:0201
	DOCUMENT CABINET (LOCATE BELOW/ADJACENT 'FACP')	SPACE AGE SRD ACE-11	7300-0553:0110

NOTICE TO CONTRACTORS:

THE SYSTEM DESIGN IS BASED ON THE PRODUCTS SHOWN ON THIS FIRE ALARM EQUIPMENT LIST AND HAS BEEN APPROVED BY DSA AS SUCH. DEVIATIONS FROM THE APPROVED DESIGN (FOR MANUFACTURER OR DEVICE LAYOUTS) MAY BE ALLOWED WITH THE APPROVAL BY THE ARCHITECT. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REDESIGN AND RESUBMIT THE PLANS TO DSA FOR RE-APPROVAL.

DETECTOR SUBSCRIPT LEGEND:

"c" - DETECTOR TO BE LOCATED WITHIN ACCESSIBLE CEILING SPACE
"p" - DETECTOR TO BE LOCATED WITHIN 36" OF CEILING PEAK

FIRE ALARM WIRING LEGEND

TAG	DESCRIPTION	CABLING
A	INITIATION CIRCUIT	(2) #16 TWISTED/UNSHIELDED - WESTPENN 990S (OR WESTPENN AQC225 (WET))
B	STROBE NOTIFICATION CIRCUIT(S) / DOOR HOLDER CIRCUIT(S)	(2) #12 THHN/THWN
C	SPEAKER NOTIFICATION CIRCUIT(S)	(2) #16 SHIELDED SPKR CABLE - WESTPENN 991 (OR WESTPENN AQC294 (WET))
D	24V AUX POWER CIRCUIT	(2) #14 TWISTED/UNSHIELDED - WESTPENN 994S (OR WESTPENN AQC226 (WET))
E	REMOTE AUDIO AMPLIFIER WIRING	6-STRAND SM FIBER (OS2) RATED FOR USE IN UNDERGROUND CONDUIT.

NOTE:
CONTRACTOR SHALL VERIFY EXACT CABLE/WIRE TYPES WITH SYSTEM MANUFACTURER PRIOR TO ROUGH-IN. INSTALL WIRING IN 3/4" CONDUIT MIN.

FIRE ALARM SCOPE OF WORK

1. THE GENERAL SCOPE OF THIS PROJECT IS TO REPLACE THE (E) MULTIPLE CROSS-TRIPPED FIRE ALARM SYSTEMS AT THE CAMPUS AND PROVIDE A NEW SINGLE CAMPUS-WIDE NETWORKED FIRE ALARM SYSTEM.
2. THE NEW SYSTEM SHALL INCLUDE VOICE EVACUATION CAPABILITY AND ALL AREAS OF THE CAMPUS THAT DO NOT CURRENTLY INCLUDE SPEAKER/STROBE NOTIFICATION DEVICES WILL BE UPGRADED TO PROVIDE SPEAKER/STROBE COVERAGE.
3. THE SYSTEM WILL BE FULLY AUTOMATIC AND INCLUDE SMOKE DETECTION THROUGHOUT.
4. THE EXISTING NOTIFIER 3030 FACP AT THE MAIN BUILDING ('AC') WILL REMAIN, WITH THE EXISTING REMOTE GRAPHIC ANNUNCIATOR AND MICROPHONE AT THE RECEPTION AREA.
5. THE EXISTING LEGACY NOTIFIER 640 AND SIEMENS MXL PANEL AT BUILDING 'AD' WILL BE REMOVED AND REPLACED WITH NEW NETWORKED NOTIFIER 3030 COMPATIBLE EQUIPMENT, INCLUDING NEW AUDIO AMPLIFIERS TO SUPPORT THE VOICE EVACUATION SYSTEM.
6. PROGRAM THE NEW FIRE ALARM NETWORK TO ACCOMMODATE THE (N) PANELS AND EQUIPMENT / DEVICES, TO ALLOW FULL ANNUNCIATION OF ALL (N) EQUIPMENT AT THE (E) MAIN CAMPUS.
7. THE (E) MAIN CAMPUS ANNUNCIATOR AND (E) OFF-SITE MONITORING SHALL REMAIN.
8. TERMINATE ALL NOTIFICATION CIRCUITS TO THE (N) FACP AND/OR FAEP'S AS SHOWN ON PLANS AND RISER DIAGRAMS.
9. TERMINATE ALL INITIATION CIRCUITS TO THE FACP'S AS SHOWN ON PLANS AND RISER DIAGRAMS.
10. TERMINATE ALL AUDIO SPEAKER CIRCUITS TO THE FACP / AMPLIFIER PANELS AS SHOWN ON PLANS AND RISER DIAGRAMS.

FIRE ALARM SYSTEM DESCRIPTION

1. THE FIRE ALARM SYSTEM SHALL BE AN AUTOMATIC ADDRESSABLE SYSTEM WITH STYLE 4, CLASS B WIRING FOR IDC'S, NAC'S, AND SLC'S WITH EMERGENCY VOICE / ALARM COMMUNICATIONS.
2. PROVIDE COMPLETE PROGRAMMING, AND ALL NECESSARY DEVICES FOR COMPLETE SYSTEM.
3. CIRCUIT PATHWAY SURVIVABILITY SHALL BE LEVEL 1.
4. PROVIDE AND INSTALL NEW EQUIPMENT, DEVICES AND REQUIRED MODULES AND PROVIDE CONNECTIONS COMPLETE FOR A FULLY FUNCTIONING EXPANSION OF THE EXISTING CAMPUS FIRE ALARM SYSTEM.
5. THE NAME OF THE SPECIFIC PERSON RESPONSIBLE FOR THE SYSTEM DESIGN IS JUSTIN KIRK (O'MAHONY & MYER).
6. SYSTEM INSTALLATION SHALL BE BY A LICENSED ELECTRICAL OR FIRE ALARM CONTRACTOR WITH A CALIFORNIA C-10 LICENSE. REGULARLY ENGAGED IN THE INSTALLATION AND COMMISSIONING OF FIRE ALARM SYSTEMS TO NFPA 72 STANDARDS. INSTALLING CONTRACTOR'S NAME AND CONTACT INFORMATION SHALL BE LISTED IN THE NFPA CLOSE OUT DOCUMENTATION AT COMPLETION OF PROJECT.

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HY Architects Project number: 6020

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SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
FIRE ALARM EQUIPMENT LIST, GENERAL NOTES & DETAILS

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE0.01
Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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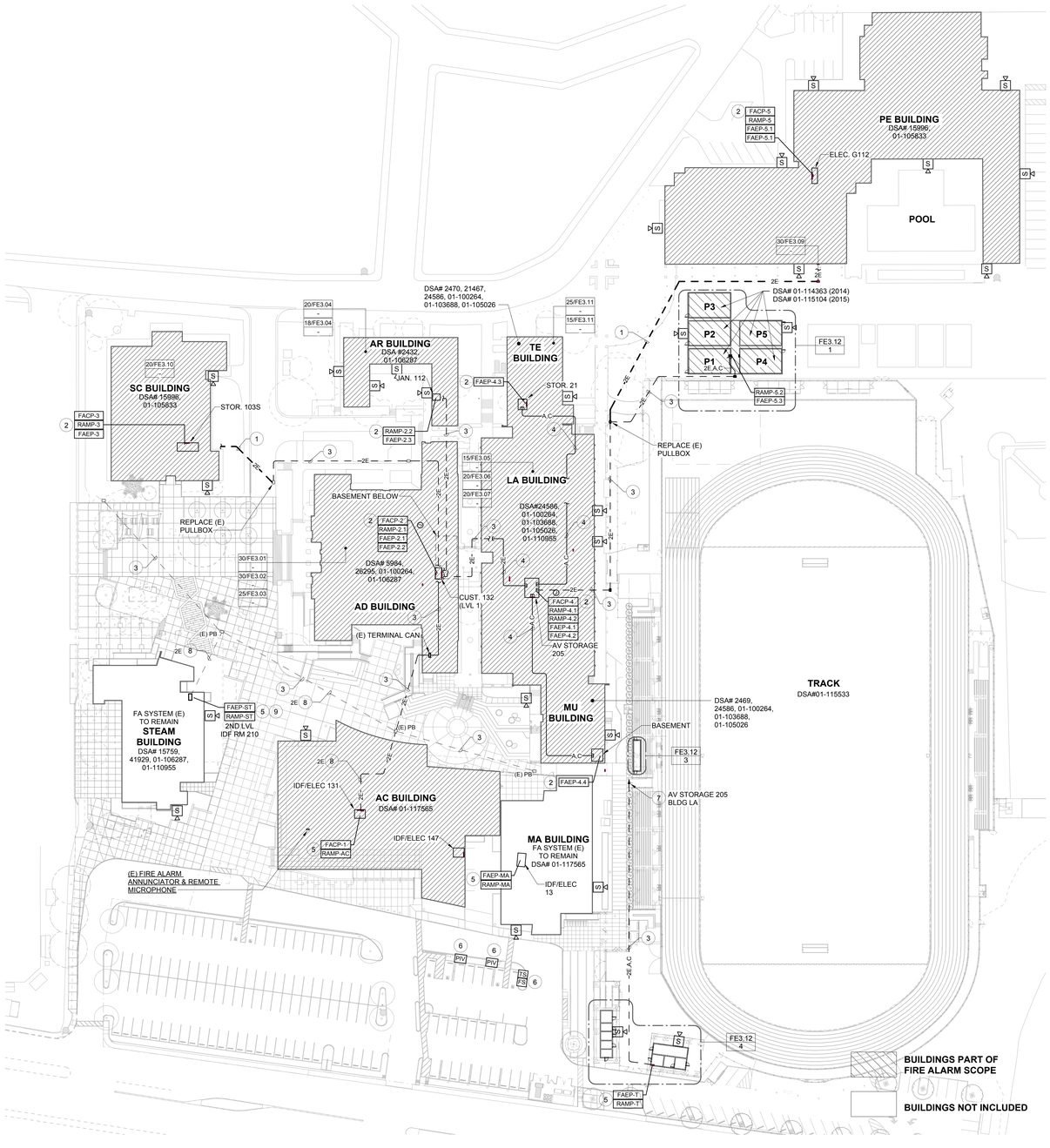

30 OVERALL SITE PLAN
1" = 50'-0"

NUMBERED SHEET NOTES

1. PROVIDE AND INSTALL NEW 1-1/2" C. IN UNDERGROUND TRENCH PER 1/E-7.01.
2. PROVIDE AND INSTALL NEW FIRE ALARM HEAD END EQUIPMENT TO REPLACE EXISTING. 'FACP' = FIRE ALARM CONTROL PANEL. 'RAMP' = REMOTE AMPLIFIER PANEL. 'FAEP' = FIRE ALARM STROBE EXPANDER PANEL.
3. EXISTING CONDUIT. REFER TO DEMO PLANS FOR INVESTIGATION REQUIREMENTS.
4. PROVIDE AND INSTALL NEW CONDUITS WITHIN BUILDING. SEE FLOOR PLANS FOR REQUIREMENTS.
5. EXISTING FIRE ALARM HEAD END EQUIPMENT.
6. EXISTING FIRE ALARM CONNECTIONS TO REMAIN.
7. EXISTING HOMERUN TO AREA INDICATED IS UNKNOWN. INCLUDE ADDITIONAL SITE INVESTIGATIONS TO VERIFY ROUTE FOR NEW CONNECTIONS AS SHOWN ON THESE DRAWINGS.
8. REPLACE THE EXISTING COPPER FIRE ALARM WIRING, RELATED TO THE EXISTING NOTIFIER 'DAA2' VOICE AMPLIFIER AT THE STEAM BUILDING, WITHIN EXISTING CONDUIT. NEW WIRING SHALL BE NEW FIBER OPTIC AS SHOWN.
9. PROVIDE AND INSTALL NEW FIBER OPTIC MODULES AT EXISTING PANELS, AS REQUIRED TO FACILITATE REMOVAL OF THE EXISTING COPPER WIRING BETWEEN EXISTING EQUIPMENT, SEE NOTE 8.

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Project
FIRE ALARM UPGRADE

Sheet Title
SITE PLAN - FIRE ALARM

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	FE1.01
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version:	2023	Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" | 1/8" = 1'-0" | 1/4" = 1'-0" | 1/2" = 1'-0" | 3/4" = 1'-0" | 1" = 1'-0" | 1 1/2" = 1'-0" | 3" = 1'-0"

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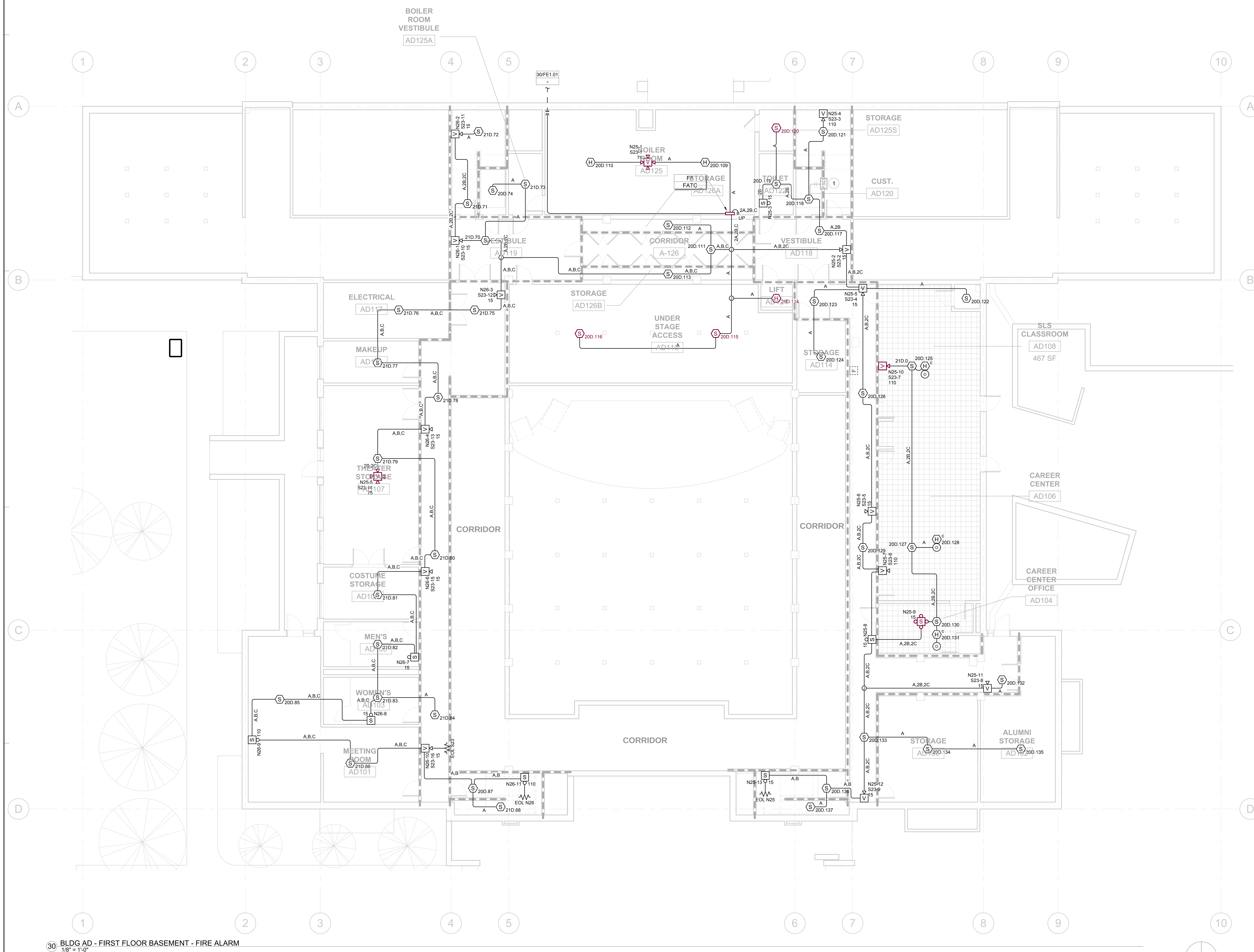


30 BLDG AD - FIRST FLOOR BASEMENT - FIRE ALARM
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. INTERCEPT EXISTING FIRE SMOKE DAMPER CONNECTIONS TO EXISTING SMOKE DETECTOR RELAY BASE AND EXTEND (3) #12-THHN IN 1/2" C. TO NEW DETECTOR AND RELAY BASE LOCATION SHOWN. CONNECT COMPLETE.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

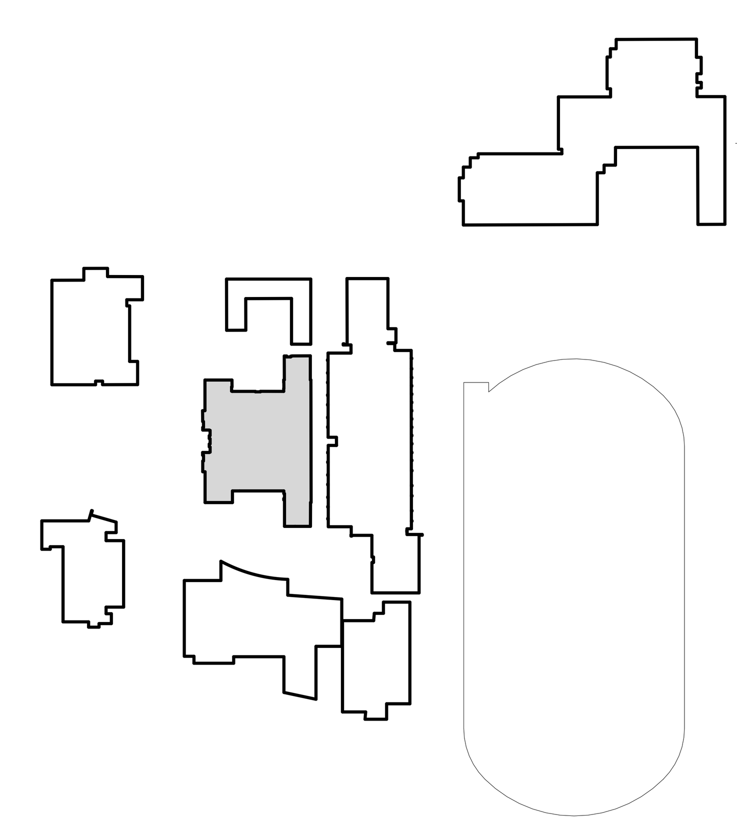
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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Project
FIRE ALARM UPGRADE

Sheet Title
AD BLDG - FIRE ALARM PLAN BASEMENT LEVEL

Client Project Number:

Scale:	AS NOTED
Drawn By:	JK
Checked By:	PJC
Issue Date:	09/06/2023
Revit Version:	2023

Sheet
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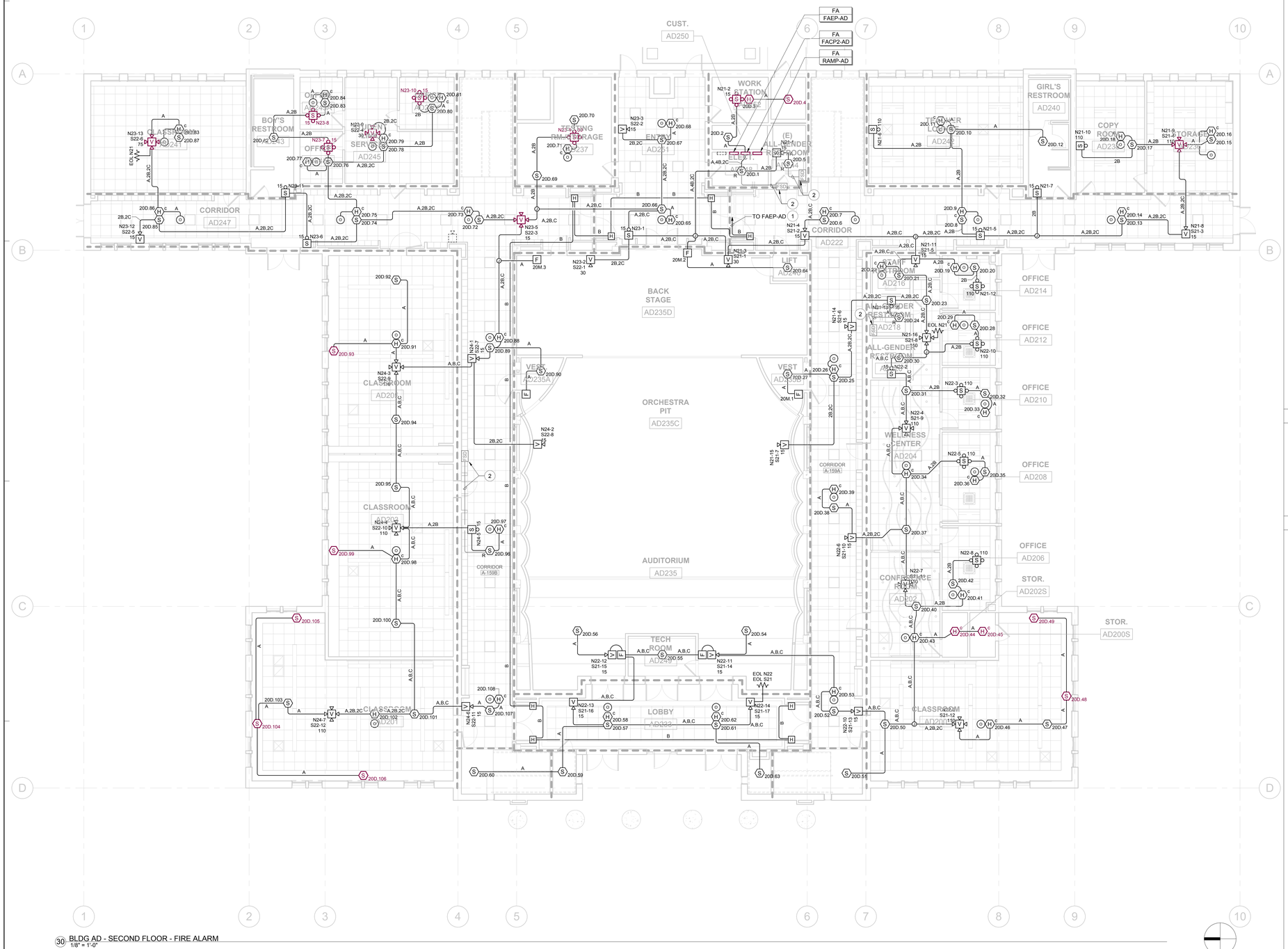


30 BLDG AD - SECOND FLOOR - FIRE ALARM
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. TERMINATE TO AUXILIARY 24V DC POWER OUTPUT ON FAEP. PROGRAM FOR DOOR HOLDER RELEASE UPON ACTIVATION OF BUILDING DETECTION SYSTEM.
2. INTERCEPT EXISTING FIRE SMOKE DAMPER CONNECTIONS TO EXISTING SMOKE DETECTOR RELAY BASE AND EXTEND (3) #12-THHN IN 1/2" C. TO NEW DETECTOR AND RELAY BASE LOCATION SHOWN. CONNECT COMPLETE.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

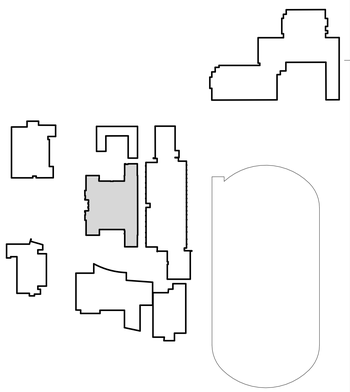
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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HY Architects Project number: 6020

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Project
FIRE ALARM UPGRADE

Sheet Title
AD BLDG - FIRE ALARM PLAN SECOND FLOOR

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE3.02
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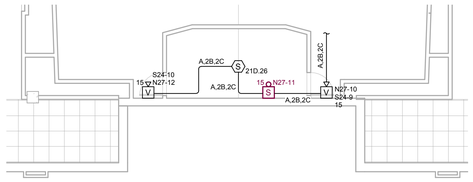
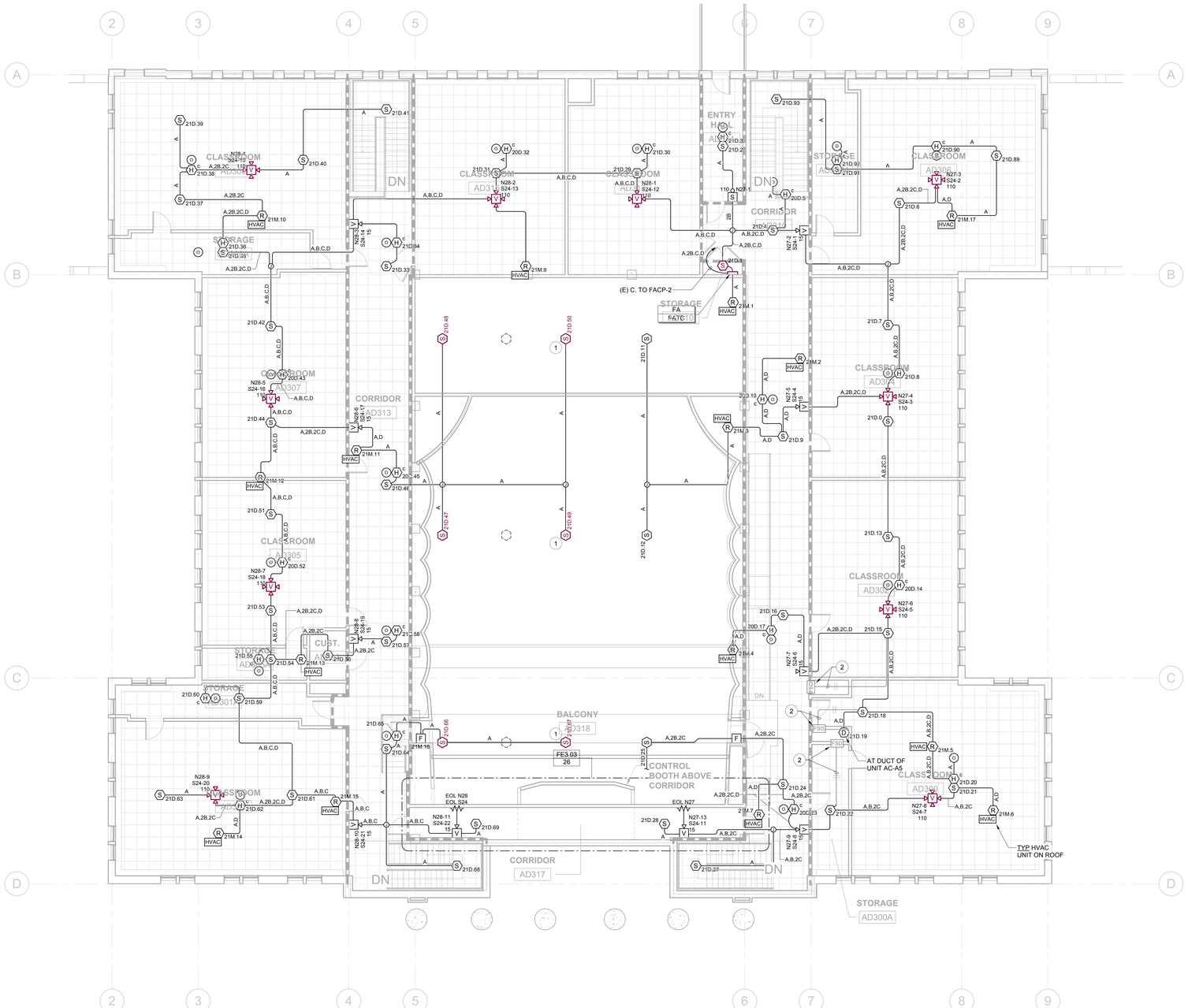


26 BLDG AD CATWALK LEVEL
1/8" = 1'-0"



25 BLDG AD - THIRD FLOOR - FIRE ALARM
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. LOCATE DETECTOR WITHIN 3' OF CEILING PEAK
2. INTERCEPT EXISTING FIRE SMOKE DAMPER CONNECTIONS TO EXISTING SMOKE DETECTOR RELAY BASE AND EXTEND (3) #12-THHN IN 1/2" C. TO NEW DETECTOR AND RELAY BASE LOCATION SHOWN. CONNECT COMPLETE.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

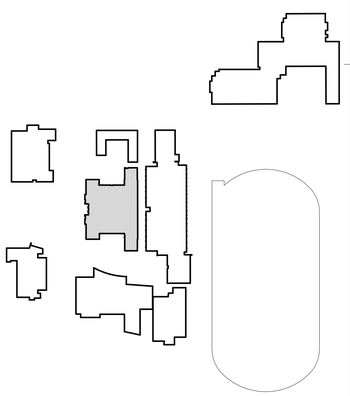
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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Project
FIRE ALARM UPGRADE

Sheet Title
AD BLDG - FIRE ALARM PLAN THIRD LEVEL

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	**FE3.03**
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version:	2023	Sheet of

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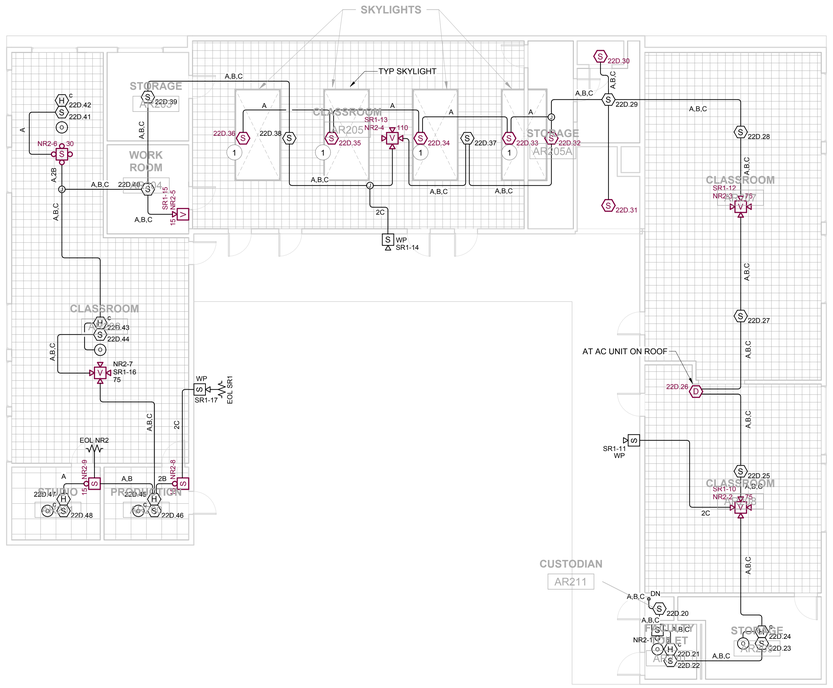
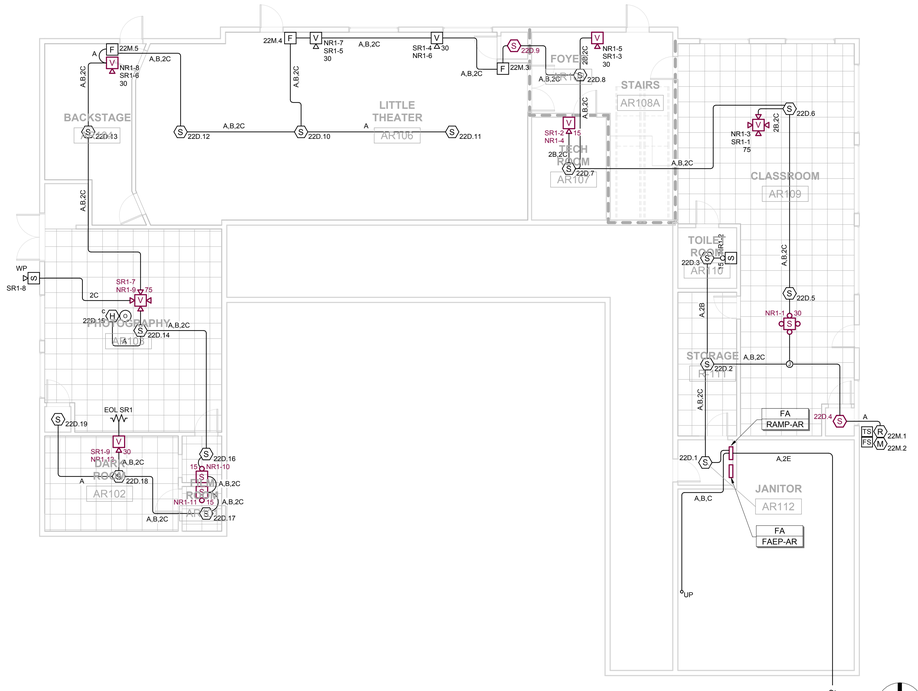


18 BLDG AR - SECOND FLOOR - FIRE ALARM
1/8" = 1'-0"



20 BLDG AR - FIRST FLOOR - FIRE ALARM
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. LOCATE DETECTOR IN SKYLIGHT WELL, WITHIN 3' OF TOP.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

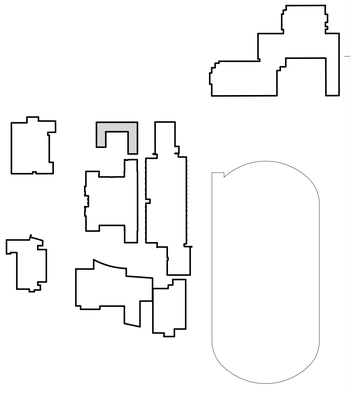
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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DATE: 11/7/2023

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Delta	Date	Revisions	By

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HY Architects Project number: 6020

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Project
FIRE ALARM UPGRADE

Sheet Title
AR BLDG - FIRE ALARM PLANS

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	**FE3.04**
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version:	2023	Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" | 1/8" = 1'-0" | 1/4" = 1'-0" | 1/2" = 1'-0" | 3/4" = 1'-0" | 1" = 1'-0" | 1 1/2" = 1'-0" | 3" = 1'-0"

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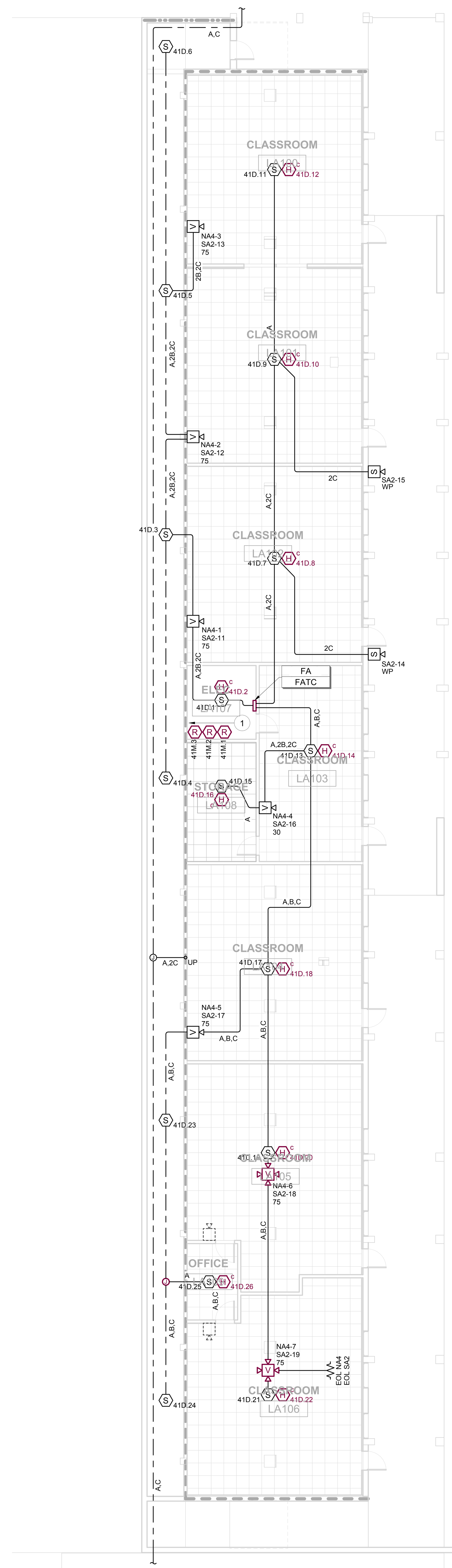


15 BLDG LA - FIRST FLOOR (BASEMENT) - FIRE ALARM
1" = 10'-0"

NUMBERED SHEET NOTES

1. PROVIDE AND INSTALL NEW RELAY MODULES AND INTERCEPT THE EXISTING 120V BRANCH CIRCUIT TO THE FIRE SMOKE DAMPERS IN THIS BUILDING. ALL FSD'S SHALL PERFORM CLOSURE UPON ACTIVATION OF ANY AREA DETECTION IN THE BUILDING.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

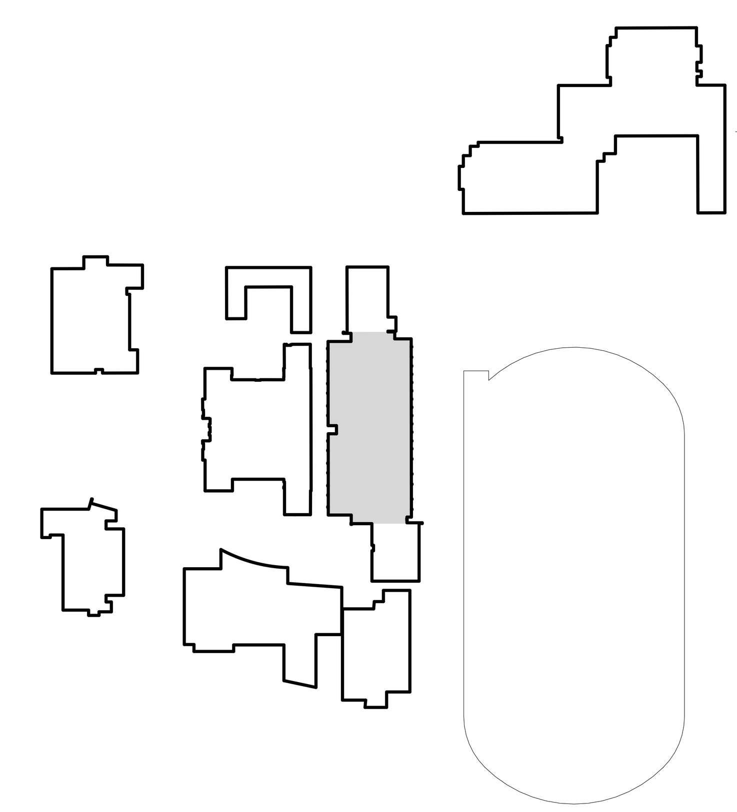
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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Project
FIRE ALARM UPGRADE

Sheet Title
LA BLDG - FIRE ALARM PLAN BASEMENT LEVEL

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	FE3.05
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version:	2023	Sheet of

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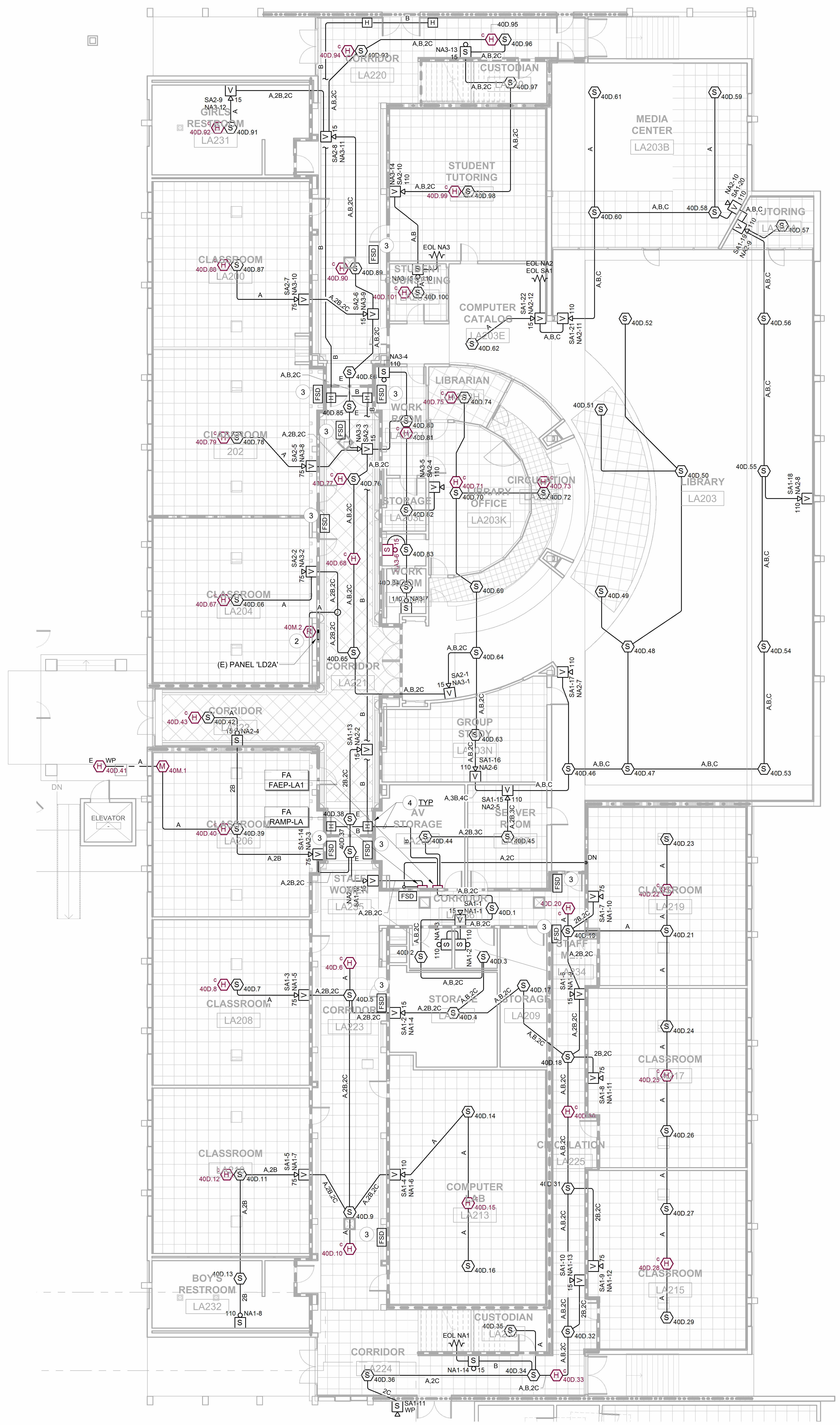


20 BLDG LA - SECOND FLOOR - FIRE ALARM
1" = 10'-0"

NUMBERED SHEET NOTES

1. PROVIDE AND INSTALL 1-1/4" C. FROM BLDG LA STORAGE ROOM TO BLDG MU AND BLDG TE FIRE ALARM EXPANDER PANEL LOCATIONS. TRANSITION CONCEALED, DOWN TO LOWER FLOOR, AND CONTINUE IN EACH DIRECTION - SEE FE3.05.
2. PROVIDE AND INSTALL NEW RELAY MODULE, AND INTERCEPT EXISTING BRANCH CIRCUIT LD2A-31, WHICH FEEDS ALL FIRE SMOKE DAMPER ASSEMBLIES ON THIS FLOOR.
3. EXISTING FIRE SMOKE DAMPER. SEE NUMBERED NOTE 2.
4. TERMINATE TO AUXILIARY 24V DC POWER OUTPUT ON FAEP. PROGRAM FOR DOOR HOLDER RELEASE UPON ACTIVATION OF BUILDING DETECTION SYSTEM.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

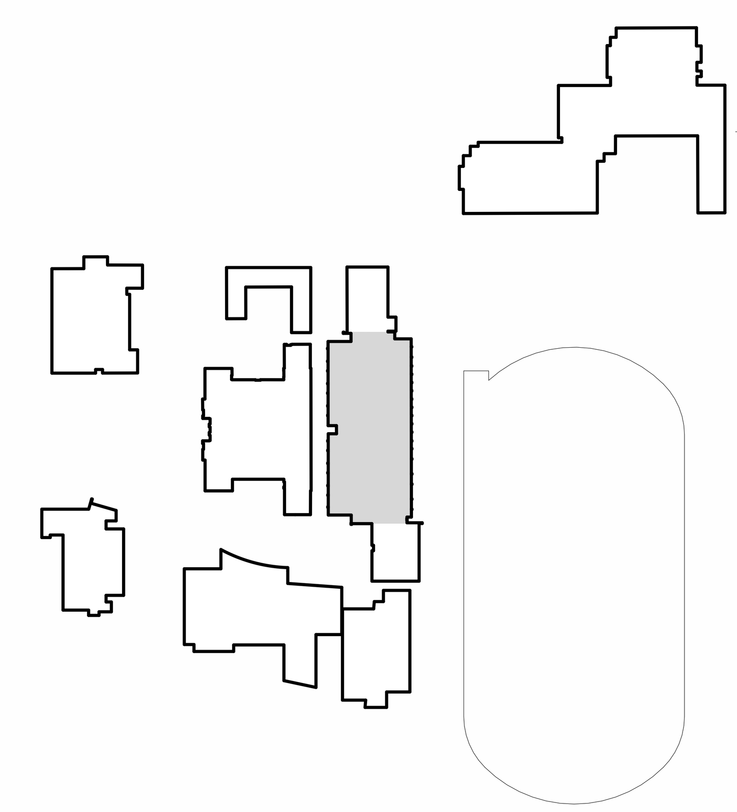
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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HY Architects Project number: 6020

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Project
FIRE ALARM UPGRADE

Sheet Title
LA BLDG - FIRE ALARM PLAN SECOND FLOOR

Client Project Number:

Scale:	AS NOTED
Drawn By:	JK
Checked By:	PJC
Issue Date:	09/06/2023
Revit Version:	2023

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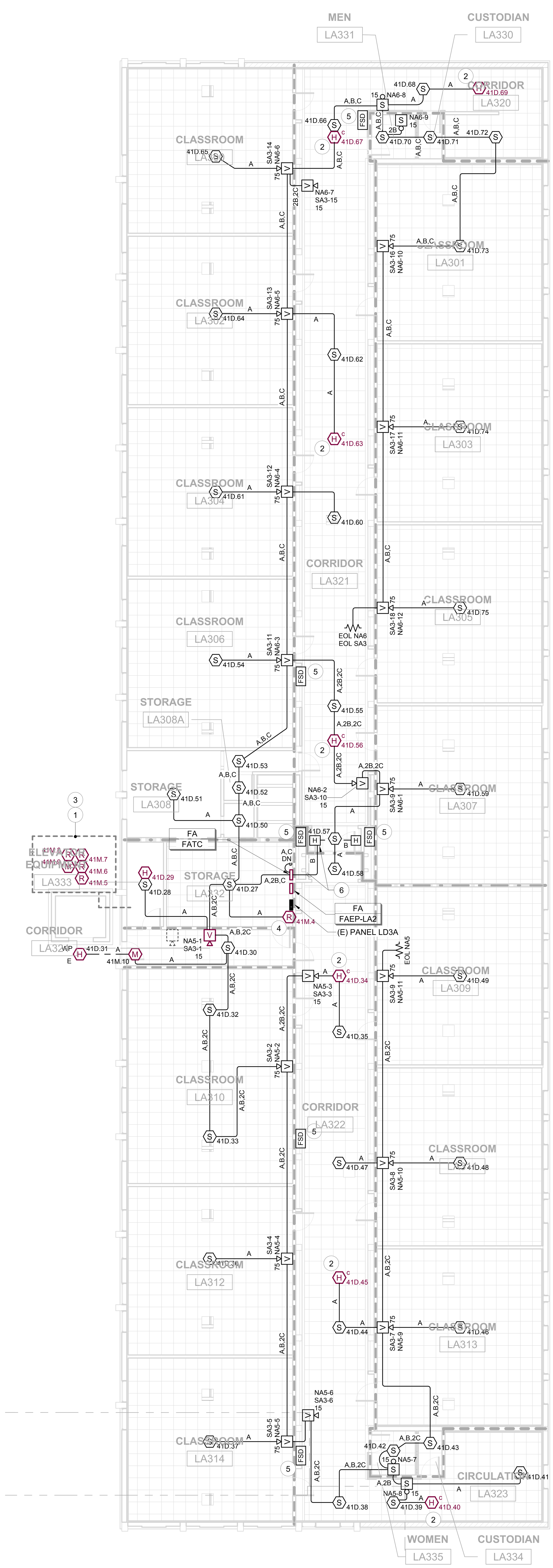


20 BLDG LA - THIRD FLOOR - FIRE ALARM
1" = 10'-0"

NUMBERED SHEET NOTES

1. INTERCEPT EXISTING CONTACTS TO ELEVATOR CONTROLLER, AND PROVIDE RELAY MODULES FOR RECALL, ALT-RECALL, SHUNT TRIP AND FIREMANS HAT. CONNECT COMPLETE.
2. PROVIDE 14" x 14" FLUSH ACCESS PANEL AT EXISTING HARD-LID CEILING, FOR HEAT DETECTOR TESTING. PROVIDE NAMEPLATE AT ACCESS PANEL INDICATING PRESENCE OF HEAT DETECTOR AND THE DEVICE LOOP ID. REFER TO ARCHITECTURAL PLANS FOR ACCESS PANEL DETAILS.
3. VERIFY EXACT LOCATION OF SHUNT TRIP RELAY AND MONITOR MODULES PRIOR TO COMMENCING WORK. TO BE LOCATED AT EXISTING ELEVATOR FEEDER SHUNT TRIP DEVICE.
4. PROVIDE AND INSTALL NEW RELAY MODULE, AND INTERCEPT EXISTING BRANCH CIRCUIT LD3A-32, WHICH FEEDS ALL FIRE SMOKE DAMPER ASSEMBLIES ON THIS FLOOR.
5. EXISTING FIRE SMOKE DAMPER. SEE NUMBERED NOTE 4.
6. TERMINATE TO AUXILIARY 24V DC POWER OUTPUT ON FAEP. PROGRAM FOR DOOR HOLDER RELEASE UPON ACTIVATION OF BUILDING DETECTION SYSTEM.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

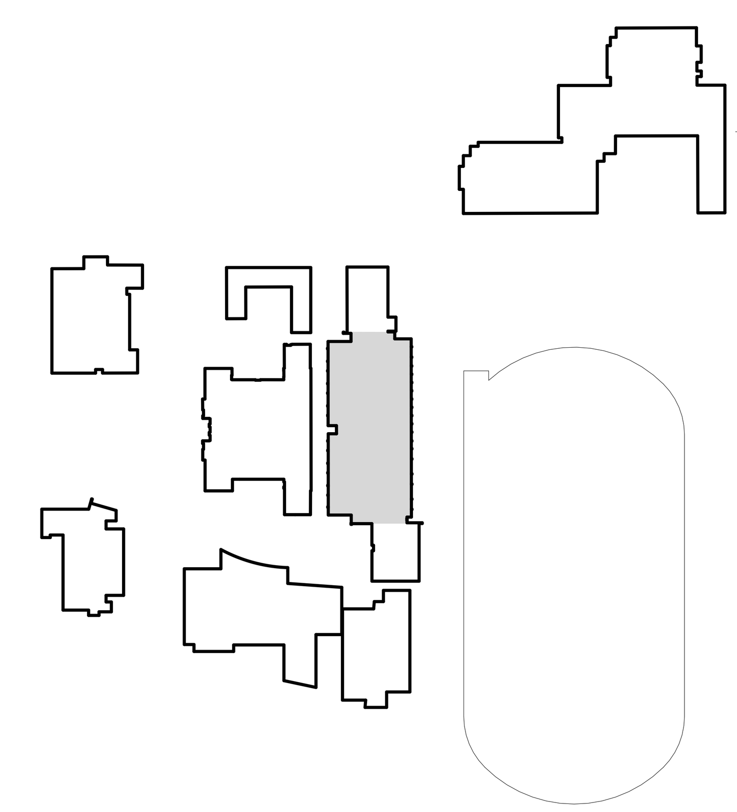
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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HY Architects Project number: 6020

Facility
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Project
FIRE ALARM UPGRADE

Sheet Title
LA BLDG - FIRE ALARM PLAN THIRD FLOOR

Client Project Number:

Scale:	AS NOTED
Drawn By:	JK
Checked By:	PJC
Issue Date:	09/06/2023
Revit Version:	2023

Sheet
FE3.07
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GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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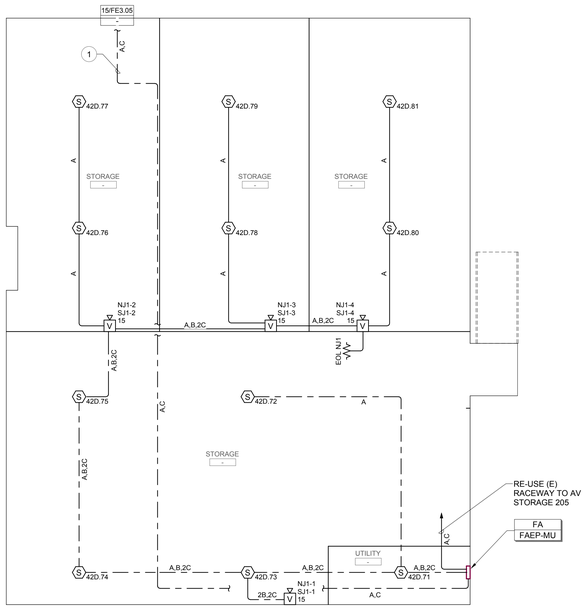
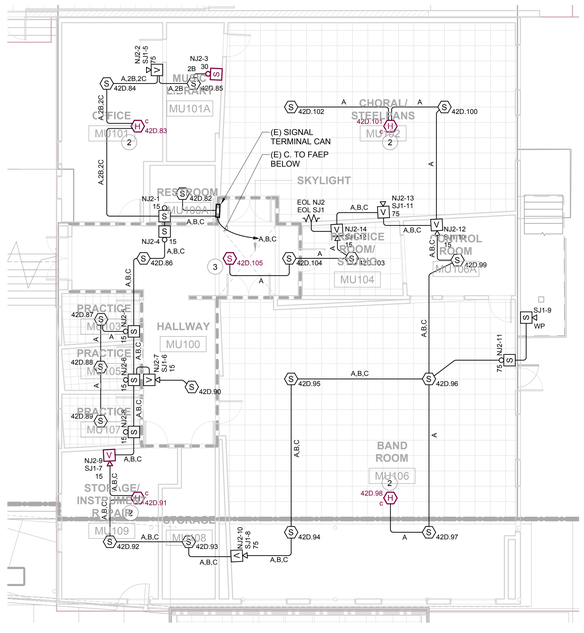


16 BLDG MU - BASEMENT
1/8" = 1'-0"



15 BLDG MU - FIRE ALARM PLAN
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. PROVIDE AND INSTALL 1-1/4" C. FROM BLDG LA STORAGE ROOM TO BLDG MU FIRE ALARM EXPANDER PANEL LOCATIONS. WHERE EXTERIOR WALLS ARE ENCOUNTERED, PROVIDE CORE DRILL TO INTERIOR SPACES, WITH 1/2" ANNULAR SPACE AROUND CONDUIT. SEAL 'WATER-TIGHT'.
2. PROVIDE 14" x 14" FLUSH ACCESS PANEL AT EXISTING HARD-LID CEILING, FOR HEAT DETECTOR TESTING. PROVIDE NAMEPLATE AT ACCESS PANEL INDICATING PRESENCE OF HEAT DETECTOR AND THE DEVICE LOOP ID. REFER TO ARCHITECTURAL PLANS FOR ACCESS PANEL DETAILS.
3. LOCATE DETECTOR IN SKYLIGHT WELL, WITHIN 3' OF TOP.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

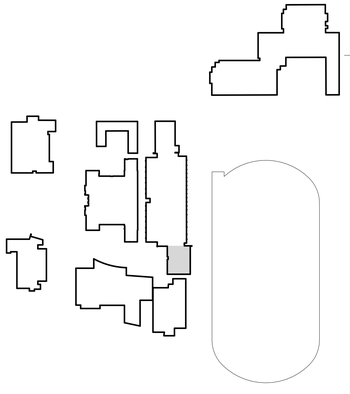
FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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HY Architects Project number: 6020

Facility
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150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
MU BLDG - FIRE ALARM PLAN
FIRST LEVEL

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE3.08
Sheet of

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NUMBERED SHEET NOTES

1. RE-USE EXISTING RACEWAY FOR NEW FIRE ALARM CABLING. T-TAP SLC AT NEAREST SOURCE.
2. PROVIDE AND INSTALL HAND ACCESS HATCH FOR HEAT DETECTOR TESTING. LABEL "HEAT DETECTOR ####", WHERE #### IS RESPECTIVE DEVICE ID.
3. INTERCEPT AND EXTEND THE EXISTING FIRE ALARM RACEWAY TO ALLOW FOR DEVICE LOCATION AS SHOWN. ALL CONDUIT IN FINISHED AREAS SHALL BE PAINTED PER THE DIRECTION OF THE ARCHITECT.
4. HOMERUN TO ELEC RM G112 AND TERMINATE TO AUXILIARY 24V DC POWER OUTPUT ON FAEP. PROGRAM FOR DOOR HOLDER RELEASE UPON ACTIVATION OF BUILDING DETECTION SYSTEM.
5. IN POOL EQUIPMENT ROOM, CONDUITS SHALL BE R.G.S.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

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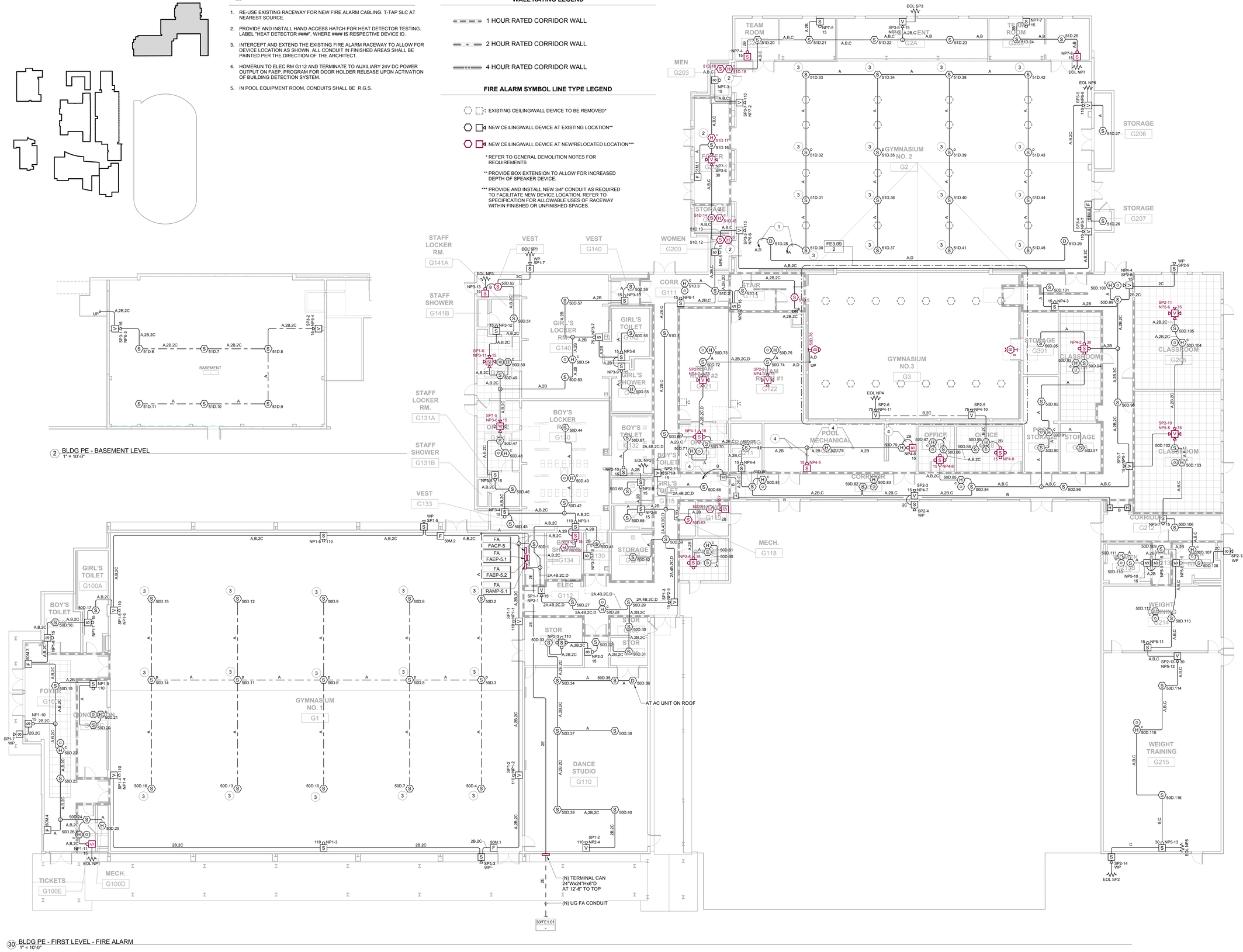
*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.

2 BLDG PE - BASEMENT LEVEL
1" = 10'-0"



30 BLDG PE - FIRST LEVEL - FIRE ALARM
1" = 10'-0"

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HY Architects Project number: 6020

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Project

FIRE ALARM UPGRADE

Sheet Title

PE BLDG - FIRE ALARM PLAN FIRST LEVEL

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	**FE3.09**
Checked By:	PJC	
Issue Date:	09/06/2023	
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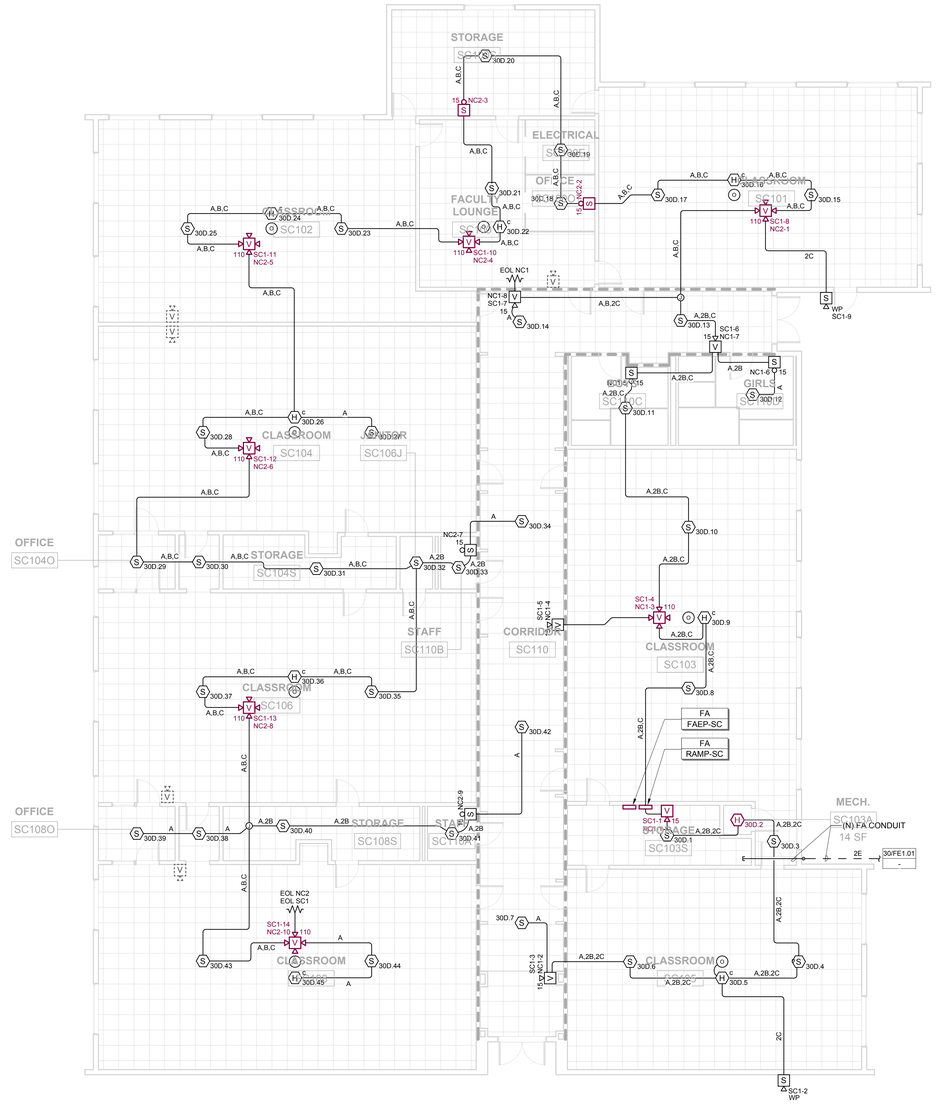


20 BLDG SC FIRST LEVEL - FIRE ALARM
1/8" = 1'-0"

WALL RATING LEGEND

1 HOUR RATED CORRIDOR WALL

2 HOUR RATED CORRIDOR WALL

4 HOUR RATED CORRIDOR WALL

FIRE ALARM SYMBOL LINE TYPE LEGEND

EXISTING CEILING/WALL DEVICE TO BE REMOVED*

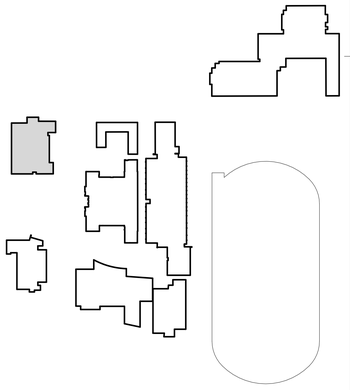
NEW CEILING/WALL DEVICE AT EXISTING LOCATION**

NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE.

*** PROVIDE AND INSTALL NEW 3/4" CONDUIT AS REQUIRED TO FACILITATE NEW DEVICE LOCATION. REFER TO SPECIFICATION FOR ALLOWABLE USES OF RACEWAY WITHIN FINISHED OR UNFINISHED SPACES.



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HY Architects Project number: 6020

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Project

FIRE ALARM UPGRADE

Sheet Title

SC BLDG - FIRE ALARM PLAN FIRST LEVEL

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	**FE3.10**
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version: 2023		Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

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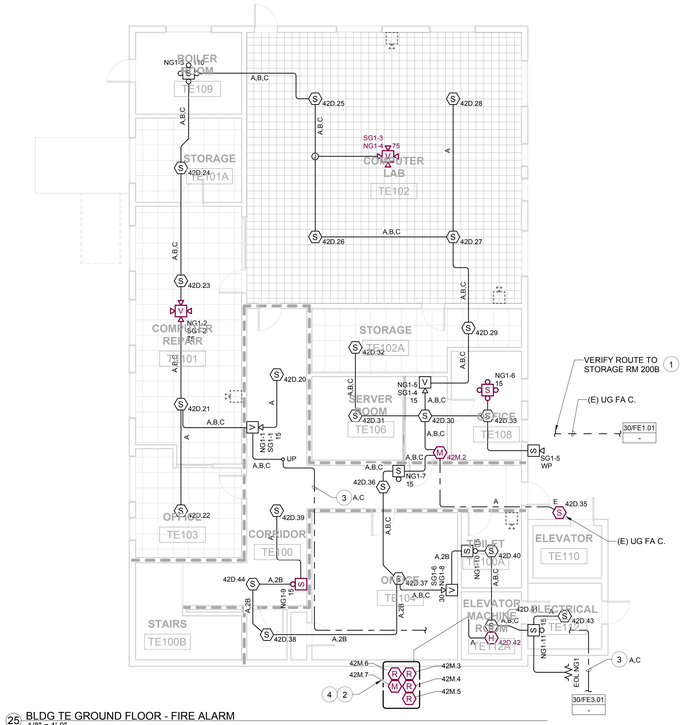
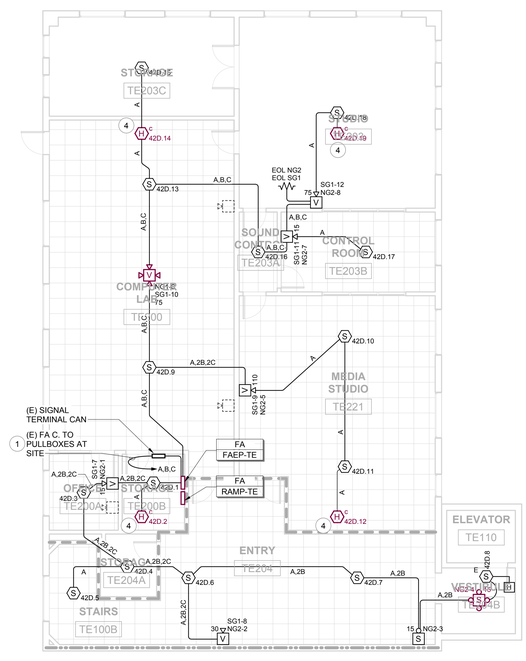


25 BLDG TE GROUND FLOOR - FIRE ALARM
1/8" = 1'-0"



15 BLDG TE FIRST LEVEL - FIRE ALARM
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. PROVIDE SIMILAR SITE INVESTIGATIONS AS SHOWN ON DEMO PLANS TO VERIFY ROUTE TO EXTERIOR. RE-USE IF FEASIBLE. INCLUDE ALLOWANCE FOR NEW RACEWAY 1-1/2" C. FROM THIS TERMINAL CAN TO THE EXISTING PULLBOXES AT THE SITE.
2. INTERCEPT EXISTING CONTACTS TO ELEVATOR CONTROLLER, AND PROVIDE RELAY MODULES FOR RECALL, ALT-RECALL, SHUNT TRIP AND FIREMANS HAT. CONNECT COMPLETE.
3. PROVIDE AND INSTALL 1-1/4" C. FROM BLDG LA STORAGE ROOM TO BLDG TE FIRE ALARM EXPANDER PANEL LOCATIONS. WHERE EXTERIOR WALLS ARE ENCOUNTERED, PROVIDE CORE DRILL TO INTERIOR SPACES, WITH 1/2" ANNULAR SPACE AROUND CONDUIT. SEAL 'WATER-TIGHT'.
4. PROVIDE 14" x 14" FLUSH ACCESS PANEL AT EXISTING HARD-LID CEILING, FOR HEAT DETECTOR TESTING. PROVIDE NAMEPLATE AT ACCESS PANEL INDICATING PRESENCE OF HEAT DETECTOR AND THE DEVICE LOOP ID. REFER TO ARCHITECTURAL PLANS FOR ACCESS PANEL DETAILS.
5. VERIFY EXACT LOCATION OF SHUNT TRIP RELAY AND MONITOR MODULES PRIOR TO COMMENCING WORK. TO BE LOCATED AT EXISTING ELEVATOR FEEDER SHUNT TRIP DEVICE.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

FIRE ALARM SYMBOL LINE TYPE LEGEND

- EXISTING CEILING/WALL DEVICE TO BE REMOVED*
- NEW CEILING/WALL DEVICE AT EXISTING LOCATION**
- NEW CEILING/WALL DEVICE AT NEW/RELOCATED LOCATION***

* REFER TO GENERAL DEMOLITION NOTES FOR REQUIREMENTS

** PROVIDE BOX EXTENSION TO ALLOW FOR INCREASED DEPTH OF SPEAKER DEVICE

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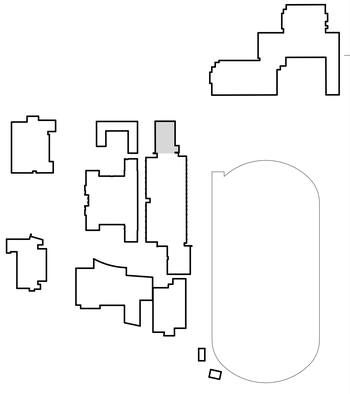

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Project

FIRE ALARM UPGRADE

Sheet Title

TE BLDG - FIRE ALARM PLANS

Client Project Number:

Scale:	AS NOTED	Sheet
Drawn By:	JK	**FE3.11**
Checked By:	PJC	
Issue Date:	09/06/2023	
Revit Version:	2023	Sheet of

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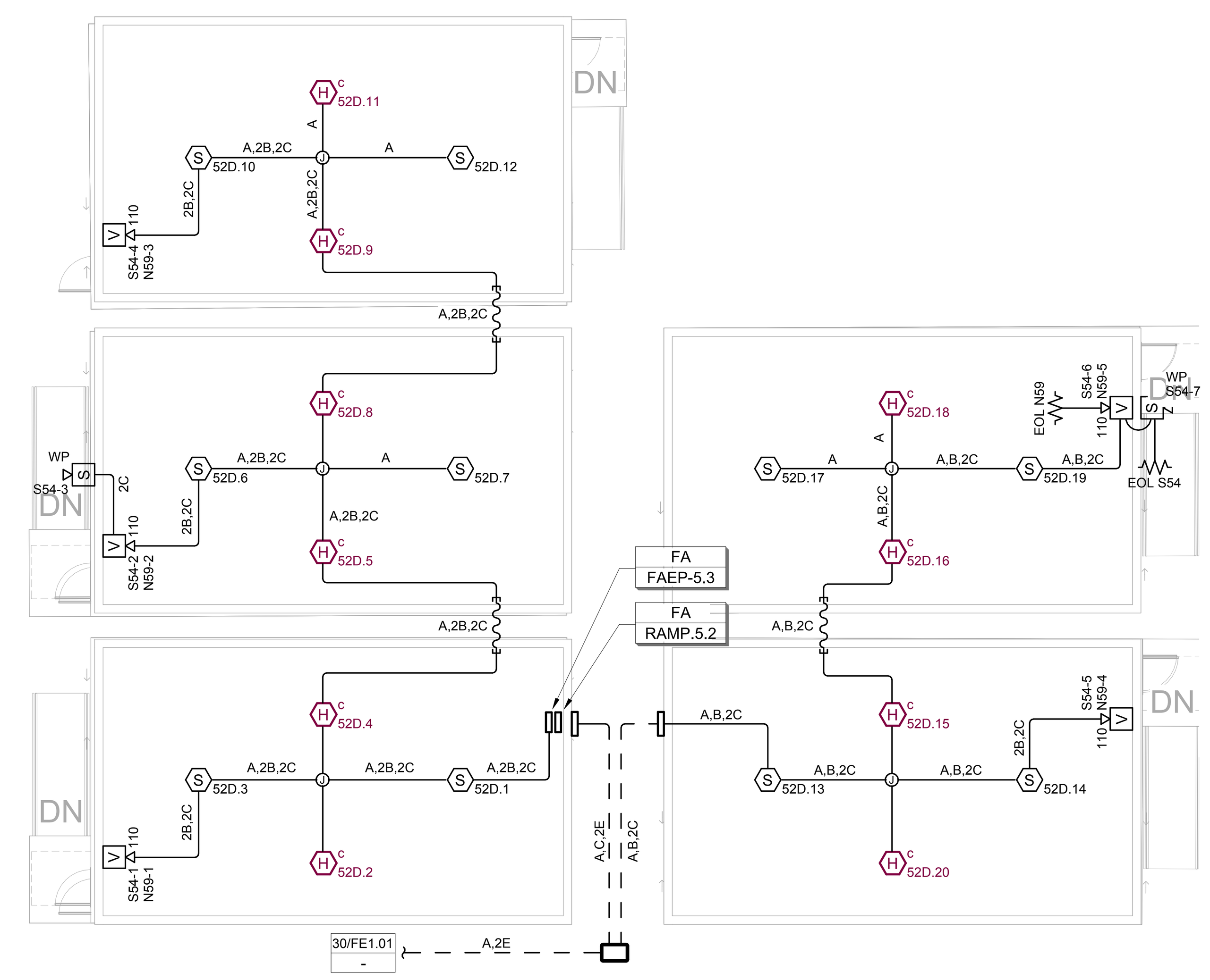
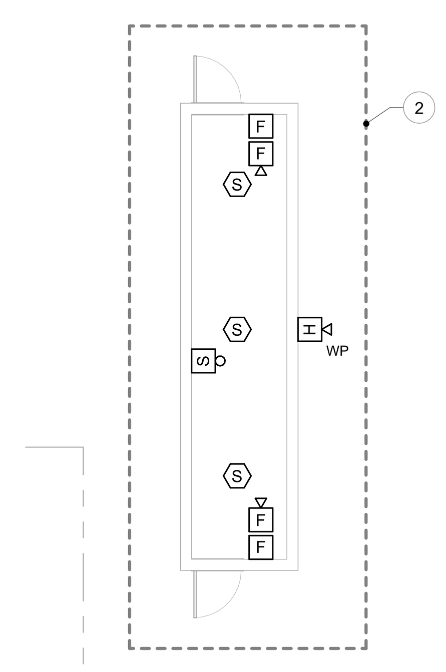
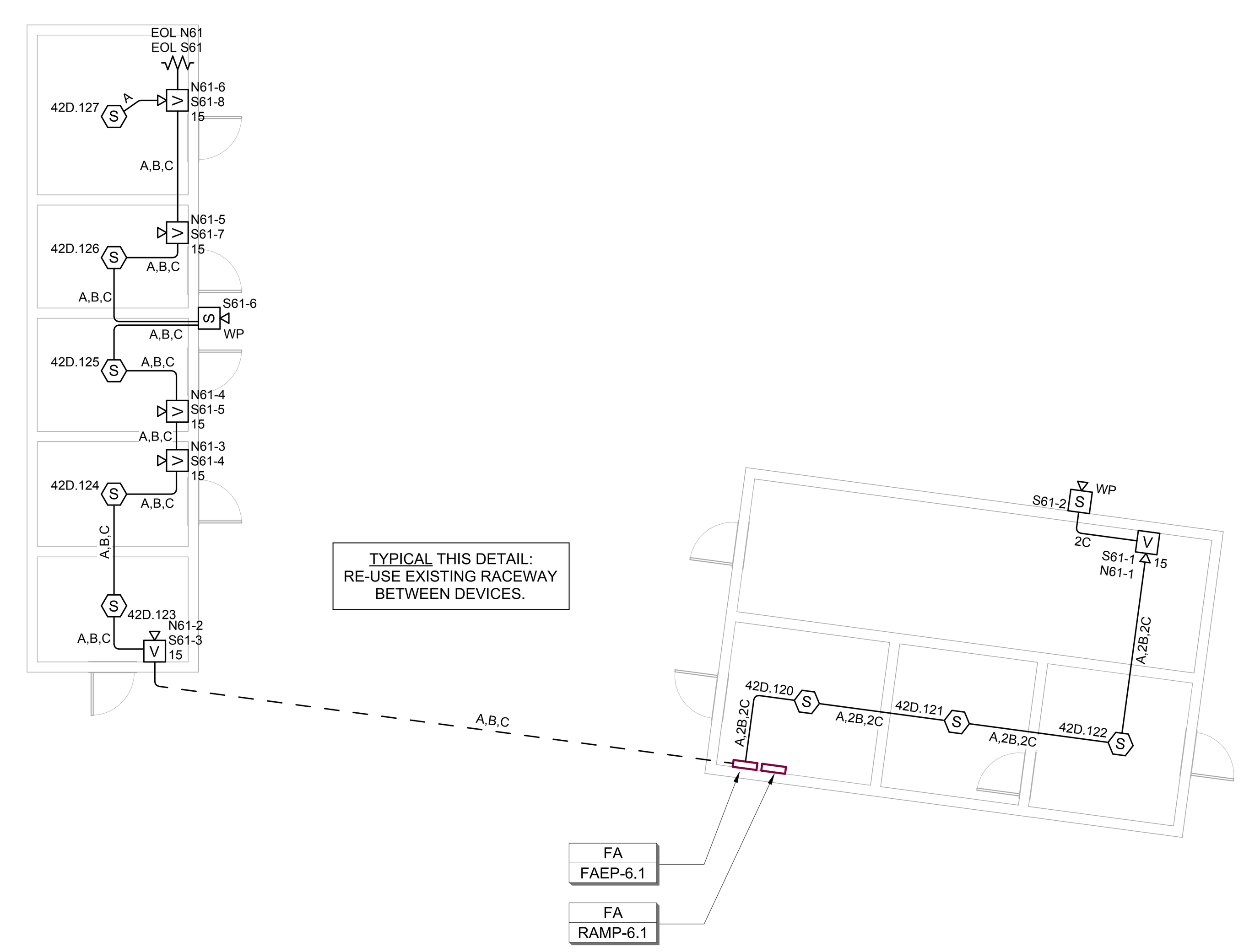


1 PARTIAL PLAN - PORTABLES North
1" = 10'-0"



3 PARTIAL PLAN - PRESSBOX
1/8" = 1'-0"



4 PARTIAL PLAN - TRACK BLDGS
1/8" = 1'-0"

NUMBERED SHEET NOTES

1. PROVIDE AND INSTALL NEW RELAY AND MONITOR MODULES TO REPLACE EXISTING, FOR CONNECTION TO CAMPUS WIDE NOTIFIER SYSTEM.
2. EXISTING MANUAL/AUTOMATIC SYSTEM TO REMAIN PROTECTED IN PLACE. SEE NUMBERED NOTE 1 FOR CONNECTION TO NEW CAMPUS WIDE NOTIFIER SYSTEM.

WALL RATING LEGEND

- 1 HOUR RATED CORRIDOR WALL
- 2 HOUR RATED CORRIDOR WALL
- 4 HOUR RATED CORRIDOR WALL

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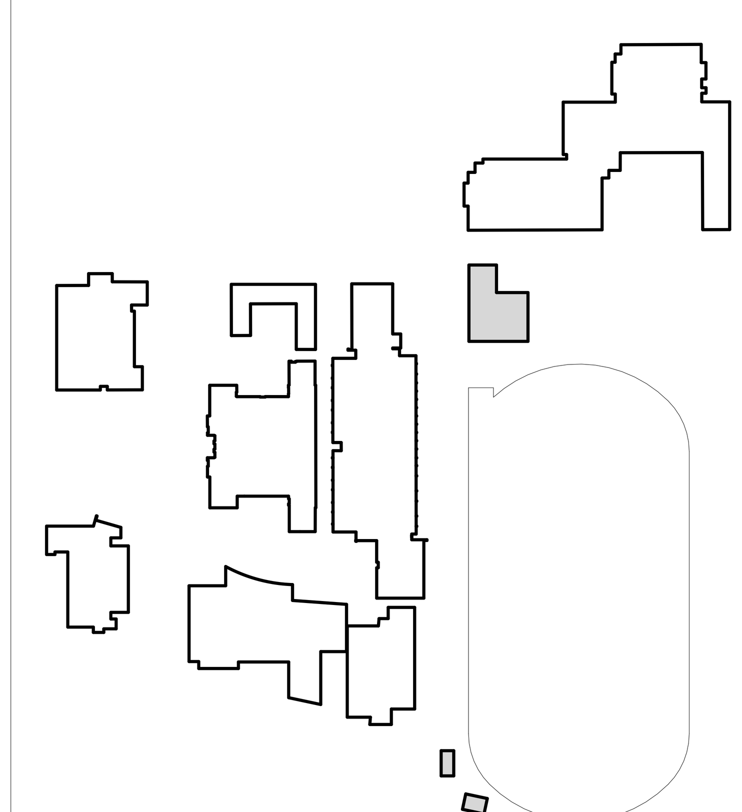

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Project
FIRE ALARM UPGRADE

Sheet Title
MISC SITE BLDGS - FIRE ALARM PLANS

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE3.12
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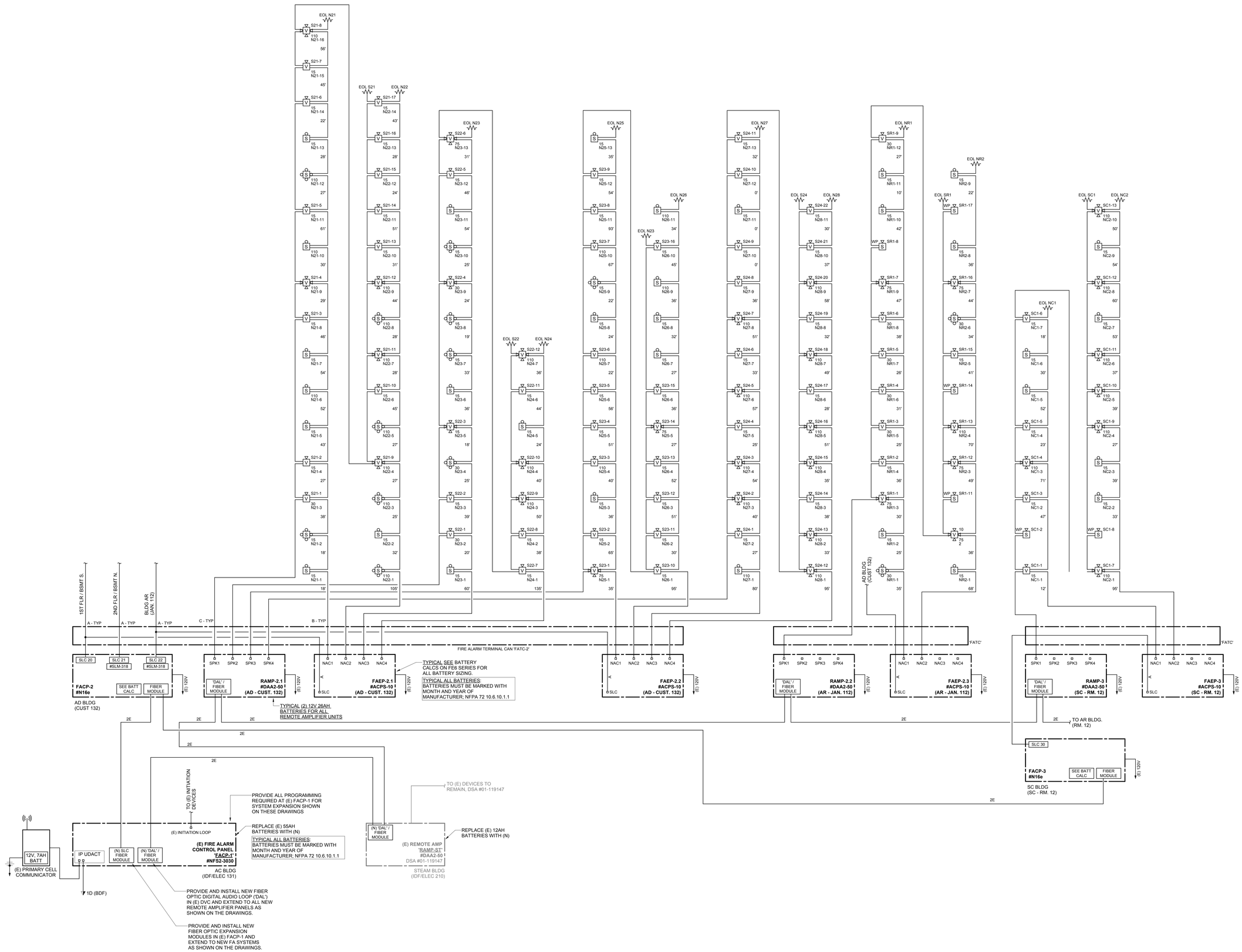

1 FIRE ALARM RISER DIAGRAM - FACP 2 & 3 - NACS
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FIRE ALARM UPGRADE

Sheet Title

RISER DIAGRAM - FIRE ALARM

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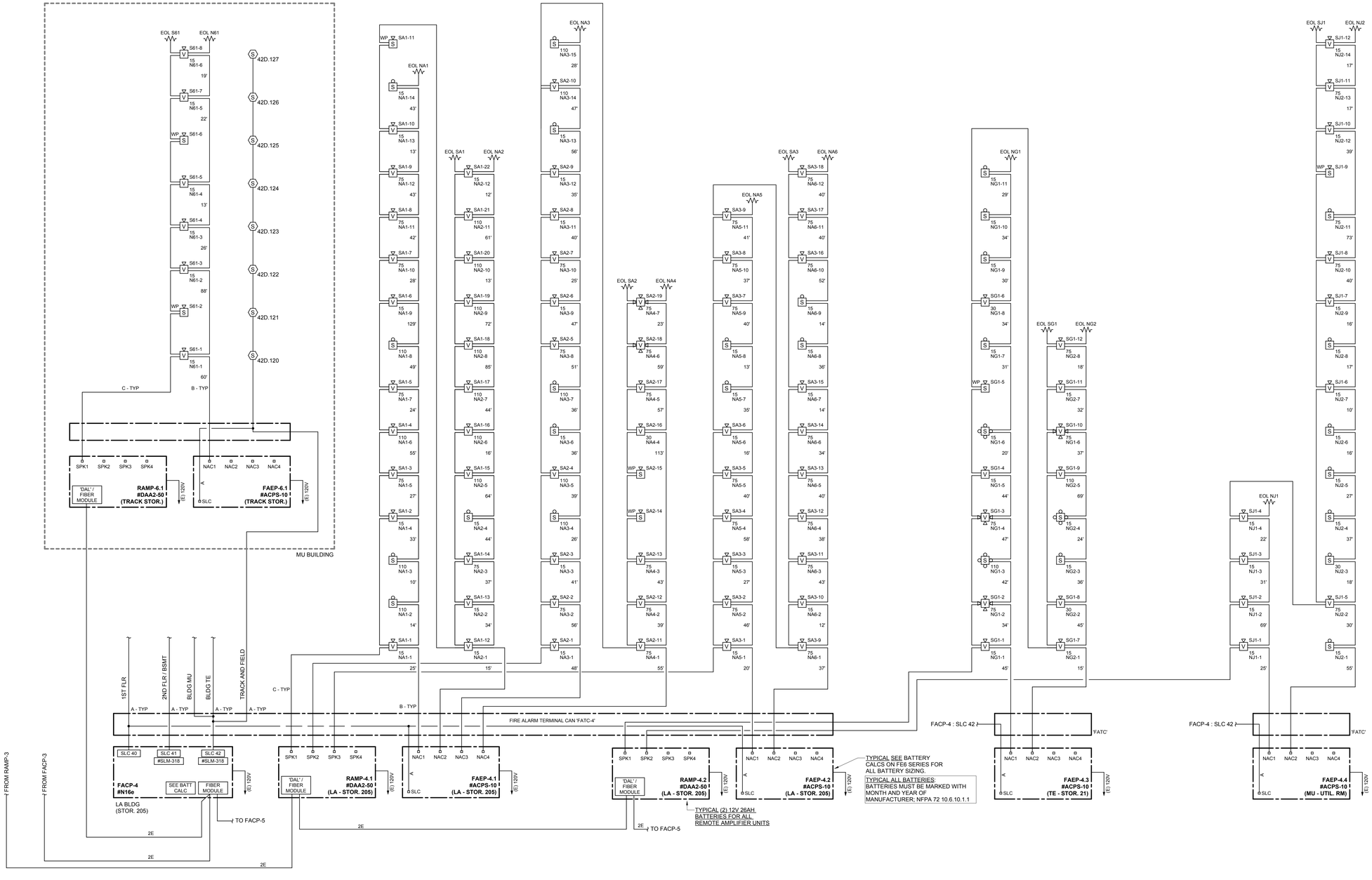

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Project
FIRE ALARM UPGRADE

Sheet Title
RISER DIAGRAM - FIRE ALARM

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

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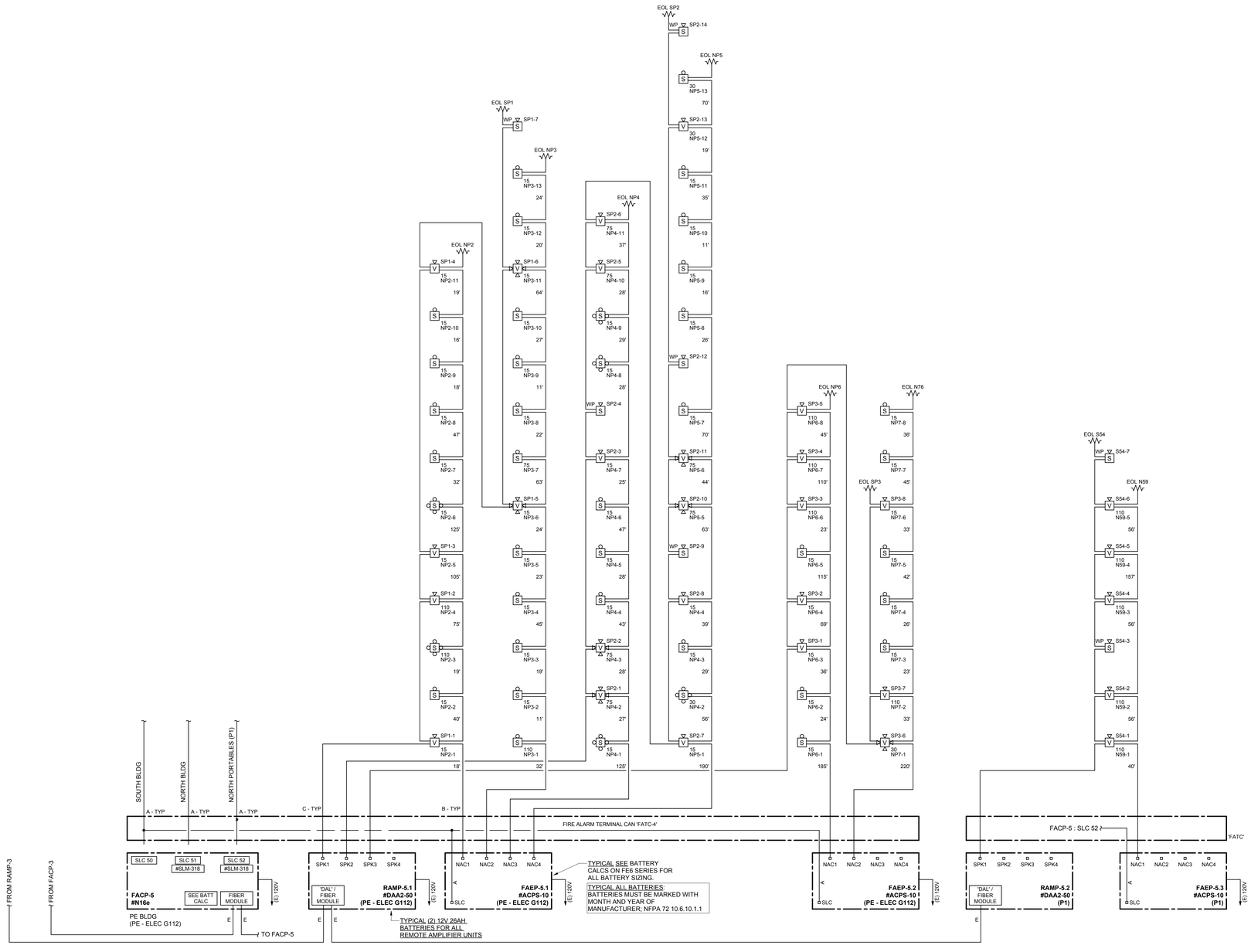

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Project

FIRE ALARM UPGRADE

Sheet Title

RISER DIAGRAM - FIRE ALARM

Client Project Number:

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Drawn By:	JK	**FE5.03**
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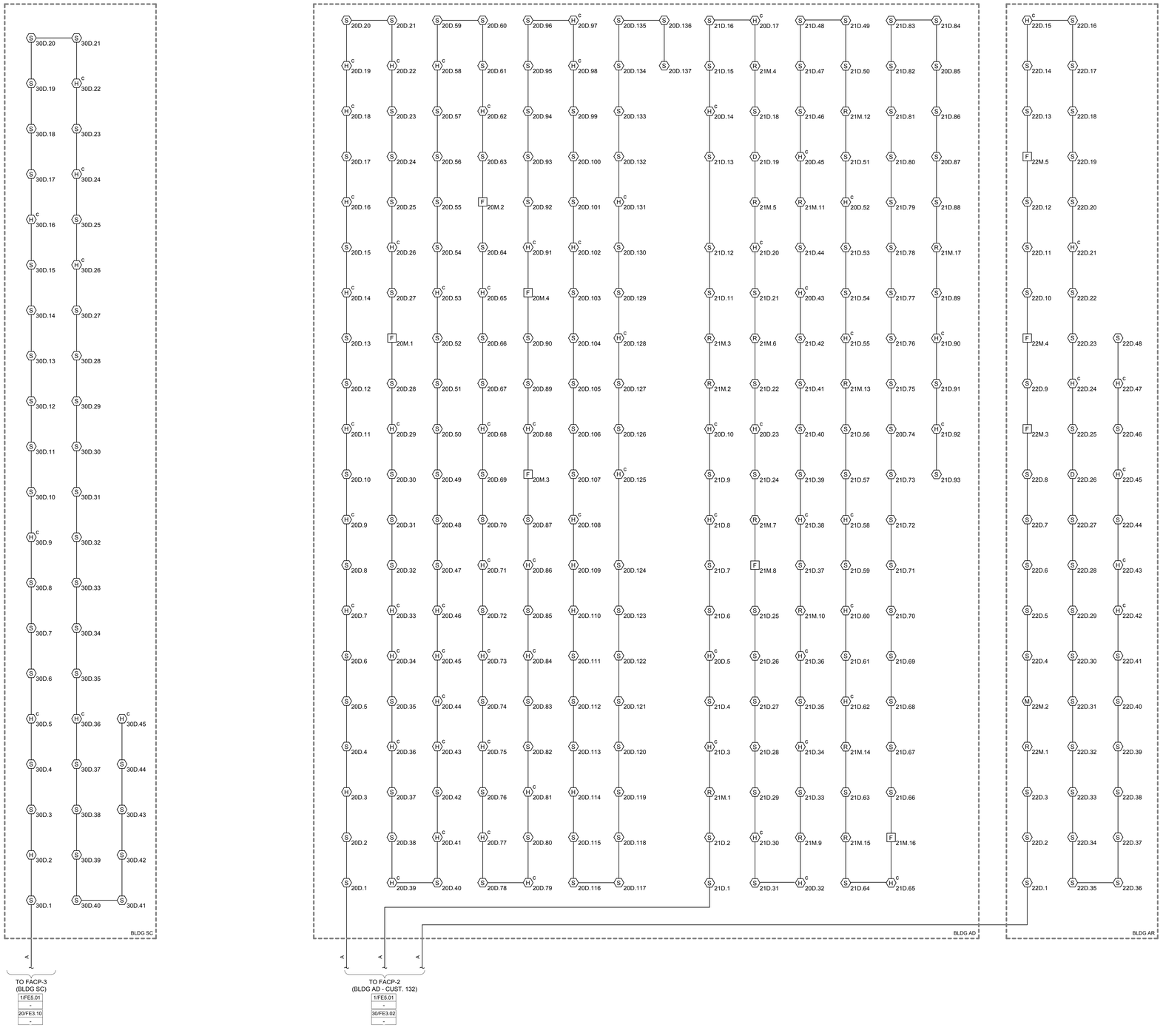

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Sheet Title

RISER DIAGRAM - FIRE ALARM

Client Project Number:

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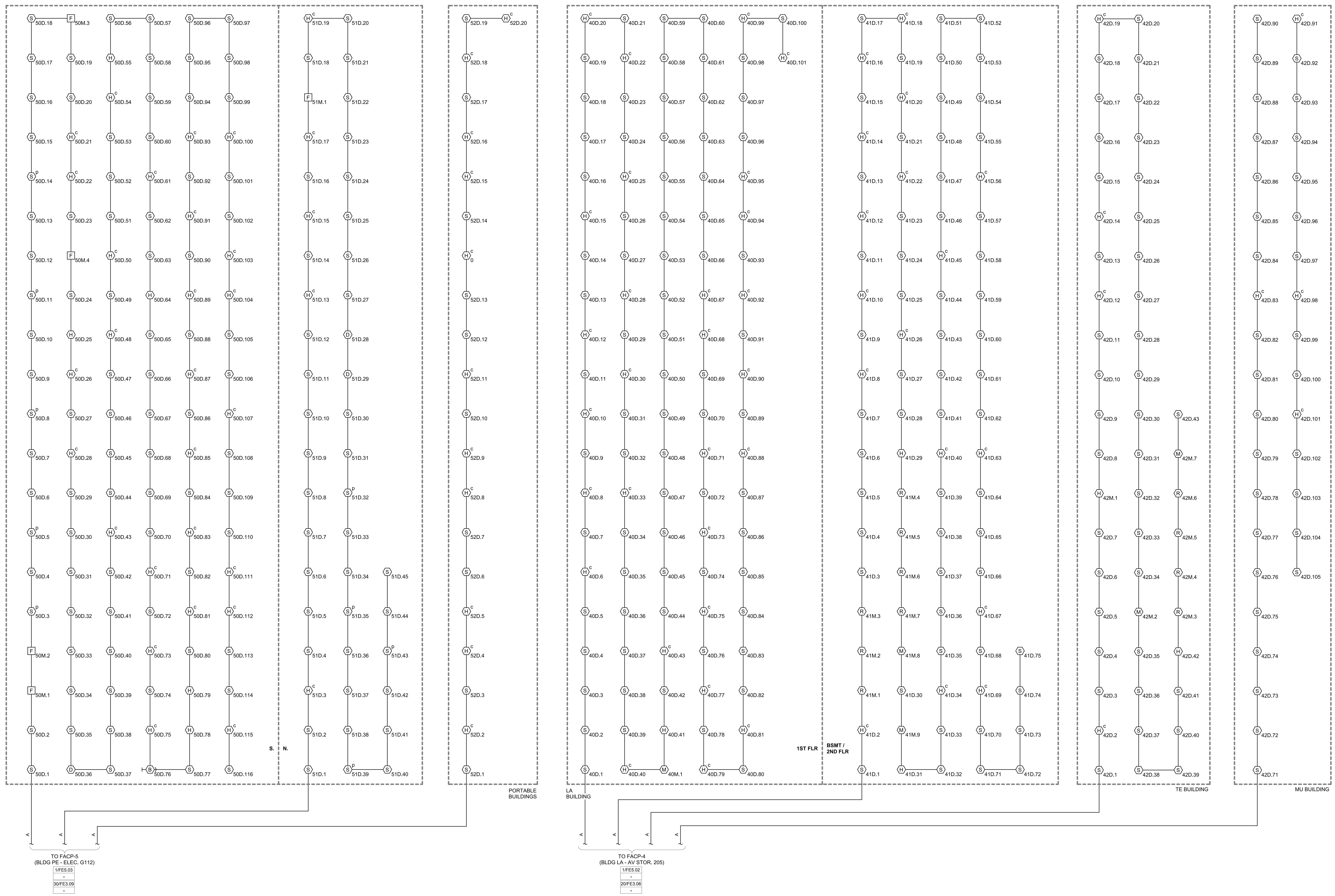

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Sheet Title
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VOLTAGE DROP CALCULATIONS: FAEP-2.3

SIGNAL CIRCUIT ID: NR1
TOTAL CKT CURRENT = 0.800 A
MAX VOLT-DROP = **3.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	35	25	30	36	25	31	26	38	47	42	10	27							5
Device Address->	SYNC	NR1-1	-2	NR1-3	NR1-4	NR1-5	NR1-6	NR1-7	NR1-8	NR1-9	NR1-10	NR1-11	NR1-12							EOL
Candella Rating->		30	15	75	15	30	30	30	30	75	15	15	30							
Current of Device (Amp)->	0.028	0.063	0.043	0.111	0.043	0.063	0.063	0.063	0.063	0.111	0.043	0.043	0.063							
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.800	0.772	0.709	0.666	0.555	0.512	0.449	0.386	0.323	0.260	0.149	0.106	0.063	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.08%	0.59%	0.92%	1.30%	1.68%	1.92%	2.18%	2.37%	2.61%	2.84%	2.96%	2.98%	3.01%	3.01%	3.01%	3.01%	3.01%	3.01%		
Device Volt->	20.38	20.28	20.21	20.13	20.06	20.01	19.95	19.92	19.87	19.82	19.80	19.79	19.79	19.79	19.79	19.79	19.79	19.79		

SIGNAL CIRCUIT ID: NR2
TOTAL CKT CURRENT = 0.754 A
MAX VOLT-DROP = **3.25%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	68	36	49	70	41	34	44	36	22										5
Device Address->	SYNC	NR2-1	NR2-2	NR2-3	NR2-4	NR2-5	NR2-6	NR2-7	NR2-8	NR2-9										EOL
Candella Rating->		15	75	75	110	15	30	75	15	15										
Current of Device (Amp)->	0.028	0.043	0.111	0.111	0.158	0.043	0.063	0.111	0.043	0.043										
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	0.754	0.726	0.683	0.572	0.461	0.303	0.260	0.197	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.07%	1.01%	1.47%	2.00%	2.61%	2.85%	3.01%	3.18%	3.24%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%		
Device Volt->	20.39	20.19	20.10	19.99	19.87	19.82	19.79	19.75	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74		

SIGNAL CIRCUIT ID: SP
TOTAL CKT CURRENT = 0.069 A
MAX VOLT-DROP = **0.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%		
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40		

SIGNAL CIRCUIT ID: SP
TOTAL CKT CURRENT = 0.069 A
MAX VOLT-DROP = **0.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%		
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40		

BATTERY CALCULATIONS: FAEP-2.3

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			0.075 A
REQUIRED (24 HOURS) =			1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NR1	0.800	1	0.800
CKT NR2	0.754	1	0.754
CKT SP	0.069	1	0.069
CKT SP	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			1.867 A
REQUIRED (15 MINUTES) =			0.467 AH
TOTAL BATTERY POWER REQUIRED AT 120% =			2.720
PROVIDE TWO, 12V, 9AH BATTERIES			

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

VOLTAGE DROP CALCULATIONS: FAEP-2.2

SIGNAL CIRCUIT ID: N25
TOTAL CKT CURRENT = 0.968 A
MAX VOLT-DROP = **5.19%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	35	65	36	40	51	56	22	24	22	67	93	54	35						5
Device Address->	SYNC	N25-1	N25-2	N25-3	N25-4	N25-5	N25-6	N25-7	N25-8	N25-9	N25-10	N25-11	N25-12	N25-13						EOL
Candella Rating->		75	15	15	15	15	15	110	15	15	110	15	15	15						
Current of Device (Amp)->	0.028	0.111	0.043	0.043	0.148	0.043	0.043	0.148	0.043	0.041	0.148	0.043	0.043	0.043						
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.968	0.940	0.829	0.786	0.743	0.595	0.552	0.509	0.361	0.318	0.277	0.129	0.086	0.043	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.09%	0.71%	1.73%	2.27%	2.83%	3.41%	3.99%	4.20%	4.37%	4.50%	4.85%	5.08%	5.16%	5.19%	5.19%	5.19%	5.19%	5.19%		
Device Volt->	20.38	20.25	20.05	19.94	19.82	19.71	19.59	19.54	19.51	19.48	19.41	19.36	19.35	19.34	19.34	19.34	19.34	19.34		

SIGNAL CIRCUIT ID: N26
TOTAL CKT CURRENT = 0.779 A
MAX VOLT-DROP = **4.63%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	95	30	51	52	27	36	27	32	36	45	34								5
Device Address->	SYNC	N26-1	N26-2	N26-3	N26-4	N25-5	N26-6	N26-7	N26-8	N26-9	N26-10	N26-11								EOL
Candella Rating->		15	15	15	15	75	15	15	15	15	110	15	110							
Current of Device (Amp)->	0.028	0.043	0.043	0.043	0.043	0.111	0.043	0.043	0.043	0.148	0.043	0.148								
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	0.779	0.751	0.708	0.665	0.622	0.579	0.468	0.425	0.382	0.339	0.191	0.148	0.000	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.07%	1.42%	1.83%	2.47%	3.08%	3.38%	3.69%	3.91%	4.14%	4.37%	4.54%	4.63%	4.63%	4.63%	4.63%	4.63%	4.63%	4.63%		
Device Volt->	20.38	20.11	20.03	19.90	19.77	19.71	19.65	19.60	19.55	19.51	19.47	19.46	19.46	19.46	19.46	19.46	19.46	19.46		

SIGNAL CIRCUIT ID: N27
TOTAL CKT CURRENT = 1.152 A
MAX VOLT-DROP = **5.51%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	80	27	40	54	25	57	33	51	36	0	0	0	32						5
Device Address->	SYNC	N27-1	N27-2	N27-3	N27-4	N27-5	N27-6	N27-7	N27-8	N27-9	N27-10	N27-11	N27-12	N27-13						EOL
Candella Rating->		110	15	110	110	15	110	15	110	15	15	15	15	15						
Current of Device (Amp)->	0.028	0.148	0.043	0.158	0.158	0.043	0.158	0.043	0.158	0.043	0.043	0.043	0.043	0.043						
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	1.152	1.124	0.976	0.933	0.775	0.617	0.574	0.416	0.373	0.215	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.11%	1.81%	2.31%	3.02%	3.81%	4.10%	4.72%	4.98%	5.34%	5.48%	5.48%	5.48%	5.48%	5.51%	5.51%	5.51%	5.51%	5.51%		
Device Volt->	20.38	20.03	19.93	19.78	19.62	19.56	19.44	19.38	19.31	19.28	19.28	19.28	19.28	19.28	19.28	19.28	19.28	19.28		

SIGNAL CIRCUIT ID: N28
TOTAL CKT CURRENT = 1.191 A
MAX VOLT-DROP = **5.79%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	95	33	38	35	51	28	49	32	58	37	30								5
Device Address->	SYNC	N28-1	N28-2	N28-3	N28-4	N28-5	N28-6	N28-7	N28-8	N28-9	N28-10	N28-11								EOL
Candella Rating->		110	110	15	110	110	15	110	15	110	15	15								
Current of Device (Amp)->	0.028	0.158	0.158	0.043	0.158	0.158	0.043	0.158	0.043	0.158	0.043	0.043								
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	1.191	1.163	1.005	0.847	0.804	0.646	0.488	0.445	0.287	0.244	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.11%	2.20%	2.83%	3.44%	3.97%	4.60%	4.85%	5.27%	5.44%	5.71%	5.77%	5.79%	5.79%	5.79%	5.79%	5.79%	5.79%	5.79%		
Device Volt->	20.38	19.95	19.82	19.70	19.59	19.46	19.41	19.33	19.29	19.24	19.22	19.22	19.22	19.22	19.22	19.22	19.22	19.22		

BATTERY CALCULATIONS: FAEP-2.2

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			0.075 A
REQUIRED (24 HOURS) =			1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT N25	0.968	1	0.968
CKT N26	0.779	1	0.779
CKT N27	1.152	1	1.152
CKT N28	1.191	1	1.191
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			4.265 A
REQUIRED (15 MINUTES) =			1.066 AH
TOTAL BATTERY POWER REQUIRED AT 120% =			3.440
PROVIDE TWO, 12V, 9AH BATTERIES			

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

VOLTAGE DROP CALCULATIONS: FAEP-2.1

SIGNAL CIRCUIT ID: N21
TOTAL CKT CURRENT = 1.289 A
MAX VOLT-DROP = **8.07%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	18	18	38	27	43	52	54	46	29	30	61	27	28	22	45	56	5		
Device Address->	SYNC	N21-1	N21-2	N21-3	N21-4	N21-5	N21-6	N21-7	N21-8	N21-9	N21-10	N21-11	N21-12	N21-13	N21-14	N21-15	N21-16	EOL		
Candella Rating->		15	15	30	15	15	110	15	15	110	110	15	110	15	15	15	110			
Current of Device (Amp)->	0.028	0.043	0.041	0.063	0.043	0.043	0.148	0.043	0.043	0.158	0.148	0.043	0.158	0.043	0.043	0.043	0.158			
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	1.289	1.261	1.218	1.177	1.114	1.071	1.028	0.880	0.837	0.794	0.636	0.488	0.445	0.287	0.244	0.201	0.158	0.000		
Device Volt-drop->	0.12%	0.55%	0.97%	1.81%	2.38%	3.25%	4.26%	5.16%	5.89%	6.33%	6.69%	7.25%	7.48%	7.63%	7.73%	7.90%	8.07%	8.07%		
Device Volt->	20.38	20.29	20.20	20.03	19.91	19.74	19.53	19.35	19.20	19.11	19.04	18.92	18.87	18.84	18.82	18.79	18.75	18.75		

SIGNAL CIRCUIT ID: N22
TOTAL CKT CURRENT = 1.435 A
MAX VOLT-DROP = **7.26%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	105	32	25	27	27	45	28	28	44	31	51	24	28	43			5		
Device Address->	SYNC	N22-1	N22-2	N22-3	N22-4	N22-5	N22-6	N22-7	N22-8	N22-9	N22-10	N22-11	N22-12	N22-13	N22-14			EOL		
Candella Rating->		110	15	110	110	110	15	110	110	110	15	15	15	15	15					
Current of Device (Amp)->	0.028	0.158	0.043	0.158	0.158	0.158	0.043	0.158	0.158	0.158	0.043	0.043	0.043	0.043	0.043					
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	1.435	1.407	1.249	1.206	1.048	0.890	0.732	0.689	0.531	0.373	0.215	0.172	0.129	0.086	0.043	0.000	0.000	0.000		
Device Volt-drop->	0.14%	2.93%	3.69%	4.26%	4.79%	5.25%	5.87%	6.24%	6.52%	6.83%	6.95%	7.12%	7.18%	7.22%	7.26%	7.26%	7.26%	7.26%		
Device Volt->	20.37	19.80	19.65	19.53	19.42	19.33	19.20	19.13	19.07	19.01	18.98	18.95	18.94	18.93	18.92	18.92	18.92	18.92		

SIGNAL CIRCUIT ID: N23
TOTAL CKT CURRENT = 0.707 A
MAX VOLT-DROP = **3.21%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	60	20	39	25	18	36	33	19	24	25	54	46	31				5		
Device Address->	SYNC	N23-1	N23-2	N23-3	N23-4	N23-5	N23-6	N23-7	N23-8	N23-9	N23-10	N23-11	N23-12	N23-13				EOL		
Candella Rating->		15	30	15	30	15	15	15	15	30	15	15	15	75						
Current of Device (Amp)->	0.028	0.043	0.063	0.043	0.063	0.041	0.043	0.041	0.041	0.063	0.041	0.043	0.043	0.111						
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	0.707	0.679	0.616	0.573	0.530	0.467	0.426	0.383	0.342	0.301	0.238	0.197	0.154	0.111	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.07%	0.84%	1.08%	1.50%	1.75%	1.91%	2.20%	2.44%	2.56%	2.70%	2.81%	3.01%	3.15%	3.21%	3.21%	3.21%	3.21%	3.21%		
Device Volt->	20.39	20.23	20.18	20.09	20.04	20.01	19.95	19.90	19.88	19.85	19.83	19.79	19.76	19.74	19.74	19.74	19.74	19.74		

SIGNAL CIRCUIT ID: N24
TOTAL CKT CURRENT = 0.674 A
MAX VOLT-DROP = **3.37%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	135	38	50	40	24	44	36										5		
Device Address->	SYNC	N24-1	N24-2	N24-3	N24-4	N24-5	N24-6	N24-7										EOL		
Candella Rating->		15	15	110	110	15	15	110												
Current of Device (Amp)->	0.028	0.043	0.043	0.158	0.158	0.043	0.043	0.158												
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12		
Current Total (Amp)->	0.674	0.646	0.603	0.560	0.402	0.244	0.201	0.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Device Volt-drop->	0.06%	1.71%	2.15%	2.68%	2.98%	3.09%	3.26%	3.37%	3.37%	3.37%	3.37%	3.37%	3.37%	3.37%	3.37%	3.37%	3.37%	3.37%		
Device Volt->	20.39	20.05	19.96	19.85	19.79	19.77	19.74	19.71	19.71	19.71	19.71	19.71	19.71	19.71	19.71	19.71	19.71	19.71		

BATTERY CALCULATIONS: FAEP-2.1

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			0.075 A
REQUIRED (24 HOURS) =			1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT N21	1.289	1	1.289
CKT N22	1.435	1	1.435
CKT N23	0.707	1	0.707
CKT N24	0.674	1	0.674
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			4.280 A
REQUIRED (15 MINUTES) =			1.070 AH
TOTAL BATTERY POWER REQUIRED AT 120% =			3.444
PROVIDE TWO, 12V, 9AH BATTERIES			

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

NOT FOR CONSTRUCTION

DSA SUBMITTAL

O'MAHONY & MYER
ELECTRICAL ENGINEERING & LIGHTING DESIGN
4340 REDWOOD HWY., SUITE 245
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Exp. 6/25
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STATE OF CALIFORNIA

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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
CALCULATIONS - FIRE ALARM

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE6.01
Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

Autodesk Docs://223031-San Rafael High School FA Upgrade/223031_SRHS_Fire Alarm_R23.rvt 10/30/2023 1:37:17 PM

VOLTAGE DROP CALCULATIONS: FAEP-4.2

SIGNAL CIRCUIT ID: NA5
TOTAL CKT CURRENT = 0.885 A
MAX VOLT-DROP = **4.11%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	45	53	27	58	40	16	35	13	40	37	41						5
Device Address->	SYNC	NA5-1	NA5-2	NA5-3	NA5-4	NA5-5	NA5-6	NA5-7	NA5-8	NA5-9	NA5-10	NA5-11						EOL
Candella Rating->		15	75	15	75	75	15	15	15	75	75	75						
Current of Device (Amp)->	0.028	0.043	0.107	0.043	0.107	0.107	0.043	0.043	0.043	0.107	0.107	0.107						
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.885	0.857	0.814	0.707	0.664	0.557	0.450	0.407	0.364	0.321	0.214	0.107	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.08%	0.81%	1.63%	1.99%	2.72%	3.14%	3.28%	3.55%	3.64%	3.88%	4.03%	4.11%	4.11%	4.11%	4.11%	4.11%	4.11%	4.11%
Device Volt->	20.38	20.23	20.07	19.99	19.85	19.76	19.73	19.68	19.66	19.61	19.58	19.56	19.56	19.56	19.56	19.56	19.56	19.56

SIGNAL CIRCUIT ID: NA6
TOTAL CKT CURRENT = 0.990 A
MAX VOLT-DROP = **3.80%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	37	12	43	38	40	34	14	36	14	52	40	40					5
Device Address->	SYNC	NA6-1	NA6-2	NA6-3	NA6-4	NA6-5	NA6-6	NA6-7	NA6-8	NA6-9	NA6-10	NA6-11	NA6-12					EOL
Candella Rating->		75	15	75	75	75	75	15	15	15	75	75	75					
Current of Device (Amp)->	0.028	0.107	0.043	0.107	0.107	0.107	0.107	0.043	0.043	0.043	0.041	0.107	0.107					
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.990	0.962	0.855	0.812	0.705	0.598	0.491	0.384	0.341	0.298	0.255	0.214	0.107	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.09%	0.77%	0.96%	1.62%	2.13%	2.58%	2.90%	3.00%	3.23%	3.31%	3.56%	3.72%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%
Device Volt->	20.38	20.24	20.20	20.07	19.97	19.87	19.81	19.79	19.74	19.72	19.67	19.64	19.62	19.62	19.62	19.62	19.62	19.62

SIGNAL CIRCUIT ID: SP
TOTAL CKT CURRENT = 0.069 A
MAX VOLT-DROP = **0.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5																	5
Device Address->	SYNC																	EOL
Candella Rating->																		
Current of Device (Amp)->	0.028	0.041																
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

SIGNAL CIRCUIT ID: SP
TOTAL CKT CURRENT = 0.069 A
MAX VOLT-DROP = **0.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5																	5
Device Address->	SYNC																	EOL
Candella Rating->																		
Current of Device (Amp)->	0.028	0.041																
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

BATTERY CALCULATIONS: FAEP-4.2

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075

TOTAL STANDBY CURRENT = 0.075 A
REQUIRED (24 HOURS) = 1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NA5	0.885	1	0.885
CKT NA6	0.990	1	0.990
CKT SP	0.069	1	0.069
CKT SP	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175

TOTAL STANDBY CURRENT = 2.188 A
REQUIRED (15 MINUTES) = 0.547 AH

TOTAL BATTERY POWER REQUIRED AT 120% = 2.816
PROVIDE TWO, 12V, 9AH BATTERIES

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

VOLTAGE DROP CALCULATIONS: FAEP-4.1

SIGNAL CIRCUIT ID: NA1
TOTAL CKT CURRENT = 1.370 A
MAX VOLT-DROP = **5.97%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	25	14	10	33	27	55	24	49	129	28	42	43	13	43			5
Device Address->	SYNC	NA1-1	NA1-2	NA1-3	NA1-4	NA1-5	NA1-6	NA1-7	NA1-8	NA1-9	NA1-10	NA1-11	NA1-12	NA1-13	NA1-14			EOL
Candella Rating->		15	110	110	15	75	110	75	110	15	75	75	75	15	15			
Current of Device (Amp)->	0.028	0.043	0.148	0.148	0.043	0.107	0.148	0.107	0.148	0.043	0.107	0.107	0.107	0.043	0.043			
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	1.370	1.342	1.299	1.151	1.003	0.960	0.853	0.705	0.598	0.450	0.407	0.300	0.193	0.086	0.043	0.000	0.000	0.000
Device Volt-drop->	0.13%	0.76%	1.11%	1.33%	1.95%	2.44%	3.33%	3.65%	4.21%	5.30%	5.52%	5.76%	5.91%	5.94%	5.97%	5.97%	5.97%	5.97%
Device Volt->	20.37	20.24	20.17	20.13	20.00	19.90	19.72	19.66	19.54	19.32	19.27	19.23	19.19	19.19	19.18	19.18	19.18	19.18

SIGNAL CIRCUIT ID: NA2
TOTAL CKT CURRENT = 1.343 A
MAX VOLT-DROP = **7.35%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	15	34	37	44	64	16	44	85	72	13	61	12					5
Device Address->	SYNC	NA2-1	NA2-2	NA2-3	NA2-4	NA2-5	NA2-6	NA2-7	NA2-8	NA2-9	NA2-10	NA2-11	NA2-12					EOL
Candella Rating->		15	15	75	15	110	110	110	110	110	110	110	15					
Current of Device (Amp)->	0.028	0.043	0.043	0.107	0.043	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.043					
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	1.343	1.315	1.272	1.229	1.122	1.079	0.931	0.783	0.635	0.487	0.339	0.191	0.043	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.13%	0.50%	1.32%	2.18%	3.11%	4.42%	4.70%	5.35%	6.37%	7.04%	7.12%	7.34%	7.35%	7.35%	7.35%	7.35%	7.35%	7.35%
Device Volt->	20.37	20.30	20.13	19.96	19.76	19.50	19.44	19.31	19.10	18.96	18.95	18.90	18.90	18.90	18.90	18.90	18.90	18.90

SIGNAL CIRCUIT ID: NA3
TOTAL CKT CURRENT = 1.390 A
MAX VOLT-DROP = **8.89%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	48	56	41	26	39	36	36	51	47	25	40	35	56	47	28		5
Device Address->	SYNC	NA3-1	NA3-2	NA3-3	NA3-4	NA3-5	NA3-6	NA3-7	NA3-8	NA3-9	NA3-10	NA3-11	NA3-12	NA3-13	NA3-14	NA3-15		EOL
Candella Rating->		15	75	15	110	110	15	110	75	15	75	15	15	15	110	110		
Current of Device (Amp)->	0.028	0.043	0.107	0.043	0.148	0.148	0.043	0.148	0.107	0.043	0.107	0.043	0.043	0.043	0.148	0.148		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	1.390	1.362	1.319	1.212	1.169	1.021	0.873	0.830	0.682	0.575	0.532	0.425	0.382	0.339	0.296	0.148	0.000	0.000
Device Volt-drop->	0.13%	1.37%	2.77%	3.71%	4.28%	5.03%	5.63%	6.19%	6.85%	7.36%	7.62%	7.94%	8.19%	8.55%	8.81%	8.89%	8.89%	8.89%
Device Volt->	20.37	20.12	19.84	19.64	19.53	19.37	19.25	19.14	19.00	18.90	18.85	18.78	18.73	18.66	18.60	18.59	18.59	18.59

SIGNAL CIRCUIT ID: NA4
TOTAL CKT CURRENT = 0.733 A
MAX VOLT-DROP = **3.10%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	55	39	43	113	57	59	23										5
Device Address->	SYNC	NA4-1	NA4-2	NA4-3	NA4-4	NA4-5	NA4-6	NA4-7										EOL
Candella Rating->		75	75	75	30	75	75	75										
Current of Device (Amp)->	0.028	0.107	0.107	0.107	0.063	0.107	0.107	0.107										
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.733	0.705	0.598	0.491	0.384	0.321	0.214	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.07%	0.80%	1.24%	1.64%	2.46%	2.81%	3.05%	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%	3.10%
Device Volt->	20.39	20.24	20.15	20.06	19.90	19.83	19.78	19.77	19.77	19.77	19.77	19.77	19.77	19.77	19.77	19.77	19.77	19.77

BATTERY CALCULATIONS: FAEP-4.1

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075

TOTAL STANDBY CURRENT = 0.075 A
REQUIRED (24 HOURS) = 1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NA1	1.370	1	1.370
CKT NA2	1.343	1	1.343
CKT NA3	1.390	1	1.390
CKT NA4	0.733	1	0.733
FAEP CTRL UNIT:	0.175	1	0.175

TOTAL STANDBY CURRENT = 5.011 A
REQUIRED (15 MINUTES) = 1.253 AH

TOTAL BATTERY POWER REQUIRED AT 120% = 3.663
PROVIDE TWO, 12V, 9AH BATTERIES

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

VOLTAGE DROP CALCULATIONS: FAEP-3

SIGNAL CIRCUIT ID: NC1
TOTAL CKT CURRENT = 0.444 A
MAX VOLT-DROP = **1.18%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	12	47	71	23	52	30	18										5
Device Address->	SYNC	NC1-1	NC1-2	NC1-3	NC1-4	NC1-5	NC1-6	NC1-7										EOL
Candella Rating->		15	15	110	15	15	15	15										
Current of Device (Amp)->	0.028	0.043	0.043	0.158	0.043	0.043	0.043	0.043										
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.444	0.416	0.373	0.330	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.04%	0.14%	0.47%	0.91%	0.99%	1.11%	1.16%	1.18%	1.18%	1.18%	1.18%	1.18%	1.18%	1.18%	1.18%	1.18%	1.18%	1.18%
Device Volt->	20.39	20.37	20.30	20.21	20.20	20.17	20.16	20.16	20.16	20.16	20.16	20.16	20.16	20.16	20.16	20.16	20.16	20.16

SIGNAL CIRCUIT ID: NC2
TOTAL CKT CURRENT = 1.148 A
MAX VOLT-DROP = **5.94%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5	95	33	39	27	39	37	53	60	54	50							5
Device Address->	SYNC	NC2-1	NC2-2	NC2-3	NC2-4	NC2-5	NC2-6	NC2-7	NC2-8	NC2-9	NC2-10							EOL
Candella Rating->		110	15	15	110	110	110	15	110	15	110							
Current of Device (Amp)->	0.028	0.158	0.043	0.043	0.158	0.158	0.158	0.043	0.158	0.043	0.158							
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	1.148	1.120	0.962	0.919	0.876	0.718	0.560	0.402	0.359	0.201	0.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.11%	2.12%	2.72%	3.40%	3.85%	4.38%	4.77%	5.17%	5.58%	5.79%	5.94%	5.94%	5.94%	5.94%	5.94%	5.94%	5.94%	5.94%
Device Volt->	20.38	19.97	19.84	19.71	19.61	19.51	19.43	19.34	19.26	19.22	19.19	19.19	19.19	19.19	19.19	19.19	19.19	19.19

SIGNAL CIRCUIT ID: SP
TOTAL CKT CURRENT = 0.069 A
MAX VOLT-DROP = **0.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5																	5
Device Address->	SYNC																	EOL
Candella Rating->																		
Current of Device (Amp)->	0.028	0.041																
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

SIGNAL CIRCUIT ID: SP
TOTAL CKT CURRENT = 0.069 A
MAX VOLT-DROP = **0.01%**
SYSTEM VOLTAGE = 20.4

Distance to Device (Ft)->	5																	5
Device Address->	SYNC																	EOL
Candella Rating->																		
Current of Device (Amp)->	0.028	0.041																
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

BATTERY CALCULATIONS: FAEP-3

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075

TOTAL STANDBY CURRENT = 0.075 A
REQUIRED (24 HOURS) = 1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NC1	0.444	1	0.444
CKT NC2	1.148	1	1.148
CKT SP	0.069	1	0.069
CKT SP	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175

TOTAL STANDBY CURRENT = 1.905 A
REQUIRED (15 MINUTES) = 0.476 AH

TOTAL BATTERY POWER REQUIRED AT 120% = 2.732
PROVIDE TWO, 12V, 9AH BATTERIES

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

NOT FOR CONSTRUCTION

DSA SUBMITTAL

O'MAHONY & MYER
ELECTRICAL ENGINEERING & LIGHTING DESIGN
4340 REDWOOD HWY., SUITE 245
SAN RAFAEL, CALIFORNIA 94903
(415) 492-0420/FAX (415) 479-9662

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REGISTERED PROFESSIONAL ENGINEER
PIERRE A. COLENSO
No.E14738
Exp. 6/25
ELECTRICAL
STATE OF CALIFORNIA

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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
CALCULATIONS - FIRE ALARM

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE6.02

Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

Autodesk Docs://223031-San Rafael High School FA Upgrade/223031_SRHS_Fire Alarm_R23.rvt 10/30/2023 1:37:19 PM

VOLTAGE DROP CALCULATIONS: FAEP-5.1

SIGNAL CIRCUIT ID:	NP1																		
TOTAL CKT CURRENT =	1.236 A																		
MAX VOLT-DROP =	7.74%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	42	53	87	91	137	91	21	26	0	39	63							5
Device Address->	SYNC	NP1-1	NP1-2	NP1-3	NP1-4	NP1-5	NP1-6	NP1-7	NP1-8	NP1-9	NP1-10	NP1-11							EOL
Candella Rating->		110	110	110	110	110	110	15	15	110	15	15							
Current of Device (Amp)->	0.028	0.148	0.148	0.148	0.148	0.148	0.148	0.043	0.043	0.148	0.043	0.043							
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	1.236	1.208	1.060	0.912	0.764	0.616	0.468	0.320	0.277	0.234	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.12%	1.08%	2.14%	3.64%	4.96%	6.55%	7.36%	7.49%	7.62%	7.62%	7.69%	7.74%	7.74%	7.74%	7.74%	7.74%	7.74%	7.74%	
Device Volt->	20.38	20.18	19.96	19.66	19.39	19.06	18.90	18.87	18.84	18.84	18.83	18.82	18.82	18.82	18.82	18.82	18.82	18.82	

SIGNAL CIRCUIT ID:	NP2																		
TOTAL CKT CURRENT =	0.635 A																		
MAX VOLT-DROP =	2.06%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	18	40	19	75	105	47	18	16	19									5
Device Address->	SYNC	NP2-1	NP2-2	NP2-3	NP2-4	NP2-5	NP2-6	NP2-7	NP2-8	NP2-9									EOL
Candella Rating->		15	15	110	110	15	15	15	15	15									
Current of Device (Amp)->	0.028	0.043	0.043	0.158	0.148	0.043	0.043	0.043	0.043	0.043									
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.635	0.607	0.564	0.521	0.363	0.215	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.06%	0.27%	0.69%	0.88%	1.40%	1.82%	1.98%	2.02%	2.05%	2.06%	2.06%	2.06%	2.06%	2.06%	2.06%	2.06%	2.06%	2.06%	
Device Volt->	20.39	20.35	20.26	20.22	20.12	20.03	20.00	19.99	19.98	19.98	19.98	19.98	19.98	19.98	19.98	19.98	19.98	19.98	

SIGNAL CIRCUIT ID:	NP3																		
TOTAL CKT CURRENT =	0.645 A																		
MAX VOLT-DROP =	2.09%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	32	19	45	23	24	63	22	11	27	64	20	24						5
Device Address->	SYNC	NP3-1	NP3-2	NP3-3	NP3-4	NP3-5	NP3-6	NP3-7	NP3-8	NP3-9	NP3-10	NP3-11	NP3-12						EOL
Candella Rating->		110	15	15	15	15	15	15	15	15	15	15	15						
Current of Device (Amp)->	0.028	0.148	0.043	0.043	0.043	0.041	0.043	0.043	0.043	0.043	0.041	0.043	0.043						
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.645	0.617	0.469	0.426	0.383	0.340	0.299	0.256	0.213	0.170	0.127	0.086	0.043	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.06%	0.43%	0.60%	0.97%	1.13%	1.29%	1.64%	1.75%	1.79%	1.88%	2.03%	2.07%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	
Device Volt->	20.39	20.31	20.28	20.20	20.17	20.14	20.06	20.04	20.03	20.02	19.98	19.98	19.97	19.97	19.97	19.97	19.97	19.97	

SIGNAL CIRCUIT ID:	NP4																		
TOTAL CKT CURRENT =	0.888 A																		
MAX VOLT-DROP =	6.21%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	125	27	28	36	69	43	66	28	29	28	37	95	75	39				5
Device Address->	SYNC	NP4-1	NP4-2	NP4-3	NP6-3	NP6-4	NP4-6	NP4-7	NP4-8	NP4-9	NP4-10	NP4-11	NP4-12	NP4-13	NP4-14				EOL
Candella Rating->		15	75	75	15	15	15	15	15	15	75	75	15	15	15				
Current of Device (Amp)->	0.028	0.041	0.111	0.111	0.043	0.043	0.043	0.043	0.041	0.041	0.107	0.107	0.043	0.043	0.043				
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.888	0.860	0.819	0.708	0.597	0.554	0.511	0.468	0.425	0.384	0.343	0.236	0.129	0.086	0.043	0.000	0.000	0.000	
Device Volt-drop->	0.08%	2.12%	2.54%	2.91%	3.32%	4.04%	4.46%	5.04%	5.27%	5.48%	5.66%	5.82%	6.06%	6.18%	6.21%	6.21%	6.21%	6.21%	
Device Volt->	20.38	19.97	19.88	19.81	19.72	19.58	19.49	19.37	19.33	19.28	19.25	19.21	19.16	19.14	19.13	19.13	19.13	19.13	

BATTERY CALCULATIONS: FAEP-5.1

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			0.075 A
REQUIRED (24 HOURS) =			1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NP1	1.236	1	1.236
CKT NP2	0.635	1	0.635
CKT NP3	0.645	1	0.645
CKT NP4	0.888	1	0.888
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			3.579 A
REQUIRED (15 MINUTES) =			0.895 AH
TOTAL BATTERY POWER REQUIRED AT 120% =			3.234
PROVIDE TWO, 12V, 9AH BATTERIES			

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

VOLTAGE DROP CALCULATIONS: FAEP-4.4

SIGNAL CIRCUIT ID:	NJ1																		
TOTAL CKT CURRENT =	0.200 A																		
MAX VOLT-DROP =	0.34%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	25	69	31	22														5
Device Address->	SYNC	NJ1-1	NJ1-2	NJ1-3	NJ1-4														EOL
Candella Rating->		15	15	15	15														
Current of Device (Amp)->	0.028	0.043	0.043	0.043	0.043														
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.200	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.02%	0.10%	0.27%	0.32%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	0.34%	
Device Volt->	20.40	20.38	20.35	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	20.33	

SIGNAL CIRCUIT ID:	NJ2																		
TOTAL CKT CURRENT =	0.627 A																		
MAX VOLT-DROP =	2.65%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	65	30	31	27	16	10	17	16	40	73	39	17	17					5
Device Address->	SYNC	NJ2-1	NJ2-2	NJ2-3	NJ2-4	NJ2-5	NJ2-6	NJ2-7	NJ2-8	NJ2-9	NJ2-10	NJ2-11	NJ2-12	NJ2-13					EOL
Candella Rating->		15	15	15	15	15	15	15	15	30	30	15	15	15					
Current of Device (Amp)->	0.028	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.063	0.063	0.043	0.043	0.043					
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.627	0.599	0.556	0.513	0.470	0.427	0.384	0.341	0.298	0.255	0.192	0.129	0.086	0.043	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.06%	0.80%	1.11%	1.41%	1.65%	1.78%	1.85%	1.96%	2.05%	2.25%	2.51%	2.61%	2.64%	2.65%	2.65%	2.65%	2.65%	2.65%	
Device Volt->	20.39	20.24	20.17	20.11	20.06	20.04	20.02	20.00	19.98	19.94	19.89	19.87	19.86	19.86	19.86	19.86	19.86	19.86	

SIGNAL CIRCUIT ID:	SP																		
TOTAL CKT CURRENT =	0.069 A																		
MAX VOLT-DROP =	0.01%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5																		5
Device Address->	SYNC																		EOL
Candella Rating->																			
Current of Device (Amp)->	0.028	0.041																	
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	

SIGNAL CIRCUIT ID:	SP																		
TOTAL CKT CURRENT =	0.069 A																		
MAX VOLT-DROP =	0.01%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5																		5
Device Address->	SYNC																		EOL
Candella Rating->																			
Current of Device (Amp)->	0.028	0.041																	
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	

BATTERY CALCULATIONS: FAEP-4.4

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			0.075 A
REQUIRED (24 HOURS) =			1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NJ1	0.200	1	0.200
CKT NJ2	0.627	1	0.627
CKT SP	0.069	1	0.069
CKT SP	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			1.140 A
REQUIRED (15 MINUTES) =			0.285 AH
TOTAL BATTERY POWER REQUIRED AT 120% =			2.502
PROVIDE TWO, 12V, 9AH BATTERIES			

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

VOLTAGE DROP CALCULATIONS: FAEP-4.3

SIGNAL CIRCUIT ID:	NG1																		
TOTAL CKT CURRENT =	0.770 A																		
MAX VOLT-DROP =	2.79%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	45	34	42	47	44	20	31	34	30	34	29							5
Device Address->	SYNC	NG1-1	NG1-2	NG1-3	NG1-4	NG1-5	NG1-6	NG1-7	NG1-8	NG1-9	NG1-10	NG1-11							EOL
Candella Rating->		15	75	110	75	15	15	15	30	15	15	15							
Current of Device (Amp)->	0.028	0.043	0.111	0.158	0.111	0.043	0.041	0.043	0.063	0.043	0.043	0.043							
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.770	0.742	0.699	0.588	0.430	0.319	0.276	0.235	0.192	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.07%	0.70%	1.15%	1.62%	2.00%	2.27%	2.37%	2.51%	2.64%	2.71%	2.76%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	2.79%	
Device Volt->	20.39	20.26	20.16	20.07	19.99	19.94	19.92	19.89	19.86	19.85	19.84	19.83	19.83	19.83	19.83	19.83	19.83	19.83	

SIGNAL CIRCUIT ID:	NG2																		
TOTAL CKT CURRENT =	0.627 A																		
MAX VOLT-DROP =	2.09%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5	15	45	36	24	69	37	32	18										5
Device Address->	SYNC	NG2-1	NG2-2	NG2-3	NG2-4	NG2-5	NG1-6	NG2-7	NG2-8										EOL
Candella Rating->		15	30	15	15	110	75	15	75										
Current of Device (Amp)->	0.028	0.043	0.063	0.043	0.041	0.148	0.111	0.043	0.107										
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.627	0.599	0.556	0.493	0.450	0.409	0.261	0.150	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.06%	0.23%	0.70%	1.04%	1.24%	1.78%	1.96%	2.05%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	
Device Volt->	20.39	20.35	20.26	20.19	20.15	20.04	20.00	19.98	19.97	19.97	19.97	19.97	19.97	19.97	19.97	19.97	19.97	19.97	

SIGNAL CIRCUIT ID:	SP																		
TOTAL CKT CURRENT =	0.069 A																		
MAX VOLT-DROP =	0.01%																		
SYSTEM VOLTAGE =	20.4																		
Distance to Device (Ft)->	5																		5
Device Address->	SYNC																		EOL
Candella Rating->																			
Current of Device (Amp)->	0.028	0.041																	
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	

BATTERY CALCULATIONS: FAEP-4.3

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			0.075 A
REQUIRED (24 HOURS) =			1.800 AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NG1	0.770	1	0.770
CKT NG2	0.627	1	0.627
CKT SP	0.069	1	0.069
CKT SP	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			1.710 A
REQUIRED (15 MINUTES) =			0.428 AH
TOTAL BATTERY POWER REQUIRED AT 120% =			2.673
PROVIDE TWO, 12V, 9AH BATTERIES			

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

NOT FOR CONSTRUCTION

DSA SUBMITTAL

O'MAHONY & MYER
ELECTRICAL ENGINEERING & LIGHTING DESIGN
43463 REDWOOD HWY, SUITE 245
SAN RAFAEL, CALIFORNIA 94903
(415) 492-0420/FAX (415) 479-9662

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REGISTERED PROFESSIONAL ENGINEER
PATRICK J. COLENSO
No.E14738
Exp. 6/23
ELECTRICAL
STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
Oakland, CA 94612
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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
CALCULATIONS - FIRE ALARM

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE6.03
Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

Autodesk Docs://223031-San Rafael High School FA Upgrade/223031_SRHS_Fire Alarm_R23.rvt 10/30/2023 1:37:20 PM

VOLTAGE DROP CALCULATIONS: FAEP-6.1

SIGNAL CIRCUIT ID:	N61																			
TOTAL CKT CURRENT =	0.286 A																			
MAX VOLT-DROP =	**0.85%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5	60	88	26	13	22	19													5
Device Address->	SYNC	N61-1	N61-2	N61-3	N61-4	N61-5	N61-6													EOL
Candella Rating->		15	15	15	15	15	15													
Current of Device (Amp)->	0.028	0.043	0.043	0.043	0.043	0.043	0.043													
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.286	0.258	0.215	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.03%	0.32%	0.68%	0.76%	0.79%	0.83%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%
Device Volt->	20.39	20.33	20.26	20.24	20.24	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23	20.23

SIGNAL CIRCUIT ID:																				
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

SIGNAL CIRCUIT ID:																				
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

SIGNAL CIRCUIT ID:																				
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

BATTERY CALCULATIONS: FAEP-6.1

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			**0.075** A
REQUIRED (24 HOURS) =			**1.800** AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT N61	0.286	1	0.286
CKT	0.069	1	0.069
CKT	0.069	1	0.069
CKT	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			**0.668** A
REQUIRED (15 MINUTES) =			**0.167** AH
TOTAL BATTERY POWER REQUIRED AT 120% =			**2.360**

PROVIDE TWO, 12V, 9AH BATTERIES

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

1

VOLTAGE DROP CALCULATIONS: FAEP-5.3

SIGNAL CIRCUIT ID:	N59																			
TOTAL CKT CURRENT =	0.768 A																			
MAX VOLT-DROP =	**2.21%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5	40	36	36	137	36														5
Device Address->	SYNC	N59-1	N59-2	N59-3	N59-4	N59-5														EOL
Candella Rating->		110	110	110	110	110														
Current of Device (Amp)->	0.028	0.148	0.148	0.148	0.148	0.148														
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.768	0.740	0.592	0.444	0.296	0.148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.07%	0.63%	1.04%	1.34%	2.11%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%	2.21%
Device Volt->	20.39	20.27	20.19	20.13	19.97	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95	19.95

SIGNAL CIRCUIT ID:																				
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

SIGNAL CIRCUIT ID:																				
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

BATTERY CALCULATIONS: FAEP-5.3

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			**0.075** A
REQUIRED (24 HOURS) =			**1.800** AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT N59	0.768	1	0.768
CKT	0.069	1	0.069
CKT	0.069	1	0.069
CKT	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			**1.150** A
REQUIRED (15 MINUTES) =			**0.288** AH
TOTAL BATTERY POWER REQUIRED AT 120% =			**2.505**

PROVIDE TWO, 12V, 9AH BATTERIES

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

1

VOLTAGE DROP CALCULATIONS: FAEP-5.2

SIGNAL CIRCUIT ID:	NP5																			
TOTAL CKT CURRENT =	0.551 A																			
MAX VOLT-DROP =	**3.22%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5	205	44	70	26	16	11	35	19	70										5
Device Address->	SYNC	NP5-1	NP5-2	NP5-3	NP5-4	NP5-5	NP5-6	NP5-7	NP5-8	NP5-9										EOL
Candella Rating->		75	75	15	15	15	15	15	15	15										
Current of Device (Amp)->	0.028	0.111	0.111	0.043	0.043	0.043	0.043	0.043	0.043	0.043										
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.551	0.523	0.412	0.301	0.258	0.215	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.05%	2.08%	2.42%	2.82%	2.95%	3.01%	3.05%	3.14%	3.17%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%
Device Volt->	20.39	19.98	19.91	19.82	19.80	19.79	19.78	19.76	19.75	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74	19.74

SIGNAL CIRCUIT ID:	NP6																			
TOTAL CKT CURRENT =	1.007 A																			
MAX VOLT-DROP =	10.40%																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5	185	24	36	69	115	23	110	45	110	23	57	33	45						5
Device Address->	SYNC	NP6-1	NP6-2	NP6-3	NP6-4	NP6-5	NP6-6	NP6-7	NP6-8	NP6-9	NP6-10	NP6-11	NP6-12	NP6-13						EOL
Candella Rating->		15	15	15	15	15	110	110	110	110	15	15	15	15						
Current of Device (Amp)->	0.028	0.043	0.043	0.043	0.043	0.043	0.148	0.148	0.148	0.148	0.043	0.043	0.043	0.043						
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	1.007	0.979	0.936	0.893	0.850	0.807	0.764	0.616	0.468	0.320	0.172	0.129	0.086	0.043	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.10%	3.52%	3.95%	4.56%	5.67%	7.42%	7.75%	9.04%	9.43%	10.10%	10.18%	10.31%	10.37%	10.40%	10.40%	10.40%	10.40%	10.40%	10.40%	10.40%
Device Volt->	20.38	19.68	19.59	19.47	19.24	18.89	18.82	18.56	18.48	18.34	18.32	18.30	18.28	18.28	18.28	18.28	18.28	18.28	18.28	18.28

SIGNAL CIRCUIT ID:	SP																			
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

SIGNAL CIRCUIT ID:	SP																			
TOTAL CKT CURRENT =	0.069 A																			
MAX VOLT-DROP =	**0.01%**																			
SYSTEM VOLTAGE =	20.4																			
Distance to Device (Ft)->	5																			5
Device Address->	SYNC																			EOL
Candella Rating->																				
Current of Device (Amp)->	0.028	0.041																		
Size of Wire (AWG)->	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12	#12
Current Total (Amp)->	0.069	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Device Volt-drop->	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Device Volt->	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40	20.40

BATTERY CALCULATIONS: FAEP-5.2

STANDBY MODE:

	EA (A)	QTY	CURRENT
FAEP CTRL UNIT:	0.075	1	0.075
TOTAL STANDBY CURRENT =			**0.075** A
REQUIRED (24 HOURS) =			**1.800** AH

ALARM MODE:

	EA (A)	QTY	CURRENT
CKT NP5	0.551	1	0.551
CKT NP6	1.007	1	1.007
CKT SP	0.069	1	0.069
CKT SP	0.069	1	0.069
FAEP CTRL UNIT:	0.175	1	0.175
TOTAL STANDBY CURRENT =			**1.871** A
REQUIRED (15 MINUTES) =			**0.468** AH
TOTAL BATTERY POWER REQUIRED AT 120% =			**2.721**

PROVIDE TWO, 12V, 9AH BATTERIES

VOLTAGE DROP FORMULAS:

2L x I x R = **Vd**

Vd / VDC = Vd%
Vd = Max Voltage Drop (Volts DC)
L = Circuit length, one-way (ft)
I = Current (amps)
R = Resistance (ohms/1000ft)
VDC = System Battery Voltage (Volts)

CONDUCTOR RESISTANCE:

AWG		Ohms/1000ft (R)
#10	=	1.21
#12	=	1.93

NOTE: WHERE DEVICE TERMINALS ARE LISTED AT MAXIMUM #12AWG, PROVIDE WIRE NUT CONNECTION AT SPECIFIED WIRE SIZE, WITH #12 PIGTAIL CONNECTION TO TERMINALS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

NOT FOR CONSTRUCTION

DSA SUBMITTAL

O'MAHONY & MYER
ELECTRICAL ENGINEERING & LIGHTING DESIGN
4340 REDWOOD HWY., SUITE 245
SAN RAFAEL, CALIFORNIA 94903
(415) 492-0420/FAX (415) 479-9662

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REGISTERED PROFESSIONAL ENGINEER
PIERRE J. COLENBRANDER
No.E14738
Exp. 6/25
ELECTRICAL
STATE OF CALIFORNIA

HIBSER YAMAUCHI Architects, Inc.
300 – 27th Street
Oakland, CA 94612
510.446.2222 tel ¦ 510.446.2211 fax

HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
CALCULATIONS - FIRE ALARM

Client Project Number:

Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE6.04
Sheet of

GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

Autodesk Docs://223031-San Rafael High School FA Upgrade/223031_SRHS_Fire Alarm_R23.rvt 10/30/2023 1:37:21 PM

BATTERY CALCULATIONS: FACP-5 (N16e)

STANDBY MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.1500	1	0.150
LOOP 1 DETECTORS	0.0004	114	0.046
LOOP 1 MODULES	0.0004	4	0.002
LOOP 2 DETECTORS	0.0004	45	0.017
LOOP 2 MODULES	0.0004	2	0.001
LOOP 3 DETECTORS	0.0004	39	0.015
LOOP 3 MODULES	0.0004	0	0.000

TOTAL STANDBY CURRENT = 0.230 A
REQUIRED (24 HOURS) = 5.515 AH

ALARM MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.2750	1	0.275
LOOP 1 DETECTORS	0.0065	114	0.741
LOOP 1 MODULES	0.0004	4	0.002
LOOP 2 DETECTORS	0.0004	45	0.017
LOOP 2 MODULES	0.0004	2	0.001
LOOP 3 DETECTORS	0.0004	39	0.015
LOOP 3 MODULES	0.0004	0	0.000

TOTAL ALARM CURRENT = 1.050 A
REQUIRED (15 MIN) = 0.263 AH

TOTAL POWER REQUIRED WITH 120%
BATTERY DERATING FACTOR = 6.933 AH

PROVIDE TWO 12V, 12AH 60AH BATTERIES

BATTERY CALCULATIONS: FACP-2 (N16e)

STANDBY MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.1500	1	0.150
LOOP 1 DETECTORS	0.0004	146	0.058
LOOP 1 MODULES	0.0004	6	0.002
LOOP 2 DETECTORS	0.0004	80	0.030
LOOP 2 MODULES	0.0004	17	0.006
LOOP 3 DETECTORS	0.0004	43	0.016
LOOP 3 MODULES	0.0004	5	0.002

TOTAL STANDBY CURRENT = 0.266 A
REQUIRED (24 HOURS) = 6.379 AH

ALARM MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.2750	1	0.275
LOOP 1 DETECTORS	0.0065	146	0.949
LOOP 1 MODULES	0.0004	6	0.002
LOOP 2 DETECTORS	0.0004	80	0.030
LOOP 2 MODULES	0.0004	17	0.006
LOOP 3 DETECTORS	0.0004	43	0.016
LOOP 3 MODULES	0.0004	5	0.002

TOTAL ALARM CURRENT = 1.281 A
REQUIRED (15 MIN) = 0.320 AH

TOTAL POWER REQUIRED WITH 120%
BATTERY DERATING FACTOR = 8.039 AH

PROVIDE TWO 12V, 12AH 60AH BATTERIES

BATTERY CALCULATIONS: FACP-3 (N16e)

STANDBY MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.1500	1	0.150
LOOP 1 DETECTORS	0.0004	45	0.018
LOOP 1 MODULES	0.0004	0	0.000
LOOP 2 DETECTORS	0.0004	0	0.000
LOOP 2 MODULES	0.0004	0	0.000
LOOP 3 DETECTORS	0.0004	0	0.000
LOOP 3 MODULES	0.0004	0	0.000

TOTAL STANDBY CURRENT = 0.168 A
REQUIRED (24 HOURS) = 4.032 AH

ALARM MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.2750	1	0.275
LOOP 1 DETECTORS	0.0065	45	0.293
LOOP 1 MODULES	0.0004	0	0.000
LOOP 2 DETECTORS	0.0004	0	0.000
LOOP 2 MODULES	0.0004	0	0.000
LOOP 3 DETECTORS	0.0004	0	0.000
LOOP 3 MODULES	0.0004	0	0.000

TOTAL ALARM CURRENT = 0.568 A
REQUIRED (15 MIN) = 0.142 AH

TOTAL POWER REQUIRED WITH 120%
BATTERY DERATING FACTOR = 5.009 AH

PROVIDE TWO 12V, 12AH 60AH BATTERIES

BATTERY CALCULATIONS: FACP-4 (N16e)

STANDBY MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.1500	1	0.150
LOOP 1 DETECTORS	0.0004	101	0.040
LOOP 1 MODULES	0.0004	1	0.000
LOOP 2 DETECTORS	0.0004	68	0.026
LOOP 2 MODULES	0.0004	7	0.003
LOOP 3 DETECTORS	0.0004	71	0.027
LOOP 3 MODULES	0.0004	5	0.002

TOTAL STANDBY CURRENT = 0.248 A
REQUIRED (24 HOURS) = 5.956 AH

ALARM MODE

	EA (A)	QTY.	CURRENT
CONTROL UNIT	0.2750	1	0.275
LOOP 1 DETECTORS	0.0065	101	0.657
LOOP 1 MODULES	0.0004	1	0.000
LOOP 2 DETECTORS	0.0004	68	0.026
LOOP 2 MODULES	0.0004	7	0.003
LOOP 3 DETECTORS	0.0004	71	0.027
LOOP 3 MODULES	0.0004	5	0.002

TOTAL ALARM CURRENT = 0.989 A
REQUIRED (15 MIN) = 0.247 AH

TOTAL POWER REQUIRED WITH 120%
BATTERY DERATING FACTOR = 7.444 AH

PROVIDE TWO 12V, 12AH 60AH BATTERIES

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-120972 INC:
REVIEWED FOR
SS ☐ FLS ☑ ACS ☐
DATE: 11/7/2023

SAN RAFAEL CITY SCHOOLS

Revisions

Delta	Date	Revisions	By

NOT FOR CONSTRUCTION

DSA SUBMITTAL

O'MAHONY & MYER
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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
CALCULATIONS - FIRE ALARM

Client Project Number:

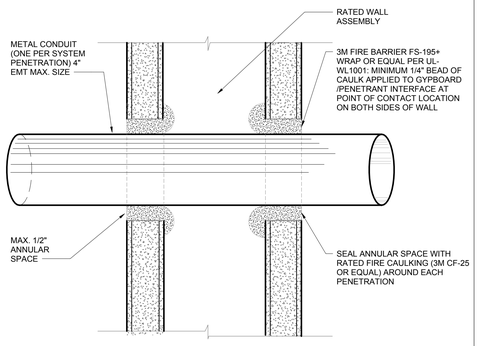
Scale: AS NOTED
Drawn By: JK
Checked By: PJC
Issue Date: 09/06/2023
Revit Version: 2023

Sheet
FE6.05
Sheet of

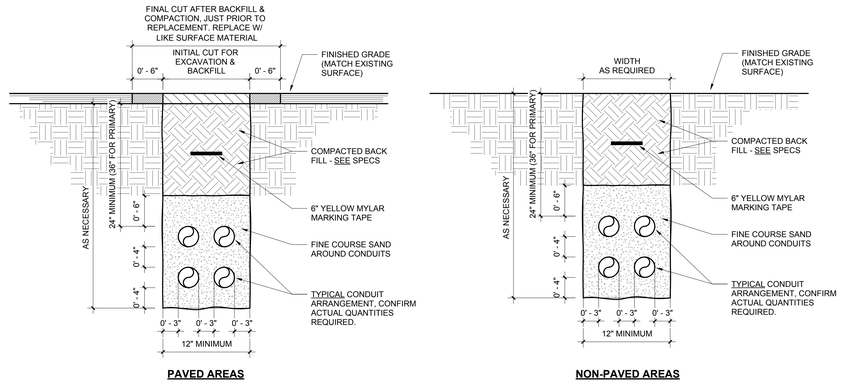
GRAPHIC SCALES: 1/16" = 1'-0" (0, 5', 50') | 1/8" = 1'-0" (0, 5', 25') | 1/4" = 1'-0" (0, 1', 12') | 1/2" = 1'-0" (0, 1', 6') | 3/4" = 1'-0" (0, 4') | 1" = 1'-0" (0, 1', 3') | 1 1/2" = 1'-0" (0, 2') | 3" = 1'-0" (0, 1')

IF THIS SHEET IS NOT 30"x42" , IT IS A REDUCED PRINT SCALE ACCORDINGLY

Autodesk Docs://223031-San Rafael High School FA Upgrade/223031_SRHS_Fire Alarm_R23.rvt 10/30/2023 1:37:22 PM



6 CONDUIT PENETRATION IN RATED WALL - UL WL1001
NO SCALE



1 TYPICAL TRENCH SECTIONS
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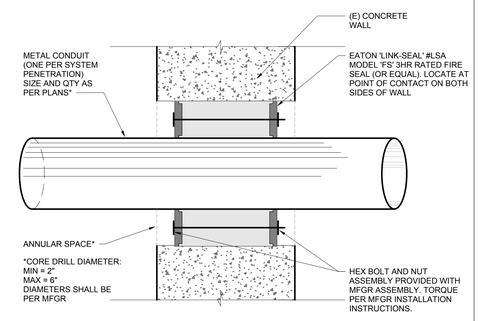
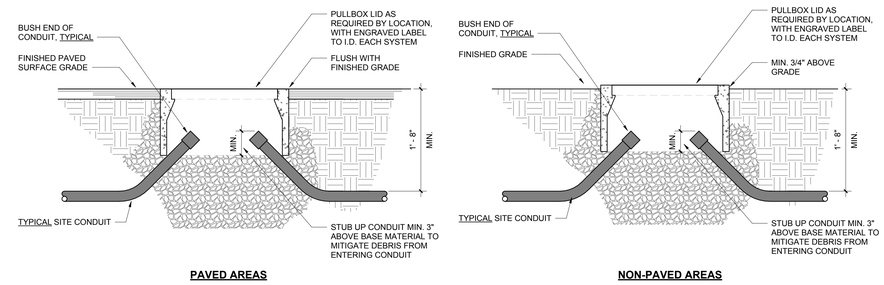


7 CONDUIT PENETRATION IN CONCRETE WALL
NO SCALE



2 TYPICAL PULLBOX SECTION
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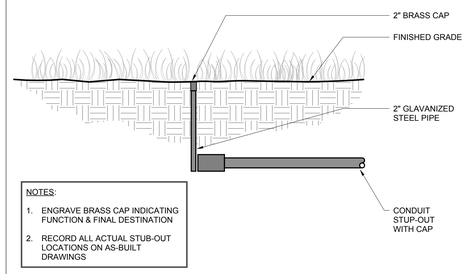
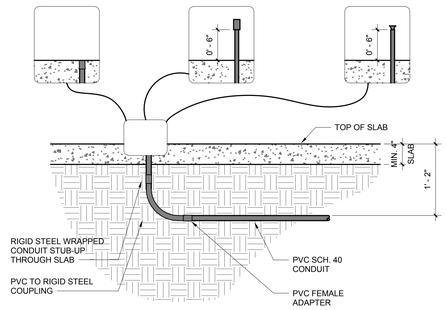


NOTES:
1. ENGRAVE BRASS CAP INDICATING FUNCTION & FINAL DESTINATION
2. RECORD ALL ACTUAL STUB-OUT LOCATIONS ON AS-BUILT DRAWINGS

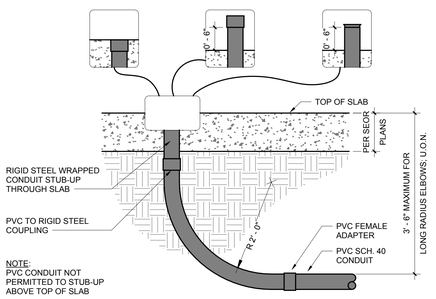
5 CONDUIT STUB-OUT
NO SCALE

A. RIGID STEEL COUPLING FLUSH WITH TOP OF SLAB. PROVIDE FLUSH PLUG ON COUPLING.
B. STUB-UP 6" AT LOCATION SHOWN ON DRAWINGS. CAP WITH THREADED COMBINATION COUPLING (RIGID STEEL TO EMT AND PLUG). SET SCREW CONNECTORS NOT ALLOWED.
C. STUB-UP 6" AT LOCATION SHOWN ON DRAWINGS. BUSH END OF CONDUIT.



3 CONDUIT STUB-UP
NO SCALE

A. RIGID STEEL COUPLING FLUSH WITH TOP OF SLAB. PROVIDE FLUSH PLUG ON COUPLING.
B. STUB-UP 6" AT LOCATION SHOWN ON DRAWINGS. CAP WITH THREADED COMBINATION COUPLING (RIGID STEEL TO EMT AND PLUG). SET SCREW CONNECTORS NOT ALLOWED.
C. STUB-UP 6" AT LOCATION SHOWN ON DRAWINGS. BUSH END OF CONDUIT.



NOTE:
PVC CONDUIT NOT PERMITTED TO STUB-UP ABOVE TOP OF SLAB

4 CONDUIT STUB-UP - FEEDERS - LONG RADIUS BENDS
NO SCALE

IDENTIFICATION STAMP
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HY Architects Project number: 6020

Facility
SAN RAFAEL HIGH SCHOOL
150 3RD ST, SAN RAFAEL, CA 94901

Project
FIRE ALARM UPGRADE

Sheet Title
DETAILS

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FE7.01
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