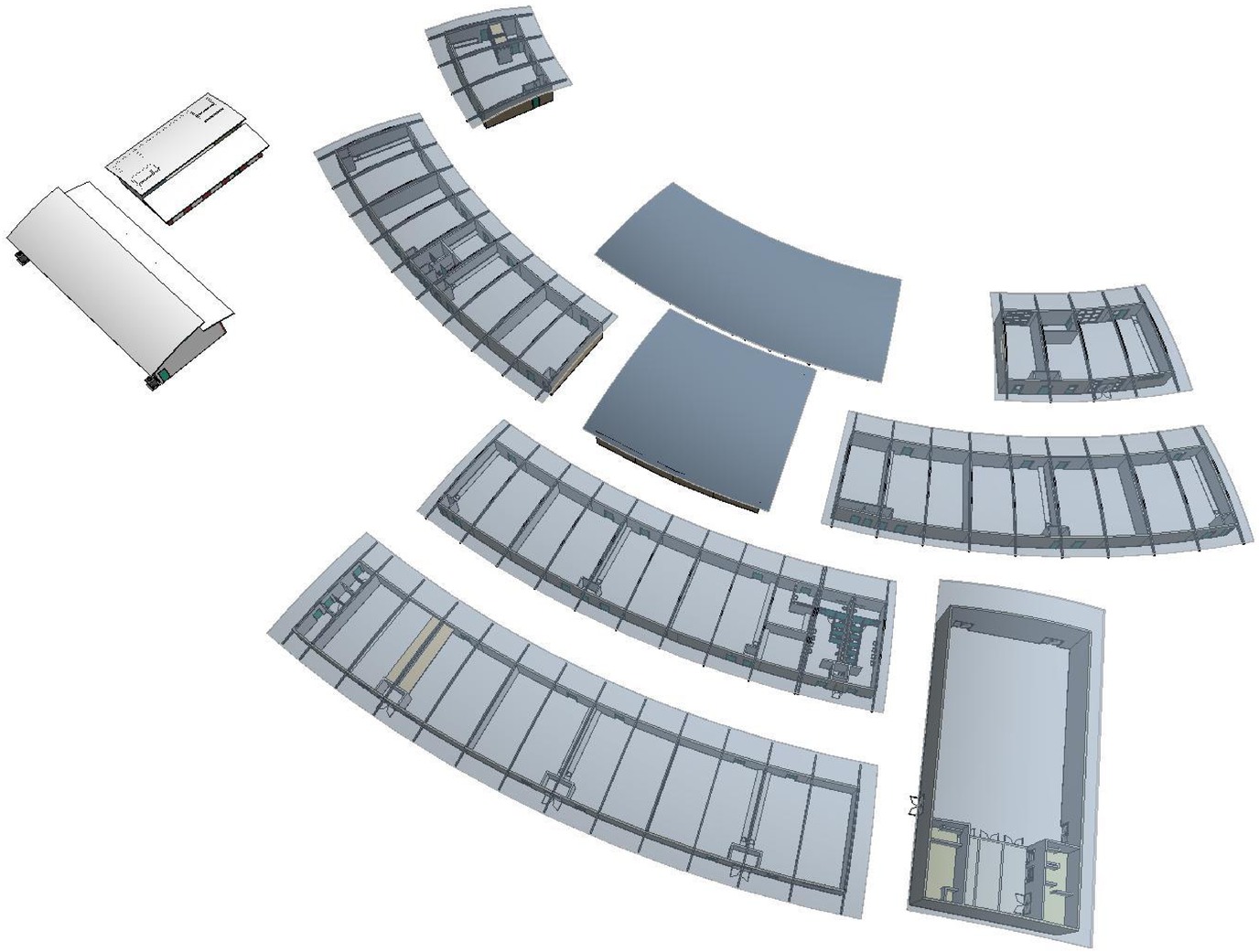
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

SAN RAFAEL CITY SCHOOLS

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901



AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

25 W Castlewood Dr,
San Rafael, CA 94901

HMC Architects

3584-002-100

LICENSED ARCHITECT
JOHN P. GRAMLING
NO. C-32106
REN. 12-31-25
STATE OF CALIFORNIA

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

PROJECT TEAM

CIVIL
Siegfried Engineering Inc.
111 N. MARKET ST. STE 300 SAN JOSE, CA 95113
408 754-2021

LANDSCAPE
ANLA Architects
1723 HAMILTON AVE. #101 SAN JOSE, CA 95125
408 292-2196

MECHANICAL
LP Consulting Engineers
1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
916 771-0778

ELECTRICAL
LP Consulting Engineers
1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
916 771-0778

Plumbing
LP Consulting Engineers
1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
916 771-0778

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:
GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:
COVER SHEET

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

G0.10

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/3584002000-A-Glenwood ES_HVAC.rvt
9/20/2024 5:03:18 PM

PLEASE RECYCLE

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

GENERAL NOTES

1. CONSTRUCTION DOCUMENTS DESCRIBE THE PRODUCTS, SYSTEMS, QUANTITIES, CONFIGURATION, AND PERFORMANCE SPECIFICATIONS THAT DELIVER THE OVERALL DESIGN INTENT OF THE PROJECT.
2. THE CONSTRUCTION DOCUMENT DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY BOTH.
3. PERFORMANCE BY THE CONSTRUCTION TEAM SHALL BE CONSISTENT WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AS NECESSARY TO DELIVER THE INDICATED RESULTS OF THE DESIGN INTENT.
4. VERIFY ALL DIMENSIONS, LOCATIONS OF EXISTING UTILITIES, AND CONDITIONS ON THE JOB SITE PRIOR TO THE START OF WORK OR PORTIONS OF THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE CONSTRUCTION DOCUMENTS. EXISTING CONDITIONS ARE INDICATED AS A RESULT OF FIELD OBSERVATIONS, INFORMATION SHOWN ON AVAILABLE DOCUMENTS AND FIELD CONDITIONS AT THE TIME OF PREPARATION.
5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES, ORDINANCES, REGULATIONS AND LAWS.
6. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND SCAFFOLDING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN.
8. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
9. DETAILS MARKED 'TYPICAL' SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY NOTED OTHERWISE.
10. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMAIN FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION.
11. PRIOR TO THE START OF WORK THE CONTRACTOR SHALL COORDINATE BETWEEN THE REQUIREMENTS OF ALL DISCIPLINES HEREIN AND BETWEEN THE REQUIREMENTS OF ALL DRAWINGS AND SPECIFICATIONS IN ORDER THAT ALL ITEMS SATISFACTORILY RELATE TO ONE ANOTHER. NOTIFY ARCHITECT IMMEDIATELY REGARDING ANY ITEMS THAT CANNOT BE COORDINATED.
12. CONTRACTOR SHALL EXCERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING, CONDUIT, ETC. AND TO PREVENT HAZARD TO PERSONNEL AND/OR TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
13. CHANGES TO THE APPROVED DRAWINGS AND/OR SPECIFICATIONS SHALL BE MADE BY ADDENDA OR A CHANGE ORDER.
14. CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE EXISTING OR NEW STRUCTURAL ELEMENTS SHALL NOT TO BE STARTED UNTIL THE DETAILS HAVE BEEN REVIEWED AND APPROVED BY THE ARCHITECT, AND STRUCTURAL ENGINEER OF RECORD.
15. ALL WORK SHALL CONFORM TO 2022 EDITION TITLE 24, CALIFORNIA CODE OF REGULATION (CCR)
16. CHANGE TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY DSA, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24 CCR.
17. A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY DSA SHALL PROVIDE CONTINUOUS INSPECTION OF WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR. INSPECTOR TO BE CLASS 1.
18. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT. THE REPORTS SHALL BE SUBMITTED TO ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, OWNER, INSPECTOR OR RECORD, AND THE DSA FIELD ENGINEER. THE REPORTS OF ANY FAILURES OF TESTS AND INSPECTIONS ARE TO BE SUBMITTED TO DSA DISTRICT STRUCTURAL ENGINEER.
19. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
20. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION, OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE DSA APPROVED CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR,, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)
21. FABRICATION AND INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT BE STARTED UNTIL CONTRACTOR'S DRAWINGS, SPECIFICATIONS, AND ENGINEERING CALCULATIONS FOR THE ACTUAL SYSTEMS TO BE INSTALLED HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT OR STRUCTURAL ENGINEER AND APPROVED BY THE DSA.
22. COMPLIANCE WITH CFC CHAPTER 33, FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION AND CBC CHAPTER 33, SAFETY DURING CONSTRUCTION WILL BE ENFORCED.

NOTE TO CONTRACTOR

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

LIGHTING CONTROLS ACCPTANCE TESTS MUST BE PEFORMED BY A CERTIFIED LIGHTING CONTROLS ACCPTANCE TEST TECHNICIAN (ATT).

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

ENVELOPE AND PROCESS WUIPMENT ACCEPTANCE TESTS SHALL BE PEFORMED BY THE INSTALLING CONTRACTORS, ENGINEER/ARCHITECT OF RECORD OR THE OWNER'S AGENT.

A LISTING OF CERTIFIED ATT'S CAN BE FOUND AT https://www.energy.ca.gov/programs-and-topics/programs/acceptance-test-technician-certification-provider-program/acceptance

THE ACCPTANCE TESTING PROCEDURES MUST BE REPEATEDM AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLTION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCPTANCE CRITERIA.

PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFRIM THAT THE REUIRED ACCPTANCE TESTS HAVE BEEN COMPLETED.

CODES

PARTIAL LIST OF APPLICABLE CODES

2022	CALIFORNIA ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.
2022	CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R. (2021 INTERNATIONAL BUILDING CODE VOLUMES 1 & 2 AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R. (2020 NATIONAL ELECTRICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R. (2021 UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R. (2021 UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R.
2022	CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R. (2021 INTERNATIONAL FIRE CODE AND 2022 CALIFORNIA AMENDMENTS)
2022	CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 C.C.R.
2022	CALIFORNIA REFERENCED STANDARDS, PART 12,TITLE 24 C.C.R.
TITLE 19	C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 17	STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 ED.
NFPA 17A	STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS	2021 ED.
NFPA 72	NATIONAL FIRE ALARM & SIGNALING CODE (CA AMENDED)	2022 ED.
NFPA 2001	STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (CA AMENDED)	2018 ED.
UL 464	AUDIBLE SIGNAL APPLIANCES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES	2003 ED.
UL 521	STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS	1999 ED. (R2005)

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

STATEMENT OF GENERAL CONFORMANCE

(X) THE CIVIL, LANDSCAPE, MECHANICAL, PLUMBING, ELECTRICAL, FIRE ALARM AND TECHNOLOGY DRAWINGS LISTED ON THE INDEX SHEET
(X) THIS DRAWING PAGE OF SPECIFICATIONS/CALCULATIONS

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

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

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344" OF TITLE 24, PART 1. (TITLE 24, PART 1, SECTION 4-317 (B))

I CERTIFY THAT:

ALL CIVIL, LANDSCAPE, MECHANICAL, ELECTRICAL, FIRE ALARM, AND TECHNOLOGY DRAWINGS OR SHEETS LISTED ON THE SHEET INDEX ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN AND HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS.

SIGNATURE
ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE

SEPTEMBER 16, 2024
DATE

JOHN P. GRAMLING
PRINT NAME

C-32706
LICENSE NUMBER

12-31-25
EXPIRATION DATE

PROJECT DESCRIPTION

- REPLACEMENT OF EXISITNG MECHANICAL UNITS W/ NEW ALL ELECTRICAL HEAT PUMP HVAC UNITS IN BLDGS. A, B, C, E, F, G & H WITH ASSOCIATED SITE WORK.
- UPGRADE OF EXISTING ELECTRICAL INFRASTRUCTURE - TRANSFORMERS AND SWITCHGEAR WITH ASSOCIATED SITE WORK.
- UPGRADE OF EXISITNG TECHNOLOGY/LOW-VOLTAGE SYSTEMS THROUGHT CAMPUS, EXCLUDING BLDGS. D, MPR, TK/A & TK/B.
- UPGRADE OF EXISTING FIRE ALARM SYSTEMS THROUGHOUT CAMPUS, EXCLUDING BLDGS. D, TK/A & TK/B.
- RENOVATION OF EXISITNG ENTRY PLAZA.
- INSTALLATION OF FENCE TRASH ENCLOSURE

PROJECT DATA

PROJECT ADDRESS: 25 W. CASTEWOOD DR. SAN RAFEL, CA 94901

BUILDING SUMMARY:

BUILDING	TYPE	OCCUPANCY	AREA
(E) BLDG A	B	V-B	3,472 SF
(E) BLDG B	E-1	V-B	1,531 SF
(E) BLDG C	E-1	V-B	4,571 SF
(E) BLDG D	A2.1	V-1 HR	3,410 SF
(E) BLDG E	E-1	V-B	4,582 SF
(E) BLDG F	E-1	V-B	5,341 SF
(E) BLDG G	E-1	V-B	6,770 SF
(E) BLDG H	E-1	V-B	2,002 SF
(E) GYM	A-3	V-B	4,692 SF
(E) TK/KA	E-1	V-B	1,638 SF
(E) TK/KB	E-1	V-B	2,945 SF

BID ALTERNATE

#1 - ADD ALTERNATE -
REPLACE PAVEMENT CONCRETE WITH DECORATIVE CONCRETE AT ENTRY PLAZA

DRAWING INDEX

01.0 GENERAL SHEET - PROJECT ANALYSIS

G0.10	COVER SHEET
G0.11	TITLE / PROJECT DATA SHEET

04.0 CIVIL

C1.0	TOPOGRAPHIC AND DEMOLITION PLAN
C2.0	PAVING AND DIMENSIONING PLAN
C3.0	GRADING AND UTILITY PLAN
C4.0	EROSION CONTROL PLAN
C5.0	CONSTRUCTION DETAILS I

05.0 LANDSCAPE

L1	LAYOUT PLAN
L2	MATERIAL PLAN
L3.1	CONSTRUCTION DETAILS
L4	IRRIGATION PLAN
L5	PLANTING PLAN
L6.1	IRRIGATION DETAILS
L6.2	IRRIGATION DETAILS
L7	PLANTING DETAILS

06.0 ARCHITECTURAL

A1.10	SITE PLAN
A7.11	ENLARGED HVAC YARD & TRASH ENCLSOURE PLANS
A7.12	ENLARGED REFLECTED CEILING PLAN & INTERIOR ELEVATION
A10.01	DETAILS

07.0 MECHANICAL

M0.01	MECHANICAL LEGENDS, NOTES AND SCHEDULES
M0.02	MECHANICAL SCHEDULES
M0.03	MECHANICAL DETAILS
M0.04	MECHANICAL DETAILS
M0.05	MECHANICAL CONTROLS
MD2.11	BLDG A MECHANICAL DEMOLITION FLOOR PLAN
MD2.12	BLDG B, C &H MECHANICAL DEMOLITION FLOOR PLAN
MD2.13	BLDG F & G MECHANICAL DEMOLITION FLOOR PLAN
MD2.14	BLDG E MECHANICAL DEMOLITION FLOOR PLAN
M2.11	BLDG A MECHANICAL FLOOR PLAN
M2.12	BLDG B, C & H MECHANICAL FLOOR PLAN
M2.13	BLDG F & G MECHANICAL FLOOR PLAN
M2.14	BLDG E MECHANICAL FLOOR PLAN
T24.1	TITLE 24 CALCUALTIONS
T24.2	TITLE 24 CALCUALTIONS
T24.3	TITLE 24 CALCUALTIONS
T24.4	TITLE 24 CALCUALTIONS
T24.5	TITLE 24 CALCUALTIONS
T24.6	TITLE 24 CALCUALTIONS
T24.7	TITLE 24 CALCUALTIONS
T24.8	TITLE 24 CALCUALTIONS
T24.9	TITLE 24 CALCUALTIONS
T24.10	TITLE 24 CALCUALTIONS
T24.11	TITLE 24 CALCUALTIONS
T24.12	TITLE 24 CALCUALTIONS

08.0 PLUMBING

P0.01	PLUMBING LEGENDS, NOTES AND SCHEDULES
PD2.11	BLDG A PLUMBING DEMOLITION FLOOR PLAN
PD2.12	BLDG B,C H PLUMBING DEMOLITION FLOOR PLAN
PD2.13	BLDG F & G PLUMBING DEMOLITION FLOOR PLAN
PD2.14	BLDG E PLUMBING DEMOLITION FLOOR PLAN
P2.11	BLDG A PLUMBING FLOOR PLAN
P2.12	BLDG B, C & H PLUMBING FLOOR PLAN
P2.13	BLDG F & G PLUMBING FLOOR PLANS
P2.14	BLDG E PLUMBING FLOOR PLAN

09.0 ELECTRICAL

E0.01	ELECTRICAL ABBREVIATIONS, NOTES AND SHEET INDEX
E0.02	ELECTRICAL SYMBOL LEGEND
E1.21	ELECTRICAL SITE PLAN
ED2.11	BLDG A ELECTRICAL DEMOLITION FLOOR PLAN
ED2.12	BLDG B,C & H ELECTRICAL DEMOLITION FLOOR PLAN
ED2.13	BLDG F & G ELECTRICAL DEMOLITION FLOOR PLAN
ED2.14	BLDG E ELECTRICAL DEMOLITION FLOOR PLAN
E2.11	BLDG A ELECTRICAL FLOOR PLAN
E2.12	BLDG B, C & H ELECTRICAL FLOOR PLAN
E2.13	BLDG F & G ELECTRICAL FLOOR PLAN
E2.14	BLDG E ELECTRICAL FLOOR PLAN
E3.11	PHOTOMETRIC PLAN
E3.12	PHOTOMETRIC PLAN
E3.13	PHOTOMETRIC PLAN
E3.14	PHOTOMETRIC PLAN
E5.01	ELECTRICAL ONE LINE DIAGRAM- DEMO
E5.02	ELECTRICAL ONE LINE DIAGRAM- NEW
E5.03	ELECTRICAL SCHEDULES
E5.04	ELECTRICAL SCHEDULES
E5.05	ELECTRICAL SCHEDULES
E5.06	ELECTRICAL SCHEDULES
E5.07	ELECTRICAL SCHEDULES
E5.08	ELECTRICAL SCHEDULES
E5.09	ELECTRICAL SCHEDULES
E6.01	ELECTRICAL DETAILS
E6.02	ELECTRICAL DETAILS
E6.03	ELCTRICAL DETAILS

010.0 FIRE ALARM

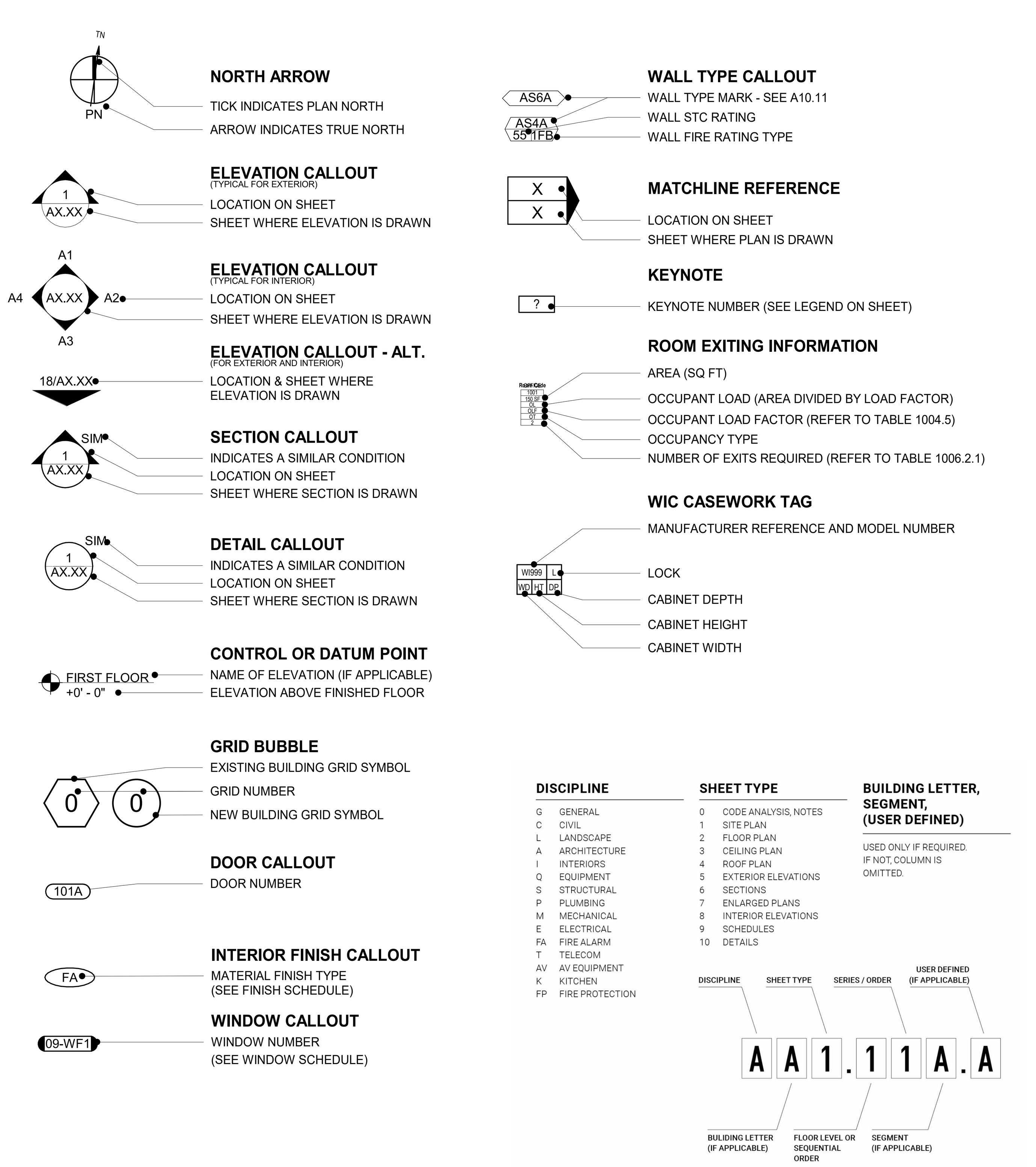
FA0.01	FIRE ALARM LEGENDS, NOTES AND SCHEDULES
FA0.02	FIRE ALARM DETAILS
FA0.03	FIRE ALARM RISER
FA0.04	FIRE ALARM RISER
FA0.05	FIRE ALARM RISER
FA0.06	FIRE ALARM RISER
FA1.21	FIRE ALARM SITE PLAN
FAD2.11	BLDG A FIRE ALARM DEMOLITION FLOOR PLAN
FAD2.12	BLDG B,C & H FIRE ALARM DEMOLITION FLOOR PLAN
FAD2.13	BLDG F & G FIRE ALARM DEMOLITION FLOOR PLAN
FAD2.14	BLDG E FIRE ALARM DEMOLITION FLOOR PLAN
FA2.11	BLDG A FIRE ALARM FLOOR PLAN
FA2.12	BLDG B, C & H FIRE ALARM FLOOR PLAN
FA2.13	BLDG F & G FIRE ALARM FLOOR PLAN
FA2.14	BLDG E FIRE ALARM FLOOR PLAN

011.0 TECHNOLOGY

T0.01	TECHNOLOGY PROJECT NOTES
T0.02	TECHNOLOGY SYMBOL LEGEND
T1.21	TECHNOLOGY SITE PLAN
TD2.11	BLDG A TECHNOLOGY DEMOLITION FLOOR PLAN
TD2.12	BLDG B, C, & H TECHNOLOGY DEMOLITION FLOOR PLANS
TD2.13	BLDG F & G TECHNOLOGY DEMOLITION FLOOR PLANS
T2.11	BLDG A TECHNOLOGY FLOOR PLAN
T2.12	BLDG B, C & H TECHNOLOGY FLOOR PLAN
T2.13	BLDG F & G TECHNOLOGY FLOOR PLAN
T2.14	BLDG E TECHNOLOGY FLOOR PLAN
T7.0.0	TECHNOLOGY BACKBONE PATHWAY DETAILS
T7.0.1	TECHNOLOGY MDF/IDF DETAILS
T70.2	TECHNOLOGY HORIZONTAL PATHWAYS
T70.3	TECHNOLOGY SYSTEMS DETAILS
T6.0.0	TECHNOLOGY ONE-LINES
T6.0.1	AUDIO-VIDEO ONE-LINES
T8.0.1	IDF RACK ELEVATIONS AND SCHEDULES

Grand total: 112

SYMBOL LEGEND

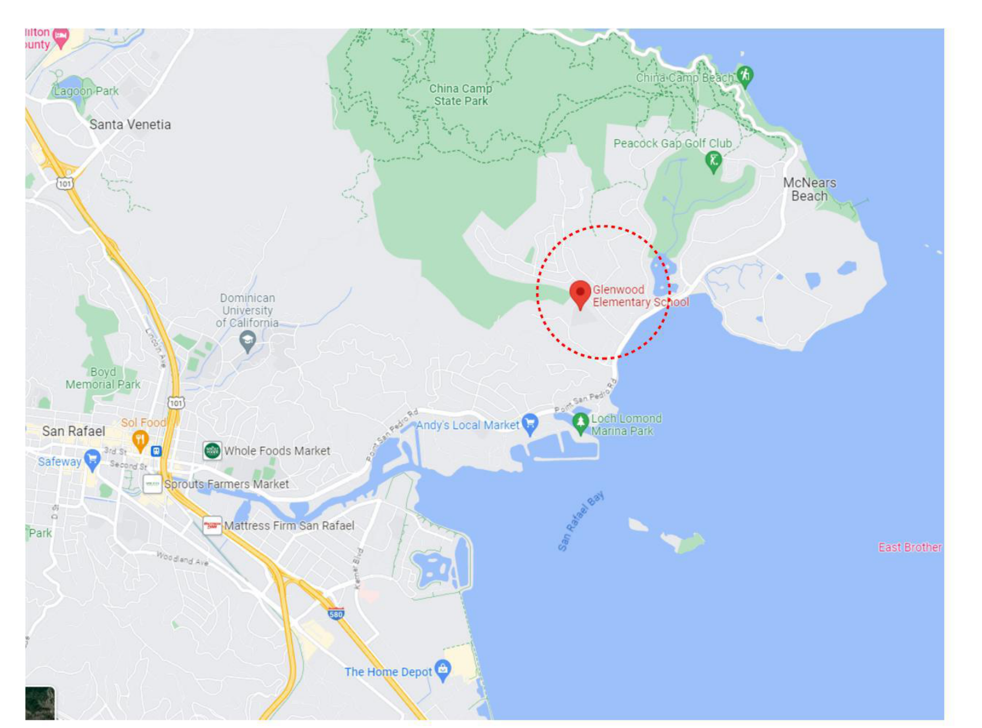


ABBREVIATIONS

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

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

VICINITY MAP



AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET, STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

LICENSED ARCHITECT JOHN P. GRAMLING NO. C-32706 REN. 12-31-25 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE

FACILITY:
25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:
GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:
TITLE / PROJECT DATA SHEET

CONSTRUCTION DOCUMENTS

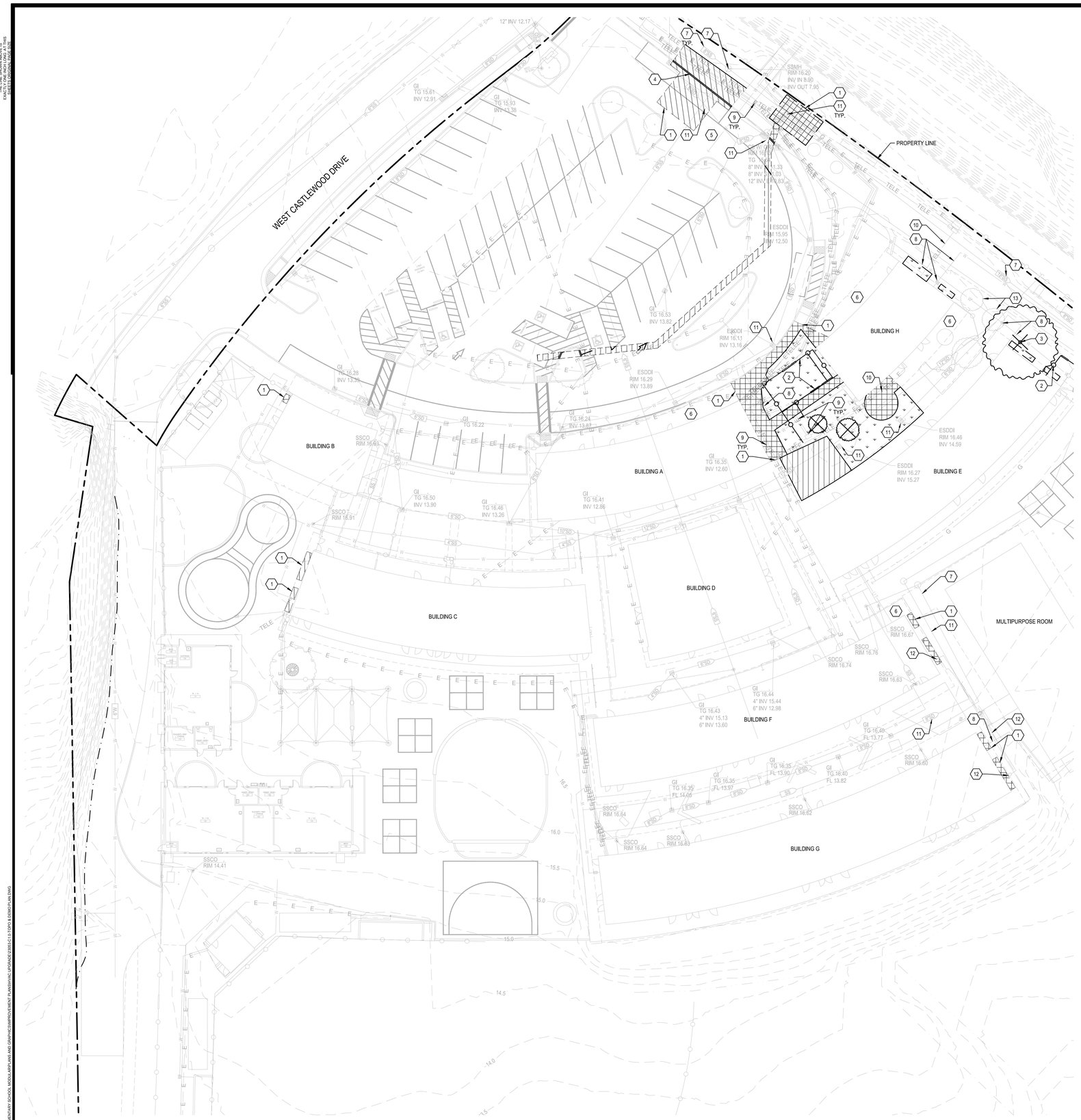
DATE: **2024.09.16**
CLIENT PROJ NO:

SHEET:
G0.11

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/3584002000-A-Glenwood ES_HVAC.rvt
9/24/2024 4:11:13 PM

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



LEGEND:

- REMOVE AND DISPOSE OF EXISTING LANDSCAPE. RELOCATE EXISTING IRRIGATION HEADS AND REROUTE EXISTING IRRIGATION TO ACHIEVE HEAD TO HEAD COVERAGE, SEE PAVING PLAN FOR NON-IRRIGATED BARK AREAS
- REMOVE AND DISPOSE OF EXISTING ASPHALT AND SUBGRADE TO ACCOMMODATE NEW STRUCTURAL SECTION
- REMOVE AND DISPOSE OF EXISTING CONCRETE AND SUBGRADE TO ACCOMMODATE NEW STRUCTURAL SECTION
- REMOVE AND DISPOSE OF EXISTING TREE, INCLUDING STUMP AND ROOTS

DEMOLITION AND PROTECTION KEYNOTES

1. SAWCUT TO A NEAT LINE IN ASPHALT. SAWCUT AND REMOVE AT NEAREST RELIEF JOINT IN CONCRETE
2. REMOVE AND DISPOSE OF EXISTING CHAINLINK FENCE
3. REMOVE AND DISPOSE OF EXISTING TREE, INCLUDING STUMP AND ROOTS
4. REMOVE AND DISPOSE OF EXISTING CURB
5. PROTECT IN PLACE EXISTING ASPHALT
6. PROTECT IN PLACE EXISTING CONCRETE
7. PROTECT IN PLACE EXISTING SANITARY SEWER LINE/STRUCTURE
8. PROTECT IN PLACE EXISTING WATER LINE/STRUCTURE
9. PROTECT IN PLACE EXISTING ELECTRICAL CONDUIT/STRUCTURE
10. PROTECT IN PLACE EXISTING COMMUNICATIONS LINE/ STRUCTURE
11. PROTECT IN PLACE EXISTING STORM DRAIN LINE/STRUCTURE
12. PROTECT IN PLACE EXISTING GAS LINE/STRUCTURE
13. PROTECT IN PLACE EXISTING TREE, INCLUDING STUMP AND ROOTS

DEMOLITION NOTES:

1. PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES, THE CONTRACTOR SHALL HAVE THE EXISTING DRY UTILITIES POT HOLED FOR VERIFICATION OF LOCATION AND DEPTH. AT SUCH TIME, POT HOLE DATA SHALL BE PROVIDED TO THE ENGINEER FOR DETERMINATION OF ADEQUATE CLEARANCE AND SEPARATION.
2. ALL EXCAVATIONS SPOILS, INCLUDING, BUT NOT LIMITED TO CONCRETE AND PAVEMENT EXCAVATION, SHALL BE EXPORTED AND DISPOSED OF BY THE CONTRACTOR.
3. EXISTING STRUCTURES, CONCRETE, PAVEMENT, FENCES, CURBS, UTILITY BOXES, LIGHTS, GATES, ETC. NOT CALLED OUT IN PLANS TO BE REMOVED OR TO REMAIN SHALL BE PROTECTED IN PLACE.
4. CONTRACTOR TO PROVIDE TREE PROTECTION AS NECESSARY DURING CONSTRUCTION TO PRESERVE EXISTING TREES. TREES NOT IDENTIFIED AS TO BE REMOVED OR TO REMAIN ARE ASSUMED TO REMAIN.
5. WHERE TRENCHING OCCURS, CONTRACTOR SHALL REPAIR AND RESTORE EXISTING PAVEMENT AND LANDSCAPE TO ORIGINAL CONDITIONS.

811 Know what's below. Call before you dig.

0' 10' 20' 40'
SCALE: 1"=20'

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

SIEGFRIED
3428 Brookside Road
Stockton,California 95219
209-943-2021
Fax: 209-942-0214
www.siegfriedeng.com

REGISTERED PROFESSIONAL ENGINEER PAUL J. SCHNEIDER No. 62498 Exp. 09/30/25 CIVIL STATE OF CALIFORNIA

DATE SIGNED: 09/24/24

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TOPOGRAPHIC AND DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

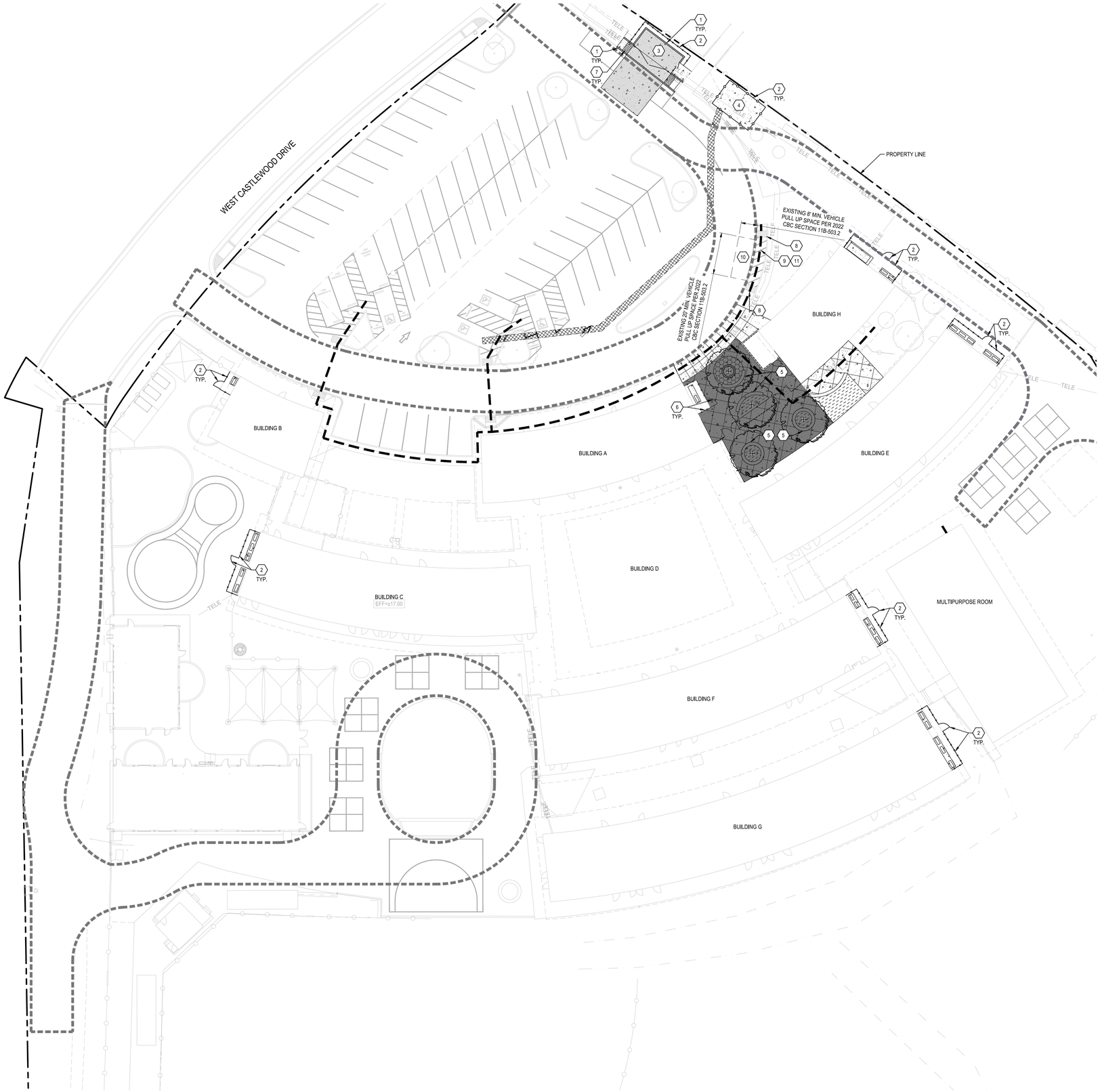
CLIENT PROJ NO:

SHEET:

C1.0

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON ORIGINAL BORDER. SCALE ACCORDINGLY



PAVING LEGEND

PEDESTRIAN CONCRETE
5" (3,000 PSI) P.C.C WITH #3 BARS @ 18" O.C. EACH WAY OVER 6" CLASS II AB OVER SUBGRADE PREPARED PER SUBGRADE PREPARATION NOTES ON THIS SHEET. CONCRETE JOINTS PER DETAIL 2 ON SHEET C5.0

ADD ALT #1: DECORATIVE PEDESTRIAN CONCRETE
5" (3,000 PSI) P.C.C WITH #3 BARS @ 18" O.C. EACH WAY OVER 6" CLASS II AB OVER SUBGRADE PREPARED PER SUBGRADE PREPARATION NOTES ON THIS SHEET. CONCRETE JOINTS PER DETAIL 2 ON SHEET C5.0. SPARKLE GRAIN FINISH, APPLICATION RATE SHALL BE 20-25LB/100SF

HEAVY DUTY CONCRETE
8" (3,000 PSI) P.C.C WITH #4 BARS @ 16" O.C. EACH WAY OVER 6" CLASS II AB OVER SUBGRADE PREPARED PER SUBGRADE PREPARATION NOTES ON THIS SHEET. CONCRETE JOINTS PER DETAIL 2 ON SHEET C5.0

PLANTING AREA
REFER TO LANDSCAPE PLANS

PAVERS
REFER TO LANDSCAPE PLANS

TRENCH AND BACKFILL
TRENCH AND BACKFILL FOR PROPOSED ELECTRICAL CONDUIT. REFER TO ELECTRICAL PLANS FOR TRENCH AND BACKFILL DETAIL

ACCESSIBLE PATH OF TRAVEL
2% MAXIMUM CROSS SLOPE , 5% MAXIMUM SLOPE IN DIRECTION OF TRAVEL. CONTRACTOR TO VERIFY THAT SLOPES ALONG SHOWN PATH OR TRAVEL ARE COMPLIANT WITH THE PROVISIONS OF THE 2022 CBC, SECTION 11B AND REPLACE CONCRETE/ASPHALT AS NECESSARY TO COMPLY

EXISTING FIRE ACCESS:
EXISTING FIRE ACCESS LANE

PAVING KEYNOTES

1. 6" VERTICAL CURB PER DETAIL 1 ON SHEET C5.0
2. 6' TALL CHAINLINK FENCE AND GATE. REFER TO ARCHITECTURAL AND LANDSCAPE PLANS
3. TRASH ENCLOSURE. REFER TO ARCHITECTURAL PLANS
4. TRANSFORMER YARD. REFER TO ELECTRICAL PLANS
5. CONCRETE SEATWALL PER LANDSCAPE PLANS
6. 6' TALL ORNAMENTAL IRON FENCE. REFER TO ARCHITECTURAL AND LANDSCAPE PLANS
7. INSTALL TRUNCATED DOMES IN THE COLOR 'FEDERAL YELLOW' PER DETAIL 8 ON SHEET C5.0
8. EXISTING TRUNCATED DOMES IN THE COLOR 'FEDERAL YELLOW;
9. EXISTING 5' WIDE ACCESS AISLE PER 2022 CBC SECTION 11B-503.2
10. EXISTING 8'X20' VEHICLE PULL-UP PER 2022 CBC SECTION 11B-503.2
11. EXISTING 4" WIDE WHITE PAINTED BORDER WITH HATCHING SPACED AT 36" O.C. PER 2022 CBC SECTION 11B-503.3

GENERAL PAVING AND DIMENSIONING NOTES:

ALL MATERIAL AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THE PROJECT SHALL CONFORM TO ALL APPLICABLE PROJECT SPECIFICATIONS.

1. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY QUESTION THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS NECESSARY FOR CONSTRUCTION OF THIS PROJECT.
2. ALL DIMENSIONS ARE TO FACE OF CURB, FACE OF BUILDING, CENTER OF PAINT STRIPING OR PERPENDICULAR TO THE PROPERTY LINE. CONTRACTOR SHALL VERIFY DIMENSIONS MATCH STRUCTURAL AND ARCHITECTURAL PLANS PRIOR TO CONSTRUCTION.
3. ALL COORDINATE POINTS ARE AT FACE OF CURB OR RADIUS POINT. BUILDING CONTROL POINTS ARE AT THE OUTER MOST EDGE OF THE BUILDING ENVELOPE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. ANY UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITIONS, ANY DAMAGE DONE TO EXISTING UTILITIES, FENCE, PAVEMENT, CURBS, DRIVEWAYS OR SIDEWALKS TO REMAIN (NO SEPARATE PAY ITEM).
7. THE CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT, CURBS, AND SIDEWALKS AT NEW PAVEMENT, CURB AND SIDEWALK JUNCTURES. NO JAGGED OR IRREGULAR CUTS WILL BE ALLOWED OR ACCEPTED.
8. REFER TO SITE PAVING PLAN, ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, IRRIGATION AND LANDSCAPING PLANS FOR ADDITIONAL INFORMATION.
9. SEE CIVIL DETAIL SHEET FOR APPLICABLE DETAILS.
10. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
11. THE CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATIONS OF EXISTING FACILITIES AND NOTIFY THE ENGINEER OF ANY CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
12. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.
13. ALL CONCRETE SIDEWALK SHALL BE 5' MIN. WIDTH UNLESS OTHERWISE SPECIFIED, SLOPED AT 2% MAX CROSS SLOPE.
14. ALL CURBS ARE 6" HIGH UNLESS OTHERWISE NOTED.

SUBGRADE PREPARATION NOTES

SUBGRADE PREPARATION FOR EXTERIOR FLATWORK

EXPANSIVE SUBGRADES SHOULD BE SCARIFIED AT LEAST 18 INCHES AND UNIFORMLY MOISTURE CONDITIONED TO A RANGE BETWEEN 2 PERCENT OVER AND 5 PERCENT OVER THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ASTM D1557 METHOD, LATEST EDITION. THE SUBGRADE SHOULD BE MECHANICALLY COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION PER THE ASTM D1557 METHOD. THE MOISTURE CONTENT OF THE SUBGRADE SHOULD BE MAINTAINED IN ITS COMPACTED STATE AND NOT BE ALLOWED TO DRY OUT PRIOR TO PLACING AGGREGATE BASE OF THE NEXT FILL LAYER.

FOR NON-EXPANSIVE SUBGRADES (I.E. COHESIONLESS SOILS SUCH AS SANDS), THE SUBGRADES SHOULD BE SCARIFIED AT LEAST 18 INCHES AND UNIFORMLY MOISTURE CONDITIONED TO SLIGHTLY ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ASTM D1557 METHOD, LATEST EDITION. THE SUBGRADE SHOULD BE MECHANICALLY COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION PER THE ASTM D1557 METHOD. THE MOISTURE CONTENT OF THE SUBGRADE SHOULD BE MAINTAINED IN ITS COMPACTED STATE AND NOT BE ALLOWED TO DRY OUT PRIOR TO PLACING THE AGGREGATE BASE OR THE NEXT FILL LAYER.

Know what's **below.**
Call before you dig.

0' 10' 20' 40'
SCALE: 1"=20'

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

SIEGFRIED
3428 Brookside Road
Stockton,California 95219
209-943-2021
Fax: 209-942-0214
www.siegfriedeng.com

REGISTERED PROFESSIONAL ENGINEER PAUL J. SCHNEIDER No. 62498 Exp. 09/30/25 CIVIL STATE OF CALIFORNIA

DATE SIGNED: 09/24/24

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PAVING AND DIMENSIONING PLAN

CONSTRUCTION DOCUMENTS

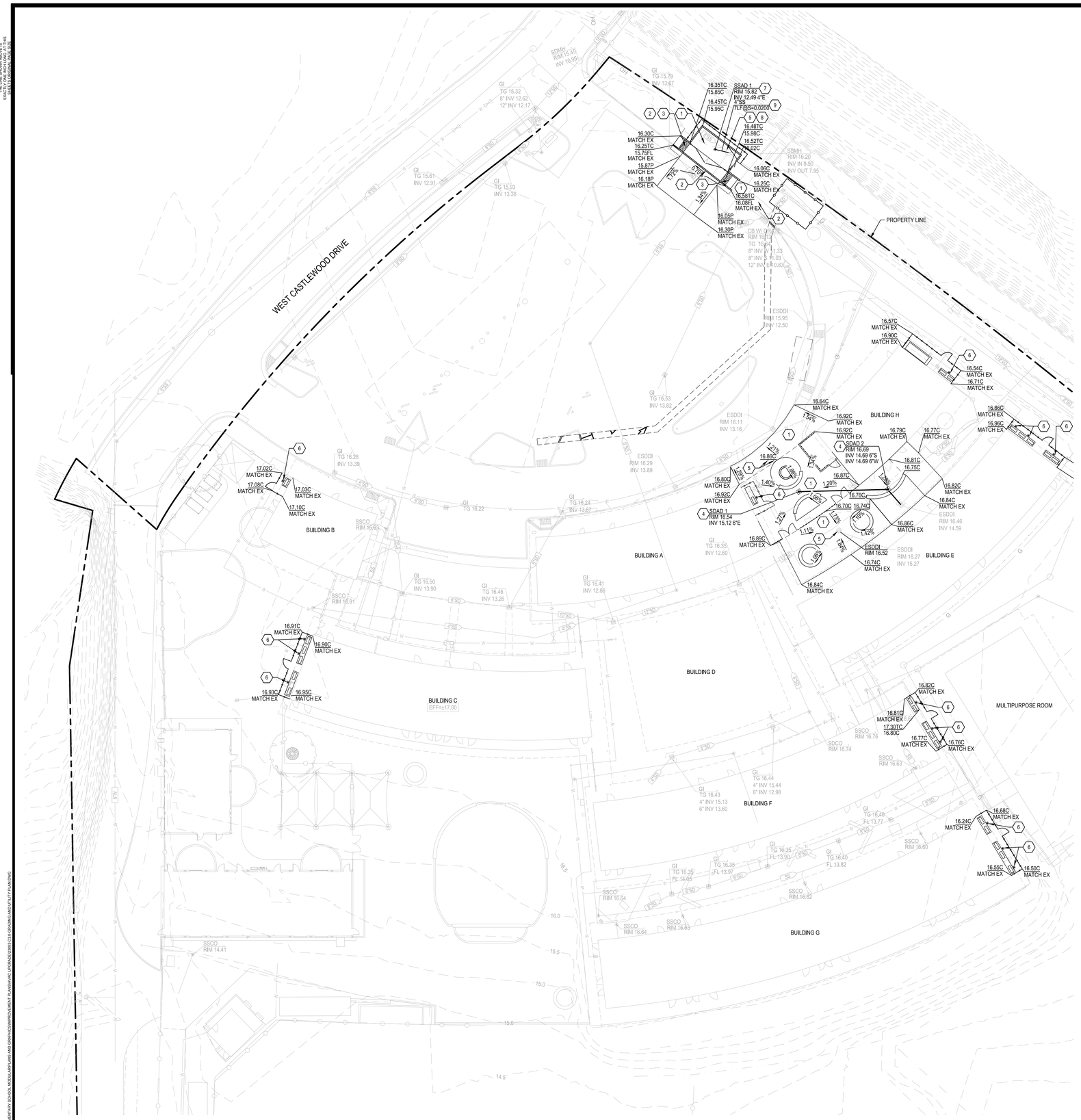
DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

C2.0

I:\SDRIVE\JOBS\2020\3 SAN RAFAEL GLENWOOD ELEMENTARY SCHOOL MODULARS\PLANS AND GRAPHICS\IMPROVEMENT PLAN\HVAC UPGRADE 2\2021-C2.0 PAVING PLAN.DWG



GRADING KEYNOTES

1. 2% MAXIMUM SLOPE IN ALL DIRECTIONS
2. 5% MAXIMUM SLOPE IN DIRECTION OF TRAVEL, 2% MAXIMUM CROSS SLOPE
3. 8.33% MAXIMUM SLOPE IN DIRECTION OF TRAVEL, 2% MAXIMUM CROSS SLOPE
4. INSTALL 12" AREA DRAIN PER DETAIL 4 ON SHEET C5.0
5. ADJUST EXISTING UTILITY TO GRADE
6. INSTALL CONDENSATE SUMP PER DETAIL 5 ON SHEET C5.0
7. INSTALL TRASH ENCLOSURE DRAIN PER DETAIL 6 ON SHEET C5.0
8. CONNECT TO EXISTING SANITARY SEWER MAINTENANCE HOLE. CONTRACTOR TO VERIFY LOCATION, INVERT AND RIM ELEVATION PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IMMEDIATELY OF ANY CONFLICTS
9. INSTALL 7LF 4"Ø WATER TIGHT GASKETED SCR-26 PVC ASTM 3034 SANITARY SEWER PIPE AT S=0.0200

LEGEND

%	GRADE SLOPE PERCENTAGE
3.0	EXISTING GROUND CONTOUR
3.0	PROPOSED GROUND CONTOUR
G.B.	GRADE BREAK
RIDGE	RIDGE

GRADING LEGEND

ABBREVIATION	DESCRIPTION
BW	BACK OF WALK
BOW	BOTTOM OF WALL
C	CONCRETE
DG	DECOMPOSED GRANITE
EC	EXISTING CONCRETE
EFL	EXISTING FLOWLINE
EG	EXISTING GROUND
EL	ELEVATION
EP	EXISTING PAVEMENT
EX.	EXISTING
FF	FINISHED FLOOR ELEVATION
FG	FINISH GROUND
FP	FINISH PAD ELEVATION
FL	FLOWLINE
G	GROUND
GB	GRADE BREAK
HP	HIGH POINT
LB	LIGHT BASE
LP	LOW POINT
MAX	MAXIMUM
MIN	MINIMUM
P	PAVEMENT
TC	TOP OF CURB
TOW	TOP OF WALL
TYP	TYPICAL

Know what's below. Call before you dig.

0' 10' 20' 40'
SCALE: 1"=20'

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

SIEGFRIED
3428 Brookside Road
Stockton,California 95219
209-943-2021
Fax: 209-942-0214
www.siegfriedeng.com

REGISTERED PROFESSIONAL ENGINEER
PAUL J. SCHNEIDER
No. 62498
Exp. 09/30/25
CIVIL
STATE OF CALIFORNIA

DATE SIGNED: 09/24/24

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

GRADING AND UTILITY PLAN

CONSTRUCTION DOCUMENTS

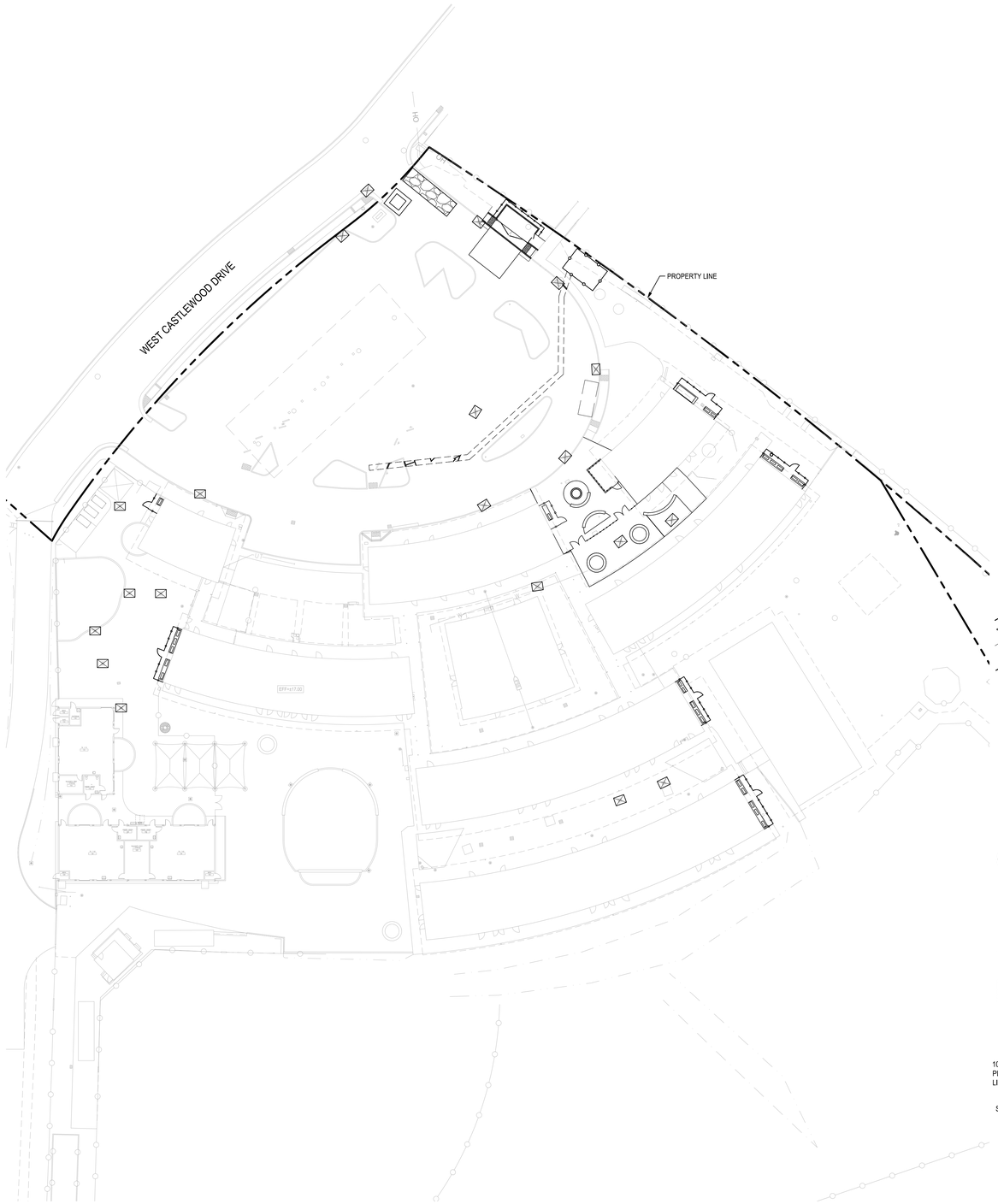
DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

C3.0

THE LINE SHOWN ABOVE IS EXACTLY 1 INCH ON ORIGINAL 22X34 SHEETS ORIGINAL SCALE: 0.5



EROSION CONTROL LEGEND

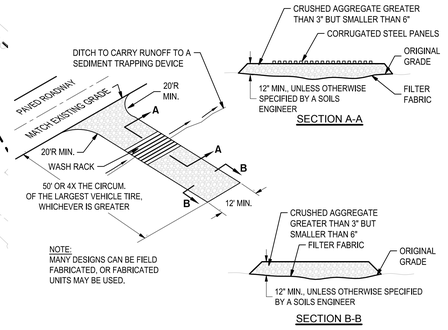
SYMBOL	DESCRIPTION
	STABILIZED CONSTRUCTION ENTRANCE, CONTRACTOR TO DETERMINE SIZE & LOCATION PER DETAIL 1 ON THIS SHEET
	FIBER ROLLED WATTLE, SEE DETAIL 2 THIS SHEET
	CONCRETE WASHOUT, CONTRACTOR TO DETERMINE LOCATION PER DETAIL 3 ON THIS SHEET
	DRAIN INLET PROTECTION PER DETAIL 4 ON THIS SHEET

EROSION CONTROL GENERAL NOTES

1. PLANS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW ALL OFFSETS. THE SITE IS DYNAMIC AND CHANGES ON A DAILY BASIS, CHANGES SHOULD BE MADE ACCORDING TO EXISTING CONDITIONS. BECAUSE IT IS IMPOSSIBLE TO PREDICT ALL POSSIBLE SITUATIONS, CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICES TO ENSURE QUALITY CONTROL.
2. THE CONTRACTOR SHALL REVIEW THE CURRENT STORM WATER POLLUTION PREVENTION PLAN (SWPPP). IT IS THE CONTRACTORS SOLE RESPONSIBILITY FOR CONDUCTING HIS/HER OPERATIONS IN ADHERENCE TO THE SWPPP. THE CONTRACTOR IS RESPONSIBLE FOR ANY FINES, DELAYS, AND/OR DAMAGES RESULTING FROM ANY STATE WATER QUALITY CONTROL BOARD SANCTIONS CAUSED BY THE OPERATION OF THE CONTRACTOR OF HIS/HER SUBCONTRACTORS.
3. THE FOLLOWING PLANS ARE ACCURATE FOR EROSION CONTROL PURPOSES ONLY. THE CONTRACTOR SHALL FOLLOW THESE PLANS UNLESS FIELD CONDITIONS DICTATE MODIFICATION. IF MODIFICATION IS NECESSARY, A SWPPP AMENDMENT MUST BE DONE. THIS MAY REQUIRE MODIFICATION TO THESE DRAWINGS AND ENGINEER CONCURRENCE.
4. INSPECT AND REPAIR FILTERS AFTER EACH STORM EVENT. REMOVE SEDIMENT WHEN 1/2 OF THE FILTER DEPTH HAS BEEN FILLED. REMOVED SEDIMENT SHALL BE DEPOSITED IN AN AREA TRIBUTARY TO A SEDIMENT BASIN OR OTHER FILTERING MEASURE. SEDIMENT AND GRAVEL SHALL BE IMMEDIATELY REMOVED FROM PAVEMENT OF ROAD.
5. UNFINISHED AND DISTURBED ARE TO BE PROTECTED WITH AN APPLICATION OF BLOWN STRAW AND ORGANIC BINDER.

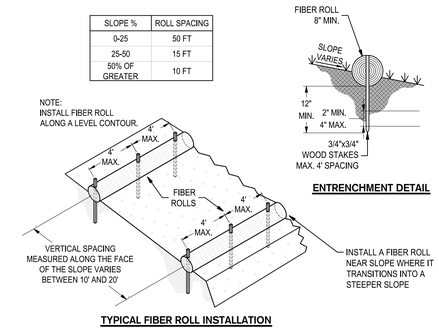
ITEM	LB/ACRE
STRAW	4,000
ORGANIC BINDER	200

6. ALTERNATE INLET PROTECTION SHALL BE USED ON ROADS OPEN TO THE PUBLIC IF ANY HAZARDOUS MATERIALS OR WASTES WHICH HAVE BEEN TREATED, STORED, DISPOSED, SPILLED, OR LEAKED IN SIGNIFICANT QUANTITIES ONTO THE CONSTRUCTION SITE, THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE THEM FROM THE SITE AND DISPOSE OF PROPERLY.
7. CHLORINATED OR DECHLORINATED WATER SHALL NOT BE DISCHARGED INTO THE STORM DRAIN SYSTEM. THE CONTRACTOR MAY DISPOSE THIS WATER INTO THE SANITARY SEWER SYSTEM UPON APPROVAL BY THE GOVERNING AGENCY.
8. THE CONTRACTOR SHALL KEEP MAINTENANCE, INSPECTION, AND REPAIR PROCEDURES TO ENSURE THAT ALL GRADED SURFACES, WALLS, BERMS, DRAINAGE STRUCTURES, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES, AND OTHER CONTROLS ARE MAINTAINED IN GOOD AND EFFECTIVE CONDITION AND ARE PROMPTLY REPAIRED OR RESTORED WHEN NECESSARY. ANY DEWATERING WATER SHALL NOT BE DISCHARGED DIRECTLY INTO THE STORM WATER SYSTEM, AND SHALL NOT BE DISCHARGED INTO THE SEWER SYSTEM.
9. ALL DEWATERING WATER MUST BE CHANNELED THROUGH AN APPROVED SEDIMENT BARRIER PRIOR TO THE WATER ENTERING THE STORM SYSTEM.
10. PAVEMENT CLEANING- FLUSHING OF STREETS/ PARKING LOTS TO REMOVE DIRT AND CONSTRUCTION DEBRIS IS PROHIBITED UNLESS PROPER SEDIMENT CONTROLS ARE USED. PREFERABLY, AREAS REQUIRING CLEANING SHOULD BE SWEPT.
11. ALL STOCKPILES OF MATERIALS THAT ARE NOT GOING TO BE USED FOR 14 DAYS SHALL BE COVERED.
12. CONTRACTOR TO USE BEST MANAGEMENT PRACTICES (BMPs) THROUGHOUT CONSTRUCTION. USE ALL BMPs THAT APPLY TO THE PROJECT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING BMPs:
    - A. DRAIN INLET PROTECTION - CALIFORNIA STORMWATER BMP HANDBOOK SECTION SE-10
    - B. SOLID WASTE MANAGEMENT - CALIFORNIA STORMWATER BMP HANDBOOK SECTION WM-5
    - C. MATERIAL STORAGE - CALIFORNIA STORMWATER BMP HANDBOOK SECTION WM-1
    - D. PAVING - CALIFORNIA STORMWATER BMP HANDBOOK SECTION NS-3
    - E. DUST CONTROL, SEDIMENT CONTROL, EROSION CONTROL AND CONCRETE WASHOUT AREAS - SHOWN ON THIS SHEET WITH DETAILS
13. CONTRACTOR SHALL INSTALL DRAIN INLET PROTECTION FOR ALL CATCH BASINS LOCATED IN THE VICINITY OF WORK. THIS INCLUDES ANY CATCH BASINS LOCATED IN THE PUBLIC RIGHT-OF-WAY, AS WELL AS ANY ON-SITE CATCH BASINS LOCATED IN THE PARKING LOT.
14. CONTRACTOR SHALL ENSURE THAT CONSTRUCTION ACTIVITIES DO NOT DEPOSIT SEDIMENT ONTO THE PARKING LOT OR PUBLIC ROADWAY, SIDEWALK, AND GUTTERS.
15. CONTRACTOR SHALL USE STREET SWEEPING OR OTHER DRY-SWEEPING METHOD, AS NECESSARY, TO REMOVE CONSTRICTION-RELATED SEDIMENTS FROM PAVEMENT IN PROJECT AREA PARKING LOT AND PUBLIC SIDEWALKS, GUTTERS, AND ROADWAY.
16. CONTRACTOR SHALL SCHEDULE WORK FOR DRY-WEATHER DAYS WHEN NO RAIN IS IN THE IMMEDIATE FORECAST.

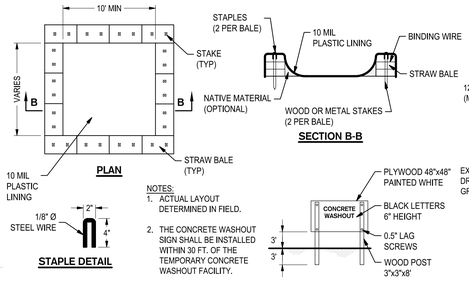


1 CONSTRUCTION ENTRANCE
SCALE: NTS

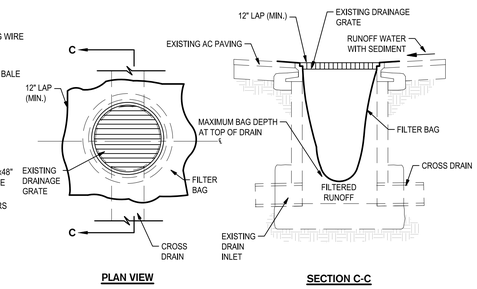
SLOPE %	ROLL SPACING
0-25	50 FT
25-50	15 FT
50% OF GREATER	10 FT



2 FIBER ROLLS
SCALE: NTS



3 CONCRETE WASHOUT
SCALE: NTS



4 GRAVEL BAG FILTER AT DROP INLET
SCALE: NTS

0' 15' 30' 60'
SCALE: 1"=30'

Know what's below. Call before you dig.

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

SIEGFRIED
3428 Brookside Road
Stockton,California 95219
209-943-2021
Fax: 209-942-0214
www.siegfriedeng.com

REGISTERED PROFESSIONAL ENGINEER PAUL J. SCHNEIDER No. 62498 Exp. 09/30/25 CIVIL STATE OF CALIFORNIA

DATE SIGNED: 09/24/24

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

EROSION CONTROL PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

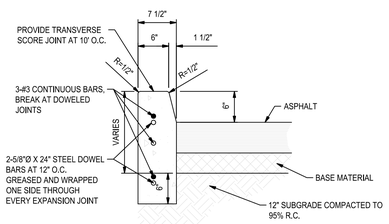
CLIENT PROJ NO:

SHEET:

C4.0

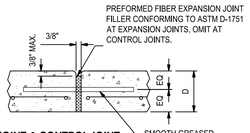
PLEASE RECYCLE

Z:\SFNG\SC\SR2203 SAN RAFAEL GLENWOOD ELEMENTARY SCHOOL MODULAR PLANS AND GRAPHICS\IMPROVEMENT PLAN\HVAC UPGRADE\2203C24 EROSION PLAN.DWG



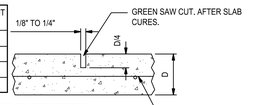
1 6" VERTICAL CONCRETE CURB
NO SCALE

DOWEL SIZE & SPACING			
SLAB DEPTH	DIAMETER	LENGTH	SPACING
4"	5/8"	12"	24" O.C.
6"	3/4"	18"	18" O.C.
8"	1"	24"	18" O.C.
10"	1"	24"	12" O.C.



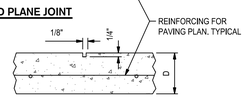
A EXPANSION JOINT & CONTROL JOINT

SLAB THICKNESS	WPJ SPACING (EACH WAY)	CONTROL JOINT SPACING
4"	6' O.C. MAX.	32' O.C. MAX.
6"	8' O.C. MAX.	36' O.C. MAX.
8"	10' O.C. MAX.	40' O.C. MAX.
10"	N/A	40' O.C. MAX.



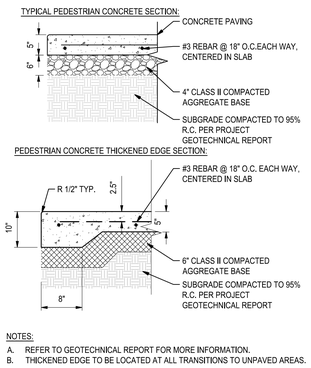
B WEAKENED PLANE JOINT

NOTE:
1. SCORE JOINT SPACING SHALL BE PLACED 5'-0" O.C. UNLESS OTHERWISE NOTED ON PLANS
2. DISTANCE FROM TOP OF CONCRETE AND TOP OF CAULKING SHALL BE LESS THAN 1/4".



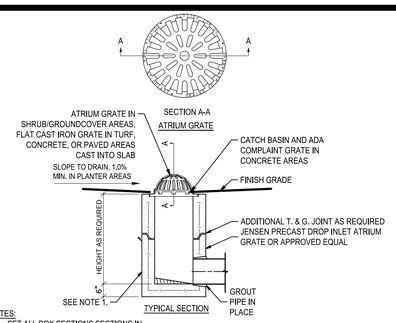
C SCORE LINE

2 CONCRETE JOINT DETAILS
NO SCALE



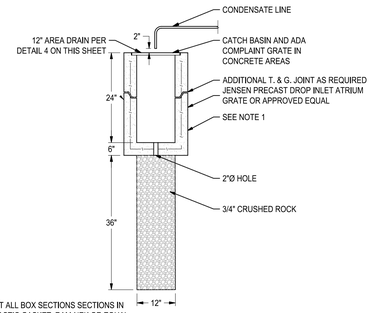
NOTES:
A. REFER TO GEOTECHNICAL REPORT FOR MORE INFORMATION.
B. THICKENED EDGE TO BE LOCATED AT ALL TRANSITIONS TO UNPAVED AREAS.

3 CONCRETE PAVING
NO SCALE



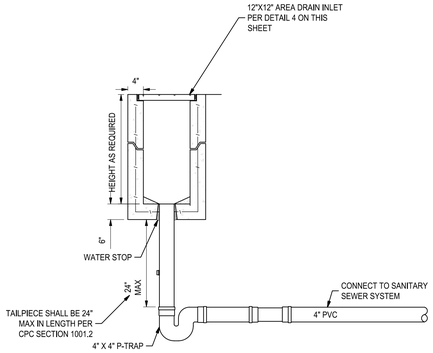
NOTES:
1. SET ALL BOX SECTIONS SECTIONS IN PLASTIC GASKET. RAM-NEK OR EQUAL. TYPICAL JOINT USE (1) 3/4"x 2-1/2" RAM-NEK SEAL OR EQUAL. 6" WIDE GROUT BAND ON OUTSIDE.
2. SEE TABLE FOR BOX SIZE, USING DEPTH OF PIPE(S).

4 AREA DRAIN INLET
NO SCALE



NOTES:
1. SET ALL BOX SECTIONS SECTIONS IN PLASTIC GASKET. RAM-NEK OR EQUAL. TYPICAL JOINT USE (1) 3/4"x 2-1/2" RAM-NEK SEAL OR EQUAL. 6" WIDE GROUT BAND ON OUTSIDE.

5 CONDENSATE SUMP
NO SCALE

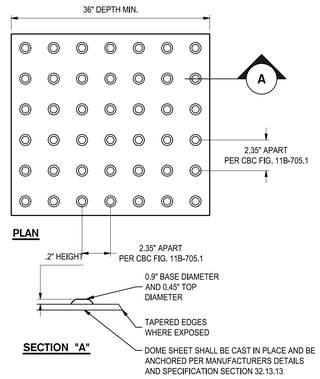


6 TRASH ENCLOSURE DRAIN
NO SCALE

BAR SIZE	CONCRETE f'c=3,000 PSI				CONCRETE f'c=3,500 PSI				CONCRETE f'c=4,000 PSI				CONCRETE f'c=5,000 PSI				CONCRETE f'c=6,000PSI			
	TENSION LAP SPLICE		TENSION DEVELOPMENT		TENSION LAP SPLICE		TENSION DEVELOPMENT		TENSION LAP SPLICE		TENSION DEVELOPMENT		TENSION LAP SPLICE		TENSION DEVELOPMENT		TENSION LAP SPLICE		TENSION DEVELOPMENT	
	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER
#3	30	23	23	17	28	21	21	16	26	20	20	15	23	17	17	13	21	16	16	12
#4	38	29	29	22	37	28	28	21	33	25	25	19	30	23	23	17	28	21	21	16
#5	49	37	37	28	45	34	34	26	42	32	32	24	38	29	29	22	34	26	26	20
#6	56	43	43	33	54	41	41	31	50	38	38	29	45	34	34	26	42	32	32	24
#7	82	63	63	48	77	59	59	45	72	55	55	42	65	50	50	38	59	45	45	34
#8	94	72	72	55	88	67	67	51	82	63	63	48	73	56	56	43	67	51	51	39
#9	106	81	81	62	99	76	76	58	93	71	71	54	82	63	63	48	76	58	58	44
#10	119	91	91	70	111	85	85	65	104	80	80	61	93	71	71	54	85	65	65	50
#11	133	102	102	78	123	94	94	72	115	88	88	67	102	78	78	60	94	72	72	55
#14	MECH SPLICE		121	93	MECH SPLICE		112	93	MECH SPLICE		112	81	MECH SPLICE		94	72	MECH SPLICE		86	66
#18			162	124			150	124			150	108			125	96			115	88

NOTES:
1. SPLICE AND DEVELOPMENT LENGTHS ARE GIVEN IN INCHES ASSUMING NORMAL WEIGHT CONCRETE AND GRADE 60 REINFORCING.
2. LAP SPLICE AND DEVELOPMENT LENGTHS BASED ON ACI 25.4.2.2, ASSUMING A MINIMUM CLEAR SPACING 2DB, AND MINIMUM CLEAR COVER OF 1DB.
3. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW.
4. LAP SPLICES SHALL NOT BE PLACED WITHIN JOINTS, OR WITHIN A DISTANCE OF TWICE THE BEAM DEPTH FROM THE FACE OF THE JOINT
5. MECHANICAL SPLICE SHALL BE DAYTON BAR-LOCK COUPLER OR APPROVED EQUAL CAPABLE OF DEVELOPING 125% OF REBAR TENSILE STRENGTH.
6. WHERE LIGHT WEIGHT CONCRETE IS USED INCREASE TENSION LAP AND DEVELOPMENT LENGTHS BY 33%.
7. WHERE EPOXY COATED OR ZINC COATED BARS ARE USED INCREASE TENSION LAP AND DEVELOPMENT BY 50%.
8. LAP SPLICE AND DEVELOPMENT LENGTHS FOR BUNDLED BARS SHALL BE INCREASED BY 20% FOR 3-BAR BUNDLE, AND 33% FOR A 4-BAR BUNDLE.

7 REINFORCING STEEL TENSION DEVELOPMENT AND LAP SPLICE
NO SCALE



8 TRUNCATED DOMES
NO SCALE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

SIEGFRIED
3428 Brookside Road
Stockton,California 95219
209-943-2021
Fax: 209-942-0214
www.siegfriedeng.com

REGISTERED PROFESSIONAL ENGINEER RALF J. SCHNEIDER No. 62498 Exp. 09/30/25 CIVIL STATE OF CALIFORNIA

DATE SIGNED: 09/24/24

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

CONTRUCTION DETAILS I

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

C5.0

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON ANSI FULL SIZE (D) DRAWINGS
P:\SFNUSD\C19\2205 SAN RAFAEL GLENWOOD ELEMENTARY SCHOOL MODULARS AND GRAPHICS\IMPROVEMENT PLAN\HVAC UPGRADE C2005-C2015 DETAILS.DWG

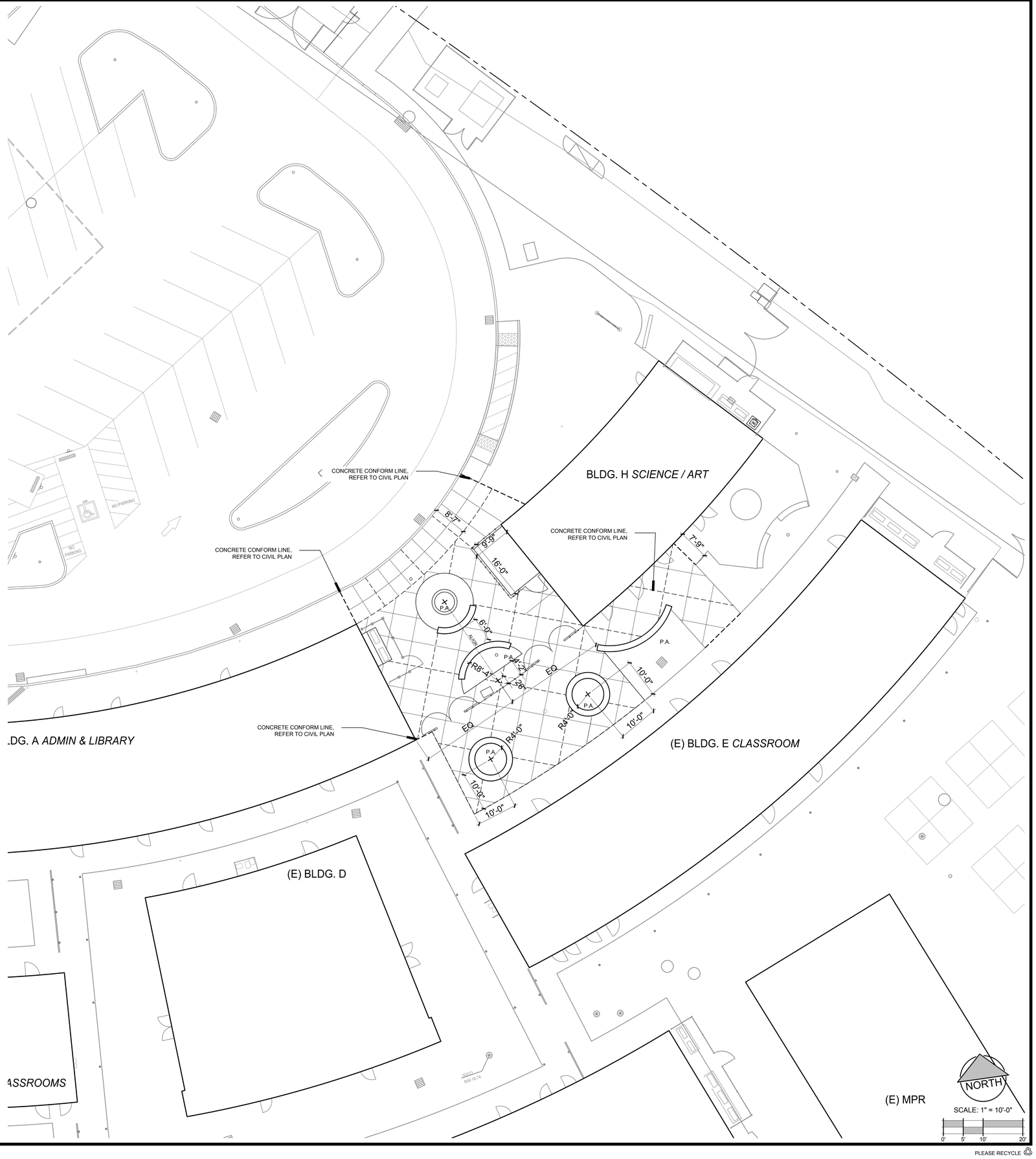
THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PRINTED ON ARCH D SHEETS ORIGINAL IMAGE SIZE

LAYOUT NOTES

1. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
2. DRAWINGS SHALL NOT BE SCALED. WRITTEN DIMENSIONS TAKE PRECEDENCE. IF CONTRACTOR FINDS A DISCREPANCY WITH WRITTEN DIMENSIONS, NOTIFY OWNER'S REPRESENTATIVE BEFORE PROCEEDING WITH WORK.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE OF AND LOCATIONS OF EXISTING AND PROPOSED UNDERGROUND SERVICES AND IMPROVEMENTS WHICH MAY CONFLICT WITH THE WORK. CONTACT THE DISTRICT REPRESENTATIVE AND UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 PRIOR TO INITIATING CONSTRUCTION FOR ASSISTANCE.
4. COORDINATE ALL CONSTRUCTION ELEMENTS PRIOR TO INSTALLATION. VERIFY , CURBS, FENCES, ETC. AND CRITICAL DIMENSIONS, REFERENCE AND COORDINATE POINT LOCATIONS, AND CONSTRUCTION CONDITIONS PRIOR TO INITIATING CONSTRUCTION. NOTIFY THE DISTRICT REPRESENTATIVE IMMEDIATELY SHOULD DISCREPANCIES ARISE.
5. CONTRACTOR SHALL LAYOUT ALL PROJECT ELEMENTS IN FIELD AS SHOWN ON THESE PLANS AND HAVE THEM APPROVED BY THE DISTRICT REPRESENTATIVE PRIOR TO CONSTRUCTION.
6. ALL MINOR ADJUSTMENTS MADE TO ACCOMMODATE EXISTING SITE CONDITIONS SHALL MAINTAIN THE OVERALL DESIGN LAYOUT. ALL ADJUSTMENTS SHALL BE APPROVED BY THE DISTRICT REPRESENTATIVE PRIOR TO CONSTRUCTION.
7. ALL NEW PAVED SURFACES SHALL CONFORM TO EXISTING PAVED SURFACES, FLUSH AND SMOOTH. CONTRACTOR SHALL CONSTRUCT SMOOTH TRANSITIONS OF PAVING AND WALKS WHILE MAINTAINING POSITIVE DRAINAGE.
8. COORDINATE ALL SLEEVING AND UTILITY LOCATIONS AS SHOWN ON THE PLANS AND DETAILS CONTAINED WITHIN THESE CONTRACT DOCUMENTS.
9. CONDITIONS NOT SPECIFICALLY NOTED OR DETAILED ON THESE PLANS SHALL BE CALLED TO THE ATTENTION OF THE DISTRICT REPRESENTATIVE FOR REVIEW PRIOR TO IMPLEMENTATION.
10. THE CONTRACTOR SHALL BE RESPONSIBLE UNDER THIS CONTRACT FOR REPAIRING OR REPLACING, AT HIS OWN EXPENSE, ANY STRUCTURES, FENCES, WALLS, PLANT MATERIAL OR TREES DAMAGED OR DESTROYED, BOTH ON THIS PROPERTY OR THOSE PROPERTIES ADJACENT TO THIS SITE. THE DAMAGED ITEM(S) WILL BE RESTORED TO THEIR ORIGINAL CONDITION OR REPLACED TO THE SATISFACTION OF THE DISTRICT REPRESENTATIVE.
11. ALL ANGLES FOR LAYOUT TO BE 90 DEGREES UNLESS OTHERWISE NOTED.
12. CONTRACTOR TO COORDINATE CONCRETE APRON LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.

LAYOUT LEGEND

SYMBOL	DESCRIPTION OF SYMBOL
BOC	BACK OF CURB
BOW	BACK OF WALL
℄	CENTERLINE
⊗	CENTERLINE OF COLUMN
COP	CENTER OF POST
EOD	EDGE OF DOOR
ER	END OF RADIUS
EQ	EQUAL
(E)	EXISTING
FOB	FACE OF BUILDING
FOC	FACE OF CURB
FOW	FACE OF WALL
IOC	INSIDE OF CURB
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
OC	ON CENTER SPACING
R	RADIUS
TYP	TYPICAL



AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

1723 Hamilton Ave
Suite 101
San Jose, CA 95125

T. 408.292.2196

www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
JOSHUA T. LOPEZ NO. 5152
12/31/2024
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

LAYOUT PLAN

DSA BACKCHECK

DATE: **2024.09.20**

CLIENT PROJ NO: ANLA - #2316.02

SHEET:

L1

PLEASE RECYCLE

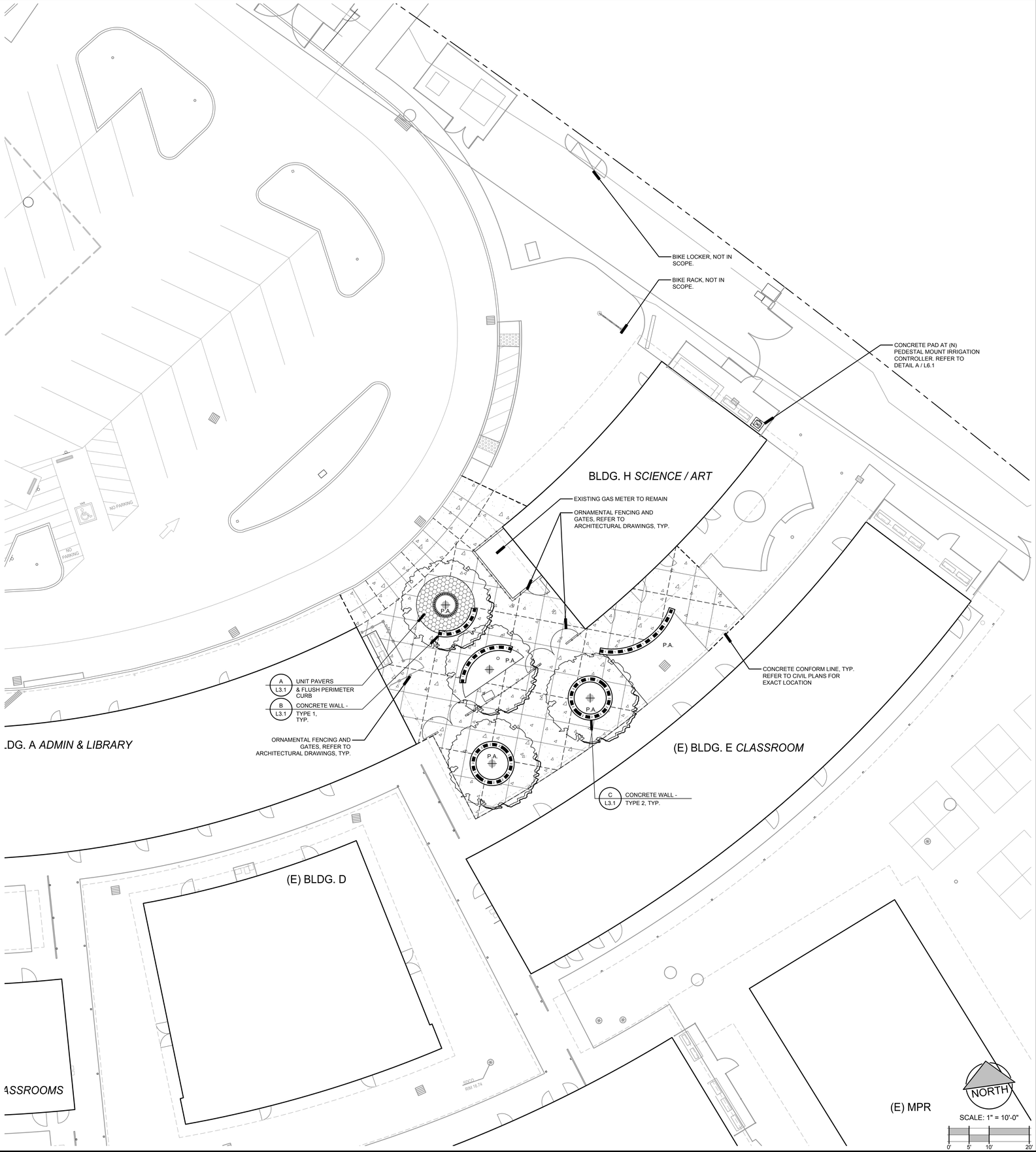
THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON ANSI D SHEETS ORIGINAL IMAGE SIZE

MATERIAL & DETAIL REFERENCE NOTES

1. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
2. CONTRACTOR SHALL BECOME FAMILIAR WITH THE LOCATION OF EXISTING AND PROPOSED UNDERGROUND SERVICES. CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 PRIOR TO BEGINNING WORK. CONTACT DISTRICT REPRESENTATIVE SHOULD ANY CONFLICTS ARISE.
3. SCORE AND EXPANSION JOINTS SHALL BE LOCATED AS INDICATED ON THIS PLAN. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS WHEN NECESSARY TO ALIGN SCORE AND EXPANSION JOINTS WITH RELATIVE ELEMENTS AS SHOWN ON THE PLAN.
4. DETAIL CALLOUTS ON PLAN ARE PROVIDED FOR CONVENIENCE AND GENERAL REFERENCE ONLY. CONTRACTOR SHALL PROVIDE QUANTITY OF PRODUCTS, ELEMENTS AND MATERIALS AS SYMBOLIZED ON PLANS, ASSOCIATED DETAILS AND SPECIFICATIONS.
5. FOR EACH CONCRETE FINISH SPECIFIED, CONTRACTOR SHALL POUR A 2'x2' SAMPLE FOR APPROVAL BY DISTRICT REPRESENTATIVE PRIOR TO INSTALLING CONCRETE PAVING.
6. LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION. IF WORK WITHIN THIS SCOPE REQUIRES REMOVAL, RENOVATION, OR DEMOLITION OF EXISTING TO REMAIN ELEMENTS, BOTH SURFACE AND KNOWN SUBSURFACE CONDITIONS, CONTRACTOR SHALL INCLUDE IN THE BID SUFFICIENT LABOR AND MATERIALS TO RESTORE EXISTING TO REMAIN IMPROVEMENTS IN-KIND AND AS ACCEPTABLE TO DISTRICT REPRESENTATIVE.
7. CONTRACTOR SHALL COORDINATE ROUGH GRADING AND FINE GRADING TO ENSURE EXISTING SUITABLE TOPSOIL IS REMOVED, STOCKPILED AND REINSTALLED INTO ALL PROPOSED LANDSCAPE AREAS PER LANDSCAPE SPECIFICATION SECTION 32 90 00. IN THE EVENT THERE IS NOT ENOUGH EXISTING TOPSOIL, OR NO PLACE TO STOCKPILE TOPSOIL, CONTRACTOR SHALL IMPORT AND INSTALL TOPSOIL PER LANDSCAPE SPECIFICATION SECTION 32 90 00.
8. THE CONTRACTOR SHALL BE RESPONSIBLE UNDER THIS CONTRACT FOR REPAIRING OR REPLACING, AT THEIR OWN EXPENSE, SURFACE AND SUBSURFACE SITE FEATURES TO REMAIN, INCLUDING BUT NOT LIMITED TO ANY STRUCTURES, FENCES, WALLS, PAVING SURFACES, PLANT MATERIAL AND/OR TREES DAMAGED OR DESTROYED, BOTH ON THIS PROPERTY OR THOSE PROPERTIES ADJACENT TO THIS SITE. THE DAMAGED ITEM(S) WILL BE RESTORED TO THEIR ORIGINAL CONDITION OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
9. CONTRACTOR SHALL ADJUST EXISTING UTILITY BOXES TO BE FLUSH WITH PROPOSED GRADES.
10. REFER TO CONSTRUCTION DETAILS ON SHEETS L3.1
11. REFER TO THE FOLLOWING SPECIFICATION SECTIONS:
    - 01 56 39 — TEMPORARY TREE AND PLANT PROTECTION
    - 32 13 13.1 — CONCRETE WORK (LANDSCAPE)
    - 32 14 00 — UNIT PAVING

MATERIAL & DETAIL REFERENCE LEGEND

SYMBOL	DETAIL DESCRIPTION	DETAIL REFERENCE
	CONCRETE PAVING REFER TO CIVIL DRAWINGS	
	UNIT PAVERS & FLUSH PERIMETER CURB	A / L3.1
	CONCRETE WALL - TYPE I	B / L3.1
	CONCRETE WALL - TYPE 2	C / L3.1
	ORNAMENTAL FENCING REFER TO ARCHITECTURAL DRAWINGS	
P.A.	PLANTING AREA REFER TO PLANTING PLAN SHEET L5 & SPECIFICATION SECTION 32 90 00	



PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

ANLA ASSOCIATES, INC.
1723 Hamilton Ave
Suite 101
San Jose, CA 95125
T. 408.292.2196
www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT — DAVID L. LOPEZ No. 4812 — 12/31/2024 — 09/20/2024 — STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

MATERIAL PLAN

DSA BACKCHECK

DATE: **2024.09.20**

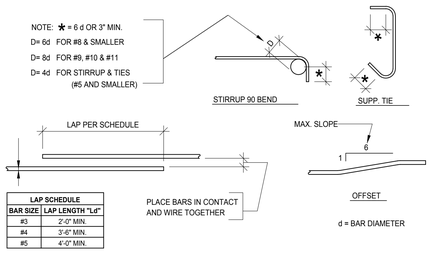
CLIENT PROJ NO: ANLA - #2316.02

SHEET:

L2

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON ORIGINAL PAPER SIZE SHEETS ORIGINAL IMAGE SIZE

NOTE: ★ = 6 d OR 3" MIN.
D= 6d FOR #8 & SMALLER
D= 8d FOR #9, #10 & #11
D= 4d FOR STIRRUP & TIES (#5 AND SMALLER)



LAP SCHEDULE	
BAR SIZE	LAP LENGTH "Ld"
#3	2'-0" MIN.
#4	3'-0" MIN.
#5	4'-0" MIN.

L TYP. CONCRETE REINFORCEMENT BENDING & SPLICING

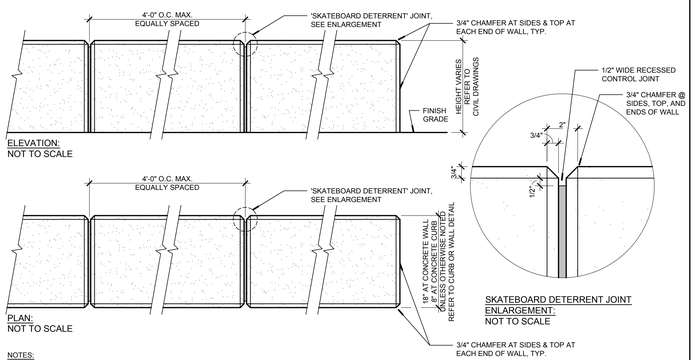
SCALE: NTS

NOT USED

H

NOT USED

D



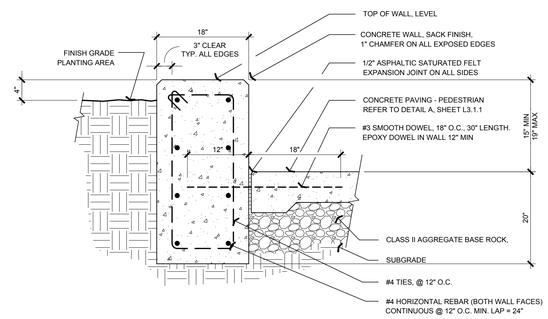
NOTES:
1. CONCRETE SEAT WALLS TO HAVE SACK FINISH, TYP.
2. REFER TO SPECIFICATION SECTION 32 13 13 "CONCRETE WORK" FOR CONCRETE MIX DESIGN CRITERIA.
3. HORIZONTAL REBAR TO BE CONTINUOUS THROUGH SKATEBOARD DETERRENT JOINTS, TYP.
4. SKATEBOARD DETERRENT JOINT TO BE 4'-0" O.C. MAXIMUM, EQUALLY SPACED, AT ALL WALLS OR RAISED CURBS, TYP.

K SKATEBOARD DETERRENT

SCALE: NTS

NOT USED

G



NOTES:
1. INSTALL 'V' NOTCH, SCORE & EXPANSION JOINTS PER SKATEBOARD DETERRENT DETAIL J, SHEET L3.1.
2. FOR TYPICAL CONCRETE REINFORCEMENT BENDING & SPLICING REFER TO DETAIL K, SHEET L3.1
3. TOP OF WALL TO BE LEVEL, UNLESS NOTED OTHERWISE.
4. REFER TO CIVIL PLANS FOR GRADES.
5. REFER TO SPECIFICATION SECTION 32 13 13.1 CONCRETE WORK (LANDSCAPE) FOR CONCRETE MIX DESIGN CRITERIA.
6. EPOXY SHALL BE SIMPSON SET-XP HIGH STRENGTH EPOXY ADHESIVE, EVALUATION REPORT: ICC-ES ESR-2508 7.

C CONCRETE WALL - TYPE 2

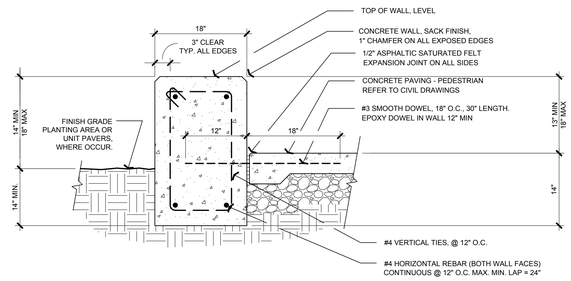
SCALE: NTS

NOT USED

J

NOT USED

F



NOTES:
1. INSTALL 'V' NOTCH, SCORE & EXPANSION JOINTS PER SKATEBOARD DETERRENT DETAIL L, SHEET L3.1.
2. FOR TYPICAL CONCRETE REINFORCEMENT BENDING & SPLICING REFER TO K, SHEET L3.1
3. TOP OF WALL TO BE LEVEL, UNLESS NOTED OTHERWISE.
4. REFER TO CIVIL PLANS FOR GRADES.
5. REFER TO SPECIFICATION SECTION 32 13 13.1 CONCRETE WORK (LANDSCAPE) FOR CONCRETE MIX DESIGN CRITERIA.
6. EPOXY SHALL BE SIMPSON SET-XP HIGH STRENGTH EPOXY ADHESIVE, EVALUATION REPORT: ICC-ES ESR-2508 7.

B CONCRETE WALL - TYPE 1

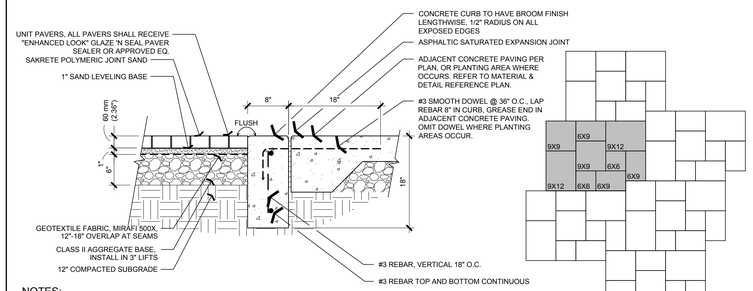
SCALE: NTS

NOT USED

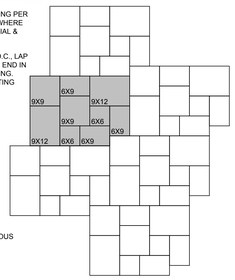
I

NOT USED

E



NOTES:
1. PAVING UNITS SHALL BE CALSTONE 'QUARRY STONE'. MANUFACTURER STANDARD COLOR TO BE SELECTED BY ARCHITECT.
2. PAVERS SHALL BE FLUSH WITH CONCRETE BANDING AND/OR ADJACENT PAVING.
3. LAYOUT PAVERS PRIOR TO INSTALLATION AND SPACE SO THAT NO PAVERS REQUIRE SAWCUTTING RESULTING IN PIECES LESS THAN 2" IN SIZE IN ANY DIRECTION.
4. INSTALL PAVERS WITH TIGHT JOINTS. FILL VOIDS WITH SAKRETE POLYMERIC SAND AND COMPACT UNTIL ALL JOINTS ARE TIGHT.
5. PAVER SURFACE SHALL BE A SMOOTH AND CONTINUOUS SURFACE WITH NO GAPS COMPLIANT WITH ADA.
6. ALL PAVERS SHALL RECEIVE "ENHANCED LOOK" GLAZE 'N SEAL PAVER SEALER OR APPROVED EQ.
7. REFER TO GEOTECHNICAL REPORT FOR COMPACTION AND PREPARATION OF BASE AND SUBGRADE MATERIALS.
8. REFER TO SPECIFICATION SECTION 32 14 00 - UNIT PAVERS
9. REFER TO SPECIFICATION SECTION 32 13 13 - CONCRETE WORK



PAVING PATTERN:
1. PAVING PATTERN TO BE AS SHOWN ABOVE
2. PAVERS TO BE
12% 6"X6" PAVERS 26% 6"X9" PAVERS
27% 9"X9" PAVERS 35% 9"X12" PAVERS

A UNIT PAVERS & FLUSH PERIMETER CURB

SCALE: NTS

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

ANLA ASSOCIATES, INC.
1723 Hamilton Ave
Suite 101
San Jose, CA 95125
T. 408.292.2196
www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
JAMES R. L. LOPEZ No. 3122
12/31/2024
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

CONSTRUCTION DETAILS

DSA BACKCHECK

DATE: **2024.09.20**

CLIENT PROJ NO: ANLA - #2316.02

SHEET:

L3.1

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON ORIGINAL 24X36 SHEETS ORIGINAL SCALE SIZE

IRRIGATION NOTES

1. I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM ACCORDINGLY FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN.

   SARAH R.L. LOPEZ
   CALIFORNIA LANDSCAPE ARCHITECT #6861

2. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL BECOME FAMILIAR WITH THE LOCATION OF EXISTING AND PROPOSED UNDERGROUND SERVICES. CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 PRIOR TO BEGINNING WORK. CONTACT DISTRICT REPRESENTATIVE SHOULD ANY CONFLICTS ARISE.
4. THE IRRIGATION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL CODES AND REGULATIONS.
5. SCHOOL IRRIGATION SYSTEM IS DESIGNED TO OPERATE AT 60 PSI AND 50 GPM FROM THE POINT OF CONNECTION. CONTRACTOR SHALL VERIFY PRESSURE AND FLOW PRIOR TO BEGINNING OF WORK CONTACT DISTRICT REPRESENTATIVE IMMEDIATELY SHOULD CONFLICTS ARISE.
6. THE IRRIGATION SYSTEM DESIGN IS DIAGRAMMATIC. WHERE PIPING, VALVES, ETC. ARE SHOWN OUTSIDE OF PLANTING AREAS, THE INTENT IS FOR PIPING, VALVES, ETC. TO BE INSTALLED WITHIN PLANTING AREAS UNLESS OTHERWISE NOTED AND DETAILED.
7. CONTRACTOR SHALL COORDINATE IRRIGATION INSTALLATION WITH OTHER TRADES. CONTRACTOR TO COORDINATE AND VERIFY ALL SLEEVING, PIPING, ELECTRICAL SUPPLY, POINT OF CONNECTION, ETC.
8. CONTRACTOR IS RESPONSIBLE FOR COMPLETE AND UNIFORM COVERAGE OF ALL PLANTING AND TURF AREAS. CONTRACTOR TO THROTTLE THE FLOW CONTROL AT EACH VALVE TO OBTAIN OPTIMUM OPERATING PRESSURE FOR EACH CIRCUIT. ADJUST SPRAY HEADS AND NOZZLES FOR OPTIMUM COVERAGE WHILE PREVENTING OVERSPRAY ONTO WALKWAYS AND STRUCTURES BY USE OF PRESSURE COMPENSATING DEVICES.
9. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN TRENCHING AROUND EXISTING TREES AND SHRUBS. CONTRACTOR SHALL HAND TRENCH WHEN TRENCHING ACROSS ROOTS 2" AND LARGER TO PRESERVE ROOT SYSTEM. ROOTS SMALLER THAN 2" MAY BE TRIMMED. DO NOT TEAR ANY ROOTS.
10. REMOTE CONTROL VALVES FOR TURF FIELD ARE BURIED BELOW FINISH GRADE. CONTRACTOR SHALL ENSURE (E) VALVES ARE OPERATION BEFORE, DURING AND AFTER CONSTRUCTION.
11. REFER TO SPECIFICATIONS SECTION 32 84 00 AND IRRIGATIONS DETAILS ON SHEET L6.1

IRRIGATION LEGEND

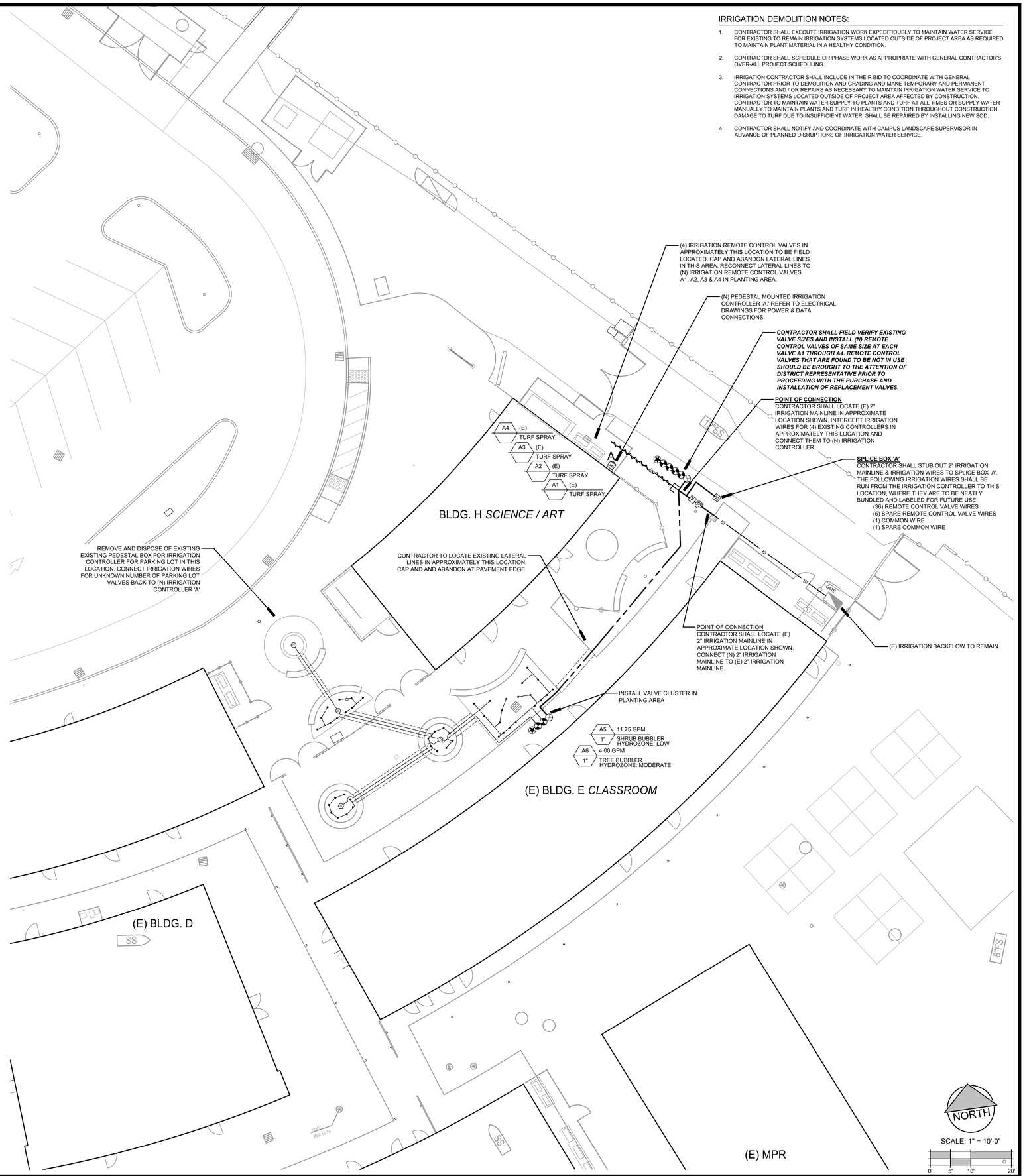
SYM	MODEL	MANUF.	DESCRIPTION	GPM	PSI	RAD
BUBBLERS						
⊘	1402	RAINBIRD	TREE FLOOD BUBBLER IN DRAIN TUBE, TWO PER TREE	.5	40	-
•	1401	RAINBIRD	SHRUB FLOOD BUBBLER, ONE PER SHRUB	.25	40	-
VALVES / CONTROLLER						
⊗	-	AQUA	IPS BRONZE BALL VALVE			
◎	2160	GRISWOLD	MASTER CONTROL VALVE, 3" SIZE, NORMALLY OPEN BRASS VALVE. RUN 2 WIRES TO CONTROLLER STATION A-1. INSTALL IN PLASTIC VALVE BOX.			
F	QS200-15	FLO MEC	1-1/2" ULTRASONIC FLOW SENSOR			
◐	PEB-PRS-D SERIES	RAINBIRD	PRESSURE REGULATING ELECTRIC REMOTE CONTROL VALVE, SIZE PER PLAN. INSTALLED IN VALVE BOX.			
❀	33DLRC	RAINBIRD	QUICK COUPLING VALVE 3/4" NPT DOUBLE TRACK KEY LUG, LOCKING RUBBER COVER, 2-PEASE BODY CONTRACTOR SHALL PROVIDE (5) QUICK COUPLING KEYS, HOSE SWIVELS AND LOCKING COVER KEY QUICK COUPLING KEY MODEL #: 33DK HOSE SWIVEL MODEL #: SH-0 LOCKING COVER KEY MODEL #: 2049 COVER KEY			
A M	EGP-48i-SPED EGP-ETHER RM-ISVCETHR-SY	RAINMASTER	RAIN MASTER EAGLE PLUS 48 STATION CONTROLLER IN A STAINLESS STEEL SECURITY PEDESTAL MOUNTED ENCLOSURE. MASTER VALVE & FLOW SENSOR CAPABILITY. LOCAL REPRESENTATIVE: CHRIS STEELE WITH TORO (559-779-8676) CHRIS.STEELE@TORO.COM			
PIPING						
———			SCH 40 PVC NON-PRESSURIZED, PURPLE COLOR, LATERAL LINE, 18" DEPTH, NSF APPROVED, SIZE PER PIPE SIZE CHART. INSTALL WITH 6" OF SAND BACKFILL.			
— — —			SCH 40 (UP TO 1 1/2") CLASS 315 (2" AND LARGER) PVC PRESSURIZED, PURPLE COLOR, MAINLINE, NSF APPROVED, SIZE PER PLAN, 24" DEPTH. INSTALL TRACER WIRE ALONG ENTIRE LENGTH OF MAINLINE & 6" OF SAND BACKFILL.			
- - - - - -			SCH 40 PVC SLEEVES, MIN. 2 IN EACH LOCATION, SIZE AS REQUIRED. RUN CONTROL WIRE IN SEPARATE SLEEVE FROM IRRIGATION PIPES. SLEEVING SHALL BE INSTALLED AS SHOWN PER DETAIL A / L6.2.1			

IRRIGATION LATERAL LINE SIZE CHART (SCH 40)

GPM	PIPE SIZE
0 - 12 GPM	1"
12.01 - 22 GPM	1 1/4"
22.01 - 30 GPM	1 1/2"
30.01 - 50 GPM	2"

C= GALLONS PER MINUTE
A= VALVE NUMBER
B= VALVE SIZE
D= DESCRIPTION
E= HYDROZONE

A C
B D
E



IRRIGATION DEMOLITION NOTES:

1. CONTRACTOR SHALL EXECUTE IRRIGATION WORK EXPEDITIOUSLY TO MAINTAIN WATER SERVICE FOR EXISTING TO REMAIN IRRIGATION SYSTEMS LOCATED OUTSIDE OF PROJECT AREA AS REQUIRED TO MAINTAIN PLANT MATERIAL IN A HEALTHY CONDITION.
2. CONTRACTOR SHALL SCHEDULE OR PHASE WORK AS APPROPRIATE WITH GENERAL CONTRACTOR'S OVER-ALL PROJECT SCHEDULING.
3. IRRIGATION CONTRACTOR SHALL INCLUDE IN THEIR BID TO COORDINATE WITH GENERAL CONTRACTOR PRIOR TO DEMOLITION AND GRADING AND MAKE TEMPORARY AND PERMANENT CONNECTIONS AND / OR REPAIRS AS NECESSARY TO MAINTAIN IRRIGATION WATER SERVICE TO IRRIGATION SYSTEMS LOCATED OUTSIDE OF PROJECT AREA AFFECTED BY CONSTRUCTION. CONTRACTOR TO MAINTAIN WATER SUPPLY TO PLANTS AND TURF AT ALL TIMES OR SUPPLY WATER MANUALLY TO MAINTAIN PLANTS AND TURF IN HEALTHY CONDITION THROUGHOUT CONSTRUCTION. DAMAGE TO TURF DUE TO INSUFFICIENT WATER SHALL BE REPAIRED BY INSTALLING NEW SOD.
4. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH CAMPUS LANDSCAPE SUPERVISOR IN ADVANCE OF PLANNED DISRUPTIONS OF IRRIGATION WATER SERVICE.

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

ANLA ASSOCIATES, INC.
1723 Hamilton Ave
Suite 101
San Jose, CA 95125
T. 408.292.2196
www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
SARAH R.L. LOPEZ No. 6861
12/31/2024
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

IRRIGATION PLAN

DSA BACKCHECK

DATE: **2024.09.20**
CLIENT PROJ NO: ANLA - #2316.02
SHEET:

L4

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PRINTED ON ANSI SHEETS ORIGINAL PAGE SIZE

PLANTING NOTES

1. I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM ACCORDINGLY FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN.

   Sarah R. Lopez
   SARAH R. LOPEZ
   CALIFORNIA LANDSCAPE ARCHITECT #6861

2. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH, AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
4. CONTRACTOR SHALL BECOME FAMILIAR WITH THE LOCATION OF ALL EXISTING AND FUTURE UNDERGROUND SERVICES AND IMPROVEMENTS WHICH MAY CONFLICT WITH WORK TO BE DONE. CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 PRIOR TO DIGGING. NOTIFY DISTRICT REPRESENTATIVE IMMEDIATELY SHOULD CONFLICTS ARISE.
5. FINE GRADING, HEADERS AND IRRIGATION COVERAGE SHALL BE APPROVED BY DISTRICT REPRESENTATIVE PRIOR TO PLANTING OPERATIONS.
6. CONTRACTOR SHALL LAY OUT PLANT PLANTING PER PLAN AND FACE TO GIVE BEST APPEARANCE OR RELATION TO ADJACENT PLANTS, STRUCTURES OR VIEWS. CONTRACTOR TO OBTAIN APPROVAL FROM DISTRICT REPRESENTATIVE PRIOR TO INSTALLATION.
7. PLANT PLANTING SHALL NOT BE INSTALLED IN AN AREA WHICH WILL CAUSE HARM TO ADJACENT STRUCTURES OR OBSTRUCT IRRIGATION SPRAY PATTERN. NOTIFY THE DISTRICT REPRESENTATIVE SHOULD CONFLICTS ARISE.
8. PRIOR TO PLANTING INSTALLATION, OBTAIN APPROVAL OF PLANT LAYOUT FROM DISTRICT REPRESENTATIVE. PLANT LOCATIONS ARE DIAGRAMMATIC AND MAY BE ADJUSTED IN THE FIELD AT AT THE DISTRICT REPRESENTATIVE'S REQUEST.
9. AT THE DISTRICT REPRESENTATIVE'S REQUEST. UNLESS OTHERWISE NOTED, FINISH GRADE OF PLANTING AREAS SHALL BE 2" BELOW ADJACENT PAVING. TAPER 3" DEPTH BARK MULCH TOP DRESSING TO 1/2" BELOW ADJACENT PAVING (1-1/2" DEPTH) WITHIN 2" OF PAVING.
10. GROUND COVERS SHALL BE PLANTED EVENLY AND CONTINUOUSLY UNDER TREE AND SHRUB MASSES.
11. ALL PLANTING AREAS SHALL RECEIVE WEED BARRIER AT FINISH GRADE OF PLANTING SOIL UNLESS OTHERWISE SPECIFIED. CONTRACTOR SHALL INSTALL 3" MIN. DEPTH BARK MULCH TOP DRESSING ABOVE WEED BARRIER. REFER TO DETAIL D, SHEET L7.
12. ALL NEWLY PLANTED PLANTING SHALL BE THOROUGHLY SOAKED WITH WATER WITHIN 3 HOURS OF PLANTING.
13. ALL EXISTING TREES, SHRUBS AND GROUND COVERS TO REMAIN SHALL BE PROTECTED. ANY DAMAGE CAUSED BY CONTRACTOR'S WORK OR NEGLIGENCE SHALL BE REPLACED OR REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE DISTRICT REPRESENTATIVE.
14. THIRTY DAYS AFTER PLANTING, CONTRACTOR SHALL RE-STAKE AND STRAIGHTEN TREES AS NECESSARY.
15. REFER TO PLANTING DETAILS ON SHEET L7.
16. REFER TO THE FOLLOWING SPECIFICATION SECTIONS:
    01 56 39 TEMPORARY TREE AND PLANT PROTECTION
    32 90 00 PLANTING

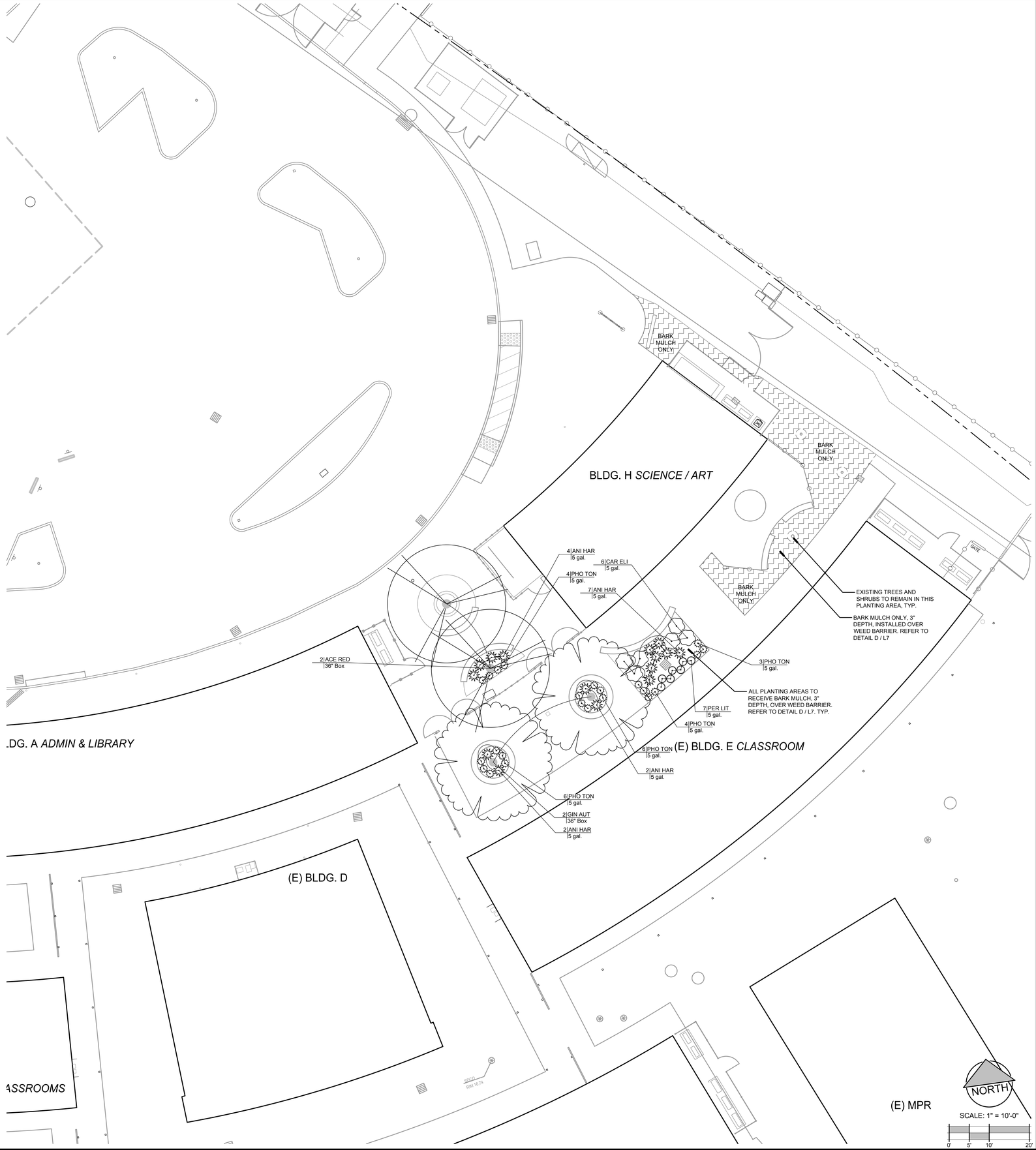
PLANT SCHEDULE

CODE	BOTANICAL / COMMON NAME	SIZE	WUCOLS WATER USE
TREES			
ACE RED	Acer rubrum 'Red Sunset' / Red Sunset® Maple	36" Box	Moderate
GIN AUT	Ginkgo biloba 'Autumn Gold' / Autumn Gold Maidenhair Tree	36" Box	Moderate
SHRUBS			
ANI HAR	Anigozanthos x 'Harmony' / Harmony Yellow Kangaroo Paw	5 gal.	Low
CAR ELI	Carpenteria californica 'Elizabeth' / Elizabeth Bush Anemone	5 gal.	Low
PER LIT	Perovskia atriplicifolia 'Little Spire' / Little Spire Russian Sage	5 gal.	Low
PHO TON	Phormium tenax 'Tony Tiger' / New Zealand Flax Hybrid	5 gal.	Low

LANDSCAPE SHADING:

AS REQUIRED PER CALGREEN 5.106.12: SHADE TREES

5.106.12.1: SURFACE PARKING AREAS:	
TOTAL AREA OF NEW SURFACE PARKING	0 SF
REQUIRED SHADING OF PARKING AREAS (50%)	0 SF
TOTAL SHADED PARKING AREA PROVIDED	0 SF
	0 SF REQUIRED
5.106.12.2: LANDSCAPE AREAS:	
TOTAL AREA OF NEW LANDSCAPE	247.00 SF
REQUIRED SHADING OF LANDSCAPE AREAS (20%)	49.40 SF
TOTAL SHADED LANDSCAPE AREA PROVIDED	220.00 SF
	170.60 SF OVER
5.106.12.3: HARDSCAPE AREAS:	
TOTAL AREA OF NEW HARDSCAPE	3,150.00 SF
REQUIRED HARDSCAPE AREA SHADING (20%)	630 SF
TOTAL SHADED HARDSCAPE AREA PROVIDED	1,497.00 SF
	867 SF OVER



PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

ANLA
1723 Hamilton Ave
Suite 101
San Jose, CA 95125
T. 408.292.2196
www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
SARAH R. LOPEZ No. 6861
12/31/2024
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PLANTING PLAN

DSA BACKCHECK

DATE: **2024.09.20**

CLIENT PROJ NO: ANLA - #2316.02

SHEET:

L5

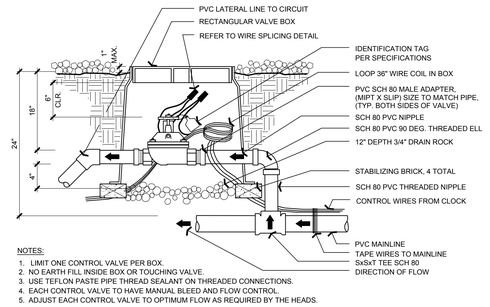
THIS LINE SHOWS 1 INCH IF PRINTED EXACTLY ONE INCH LONG AT THIS SCALE

NOT USED

L

NOT USED

H

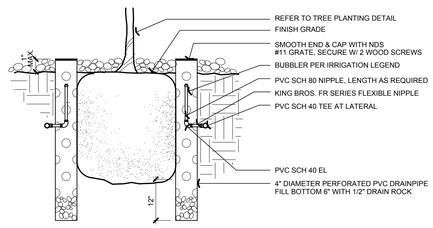


NOTES:
1. LIMIT ONE CONTROL VALVE PER BOX.
2. NO EARTH FILL INSIDE BOX OR TOUCHING VALVE.
3. USE TEFLON PASTE PIPE THREAD SEALANT ON THREADED CONNECTIONS.
4. EACH CONTROL VALVE TO HAVE MANUAL BLEED AND FLOW CONTROL.
5. ADJUST EACH CONTROL VALVE TO OPTIMUM FLOW AS REQUIRED BY THE HEADS.

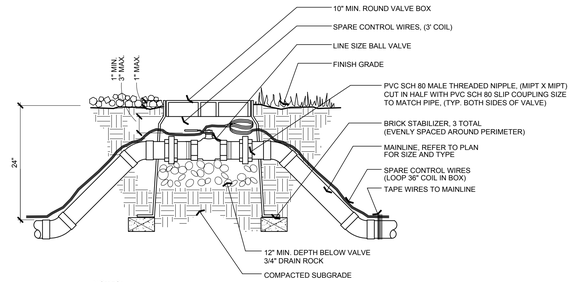
D REMOTE CONTROL VALVE SCALE: NTS

NOT USED

K



G TREE BUBBLER SCALE: NTS

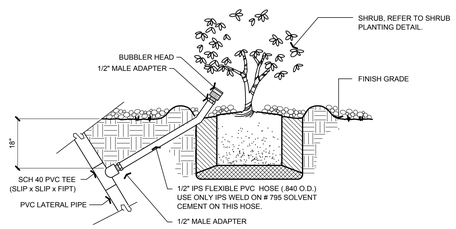


NOTES:
1. VALVE BOX SHALL BE SIZED AND INSTALLED TO ALLOW FREE MOVEMENT OF BALL VALVE HANDLE. DO NOT CUT VALVE HANDLE.
2. CONTRACTOR SHALL RUN SPECIFIED QUANTITY OF SPARE CONTROL WIRES THROUGH EACH BALL VALVE BOX AND COIL 3' LOOP FOR FUTURE USE.

C BALL VALVE SCALE: NTS

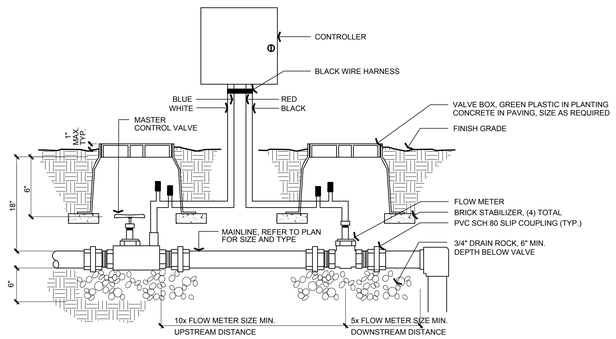
NOT USED

J



NOTES:
1. FLEXIBLE TUBING NOT TO EXTEND MORE THAN 1 1/2" ABOVE FINISH GRADE.
2. INSTALL AND ADJUST BUBBLER TO APPLY WATER ON ROOTBALL OF EACH SHRUB.
3. CONTRACTOR SHALL INSTALL CHECK VALVES AS REQUIRED ON SLOPES TO MINIMIZE RUN-OFF AND AVOID POOLING OF WATER FROM LOW HEAD RUN-OFF.

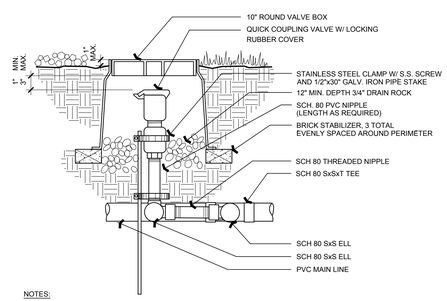
F SHRUB BUBBLER SCALE: NTS



B MASTER CONTROL VALVE & FLOW SENSORS SCALE: NTS

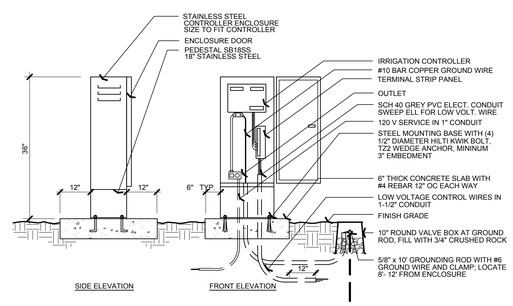
NOT USED

I



NOTES:
1. USE TEFLON PASTE PIPE THREAD SEALANT FOR THREADED CONNECTIONS
2. INSTALL QUICK COUPLER IN SAME BOX WITH REMOTE CONTROL VALVE WHEN PRACTICAL.

E QUICK COUPLING VALVE SCALE: NTS



A PEDESTAL MOUNT IRRIGATION CONTROLLER ASSEMBLY SCALE: NTS

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

ANLA ASSOCIATES

1723 Hamilton Ave
Suite 101
San Jose, CA 95125

T. 408.292.2196

www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
SAMUEL LOPEZ III
12/31/2024
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

IRRIGATION DETAILS

DSA BACKCHECK

DATE: **2024.09.20**

CLIENT PROJ NO: ANLA - #2316.02

SHEET:

L6.1

THIS LINE SHOULD BE EXACTLY ONE INCH LONG AT THIS SCALE. IF NOT, ADJUST YOUR PRINT

NOT USED

G

California Water Efficient Landscape Worksheet

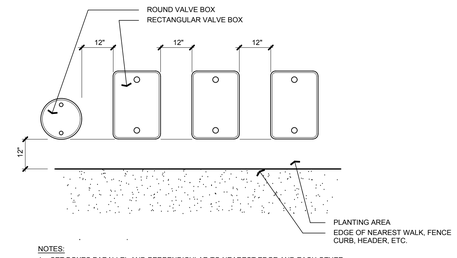
Reference Evapotranspiration (ETo)			45.3	Project Type		School		0.65
Hydrozone #	Planting Description	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	ETAF (PF/IE)	Landscape Area (Sq. Ft.)	ETAF x Area	Estimated Total Water Use (ETWU)
Regular Landscape Areas								
A1	Existing Valve	–	–	–	–	–	–	–
A2	Existing Valve	–	–	–	–	–	–	–
A3	Existing Valve	–	–	–	–	–	–	–
A4	Existing Valve	–	–	–	–	–	–	–
A5	SHRUB BUBBLER	0.3	Drip	0.81	0.37	447	166	4650
A6	TREE BUBBLER	0.4	Drip	0.81	0.49	400	198	5548
A7	Existing Valve	–	–	–	–	–	–	–
A8	Existing Valve	–	–	–	–	–	–	–
A9	Not Used (Future Expansion)							
A10	Not Used (Future Expansion)							
A11	Not Used (Future Expansion)							
A12	Not Used (Future Expansion)							
A13	Not Used (Future Expansion)							
A14	Not Used (Future Expansion)							
A15	Not Used (Future Expansion)							
A16	Not Used (Future Expansion)							
A17	Not Used (Future Expansion)							
A18	Not Used (Future Expansion)							
A19	Not Used (Future Expansion)							
A20	Not Used (Future Expansion)							
A21	Not Used (Future Expansion)							
A22	Not Used (Future Expansion)							
A23	Not Used (Future Expansion)							
A24	Not Used (Future Expansion)							
A25	Not Used (Future Expansion)							
A26	Not Used (Future Expansion)							
A27	Not Used (Future Expansion)							
A28	Not Used (Future Expansion)							
A29	Not Used (Future Expansion)							
A30	Not Used (Future Expansion)							
A31	Not Used (Future Expansion)							
A32	Not Used (Future Expansion)							
A33	Not Used (Future Expansion)							
A34	Not Used (Future Expansion)							
A35	Not Used (Future Expansion)							
A36	Not Used (Future Expansion)							
A37	Not Used (Future Expansion)							
A38	Not Used (Future Expansion)							
A39	Not Used (Future Expansion)							
A40	Not Used (Future Expansion)							
A41	Not Used (Future Expansion)							
A42	Not Used (Future Expansion)							
A43	Not Used (Future Expansion)							
A44	Not Used (Future Expansion)							
A45	Not Used (Future Expansion)							
A46	Not Used (Future Expansion)							
A47	Not Used (Future Expansion)							
A48	Not Used (Future Expansion)							
			Totals	847	363	10198		
Special Landscape Areas								
–			–	–	–	–		
			Totals	–	–	–		
						ETWU Total		10198
						Maximum Applied Water Allowance (MAWA)		15463

ETAF Calculations	
Regular Landscape Areas	
Total ETAF x Area	363
Total Area	847
Average ETAF	0.43
All Landscape Areas	
Total ETAF x Area	363
Total Area	847
Average ETAF	0.43

I CALIFORNIA WATER EFFICIENT LANDSCAPE WORKSHEET SCALE: NTS

NOT USED

E

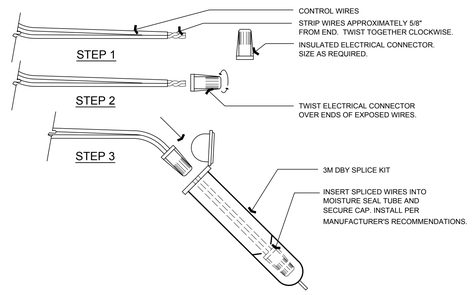


NOTES:
1. SET BOXES PARALLEL AND PERPENDICULAR TO NEAREST EDGE AND EACH OTHER.
2. CENTER BOXES OVER ENCLOSED VALVES.
3. AVOID HEAVILY COMPACTING SOIL AROUND BOXES TO PREVENT DAMAGING BOX.
4. VALVE BOXES IN SHRUB PLANTING AREAS SHALL BE GREEN.

D VALVE BOX ALIGNMENT SCALE: NTS

NOT USED

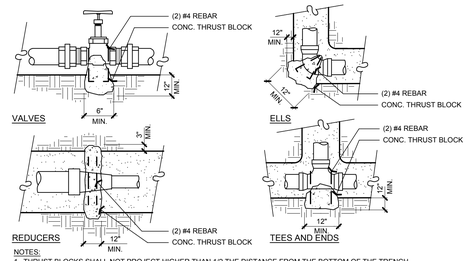
F



C WIRE CONNECTIONS SCALE: NTS

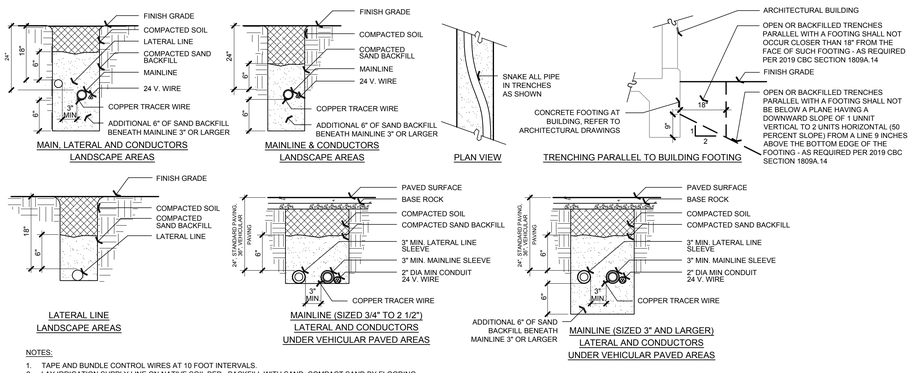
NOT USED

H



NOTES:
1. THRUST BLOCKS SHALL NOT PROJECT HIGHER THAN 1/2 THE DISTANCE FROM THE BOTTOM OF THE TRENCH TO FINISH GRADE. DO NOT COVER ENDS OF FITTINGS OR BOLTS WITH CONCRETE.
2. CONCRETE SHALL HAVE COMPRESSION STRENGTH OF 2000 PSI.
3. THRUST BLOCKING IS REQUIRED ON 3" AND LARGER PIPE WHERE:
   - PIPE CHANGES DIRECTION
   - PIPE CHANGES SIZES
   - STOPS OR DEAD ENDS
   - THRUST DEVELOPS @ VALVES
   - THRUST DUE TO HIGH PRESSURE IS EXPECTED

B THRUST BLOCK SCALE: NTS



NOTES:
1. TAPE AND BUNDLE CONTROL WIRES AT 10 FOOT INTERVALS.
2. LAY IRRIGATION SUPPLY LINE ON NATIVE SOIL BED. BACKFILL WITH SAND, COMPACT SAND BY FLOODING.
3. PROVIDE SLEEVES FOR ALL LINES AND WIRES BENEATH PAVING.

A TRENCHING SCALE: NTS

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

Consultant:

ANLA ASSOCIATES, INC.
1723 Hamilton Ave
Suite 101
San Jose, CA 95125

T. 408.292.2196

www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
DANIEL LOPEZ DE VEGA
12/31/2024
Renewal Date
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

IRRIGATION DETAILS

DSA BACKCHECK

DATE: **2024.09.20**

CLIENT PROJ NO: ANLA - #2316.02

SHEET:

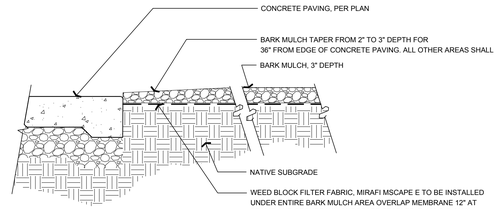
L6.2

PLEASE RECYCLE

THIS LINE SHOULD MEASURE 1 INCH IF NOT, THIS SHEET IS NOT THE SCALE SHOWN

NOT USED

NOT USED



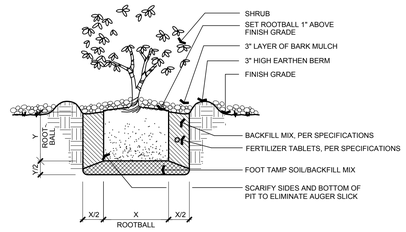
NOTES:

1. REFER TO SPECIFICATION SECTION 32 90 00
2. CONTRACTOR SHALL FINE GRADE BARK MULCH AREA, APPLY PRE-EMERGENT WEED CONTROL, INSTALL WEED BLOCK FILTER FABRIC WITH STAPLES, AND APPLY BARK MULCH 3" DEPTH MIN.
3. DO NOT INSTALL WEED BLOCK FILTER FABRIC OR MULCH WITHIN 2" OF (N) OR (E) PLANT STEMS AND 6" OF TREE TRUNKS
4. WEED BLOCK FILTER FABRIC TO BE MIRAFI MSCAPE E, ROLL SIZE TO BE 9' WIDE.
5. LANDSCAPE STAPLES TO BE 6-INCH 9-GAUGE GALVANIZED STEEL LANDSCAPING STAPLES, AVAILABLE THROUGH SANDBAGGY.COM, OR EQUAL.

L H D WEED BARRIER SCALE: NTS

NOT USED

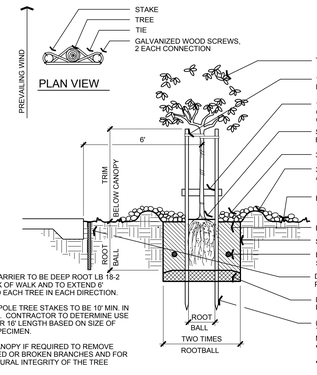
NOT USED



K G C SHRUB PLANTING SCALE: NTS

NOT USED

NOT USED



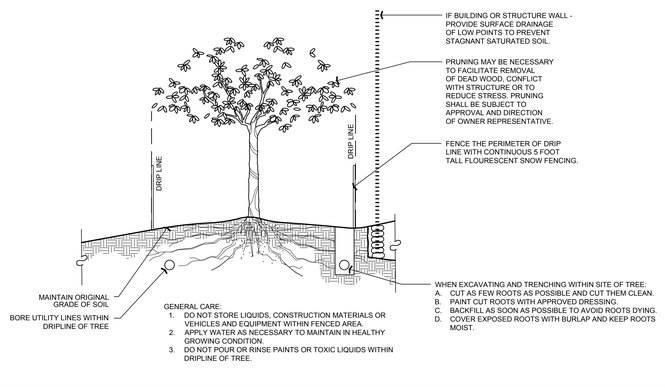
NOTES:

1. ROOT BARRIER TO BE DEEP ROOT LB 18-2 AT BACK OF WALK AND TO EXTEND 8' BEYOND EACH TREE IN EACH DIRECTION.
2. LODGE POLE TREE STAKES TO BE 10' MIN. IN LENGTH. CONTRACTOR TO DETERMINE USE OF 12' OR 16' LENGTH BASED ON SIZE OF TREE SPECIMEN.
3. TRIM CANOPY IF REQUIRED TO REMOVE DAMAGED OR BROKEN BRANCHES AND FOR STRUCTURAL INTEGRITY OF THE TREE

J F B TREE PLANTING SCALE: NTS

NOT USED

NOT USED



GENERAL CARE:

1. DO NOT STORE LIQUIDS, CONSTRUCTION MATERIALS OR VEHICLES AND EQUIPMENT WITHIN FENCED AREA.
2. APPLY WATER AS NECESSARY TO MAINTAIN IN HEALTHY GROWING CONDITION.
3. DO NOT POUR OR RINSE PAINTS OR TOXIC LIQUIDS WITHIN DRIPLINE OF TREE.

I E A TREE PROTECTION SCALE: NTS

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-001-000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

ISSUE

Δ DESCRIPTION DATE

KEYNOTES

NOTES

Consultant:

ANLA ASSOCIATES

1723 Hamilton Ave
Suite 101
San Jose, CA 95125

T. 408.292.2196

www.anla-associates.com

LICENSED LANDSCAPE ARCHITECT
SARAH L. LOPEZ-RIOS
12/31/2024
09/20/2024
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PLANTING DETAILS

DSA BACKCHECK

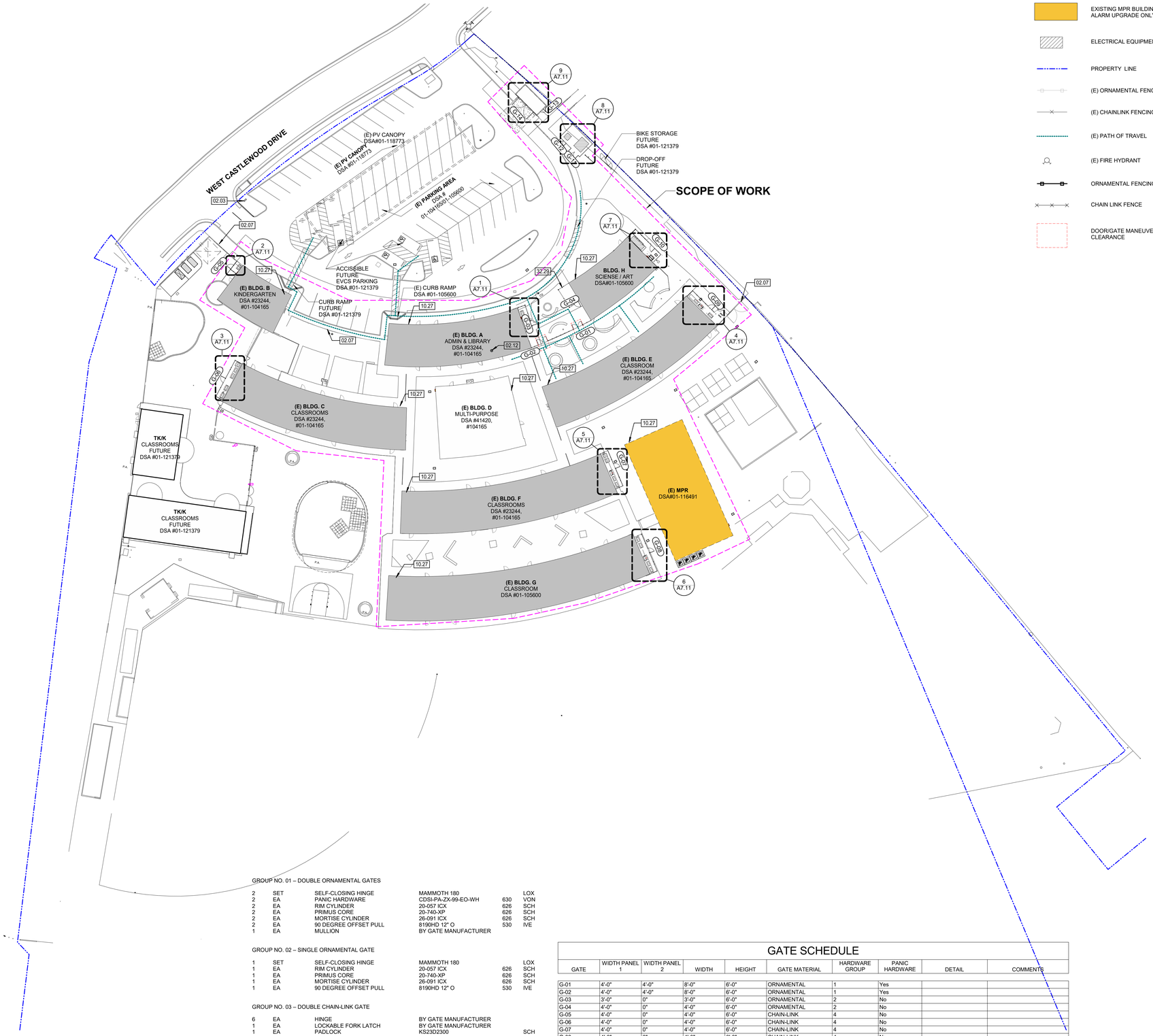
DATE: **2024.09.20**

CLIENT PROJ NO: ANLA - #2316.02

SHEET:

L7

THE LINE SHOWN ABOVE IS 1" WHEN PRINTED ON THIS SHEETS ORIGINAL PAGE SIZE



LEGEND

- EXISTING BUILDINGS W/ HVAC, ELEC, FIRE ALARM, TECH/LOW-VOLTAGE UPGRAD
- EXISTING MPR BUILDING - FIRE ALARM UPGRADE ONLY
- ELECTRICAL EQUIPMENT, S.E.D
- PROPERTY LINE
- (E) ORNAMENTAL FENCING
- (E) CHAINLINK FENCING
- (E) PATH OF TRAVEL
- (E) FIRE HYDRANT
- ORNAMENTAL FENCING
- CHAIN LINK FENCE
- DOOR/GATE MANEUVERING CLEARANCE

GROUP NO. 01 – DOUBLE ORNAMENTAL GATES

2	SET	SELF-CLOSING HINGE	MAMMOTH 180		LOX
2	EA	PANIC HARDWARE	CDSI-PA-ZX-99-EO-WH	630	VON
2	EA	RIM CYLINDER	20-057 ICX	626	SCH
2	EA	PRIMUS CORE	20-740-XP	626	SCH
2	EA	MORTISE CYLINDER	26-091 ICX	626	SCH
2	EA	90 DEGREE OFFSET PULL	8190HD 12" O	530	IVE
1	EA	MULLION	BY GATE MANUFACTURER		

GROUP NO. 02 – SINGLE ORNAMENTAL GATE

1	SET	SELF-CLOSING HINGE	MAMMOTH 180		LOX
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
1	EA	MORTISE CYLINDER	26-091 ICX	626	SCH
1	EA	90 DEGREE OFFSET PULL	8190HD 12" O	530	IVE

GROUP NO. 03 – DOUBLE CHAIN-LINK GATE

6	EA	HINGE	BY GATE MANUFACTURER	
1	EA	LOCKABLE FORK LATCH	BY GATE MANUFACTURER	
1	EA	PADLOCK	KS23D2300	SCH

GROUP NO. 04 – SINGLE CHAIN-LINK GATE

3	EA	HINGE	BY GATE MANUFACTURER	
1	EA	LOCKABLE FORK LATCH	BY GATE MANUFACTURER	
1	EA	PADLOCK	KS23D2300	SCH

GATE SCHEDULE

GATE	WIDTH PANEL 1	WIDTH PANEL 2	WIDTH	HEIGHT	GATE MATERIAL	HARDWARE GROUP	PANIC HARDWARE	DETAIL	COMMENTS
G-01	4'-0"	4'-0"	8'-0"	6'-0"	ORNAMENTAL	1	Yes		
G-02	4'-0"	4'-0"	8'-0"	6'-0"	ORNAMENTAL	1	Yes		
G-03	3'-0"	0"	3'-0"	6'-0"	ORNAMENTAL	2	No		
G-04	4'-0"	0"	4'-0"	6'-0"	ORNAMENTAL	2	No		
G-05	4'-0"	0"	4'-0"	6'-0"	CHAIN-LINK	4	No		
G-06	4'-0"	0"	4'-0"	6'-0"	CHAIN-LINK	4	No		
G-07	4'-0"	0"	4'-0"	6'-0"	CHAIN-LINK	4	No		
G-08	4'-0"	0"	4'-0"	6'-0"	CHAIN-LINK	4	No		
G-09	4'-0"	0"	4'-0"	6'-0"	CHAIN-LINK	4	No		
G-10	4'-0"	0"	4'-0"	6'-0"	CHAIN-LINK	4	No		
G-11	4'-0"	4'-0"	8'-0"	6'-0"	CHAIN-LINK	3	No		@ TRANSFORMER
G-12	3'-0"	3'-0"	6'-0"	6'-0"	CHAIN-LINK	3	No		@ TRANSFORMER
G-13	3'-0"	0"	3'-0"	6'-0"	CHAIN-LINK	4	No		@ TRASH ENCLOSURE
G-14	8'-0"	8'-0"	16'-0"	6'-0"	CHAIN-LINK	3	No		@ TRASH ENCLOSURE

TN

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

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

LICENSED ARCHITECT
JOHN P. GRAMLING
NO. C-32108
REN. 12-31-25
STATE OF CALIFORNIA

ISSUE

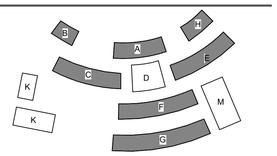
Δ	DESCRIPTION	DATE

KEYNOTES

02.03	(E) TOW-AWAY SIGN, SEE DET. 11/A10.01
02.07	(E) FENCE
02.12	REMOVE (E) KILN AND TURN OVER TO DISTRICT. REMOVE (E) DUCT AND PATCH ROOF TO MATCH ADJACENT
10.27	BUILDING SIGN | DET. 11/A10.01
32.29	REPLACE (E) CHAIN LINK FENCE W/ ORNAMENTAL FENCE.

NOTES

1. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS
2. REFER TO LANDSCAPE DRAWINGS FOR PAVING AND PLANTING INFORMATION
3. REFER TO ELECTRICAL DRAWINGS FOR UTILITY INFORMATION
4. CONTRACTOR IS RESPONSIBLE FOR REPAIR/REPLACEMENT OF ALL HARDSCAPE/PLANTING OUTSIDE OF LIMIT OFWORK LINE FOR CONNECTION OF UNDERGROUND UTILITIES



FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

SITE PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

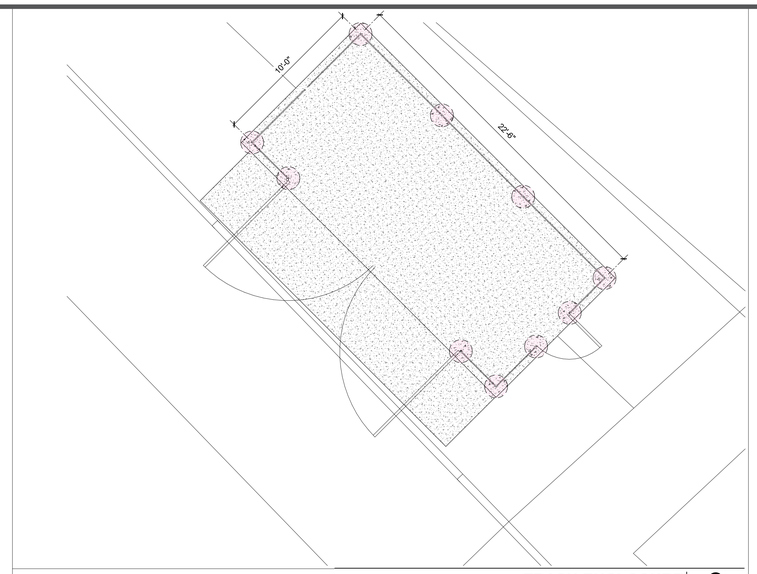
CLIENT PROJ NO:

SHEET:

A1.10

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/3584002000-A-Glenwood ES_HVAC.rvt
9/20/2024 5:45:34 PM

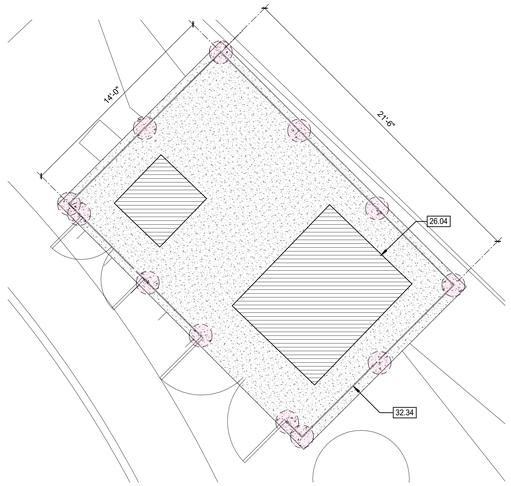
THE LINE SHOWN ABOVE IS 1" WHEN PRINTED ON ANSI D SHEETS ORIGINAL PAGE SIZE



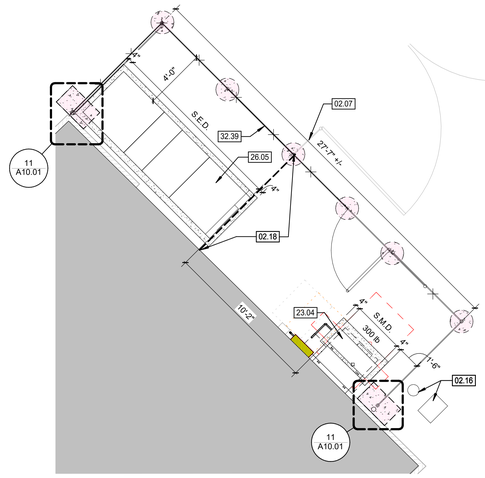
TRASH ENCLOSURE **9** 1/4" = 1'-0"

LEGEND

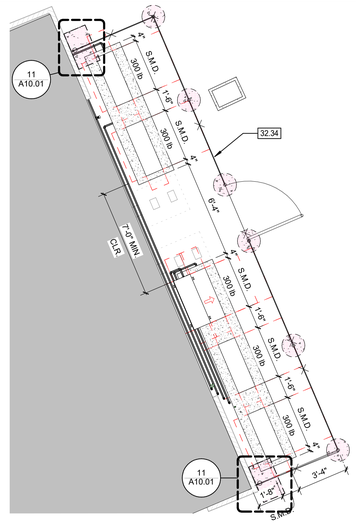
- EXISTING BUILDINGS TO BE HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADED
- CONCRETE PAD
- HVAC UNITS, S.M.D
- ELECTRICAL PANEL, S.E.D
- 6'-0" HIGH BLACK VINYL CHAIN LINK FENCE
- FENCE POST FOOTING



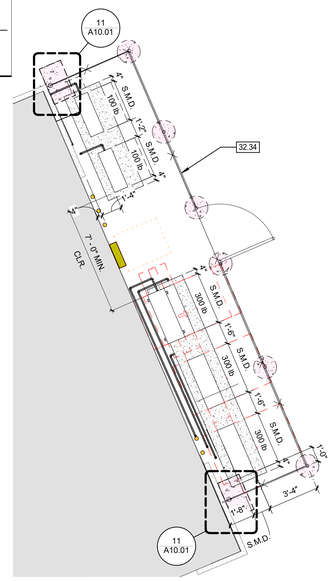
TRANSFORMER ENCLOSURE **8** 1/4" = 1'-0"



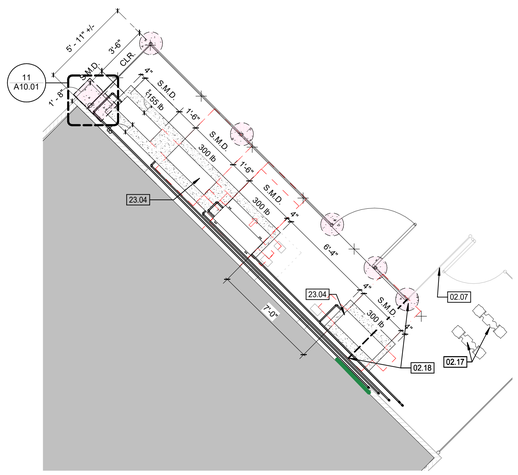
HVAC UNIT YARD @ BLDG H **7** 1/4" = 1'-0"



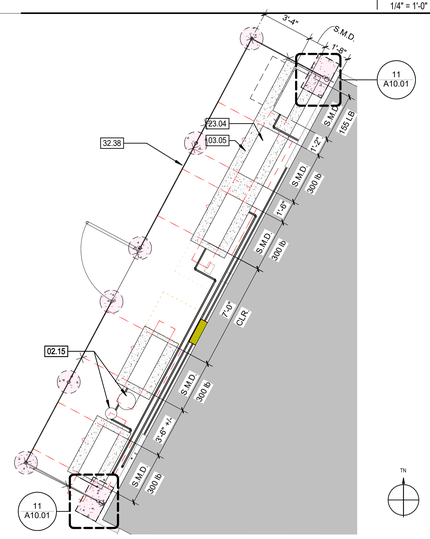
HVAC UNIT YARD @ BLDG G **6** 1/4" = 1'-0"



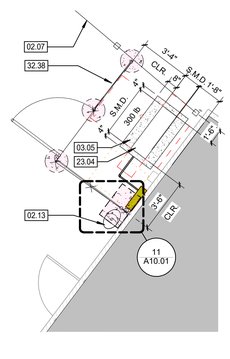
HVAC UNIT YARD @ BLDG F **5** 1/4" = 1'-0"



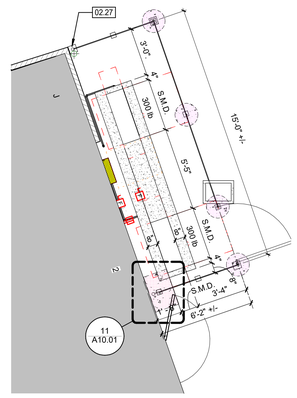
HVAC UNIT YARD @ BLDG E **4** 1/4" = 1'-0"



HVAC UNIT YARD @ BLDG C **3** 1/4" = 1'-0"



HVAC UNIT YARD @ BLDG B **2** 1/4" = 1'-0"



HVAC UNIT YARD@BLDG A **1** 1/4" = 1'-0"

PLEASE RECYCLE

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

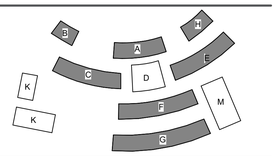
LICENSED ARCHITECT JOHN P. GRAMLING NO. C-32106 REN. 12-31-25 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

02.07	(E) FENCE
02.13	(E) D.F. TO REMAIN
02.15	(E) PLUMBING VALVE TO REMAIN
02.16	(E) IRRIGATION VALVE TO REMAIN
02.17	(E) BACKFLOW PREVENTER TO REMAIN
02.18	DEMOLISH (E) FENCE AND PREP FOR ATTACHMENT TO (N) FENCE
02.27	(E) FENCE POST
03.05	CONCRETE HOUSING PAD S.M.D.
23.04	HVAC EQUIP. SEE DETAIL 14/A10.01 & S.M.D.
26.04	PG&E TRANSFORMER W/ FENCE ENCLOSURE; SEE ELECT. DWGS FOR MORE INFO. AND DETAILS
26.05	MAIN SWITCHBOARD W/ FENCE ENCLOSURE, SEE ELECT. DWGS FOR MORE INFO. & DETAILS
32.34	(N) 6' HIGH CHAIN LINK FENCE; SEE DETAIL 2/A10.01
32.38	(N) 6' HIGH BLACK VINYL CHAIN LINK FENCE W/ TOP COVER
32.39	(N) 6' HIGH BLACK VINYL CHAIN LINK FENCE; SEE DETAIL 2/A/10.01



FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ENLARGED HVAC YARD & TRASH ENCLSOURE PLANS

CONSTRUCTION DOCUMENTS

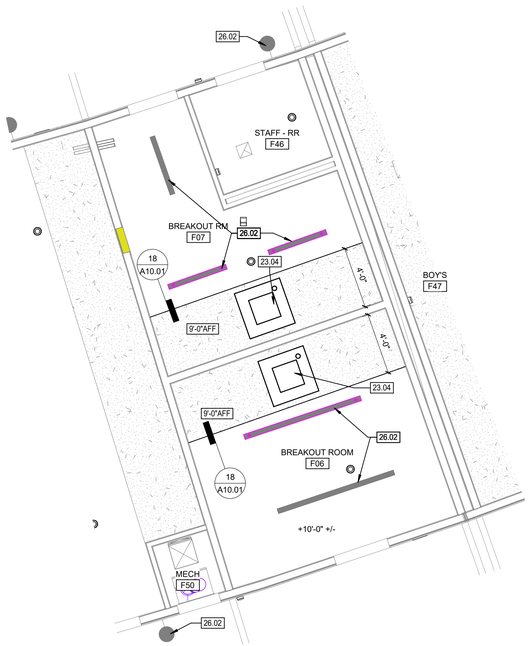
DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

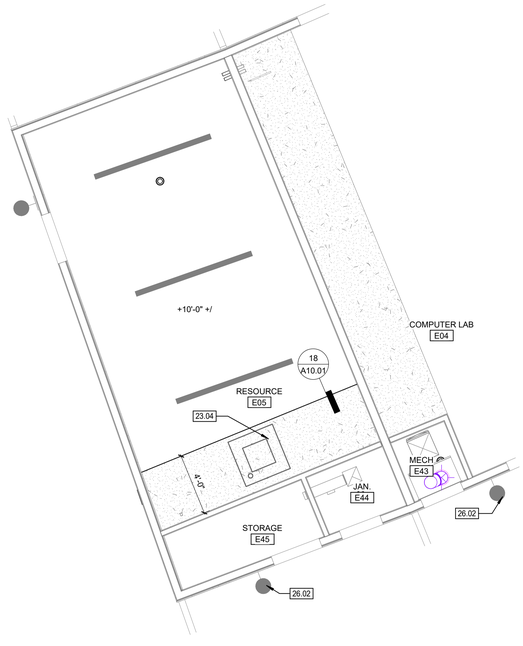
A7.11

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/3584002000-A-Glenwood ES_HVAC.rvt
9/20/2024 5:45:38 PM

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEETS ORIGINAL PAGE SIZE



F06 & F07 REFLECTED CEILING PLANS | 3 | 1/4" = 1'-0"



E05 - REFLECTED CEILING PLAN | 2 | 1/4" = 1'-0"

C14 BREAKOUT ROOM - REFLECTED CEILING PLAN | 1 | 1/4" = 1'-0"

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

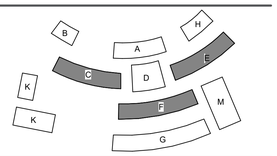
LICENSED ARCHITECT
JOHN P. GRAMLING
NO. C-32705
REN. 12-31-25
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

23.04	HVAC EQUIP. SEE DETAIL 14/A10.01 & S.M.D.
26.02	LIGHT FIXTURE, S.E.D.



FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ENLARGED REFLECTED CEILING PLAN & INTERIOR ELEVATION

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

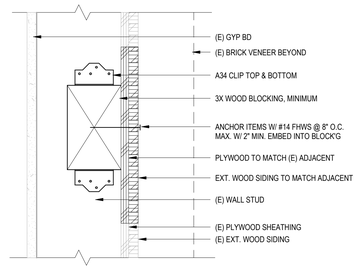
SHEET:

A7.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK3584002000-A-Glenwood ES_HVAC.rvt
9/26/2024 1:40:22 PM

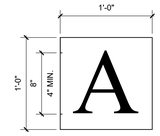
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PRINTED ON THIS SHEETS ORIGINAL PAGE SIZE



NOTE: SEE 19/A10.01 FOR PLYWOOD PATCHING DETAIL

TYPICAL BLOCKING 20
3" = 1'-0"

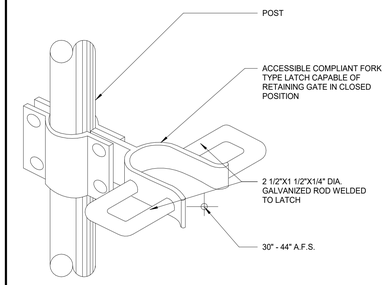


NOTE:
SIGN MATERIAL TO BE 1/8
THICK ES PLATIC, W/ 1/2" MIN. STROKE WIDTH LETTER
PROVIDE MECHANICAL MOUNITNG W/ VANDAL RESISTANT TASTENERS.

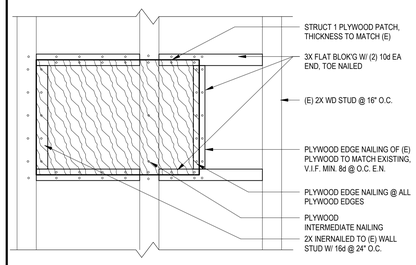
ALL BUILDING NUMBERS SHALL BE ARABIC NUMERS OR ALPHABETICAL LETTERS.

WHITE BACKGROUND W/ 70% MIN. CONTRAS BETWEEN TEXT AND BACKGROUND. ALL NON-GLARE

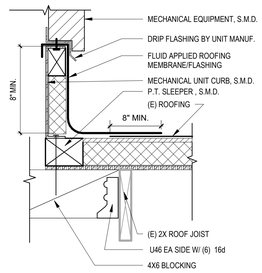
BUILING IDENTIFICATION 10
1 1/2" = 1'-0"



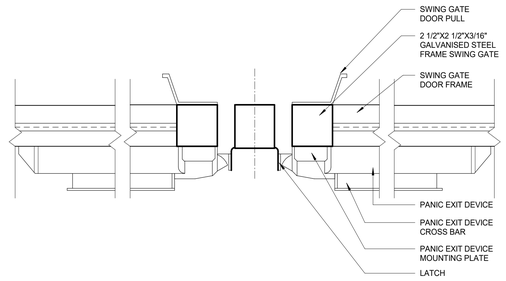
CHAIN LINK ACCESSIBLE FORK LATCH 5
1/2" = 1'-0"



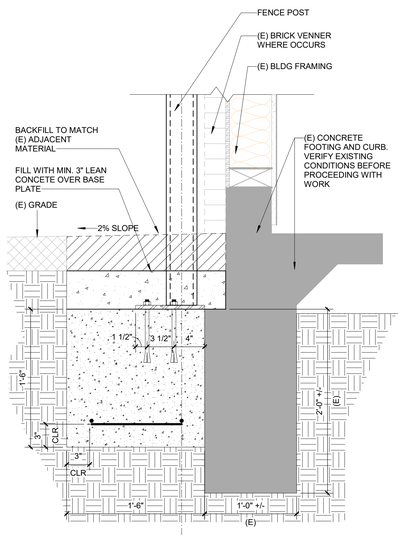
EXT. SHEAR SHEATHING REPAIR 19
1 1/2" = 1'-0"

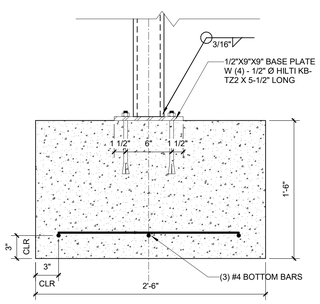


MECH UNIT CURB FLASHING 14
1 1/2" = 1'-0"

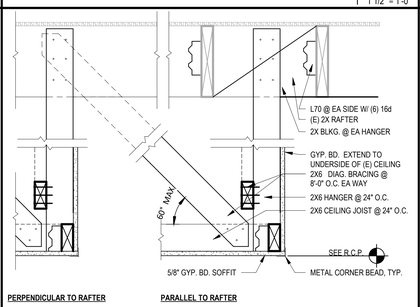


PANIC HARDWARE SECTIONAL DETAIL 4
1/4" = 1'-0"

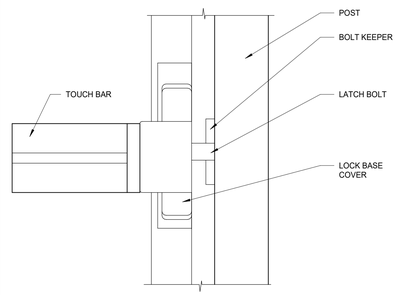




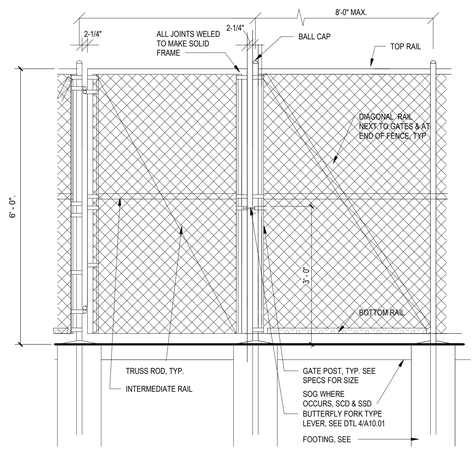
FENCE POST TO (E) WALL 21
1 1/2" = 1'-0"



FRAMED GWB SOFFIT 18
1 1/2" = 1'-0"

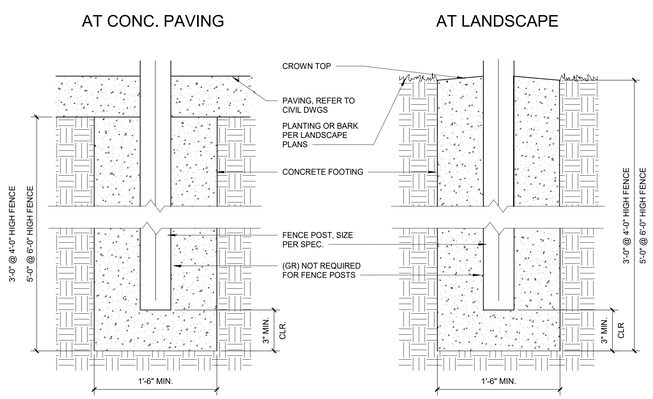


PANIC HARDWARE ELEVATIONAL DETAIL 13
1/4" = 1'-0"



NOTE:
THIS DETAIL IS NOT PART OF DSA STRUCTURAL APPROVAL

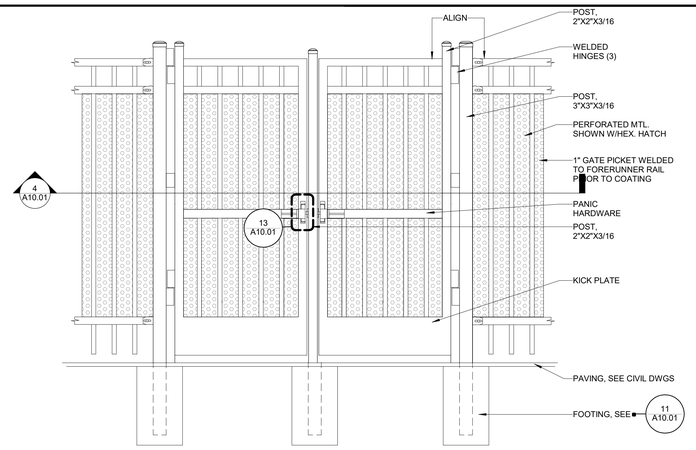
CHAIN LINK FENCE 2
3/4" = 1'-0"



NOTE:
1. SEE PLANS FOR CONCRETE PAVING / LANDSCAPE LOCATIONS

NOTE:
THIS DETAIL IS NOT PART OF DSA STRUCTURAL APPROVAL

FOOTING DETAIL (GATE/ NON-GATE POST) 11
1/4" = 1'-0"



NOTE:
THIS DETAIL IS NOT PART OF DSA STRUCTURAL APPROVAL

ORNAMENTAL PICKET FENCING- DOUBLE GATE 1
1" = 30'-0"

AGENCY APPROVAL:

DSA # 01-121701
FILE # 21-39

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

LICENSED ARCHITECT JOHN P. GRAMLING NO. C-32106 REN. 12-31-25 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

DETAILS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

A10.01

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/3584002000-A-Glenwood ES_HVAC.rvt
9/26/2024 2:38:19 PM

PLEASE RECYCLE

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

GRAVITY VENTILATOR HOOD SCHEDULE

TYPE	MARK	HOOD TYPE	MOUNTING	CFM	THROAT AREA (SQ. FT.)	THROAT SIZE (IN.)	PRESSURE DROP (IN. WC.)	THROAT VELOCITY (FPM)	OPERATING WEIGHT	MANUFACTURER	MODEL	NOTES
RH	B1	INTAKE	ROOF	1,190	3.36	22 x 22	0.02	354	125 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	C1	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	C2	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	C3	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	C4	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	E1	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	E2	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	E3	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	E4	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	F1	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	F2	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	F3	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	F4	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	G1	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	G2	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	G3	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	G4	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	G5	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	G6	INTAKE	ROOF	930	2.78	20 x 20	0.02	335	100 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.
RH	H1	INTAKE	ROOF	1,190	3.36	22 x 22	0.02	354	125 lb	GREENHECK	FGI	PROVIDE FACTORY ROOF CURB. PROVIDE ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER. COORDINATE BACKDRAFT DAMPER INSTALLATION AND OPERATION WITH HOODS INTENDED FOR AIR INTAKE AND AIR RELIEF/EXHAUST. PROVIDE INSECT SCREEN.

SUPPLY FAN SCHEDULE

TYPE	MARK	FAN TYPE	MOUNTING	ELECTRICAL				FAN					CONTROL	OPERATING WEIGHT	MANUFACTURER	MODEL	NOTES
				VOLTAGE	PHASE	FLA	MCA	HP	DRIVE	FAN RPM	CFM	E.S.P. (IN. WC.)					
SF	C5	CENTRIFUGAL	SUSPENDED	120	1	0.1	0.5	0.01	DIRECT	989	50	0.2	INTERLOCK W/ FC-C5	25 lb	PANASONIC	FV-15NLFS1	PROVIDE WITH MERV 13 FILTER.
SF	E5	CENTRIFUGAL	SUSPENDED	120	1	0.1	0.5	0.01	DIRECT	989	50	0.2	INTERLOCK W/ FC-E5	25 lb	PANASONIC	FV-15NLFS1	PROVIDE WITH MERV 13 FILTER.
SF	F5	CENTRIFUGAL	SUSPENDED	120	1	0.1	0.5	0.01	DIRECT	989	50	0.2	INTERLOCK W/ FC-F5	25 lb	PANASONIC	FV-15NLFS1	PROVIDE WITH MERV 13 FILTER.
SF	F6	CENTRIFUGAL	SUSPENDED	120	1	0.1	0.5	0.01	DIRECT	989	50	0.2	INTERLOCK W/ FC-F6	25 lb	PANASONIC	FV-15NLFS1	PROVIDE WITH MERV 13 FILTER.

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

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

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

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

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

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

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

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

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

MP	MD	PP	E	
☒	☒	☐	☐	OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.
☐	☐	☐	☐	OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM#) #_______.

MECHANICAL SPECIFICATIONS

1. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
   - A. 2022 CALIFORNIA BUILDING CODE
   - B. 2022 CALIFORNIA MECHANICAL CODE
   - C. 2022 CALIFORNIA PLUMBING CODE
   - D. 2022 CALIFORNIA ELECTRICAL CODE
   - E. 2022 CALIFORNIA GREEN BUILDING STANDARDS
   - F. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS - TITLE 24
   - G. NATIONAL FIRE PROTECTION ASSOCIATION
   - H. CALIFORNIA STATE FIRE MARSHAL
2. DRAWINGS ARE SCHEMATIC AND DIAGRAMMATIC. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT, PIPING, AND OTHER MECHANICAL WORK. USE JUDGEMENT AND CARE TO INSTALL MECHANICAL WORK TO FIT THE JOB CONDITIONS WITHIN THE BUILDING CONSTRUCTION AND FINISHES, AND TO FUNCTION PROPERLY.
3. CONTRACTOR SHALL EXAMINE THE SITE, VERIFY DIMENSIONS AND LOCATIONS WITH DRAWINGS, CHECK UTILITY CONNECTION LOCATIONS, AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND LIMITATIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF THE CONTRACTOR'S MISUNDERSTANDING OF THE AMOUNT OF WORK INVOLVED OR HIS LACK OF KNOWLEDGE OF ANY SITE CONDITION WHICH MAY AFFECT HIS WORK. ANY APPARENT VARIANCE OF THE DRAWINGS OR SPECIFICATIONS FROM THE EXISTING CONDITIONS AT THE SITE SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL ORGANIZE HIS WORK SO THAT THE PROGRESS OF THE MECHANICAL WORK WILL CONFORM TO THE PROGRESS OF THE OTHER TRADES, AND SHALL COMPLETE THE ENTIRE INSTALLATION AS SOON AS THE CONDITIONS OF THE BUILDING WILL PERMIT. ANY COST RESULTING FROM DEFECTIVE OR ILL TIMED WORK PERFORMED UNDER THIS SECTION SHALL BE BORNE BY THIS CONTRACTOR.
5. THE WORK SHALL ALSO INCLUDE THE COMPLETION OF DETAILS OF MECHANICAL WORK NOT MENTIONED OR SHOWN WHICH ARE NECESSARY FOR THE SUCCESSFUL OPERATION OF MECHANICAL SYSTEMS DESCRIBED ON THE DRAWINGS OR REQUIRED BY THESE SPECIFICATIONS. FURNISH AND INSTALL ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED WHICH IS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
6. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.
7. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF MECHANICAL EQUIPMENT.
8. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, AIR FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.
9. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.
10. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS MECHANICAL COMPONENTS OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.
11. CHECK ALL SYSTEMS FOR LEAKS AND EXCESSIVE NOISE. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER THAT THE SYSTEM IS FUNCTIONING PROPERLY.
12. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
13. MECHANICAL EQUIPMENT AND PIPING SHALL NOT BE WITHIN ELECTRICAL OR LOW VOLTAGE EQUIPMENT DEDICATED SPACE. NO PIPING WILL BE ALLOWED ABOVE EQUIPMENT'S DEDICATED SPACE.
14. ALL EXPOSED DUCTWORK OUTDOORS SHALL BE PREPARED WITH A PRIME COAT AND THEN PAINTED, COLOR BY ARCHITECT.
15. NEW BUILDINGS 10,000 SQUARE FEET AND ABOVE TO BE COMMISSIONED PER REQUIREMENTS LISTED IN CALGREEN SECTION 5.410.2.
16. ADHESIVES, SEALANTS AND CAULKS USED ON THE PROJECT SHALL MEET THE REQUIREMENTS LISTED IN CALGREEN SECTION 5.504.4.1.
17. MINIMUM MERV-8 FILTERS TO BE USED FOR ANY PERMANENT HVAC SYSTEM IN OPERATION DURING CONSTRUCTION. REPLACE ALL FILTERS WITH MINIMUM MERV-13 PRIOR TO OCCUPANCY OR AT THE CONCLUSION OF CONSTRUCTION PER CALGREEN SECTION 5.504.1.
18. DURING CONSTRUCTION, ALL HVAC EQUIPMENT, DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENTS SHALL BE COVERED WITH TAPE, PLASTIC, OR SHEET METAL TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM PER CALGREEN SECTION 5.504.3.
19. ALL MECHANICAL VENTILATION SYSTEMS SHALL HAVE FILTRATION MEDIA FOR OUTSIDE AIR AND RETURN AIR WHICH PROVIDES MINIMUM MERV-13 FILTRATION. FILTRATION MEDIA SHALL BE REPLACED PRIOR TO OCCUPANCY AND SHALL BE CLEARLY LABELED WITH MERV RATING PER CALGREEN SECTION 5.5.04.5.3.
20. ALL REFRIGERANTS USED OR PROVIDED ON THIS PROJECT SHALL MEET THE OZONE DEPLETION AND GREENHOUSE GAS REDUCTION REQUIREMENTS PER CALGREEN SECTION 5.508.1.
21. COMBINATION FIRE AND SMOKE DAMPERS SHALL MEET THE REQUIREMENTS OF NFPA 90A, UL 555, UL 555S, AND AS INDICATED. PROVIDE FACTORY SLEEVE AND COLLAR FOR EACH DAMPER. INSTALL PER CSFM LISTING.
22. THE INSTALLATION OF DUCT SMOKE DETECTORS FOR AUTOMATIC SHUTDOWN OF AIR MOVING SYSTEMS AS REQUIRED BY CMC SECTION 609, OR AS REQUIRED FOR THE OPERATION OF FIRE/SMOKE DAMPERS, SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA STATE FIRE MARSHAL AND THE LOCAL FIRE DEPARTMENT. WHERE AIR DUCT SMOKE DETECTORS SERVING AIR-MOVING SYSTEMS ARE INSTALLED IN CONCEALED SPACES, AND/OR DROP CEILING AREAS MORE THAN 10 FEET ABOVE THE FINISHED FLOOR, THE DETECTOR SHALL BE PROVIDED WITH A REMOTE TEST AND RESET SWITCH. SAID REMOTE TEST AND RESET SWITCH SHALL BE ATTACHED TO AN ADJACENT WALL OR STRUCTURAL COLUMN AT A MAXIMUM HEIGHT OF 6 FEET ABOVE FINISHED FLOOR. PRIOR TO MECHANICAL PERMIT FINAL, A SMOKE DETECTOR SHUT-OFF TEST WILL BE REQUIRED.
23. MECHANICAL IDENTIFICATION:
   - A. IDENTIFY MECHANICAL EQUIPMENT AND CONTROLS WITH LAMINATED PLASTIC NAMEPLATES CONFORMING TO ASTM D2709.
   - B. IDENTIFY PIPING WITH PLASTIC ADHESIVE TAPE MARKERS, CONFORMING TO ASME A13.1. INSTALL LABELING ON PIPE AT INTERVALS OF NOT MORE THAN 20 FEET (6 METERS) AND AT LEAST ONCE IN EACH ROOM AND EACH STORY TRAVERSED BY PIPELINE.
   - C. INSTALL CEILING TACKS FOR CONCEALED FIRE AND SMOKE DAMPERS (3/4", RED) AND HEATING AND COOLING VALVES (3/4", BLUE).
24. DUCTWORK:
   - A. GALVANIZED STEEL DUCTS SHALL BE ASTM A 653/A 653M GALVANIZED STEEL SHEET, FORMING STEEL (FS) DESIGNATION, WITH G90/Z275 ZINC COATING.
   - B. KITCHEN EXHAUST DUCTWORK SHALL BE ASTM A666, TYPE 304 STAINLESS STEEL.
   - C. METAL DUCTS: FABRICATE, SUPPORT AND SEAL DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR THE FOLLOWING PRESSURE CLASSES:
     - a. MEDIUM PRESSURE SUPPLY AIR: ABOVE 3 INCH W.C.
     - b. LOW PRESSURE SUPPLY AIR: 2 INCH W.C.
     - c. OUTSIDE AIR INTAKE: 1/2 INCH W.C.
     - d. RETURN AND RELIEF AIR: 1 INCH W.C.
     - e. GENERAL EXHAUST AIR: 1/2 INCH W.C.
   - D. FLEXIBLE DUCTS: UL 181, CLASS 1, MULTIPLE LAYERS OF ALUMINUM LAMINATE SUPPORTED BY HELICALLY WOUND SPRING STEEL WIRE. FIBERGLASS INSULATION WITH POLYETHYLENE VAPOR BARRIER FILM. PRESSURE RATING: FROM 4 IN-WC POSITIVE TO 0.5 IN-WC NEGATIVE. TEMPERATURE RANGE: MINUS 20 TO 210 DEGREES F.
     - a. THE MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5 FEET PER CMC SECTION 603.4.1 DUCTWORK SHALL BE EXTENDED TO FULL LENGTH WHENEVER POSSIBLE WITHOUT SEVERE BENDS OR KINKS. BENDS SHALL BE MADE TO MAINTAIN R/W EQUAL TO 1.5.
   - E. CONSTRUCT DUCTWORK T'S, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN 1-1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE RECTANGULAR ELBOWS MUST BE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER INSULATION.
   - F. SEAL ALL STANDING SEAMS AND TRANSVERSE JOINTS IN ALL SHEETMETAL DUCTWORK WITH HARDCAST IRON GRIP PREMIUM FLEXIBLE WATER BASED DUCT SEALANT.
   - G. ALL BRANCH DUCTS SHALL HAVE BALANCING DAMPERS WITH ACCESSIBLE LOCKING TYPE QUADRANT. WHERE DAMPER IS INACCESSIBLE, PROVIDE YOUNG REGULATOR MODEL 270-301 CABLE KIT WITH EITHER 830A-CC (RECTANGULAR) OR 5020-CC (ROUND) DAMPER.
25. DUCT INSULATION:
   - A. FLEXIBLE GLASS FIBER INSULATION: ASTM C553; FLEXIBLE, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.36 AT 75 DEGREES F PER ASTM C 518. DUCT APPLICATION: 2" THICK, 3/4 LB. DENSITY. VAPOR BARRIER JACKET TESTED PER ASTM E 96/E 96M.
   - B. RIGID GLASS FIBER INSULATION: ASTM C 612; RIGID, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F PER ASTM C 518. DENSITY: 3.0 LB/CU FT. VAPOR BARRIER JACKET TESTED PER ASTM E 96/E 96M.
   - C. DUCT LINER: INCOMBUSTIBLE GLASS FIBER COMPLYING WITH ASTM C 1071; FLEXIBLE BLANKET; IMPREGNATED SURFACE AND EDGES COATED WITH ACRYLIC POLYMER SHOWN TO BE FUNGUS AND BACTERIA RESISTANT BY TESTING TO ASTM G 21.
     - a. LINER FASTENERS: GALVANIZED STEEL, SHEET METAL WELD PINS OR CLINCH PINS AND WASHERS.
   - D. SUPPLY AND RETURN DUCTWORK EXPOSED TO OUTDOORS FOR DIRECT EVAPORATIVE COOLING SYSTEMS TO BE EXTERNALLY INSULATED. COVER INSULATION WITH WITH CALKED ALUMINUM JACKET WITH SEAMS LOCATED ON BOTTOM SIDE OF HORIZONTAL DUCT SECTION.
   - E. DUCT AND LINER INSULATION THICKNESSES AND R-VALUES TO BE PER PLANS AND TITLE 24 REQUIREMENTS.
26. PIPING INSULATION:
   - A. GLASS FIBER INSULATION: ASTM C 547 AND ASTM C 795. 'K' ('KSI') VALUE: 0.27 TO 0.30 AT 150 DEGREES F PER ASTM C 177. MAXIMUM SERVICE TEMPERATURE OF 850 DEGREES F. VAPOR BARRIER JACKET TESTED PER ASTM E 96/E 96M.
   - B. INSULATION THICKNESS SCHEDULE:
     - a. REFRIGERANT SUCTION AND HOT GAS:
       1. 1-1/2 INCH THICKNESS FOR PIPING 1 INCHES AND LARGER.
       2. 1 INCH THICKNESS FOR PIPING 3/4 INCHES AND SMALLER.
     - b. HYDRONIC PIPING:
       1. 2 INCH THICKNESS FOR PIPING 1-1/2 INCHES AND LARGER.
       2. 1-1/2 INCH THICKNESS FOR PIPING 1 INCHES AND SMALLER.
27. ALL INSULATION AND LINER PRODUCTS SURFACE BURNING CHARACTERISTICS: FLAME SPREAD/SMOKE DEVELOPED INDEX OF 25/50, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, OR UL 723.
28. INSULATION JACKTETING:
   - A. PROVIDE ALUMINUM JACKETING FOR DUCT INSULATION EXPOSED TO OUTDOORS.
   - B. PROVIDE PVC JACKETING FOR PIPING INSULATION EXPOSED TO OCCUPIABLE SPACES INDOORS.
   - C. PROVIDE ALUMINUM JACKETING FOR PIPING INSULATION EXPOSED TO OUTDOORS.
29. GENERAL TESTING REQUIREMENTS:
   - A. PERFORM TOTAL SYSTEMS BALANCE IN ACCORDANCE WITH AABC, ASHRAE STD 111, OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.
   - B. HYDRONIC PIPING: PRESSURE= 125 PSIG / MEDIUM= WATER / DURATION= 4 HOURS

MECHANICAL LEGEND

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

DEMAND CONTROL VENTILATION OSA SCHEDULE

AC UNIT	MIN OSA CFM	MAX OSA CFM
FC-A1	230	365
FC-A2	230	365
FC-B1	190	465
FC-C1	140	355
FC-C2	140	355
FC-C3	140	355
FC-C4	140	355
FC-E1	140	350
FC-E2	140	355
FC-E3	140	355
FC-E4	140	355
FC-F1	140	355
FC-F2	140	355
FC-F3	140	355
FC-F4	140	355
FC-G1	140	355
FC-G2	140	355
FC-G3	140	355
FC-G4	140	355
FC-G5	140	355
FC-G6	140	355
FC-H2	220	535

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

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

MECHANICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
M0.01	MECHANICAL LEGENDS, NOTES, AND SCHEDULES
M0.02	MECHANICAL SCHEDULES
M0.03	MECHANICAL DETAILS
M0.04	MECHANICAL DETAILS
M0.05	MECHANICAL CONTROLS
MD2.11	BLDG A MECHANICAL DEMOLITION FLOOR PLAN
MD2.12	BLDG B, C, & H MECHANICAL DEMOLITION FLOOR PLANS
MD2.13	BLDG F & G MECHANICAL DEMOLITION FLOOR PLANS
MD2.14	BLDG E MECHANICAL DEMOLITION FLOOR PLAN
M2.11	BLDG A MECHANICAL FLOOR PLAN
M2.12	BLDG B, C, & H MECHANICAL FLOOR PLANS
M2.13	BLDG F & G MECHANICAL FLOOR PLANS
M2.14	BLDG E MECHANICAL FLOOR PLAN

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

MECHANICAL LEGENDS, NOTES, AND SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

M0.01

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:20:32 AM

FAN COIL UNIT SCHEDULE

TYPE	MARK	NOMINAL TONS	DUCT CONFIG.	ELECTRICAL VOLTAGE	ELECTRICAL PHASE	ELECTRICAL MCA	ELECTRICAL MOCP	SUPPLY FAN MOTOR HP	SUPPLY FAN DRIVE/ SPEEDS	SUPPLY FAN CFM	SUPPLY FAN ESP (IN WC)	SUPPLY FAN OUTSIDE AIR (CFM)	COOLING TYPE	COOLING TOTAL COOLING CAPACITY	COOLING SENSIBLE COOLING CAPACITY	COOLING E.A. DB/WB (°F)	HEATING TYPE	HEATING CAPACITY AT 17°F (BTU/H)	HEATING CAPACITY AT 47°F (BTU/H)	FILTER TYPE	OPERATING WEIGHT	MANUFACTURER	MODEL	NOTES
FC	A1	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	365	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	A2	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	365	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	B1	4	VERTICAL	208	1	5.6	15	0.25	VARIABLE	1,190	0.5	465	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C1	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C2	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C3	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C4	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	C5	2	CASSETTE	208	1	0.6	1	0.1	VARIABLE	710	0.2	115	DX	24,000 Btu/h	20,640 Btu/h	80 / 67	HEAT PUMP	17,400	29,000	MERV 13	75	MITSUBISHI	TPLA0A0241EA80A	PROVIDE WITH 3-WAY DIFFUSER. PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. PROVIDE WITH BUILT-IN CONDENSATE PUMP. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	E1	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	350	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	E2	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	E3	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	E4	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	E5	2	CASSETTE	208	1	0.6	1	0.1	VARIABLE	710	0.2	155	DX	24,000 Btu/h	20,640 Btu/h	80 / 67	HEAT PUMP	17,400	29,000	MERV 13	75	MITSUBISHI	TPLA0A0241EA80A	PROVIDE WITH 3-WAY DIFFUSER. PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. PROVIDE WITH BUILT-IN CONDENSATE PUMP. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	F1	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	F2	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	F3	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	F4	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	F5	1	CASSETTE	208	1	0.3	1	0.1	VARIABLE	490	0.2	110	DX	12,000 Btu/h	10,680 Btu/h	80 / 67	HEAT PUMP	12,200	20,000	MERV 13	50	MITSUBISHI	TPLA0A0121EA80A	PROVIDE WITH 3-WAY DIFFUSER. PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. PROVIDE WITH BUILT-IN CONDENSATE PUMP. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	F6	1	CASSETTE	208	1	0.3	1	0.1	VARIABLE	490	0.2	100	DX	12,000 Btu/h	10,680 Btu/h	80 / 67	HEAT PUMP	12,200	20,000	MERV 13	50	MITSUBISHI	TPLA0A0121EA80A	PROVIDE WITH 3-WAY DIFFUSER. PROVIDE SECONDARY CONDENSATE OVERFLOW SWITCH. PROVIDE WITH BUILT-IN CONDENSATE PUMP. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	G1	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	G2	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	G3	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	G4	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	G5	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	G6	3	VERTICAL	208	1	4.1	15	0.1	VARIABLE	930	0.5	355	DX	36,800 Btu/h	28,400 Btu/h	80 / 67	HEAT PUMP	21,000	40,000	MERV 13	150	MITSUBISHI	TPVFYP036AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	H1	1.5	VERTICAL	208	1	2.4	3	0.1	VARIABLE	575	0.5	65	DX	18,000 Btu/h	15,300 Btu/h	80 / 67	HEAT PUMP	14,000	26,000	MERV 13	100	MITSUBISHI	NTXAMT18A112AA	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.
FC	H2	4	VERTICAL	208	1	5.6	15	0.25	VARIABLE	1,190	0.5	535	DX	48,000 Btu/h	35,700 Btu/h	80 / 67	HEAT PUMP	30,800	54,000	MERV 13	175	MITSUBISHI	TPVFYP048AM141A	PROVIDE SECONDARY OVERFLOW SWITCH. FAN COIL UNIT IS TO BE DIRECTLY CONTROLLED BY AN ALERTON VLC CONTROLLER. SPLIT SYSTEM UNIT MANUFACTURER MUST PROVIDE A 24V ADAPTER WITH DRY CONTACTS FOR DIRECT CONTROL BY THE ALERTON CONTROLLER. THERMOSTAT AND CO2 SENSOR WILL BE PROVIDED BY CONTROLS CONTRACTOR. SPLIT SYSTEM MANUFACTURER TO PROVIDE A CENTRAL GATEWAY FOR THE SPLIT SYSTEM. PROVIDE INTEGRATION SUPPORT FOR TIE-IN TO THE ALERTON SYSTEM.

SPLIT HEAT PUMP SCHEDULE

TYPE	MARK	ELECTRICAL VOLTAGE	ELECTRICAL PHASE	ELECTRICAL MCA	ELECTRICAL MOCP	SEER / EER	COP	HSPF	COOLING CAPACITY	HEATING CAPACITY	SUMMER AMBIENT DB/WB TEMP. (°F)	WINTER AMBIENT DB TEMP. (°F)	REFRIGERANT TYPE	REFRIG. LINE SIZE (LIQ/SUC)	SERVICE	OPERATING WEIGHT (LB)	MANUFACTURER	MODEL	NOTES
HP	A1	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	A2	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	B1	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C1	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C2	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C3	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C4	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	C5	208	1	19	26	24.7 / 14.3	4.35	9.3	24,000 Btu/h	29,000 Btu/h	80 / 67	47	R410A	3/8 / 5/8	SEE PLAN	155	MITSUBISHI	TRUZA0241HA70NA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 165 FT.
HP	E1	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	E2	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	E3	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	E4	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	E5	208	1	19	26	24.7 / 14.3	4.35	9.3	24,000 Btu/h	29,000 Btu/h	80 / 67	47	R410A	3/8 / 5/8	SEE PLAN	155	MITSUBISHI	TRUZA0241HA70NA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 165 FT.
HP	F1	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	F2	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	F3	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	F4	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	F5	208	1	11	28	26.9 / 16.4	4.94	12.8	12,000 Btu/h	20,000 Btu/h	80 / 67	47	R410A	1/4 / 1/2	SEE PLAN	100	MITSUBISHI	TRUZA0121KA70NA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 100 FT.
HP	F6	208	1	11	28	26.9 / 16.4	4.94	12.8	12,000 Btu/h	20,000 Btu/h	80 / 67	47	R410A	1/4 / 1/2	SEE PLAN	100	MITSUBISHI	TRUZA0121KA70NA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 100 FT.
HP	G1	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	G2	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	G3	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	G4	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	G5	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	G6	208	1	29	40	18.5 / 12	3.5	10	36,000 Btu/h	41,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM36A142BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.
HP	H1	208	1	14	24	21 / 13.2	3.9	12.6	18,000 Btu/h	26,000 Btu/h	80 / 67	47	R410A	1/4 / 1/2	SEE PLAN	150	MITSUBISHI	NTXSKS18A112AA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 100 FT.
HP	H2	208	1	29	40	16 / 10.5	3.2	8.9	48,000 Btu/h	50,000 Btu/h	80 / 67	47	R-410A	3/8 / 5/8	SEE PLAN	300	MITSUBISHI	NTXMSM48A182BA	ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH. MAXIMUM PIPING LENGTH: 490 FT.

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

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:20:35 AM

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

MECHANICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

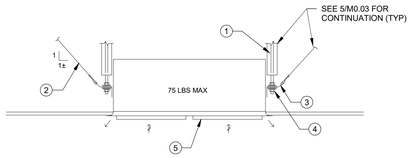
SHEET:

M0.02

PLEASE RECYCLE

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

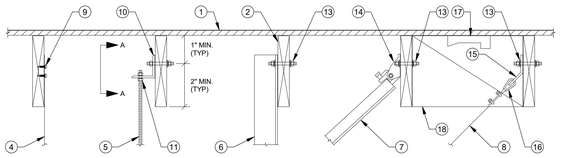
1. 3/8"ø THREADED ROD WITH UNISTRUT P1000T CHANNEL STIFFENER, TYP 4 AT EACH CORNER. PROVIDE CHANNEL WITH 3/8"ø BOLTS AT 10" MAX O.C.
2. 12 GA TAUT WIRE, TYP 4, (4) TIGHT TURNS WITH 1-1/2", TYP AT EACH END
3. 3"x2"x2" WIDE 16 GA ANGLE, TYP
4. LOCKNUT, TYP
5. CEILING CASSETTE AC UNIT SEE SCHEDULES



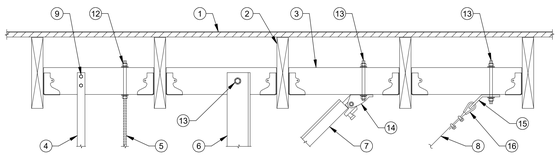
SEISMIC BRACING PLAN

CASSETTE INDOOR UNIT MOUNTING — NTS — 7

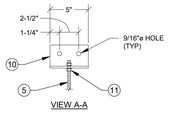
1. EXISTING ROOF.
2. EXISTING ROOF FRAMING.
3. 4x4 BLOCKING BETWEEN JOISTS W/ U44 HANGERS AT EACH END, TYP.
4. 1" x 20 GA. GALV. SHEET METAL STRAP.
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
6. 3"x3"x1/4" GALVANIZED STEEL ANGLE.
7. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
8. 3/32"ø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



AT FRAMING MEMBERS



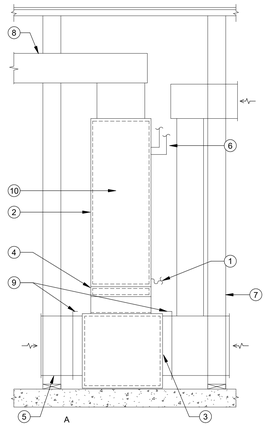
BETWEEN FRAMING MEMBERS



VIEW A-A

HANGER UPPER ATTACHMENTS — NTS — 5

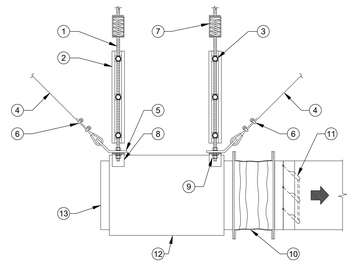
1. 3/4" CONDENSATE PIPING, SEE PLUMBING PLANS FOR ROUTING.
2. FAN COIL UNIT, SEE SCHEDULES.
3. SHEET METAL MIXED AIR PLENUM.
4. BOTTOM INLET FILTER RACK BY FURNACE MFGR.
5. RETURN AIR DUCT, SEE PLAN FOR SIZE AND ROUTING.
6. LIQUID AND SUCTION REFRIGERANT LINES, ROUTE & SIZE PER MFGR.
7. EXTERIOR WALL.
8. SUPPLY AIR DUCT, SEE PLAN FOR SIZE AND ROUTING.
9. MOTORIZED DAMPER.
10. OUTSIDE AIR DUCT, SEE PLAN FOR SIZE AND ROUTING.



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

FAN COIL MOUNTING — NTS — 1

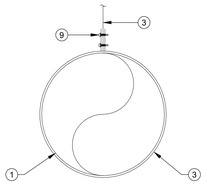
1. 3/8"Ø THREADED ROD, B-LINE ATR OR EQUAL
2. 1-5/8"X1-5/8"X12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL
3. ROD STIFFENER, B-LINE TOLCO MODEL 98B OR EQUAL, MIN. 1" FROM TOP AND BOTTOM OF UNISTRUT AND MAX. 28" O.C., TORQUE TO 10 FT-LBS
4. 3/32"Ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7X19 STRAND CORE
5. 2"X3"X1/4" X 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL
6. CABLE THIMBLE AND CABLE CLIPS
7. MIN. 1" STATIC DEFLECTION VIBRATION ISOLATOR
8. HANGER BRACKET PROVIDED BY FAN MANUFACTURER
9. LOCKNUT, TYP
10. FLEXIBLE DUCT CONNECTOR, TYP
11. BACKDRAFT DAMPER PROVIDED BY FAN MANUFACTURER
12. INLINE EXHAUST FAN, SEE SCHEDULE
13. INLET GUARD, SEE SCHEDULE



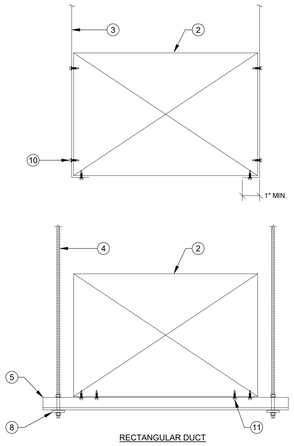
NOTES:
A. SEE HANGER UPPER ATTACHMENT DETAIL FOR UPPER ATTACHMENTS.
B. PROVIDE ROD STIFFENERS ONLY WHERE ROD LENGTH FROM SEISMIC BRACING TO UPPER ATTACHMENT EXCEEDS 18".

SUPPLY FAN MOUNTING — NTS — 8

1. ROUND DUCT, SEE PLAN FOR SIZE AND ROUTING.
2. RECTANGULAR DUCT, SEE PLAN FOR SIZE AND ROUTING.
3. 1" x 20 GA. GALV. SHEET METAL STRAP.
4. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
5. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
6. 1" x 20 GA GALV. SHEET METAL STRAP WITH 3"x2" HIGH FLANGE.
7. NUT AND WASHER, TOP AND BOTTOM.
8. NUT, TOP AND BOTTOM WITH UNISTRUT SQUARE WASHER, B-LINE MODEL B2012N OR EQUAL.
9. (2) #10 TEK SCREWS.
10. (3) #10 TEK SCREWS, EA SIDE.
11. (2) #10 TEK SCREWS, EA SIDE.



ROUND DUCT

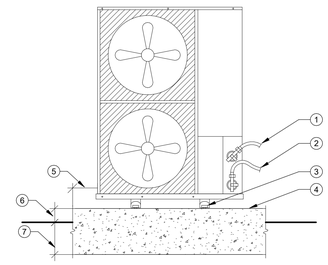


RECTANGULAR DUCT

NOTES:
A. HANGER SPACING TO BE AT MAXIMUM 8FT O.C.

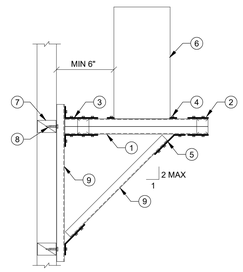
DUCT HANGERS — NTS — 6

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

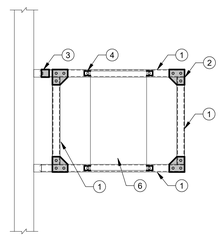


HEAT PUMP MOUNTING DETAIL — NTS — 2

1. P1001.
2. P1334 TOP AND BOTTOM, EA CORNER.
3. P1026 TOP AND BOTTOM, TYP.
4. 3/8" HEX BOLT W/ P1008 CHANNEL NUT WITH SPRING, TYP.
5. LS5503, EA END W/ 1/2" HEX BOLTS AND P1010 CHANNEL NUT WITH SPRING, TYP.
6. MECHANICAL UNIT, SEE PLAN.
7. 4x FLAT BLKG W/ A35 T&B, EA END.
8. 1/2" DIA LG BOLT CENTERED ON BLKG W/ 4" MIN PENETRATION.
9. P1000.



ELEVATION VIEW



PLAN VIEW

HEAT PUMP WALL UNIT MOUNTING — NTS — 3

DIMENSION OF LONGEST SIDE INCHES	SHEET METAL GAGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1)				
				AT JOINTS			
			MIN. HT. IN.	DRIVE SLIP / PLAIN S SLIP	HEMMED S SLIP	ALTERNT BAR SLIP	REIN-FROCED BAR SLIP
				RECOM-MENDED GAGE	RECOM-MENDED GAGE	RECOM-MENDED GAGE	RECOM-MENDED GAGE
UP THRU 12	26	NONE REQUIRED	1	26	26	24	24
13 - 18	24	NONE REQUIRED	1	24	24	24	24
19 - 30	24	1" x 1" x 1/8" @ 60 IN.	1		24	24	24
31 - 42	22	1" x 1" x 1/8" @ 60 IN.	1			22	22

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

DUCT CONSTRUCTION STANDARDS — NTS — 4

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

MECHANICAL DETAILS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

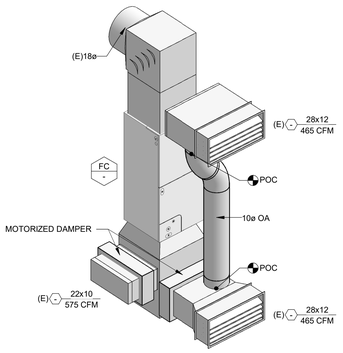
SHEET:

M0.03

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:20:37 AM

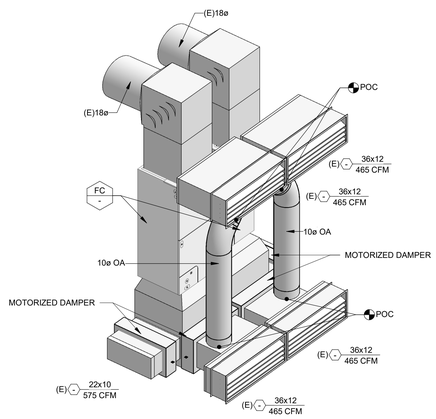
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET IN ORIGINAL PAGE SIZE



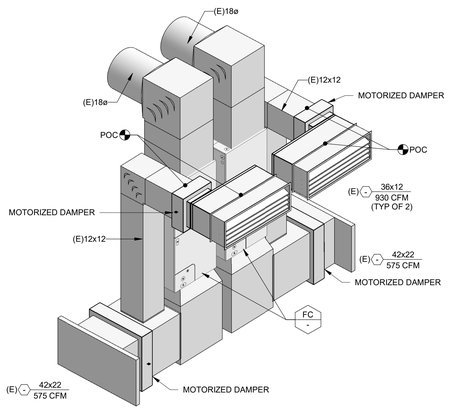
5 TYPICAL SINGLE FAN COIL UNIT ISOMETRIC (BLDG B, C, F & E)

SCALE:



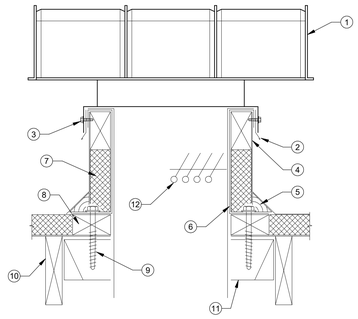
6 TYPICAL DOUBLE FAN COIL UNIT ISOMETRIC (BLDG F & E)

SCALE:



7 TYPICAL DOUBLE FAN COIL UNIT ISOMETRIC (BLDG G)

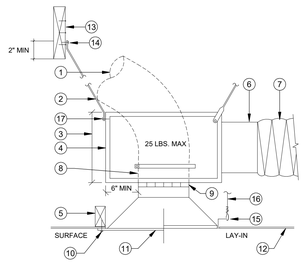
SCALE:



1. ROOF MOUNTED RELIEF/INTAKE HOOD.
2. 26 GA GALV. SM COUNTERFLASHING.
3. SECURE HOOD TO CURB WITH #12 SM SCREWS, 4 PER SIDE.
4. ROOFING UP AND UNDER FLASHING.
5. CANT STRIP.
6. CURB BY HOOD MFR.
7. RIGID INSULATION ALL AROUND.
8. PRESSURE TREATED DOUG FIR LEVELING BLOCK, MIN. 2" HIGH. TOP FLAT/LEVEL.
9. 1/2"Ø LAG SCREW AT 24" O.C., MIN 2 SCREWS EACH SIDE AND 8" FROM END, TYP.
10. EXISTING ROOF FRAMING.
11. 4X6 BLOCKING BETWEEN JOISTS.
12. ADJUSTABLE COUNTERBALANCED BACKDRAFT DAMPER.

RELIEF/INTAKE HOOD MOUNTING

NTS | 3



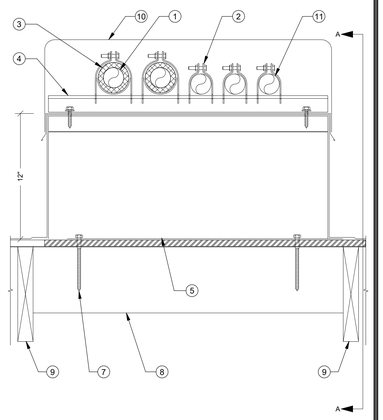
1. ¢ OF ELBOW RADIUS MINIMUM 150% OF DUCT DIAMETER.
2. SUPPORT W/(4) 1-1/2 x 24 GA SHEET METAL STRAPS. SECURE STRAPS TO PLENUM & STRUCTURE ABOVE.
3. (BRANCH SIZE + 2") X (NECK SIZE +2")
4. CUSHIONHEAD BOX WITH MINIMUM 1" ACOUSTIC LINING.
5. 2x WOOD BLOCKING OR NAILER.
6. METAL SLEEVE OR SPIN-IN FITTING.
7. INSULATED FLEXIBLE AIR DUCT. SEE MECHANICAL PLAN FOR SIZE.
8. TRANSITION (AS REQUIRED).
9. AIR CONTROL GRID SET AT 90° TO AIR STREAM OR PLANE OF ELBOW. (WHERE APPLICABLE)
10. REGISTER SCREW. SECURE PER DIFFUSER MNFG. REQUIREMENTS.
11. TYPICAL SQUARE NECK SUPPLY, RETURN OR EXHAUST AIR DIFFUSER.
12. FINISHED CEILING, SEE ARCH. DRAWINGS.
13. 2X MIN JOIST, TYP.
14. 1/4"wx1-1/4" LAG BOLT @ 1" O.C., TYP. 2.
15. 90° ANGLE BRACKET WITH (2) HOLES, ATTACH TO LAY-IN DIFFUSER/GRILLE WITH #12x3/4" SM SCREW. PROVIDE #10 SCREWS TO CEILING RUNNER, (2) EACH SIDE MIN.
16. (1) 12 GA. WIRE PER IR 25-2.19 SECTION 1.8.2. ATTACHED TO STRUCTURE . WITH 1/4"ø EYE BOLT WITH 1-1/2" MIN PENETRATION INTO 2x RAFTERS ABOVE.
17. #12x3/4" SM SCREW (TYP).

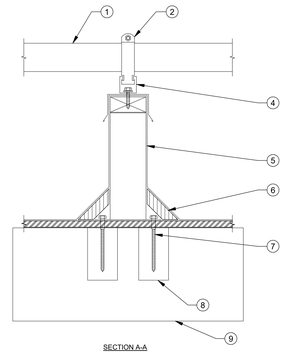
NOTES:
1. WHERE FULL 150% ¢ RADIUS IS NOT POSSIBLE. THE CUSHIONHEAD IS REQ'D.
2. VERIFY CEILING TYPE, PROVIDE APPROPRIATE DIFFUSER FRAME & INSTALLATION.

DIFFUSER / GRILLE MOUNTING

NTS | 4

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





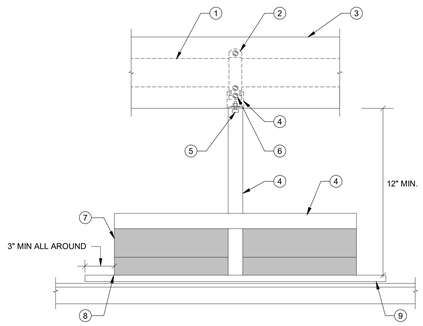
SECTION A-A

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

ANCHORED PIPE SUPPORT ON ROOF

NTS | 1

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



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

REFRIGERANT PIPING ON ROOF

NTS | 2

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: Z3-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

MECHANICAL DETAILS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

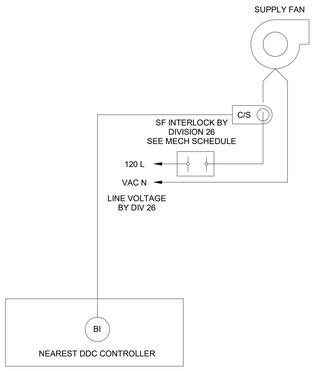
M0.04

Autodesk Docs://3584/001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:26:42 AM

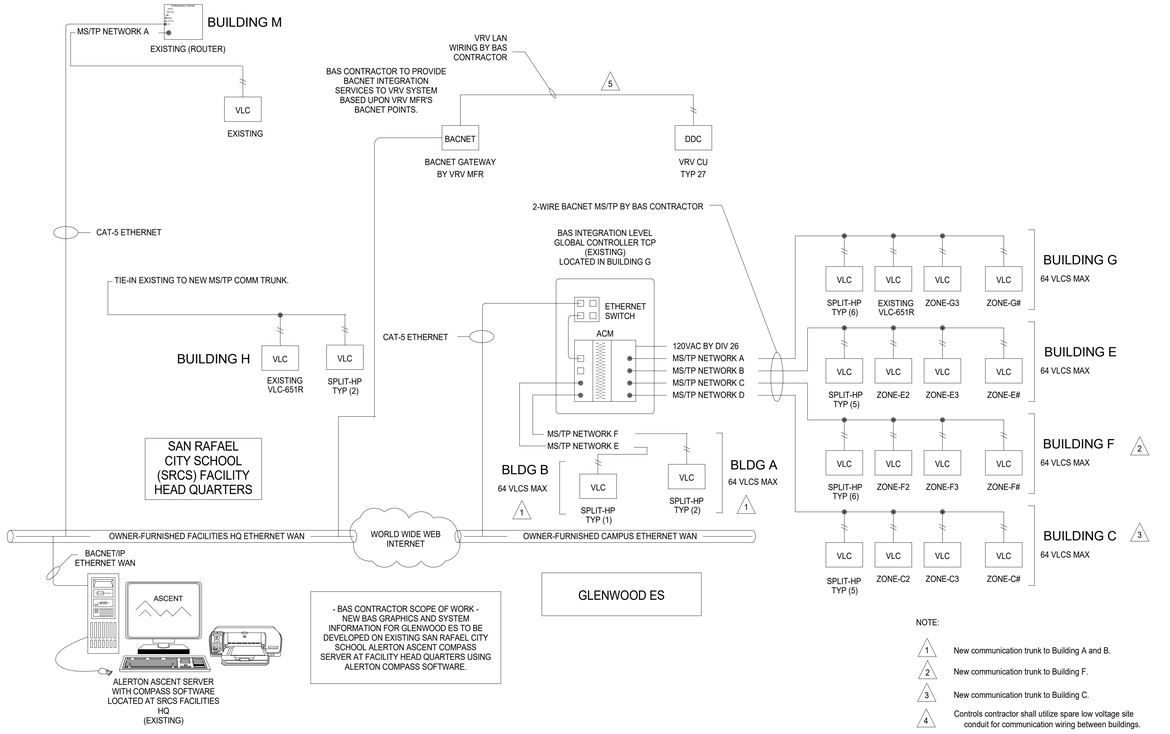
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXTRA WIDE FOR PLOTTING ON THIS SHEET IS ORIGINAL PAGE SIZE

SUPPLY FAN OPERATION
1. THE SUPPLY FAN WILL BE INTERLOCKED WITH ITS CORRESPONDING FAN COIL.
2. MONITORING - THE FOLLOWING CONDITIONS SHALL BE MONITORED BY THE EMS:
   A. STATUS OF EXHAUST FAN



2 SUPPLY FAN CONTROLS
SCALE: NONE



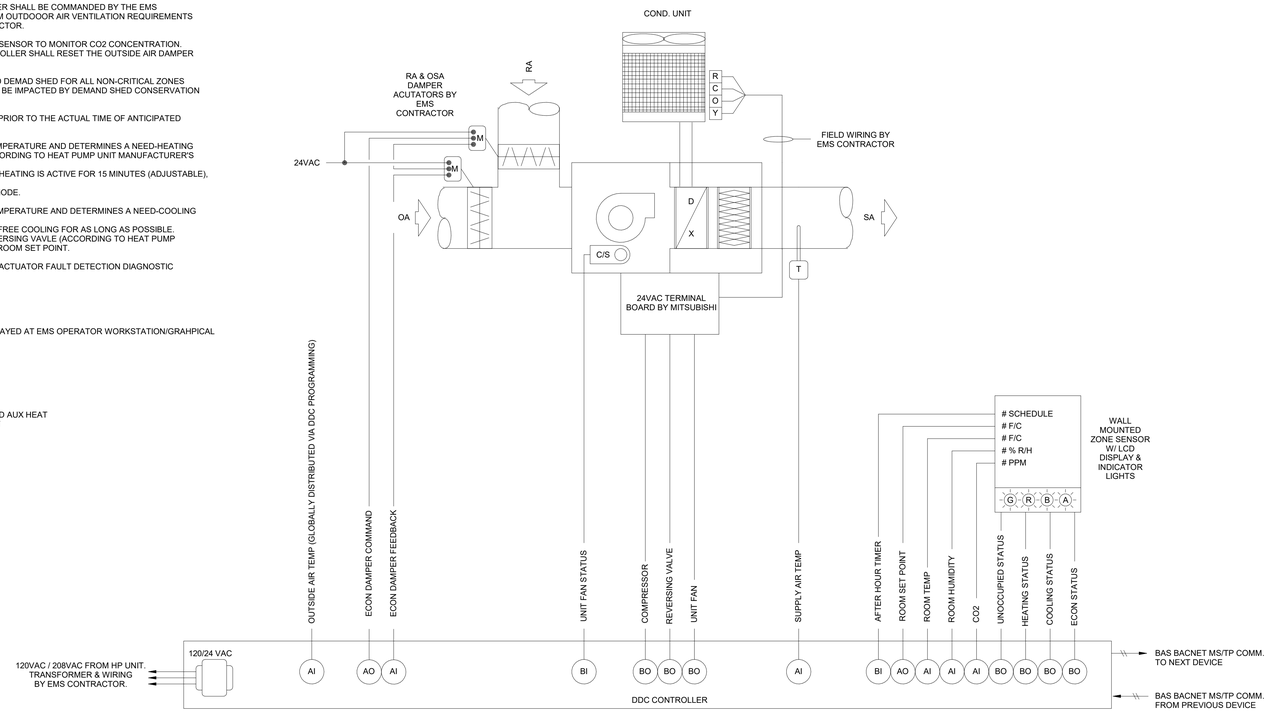
NOTE:

1. New communication trunk to Building A and B.
2. New communication trunk to Building F.
3. New communication trunk to Building C.
4. Controls contractor shall utilize spare low voltage site conduit for communication wiring between buildings.
5. Controls contractor shall run controls conduit on same Unistrut as refrigerant line - space to accommodate up to 1" conduit - Rigid.

1 ALERTON BACNET BAS SYSTEM - NETWORK ARCHITECTURE
SCALE: 1/4" = 1'-0"

HEAT PUMP UNIT WITH ECONOMIZER, DEMAND CONTROL VENTILATION

1. SYSTEM OVERVIEW
   A. EACH HEAT PUMP UNIT WILL BE DIRECTLY CONTROLLED BY ITS OWN DEDICATED EMS (ENERGY MANAGEMENT SYSTEM) UNITARY CONTROLLER
   B. EMS UNITARY CONTROLLER WILL BE CONECTED TO A WALL MOUNTED ELECTRONIC ZONE TEMPERATURE SENSOR WITH INTEGRAL RELATIVE HUMIDITY SENSOR AND CO2 SENSOR.
   C. ELECTRONIC ZONE TEMPERATURE SENSOR SHALL HAVE A TOUCH SCREEN LCD INTERFACE WHICH INCLUDES: 1) DIGITAL PUSHBUTTONS FOR WARMER/COOLER SETPOINT CONTROL; 2) VISUAL DISPLAY OF ROOM TEMPERATURE, ROOM HUMIDITY, ROOM CO2 AND AMBIENT OSA TEMPERATURE; AND 3) DIGITAL PUSHBUTTON AFTER HOURS OVERRIDE TIMER CONTROL, WITH USER ADJUSTABLE DURATION. THE AFTER-HOURS OVERRIDE DURATION SHALL HAVE THE ABILITY TO BE LIMITED FROM THE FRONT-END.
2. UNIT FAN OPERATION
   A. WHEN THE ZONE IS IN OCCUPIED MODE OR IN AFTERHOURS MODE, THE FAN SHALL RUN CONTINUOUSLY, UNLESS VACANT MODE HAS BEEN TRIGGERED.
   B. DURING THE UNOCCUPIED MODE AS DETERMINED BY EMS TIME SCHEDULE, THE UNIT FAN CYCLES WITH DEMAND AND THE TEMPERATURE IS CONTROLLED BY THE UNOCCUPIED SPACE TEMPERATURE HEATING AND COOLING SET POINTS.
3. MINIMUM OUTDOOR AIR VENTILATION
   A. DURING OCCUIPIED MODE OR AFTERHOURS MODE, THE ECONOMIZER DAMPER SHALL BE COMMANDED BY THE EMS UNITARY CONTROLLER TO MAINTAIN A POSITION WHICH SATISFIES THE MINIMUM OUTDOOOR AIR VENTILATION REQUIREMENTS FOR THE ZONE. DAMPER POSITION(S) DETERMINED BY AIR BALANCING CONTRACTOR.
4. DEMAND CONTROL VENTILATION
   A. EMS UNITARY CONTROLLER WILL BE CONNECTED TO A WALL MOUNTED CO2 SENSOR TO MONITOR CO2 CONCENTRATION.
   B. DURING OCCUPIED MODE OR AFTERHOURS MODE, THE EMS UNITARY CONTROLLER SHALL RESET THE OUTSIDE AIR DAMPER MINIMUM POSITION TO MAINTAIN THE CO2 CONCENTRATION BELOW 1,000 PPM.
5. AUTOMATIC DEMAND REDUCTION CONTROLS
   A. EMS SHALL BE PROGRAMMED WITH CAPABILITY TO IMPLEMENT CENTRALIZED DEMAD SHED FOR ALL NON-CRITICAL ZONES UPON CALL FOR AUTOMATIC DEMAND REDUCTION. CRITICAL ZONES SHALL NOT BE IMPACTED BY DEMAND SHED CONSERVATION MEASURES.
6. ZONE PRE-OCCUPANCY PURGE
   A. THE EMS SHALL SCHEDULE THE ZONE TO BE IN OCCUPIED MODE ONE HOUR PRIOR TO THE ACTUAL TIME OF ANTICIPATED OCCUPANCY.
7. HEATING OPERATION.
   A. THE CONTROLLER COMPARES THE HEATING SET POINT WITH THE SPACE TEMPERATURE AND DETERMINES A NEED-HEATING CONTROL SIGNAL TO ENGAGE THE COMPRESSOR AND REVERSING VALVE (ACCORDING TO HEAT PUMP UNIT MANUFACTURER'S INSTALLATION FOR HEATING CYCLE) TO MAINTAIN ROOM SET POINT.
   B. IF FURTHER HEATING IS REQUIRED AFTER COMPRESSOR/REVERSING VALVE HEATING IS ACTIVE FOR 15 MINUTES (ADJUSTABLE), ENGAGE AUXILIARY ELECTRIC HEAT.
   C. ECONOMIZER TO BE COMMANDED TO MIN CFM SETPOINT DURING HEATING MODE.
8. COOLING OPERATION
   A. THE CONTROLLER COMPARES THE COOLING SET POINT WITH THE SPACE TEMPERATURE AND DETERMINES A NEED-COOLING SIGNAL.
   B. THE FIRST STAGE OF COOLING WILL ENABLE THE ECONOMIZER TO PROVIDE FREE COOLING FOR AS LONG AS POSSIBLE.
   C. THE SECOND STAGE OF COOLING WILL ENABLE THE COMPRESSOR AND REVERSING VAVLE (ACCORDING TO HEAT PUMP UNIT MANUFACTURER'S INSTRUCTION FOR COOLING CYCLE) TO MAINTAIN THE ROOM SET POINT.
9. FAULT DIAGNOSTICS
   A. THE EMS DCC CONTROLLER SHALL MONITOR THE FOLLOWING ECONOMIZER ACTUATOR FAULT DETECTION DIAGNOSTIC CONDITIONS AND BROADCAST RESULTS VIA EMS NETWORK:
   - TEMPERATURE SENSOR FAILURE/FAULT
   - ECONOMIZER NOT ECONOMIZING WHEN ENABLED
   - ECONOMIZER ECONOMIZING WHEN DISABLED
   - ECONOMIZER DAMPER MODULATION FAILURE
   - EXCESS OUTDOOR AIR
10. MONITORING - THE FOLLOWING CONDITIONS SHALL BE MONITORED AND DISPLAYED AT EMS OPERATOR WORKSTATION/GRAHPICAL USER INTERFACE
   A. SUPPLY AIR TEMPERATURE
   B. ROOM TEMPERATURE
   C. ROOM HUMIDITY
   D. ROOM CO2 CONCENTRATION
   E. CURRENT MODE (HEATING/COOLING/FAN)
   F. SUPPLY AIR TEMPERATURE ATTAINED LAST TIME WAS IN HEATING
   G. SUPPLY AIR TEMPERATURE ATTAINED LAST TIME WAS IN COOLING
   H. CURRENT COMMAND STATUS OF FAN, COMPRESSOR, REVERSING VALVE AND AUX HEAT
   I. RUN TIME METERS ON FAN, COMPRESSOR, REVERSING VALVE AND AUX HEAT
   J. FAN STATUS THRU CURRENT SWITCH
   K. ECONOMIZER ACTUATOR FEEDBACK STATUS



3 HEAT PUMP UNIT W/ DEMAND CONTROL VENTILATION
SCALE: NONE

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

MECHANICAL CONTROLS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

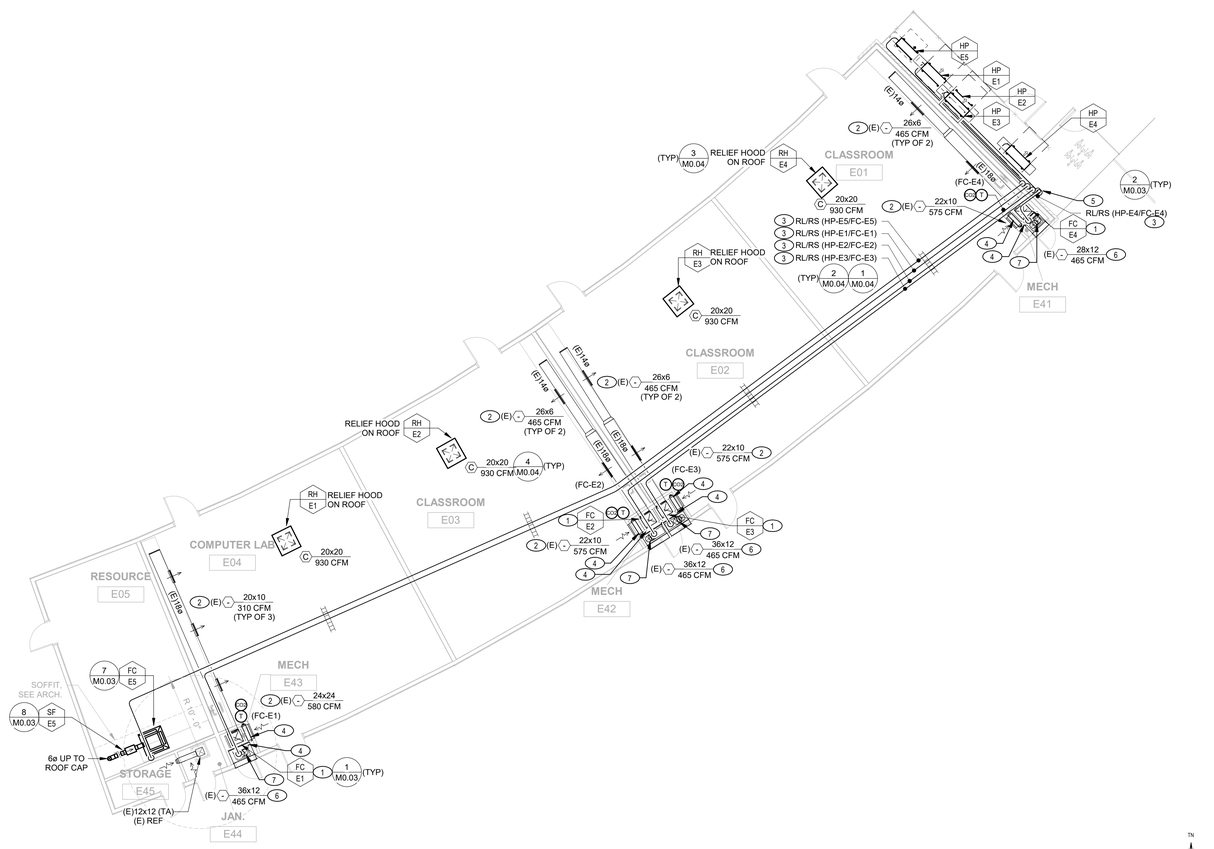
SHEET:

M0.05

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:20:43 AM

PLEASE RECYCLE

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



1 MECHANICAL FLOOR PLAN - BLDG E

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

KEY NOTES

1. INSTALL NEW FAN COIL. PROVIDE NECESSARY DUCT, FITTINGS, OFFSETS, AND TRANSITIONS FOR A COMPLETE AND OPERABLE SYSTEM.
2. RE-BALANCE EXISTING AIR INLET/OUTLET TO AIR QUANTITY SHOWN.
3. REFRIGERANT PIPING LINE SET, SIZE PER MANUFACTURER'S RECOMMENDATION. CONTRACTOR TO COORDINATE PIPING LINE LENGTHS AND SIZES WITH EQUIPMENT MANUFACTURER/SUPPLIER. SEE DETAILS 1/M0.04 & 2/M0.04 FOR PIPE ON ROOF ATTACHMENT DETAILS.
4. PROVIDE MOTORIZED DAMPER IN LOWER DUCT BEFORE UNIT RETURN AIR PLENUM.
5. COORDINATE NEW REFRIGERANT PIPING RISER LOCATION WITH EXISTING SYSTEMS TO AVOID CONFLICT WITH EXISTING SYSTEMS.
6. RE-BALANCE BOTH EXISTING HIGH AND LOW AIR INLETS TO AIR QUANTITY SHOWN.
7. PROVIDE 10Ø OUTSIDE AIR DUCT FROM RETURN AIR PLENUM TO EXISTING OUTSIDE AIR LOUVER.. PROVIDE NECESSARY FITTINGS, DUCTWORK, OFFSETS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL HVAC EQUIPMENT, DUCTWORK, CONTROLS AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR, AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.
D. ALL THERMOSTATS IN STUDENT ACCESSIBLE AREAS TO HAVE VENTED LOCKABLE COVER.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E MECHANICAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

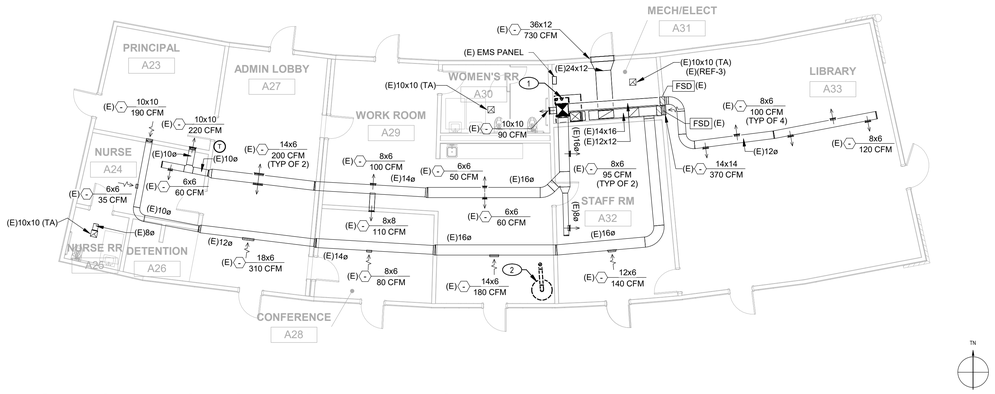
CLIENT PROJ NO:

SHEET:

M2.14

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:21:00 AM



1 MECHANICAL DEMOLITION FLOOR PLAN - BLDG A

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

KEY NOTES

1 REMOVE AND DISCARD EXISTING FURNACE.

2 DISCONNECT AND DEMOLISH HOOD EXHAUST DUCT. PATCH ROOF TO MATCH EXISTING. KILN AND KILN HOOD TO BE RETURNED TO DISTRICT.

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.

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

C. PATCH, REPAIR, AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A MECHANICAL DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

MD2.11

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

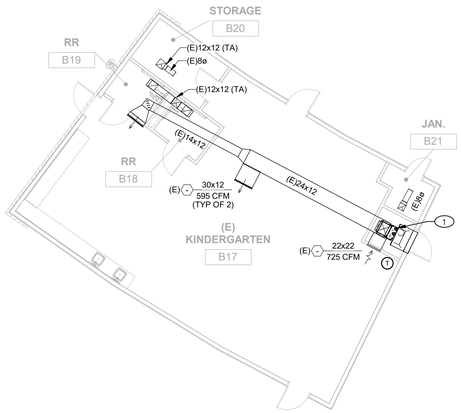
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:21:03 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON THIS SHEET IF ORIGINAL PAGE SIZE

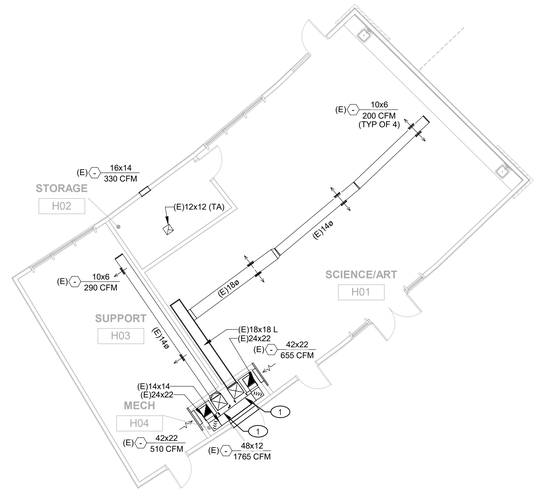
KEY NOTES

1 REMOVE AND DISCARD EXISTING FURNACE.



3 MECHANICAL DEMOLITION FLOOR PLAN - BLDG B

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



2 MECHANICAL DEMOLITION FLOOR PLAN - BLDG H

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

GENERAL NOTES

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

1 MECHANICAL DEMOLITION FLOOR PLAN - BLDG C

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H MECHANICAL DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

MD2.12

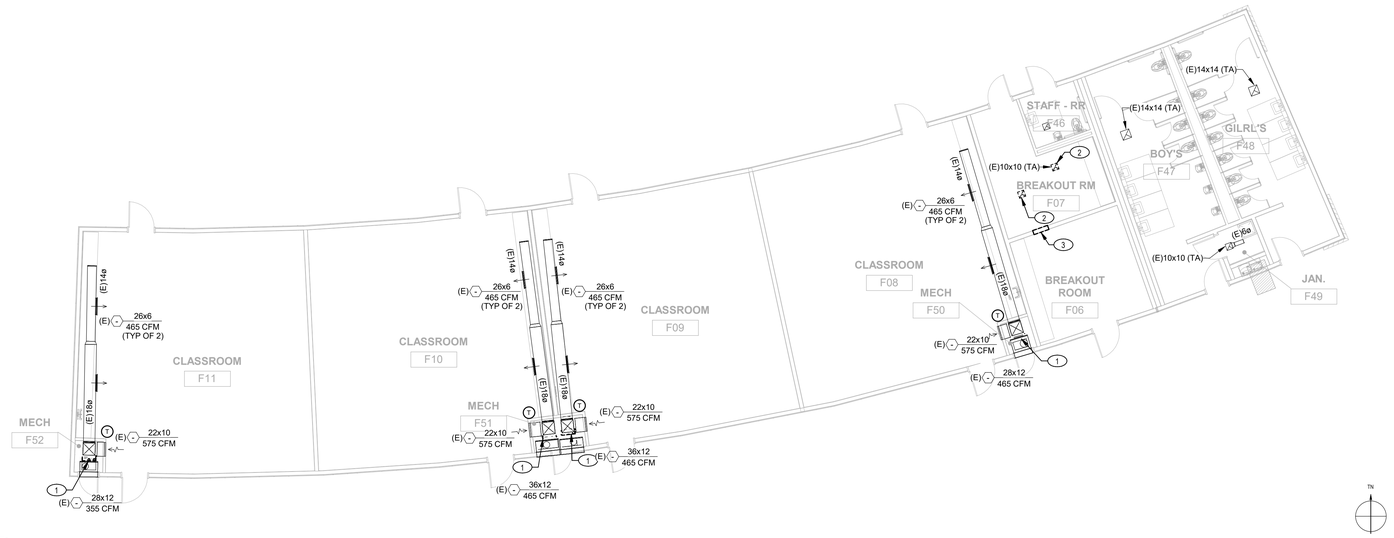
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/24/2024 11:21:07 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET IN ORIGINAL PAGE SIZE

KEY NOTES

1. REMOVE AND DISCARD EXISTING FURNACE.
2. DEMOLISH EXISTING DUCT RISER AND ASSOCIATED MECHANICAL EQUIPMENT, DUCTWORK, AND ACCESSORIES. PATCH ROOF TO MATCH EXISTING.
3. EXISTING WALL FURNACE TO BE DEMOLISHED AND DISCARDED. PATCH WALL TO MATCH EXISTING.

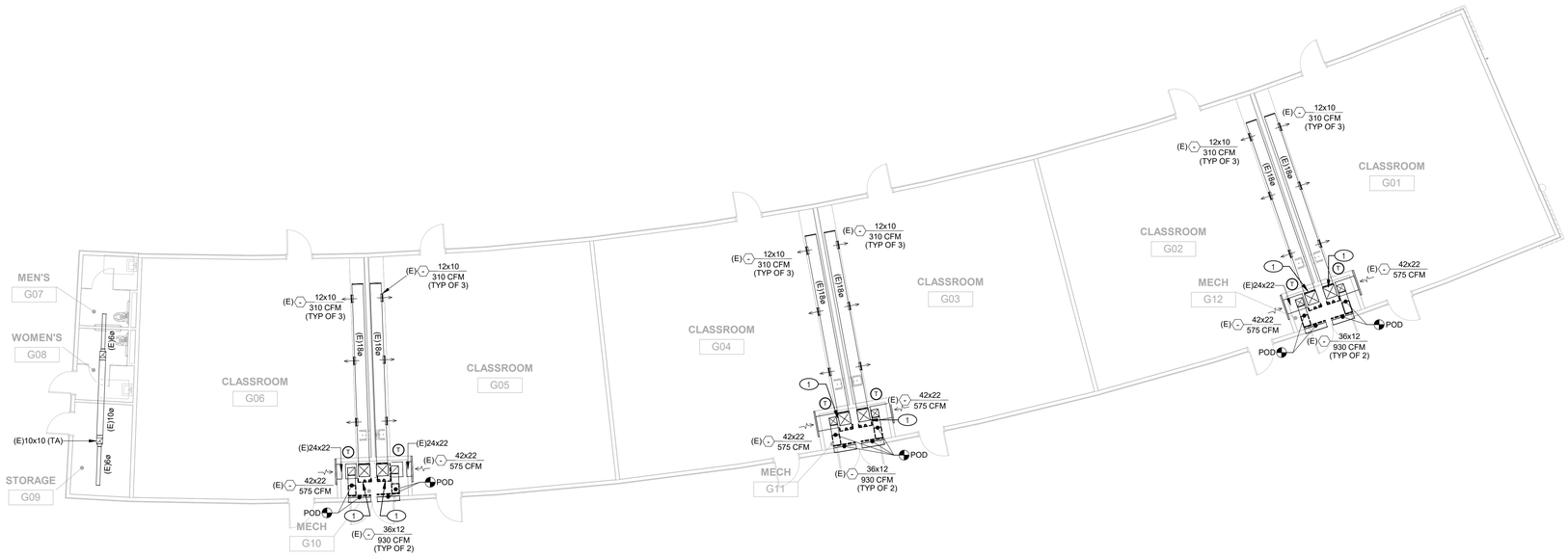


2 MECHANICAL DEMOLITION FLOOR PLAN - BLDG F

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

GENERAL NOTES

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



1 MECHANICAL DEMOLITION FLOOR PLAN - BLDG G

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G MECHANICAL DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

MD2.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Z.rvt
9/24/2024 11:21:12 AM

PLEASE RECYCLE

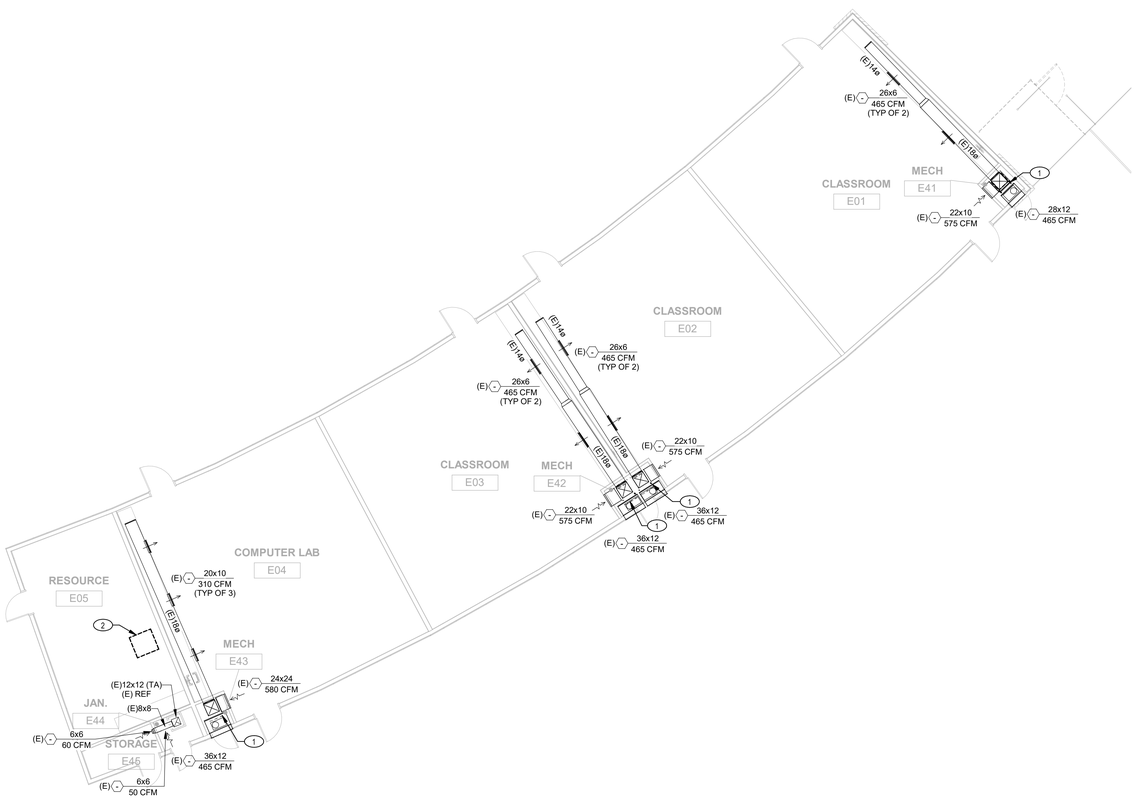
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON THIS SHEET IF ORIGINAL PAGE SIZE

KEY NOTES

1 REMOVE AND DISCARD EXISTING FURNACE.
2 DEMOLISH AND DISCARD EXISTING CONDENSING UNIT AND RELATED ACCESSORIES.

GENERAL NOTES

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



1 **MECHANICAL DEMOLITION FLOOR PLAN - BLDG E**
SCALE: 1/8" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E MECHANICAL DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

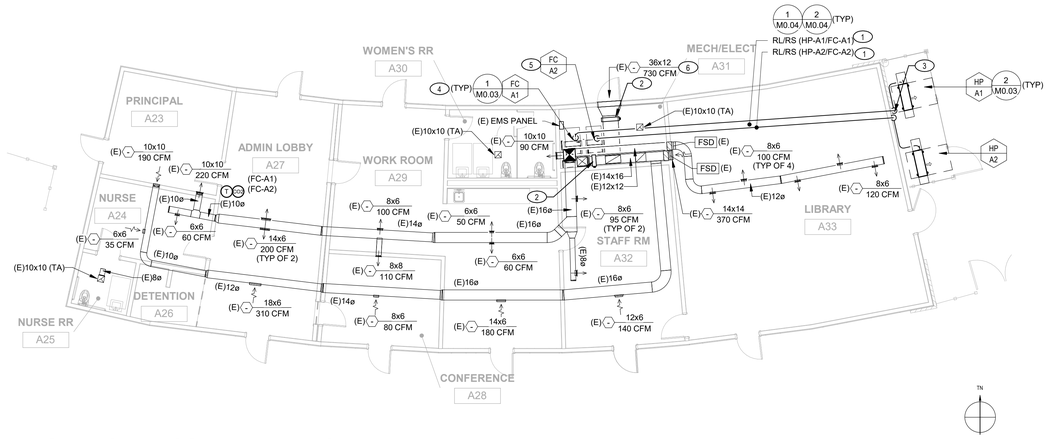
DATE: **2024.09.16**
CLIENT PROJ NO:

SHEET:

MD2.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:21:15 AM

PLEASE RECYCLE



1 MECHANICAL FLOOR PLAN - BLDG A

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

KEY NOTES

1. REFRIGERANT PIPING LINE SET, SIZE PER MANUFACTURER'S RECOMMENDATION. CONTRACTOR TO COORDINATE PIPING LINE LENGTHS AND SIZES WITH EQUIPMENT MANUFACTURER/SUPPLIER. SEE DETAILS 1/M0.04 & 2/M0.04 FOR PIPE ON ROOF ATTACHMENT DETAILS.
2. PROVIDE MOTORIZED DAMPER IN LOWER DUCT BEFORE UNIT RETURN AIR PLENUM.
3. COORDINATE NEW REFRIGERANT PIPING RISER LOCATION WITH EXISTING SYSTEMS TO AVOID CONFLICT WITH EXISTING SYSTEMS.
4. INSTALL NEW FAN COIL. PROVIDE NECESSARY DUCT, FITTINGS, OFFSETS, AND TRANSITIONS FOR A COMPLETE AND OPERABLE SYSTEM.
5. CONNECT SUPPLY AND RETURN DUCT FROM FC-A2 TO EXISTING SYSTEM. PROVIDE NECESSARY OFFSETS, TRANSITIONS, DUCTWORK, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.
6. RE-BALANCE EXISTING AIR INLET/OUTLET TO AIR QUANTITY SHOWN.

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL HVAC EQUIPMENT, DUCTWORK, CONTROLS AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR, AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.
D. ALL THERMOSTATS IN STUDENT ACCESSIBLE AREAS TO HAVE VENTED LOCKABLE COVER.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
CONSULTING ENGINEERS
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A MECHANICAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

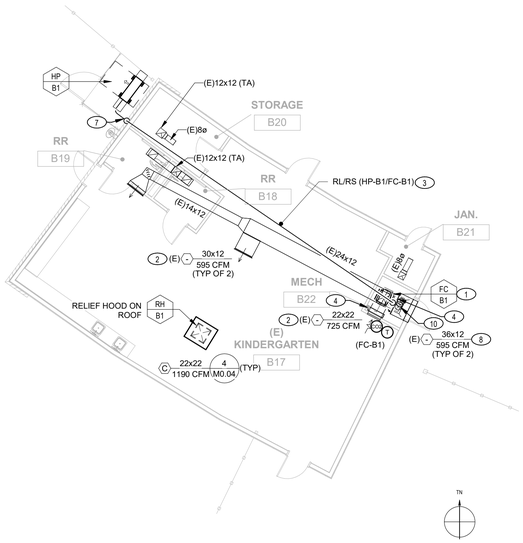
M2.11

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

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:20:46 AM

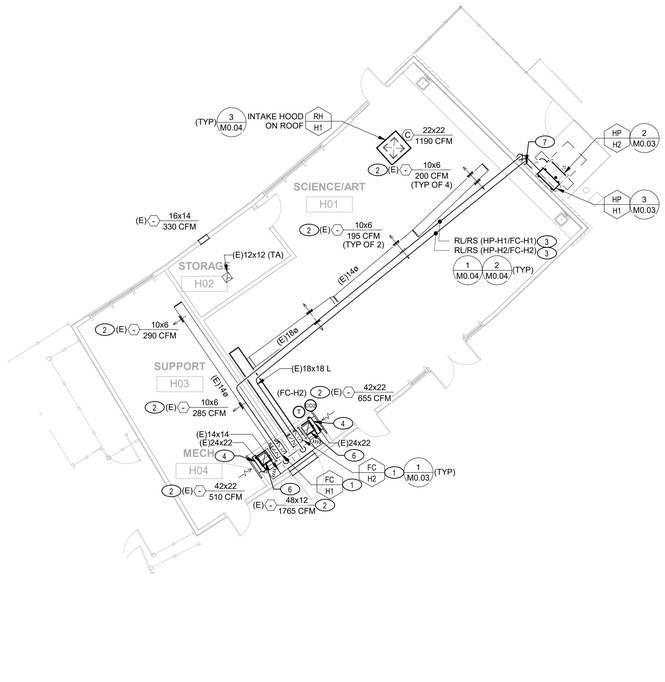
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON A PLAN SHEET 11 ORIGINAL PAGE SIZE



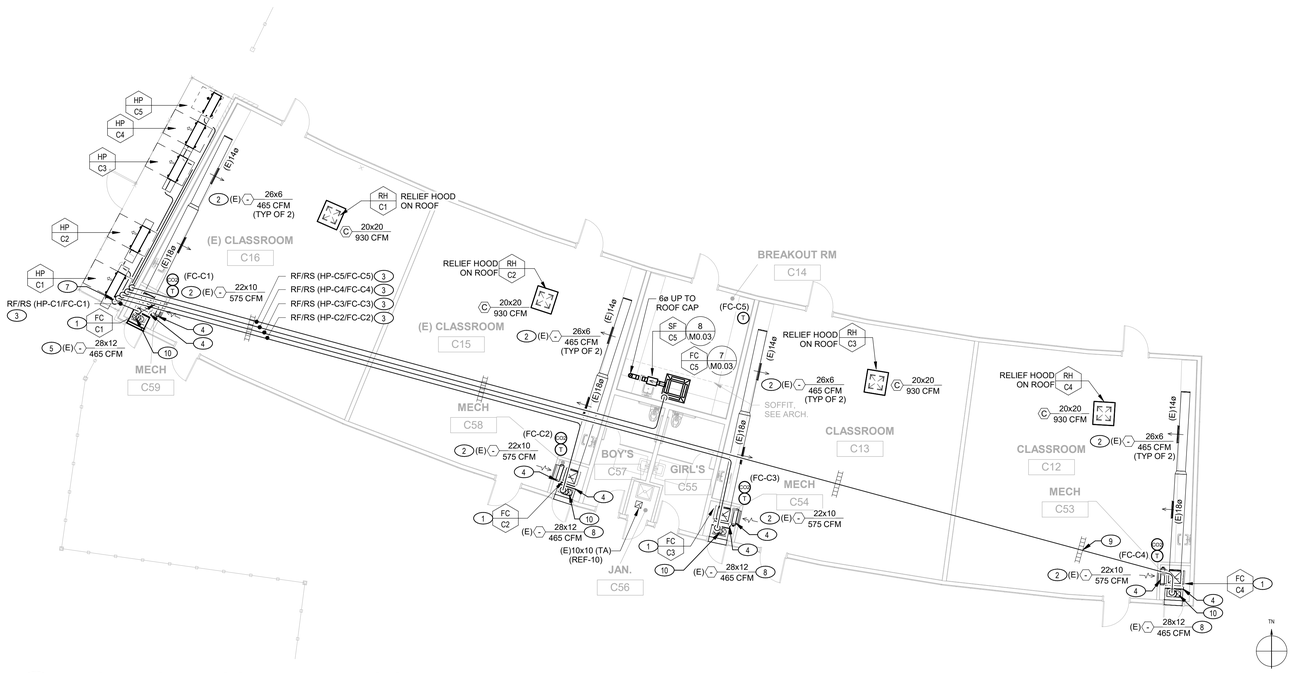
3 MECHANICAL FLOOR PLAN - BLDG B

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



2 MECHANICAL FLOOR PLAN - BLDG H

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



1 MECHANICAL FLOOR PLAN - BLDG C

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

KEY NOTES

1. INSTALL NEW FAN COIL. PROVIDE NECESSARY DUCT, FITTINGS, OFFSETS, AND TRANSITIONS FOR A COMPLETE AND OPERABLE SYSTEM.
2. RE-BALANCE EXISTING AIR INLET/OUTLET TO AIR QUANTITY SHOWN.
3. REFRIGERANT PIPING LINE SET, SIZE PER MANUFACTURER'S RECOMMENDATION. CONTRACTOR TO COORDINATE PIPING LINE LENGTHS AND SIZES WITH EQUIPMENT MANUFACTURER/SUPPLIER. SEE DETAILS 1/M0.04 & 2/M0.04 FOR PIPE ON ROOF ATTACHMENT DETAILS.
4. PROVIDE MOTORIZED DAMPER IN LOWER DUCT BEFORE UNIT RETURN AIR PLENUM.
5. RE-BALANCE BOTH EXISTING LOW, AND NEW HIGH AIR INLETS TO AIR QUANTITY SHOWN.
6. PROVIDE MOTORIZED DAMPER IN OUTSIDE AIR DUCT DROP.
7. COORDINATE NEW REFRIGERANT PIPING RISER LOCATION WITH EXISTING SYSTEMS TO AVOID CONFLICT WITH EXISTING SYSTEMS.
8. RE-BALANCE BOTH EXISTING HIGH AND LOW AIR INLETS TO AIR QUANTITY SHOWN.
9. CUT EXISTING CEILING FOR INSTALLING BLOCKING. PATCH AND FINISH CEILING TO MATCH EXISTING ADJACENT, TYPICAL.
10. PROVIDE 10Ø OUTSIDE AIR DUCT FROM RETURN AIR PLENUM TO EXISTING OUTSIDE AIR LOUVER.. PROVIDE NECESSARY FITTINGS, DUCTWORK, OFFSETS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL HVAC EQUIPMENT, DUCTWORK, CONTROLS AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR, AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.
D. ALL THERMOSTATS IN STUDENT ACCESSIBLE AREAS TO HAVE VENTED LOCKABLE COVER.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H MECHANICAL FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

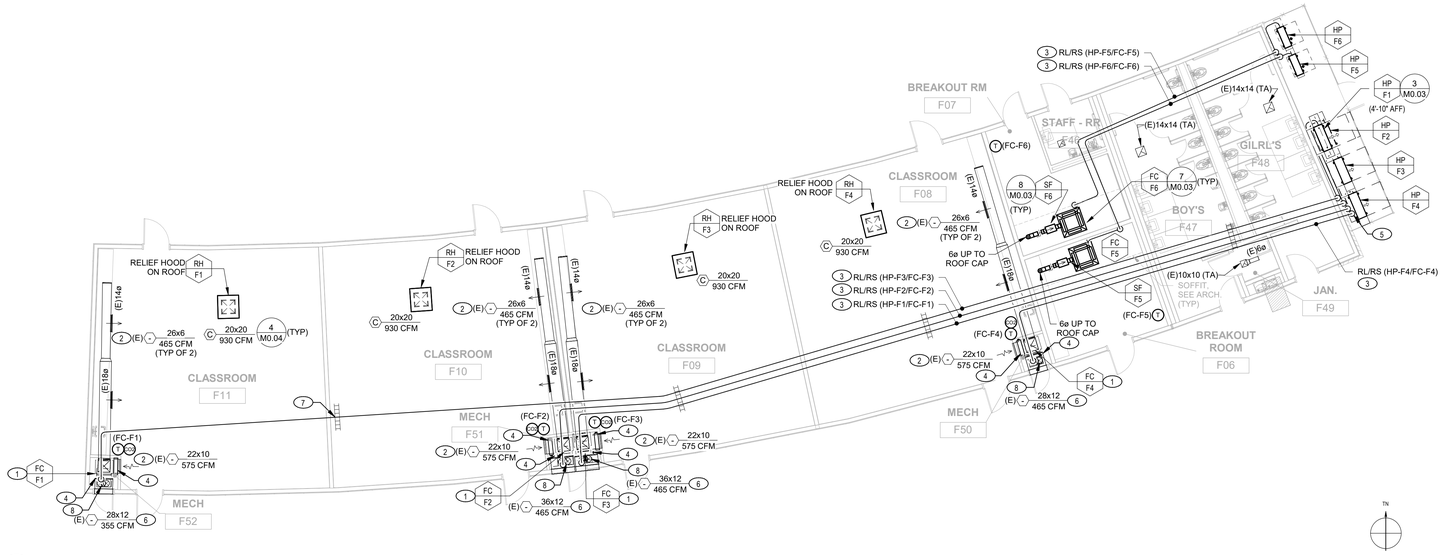
SHEET:

M2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/24/2024 11:20:51 AM

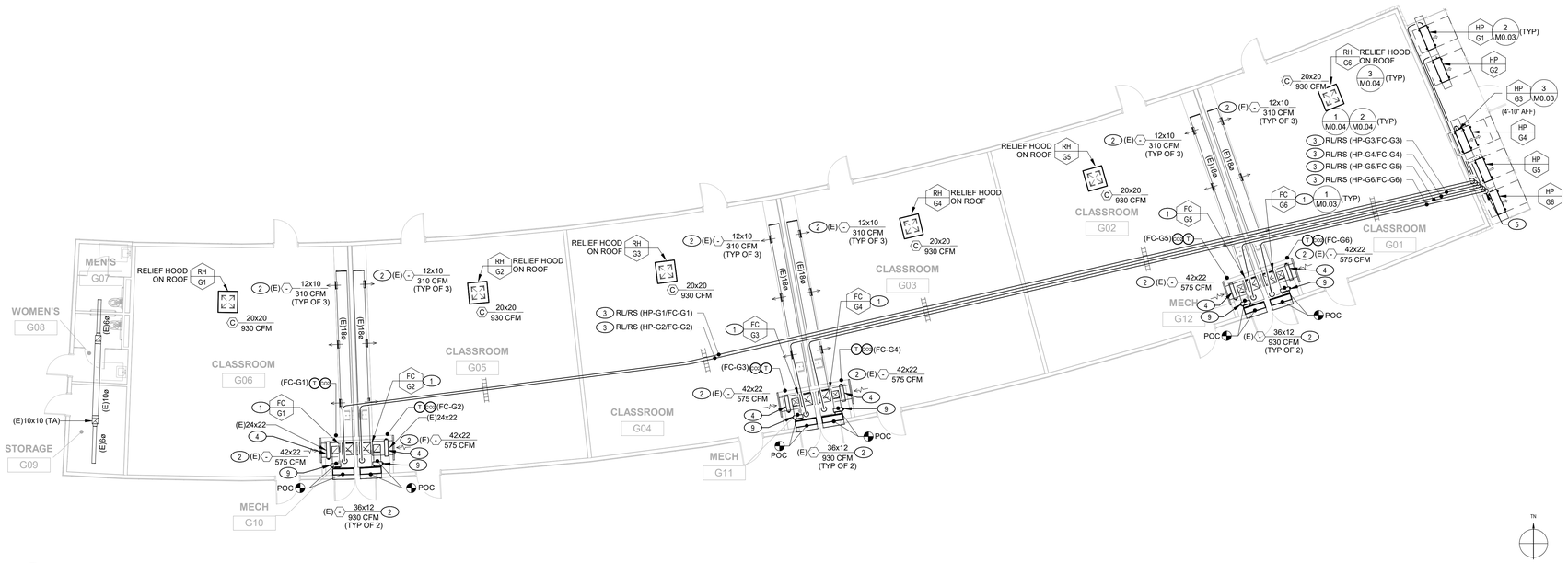
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS ONE INCH IN LENGTH ON THIS SHEET IF ORIGINAL PAGE SIZE



2 MECHANICAL FLOOR PLAN - BLDG F

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



1 MECHANICAL FLOOR PLAN - BLDG G

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

KEY NOTES

1. INSTALL NEW FAN COIL. PROVIDE NECESSARY DUCT, FITTINGS, OFFSETS, AND TRANSITIONS FOR A COMPLETE AND OPERABLE SYSTEM.
2. RE-BALANCE EXISTING AIR INLET/OUTLET TO AIR QUANTITY SHOWN.
3. REFRIGERANT PIPING LINE SET, SIZE PER MANUFACTURER'S RECOMMENDATION. CONTRACTOR TO COORDINATE PIPING LINE LENGTHS AND SIZES WITH EQUIPMENT MANUFACTURER/SUPPLIER. SEE DETAILS 1/M0.04 & 2/M0.04 FOR PIPE ON ROOF ATTACHMENT DETAILS.
4. PROVIDE MOTORIZED DAMPER IN LOWER DUCT BEFORE UNIT RETURN AIR PLENUM.
5. COORDINATE NEW REFRIGERANT PIPING RISER LOCATION WITH EXISTING SYSTEMS TO AVOID CONFLICT WITH EXISTING SYSTEMS.
6. RE-BALANCE BOTH EXISTING HIGH AND LOW AIR INLETS TO AIR QUANTITY SHOWN.
7. CUT EXISTING CEILING FOR INSTALLING BLOCKING. PATCH AND FINISH CEILING TO MATCH EXISTING ADJACENT, TYPICAL.
8. PROVIDE 10Ø OUTSIDE AIR DUCT FROM RETURN AIR PLENUM TO EXISTING OUTSIDE AIR LOUVER.. PROVIDE NECESSARY FITTINGS, DUCTWORK, OFFSETS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.
9. PROVIDE MOTORIZED DAMPER IN OUTSIDE AIR DUCT.

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.
B. ALL HVAC EQUIPMENT, DUCTWORK, CONTROLS AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.
C. PATCH, REPAIR, AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITION AND INSTALL.
D. ALL THERMOSTATS IN STUDENT ACCESSIBLE AREAS TO HAVE VENTED LOCKABLE COVER.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G MECHANICAL FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

M2.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/24/2024 11:20:56 AM

PLEASE RECYCLE

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

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 3 of 11)

C1. COMPLIANCE SUMMARY

	COMPLIES[3]		
	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	305.75	n/a	n/a
Proposed Design	188.1	n/a	n/a
Compliance Margins	**117.65**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Compliance Totals include efficiency, photovoltaics and batteries
[3] New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 2 of 11)

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Not Included	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 1 of 11)

Project Name:	Glenwood ES Mod - Bldg A	Date Prepared:	2024-04-01

A. General Information

1	Project Name	Glenwood ES Mod - Bldg A			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	5	Standards Version	Compliance 2022
6	Zip code	94901	7	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	3081	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	3081	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 6 of 11)

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	5.4	---	117	---	---
Space Cooling	4.7	4	0.7	---	---	---
Indoor Fans	6	1.1	4.9	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	0.8	0.8	0	10.9	10.9	0
Indoor Lighting	5.1	5.1	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**16.6**	**16.4**	**0.2**	**127.9**	**10.9**	**117**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**16.6**	**16.4**	**0.2**	**127.9**	**10.9**	**117**
Receptacle	11.2	11.2	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**27.8**	**27.6**	**0.2**	**127.9**	**10.9**	**117**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 5 of 11)

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	88.91	88.91	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**394.66**	**277.01**	**117.65 (29.8%)**

[1] Notes: This table is not used for Energy Code Compliance.

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 4 of 11)

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]			
Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	105.5	51.89	53.61
Space Cooling	79.08	68.99	10.09
Indoor Fans	63.98	10.03	53.95
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	15.72	15.72	0
Indoor Lighting	41.47	41.47	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**305.75**	**188.1**	**117.65 (38.5%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**305.75**	**188.1**	**117.65 (38.5%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 9 of 11)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
1-Office < 250 sqft-Trm	Uncontrolled	2	N/A	N/A	1,860	N/A	0	N/A	N/A	N/A	☐
PropNoClg-NonResZnSys	Single Zone Air Conditioner	2	0	83.3	2,717.23	N/A	N/A	0	W/cfm	Cycling	☐

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 8 of 11)

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
FC/HP-1&2	2	365.48	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] Status: N - New, A - Altered, E - Existing

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-1&2	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Office < 250 sqft	Office - Office space Misc - All others Office - Reception areas Office - Breakrooms General - Conference/meeting Assembly - Libraries (reading rooms and stack areas)	54.65	730.95	0	3081	DCV

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	(Page 7 of 11)

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	72.3	34.1	38.2	52.84
NET EUI[1]	72.3	34.1	38.2	52.84

[1] Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

D1. EXCEPTIONAL CONDITIONS

• The building does not include service water heating. Verify that service water heating is not required and is not included in the design.
• The user model includes space(s) that are designed to be served by mechanical cooling systems, but the cooling systems were not included in the simulation model. A cooling system has been modeled for both the proposed and standard cases.
• The user model includes space(s) without sufficient cooling equipment. Cooling equipment has been added to the model to meet cooling loads.

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
FC/HP-1&2	Single Zone Heat Pump (SZHP) Air System	2	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N

[1] Status: N - New, A - Altered, E - Existing

TITLE 24 COMPLIANCE SHEET INDEX

SHEET NUMBER	SHEET NAME
T24.1	TITLE 24 CALCULATIONS
T24.2	TITLE 24 CALCULATIONS
T24.3	TITLE 24 CALCULATIONS
T24.4	TITLE 24 CALCULATIONS
T24.5	TITLE 24 CALCULATIONS
T24.6	TITLE 24 CALCULATIONS
T24.7	TITLE 24 CALCULATIONS
T24.8	TITLE 24 CALCULATIONS
T24.9	TITLE 24 CALCULATIONS
T24.10	TITLE 24 CALCULATIONS
T24.11	TITLE 24 CALCULATIONS
T24.12	TITLE 24 CALCULATIONS

PLEASE RECYCLE

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA. 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: Z3-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.1

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:36 AM

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

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 11 of 11)**

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 04-01-2024	
City/State/Zip: Roseville, CA 95678	License #: M34661	
Phone:	Title: Mechanical Engineer	Scope:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-04-01 10:49:45 Compliance ID: EnergyPro-4955-0424-0355

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 10 of 11)**

Documentation Author's Declaration Statement

1. I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: LP Consulting Engineers, Inc.	Signature Date: 04-01-2024
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable): M40674
City/State/Zip: Roseville, CA 95678	Phone: 916.771.0778

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 04-01-2024	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-04-01 10:49:45 Compliance ID: EnergyPro-4955-0424-0355

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 3 of 11)**

C1. COMPLIANCE SUMMARY

COMPLIES[3]

	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	308.36	n/a	n/a
Proposed Design	227.19	n/a	n/a
Compliance Margins	**81.17**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Compliance Totals include efficiency, photovoltaics and batteries
[3] New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-03-04 16:32:57 Compliance ID: EnergyPro-4955-0324-0292

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 2 of 11)**

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Not Included	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-03-04 16:32:57 Compliance ID: EnergyPro-4955-0324-0292

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
Nonresidential Performance Compliance Method		**(Page 1 of 11)**
Project Name: Glenwood ES Mod - Bldg B	**Date Prepared:**	**2024-03-04**

A. General Information

1	Project Name	Glenwood ES Mod - Bldg B			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	5	Standards Version	Compliance 2022
6	Zip code	94901	7	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	1336	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	1336	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-03-04 16:32:57 Compliance ID: EnergyPro-4955-0324-0292

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 6 of 11)**

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	2.1	---	39.7	---	---
Space Cooling	1.8	1.6	0.2	---	---	---
Indoor Fans	2.7	1.3	1.4	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	2.5	2.5	0	---	---	---
Indoor Lighting	1.6	1.6	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**8.6**	**9.1**	**-0.5**	**39.7**	**0**	**39.7**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**8.6**	**9.1**	**-0.5**	**39.7**	**0**	**39.7**
Receptacle	3.4	3.4	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**12**	**12.5**	**-0.5**	**39.7**	**0**	**39.7**

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-03-04 16:32:57 Compliance ID: EnergyPro-4955-0324-0292

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 5 of 11)**

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	64.03	64.03	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**372.39**	**291.22**	**81.17 (21.8%)**

[1] Notes: This table is not used for Energy Code Compliance.

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1   ☐ This project is pursuing CalGreen Tier 2

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-03-04 16:32:57 Compliance ID: EnergyPro-4955-0324-0292

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 4 of 11)**

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	83.12	46.62	36.5
Space Cooling	78.1	72.13	5.97
Indoor Fans	66.59	27.9	38.69
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	48.55	48.54	0.01
Indoor Lighting	32	32	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**308.36**	**227.19**	**81.17 (26.3%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**308.36**	**227.19**	**81.17 (26.3%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Schema Version: rev 20220601 Report Generated: 2024-03-04 16:32:57 Compliance ID: EnergyPro-4955-0324-0292

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:38 AM

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

CONSULTING ENGINEERS

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.2

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH IF NOT PRINTED ON THE SHEET ELECTRONICAL PAGE SIZE

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 9 of 11)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
1-Classroom-Trm	Uncontrolled	1	N/A	N/A	1,190	N/A	0	N/A	N/A	N/A	☐
PropNoClg-NonResZnSys	Single Zone Air Conditioner	1	0	73.1	2,384.47	N/A	N/A	0	W/cfm	Cycling	☐

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 8 of 11)

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
FC/HP-B1	1	491.58	1,190	0.25	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-B1	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] *Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Classroom	Education - Classrooms (ages 5-8) Office - Occupiable storage rooms for dry materials	31.72	491.58	0	1336	DCV

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 7 of 11)

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	60.36	31.92	28.44	47.12
NET EUI[1]	60.36	31.92	28.44	47.12

[1] *Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.*

D1. EXCEPTIONAL CONDITIONS

- The building does not include service water heating. Verify that service water heating is not required and is not included in the design.
- The user model includes space(s) that are designed to be served by mechanical cooling systems, but the cooling systems were not included in the simulation model. A cooling system has been modeled for both the proposed and standard cases.
- The user model includes space(s) without sufficient cooling equipment. Cooling equipment has been added to the model to meet cooling loads.

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
FC/HP-B1	Single Zone Heat Pump (SZHP) Air System	1	56.24	0	COP HSPF2	3.9 8.9	46.09	EER2 SEER2	10.5 16	Fixed DB	N

[1] *Status: N - New, A - Altered, E - Existing*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 1 of 13)

Project Name:	Glenwood ES Mod - Bldg C	Date Prepared:	2024-05-01

A. General Information

1	Project Name	Glenwood ES Mod - Bldg C			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	5	Standards Version	Compliance 2022
6	Zip code	94901	7	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	3946	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	3946	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 11 of 11)

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:
Company: LP Consulting Engineers	
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-04-2024
City/State/Zip: Roseville, CA 95678	License #: M34661
Phone:	Title: Mechanical Engineer Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 10 of 11)

Documentation Author's Declaration Statement

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: LP Consulting Engineers, Inc.	Signature Date: 03-04-2024
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable): M40674
City/State/Zip: Roseville, CA 95678	Phone: 916.771.0778

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-04-2024	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 4 of 13)

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]			
Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	41.86	45.74	-3.88
Space Cooling	82.95	50.81	32.14
Indoor Fans	246.77	19.82	226.95
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	31.69	31.68	0.01
Indoor Lighting	31.66	31.66	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**434.93**	**179.71**	**255.22 (58.7%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**434.93**	**179.71**	**255.22 (58.7%)**

[1] *Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 3 of 13)

C1. COMPLIANCE SUMMARY

COMPLIES[3]			
	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	434.93	n/a	n/a
Proposed Design	179.71	n/a	n/a
Compliance Margins	**255.22**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] *Efficiency measures include improvements like a better building envelope and more efficient equipment*
[2] *Compliance Totals include efficiency, photovoltaics and batteries*
[3] *New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded*
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 2 of 13)

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Not Included	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.3

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:43 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1 INCH LONG ON THIS SHEET IF ORIGINAL PAGE SIZE

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 7 of 13)

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	66.81	27.93	38.88	58.19
NET EUI[1]	66.81	27.93	38.88	58.19

[1] Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

D1. EXCEPTIONAL CONDITIONS

- The building does not include service water heating. Verify that service water heating is not required and is not included in the design.

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-C1	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-C2	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-C3	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N

[1] Status: N - New, A - Altered, E - Existing

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 6 of 13)

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	6.2	---	58.9	---	---
Space Cooling	5.8	3.1	2.7	---	---	---
Indoor Fans	34	2.8	31.2	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	5.1	5.1	0	---	---	---
Indoor Lighting	4.7	4.7	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**49.6**	**21.9**	**27.7**	**58.9**	**0**	**58.9**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**49.6**	**21.9**	**27.7**	**58.9**	**0**	**58.9**
Receptacle	10.4	10.4	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**60**	**32.3**	**27.7**	**58.9**	**0**	**58.9**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 5 of 13)

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	66.84	66.84	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**501.77**	**246.55**	**255.22 (50.9%)**

[1] Notes: This table is not used for Energy Code Compliance.

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 10 of 13)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
			Rated Capacity (kBtuh)		Airflow (cfm)			Fan			
System ID	System Type	Qty	Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	VSD
1-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
2-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
3-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
4-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
5-Breakroom-Trm	Uncontrolled	1	N/A	N/A	710	N/A	0	N/A	N/A	N/A	☐

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems
Indoor Lighting	NRCI-LTI-01-E - Must be submitted for all buildings

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Indoor Lighting	NRCA-LTI-02-A - Occupancy Sensors and Automatic Time Switch Controls.
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 9 of 13)

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-C1	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-C2	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-C3	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-C4	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
		Mechanical Ventilation				
Zone Name	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM	Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
1-Classroom	Education - Classrooms (ages 9-18)	23.23	353.02	0	929	DCV
2-Classroom	Education - Classrooms (ages 9-18)	23.23	353.02	0	929	DCV
3-Classroom	Education - Classrooms (ages 9-18)	23.23	353.02	0	929	DCV
4-Classroom	Education - Classrooms (ages 9-18)	23.23	353.02	0	929	DCV
5-Breakroom	Office - Breakrooms	7.67	115	0	230	N/A

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 8 of 13)

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-C4	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-C5	Single Zone Heat Pump (SZHP) Air System	1	30.2	0	COP HSPF2	4.05 9.3	23.04	EER2 SEER2	14.5 24.7	No Economizer	N

[1] Status: N - New, A - Altered, E - Existing

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
			Supply Fan				Return / Relief Fan					
Name or Item Tag	Qty	Design OA CFM	CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	Status[1]
FC/HP-C1	1	353.02	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-C2	1	353.02	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-C3	1	353.02	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-C4	1	353.02	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-C5	1	115	710	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] Status: N - New, A - Altered, E - Existing

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 13 of 13)

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 05-01-2024	
City/State/Zip: Roseville, CA 95678	License #: M34661	
Phone: 916.771.0778	Title: Mechanical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 12 of 13)

Documentation Author's Declaration Statement

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: LP Consulting Engineers, Inc.	Signature Date: 05-01-2024
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Roseville, CA 95678	Phone: (916)-771-0778

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 05-01-2024	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 11 of 13)

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA

CONSULTING ENGINEERS

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.4

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:42 AM

PLEASE RECYCLE

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

Project Name: Glenwood ES Mod - Bldg E **Date Prepared:** 2024-03-07

A. General Information

1	Project Name	Glenwood ES Mod - Bldg E			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	5	Standards Version	Compliance 2022
6	Zip code	94901	7	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing addition and alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	4097	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	4097	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Performance	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Performance	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

C1. COMPLIANCE SUMMARY

COMPLIES[3]

	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	438.65	n/a	n/a
Proposed Design	181.8	n/a	n/a
Compliance Margins	**256.85**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Compliance Totals include efficiency, photovoltaics and batteries
[3] New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	42.75	47.99	-5.24
Space Cooling	83.63	50.1	33.53
Indoor Fans	247.86	19.31	228.55
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	31.85	31.84	0.01
Indoor Lighting	32.56	32.56	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**438.65**	**181.8**	**256.85 (58.6%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**438.65**	**181.8**	**256.85 (58.6%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	66.83	66.83	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**505.48**	**248.63**	**256.85 (50.8%)**

[1] Notes: This table is not used for Energy Code Compliance.

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	6.7	---	62.4	---	---
Space Cooling	6.1	3.1	3	---	---	---
Indoor Fans	35.4	2.8	32.6	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	5.4	5.3	0.1	---	---	---
Indoor Lighting	5	5	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**51.9**	**22.9**	**29**	**62.4**	**0**	**62.4**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**51.9**	**22.9**	**29**	**62.4**	**0**	**62.4**
Receptacle	10.8	10.8	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**62.7**	**33.7**	**29**	**62.4**	**0**	**62.4**

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	67.45	28.07	39.38	58.38
NET EUI[1]	67.45	28.07	39.38	58.38

[1] Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

D1. EXCEPTIONAL CONDITIONS

• The building does not include service water heating. Verify that service water heating is not required and is not included in the design.

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01	02	03	04
Opaque Surfaces & Orientation	Total Gross Surface Area (ft²)	Total Fenestration Area (ft²)	Window to Wall Ratio (%)
North-Facing[1]	374	0	0
East-Facing[2]	1017	33	3.24
South-Facing[3]	0	0	0
West-Facing[4]	1294	344	26.58
Total	**2685**	**377**	**14.04**
Roof	4097	0	0

Notes
[1]North-Facing is oriented to within 45 degrees of true north, including 45 00'00" east of north (NE), but excluding 45 00'00" west of north (NW),
[2]East-Facing is oriented to within 45 degrees of true east, including 45 00'00" south of east (SE), but excluding 45 00'00" north of east (NE),
[3]South-Facing is oriented to within 45 degrees of true south, including 45 00'00" west of south (SW), but excluding 45 00'00" east of south (SE),
[4]West-Facing is oriented to within 45 degrees of true west, including 45 00'00" north of west (NW), but excluding 45 00'00" south of west (SW),

G4. NONRESIDENTIAL AIR BARRIER

01	02
Building Story Name	Air Barrier
Com-Floor 1	No air barrier

G5. OPAQUE SURFACE ASSEMBLY SUMMARY

01	02	03	04	05	06		07	08	09	10
Surface Name	Construction Type	Area (ft²)	Framing Type	Cavity R-Value	Continuous R-Value		Units	Value	Description of Assembly Layers	Status[1]
					Interior	Exterior				
Slab On Grade6	Underground Floor	4,097	N/A	0	N/A	N/A	F-factor	0.73	Slab Type =Unheated slab on grade Insulation Orientation =None Insulation R-Value =none	E
6 Concrete Wall8	Exterior Wall	2,685	N/A	0	N/A	N/A	U-factor	0.7752	Concrete - 140 lb/ft3 - 6 in.	E
R-0 Roof No Attic16	Roof	4,097	N/A	0	N/A	N/A	U-factor	0.304	AsphaltShingles0_25In Vapor permeable felt - 1/8 in. Plywood - 1/2 in. Air - Cavity - Wall Roof Ceiling - 4 in. or more Gypsum Board - 1/2 in.	E

[1] Status: N - New, A - Altered, E - Existing

G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)

01	02	03	04	05	06	07	08	09
Fenestration Assembly Name	Fenestration Type/ Product Type / Frame Type	Certification Method[1]	Assembly Method	Area (ft²)	Overall U-factor	Overall SHGC	Overall VT	Status[2]
Single Metal Clear	Vertical fenestration Fixed window Metal	Default 110.6	Site built	377	1.19	0.83	0.77	E

[1] Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix NA6 and are used in the analysis.
[2] Status: N - New, A - Altered, E - Existing

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-E1	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-E2	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-E3	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N

[1] Status: N - New, A - Altered, E - Existing

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:45 AM

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.5

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH WHEN PLOTTED ON THE SHEET'S ORIGINAL PAGE SIZE

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 12 of 15)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
1-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
2-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
3-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
4-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
5-Classroom-Trm	Uncontrolled	1	N/A	N/A	710	N/A	0	N/A	N/A	N/A	☐

K1. INDOOR CONDITIONED LIGHTING GENERAL INFO

01	02	03	04	05	06
Occupancy Type[1]	Conditioned Floor Area[2] (ft^2)	Installed Lighting Power (Watts)	Lighting Control Credits (Watts)	Additional (Custom) Allowance	
				Area Category Footnotes (Watts)	Area Category Footnotes (Watts)
Classroom, Lecture, or Training Vocational	1319	791.4	0	0	0
Building Totals:	**1319**	**791.4**	**0**	**0**	**0**

[1] *See Table 140.6-C*
[2] *See NRCC-LTI--E for unconditioned spaces*
[3] *Lighting information for existing spaces modeled is not included in this table*

K4. INDOOR CONDITIONED LIGHTING MANDATORY LIGHTING CONTROL

See NRCC-LTI-E for mandatory controls

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 11 of 15)

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-E1	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-E2	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-E3	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-E4	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] *Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Classroom	Education - Classrooms (ages 9-18)	22.98	349.22	0	919	DCV
2-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
3-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
4-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
5-Classroom	Education - Classrooms (ages 9-18)	10	152	0	400	N/A

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 10 of 15)

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
FC/HP-E4	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-E5	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.1 9.5	23.04	EER2 SEER2	14.3 24.7	No Economizer	N

[1] *Status: N - New, A - Altered, E - Existing*

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
FC/HP-E1	1	349.22	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-E2	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-E3	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-E4	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-E5	1	152	710	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 15 of 15)

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-07-2024	
City/State/Zip: Roseville, CA 95678	License #: M34661	
Phone:	Title: Mechanical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 14 of 15)

Documentation Author's Declaration Statement

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: LP Consulting Engineers, Inc.	Signature Date: 03-07-2024
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Roseville, CA 95678	Phone: (916)-771-0778

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-07-2024	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 13 of 15)

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Envelope	NRCI-ENV-E - Envelope (for all buildings)
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems
Indoor Lighting	NRCI-LTI-E - Indoor Lighting (for all buildings)

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 3 of 17)

C1. COMPLIANCE SUMMARY

COMPLIES[3]		
	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft[2] - yr)	Total[2] (kBtu/ft[2] - yr)	Total[2] (kBtu/ft[2] - yr)
Standard Design	402	n/a	n/a
Proposed Design	172.6	n/a	n/a
Compliance Margins	**229.4**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] *Efficiency measures include improvements like a better building envelope and more efficient equipment*
[2] *Compliance Totals include efficiency, photovoltaics and batteries*
[3] *New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded*
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 2 of 17)

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Performance	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Performance	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 1 of 17)

Project Name:	Glenwood ES Mod - Bldg F	**Date Prepared:**	2024-05-01

A. General Information

1	Project Name	Glenwood ES Mod - Bldg F			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	5	Standards Version	Compliance 2022
6	Zip code	94901	7	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing addition and alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft^2)	4104	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft^2)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	4104	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.6

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 11:01:47 AM

PLEASE RECYCLE

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

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	6.2	---	61.7	---	---
Space Cooling	5.7	2.8	2.9	---	---	---
Indoor Fans	31.8	3.2	28.6	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	5.2	5.2	0	---	---	---
Indoor Lighting	5	4.8	0.2	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**47.7**	**22.2**	**25.5**	**61.7**	**0**	**61.7**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**47.7**	**22.2**	**25.5**	**61.7**	**0**	**61.7**
Receptacle	10.9	10.9	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**58.6**	**33.1**	**25.5**	**61.7**	**0**	**61.7**

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	66.83	66.83	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**468.83**	**239.43**	**229.4 (48.9%)**

[1] *Notes: This table is not used for Energy Code Compliance.*

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	41.98	43.76	-1.78
Space Cooling	74.82	44.71	30.11
Indoor Fans	221.9	22.1	199.8
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	31	30.97	0.03
Indoor Lighting	32.3	31.06	1.24
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**402**	**172.6**	**229.4 (57.1%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**402**	**172.6**	**229.4 (57.1%)**

[1] *Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.*

G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)

01	02	03	04	05	06	07	08	09
Fenestration Assembly Name	Fenestration Type/ Product Type / Frame Type	Certification Method[1]	Assembly Method	Area (ft^2)	Overall U-factor	Overall SHGC	Overall VT	Status[2]
Single Metal Clear	Vertical fenestration Fixed window Metal	Default 110.6	Site built	398	1.19	0.83	0.77	E

[1] *Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix NA6 and are used in the analysis.*
[2] *Status: N - New, A - Altered, E - Existing*

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-F1	Single Zone Heat Pump (SZHP) Air System	1	42.7	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-F2	Single Zone Heat Pump (SZHP) Air System	1	42.7	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-F3	Single Zone Heat Pump (SZHP) Air System	1	42.7	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N

[1] *Status: N - New, A - Altered, E - Existing*

G4. NONRESIDENTIAL AIR BARRIER

01	02
Building Story Name	Air Barrier
Com-Floor 1	No air barrier

G5. OPAQUE SURFACE ASSEMBLY SUMMARY

01	02	03	04	05	06		07	08	09	10
Surface Name	Construction Type	Area (ft^2)	Framing Type	Cavity R-Value	Continuous R-Value		Units	Value	Description of Assembly Layers	Status[1]
					Interior	Exterior				
Slab On Grade6	Underground Floor	4,104	N/A	0	N/A	N/A	F-factor	0.73	Slab Type =Unheated slab on grade Insulation Orientation =None Insulation R-Value =none	E
6 Concrete Wall8	Exterior Wall	2,509	N/A	0	N/A	N/A	U-factor	0.7752	Concrete - 140 lb/ft3 - 6 in.	E
R-0 Roof No Attic17	Roof	4,104	N/A	0	N/A	N/A	U-factor	0.304	AsphaltShingles0_25In Vapor permeable felt - 1/8 in. Plywood - 1/2 in. Air - Cavity - Wall Roof Ceiling - 4 in. or more Gypsum Board - 1/2 in.	E

[1] *Status: N - New, A - Altered, E - Existing*

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	63.75	27.52	36.23	56.83
NET EUI[1]	63.75	27.52	36.23	56.83

[1] *Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.*

D1. EXCEPTIONAL CONDITIONS

- The building does not include service water heating. Verify that service water heating is not required and is not included in the design.

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01	02	03	04
Opaque Surfaces & Orientation	Total Gross Surface Area (ft^2)	Total Fenestration Area (ft^2)	Window to Wall Ratio (%)
North-Facing[1]	1105	344	31.13
East-Facing[2]	0	0	0
South-Facing[3]	1161	54	4.65
West-Facing[4]	243	0	0
Total	**2509**	**398**	**15.86**
Roof	4104	0	0

Notes
[1] *North-Facing is oriented to within 45 degrees of true north, including 45 00'00" east of north (NE), but excluding 45 00'00" west of north (NW),*
[2] *East-Facing is oriented to within 45 degrees of true east, including 45 00'00" south of east (SE), but excluding 45 00'00" north of east (NE),*
[3] *South-Facing is oriented to within 45 degrees of true south, including 45 00'00" west of south (SW), but excluding 45 00'00" east of south (SE),*
[4] *West-Facing is oriented to within 45 degrees of true west, including 45 00'00" north of west (NW), but excluding 45 00'00" south of west (SW),*

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	MIn.	Min. Ratio	Power	Power Units	Cycles	
1-Clasroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
2-Clasroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
3-Clasroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
4-Clasroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
5-Breakroom-Trm	Uncontrolled	1	N/A	N/A	300	N/A	0	N/A	N/A	N/A	☐
6-Breakroom-Trm	Uncontrolled	1	N/A	N/A	300	N/A	0	N/A	N/A	N/A	☐

K1. INDOOR CONDITIONED LIGHTING GENERAL INFO

01	02	03	04	05	06
Occupancy Type[1]	Conditioned Floor Area[2] (ft^2)	Installed Lighting Power (Watts)	Lighting Control Credits (Watts)	Additional (Custom) Allowance	
				Area Category Footnotes (Watts)	Area Category Footnotes (Watts)
Lounge	400	126	0	0	0
Building Totals:	**400**	**126**	**0**	**0**	**0**

[1] *See Table 140.6-C*
[2] *See NRCC-LTI--E for unconditioned spaces*
[3] *Lighting information for existing spaces modeled is not included in this table*

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-F1	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-F2	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-F3	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-F4	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] *Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Clasroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
2-Clasroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
3-Clasroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
4-Clasroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
5-Breakroom	General - Break rooms	7.17	107.5	0	215	N/A
6-Breakroom	General - Break rooms	6.17	92.5	0	185	N/A

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-F4	Single Zone Heat Pump (SZHP) Air System	1	42.7	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-F5	Single Zone Heat Pump (SZHP) Air System	1	17.71	0	COP HSPF2	4.5 10.9	11.52	EER2 SEER2	12.2 21.7	No Economizer	N
FC/HP-F6	Single Zone Heat Pump (SZHP) Air System	1	17.71	0	COP HSPF2	4.5 10.9	11.52	EER2 SEER2	12.2 21.7	No Economizer	N

[1] *Status: N - New, A - Altered, E - Existing*

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
FC/HP-F1	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-F2	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-F3	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-F4	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-F5	1	107.5	300	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-F6	1	92.5	300	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

**25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901**

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.7

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:49 AM

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

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 15 of 17)**

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION
Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online
There are no Certificates of Verification applicable to this project

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 14 of 17)**

Area Level Controls (includes all lighting controls installed in conditioned space to meet mandatory requirements per 130.1)

03	04	05	06	07	08	09
Area Description	**Area Category Primary Function Area**	**Area Controls 130.1(a) & 160.5(b)4A**	**Multi-Level Controls 130.1(b) & 160.5(b)4B**	**Shut-Off Controls 130.1(c) & 160.5(b)4C**	**Primary Daylighting 130.1(d) & 160.5(b)4D**	**Secondary Daylighting 140.5(d) & 160.5(b)4D**
Breakroom	Lounge	Required	Required	Required	NA	NA

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Envelope	NRCI-ENV-E - Envelope (for all buildings)
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems
Indoor Lighting	NRCI-LTI-01-E - Must be submitted for all buildings
Indoor Lighting	NRCI-LTI-E - Indoor Lighting (for all buildings)

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Indoor Lighting	NRCA-LTI-02-A - Occupancy Sensors and Automatic Time Switch Controls.
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 13 of 17)**

K2. INDOOR CONDITIONED LIGHTING SCHEDULE

Luminaire Schedule (includes all permanent installed lighting in conditioned space, and portable lighting over 0.3 w/ft[2] in offices)

01	02	03	04	05	06
Name or Item Tag	**Complete Luminaire Description (i.e. 3-lamp fluorescent troffer, F32T8, one dimmable electronic ballast)**	**Installed Watts (Conditioned)**			
		Watts per luminaire	**How is Wattage determined**	**Total Number of Luminaires**	**Installed Watts**
P-8	P-8 8-Feet LED Direct - Indirect	36	According to	2	72
P-4	P-4 4-Feet LED Direct - Indirect	18	According to	3	54

[1]If lighting power densities were used in the compliance model Building Departments will need to check prescriptive forms for Luminaire Schedule details.

K3. INDOOR CONDITIONED LIGHTING CONTROL CREDITS

Lighting Control Credits Schedule (includes all lighting controls installed in conditioned space for compliance credit per 140.6(a)2 and Table 140.6-A)

01	02	03	04	05	06	07	08	09
Area Description	**Primary Function Area (must meet requirements of Table 140.6-A and 170.2-L)**	**Type of Lighting Control**	**Power Adjustment Factor (PAF)**	**Luminaire Item Tag**	**Watts per Luminaire**	**# of Luminaires**	**Lighting Controlled (Watts)**	**Control Credit (Watts)**
S-5-Breakroom	Lounge	N/A	N/A	P-8	36	2	72	0
S-6-Breakroom	Lounge	N/A	N/A	P-4	18	3	54	0
							Lighting Control Credits (Conditioned) Total (Watts)	**0**

K4. INDOOR CONDITIONED LIGHTING MANDATORY LIGHTING CONTROL

Building Level Controls

01	02
Mandatory Demand Response 110.12(c)	**Shut-Off Controls 130.1(c) & 160.5(b)4C**
NA	**NA**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 1 of 13)**

Project Name: **Glenwood ES Mod - Bldg G** | **Date Prepared:** **2024-03-05**

A. General Information

1	Project Name	Glenwood ES Mod - Bldg G			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	**5**	Standards Version	Compliance 2022
6	Zip code	94901	**7**	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	**9**	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	**11**	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing alteration	**13**	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft[2])	5556	**15**	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft[2])	0	**17**	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	5556	**19**	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 17 of 17)**

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 05-01-2024	
City/State/Zip: Roseville, CA 95678	License #: M34661	
Phone: 916.771.0778	Title: Mechanical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 16 of 17)**

Documentation Author's Declaration Statement

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: LP Consulting Engineers, Inc.	Signature Date: 05-01-2024
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Roseville, CA 95678	Phone: (916)-771-0778

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 05-01-2024	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 4 of 13)**

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft[2] - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	38.45	42.81	-4.36
Space Cooling	74.86	46.17	28.69
Indoor Fans	230.49	16.98	213.51
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	29.79	29.78	0.01
Indoor Lighting	32.56	32.56	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**406.15**	**168.3**	**237.85 (58.6%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**406.15**	**168.3**	**237.85 (58.6%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 3 of 13)**

C1. COMPLIANCE SUMMARY

COMPLIES[3]

	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft[2] - yr)	**Total[2] (kBtu/ft[2] - yr)**	**Total[2] (kBtu/ft[2] - yr)**
Standard Design	406.15	n/a	n/a
Proposed Design	168.3	n/a	n/a
Compliance Margins	**237.85**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Compliance Totals include efficiency, photovoltaics and batteries
[3] New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 2 of 13)**

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						**Building Components Complying Prescriptively**	
Envelope (See Table G)	Nonres	Not Included	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

T24.8

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:51 AM

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

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 7 of 13)**

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	63.09	26.84	36.25	57.46
NET EUI[1]	63.09	26.84	36.25	57.46

[1] *Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.*

D1. EXCEPTIONAL CONDITIONS

- The building does not include service water heating. Verify that service water heating is not required and is not included in the design.

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-G1	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-G2	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-G3	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N

[1] *Status: N - New, A - Altered, E - Existing*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 6 of 13)**

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	8.1	---	76.2	---	---
Space Cooling	7.4	3.9	3.5	---	---	---
Indoor Fans	44.7	3.4	41.3	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	6.8	6.8	0	---	---	---
Indoor Lighting	6.8	6.8	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**65.7**	**29**	**36.7**	**76.2**	**0**	**76.2**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**65.7**	**29**	**36.7**	**76.2**	**0**	**76.2**
Receptacle	14.7	14.7	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**80.4**	**43.7**	**36.7**	**76.2**	**0**	**76.2**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 5 of 13)**

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	66.83	66.83	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**472.98**	**235.13**	**237.85 (50.3%)**

[1] *Notes: This table is not used for Energy Code Compliance.*

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 10 of 13)**

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
4-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
5-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
6-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
1-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
2-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
3-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
4-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
5-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐
6-Classroom-Trm	Uncontrolled	1	N/A	N/A	930	N/A	0	N/A	N/A	N/A	☐

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 9 of 13)**

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-G1	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-G2	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-G3	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-G4	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-G5	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB
FC/HP-G6	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] *Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
2-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV
3-Classroom	Education - Classrooms (ages 9-18)	23.15	351.88	0	926	DCV

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 8 of 13)**

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
			Heating				Cooling				
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency	Economizer Type (if present)	Status[1]
FC/HP-G4	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-G5	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N
FC/HP-G6	Single Zone Heat Pump (SZHP) Air System	1	41.66	0	COP HSPF2	4.25 10	35.33	EER2 SEER2	12 18.5	Fixed DB	N

[1] *Status: N - New, A - Altered, E - Existing*

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
FC/HP-G1	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-G2	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-G3	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-G4	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-G5	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-G6	1	351.88	930	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 13 of 13)**

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-05-2024	
City/State/Zip: Roseville, CA 95678	License #: M34661	
Phone:	Title: Mechanical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 12 of 13)**

Documentation Author's Declaration Statement

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: LP Consulting Engineers, Inc.	Signature Date: 03-05-2024
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Roseville, CA 95678	Phone: (916)-771-0778

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed:	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 11 of 13)**

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.9

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:54 AM

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

C1. COMPLIANCE SUMMARY

COMPLIES[3]

	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	351.09	n/a	n/a
Proposed Design	200.38	n/a	n/a
Compliance Margins	**150.71**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] *Efficiency measures include improvements like a better building envelope and more efficient equipment*
[2] *Compliance Totals include efficiency, photovoltaics and batteries*
[3] *New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded*
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance						Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Not Included	Solar Thermal Water Heating (See Table I3)	☐	Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒	Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐	Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒	Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☐	Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒	Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐	Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒	Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐	Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒	Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

Project Name: Glenwood ES Mod - Bldg H **Date Prepared:** 2024-03-05

A. General Information

1	Project Name	Glenwood ES Mod - Bldg H			
2	Run Title	Title 24 Analysis			
3	Project Location	25 W Castlewood Dr			
4	City	San Rafael	5	Standards Version	Compliance 2022
6	Zip code	94901	7	Compliance Software (version)	EnergyPro 9.2
8	Climate Zone	2	9	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	11	Weather File	NAPA-COUNTY-AP_STYP20.epw
12	Project Scope	• Existing alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	1888	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	1888	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	3.2	---	52.2	---	---
Space Cooling	3.2	1.7	1.5	---	---	---
Indoor Fans	7.4	1.9	5.5	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	2.7	2.7	0	---	---	---
Indoor Lighting	2.3	2.3	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**15.6**	**11.8**	**3.8**	**52.2**	**0**	**52.2**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**15.6**	**11.8**	**3.8**	**52.2**	**0**	**52.2**
Receptacle	5.3	5.3	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**20.9**	**17.1**	**3.8**	**52.2**	**0**	**52.2**

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	71.32	71.32	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**422.41**	**271.7**	**150.71 (35.7%)**

[1] *Notes: This table is not used for Energy Code Compliance.*

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	77.39	49.14	28.25
Space Cooling	88.56	54.16	34.4
Indoor Fans	116.77	28.61	88.16
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	36.41	36.51	-0.1
Indoor Lighting	31.96	31.96	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**351.09**	**200.38**	**150.71 (42.9%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**351.09**	**200.38**	**150.71 (42.9%)**

[1] *Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.*

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	MIn.	Min. Ratio	Power	Power Units	Cycles	
1-Office > 250 sqft-Trm	Uncontrolled	1	N/A	N/A	575	N/A	0	N/A	N/A	N/A	☐
2-Classroom-Trm	Uncontrolled	1	N/A	N/A	1,190	N/A	0	N/A	N/A	N/A	☐

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
Mechanical	NRCA-MCH-05-A - Air Economizer Controls
Mechanical	NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
FC/HP-H1	1	63.45	575	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC/HP-H2	1	532.32	1,190	0.25	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
FC/HP-H1	Single Zone Heat Pump (SZHP) Air System	N/A	Fixed DB
FC/HP-H2	Single Zone Heat Pump (SZHP) Air System	N/A	Zone(s) With CO2 Sensor Vent. Control Fixed DB

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] *Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-Office > 250 sqft	Office - Office space	2.12	63.45	0	423	N/A
2-Classroom	Education - Classrooms (ages 5-8) Office - Occupiable storage rooms for dry materials	34.08	532.32	0	1465	DCV

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	65.42	30.9	34.52	52.77
NET EUI[1]	65.42	30.9	34.52	52.77

[1] *Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.*

D1. EXCEPTIONAL CONDITIONS

• The building does not include service water heating. Verify that service water heating is not required and is not included in the design.

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
FC/HP-H1	Single Zone Heat Pump (SZHP) Air System	1	27.08	0	COP HSPF2	4.5 10.7	17.28	EER2 SEER2	13.2 21	Fixed DB	N
FC/HP-H2	Single Zone Heat Pump (SZHP) Air System	1	56.24	0	COP HSPF2	3.95 9	46.09	EER2 SEER2	13 17.5	Fixed DB	N

[1] *Status: N - New, A - Altered, E - Existing*

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

**25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901**

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.10

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:56 AM

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-ELC-E
This document is used to demonstrate compliance with mandatory requirements in 130.5, for electrical systems in newly constructed nonresidential and hotel/motel occupancies and 160.6 and 160.9 for electrical systems in newly constructed multifamily occupancies. Additions and alterations to electrical service systems in nonresidential and hotel/motel occupancies will also use this document to demonstrate compliance per 141.0(a) or 141.0(b)2[F] for alterations. For multifamily addition or alterations compliance will be documented per 180.1(a) or 180.2 (b)4Bvii		
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 1 of 4)**
Project Address: 25 W Castlewood Dr	**Date Prepared:**	3/7/2024

A. GENERAL INFORMATION

01	Project Location (city)	San Rafael	02	Climate Zone	2
			03	Occupancy Types Within Project:	

B. PROJECT SCOPE

This table includes electrical systems that are within the scope of the permit application.

01	02	03	04	05	06	07
Electrical Service Designation/ Description	Scope of Work[1]	Rating[2] (kVA)	Utility Provided Metering System Exception to 130.5(a)/ 160.6(a)[3]	System subject to CA Elec Code Article 517 Exception to 130.5(a)and (b)	Demand Response Controls	Provides power to dwelling units/common living areas only in multifamily occupancy
Glenwood ES Mod	Add/Alt to feeders and branch circuits only	721	☐	☐	Where required, demand response controls must be specified which are capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal. Sections 120.2/ 160.3, 130.1/ 160.5, and 130.3/ 160.5, and mechanical, indoor lighting, and sign lighting Certificate of Compliance documents will indicate when demand response controls are required.	☐

[1] *FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(c)/160.6(c), no other requirements from 130.5/160.6 are required.*
[2] *If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.*
[3] *Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.*

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 11 of 11)**

Responsible Designer Name: Jason DeDora	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-05-2024	
City/State/Zip: Roseville, CA 95678	License #: M34661	
Phone:	Title: Mechanical Engineer	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD	NRCC-PRF-E
Nonresidential Performance Compliance Method	**(Page 10 of 11)**

Documentation Author's Declaration Statement

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:	
Company: LP Consulting Engineers, Inc.	Signature Date: 03-05-2024	
Address: 1209 Pleasant Grove Blvd	CEA/HERS Certification Identification (if applicable):	
City/State/Zip: Roseville, CA 95678	Phone: (916)-771-0778	

Responsible Person's Declaration statement

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

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

Responsible Designer Name:	Responsible Designer Signature:	
Company: HMC Architects		
Address: 333 W San Carlos St, Studio 750	Date Signed:	
City/State/Zip: San Jose, CA 95110	License #:	
Phone: 408.977.9160	Title:	Scope:
Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:	
Company: LP Consulting Engineers		
Address: 1209 Pleasant Grove Blvd	Date Signed: 03-05-2024	
City/State/Zip: Roseville, CA 95678	License #: E16762	
Phone: 916.771.0778	Title: Electrical Engineer	Scope:

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-ELC-E
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 4 of 4)**
Project Address: 25 W Castlewood Dr	**Date Prepared:**	3/7/2024

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature:
Company: 1209 Pleasant Grove Blvd	Signature Date: 2024-03-07
Address: 1209 Pleasant Grove Blvd	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Roseville CA 95678	Phone: (916)-771-0778

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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

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

Responsible Designer Name: Rami Zeidan	Responsible Designer Signature:
Company: LP Consulting Engineers	Date Signed: 2024-03-07
Address: 1209 Pleasant Grove Blvd	License: E16762
City/State/Zip: Roseville CA 95678	Phone: 916.771.0778

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-ELC-E
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 3 of 4)**
	Date Prepared:	3/7/2024

H. VOLTAGE DROP

Glenwood ES Mod	☒	Voltage drop less than 5%	☐	Permitted by CA Elec Code (Exception to 130.5(c))*	Attached	E5.03	☐	☐

** NOTES: If "Permitted by CA Elec Code *" is selected under Compliance Method above, please indicate where the exception applies in the space provided below.*

[1] *FOOTNOTES: Voltage drop calculations may be attached to the permit application outside the construction documents if allowed by the Authority Having Jurisdiction. Select "attached" if applicable. If calculations will be the responsibility of the installing contractor, select "Contractor Responsible".*

J. ELECTRIC READY BUILDINGS

This section does not apply to this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

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

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-ELC-E
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 2 of 4)**
	Date Prepared:	3/7/2024

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through J. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01		02		03		04		05	06
Service Electrical Metering 130.5(a)/ 160.6(a) (See Table F)	AND	Separation for Monitoring 130.5(b)/ 160.6(b) (See Table G)	AND	Voltage Drop 130.5(c)/ 160.6(c) (See Table H)	AND	Controlled Receptacles 130.5(d)/ 160.6(d) (See Table I)		Electric Ready 160.9 (See Table J)	**Compliance Results**
Yes	AND	Yes	AND	Yes	AND				COMPLIES

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

F. SERVICE ELECTRICAL METERING

This section does not apply to this project.

G. SEPARATION OF ELECTRICAL CIRCUITS FOR ENERGY MONITORING

This section does not apply to this project.

H. VOLTAGE DROP

This table includes entirely new or complete replacement electrical power distribution systems, or alterations that add, modify or replace both feeders and branch circuits to demonstrate compliance with 130.5(c)/ 160.6(c). For alterations, only the altered circuits must demonstrate compliance per 141.0(b)2Pii/ 180.2(b)4Bviic.

01	02	03	04	05	
Electrical Service Designation/Description	Combined Voltage Drop on Installed Feeder/Branch Circuit Conductors Compliance Method	Location of Voltage Drop Calculations[1]	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector	
				Pass	Fail

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 3 of 7)**
	Date Prepared:	3/7/2024

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(e)6 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per 141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie, existing luminaires remaining or existing luminaires being moved are not included). Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H. and are not included here. All other multifamily outdoor lighting is included here.

Designed Wattage:

01	02		03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description		Watts per luminaire[1, 2]	How is Wattage determined	Total Number Luminaires [2]	Luminaire Status[3]	Excluded per 140.7(a) / 170.2(e)6A	Design Watts	Cutoff Req. > 6,200 initial lumen output 130.2(b) / 160.5(c)1[4]	Field Inspector	
										Pass	Fail
W1	W1 - LED WALL PACK	☐ Linear	30	Mfr. Spec	8	New	☐	240	NA: < 6200 lumens	☐	☐
							Total Design Watts:	240			

** NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.*
EX: Luminaire is lighting a statue; EXCEPTION 2 to 130.2(b)

[1] *FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b)*
[2] *For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.*
[3] *Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of the project scope.*
[4] *Compliance with mandatory shielding requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by 130.2(b)/ 160.5(c)*

G. SHIELDING REQUIREMENTS (BUG)

This section does not apply to this project.

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 2 of 7)**
	Date Prepared:	3/7/2024

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through N. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv														Compliance Results		
01		02		03		04		05		06		07		08	09
General Hardscape Allowance 140.7(d)1 / 170.2(e)6 (See Table I)	+	Per Application 140.7(d)2 / 170.2(e)6 (See Table J)	+	Sales Frontage 140.7(d)2 (See Table K)	+	Ornamental 140.7(d)2 / 170.2(e)6 (See Table L)	+	Per Specific Area 140.7(d)2 / 170.2(e)6 (See Table M)	OR	Existing Power Allowance 141.0(b)2L / 180.2(b)4Bv (See Table N)	=	**Total Allowed** (Watts)	≥	**Total Actual** (Watts)	**07 must be >= 08**
442	+	---	+	---	+	---	+	---	OR	---	=	442	≥	240	COMPLIES
Shielding Compliance (See Table G for Details)															N/A
Controls Compliance (See Table H for Details)															COMPLIES

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-ELC-E
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 1 of 4)**
	Date Prepared:	3/7/2024

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through J. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01		02		03		04		05	06
Service Electrical Metering 130.5(a)/ 160.6(a) (See Table F)	AND	Separation for Monitoring 130.5(b)/ 160.6(b) (See Table G)	AND	Voltage Drop 130.5(c)/ 160.6(c) (See Table H)	AND	Controlled Receptacles 130.5(d)/ 160.6(d) (See Table I)		Electric Ready 160.9 (See Table J)	**Compliance Results**
Yes	AND	Yes	AND	Yes	AND				COMPLIES

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

F. SERVICE ELECTRICAL METERING

This section does not apply to this project.

G. SEPARATION OF ELECTRICAL CIRCUITS FOR ENERGY MONITORING

This section does not apply to this project.

H. VOLTAGE DROP

This table includes entirely new or complete replacement electrical power distribution systems, or alterations that add, modify or replace both feeders and branch circuits to demonstrate compliance with 130.5(c)/ 160.6(c). For alterations, only the altered circuits must demonstrate compliance per 141.0(b)2Pii/ 180.2(b)4Bviic.

01	02	03	04	05	
Electrical Service Designation/Description	Combined Voltage Drop on Installed Feeder/Branch Circuit Conductors Compliance Method	Location of Voltage Drop Calculations[1]	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector	
				Pass	Fail

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
This document is used to demonstrate compliance with requirements in 110.9, 130.0, 130.2, 140.7, and 141.0(b)2L for outdoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e)6, 180.1(a) and 180.2(b)4Bv for outdoor lighting scopes using the prescriptive path for multifamily and mixed-use occupancies. Multifamily includes dormitory and senior living facilities.		
Project Name: Glenwood ES Mod - Exterior Lighting	**Report Page:**	**(Page 1 of 7)**
Project Address: 25 W Castlewood Dr	**Date Prepared:**	3/7/2024

A. GENERAL INFORMATION

01	Project Location (city)	San Rafael	04	Total Illuminated Hardscape Area (ft²)	2605
02	Climate Zone	2			

03 Outdoor Lighting Zone per Title 24 Part 1 10.114 or as designated by Authority Having Jurisdiction (AHJ):

☐ LZ-0: Very Low - Undeveloped Parkland ☐ LZ-2: Moderate - Urban Clusters ☐ LZ-4: High - Must be reviewed by CA Energy Commission for Approval
☐ LZ-1: Low - Rural Areas ☒ LZ-3: Moderately High - Urban Areas

05 Occupancy Types within Project

● All Other Occupancies

B. PROJECT SCOPE

This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv for alterations.

My Project Consists of:

01	02
☐ New Lighting System	Must Comply with Allowances from 140.7 / 170.2(e)6
☒ Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)? ● Yes ○ No

03	04	05
% of Existing Luminaires Being Altered[1]	Sum Total of Luminaires Being Added or Altered	Calculation Method
☐ < 10% ☐ >= 10% and < 50% ☐ >= 50%	0	

Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires.

[1] *FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.*

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA. 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
MEP & FS / Sustainability / CxA
CONSULTING ENGINEERS
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:
25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:
GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:
TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.11

THE LINE SHOWN ABOVE IS 1" WHEN PRINTED ON A PAGE SIZED 11"x17" (ORIGINAL PAGE SIZE)
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TKC23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:01:58 AM
PLEASE RECYCLE

K. LIGHTING ALLOWANCE: SALES FRONTAGE

This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL

This section does not apply to this project.

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

This section does not apply to this project.

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)

This section does not apply to this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection has been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

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

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection has been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.	Exterior Building;

I. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(e))

This table includes areas using allowance calculations per 140.7 / 170.2(e). General Hardscape Allowance is per Table 140.7-A/Table 170.2-R while "Use it or lose it" Allowances are per Table 140.7-B /Table 170.2-S. Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.
Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H. and are not included here. All other multifamily outdoor lighting is included here.

01			
☒ General Hardscape Allowance Table I (below)	"Use it or lose it" Allowance (select all that apply) (select all that apply)		
	☐ Per Application Table J	☐ Sales Frontage Table K	☐ Ornamental Table L	☐ Per Specific Area Table M

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/Motel

02	03	04	05	06	07	08	09
Area Description	Area Wattage Allowance (AWA)			Linear Wattage Allowance (LWA)			Total General AWA + LWA (Watts)
	Illuminated Area (ft^2)	Allowed Density (W/ft^2)	Area Allowance (Watts)	Perimeter Length (lf)	Allowed Density (W/lf)	Linear Allowance (Watts)	
Building A - Pedestrian Hardscape	460	0.021	9.7	95	0.2	19	29
Building B - Pedestrian Hardscape	240	0.021	5	81	0.2	16.2	21
Building C - Pedestrian Hardscape	275	0.021	5.8	83	0.2	16.6	22
Building H - Pedestrian Hardscape	600	0.021	12.6	170	0.2	34	47
Building F - Pedestrian Hardscape	270	0.021	5.7	81	0.2	16.2	22
Building G - Pedestrian Hardscape	380	0.021	8	91	0.2	18.2	26
Building E - Pedestrian Hardscape	380	0.021	8	85	0.2	17	25
Initial Wattage Allowance for Entire Site (Watts):							250
Instances of Initial Wattage Allowance (LZ 0 only)[1]							
Total General Hardscape Allowance (Watts):							442

J. LIGHTING ALLOWANCE: PER APPLICATION

This section does not apply to this project.

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01	02	03	04	05	
Area Description	Shut-Off 130.2(c)1 / 160.5(c)	Auto-Schedule 130.2(c)2 / 160.5(c)	Motion Sensor 130.2(c)3 / 160.5(c)	Field Inspector	
				Pass	Fail
Exterior Building	Astronomical Timer	Provided	Provided	☐	☐

[1]FOOTNOTE: Text has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.
[2]Authority having jurisdiction may ask for cutsheets or other documentation to confirm compliance of light source.
[3]Recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are excepted from ii and iii.

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Ashton Tafarrodi	Documentation Author Signature: Ashton Tafarrodi
Company: LP Consulting Engineers, Inc.	Signature Date: 2024-03-07
Address: 1209 Pleasant Grove Blvd	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Roseville CA 95678	Phone: (916)-771-0778

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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

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

Responsible Designer Name: Rami Zeidan	Responsible Designer Signature: Rami Zeidan
Company: LP Consulting Engineers	Date Signed: 2024-03-07
Address: 1209 Pleasant Grove Blvd	License: E16762
City/State/Zip: Roseville CA 95678	Phone: 916.771.0778

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA. 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TITLE 24 CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

T24.12

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON A PLOT SHEET ORIGINAL SCALE SIZE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan:TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 11:02:00 AM

PLEASE RECYCLE

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

PIPE HANGER SCHEDULE

PER 2022 CPC TABLE 313.3

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

NOTES:
1. SUPPORT ADJACENT TO JOINT, NOT TO EXCEED 18".
2. SEISMIC BRACE NOT TO EXCEED 40 FOOT INTERVALS TO PREVENT HORIZONTAL MOVEMENT.
3. SUPPORT AT EACH HORIZONTAL BRANCH CONNECTION.
4. HANGERS SHALL NOT BE PLACED ON THE COUPLING.
5. VERTICAL WATER LINES SHALL BE PERMITTED TO BE SUPPORTED IN ACCORDANCE WITH RECOGNIZED ENGINEERING PRINCIPLES WITH REGARD TO EXPANSION AND CONTRACTION, WHERE FIRST APPROVED BY THE AUTHORITY HAVING JURISDICTION.
6. SEE THE APPROPRIATE IAPMO INSTALLATION STANDARD FOR EXPANSION AND OTHER SPECIAL REQUIREMENTS.
7. NATURAL GAS PIPING TO BE SUPPORTED PER 2022 CPC TABLE 1210.3.5.1.

HANGER ROD SIZING

PER 2022 CPC TABLE 313.6

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

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

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

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

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

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

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

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

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

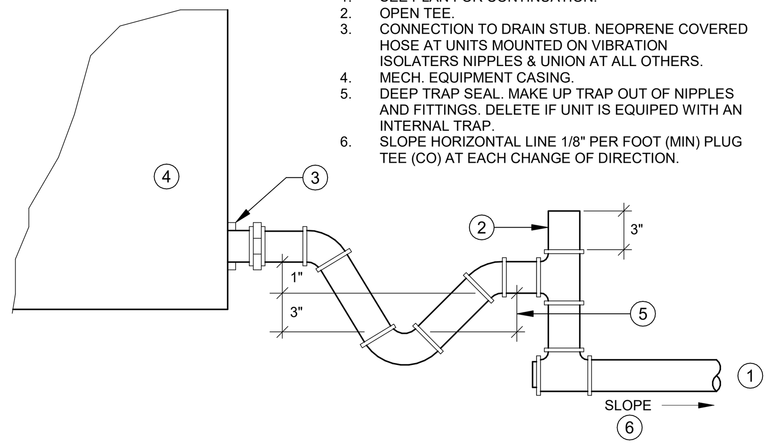
MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

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

MP ☐ MD ☐ PP ☐ E ☐ — OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM#) #_______.

PLUMBING LEGEND

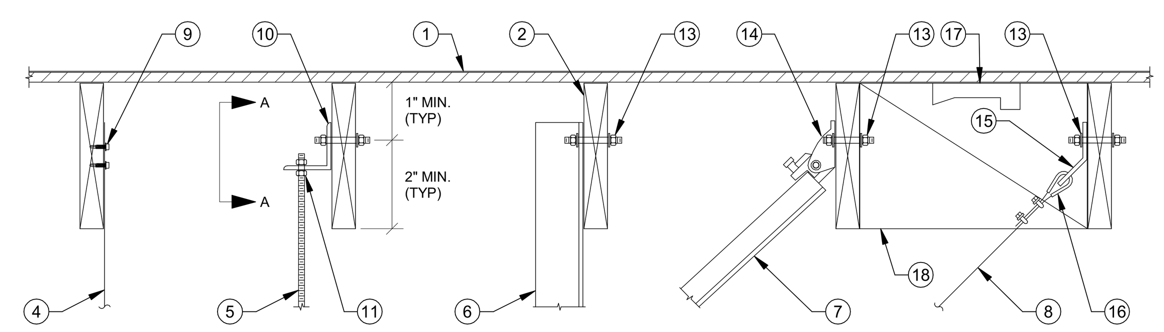
SYMBOL	ITEM	ABBR.
WH 1	EQUIPMENT DESIGNATION / UNIT ABBREVIATION; NUMBER	
WC-1	FIXTURE DESIGNATION / UNIT ABBREVIATION; NUMBER	
1 P-1	DETAIL DESIGNATION; DETAIL NUMBER; SHEET NO. WHERE SHOWN	
	DOMESTIC COLD WATER	CW
	DOMESTIC HOT WATER	HW
	DOMESTIC HOT WATER RETURN	HWR
V	VENT	V
G	GAS	G
MG	MEDIUM PRESSURE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



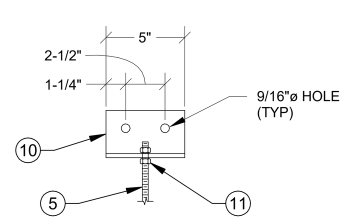
1. SEE PLAN FOR CONTINUATION.
2. OPEN TEE.
3. CONNECTION TO DRAIN STUB. NEOPRENE COVERED HOSE AT UNITS MOUNTED ON VIBRATION ISOLATERS NIPPLES & UNION AT ALL OTHERS.
4. MECH. EQUIPMENT CASING.
5. DEEP TRAP SEAL. MAKE UP TRAP OUT OF NIPPLES AND FITTINGS. DELETE IF UNIT IS EQUIPED WITH AN INTERNAL TRAP.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

CONDENSATE DRAIN CONNECTION | NTS | 1

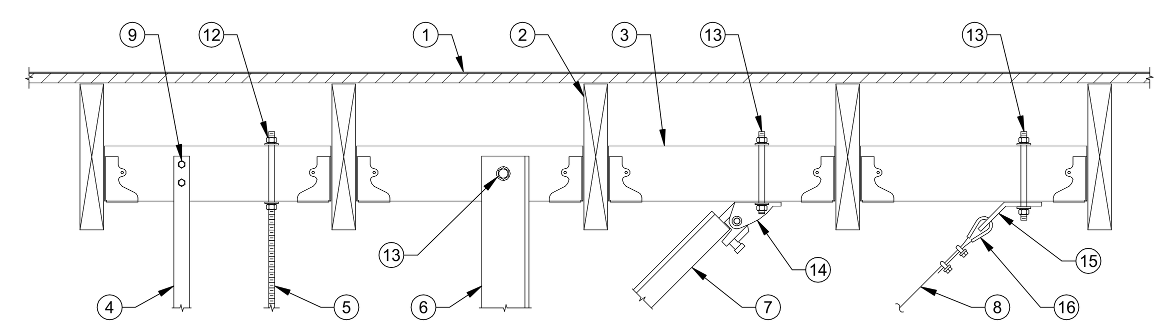
1. EXISTING ROOF.
2. EXISTING ROOF FRAMING.
3. 4x4 BLOCKING BETWEEN JOISTS W/ U44 HANGERS AT EACH END, TYP.
4. 1" x 20 GA. GALV. SHEET METAL STRAP.
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
6. 3"x3"x1/4" GALVANIZED STEEL ANGLE.
7. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
8. 3/32"ø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



AT FRAMING MEMBERS



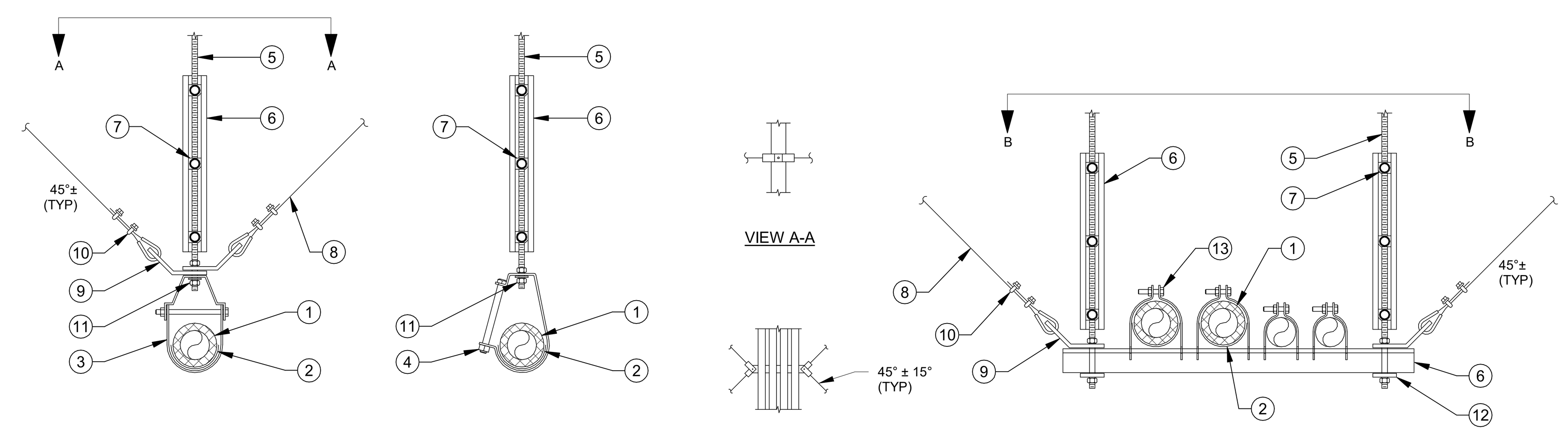
VIEW A-A



BETWEEN FRAMING MEMBERS

HANGER UPPER ATTACHMENTS | NTS | 2

1. PIPE, SEE PLAN FOR SIZE AND ROUTING.
2. PIPE INSULATION WHERE APPLICABLE, SEE SPECIFICATIONS. PROVIDE INSULATION PROTECTION SADDLE, MIN. 12" LONG, B-LINE B3151 OR EQUAL. MAY BE SUBSTITUTED FOR PRE-INSULATED CALCIUM SILICATE SHIELD SUPPORT, B-LINE B338 OR EQUAL.
3. STANDARD CLEVIS PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3100 OR EQUAL.
4. ADJUSTABLE 'J' PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3690 OR EQUAL.
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL.
6. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL.
7. ROD STIFFENER, B-LINE TOLCO MODEL 98B OR EQUAL, MIN. 1" FROM TOP AND BOTTOM OF UNISTRUT AND MAX. 28" O.C., TORQUE TO 10 FT-LBS.
8. 3/32"ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7x19 STRAND CORE.
9. 2"x3"x1/4" X 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL.
10. CABLE THIMBLE AND CABLE CLIPS.
11. NUT AND WASHER, TOP AND BOTTOM.
12. NUT, TOP AND BOTTOM WITH UNISTRUT SQUARE WASHER, B-LINE MODEL B201ZN OR EQUAL.
13. PIPE CLAMP, B-LINE SERIES B2000 OR EQUAL.



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

NOTES:
A. HANGER SPACING TO BE PER SPECIFICATIONS. MAXIMUM SPACING MAY NOT EXCEED 2022 CPC TABLE 313.3.
B. PROVIDE ROD STIFFENERS ONLY WHERE ROD LENGTH FROM SEISMIC BRACING TO UPPER ATTACHMENT EXCEEDS 18".
C. SEISMIC RESTRAINTS ARE NOT REQUIRED FOR 3/4" AND SMALLER GAS PIPING, AND FOR ALL OTHER PIPING 2" AND SMALLER.
D. SEISMIC RESTRAINTS ARE NOT REQUIRED FOR ALL PIPING SUSPENDED BY INDIVIDUAL HANGERS 12" OR LESS IN LENGTH FROM TOP OF PIPE TO BOTTOM OF ATTACHMENT TO STRUCTURE.

PIPE HANGER DETAIL | NTS | 3

PLUMBING SPECIFICATIONS

1. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
   A. 2022 CALIFORNIA BUILDING CODE
   B. 2022 CALIFORNIA MECHANICAL CODE
   C. 2022 CALIFORNIA PLUMBING CODE
   D. 2022 CALIFORNIA ELECTRICAL CODE
   E. 2022 CALIFORNIA GREEN BUILDING STANDARDS
   F. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS - TITLE 24
   G. NATIONAL FIRE PROTECTION ASSOCIATION
   H. CALIFORNIA STATE FIRE MARSHAL
2. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.
3. THE PLUMBING CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF PLUMBING EQUIPMENT.
4. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER.
5. THE LOCATIONS OF EQUIPMENT, PIPING, AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER.
6. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.
7. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.
8. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS PLUMBING COMPONENTS OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.
9. CHECK ALL SYSTEMS FOR LEAKS. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY.
10. BEFORE COMMENCING WORK CHECK INVERT ELEVATIONS REQUIRED FOR SEWER CONNECTIONS, CONFIRM INVERTS AND ENSURE THAT THESE CAN BE PROPERLY CONNECTED WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING. VERIFY THE LOCATION OF ALL SERVICES. NO EXTRA COSTS SHALL BE ALLOWED IF SERVICES ARE NOT AS SHOWN.
11. COORDINATE ALL NEW OR CHANGING UTILITY SERVICES WITH UTILITY PROVIDER AS SOON AS POSSIBLE. ALL WORK PERFORMED NOT IN ACCORDANCE WITH THE UTILITY COMPANIES REQUIREMENTS PRIOR TO COORDINATING WITH THE UTILITY COMPANY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
12. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
13. MAKE ALL CONNECTIONS TO EQUIPMENT AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER AS FAR AS TRAPS, DRAINS, FLEXIBLE CONNECTIONS, ETC. AND AS REQUIRED BY THE EQUIPMENT AND LOCATION.
14. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, FIXTURE MOUNTING HEIGHTS AND ADA ACCESSIBILITY REQUIREMENTS.
15. PIPING INSULATION (INTERIOR APPLICATIONS):
    A. GLASS FIBER INSULATION: ASTM C 547 AND ASTM C 795. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F, WHEN TESTED IN ACCORDANCE WITH ASTM C 177. MAXIMUM SERVICE TEMPERATURE: 850 DEGREES F. MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME.
    B. VAPOR BARRIER JACKET: WHITE KRAFT PAPER WITH GLASS FIBER YARN, BONDED TO ALUMINIZED FILM; MOISTURE VAPOR TRANSMISSION WHEN TESTED IN ACCORDANCE WITH ASTM E 96/E 96M OF 0.02.
    C. INSULATION THICKNESS SCHEDULES:
       a. DOMESTIC HOT AND TEMPERED WATER SUPPLY:
          • 2 INCH THICKNESS FOR PIPING 2 INCH AND LARGER.
          • 1-1/2 INCH THICKNESS FOR PIPING 1 INCH TO 1-1/2 INCH.
          • 1 INCH THICKNESS FOR PIPING LESS THAN 1 INCH.
       b. DOMESTIC COLD WATER LOCATED IN UNHEATED AREAS:
          • 1 INCH THICKNESS FOR PIPING 1-1/2 INCHES AND LARGER.
          • 3/4 INCH THICKNESS FOR PIPING 1 INCHES AND SMALLER.
16. INSULATE DOMESTIC HOT WATER, TEMPERED WATER AND WASTE PIPING BELOW HANDICAPPED PLUMBING FIXTURES WITH MOLDED SINGLE PIECE REMOVABLE INSULATION COVERS, FOAM, FIRE RESISTANT, TRUEBRO, OR EQUAL. INSTALL INSULATION COVERS IN ACCORDANCE WITH CBC ACCESS REQUIREMENTS.
17. FIXTURES, DOMESTIC WATER PIPING AND COMPONENTS SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA AB 1953 LEGISLATION WHICH LIMITS THE ALLOWABLE LEAD CONTENT IN CERTAIN DOMESTIC WATER SYSTEM COMPONENTS.
18. PROVIDE COMPRESSION SHUTOFF CONTROL STOP VALVES WITH IPS INLETS AND THREADED BRASS NIPPLES AT PIPE CONNECTION ON WATER SUPPLIES TO EACH FIXTURE.
19. PROVIDE CHROMIUM-PLATED FINISH ON FITTINGS AND ACCESSORIES EXPOSED TO VIEW.
20. FIXTURE FITTINGS AND TRIM: CONFORM TO ASME A112.18.1M AND ASME A112.19.5, AS APPLICABLE.
21. PROVIDE WATER HAMMER ARRESTORS AT END OF PIPE RUNS TO TWO OR MORE FIXTURES, PROPERLY SIZED WITH SUFFICIENT DISPLACEMENT VOLUME TO DISSIPATE CALCULATED ENERGY IN THE PIPING SYSTEMS. WATER HAMMER ARRESTORS SHALL BE STAINLESS STEEL SHELL WITH STAINLESS STEEL BELLOWS CONTAINED WITHIN THE CASING.
22. PROVIDE PIPE SLEEVES WHERE PIPES AND TUBING PASS THROUGH WALLS, FLOORS, ROOFS, AND PARTITIONS. FINISH FLUSH AT BOTH ENDS. EXTEND 2 INCHES (50 MM) ABOVE FINISHED FLOORS. PACK SPACE BETWEEN PIPE OR TUBING AND SLEEVE, AND CALK.
23. IDENTIFY PIPING WITH TAPE AND DECALS. INSTALL LABELING ON PIPE AT INTERVALS OF NOT MORE THAN 20 FEET (6 METERS) AND AT LEAST ONCE IN EACH ROOM AND EACH STORY TRAVERSED BY PIPELINE.
24. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS.
25. ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 10' FROM ANY OUTSIDE AIR INTAKE OR OPENING TO THE BUILDING.
26. ALL EXPOSED MATERIAL SHALL BE PREPARED WITH A PRIME COAT AND THEN PAINTED.

PLUMBING SHEET INDEX

SHEET NUMBER	SHEET NAME
P0.01	PLUMBING LEGENDS, NOTES, AND SCHEDULES
PD2.11	BLDG A PLUMBING DEMOLITION FLOOR PLAN
PD2.12	BLDG B, C, & H PLUMBING DEMOLITION FLOOR PLANS
PD2.13	BLDG F & G PLUMBING DEMOLITION FLOOR PLANS
PD2.14	BLDG E PLUMBING DEMOLITION FLOOR PLAN
P2.11	BLDG A PLUMBING FLOOR PLAN
P2.12	BLDG B, C, & H PLUMBING FLOOR PLANS
P2.13	BLDG F & G PLUMBING FLOOR PLANS
P2.14	BLDG E PLUMBING FLOOR PLAN

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ DESCRIPTION DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PLUMBING LEGENDS, NOTES, AND SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16 CLIENT PROJ NO:

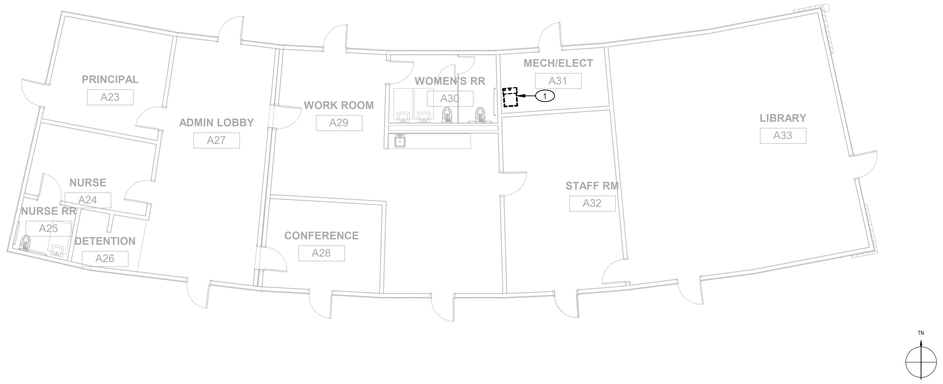
SHEET:

P0.01

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:13 AM

PLEASE RECYCLE

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



1 PLUMBING DEMOLITION FLOOR PLAN - BLDG A

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

KEY NOTES

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

GENERAL NOTES

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A PLUMBING DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

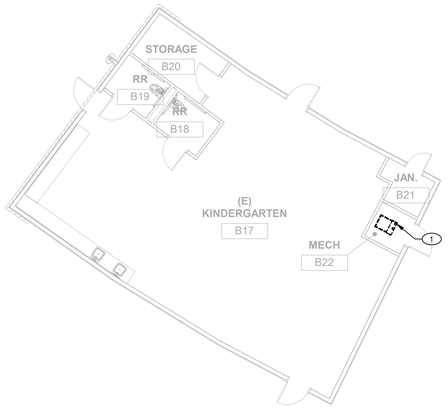
SHEET:

PD2.11

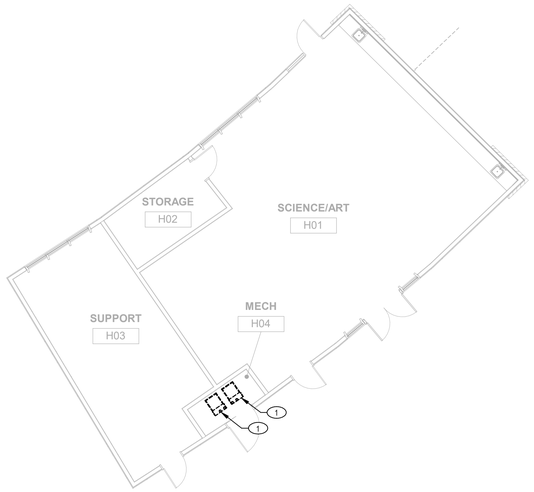
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:32 AM

PLEASE RECYCLE

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



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



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

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

KEY NOTES

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

GENERAL NOTES

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H PLUMBING DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

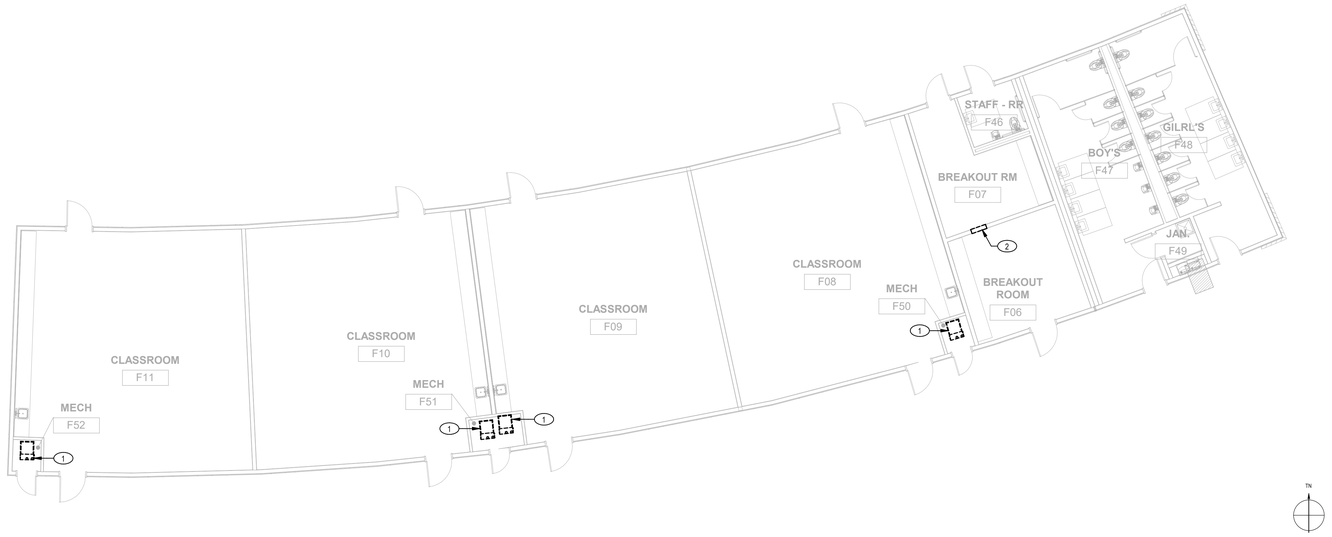
SHEET:

PD2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:36 AM

PLEASE RECYCLE

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



2 PLUMBING DEMOLITION FLOOR PLAN - BLDG F

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

1 PLUMBING DEMOLITION FLOOR PLAN - BLDG G

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

KEY NOTES

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

2 EXISTING WALL FURNACE TO BE DEMOLISHED AND DISCARDED. EXISTING GAS LINE TO FURNACE TO BE CAPPED IN PLACE AND ABANDONED. PATCH WALL TO MATCH EXISTING.

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT/ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS SHOWN.

B. ALL PLUMBING EQUIPMENT, FIXTURES, AND PIPING SHALL REMAIN UNLESS NOTED OTHERWISE.

C. PATCH, REPAIR AND FINISH AS NECESSARY FOR ANY DAMAGES DURING DEMOLITIONS AND INSTALL.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G PLUMBING DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

PD2.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:41 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET IN ORIGINAL PAGE SIZE

KEY NOTES

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

GENERAL NOTES

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

1 PLUMBING DEMOLITION FLOOR PLAN - BLDG E

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E PLUMBING DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

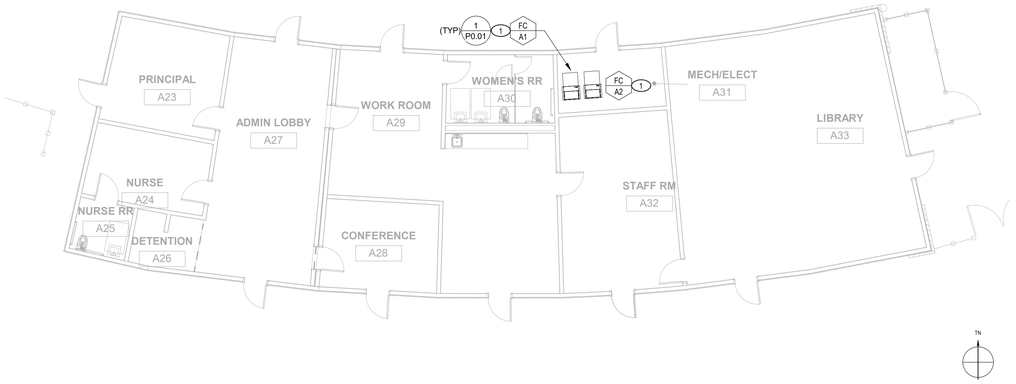
SHEET:

PD2.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:44 AM

PLEASE RECYCLE

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



1 PLUMBING FLOOR PLAN - BLDG A

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

KEY NOTES

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

GENERAL NOTES

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A PLUMBING FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

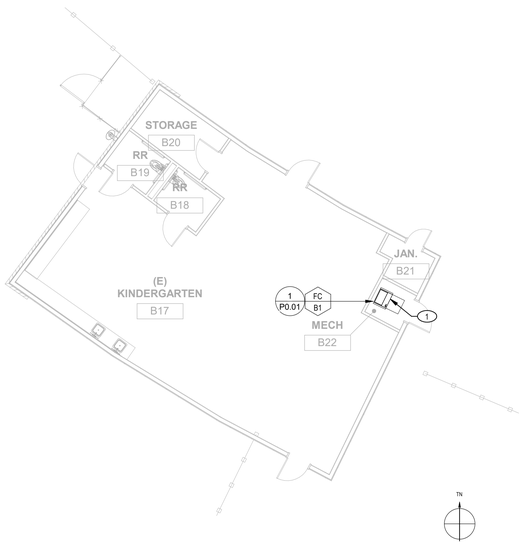
SHEET:

P2.11

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:16 AM

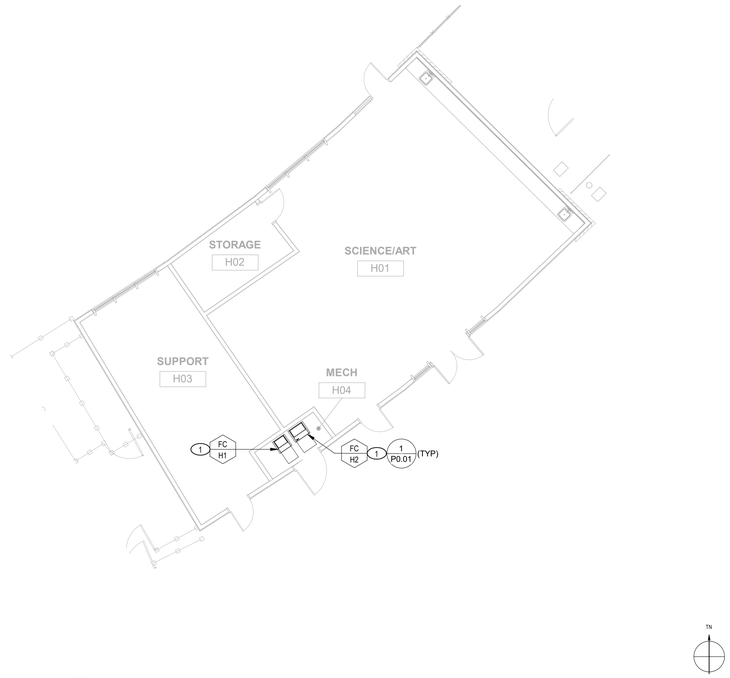
PLEASE RECYCLE

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



3 PLUMBING FLOOR PLAN - BLDG B

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



2 PLUMBING FLOOR PLAN - BLDG H

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

1 PLUMBING FLOOR PLAN - BLDG C

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

KEY NOTES

1. RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL. PROVIDE THE NECESSARY PIPING, FITTINGS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.
2. TERMINATE CONDENSATE PIPING ELBOW DOWN 3" OVER JANITOR SINK.

GENERAL NOTES

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H PLUMBING FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

P2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 10:35:20 AM

PLEASE RECYCLE

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

2 PLUMBING FLOOR PLAN - BLDG F

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

1 PLUMBING FLOOR PLAN - BLDG G

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

KEY NOTES

1. RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL. PROVIDE THE NECESSARY PIPING, FITTINGS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.
2. TERMINATE CONDENSATE PIPING ELBOW DOWN 3" OVER JANITOR SINK.

GENERAL NOTES

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G PLUMBING FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

P2.13

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:25 AM

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET IN ORIGINAL PAGE SIZE

KEY NOTES

1. RECONNECT EXISTING CONDENSATE PIPING TO NEW FAN COIL. PROVIDE THE NECESSARY PIPING, FITTINGS, AND ACCESSORIES FOR A COMPLETE AND OPERABLE SYSTEM.
2. TERMINATE CONDENSATE PIPING ELBOW DOWN 3" OVER JANITOR SINK.

GENERAL NOTES

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

TN

1 PLUMBING FLOOR PLAN - BLDG E

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E PLUMBING FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

P2.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:35:29 AM

PLEASE RECYCLE

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

EQUIPMENT ANCHORAGE NOTES

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

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

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

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

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

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

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

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

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

MP	MD	PP	E	
☐	☐	☐	☒	OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.
☐	☐	☐	☐	OPTION 2: SHALL COMPLY WITH HCAi (OSHPD) PRE-APPROVAL (OPM#) #_______. AS INCLUDED IN THESE DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

OCCUPANCY AND DAYLIGHTING SENSOR NOTES

1. OCCUPANCY SENSORS AND DAYLIGHTING SENSORS SYSTEMS OPERATION:

A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND AIM SENSORS IN THE CORRECT LOCATION REQUIRED FOR COMPLETE AND PROPER VOLUMETRIC COVERAGE WITHIN THE RANGE OF COVERAGE(S) OF CONTROLLED AREAS PER THE MANUFACTURER'S RECOMMENDATIONS. ROOMS SHALL HAVE NINETY (90) TO ONE HUNDRED (100) PERCENT COVERAGE TO COMPLETELY COVER THE CONTROLLED AREA TO ACCOMMODATE OCCUPANCY HABITS OF SINGLE OR MULTIPLE OCCUPANTS AT ANY LOCATION WITHIN THE ROOM(S). THE LOCATIONS AND QUANTITIES OF SENSORS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE ROOMS THAT ARE TO BE PROVIDED WITH SENSORS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SENSORS IF REQUIRED TO PROPERLY AND COMPLETELY COVER THE RESPECTIVE ROOM.

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A PRE- INSTALLATION MEETING WITH MANUFACTURER'S FACTORY AUTHORIZED REPRESENTATIVE, AT THE OWNER'S FACILITY, TO VERIFY PLACEMENT OF SENSORS AND INSTALLATION CRITERIA.

C. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE PROPER ADJUSTMENTS TO ASSURE OWNER'S SATISFACTION WITH THE OCCUPANCY SYSTEM. IF THE CONTRACTOR IS INCAPABLE TO MAKE PROPER ADJUSTMENTS, THE CONTRACTOR SHALL PROVIDE THE FACTORY STARTUP IN THAT THE MANUFACTURER'S RESPONSIBILITY TO VERIFY PROPER ADJUSTMENTS AND TRAIN OWNER'S PERSONNEL TO ENSURE OWNER'S SATISFACTION WITH THE OCCUPANCY SYSTEM.

D. PROPER JUDGMENT MUST BE EXERCISED IN EXECUTING THE INSTALLATION SO AS TO ENSURE THE BEST POSSIBLE INSTALLATION IN THE AVAILABLE SPACE AND TO OVERCOME LOCAL DIFFICULTIES DUE TO SPACE LIMITATIONS OR INTERFERENCE OF STRUCTURAL COMPONENTS. THE CONTRACTOR SHALL ALSO PROVIDE, AT THE OWNER'S FACILITY, THE TRAINING NECESSARY TO FAMILIARIZE THE OWNER'S PERSONNEL WITH THE OPERATION, USE, ADJUSTMENT, AND PROBLEM SOLVING DIAGNOSIS OF THE OCCUPANCY SENSING DEVICES AND SYSTEMS.

2. OCCUPANCY SENSORS AND DAY LIGHITNG SENSORS COMMISSIONING:

A. UPON COMPLETION OF THE INSTALLATION, CONTRACTOR SHALL PROVIDE A COMPLETE SYSTEM COMMISSIONED BY THE MANUFACTURER'S FACTORY AUTHORIZED TECHNICIAN WHO WILL VERIFY ADJUSTMENTS AND SENSOR PLACEMENT TO ENSURE A TROUBLE-FREE OCCUPANCY-BASED LIGHTING CONTROL SYSTEM.

B. UPON COMPLETION OF THE SYSTEM FINE TUNING, THE CONTRACTOR SHALL ARRANGE FOR THE FACTORY AUTHORIZED TECHNICIAN TO PROVIDE THE PROPER TRAINING TO THE OWNER'S PERSONNEL IN THE ADJUSTMENT AND MAINTENANCE OF THE SENSORS.

C. LIGHTING CONTROLS COMMISSIONING, INSPECTIONS (INCLUDING STATE OF CALIFORNIA ENERGY COMMISSION INSPECTION FORMS AND APPLICATIONS), TESTING, PROGRAMMING AND TUNING OF LIGHTING CONTROL SENSORS, DEVICES AND COMPONENTS, ETC. SHALL BE INCLUDED IN THE LIGHTING CONTROL PACKAGE AND PRICE.ANY LABOR, TOOLS AND MATERIALS REQUIRED TO PROVIDE A COMPLETE LIGHTING CONTROL SYSTEM SHALL BE AT NO EXTRA COST TO THE OWNERS OR END-USERS.

DIGITAL LIGHTING MANAGEMENT (DLM) CONTROLS

1. THE CONTRACTOR MAY SUBSTITUTE EQUAL CONTROL DEVICES FROM A DIFFERENT MANUFACTURER AND SHALL PROVIDE LIGHTING AND RECEPTACLE CONTROL WIRING DIAGRAMS WITH THE SHOP DRAWING SUBMITTALS OF SUBSTITUTED DEVICES.
2. EVERY EFFORT HAS BEEN MADE ON THE PART OF THE ENGINEER TO INDICATE THE PROPER SELECTION OF THE PRODUCT AND MOUNTING LOCATIONS. FINAL DETERMINATION OF CIRCUITING, VOLTAGE, QUANTITY AND MODEL OF ROOM CONTROLLERS REQUIRED, AND SETTING OF SENSITIVITY/TIME ADJUSTMENTS ARE THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR AND/OR COMMISSIONING AGENT. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHOULD BE ADHERED TO.
3. PLUG N' GO (PNG): DEFAULT OPERATION. UPON INITIAL POWER-UP, THE DLM SYSTEM AUTOMATICALLY IDENTIFIES THE DEVICES ON THE LOCAL NETWORK THEN ENTERS THE WATTSTOPPER PATENTED PLUG N' GO CONFIGURATION TO ALLOW BASIC OPERATION OF ALL DLM DEVICES. IN MOST APPLICATIONS THE RELATIONSHIP BETWEEN QUANTITY OF LOADS, SWITCHES AND OCCUPANCY SENSORS WILL NOT REQUIRE ANY ADJUSTMENTS. PNG AUTOMATICALLY MAXIMIZES LIGHTING ENERGY EFFICIENCY.
4. ROOM CONTROLLERS SHOULD ONLY BE FED BY A CONSTANT HOT (UNSWITCHED) CIRCUIT.
5. ROOM CONTROLLERS WITH 2 OR 3 RELAYS ARE FOR MULTIPLE LEVELS OR ZONES, NOT MULTIPLE ROOMS.
6. ALL SENSOR LOCATIONS ARE APPROXIMATE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO INSTALLATION. IF PENDANT MOUNTED FIXTURES ARE PRESENT, LOCATION AND COVERAGE OF SENSORS SHOULD BE REVIEWED.
7. CEILING MOUNTED SENSORS REQUIRE THEY BE LOCATED NO CLOSER THAN 4'-6' FROM AIR SUPPLY/RETURN REGISTERS.
8. PUSH N' LEARN (PNL): CUSTOM OPERATION A CONFIGURATION (CONFIG) BUTTON ON MOST DLM DEVICES ALLOWS EASY ACCESS TO THE WATTSTOPPER PATENTED PUSH N' LEARN TECHNOLOGY TO MODIFY SYSTEM OPERATION. FUNCTIONALITY OF THE CONFIG BUTTON IS STANDARDIZED THROUGHOUT THE DLM PRODUCT LINE, AS IS THE OPERATION OF THE CONFIG LED INDICATORS. IN ADDITION, THE CONFIGURATION TOOL PROVIDES REMOTE INFRARED ACCESS TO PNL AND SENSOR ADJUSTMENT PARAMETERS.
9. ALL ROOM CONTROLLERS SHALL BE INTERLOCKED AND PROGRAMMED SUCH THAT THE LIGHTING POWER IN THE BUILDING SHALL BE CAPABLE OF BEING AUTOMATICALLY REDUCED IN RESPONSE TO A DEMAND RESPONSE SIGNAL, SO THAT THE BUILDING'S TOTAL LIGHTING POWER CAN BE LOWERED BY A MINIMUM OF 15 PERCENT BELOW THE TOTAL INSTALLED LIGHTING POWER.
10. SEE PLANS FOR QUANTITY AND LOCATIONS REQUIRED.
11. FOR RECEPTACLES FLUSH IN WALL, PROVIDE (1) PLUG ROOM CONTROLLER PER CIRCUIT. REFER TO POWER PLANS FOR QUANTITY OF CONTROLLED CIRCUITS.
12. ALL PLUG ROOM CONTROLLERS SHALL SWITCH ON/OFF WITH THE LIGHTING CONTROLS.
13. OCCUPANCY SENSOR SEQUENCE OF OPERATION - GENERAL NOTES:
    A. DURING BUSINESS HOURS, LIGHTS SHALL BE AUTOMATICALLY TURNED ON WHEN A PERSON ENTERS A SPACE, AND TURN OFF AFTER THE SPACE HAS BEEN UNOCCUPIED FOR A PERIOD OF TIME.
    B. DURING WEEKDAYS, AFTER BUSINESS HOURS, LIGHTS SHALL BE TURNED ON MANUALLY ONLY, AND SHALL TURN OFF MANUALLY OR AUTOMATICALLY BY OCCUPANCY SENSOR.
    C. DURING WEEKENDS AND HOLIDAYS, LIGHTS SHALL BE TURNED ON MANUALLY ONLY, AND SHALL TURN OFF MANUALLY OR AUTOMATICALLY BY OCCUPANCY SENSOR.

UTILITIES SERVICE AND UNDERGROUND TRENCHING NOTES

1. THESE PLANS HAVE BEEN PREPARED WITHOUT UTILITY COMPANIES COMMITMENTS (PENDING). LP CONSULTING ENGINEERS, INC. ACCEPTS NO RESPONSIBILITY AND SHALL NOT INCUR ANY COSTS DUE TO CHANGES IN SERVICE REQUIREMENTS BY THE UTILITY COMPANIES.
2. CONTRACTOR SHALL COORDINATE SPECIFIC REQUIREMENTS WITH THE UTILITY COMPANIES AS FOLLOW:
   A. POWER COMPANY:
   PACIFIC GAS & ELECTRIC, STREET ADDRESS, CA
   CONTACT - STEPHANIE MULLINS; TELEPHONE - 415-471-6614
   B. TELEPHONE COMPANY:
   AT&T, STREET ADDRESS, CA
   CONTACT - NAME HERE; TELEPHONE - NUMBER HERE
   C. CABLE TELEVISION:
   COMCAST CABLE TELEVISION, STREET ADDRESS, CA
   CONTACT - NAME HERE; TELEPHONE - NUMBER HERE
3. CONTRACTOR SHALL CALL THE UTILITY COMPANIES REPRESENTATIVE TO ATTEND PRE-CONSTRUCTION MEETING.
4. CONTRACTOR SHALL PROTECT ANY APPLICABLE EXISTING STREET LIGHTING, UTILITY POLES, OVERHEAD LINES, UNDERGROUND WIRING, AND UTILITY PULL BOXES DURING CONSTRUCTION.
5. CONTRACTOR IS RESPONSIBLE FOR SITE AND OFF-SITE IMPROVEMENTS AND TO COORDINATE UTILITY CONNECTIONS WITH THE UTILITY COMPANIES.
6. POWER SERVICE:

   A. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH PG&E FOR ALL ASPECTS OF THIS PROJECT INCLUDING ARRANGING FOR TEMPORARY CONSTRUCTION POWER, SCHEDULING INSPECTIONS AND OBTAINING SIGN-OFFS, SCHEDULING RELOCATION AND REMOVAL OF UTILITY EQUIPMENT, INSTALLING UTILITY EQUIPMENT AND INFRASTRUCTURE, AND SCHEDULING FINAL CONNECTION SERVICES. CONTRACTOR SHALL BE AWARE THAT POWER COMPANY REQUIRES EXTENSIVE ADVANCE NOTIFICATION AND SHOULD SCHEDULE ALL WORK ACCORDINGLY. CONTRACTOR SHALL NOT MAKE ANY CLAIMS FOR TIME DELAY DUE TO ANY POWER COMPANY WORK ASSOCIATED WITH THIS PROJECT.

   B. CONTRACTOR SHALL CONTACT PG&E TO ARRANGE CONSTRUCTION TEMPORARY ELECTRICAL SERVICE. CONTRACTOR SHALL PAY ALL REQUIRED FEES AND INSTALLATION COSTS.

   C. PG&E POWER SERVICE LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH AS ANY WET UTILITIES.
7. TELEPHONE SERVICE:

   A. CONTRACTOR SHALL COORDINATE WITH AT&T FOR ALL REQUIRED INSPECTIONS OF INFRASTRUCTURE WORK, PULLBOXES, AND TELECOM ROOM.

   B. ALL AT&T COMPANY STRUCTURES MUST BE IN PLACE AND READY 30-45 DAYS PRIOR TO ANY REQUEST FOR NEW SERVICE.
8. UNDERGROUND TRENCHING:

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

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

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

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

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

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

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

   H. PROVIDE PARTEX IDENTIFICATION TAGS TO IDENTIFY UNDERGROUND CIRCUITS.

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

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

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

GENERAL NOTES

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

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

DEMOLITION GENERAL NOTES

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

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

ELECTRICAL ABBREVIATIONS

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

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

APPLICABLE CODES AND STANDARDS

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

PROJECT ELECTRICAL SCOPE OF WORK

DESCRIPTION:
THE PROJECT INCLUDES A NEW ELECTRICAL SERVICE UPGRADE, RENOVATION, AND MECHANICAL UPGRADES OF AN EXISTING SCHOOL BUILDING THAT IS APPROXIMATELY 35,000 SQUARE FEET.

THE UPGRADE AND RENOVATION INCLUDE :
- DEMOLITION OF SOME EXISTING 800A, 208Y/120V, 3PH, 4W SERVICE.
- INSTALLATION OF A NEW ELECTRICAL SERVICE, UNDERGROUND ELECTRICAL DISTRIBUTION SYSTEM TO THE BUILDINGS, THE INSTALLATION OF NEW PANELS AT EACH BUILDING.
- RECONNECTION OF THE EXISTING PV SYSTEM, 66.6KW TO THE NEW MAIN SWITCHBOARD.
- ELECTRICAL CONNECTION TO MECHANICAL, PLUMBING, FIRE ALARM, AND TECHNOLOGY EQUIPMENT AND DEVICES.
- ELECTRICAL CONNECTION TO KITCHEN EQUIPMENT.

THESE ELECTRICAL DRAWINGS INDICATE THE GENERAL SCOPE OF THE PROJECT IN TERMS OF ELECTRICAL DESIGN CONCEPT, MAJOR ELECTRICAL ELEMENTS, AND THE TYPE OF ELECTRICAL SYSTEMS. AS SCOPE DOCUMENTS, THESE DRAWINGS DO NOT NECESSARILY INDICATE OR DESCRIBE ALL WORK REQUIRED FOR FULL PERFORMANCE AND COMPLETION OF THE REQUIREMENTS. ON THE BASIS OF THE GENERAL SCOPE INDICATED OR DESCRIBED, THE CONTRACTOR SHALL FURNISH ALL ITEMS REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK.

CONTRACTOR IS TO PERFORM INDEPENDENT INVESTIGATION OF UNDERGROUND EXISTING UTILITIES IN ALL AREAS OF ANTICIPATED ELECTRICAL WORK.

CALIFORNIA ELECTRIC VEHICLE (EV) CHARGING MANDATORY MEASURES

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

CALGreen (Non-Res) TABLE 5.106.5.3.1:

- TOTAL NUMBER OF ACTUAL PARKING SPACES: 61
- NUMBER OF REQUIRED EV CAPABLE SPACES: 3
- NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE): 10

NOTE:

1. THE CAMPUS CURRENTLY HAS (8) DUAL EVSE LEVEL 2. NO ADDITIONAL EVSE AND EV CAPABLE PARKING SPACES ARE REQUIRED.

(SHOWN FOR REFERENCE ONLY)

ELECTRICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
E0.01	ELECTRICAL ABBREVIATIONS, NOTES AND SHEET INDEX
E0.02	ELECTRICAL SYMBOL LEGEND
E1.21	ELECTRICAL SITE PLAN
ED2.11	BLDG A ELECTRICAL DEMOLITION FLOOR PLAN
ED2.12	BLDG B, C, & H ELECTRICAL DEMOLITION FLOOR PLANS
ED2.13	BLDG F & G ELECTRICAL DEMOLITION FLOOR PLANS
ED2.14	BLDG E ELECTRICAL DEMOLITION FLOOR PLAN
E2.11	BLDG A ELECTRICAL FLOOR PLAN
E2.12	BLDG B, C, & H ELECTRICAL FLOOR PLANS
E2.13	BLDG F & G ELECTRICAL FLOOR PLANS
E2.14	BLDG E FLOOR PLAN
E3.11	PHOTOMETRIC PLAN
E3.12	PHOTOMETRIC PLANS
E3.13	PHOTOMETRIC PLANS
E3.14	PHOTOMETRIC PLAN
E5.01	ELECTRICAL ONE-LINE DIAGRAM - DEMO
E5.02	ELECTRICAL ONE-LINE DIAGRAM - NEW
E5.03	ELECTRICAL SCHEDULES
E5.04	ELECTRICAL SCHEDULES
E5.05	ELECTRICAL SCHEDULES
E5.06	ELECTRICAL SCHEDULES
E5.07	ELECTRICAL SCHEDULES
E5.08	ELECTRICAL SCHEDULES
E5.09	ELECTRICAL SCHEDULES
E6.01	ELECTRICAL DETAILS
E6.02	ELECTRICAL DETAILS
E6.03	ELECTRICAL DETAILS

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL ABBREVIATIONS, NOTES AND SHEET INDEX

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

E0.01

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:10 AM

THE LINE SHOWN ABOVE IS ONE INCH WHEN PLOTTED ON THIS SHEET ORIGINAL PAGE SIZE

ELECTRICAL SYMBOL LEGEND

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

SYMBOL	DESCRIPTION
	LIGHTING
	LED LUMINAIRE - T-BAR LAY-IN
	LED LUMINAIRE - RECESSED IN GYPBOARD
	LED LUMINAIRE - SURFACE
	LED LUMINAIRE - SUSPENDED
	LED LUMINAIRE - SURFACE OR SUSPENDED STRIP
	LED LUMINAIRE - RECESSED DOWNLIGHT
	LED LUMINAIRE - RECESSED WALLWASH
H	LED LUMINAIRE - SURFACE
	LED LUMINAIRE - WALL
	LED LUMINAIRE - PENDANT
J	TRACK LIGHT - SUSPENDED OR SURFACE MOUNTED
	CONTINUOUS LINEAR LED TAPE OR LED COVE LIGHT
	HATCHED LUMINAIRE INDICATES AN EMERGENCY LUMINAIRE CONNECTED TO A EMERGENCY POWER DISTRIBUTION SYSTEM, OR INTEGRAL EMERGENCY BATTERY BACK-UP
	SINGLE FACE EXIT SIGN. SEE LIGHTING FIXTURE SCHEDULE FOR SPECIFICATION. DIRECTIONAL ARROW AS INDICATED ON PLANS. (CEILING OR WALL)
	DOUBLE FACE EXIT SIGN. SEE LIGHTING FIXTURE SCHEDULE FOR SPECIFICATION. DIRECTIONAL ARROW AS INDICATED ON PLANS. (CEILING OR WALL)
	COMBINATION EMERGENCY EXIT SIGN WITH DUAL HEAD LIGHTS WITH EMERGENCY BATTERY BACK-UP
	BATTERY POWERED EMERGENCY EGRESS LUMINAIRE - SURFACE MOUNTED
	SPOT/FLOOD LUMINAIRE - CEILING
	SPOT/FLOOD LUMINAIRE - ABOVE GROUND
	EXTERIOR POLE FIXTURE - SINGLE HEAD
	EXTERIOR POLE FIXTURE - TWIN HEAD
	EXTERIOR PATHWAY POST-TOP POLE FIXTURE
	BOLLARD FIXTURE
	STEP LUMINAIRE
	LIGHTING CONTROLS
$	SINGLE POLE TOGGLE SWITCH, 20A, 120-277V @ +46" TO TOP OF BOX, UNO.
$3	THREE WAY TOGGLE SWITCH, 20A, 120-277V @ +46" TO TOP OF BOX, UNO.
$abc	SUBSCRIPTS "a b c" DESIGNATE THE QUANTITY OF SWITCHES AT EACH LOCATION (TYPICAL FOR ALL SWITCH TYPES)
$K	SINGLE POLE KEYED BARREL SWITCH 20A, 120-277V @ +46" TO TOP OF BOX, UNO.
	PUSH BUTTON
	WALL MOUNTED DIMMER. SEE CONTROL DRAWINGS FOR TYPE.
OS	OCCUPANCY SENSOR. SEE CONTROL DRAWINGS FOR TYPE.
DS	PHOTOCONTROL DAYLIGHT SENSOR
	TAGS AND LEADERS
	BRACKET
	LEADERS
26-XXX	KEY NOTE
G2 L1-11a	LIGHT FIXTURE TAG : FIXTURE TYPE PANEL NAME - CIRCUIT# / SWITCHLEG
X	FEEDER DESIGNATION TAG
X	KITCHEN EQUIPMENT DESIGNATION TAG
x Ex.1	DETAIL DESIGNATION: TOP LETTER INDICATES DETAIL. BOTTOM LETTER / NUMBER INDICATES SHEET
REF x	MECHANICAL EQUIPMENT I.D. TAG - MP&S

SYMBOL	DESCRIPTION
	POWER
	MAIN SWITCHBOARD OR DISTRIBUTION PANEL,AS NOTED
	RECESSED MOUNTED LIGHTING OR DISTRIBUTION PANEL
	SURFACE MOUNTED LIGHTING OR DISTRIBUTION PANEL
	RECESSED TERMINAL CABINET w/ 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO.
	SURFACE MOUNTED TERMINAL CABINET w/ 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO.
T	DISTRIBUTION TRANSFORMER, MOUNTING AND SIZE AS NOTED
	NON-FUSED DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH; SIZE DISCONNECT AND FUSES PER UNIT LABEL
	NON-FUSED / FUSED DISCONNECT; SEE DISCONNECT SWITCH SCHEDULE
	MOTOR STARTER/CONTROLLER
	COMBINATION CIRCUIT BREAKER DISCONNECT/MOTOR STARTER.
N.F.	COMBINATION FUSIBILE DISCONNECT/MOTOR CONTROLLER; PROVIDE FUSES PER MANUFACTURER'S REQUIREMENTS. N.F. INDICATES NON-FUSED.
	POWER CONNECTION
	DUPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER TOP. [1]
	ISOLATED GROUND DUPLEX RECEPTACLE, 20A, 120V @ +16" TO BOTTOM OF BOX, UNO.
	DEDICATED DUPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	GFCI DUPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	GFCI DUPLEX RECEPTACLE OUTLET MOUNTED ABOVE COUNTER TOP AND/OR SINK BACKSPLASH. [1]
	ISOLATED GROUND GFCI DUPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	DEDICATED GFCI DUPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO
	FOURPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	FOURPLEX RECEPTACLE OUTLET MOUNTED ABOVE COUNTER TOP. [1]
	ISOLATED GROUNDED FOURPLEX RECEPTACLE 20A, 120V @ +16" TO BOTTOM OF BOX, UNO.
	DEDICATED FOURPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	CONTROLLED/UNCONTROLLED FOURPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
A	CONTROLLED/UNCONTROLLED FOURPLEX RECEPTACLE OUTLET 20A, 120V, MOUNTED ABOVE COUNTER. [1]
	GFCI FOURPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	GFCI FOURPLEX RECEPTACLE OUTLET MOUNTED ABOVE COUNTER TOP AND/OR SINK BACKSPLASH. [1]
	ISOLATED GROUND GFCI FOURPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	DEDICATED GFCI FOURPLEX RECEPTACLE OUTLET 20A, 120V, @ +16" TO BOTTOM OF BOX, UNO.
	SPECIAL RECEPTACLE OUTLET, SIZE AND NEMA CONFIGURATION AS NOTED, MOUNTED @ +16" TO BOTTOM OF BOX, UNO.
	FLOOR MOUNTED DUPLEX RECEPTACLE, 20A, 125V FLUSH IN FINISHED FLOOR
	FLOOR MOUNTED FOURPLEX RECEPTACLE, 20A, 125V FLUSH IN FINISHED FLOOR
	CEILING MOUNTED DUPLEX RECEPTACLE, 20A, 125V
	CEILING MOUNTED FOURPLEX RECEPTACLE, 20A, 125V
J	JUNCTION BOX - SIZE AS REQUIRED BY CODE. (WALL MOUNTED AND REGULAR)
J	JUNCTION BOX (FLOOR MOUNTED) - SIZE AS REQUIRED BY CODE.
	PLUGMOLD
	POWER POLE
	FLOOR MOUNTED COMBO DUPLEX RECEPTACLE / TELEPHONE/DATA
	FLOOR MOUNTED COMBO FOURPLEX RECEPTACLE / TELEPHONE/DATA
	CEILING EXHAUST FAN
EV EV	ELECTRIC VEHICLE CHARGER, DUAL PORT & SINGLE PORT
$T	THERMAL OVERLOAD SWITCH
$M	MOTOR RATED SWITCH

FOOTNOTE:

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

SYMBOL	DESCRIPTION
	ONE LINE DIAGRAM
(N) PANEL "A" 100A	PANEL IDENTIFICATION
100A 3P	CIRCUIT BREAKER
250AF 250AT	CIRCUIT BREAKER WITH TRIP UNIT, AMPERE FRAME / AMPERE TRIP
100A 3P	FUSED SWITCH
	GROUND FAULT CIRCUIT INTERRUPTER
GFCI	GROUND
	UNDERGROUND TERMINATION SERVICE LUG
	UTILITY METER WITH CURRENT TRANSFORMER COMPARTMENT METER SOCKET
M	CUSTOMER-OWNED MULTIFUNCTION METER WITH CURRENT TRANSFORMERS
M	MOTOR
	TRANSFORMER WITH GROUND
	UFER GROUND
	BOND TO COLD WATER PIPE, GAS PIPE, BUILDING STEEL
	AUTOMATIC TRANSFER SWITCH
	NEUTRAL LINK
SPD	SURGE PROTECTIVE DEVICE
	CIRCUITS
	STUB
	CONTINUATION
	CONDUIT RISER - UP
	CONDUIT DROP - DOWN
	CONDUIT CONCEALED IN CEILING OR WALL.
	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
	EXISTING CONDUIT TO REMAIN.
	CONDUIT & CONDUCTORS FOR LOW VOLTAGE MOTION SENSORS
	EXISTING CONDUIT AND/OR CONDUCTORS TO BE REMOVED. UNDERGROUND CONDUIT MAY BE ABANDONED IN PLACE.
	HOMERUN TO PANELBOARD OR TERMINAL CABINET w/ CONDUCTORS AS NOTED
#	CIRCUIT CONDUITORS: LONG TICK INDICATES NEUTRAL CONDUCTOR; SHORT TICKS INDICATE PHASE CONDUCTORS; TICK MARK WITH A DOT ON THE END INDICATES EQUIPMENT GROUNDING CONDUCTOR. NUMBER BY TICKS INDICATE WIRE GAUGE OTHER THAN 12 AWG CU. NO TICKS INDICATE 2 #12 CU, 1 #12 CU GND, IN 1/2" CONDUIT. OTHERS AS NOTED ON PLAN. NOTE: PROVIDE A CODE SIZED EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS FOR THIS PROJECT, WHETHER SHOWN ON PLAN OR NOT.
	FLEXIBLE CONDUIT, 6'-0" LONG MAX. w/ #12 CU GROUND UNO.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SYMBOL LEGEND

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

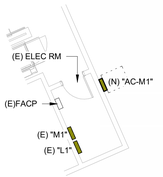
SHEET:

E0.02

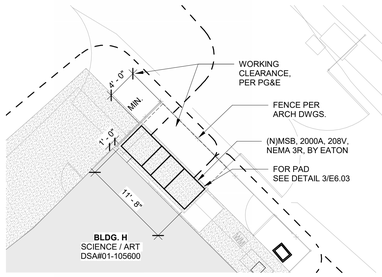
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_/22/v1
9/19/2024 9:40:12 AM

PLEASE RECYCLE

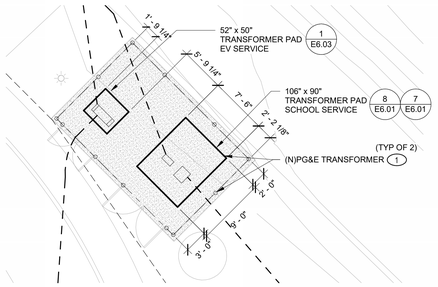
THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE



5 ENLARGED MPR FLOOR PLAN
SCALE: 1/8" = 1'-0"

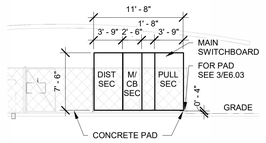


4 ENLARGED MAIN SWITCHBOARD SITE PLAN
SCALE: 1/8" = 1'-0"

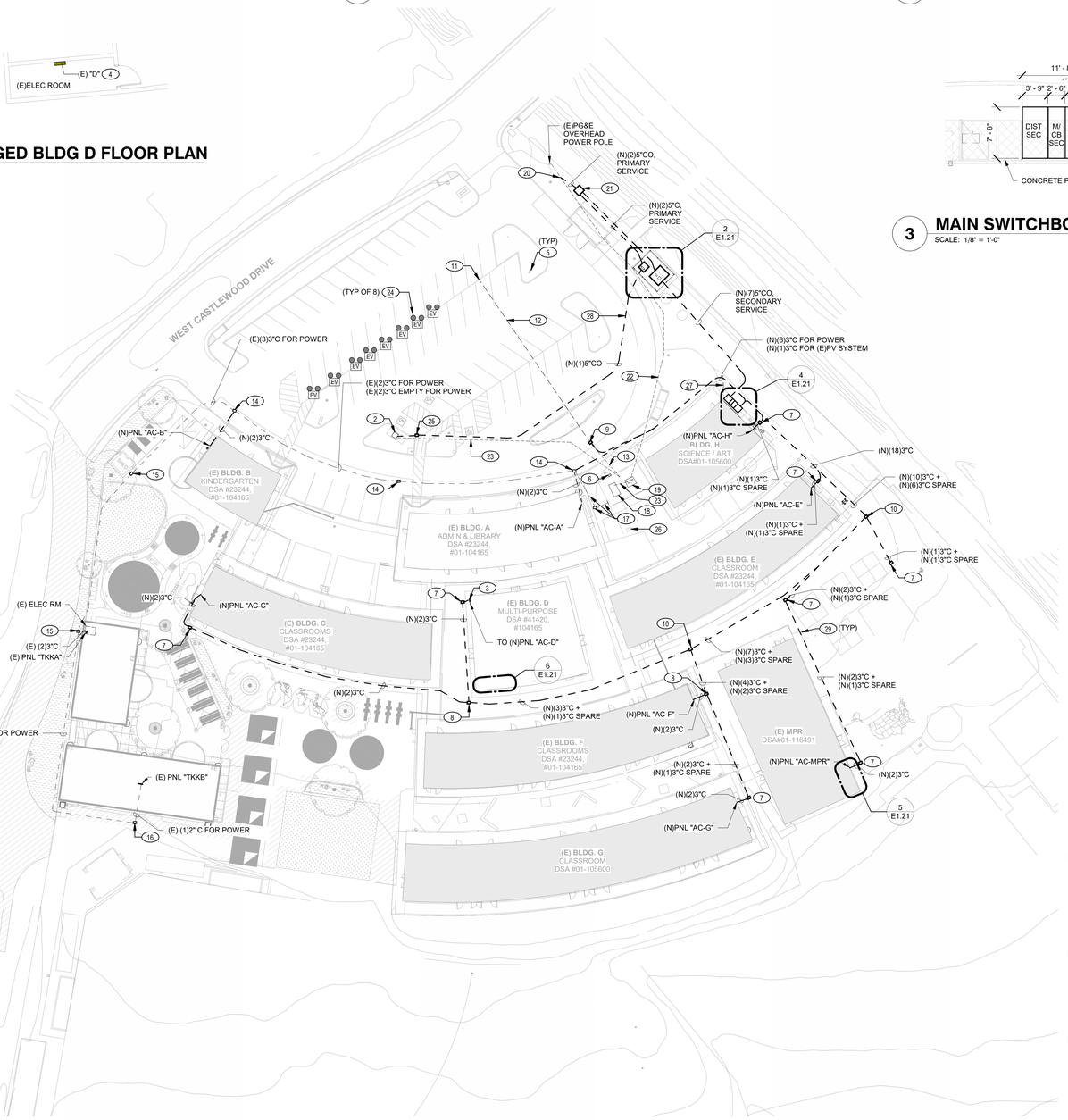


2 ENLARGED PG&E TRANSFORMER SITE PLAN
SCALE: 1/8" = 1'-0"

6 ENLARGED BLDG D FLOOR PLAN
SCALE: 1/8" = 1'-0"



3 MAIN SWITCHBOARD ELEVATION VIEW
SCALE: 1/8" = 1'-0"



1 ELECTRICAL SITE PLAN
SCALE: 1/32" = 1'-0"

KEY NOTES

1. NEW PG&E TRANSFORMER ENCLOSED BY A FENCE. REFER TO ARCHITECTURAL DETAIL 1/A10.01, 2/A10.01, 8/A7.11 AND LANDSCAPE DRAWINGS FOR ADDITIONAL INFORMATION.
2. EXISTING 208V, 400A, 3-PHASE, 4-WIRE MAIN SWITCHBOARD EV PANEL TO REMAIN. THIS SWITCHBOARD IS FED FROM PG&E TRANSFORMER "T204" 145-FEET EAST. CONTRACTOR TO COORDINATE WITH PG&E REPRESENTATIVE FOR THE DISCONNECTION FROM THE EXISTING PG&E TRANSFORMER "T204" AND RECONNECTION TO THE NEW PG&E TRANSFORMER. REFER TO DETAIL 2/E1.21.
3. NEW PANEL TO BE LOCATED INSIDE THE EXISTING STORAGE ROOM D34. STORAGE ROOM WILL BECOME ELECTRICAL/IDF ROOM UNDER BUILDING "D" RENOVATION. EXACT LOCATION WITHIN THIS ROOM TO BE COORDINATED WITH THE LATEST BUILDING "D" ELECTRICAL DRAWINGS.
4. EXISTING PANEL TO BE DISCONNECTED FROM EXISTING MAIN SWITCHBOARD AND RECONNECTED TO NEW PANEL "AC-D". PANEL "D" WILL BE DEMOLISHED UNDER BUILDING "D" RENOVATION.
5. EXISTING LIGHT POLE IS EXISTING TO REMAIN.
6. EXISTING IRRIGATION CONTROLLER BEING DEMOLISHED TO BE DISCONNECTED FROM EXISTING SWITCHBOARD.
7. NEW CHRISTY BOX #B2436.
8. NEW CHRISTY BOX #B3315.
9. NEW CHRISTY BOX #B3048.
10. NEW HANDHOLE BOX 8'-0 X 6'-0" X 5'-0" OR EQUAL.
11. EXISTING PV PANEL "SPNLBD-1" TO REMAIN.
12. EXISTING (1)3" PCV SCH40, 3#350 CU, 1#2 CU N, 1#2 CU GND VIA BORE TO REMAIN.
13. EXISTING WIRES TO BE REMOVED AND ABANDON UNDERGROUND CONDUITS.
14. EXISTING JENSEN BOX #3315 TO REMAIN.
15. EXISTING CHRISTY BOX #B3048 TO REMAIN.
16. EXISTING CHRISTY BOX #B2436 TO REMAIN.
17. EXISTING WIRES SERVICING TKKA/TKKB TO BE INTERCEPTED AND REMOVED BACK TO THE NEAREST JENSEN BOX #3315. SPLICE WIRES AND RECONNECT TO NEW SWITCHBOARD. REFER TO E5.02. CUT OFF CONDUITS AT THE JENSEN BOX #3315 AND ABANDON CONDUIT BETWEEN EXISTING JENSEN BOX 3315 AND THE EXISTING SWITCHBOARD BEEN REMOVED. REMOVE EXISTING CHRISTY IN BETWEEN THE JENSEN BOX #3315 AND THE EXISTING SWITCHBOARD.
18. EXISTING 800A MAIN SWITCHBOARD THAT HOUSES EXISTING PG&E METER AND EXISTING MAIN SERVICE DISCONNECT THAT SERVICES THE CAMPUS TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PG&E REPRESENTATIVE FOR THE REMOVAL OF EXISTING PG&E SERVICE METER AND UNDER GROUND SERVICE POWER WIRES BETWEEN THE EXISTING TRANSFORMER AND THE EXISTING SWITCHBOARD.
19. EXISTING PG&E TRANSFORMER THAT SERVICES THE EXISTING SWITCHBOARD TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PG&E REPRESENTATIVE FOR THE REMOVAL OF TRANSFORMER AND THE REMOVAL OF MEDIUM VOLTAGE WIRES BETWEEN THE EXISTING TRANSFORMER AND THE EXISTING PG&E POWER POLE.
20. CONTRACTOR TO EXPOSE EXISTING UNDERGROUND CONDUIT FEEDING T204. PG&E TO CUT AND RE-ROUTE CABLE TO 3-WAY BOX.
21. CONTRACTOR TO PROVIDE 3-WAY BOX CONCRETE PAD. PG&E TO INSTALL 3-WAY PM BOX (M360038). 72" X 36" AND KEEP 24" SIDE AND BACK AND 36" FRONT CLEARANCE. REFER TO DETAIL 2/E6.03 FOR BOLLARD ARRANGEMENT.
22. EXISTING PG&E UNDERGROUND PRIMARY SERVICE TO BE DISCONNECTED.
23. EXISTING PG&E UNDERGROUND SECONDARY SERVICE TO BE DISCONNECTED. CONTRACTOR TO CONTACT AND COORDINATE FOR PG&E TO REMOVE THEIR CONDUCTORS.
24. EXISTING DUAL EV CHARGERS TO REMAIN.
25. CONTRACTOR TO COORDINATE WITH PG&E FOR THE INSTALLATION AND / OR REQUIREMENTS OF THE NEW PG&E BOX #3, 24" X 36" X 30". SEE DETAIL 9/E6.01.
26. EXISTING PULL BOX TO BE ABANDON IN PLACE.
27. EXISTING MARQUEE SIGN TO REMAIN. IT IS FED FROM "H"-11.
28. FOR TRENCH BACKFILL ON EXISTING ASPHALT, REFER TO DETAIL E/E6.03. WHERE THERE IS A FIRE LINE, THE CONSTRUCTION SHALL BE SO THAT IT CAN ACCOMMODATE FIRE APPARATUS PER CFC 503.2. REFER TO CIVIL DRAWINGS FOR FIRE LANE PATH OF TRAVEL.
29. FOR TRENCHING ON EXISTING ASPHALT AND FINISH GRADE, REFER TO DETAIL 3/E6.01.

GENERAL NOTES (CONTINUED)

H. CONDUIT PATHWAYS SHALL BE FULLY COORDINATED WITH CIVIL. SEE SHEET E0.01 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL DETAIL 3/E6.01. CIVIL ENGINEER CONFIRM THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

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

J. ALL UNDERGROUND CONDUIT, UG, SHALL BE PVC SCH40 UNO.

K. ALL BELOW GRADE PULL BOXES, REFER TO DETAIL 1/E6.01 & 2/E6.01.

GENERAL NOTES

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

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

C. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT AND FITTINGS. THE MATERIAL USED FOR CORROSION PROTECTION SHALL BE UPC APPROVED AND STAMPED.

D. ALL ELECTRICAL CABLING WORK SPACE SHALL COMPLY WITH CEC ARTICLE 110.72.

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

F. ACCESS TO MANHOLES SHALL COMPLY WITH CEC ARTICLE 110.75(A)-(E).

G. ALL CONDUCTOR BENDING RADIUS SHALL BE PER CEC ARTICLE 300.34.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SITE PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

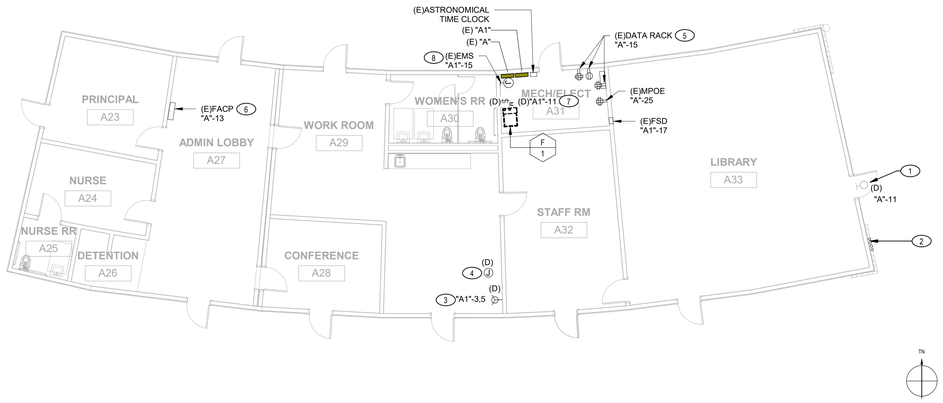
SHEET:

E1.21

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan:TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:21 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE



1 ELECTRICAL DEMOLITION FLOOR PLAN - BLDG A

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

KEY NOTES

1. REMOVE EXISTING LIGHT. EXISTING BACKBOX, CONDUIT, AND WIRES TO REMAIN. REFER TO BLDG ELECTRICAL FLOOR PLAN FOR NEW LIGHT AND ADDITIONAL INFORMATION.
2. EXISTING EMPTY ELECTRICAL CONDUITS TO BE REMOVED. SEE E5.01.
3. DISCONNECT OUTLET THAT SERVICES KILN AND REMOVE WIRES BACK TO SOURCE PANEL. CONDUIT TO BE ABANDONED IN PLACE. ADD A BLACK COVER.
4. DISCONNECT CEILING OUTLET THAT SERVICES EXHAUST HOOD OVER THE KILN. REMOVE OUTLET, BACKBOX, AND WIRES BACK TO SOURCE PANEL OR NEAREST JUNCTION BOX IF CIRCUIT SERVICES OTHER LOAD. CONDUIT TO BE ABANDON IN PLACE.
5. EXISTING 120V CIRCUIT FOR DATA RACK TO REMAIN.
6. EXISTING 120V CIRCUIT FOR FIRE ALARM TO REMAIN.
7. DISCONNECT 120V CIRCUIT THAT SERVES THE EXISTING FURNACE BEING DEMOLISHED. REMOVE WIRES BACK TO SOURCE PANEL AND CONDUIT TO REMAIN IN PLACE.
8. EXISTING 120V CONNECTION FOR THE EXISTING EMS TO REMAIN.

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT, SHOWN AS EXISTING (E) TO REMAIN UNO AS TO BE DEMOLISHED (D).

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

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A ELECTRICAL DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

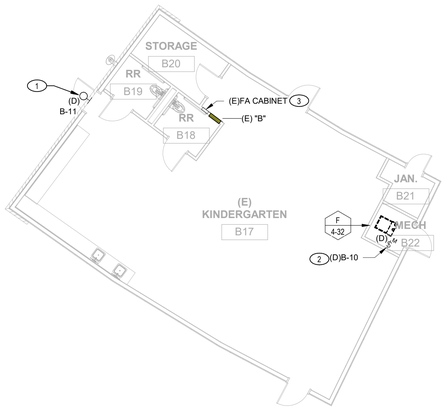
SHEET:

ED2.11

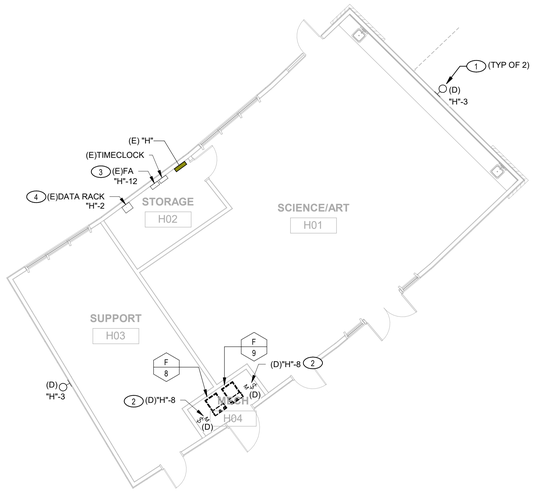
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 9:41:25 AM

PLEASE RECYCLE

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



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



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

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

KEY NOTES

1. REMOVE EXISTING LIGHT. EXISTING BACKBOX, CONDUIT, AND WIRES TO REMAIN. REFER TO BLDG ELECTRICAL FLOOR PLAN FOR NEW LIGHT AND ADDITIONAL INFORMATION.
2. DISCONNECT 120V CIRCUIT THAT SERVES THE EXISTING FURNACE BEING DEMOLISHED. REMOVE WIRES BACK TO SOURCE PANEL AND CONDUIT TO REMAIN IN PLACE.
3. EXISTING 120V CIRCUIT FOR FIRE ALARM TO REMAIN.
4. EXISTING 120V CIRCUIT FOR DATA RACK TO REMAIN.
5. DISCONNECT AND REMOVE EXISTING PENDANT LIGHT. CONDUIT, WIRES, AND CIRCUIT TO REMAIN. REMOVE EXISTING LIGHTING CONTROLS AND BACKBOX AND CONDUIT TO REMAIN.
6. EXISTING CEILING MOUNTED OUTLET FOR PROJECTOR BEING REMOVED TO REMAIN.
7. CONTRACTOR TO DISCONNECT AND REMOVE EXISTING OUTLET IN AREAS WHERE TECHNOLOGY IS REPLACING DATA OUTLETS WITH NEW WIREMOLD POWER/DATA BOX COMBINATION. CIRCUIT AND WIRES TO REMAIN. REFER TO TECHNOLOGY DRAWINGS FOR SCOPE OF WORK AT EACH CLASSROOM.

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT, SHOWN AS EXISTING (E) TO REMAIN UNO AS TO BE DEMOLISHED (D).

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

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H ELECTRICAL DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

ED2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:32 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

2 ELECTRICAL DEMOLITION FLOOR PLAN - BLDG F

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

KEY NOTES

1. REMOVE EXISTING LIGHT. EXISTING BACKBOX, CONDUIT, AND WIRES TO REMAIN. REFER TO BLDG ELECTRICAL FLOOR PLAN FOR NEW LIGHT AND ADDITIONAL INFORMATION.
2. EXISTING 120V CIRCUIT FOR DATA RACK TO REMAIN.
3. DISCONNECT 120V CIRCUIT THAT SERVES THE EXISTING FURNACE BEING DEMOLISHED. REMOVE WIRES BACK TO SOURCE PANEL AND CONDUIT TO REMAIN IN PLACE.
4. EXISTING 120V CIRCUIT FOR FIRE ALARM TO REMAIN.
5. EXISTING CEILING MOUNTED OUTLET FOR PROJECTOR BEING REMOVED TO REMAIN.
6. CONTRACTOR TO DISCONNECT AND REMOVE EXISTING OUTLET IN AREAS WHERE TECHNOLOGY IS REPLACING DATA OUTLETS WITH NEW WIREMOLD POWER/DATA BOX COMBINATION. CIRCUIT AND WIRES TO REMAIN. REFER TO TECHNOLOGY DRAWINGS FOR SCOPE OF WORK AT EACH CLASSROOM.
7. DISCONNECT AND REMOVE EXISTING PENDANT LIGHT. CONDUIT, WIRES, AND CIRCUIT TO REMAIN. REMOVE EXISTING LIGHTING CONTROLS AND BACKBOX AND CONDUIT TO REMAIN.

1 ELECTRICAL DEMOLITION FLOOR PLAN - BLDG G

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

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT, SHOWN AS EXISTING (E) TO REMAIN UNO AS TO BE DEMOLISHED (D).

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

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G ELECTRICAL DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

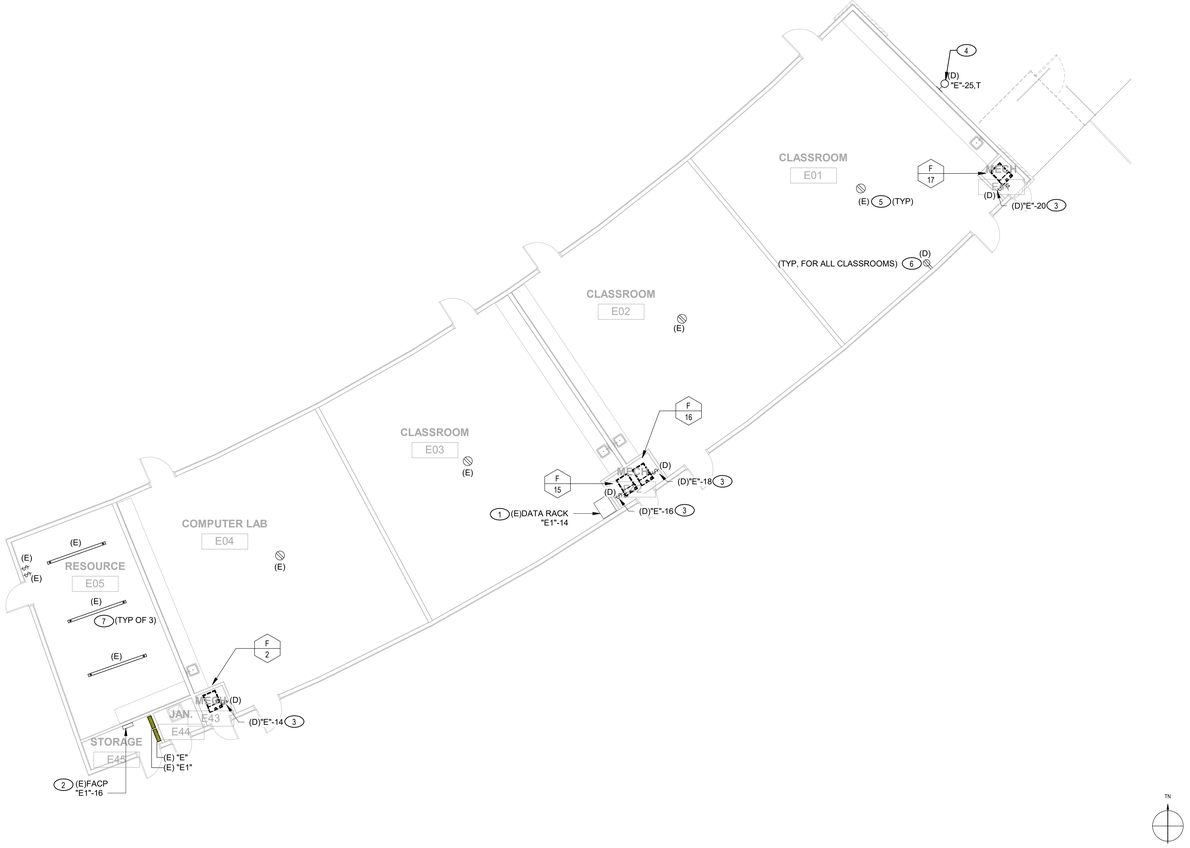
ED2.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:37 AM

PLEASE RECYCLE

KEY NOTES

1. EXISTING 120V CIRCUIT FOR DATA RACK TO REMAIN.
2. EXISTING 120V CIRCUIT FOR FIRE ALARM TO REMAIN.
3. DISCONNECT 120V CIRCUIT THAT SERVES THE EXISTING FURNACE BEING DEMOLISHED. REMOVE WIRES BACK TO SOURCE PANEL AND CONDUIT TO REMAIN IN PLACE.
4. REMOVE EXISTING LIGHT. EXISTING BACKBOX, CONDUIT, AND WIRES TO REMAIN. REFER TO BLDG ELECTRICAL FLOOR PLAN FOR NEW LIGHT AND ADDITIONAL INFORMATION.
5. EXISTING CEILING MOUNTED OUTLET FOR PROJECTOR BEING REMOVED TO REMAIN.
6. CONTRACTOR TO DISCONNECT AND REMOVE EXISTING OUTLET IN AREAS WHERE TECHNOLOGY IS REPLACING DATA OUTLETS WITH NEW WIREMOLD POWER/DATA BOX COMBINATION. CIRCUIT AND WIRES TO REMAIN. REFER TO TECHNOLOGY DRAWINGS FOR SCOPE OF WORK AT EACH CLASSROOM.
7. EXISTING LIGHT AND LOCAL LIGHTING CONTROLS TO REMAIN.



GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT, SHOWN AS EXISTING (E) TO REMAIN UNO AS TO BE DEMOLISHED (D).

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

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

1 ELECTRICAL DEMOLITION FLOOR PLAN - BLDG E

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E ELECTRICAL DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

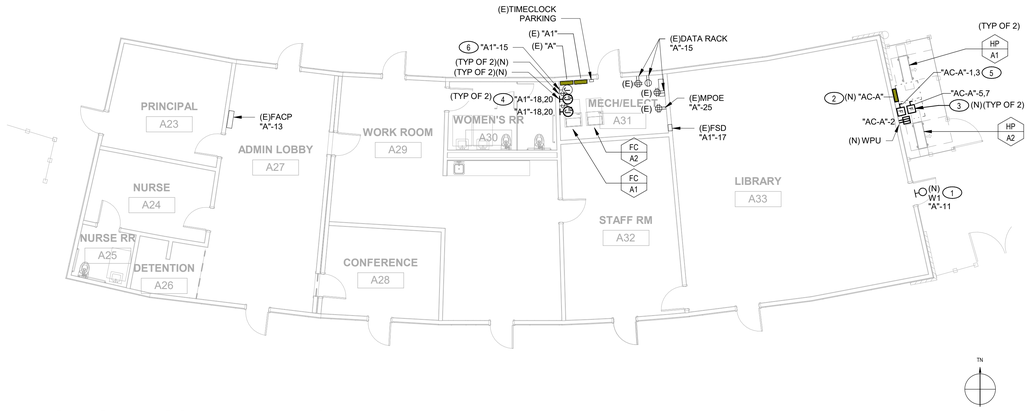
ED2.14

PLEASE RECYCLE

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

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:40 AM

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET IS ORIGINAL PAGE SIZE



1 ELECTRICAL FLOOR PLAN - BLDG A

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

KEY NOTES

1. PROVIDE NEW WALL PACK LIGHT AND RECONNECT NEW LIGHT FIXTURE TO EXISTING LIGHT CIRCUIT. REFER TO DETAIL 1/E6.02.
2. NEW PANELBOARD, NEMA 3R. REFER TO DETAIL 2/E6.02.
3. NEW DISCONNECT, NEMA 3R. REFER TO DETAIL 2/E6.02.
4. PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 15 MOCP, MOTOR RATED DISCONNECT FOR FAN COIL UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
5. PROVIDE 208V, 1-PH, 2#8 CU, 1#10 CU GND, 3/4"C, 29 MCA, 40 MOCP, 60AS/40AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
6. EXISTING 120V CONNECTION FOR THE EXISTING EMS TO REMAIN.

GENERAL NOTES

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

B. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT AND FITTINGS.

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

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

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

F. UNDERGROUND CONDUIT PATHWAYS SHALL BE FULLY COORDINATED WITH CIVIL. SEE SHEET E0.0 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL DETAIL 3/E6.01. CIVIL ENGINEER TO CONFIRM THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

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

H. ALL ELECTRICAL PENETRATIONS GOING THRU SHEARWALL(S) SHALL BE FULLY COORDINATED WITH STRCUTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, AND OTHER PARTIES INVOLVED PRIOR TO INSTALLATION AND ROUGH INS.

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

J. EXTERIOR DISCONNECTS TO BE WEATHERPROOF RATED.

K EXISTING ELECTRICAL OUTLETS THAT ARE NOT AFFECTED BY TECHNOLOGY SCOPE TO REMAIN UNCHANGED.

L. EXISTING POWER/DATA RACEWAY TO REMAIN UNO TO BE REPLACED. REFER TO TECHNOLOGY DRAWINGS FOR EXISTING POWER/DATA WIREMOLD SERIES AND POWER/DATA OUTLET BOX COMINATION DESCRIPTION.

M. CONTRACTOR TO RUN NEW ELECTRICAL CONDUITS ON THE ROOF THAT ARE DEDICATED TO RECONNECT EXISTING ELECTRICAL PANEL LOCATED INSIDE THE BUILDING TO THE NEW PANEL "AC-X" LOCATED ON THE EXTERIOR WALL OF THE BUILDING. FOR ROOF CONDUIT SUPPORT, SEE DETAILS 4/E6.02, 5/E6.02, AND 6/E6.02.

N. ELECTRICAL RECEPTACLES LOCATED 5'-0" IN STUDENT CLASSROOMS AND STUDENT RESTROOMS SHALL BE PROVIDED WITH TAMPER RESISTANCE, CEC 406.12.

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A ELECTRICAL FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

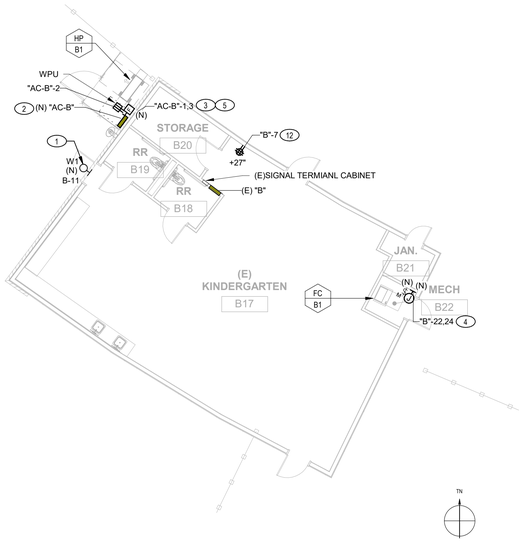
SHEET:

E2.11

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:25 AM

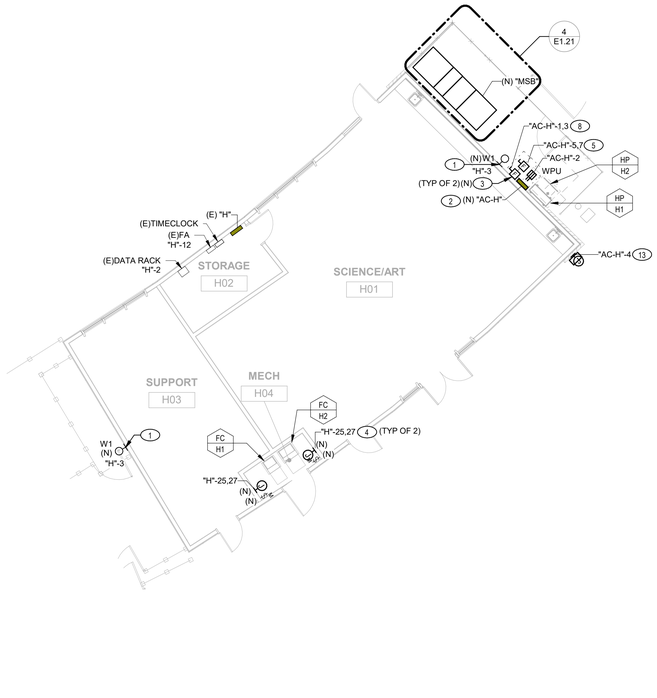
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL PAGE SIZE



3 ELECTRICAL FLOOR PLAN - BLDG B

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



1 ELECTRICAL FLOOR PLAN - BLDG H

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

2 ELECTRICAL FLOOR PLAN - BLDG C

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

KEY NOTES

1. PROVIDE NEW WALL PACK LIGHT AND RECONNECT NEW LIGHT FIXTURE TO EXISTING LIGHT CIRCUIT. REFER TO DETAIL 1/E6.02.
2. NEW PANELBOARD, NEMA 3R. REFER TO DETAIL 2/E6.02.
3. NEW DISCONNECT, NEMA 3R. REFER TO DETAIL 2/E6.02.
4. PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 15 MOCP, MOTOR RATED DISCONNECT FOR FAN COIL UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
5. PROVIDE 208V, 1-PH, 2#8 CU, 1#10 CU GND, 3/4"C, 29 MCA, 40 MOCP, 60AS/40AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
6. PROVIDE 120V, 2#12 CU, 1#12 CU GND, 3/4"C, MOTOR RATED DISCONNECT SWITCH FOR SUPPLY FAN. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
7. PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 19 MCA, 30 MOCP, 30AS/30AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
8. PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 14 MCA, 25 MOCP, 30AS/25AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
9. CONTRACTOR TO PROVIDE TAMPER PROOF OUTLET IN AREAS WHERE TECHNOLOGY IS REPLACING DATA OUTLETS WITH NEW WIREMOLD POWER/DATA BOX COMBINATION. CONNECT NEW OUTLET TO EXISTING CIRCUIT. REFER TO TECHNOLOGY DRAWINGS FOR SCOPE OF WORK AT EACH CLASSROOM.
10. NEW SOFFIT TO HOUSE MECHANICAL EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS. CONTRACTOR TO PROVIDE ELECTRICAL ACCESS PANEL FOR ACCESSIBILITY TO MECHANICAL EQUIPMENT MOTOR RATED DISCONNECTS.
11. NEW PENDANT LIGHT AND LIGHTING CONTROLS. CONNECT NEW PENDANT LIGHT TO EXISTING CIRCUIT. LIGHTING CONTROLS BY WATTSTOPPER. REFER TO DETAIL 3/E6.02.
12. PROVIDE 120V, 20A DEDICATED CIRCUIT FOR NEW IDF RACK. REFER TO TECHNOLOGY DRAWINGS T2.12 FOR IDF EXACT LOCATION.
13. PROVIDE 120V, 2#12 CU, 1#12 CU GND, 3/4"C FOR IRRIGATION CONTROLLER. REFER TO LANDSCAPE DRAWINGS FOR EXACT LOCATION AND IRRIGATION CONTROLLER INSTALLATION MANUAL FOR POWER CONNECTION AND ADDITIONAL CONDUIT AND WIRE REQUIREMENTS.

GENERAL NOTES

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

B. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT AND FITTINGS.

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

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

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

F. UNDERGROUND CONDUIT PATHWAYS SHALL BE FULLY COORDINATED WITH CIVIL. SEE SHEET E0.0 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL DETAIL 3/E6.01. CIVIL ENGINEER TO CONFIRM THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

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

H. ALL ELECTRICAL PENETRATIONS GOING THRU SHEARWALL(S) SHALL BE FULLY COORDINATED WITH STRCUTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, AND OTHER PARTIES INVOLVED PRIOR TO INSTALLATION AND ROUGH INS.

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

J. EXTERIOR DISCONNECTS TO BE WEATHERPROOF RATED.

K EXISTING ELECTRICAL OUTLETS THAT ARE NOT AFFECTED BY TECHNOLOGY SCOPE TO REMAIN UNCHANGED.

L. EXISTING POWER/DATA RACEWAY TO REMAIN UNO TO BE REPLACED. REFER TO TECHNOLOGY DRAWINGS FOR EXISTING POWER/DATA WIREMOLD SERIES AND POWER/DATA OUTLET BOX COMINATION DESCRIPTION.

M. CONTRACTOR TO RUN NEW ELECTRICAL CONDUITS ON THE ROOF THAT ARE DEDICATED TO RECONNECT EXISTING ELECTRICAL PANEL LOCATED INSIDE THE BUILDING TO THE NEW PANEL "AC-X" LOCATED ON THE EXTERIOR WALL OF THE BUILDING. FOR ROOF CONDUIT SUPPORT, SEE DETAILS 4/E6.02, 5/E6.02, AND 6/E6.02.

N. ELECTRICAL RECEPTACLES LOCATED 5'-0" IN STUDENT CLASSROOMS AND STUDENT RESTROOMS SHALL BE PROVIDED WITH TAMPER RESISTANCE, CEC 406.12.

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H ELECTRICAL FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

E2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:29 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

2 ELECTRICAL FLOOR PLAN - BLDG F

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

1 ELECTRICAL FLOOR PLAN - BLDG G

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

KEY NOTES

1 PROVIDE NEW WALL PACK LIGHT AND RECONNECT NEW LIGHT FIXTURE TO EXISTING LIGHT CIRCUIT. REFER TO DETAIL 1/E6.02.

2 NEW PANELBOARD, NEMA 3R. REFER TO DETAIL 2/E6.02.

3 NEW DISCONNECT, NEMA 3R. REFER TO DETAIL 2/E6.02.

4 NEW PANELBOARD, NEMA 3R. PANEL TO BE MOUNTED ON WALL. REFER TO DETAIL 2/E6.02.

5 PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 15 MOCP, MOTOR RATED DISCONNECT FOR FAN COIL UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.

6 PROVIDE 120V, 2#12 CU, 1#12 CU GND, 3/4"C, MOTOR RATED DISCONNECT SWITCH FOR SUPPLY FAN. REFER TO M0.02 FOR ADDITIONAL INFORMATION.

7 PROVIDE 208V, 1-PH, 2#8 CU, 1#10 CU GND, 3/4"C, 29 MCA, 40 MOCP, 60AS/40AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.

8 PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 19 MCA, 30 MOCP, 30AS/30AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.

9 CONTRACTOR TO PROVIDE TAMPER PROOF OUTLET IN AREAS WHERE TECHNOLOGY IS REPLACING DATA OUTLETS WITH NEW WIREMOLD POWER/DATA BOX COMBINATION. CONNECT NEW OUTLET TO EXISTING CIRCUIT. REFER TO TECHNOLOGY DRAWINGS FOR SCOPE OF WORK AT EACH CLASSROOM.

10 NEW SOFFIT TO HOUSE MECHANICAL EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS. CONTRACTOR TO PROVIDE ELECTRICAL ACCESS PANEL FOR ACCESSIBILITY TO MECHANICAL EQUIPMENT MOTOR RATED DISCONNECTS.

11 NEW PENDANT LIGHT AND LIGHTING CONTROLS. CONNECT NEW PENDANT LIGHT TO EXISTING CIRCUIT. LIGHTING CONTROLS BY WATTSTOPPER. REFER TO DETAIL 3/E6.02.

GENERAL NOTES

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

B. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT AND FITTINGS.

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

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

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

F. UNDERGROUND CONDUIT PATHWAYS SHALL BE FULLY COORDINATED WITH CIVIL. SEE SHEET E0.0 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL DETAIL 3/E6.01. CIVIL ENGINEER TO CONFIRM THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

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

H. ALL ELECTRICAL PENETRATIONS GOING THRU SHEARWALL(S) SHALL BE FULLY COORDINATED WITH STRCUTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, AND OTHER PARTIES INVOLVED PRIOR TO INSTALLATION AND ROUGH INS.

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

J. EXTERIOR DISCONNECTS TO BE WEATHERPROOF RATED.

K EXISTING ELECTRICAL OUTLETS THAT ARE NOT AFFECTED BY TECHNOLOGY SCOPE TO REMAIN UNCHANGED.

L. EXISTING POWER/DATA RACEWAY TO REMAIN UNO TO BE REPLACED. REFER TO TECHNOLOGY DRAWINGS FOR EXISTING POWER/DATA WIREMOLD SERIES AND POWER/DATA OUTLET BOX COMINATION DESCRIPTION.

M. CONTRACTOR TO RUN NEW ELECTRICAL CONDUITS ON THE ROOF THAT ARE DEDICATED TO RECONNECT EXISTING ELECTRICAL PANEL LOCATED INSIDE THE BUILDING TO THE NEW PANEL "AC-X" LOCATED ON THE EXTERIOR WALL OF THE BUILDING. FOR ROOF CONDUIT SUPPORT, SEE DETAILS 4/E6.02, 5/E6.02, AND 6/E6.02.

N. ELECTRICAL RECEPTACLES LOCATED 5'-0" IN STUDENT CLASSROOMS AND STUDENT RESTROOMS SHALL BE PROVIDED WITH TAMPER RESISTANCE, CEC 406.12.

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G ELECTRICAL FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

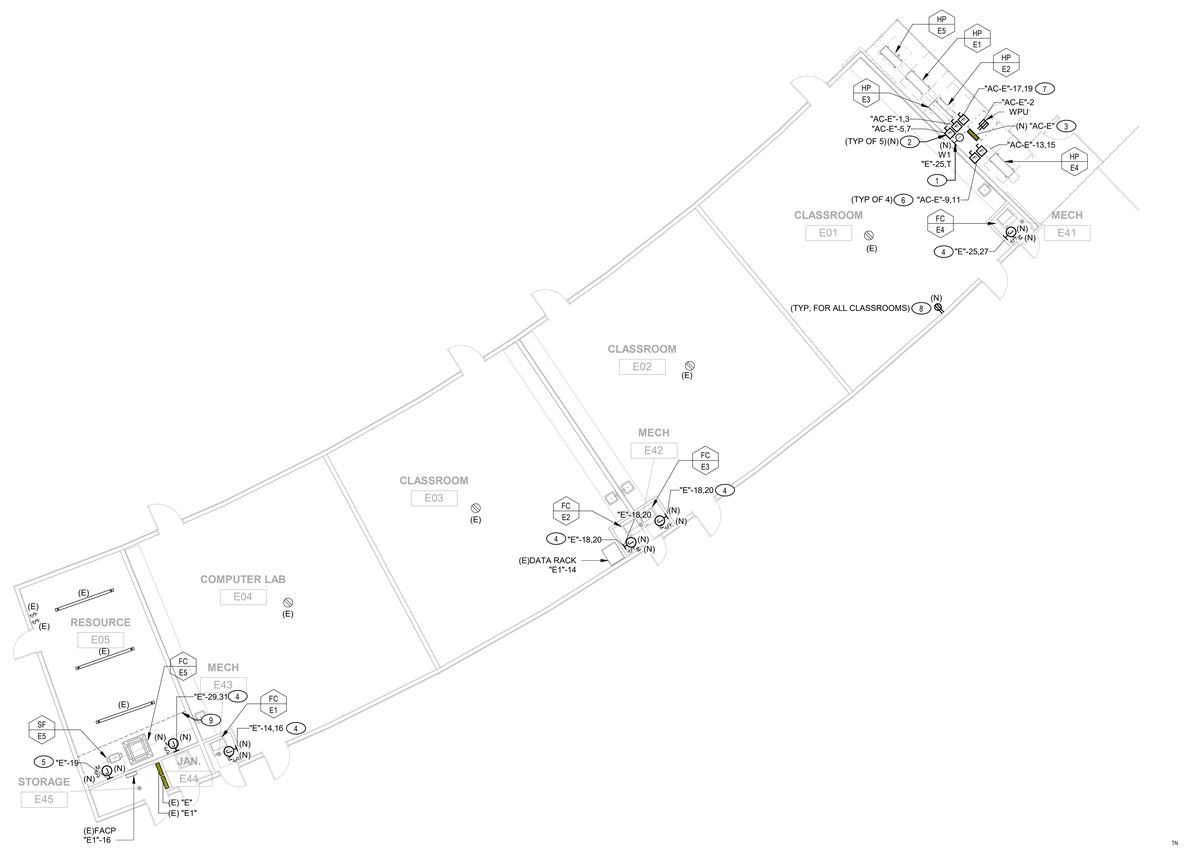
SHEET:

E2.13

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:34 AM

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PRINTED ON THIS SHEET'S ORIGINAL PAGE SIZE



1 ELECTRICAL FLOOR PLAN - BLDG E

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

KEY NOTES

1. PROVIDE NEW WALL PACK LIGHT AND RECONNECT NEW LIGHT FIXTURE TO EXISTING LIGHT CIRCUIT. REFER TO DETAIL 1/E6.02.
2. NEW DISCONNECT, NEMA 3R. REFER TO DETAIL 2/E6.02.
3. NEW PANELBOARD, NEMA 3R. PANEL TO BE MOUNTED ON WALL. REFER TO DETAIL 2/E6.02.
4. PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 15 MOCP. MOTOR RATED DISCONNECT FOR FAN COIL UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
5. PROVIDE 120V, 2#12 CU, 1#12 CU GND, 3/4"C, MOTOR RATED DISCONNECT SWITCH FOR SUPPLY FAN. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
6. PROVIDE 208V, 1-PH, 2#8 CU, 1#10 CU GND, 3/4"C, 29 MCA, 40 MOCP, 60AS/40AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
7. PROVIDE 208V, 1-PH, 2#10 CU, 1#10 CU GND, 3/4"C, 19 MCA, 30 MOCP, 30AS/30AF SAFETY DISCONNECT SWITCH FOR HEAP PUMP UNIT. REFER TO M0.02 FOR ADDITIONAL INFORMATION.
8. CONTRACTOR TO PROVIDE TAMPER PROOF OUTLET IN AREAS WHERE TECHNOLOGY IS REPLACING DATA OUTLETS WITH NEW WIREMOLD POWER/DATA BOX COMBINATION. CONNECT NEW OUTLET TO EXISTING CIRCUIT. REFER TO TECHNOLOGY DRAWINGS FOR SCOPE OF WORK AT EACH CLASSROOM.
9. NEW SOFFIT TO HOUSE MECHANICAL EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS. CONTRACTOR TO PROVIDE ELECTRICAL ACCESS PANEL FOR ACCESSIBILITY TO MECHANICAL EQUIPMENT MOTOR RATED DISCONNECTS.

GENERAL NOTES

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

B. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT AND FITTINGS.

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

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

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

F. UNDERGROUND CONDUIT PATHWAYS SHALL BE FULLY COORDINATED WITH CIVIL. SEE SHEET E0.0 FOR GENERAL UG TRENCHING NOTES. FOR UG CONSTRUCTION, THE MINIMUM DEPTH BELOW GRADE, AND REQUIRED COVERAGE PER CEC, TABLE 300.50. SEE TYPICAL DETAIL 3/E6.01. CIVIL ENGINEER TO CONFIRM THE FINAL CONSTRUCTION, DEPTH BELOW GRADE, AND CONCRETE COVERAGE (WHERE APPLICABLE).

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

H. ALL ELECTRICAL PENETRATIONS GOING THRU SHEARWALL(S) SHALL BE FULLY COORDINATED WITH STRCUTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, AND OTHER PARTIES INVOLVED PRIOR TO INSTALLATION AND ROUGH INS.

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

J. EXTERIOR DISCONNECTS TO BE WEATHERPROOF RATED.

K EXISTING ELECTRICAL OUTLETS THAT ARE NOT AFFECTED BY TECHNOLOGY SCOPE TO REMAIN UNCHANGED.

L. EXISTING POWER/DATA RACEWAY TO REMAIN UNO TO BE REPLACED. REFER TO TECHNOLOGY DRAWINGS FOR EXISTING POWER/DATA WIREMOLD SERIES AND POWER/DATA OUTLET BOX COMINATION DESCRIPTION.

M. CONTRACTOR TO RUN NEW ELECTRICAL CONDUITS ON THE ROOF THAT ARE DEDICATED TO RECONNECT EXISTING ELECTRICAL PANEL LOCATED INSIDE THE BUILDING TO THE NEW PANEL "AC-X" LOCATED ON THE EXTERIOR WALL OF THE BUILDING. FOR ROOF CONDUIT SUPPORT, SEE DETAILS 4/E6.02, 5/E6.02, AND 6/E6.02.

N. ELECTRICAL RECEPTACLES LOCATED 5'-0" IN STUDENT CLASSROOMS AND STUDENT RESTROOMS SHALL BE PROVIDED WITH TAMPER RESISTANCE, CEC 406.12.

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: Z3-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

E2.14

Autodesk Docs://3584/001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:38 AM

PLEASE RECYCLE

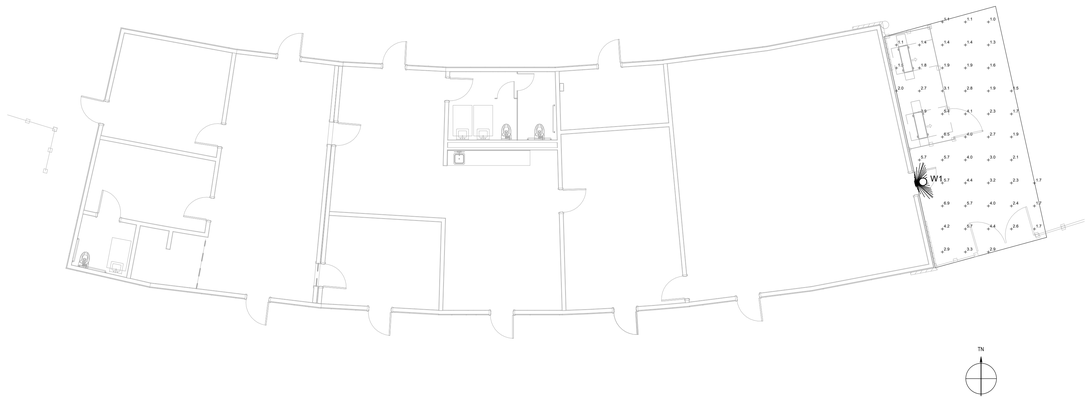
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON A THIS SHEET'S ORIGINAL PAGE SIZE

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	LABEL	MANUFACTURER/MODEL NUMBER	MOUNTING	LUMENS PER LAMP	LIGHT LOSS FACTOR	WATTAGE
○-1	W1	COPPER LIGHTING SOLUTIONS MCGRAW-EDISON GWS GALLEON II WALL SLIM	WALL PACK	2941	1	29

PHOTOMETRIC STATISTICS

SYMBOL	DESCRIPTION	AVERAGE	MAXIMUM	MINIMUM	MAXIMUM/MINIMUM	AVERAGE/MIMINUM
+	PATH OF TRAVEL-BLDG A	3.0 FC	6.9 FC	1.0 FC	6.9:1	3.0:1



1 **PHOTOMETRIC PLAN - BLDG A**
SCALE: 1/8" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PHOTOMETRIC PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

E3.11

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:40 AM

PLEASE RECYCLE

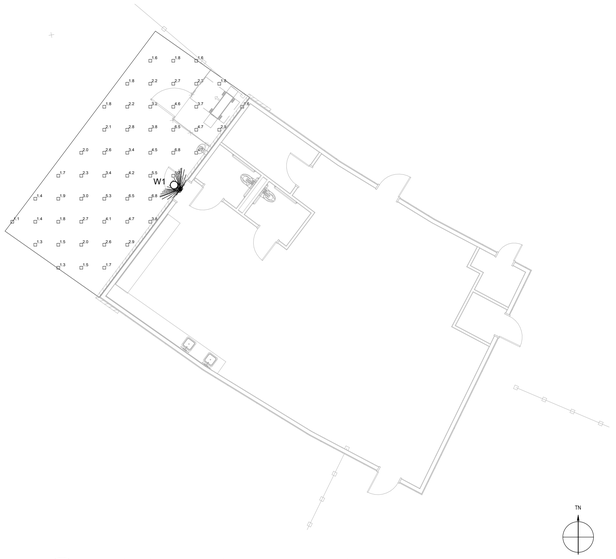
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON THIS SHEET'S ORIGINAL PAGE SIZE

EXTERIOR LIGHTING FIXTURE SCHEDULE

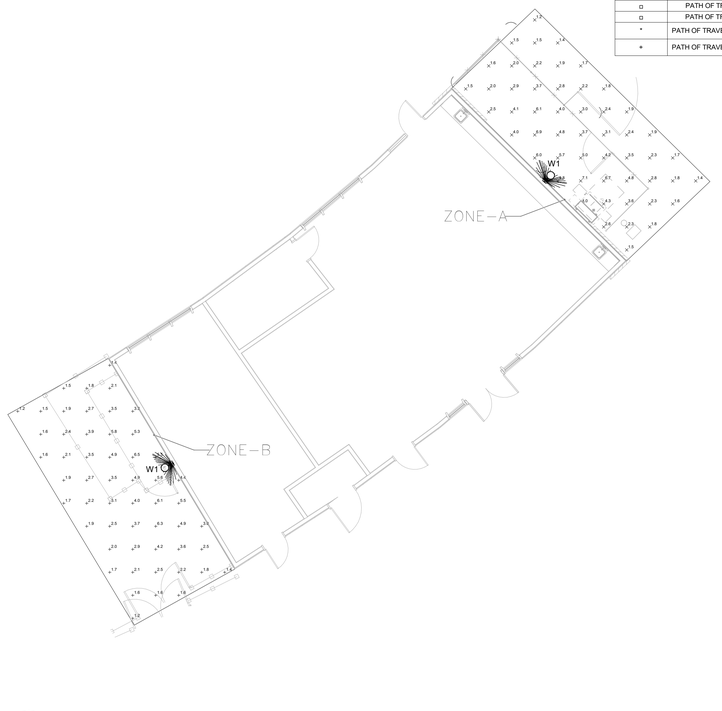
SYMBOL	LABEL	MANUFACTURER/MODEL NUMBER	MOUNTING	LUMENS PER LAMP	LIGHT LOSS FACTOR	WATTAGE
	W1	COPPER LIGHTING SOLUTIONS MCGRAW-EDISON GWS GALLEON II WALL SLIM	WALL PACK	2941	1	29

PHOTOMETRIC STATISTICS

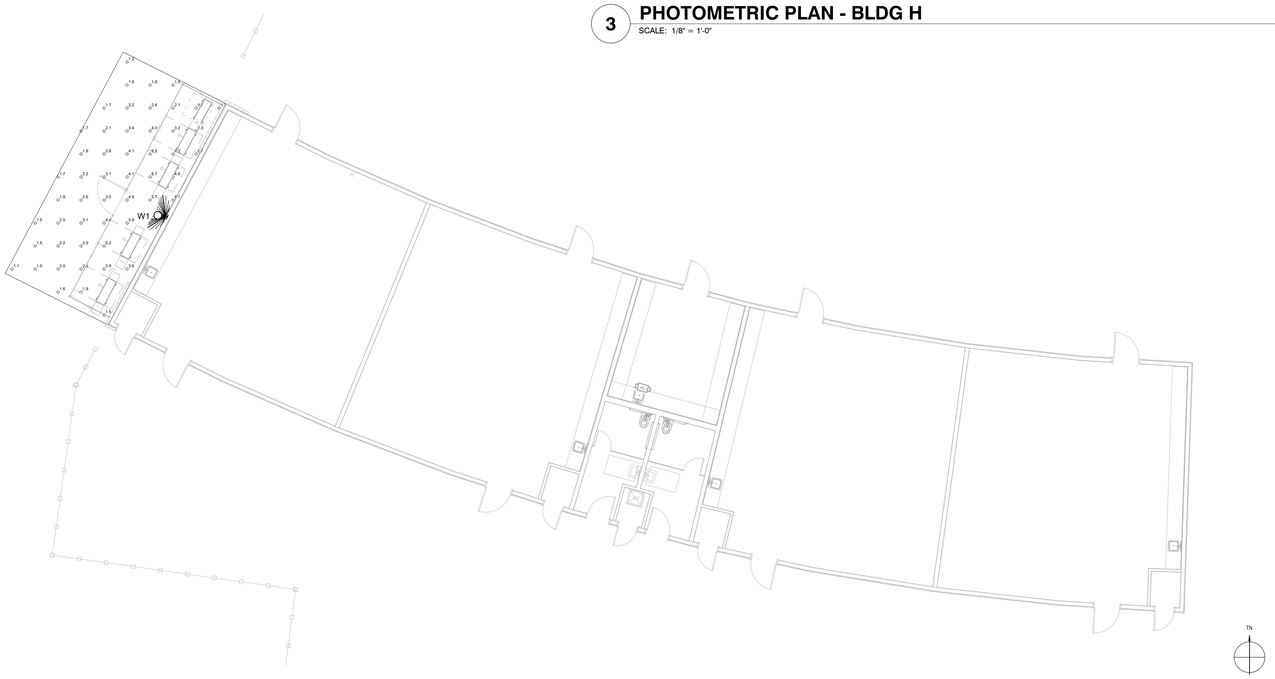
SYMBOL	DESCRIPTION	AVERAGE	MAXIMUM	MINIMUM	MAXIMUM/MINIMUM	AVERAGE/MIMINUM
	PATH OF TRAVEL-BLDG B	3.6 FC	6.8 FC	1.1 FC	6.2:1	2.7:1
	PATH OF TRAVEL-BLDG C	3.0 FC	6.7 FC	1.1 FC	6.1:1	2.7:1
*	PATH OF TRAVEL-BLDG H ZONE-A	3.1 FC	7.1 FC	1.2 FC	5.9:1	2.6:1
+	PATH OF TRAVEL-BLDG H ZONE-B	3.1 FC	6.5 FC	1.2 FC	5.4:1	2.6:1



1 **PHOTOMETRIC PLAN - BLDG B**
SCALE: 1/8" = 1'-0"



3 **PHOTOMETRIC PLAN - BLDG H**
SCALE: 1/8" = 1'-0"



2 **PHOTOMETRIC PLAN - BLDG C**
SCALE: 1/8" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PHOTOMETRIC PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

E3.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:43 AM

PLEASE RECYCLE

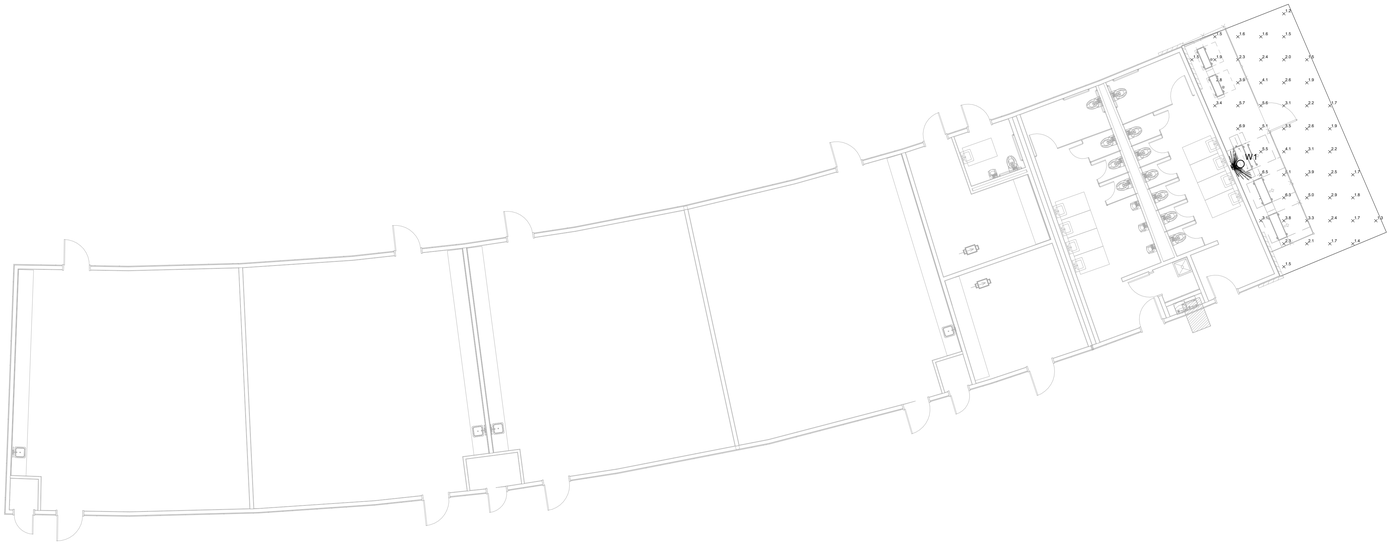
THE LINE SHOWN ABOVE IS 1" LONG WHEN PRINTED ON A THIS SHEET'S ORIGINAL PAGE SIZE

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	LABEL	MANUFACTURER/MODEL NUMBER	MOUNTING	LUMENS PER LAMP	LIGHT LOSS FACTOR	WATTAGE
○-1	W1	COPPER LIGHTING SOLUTIONS MCGRAW-EDISON GWS GALLEON II WALL SLIM	WALL PACK	2941	1	29

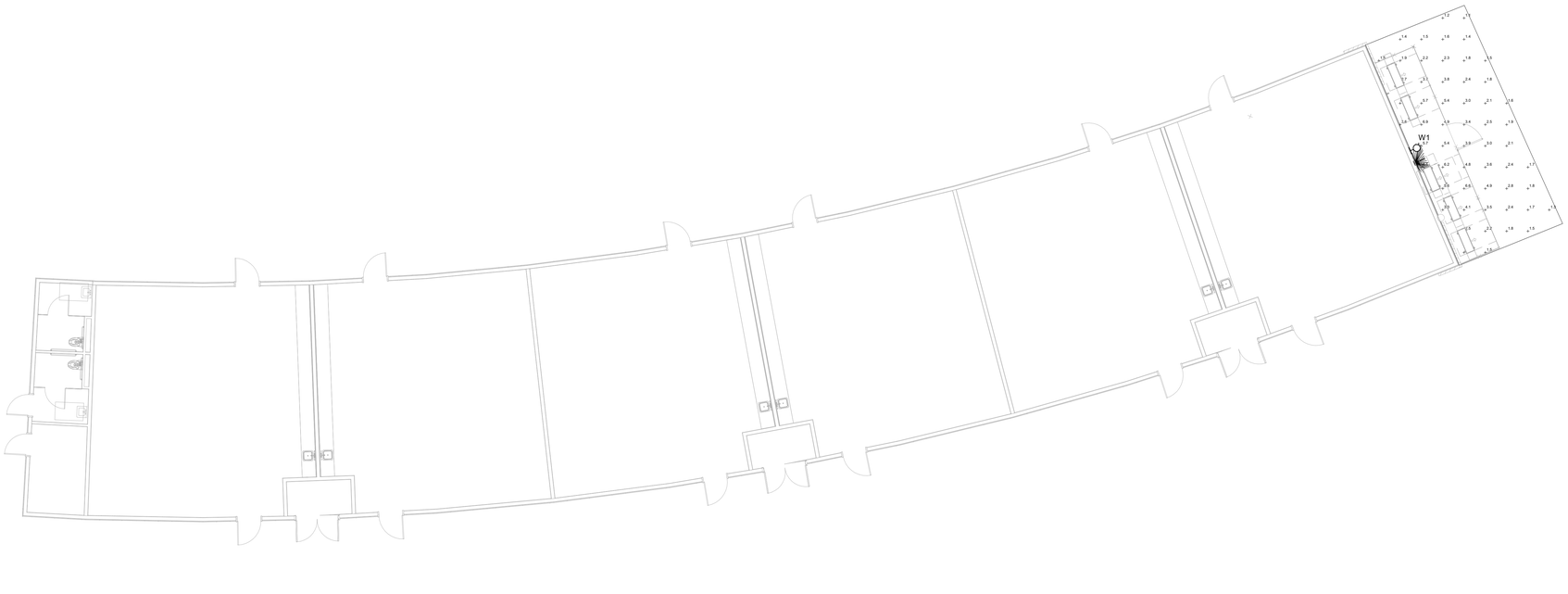
PHOTOMETRIC STATISTICS

SYMBOL	DESCRIPTION	AVERAGE	MAXIMUM	MINIMUM	MAXIMUM/MINIMUM	AVERAGE/MIMINUM
*	PATH OF TRAVEL-BLDG F	3.1 FC	6.9 FC	1.2 FC	5.8:1	2.6:1
+	PATH OF TRAVEL-BLDG G	3.0 FC	6.9 FC	1.1 FC	6.3:1	2.7:1



2 PHOTOMETRIC PLAN - BLDG F

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



3 PHOTOMETRIC PLAN - BLDG G

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PHOTOMETRIC PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

E3.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:47 AM

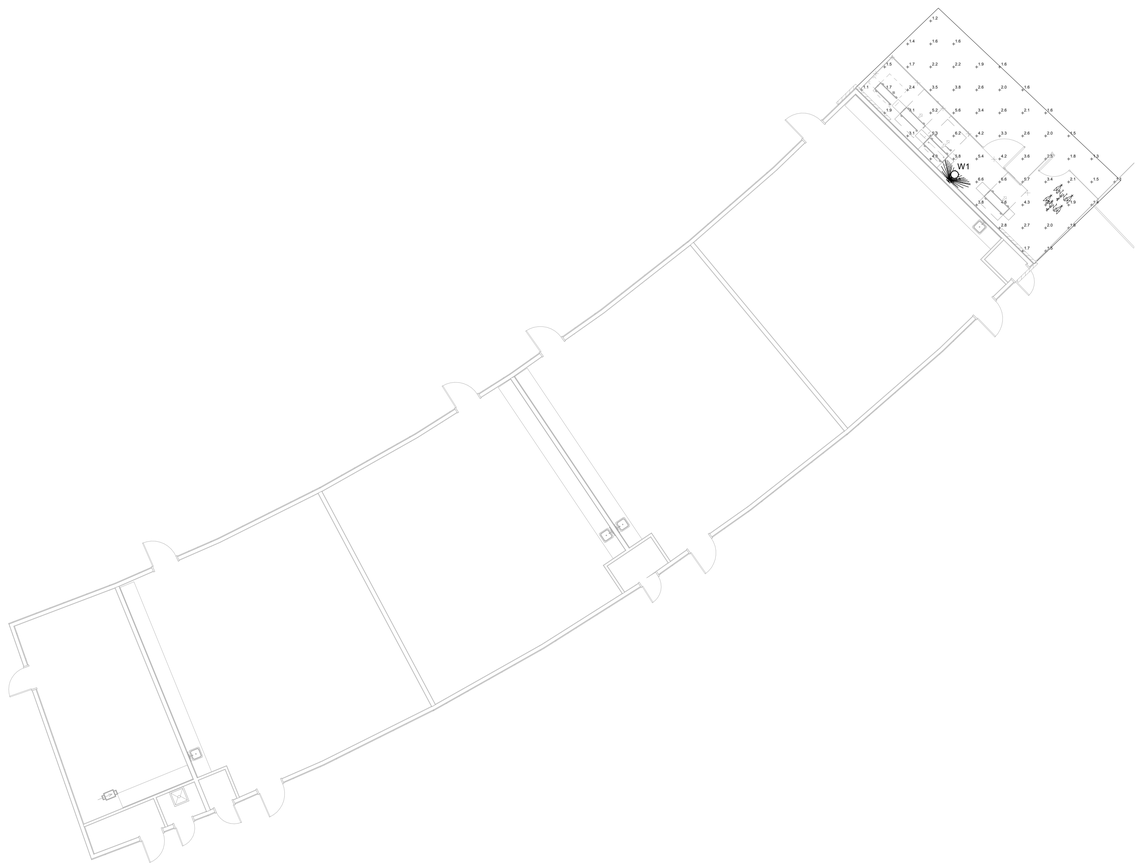
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL PAGE SIZE

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	LABEL	MANUFACTURER/MODEL NUMBER	MOUNTING	LUMENS PER LAMP	LIGHT LOSS FACTOR	WATTAGE
	W1	COPPER LIGHTING SOLUTIONS MCGRAW-EDISON GWS GALLEON II WALL SLIM	WALL PACK	2941	1	29

PHOTOMETRIC STATISTICS						
SYMBOL	DESCRIPTION	AVERAGE	MAXIMUM	MINIMUM	MAXIMUM/MINIMUM	AVERAGE/MIMINUM
+	PATH OF TRAVEL-BLDG E	2.6 FC	6.6 FC	1.1 FC	6.0:1	2.6:1



1 **PHOTOMETRIC PLAN - BLDG E**
SCALE: 1/8" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

PHOTOMETRIC PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

E3.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:49 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT FULL SHEET ORIGINAL PAGE SIZE

KEY NOTES

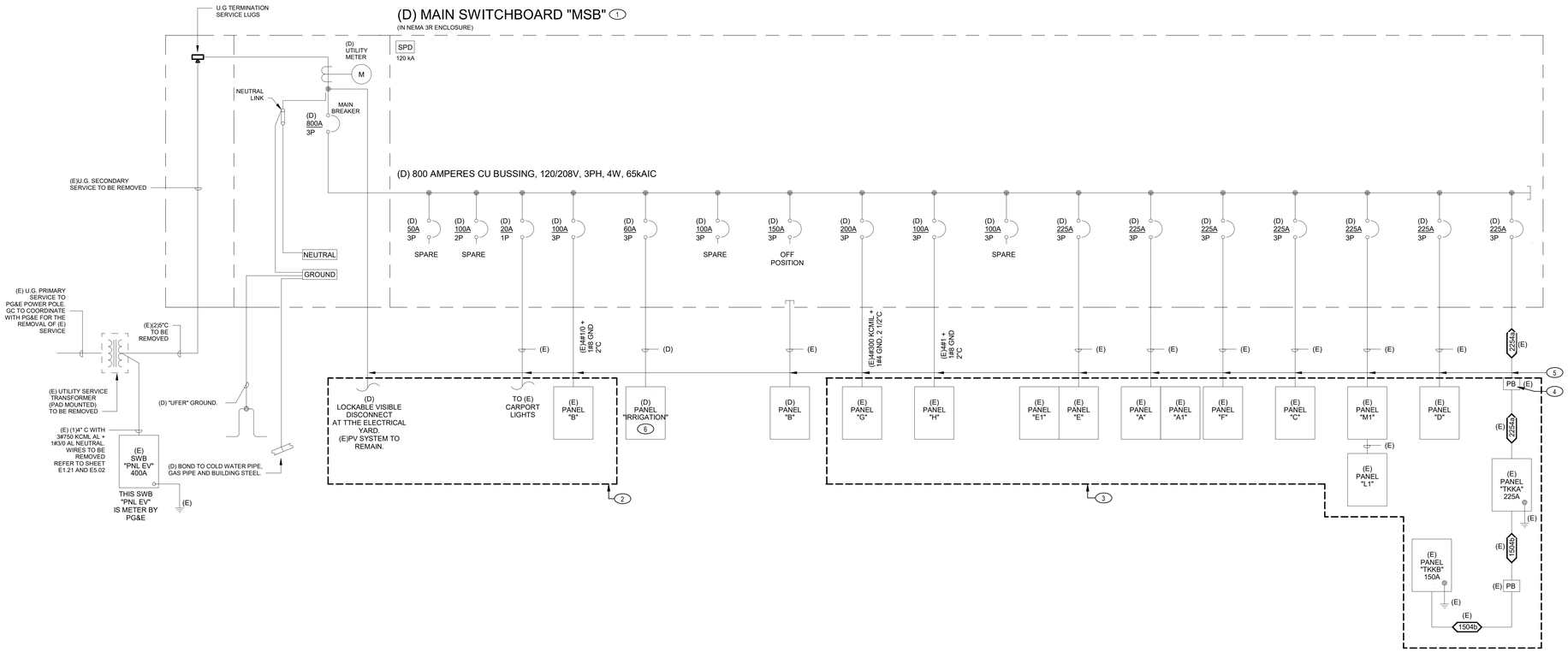
1. EXISTING 800A MAIN SWITCHBOARD THAT HOUSES EXISTING PG&E METER AND EXISTING MAIN SERVICE DISCONNECT TO BE REMOVED. CONTRACTOR TO COORDINATE WITH PG&E REPRESENTATIVE FOR THE REMOVAL OF EXISTING PG&E SERVICE METER AND UNDER GROUND SERVICE POWER WIRES BETWEEN THE EXISTING UTILITY TRANSFORMER AND THE EXISTING SWITCHBOARD.
2. EXISTING PANEL, PV SYSTEM, OTHER ELECTRICAL EQUIPMENT, AND LIGHTING TO REMAIN (TYP). PANEL AND ELECTRICAL EQUIPMENT TO BE CONNECTED TO NEW PANEL. SEE SHEET E5.02.
3. EXISTING PANEL AND OTHER ELECTRICAL EQUIPMENT TO REMAIN (TYP). PANEL AND ELECTRICAL EQUIPMENT TO BE CONNECTED TO NEW PANEL. SEE SHEET E5.02.
4. INTERCEPT EXISTING FEEDER AT THE EXISTING PULL BOX TO THE MSB. EXISTING WIRES DOWNSTREAM TO REMAIN. SEE SHEET E5.02.
5. INTERCEPT EXISTING FEEDER, REMOVE WIRES FROM PANEL BACK TO MSB. UNDER GROUND CONDUIT TO BE ABANDONED IN PLACE. SEE SHEET E5.02.
6. INTERCEPT EXISTING FEEDER AND DISCONNECT EXISTING IRRIGATION CONTROLLER BEING DEMOLISHED. REMOVE WIRES BACK TO EXISTING MSB.

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT IS EXISTING (E) TO REMAIN UNCHANGED UON AS DEMO (D).

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

C. EXISTING BREAKERS THAT SERVE PANELS BEING REMOVED SHALL BE IN THE OPEN POSITION AND SWITCHBAORD DIRECTORY SHALL INDICATE "SPARE BREAKER".



1 ELECTRICAL ONE-LINE DIAGRAM - DEMO

SCALE: NONE

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL ONE-LINE DIAGRAM - DEMO

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

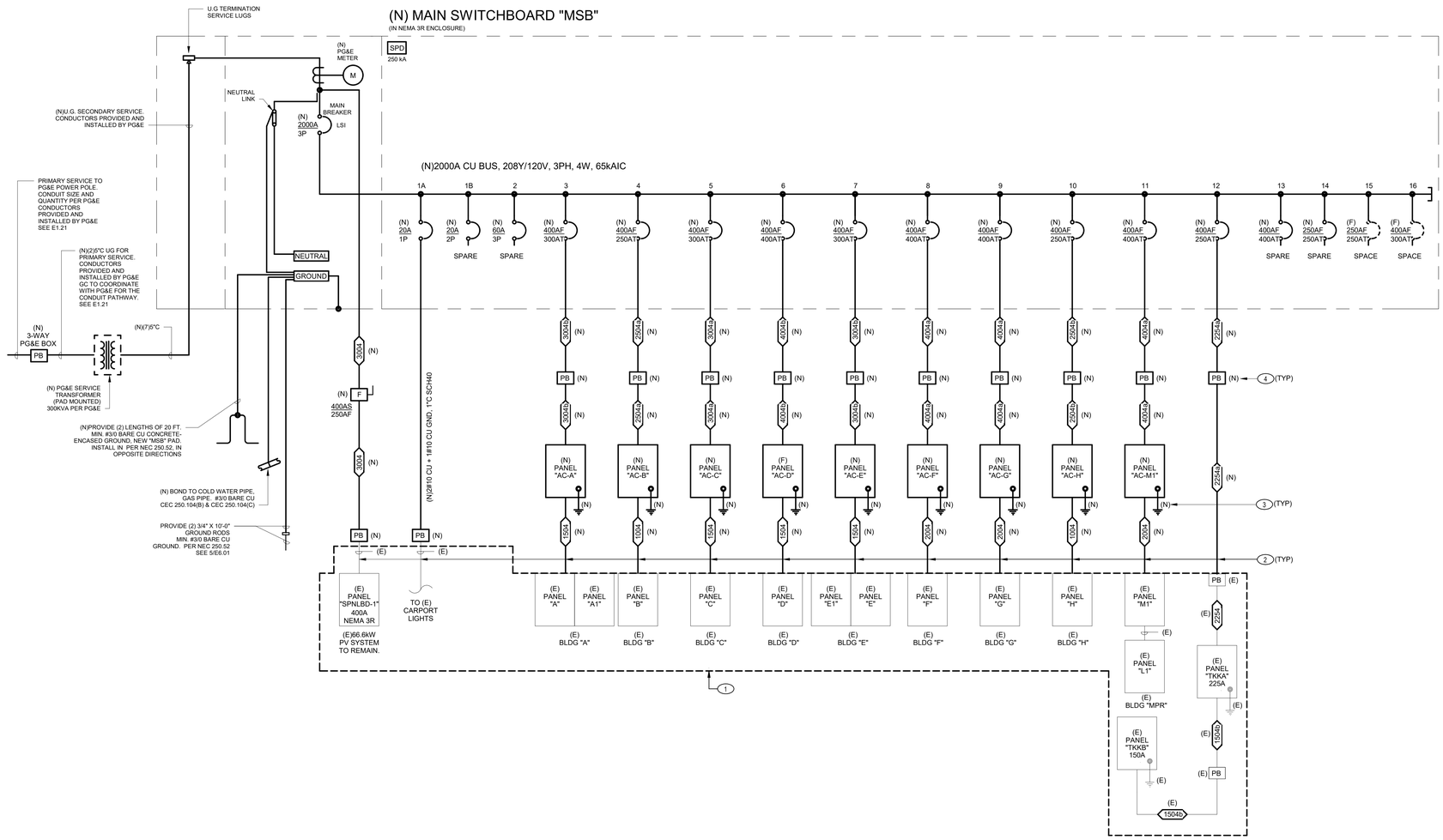
CLIENT PROJ NO:

SHEET:

E5.01

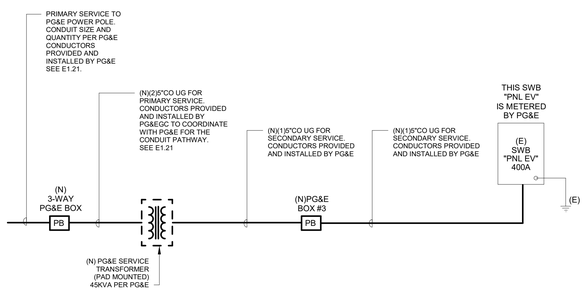
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:52 AM

PLEASE RECYCLE



1 ELECTRICAL ONE-LINE DIAGRAM - NEW

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



2 ELECTRICAL ONE-LINE DIAGRAM EV SWITCHBOARD/PANEL - NEW

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

KEY NOTES

1. EXISTING PANEL, PV SYSTEM, OTHER ELECTRICAL EQUIPMENT, AND LIGHTING TO REMAIN (TYP). PANEL AND ELECTRICAL EQUIPMENT TO BE CONNECTED TO NEW PANEL OR NEW MAIN SWITCHBOARD. SEE E1.21.
2. RECONNECT EXISTING PANEL, EQUIPMENT, AND DEVICES TO NEW PANEL OR NEW MAIN SWITCHBOARD. WHERE THERE ARE EXISTING UNDER GROUND CONDUITS, CONTRACTOR TO PROVIDE NEW WIRES.
3. PROVIDE NEW GROUNDING CONNECTION PER CEC 250.50.
4. PULL BOX SIZE PER E1.21.

GENERAL NOTES

A. COORDINATE WITH THE PANELS MANUFACTURER FOR PROVIDING ADEQUATE SPACE AND TERMINATION PROVISIONS FOR UP-SIZED CONDUCTORS AND CONDUITS, AND MULTIPLE PARALLEL CONDUCTORS PER PHASE.

B. SERVICE CONDUITS, CONDUCTORS, EQUIPMENT AND METERING PROVISIONS SHALL MEET PG&E REQUIREMENTS.

C. PROVIDE ALL NECESSARY AUXILIARY EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

D. LETTER FOR SHORT CIRCUIT CURRENT VALUE FROM PG&E SHALL BE AVAILABLE AT THE JOB SITE FOR INSPECTION.

E. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER UNLESS SPECIFIED.

F. CONTRACTOR SHALL PROVIDE A SHORT CIRCUIT, PROTECTIVE DEVICE COORDINATION AND ARC FLASH STUDY TO THE OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL. EQUIPMENT SHALL BE PROVIDED ACCORDINGLY ONCE THE STUDY IS APPROVED. SERT AND ADJUST ALL DEVICES IN ACCORDANCE WITH THE RESULT OF THE STUDY, BEFORE ENERGIZING THE EQUIPMENT.

G. ARC-FLASH WARNING LABEL SHALL BE FIELD MARKED ON ALL SWITCHGEAR, PANELBOARDS AND METER SOCKETS, LEGIBLY AND VISIBLY, WARNING QUALIFIED PERSONS OF POTENTIAL ARC FLASH HAZARDS, IN COMPLIANCE WITH CEC 2019 SECTION 110.16.

H. MAXIMUM AVAILABLE FAULT CURRENT (AFC) SHALL BE FIELD MARKED ON ALL SERVICE EQUIPMENT, LEGIBLY, AND SHALL INCLUDE DATE AFC CALCULATION WAS PERFORMED, IN COMPLIANCE WITH CEC 2019 SECTION 110.24(A).

I. ALL SWITCHBOARDS, DISTRIBUTION PANELS, AND PANELBOARDS SHALL BE FULLY RATED FOR INTERRUPTING CAPACITY. SERIES RATED EQUIPMENT SHALL NOT BE USED.

J. ALL SERVICES SUPPLYING THE SAME BUILDING SHALL HAVE THE SAME GROUNDING ELECTRODE SYSTEM. TWO OR MORE GROUNDING ELECTRODES THAT ARE BONDED TOGETHER SHALL BE CONSIDERED AS A SINGLE GROUNDING ELECTRODE SYSTEM IN THIS SENSE.

K. INSTALL A PERMANENT PLAQUE OR DIRECTORY AT EACH SERVICE DISCONNECT LOCATION DENOTING ALL OTHER SERVICES TO THE BUILDING AND THE AREA SERVED BY EACH. EACH SERVICE DISCONNECT SHALL BE PERMANENTLY MARKED TO IDENTIFY IT AS A SERVICE DISCONNECT.

L. AIC RATING FOR THE PANELS AND SWITCHBOARDS ARE BASED ON ASSUMED 65KA AVAILABLE FAULT CURRENT AT THE SERVICES. CONTRACTOR SHALL COORDINATE TRANSFORMERS MANUFACTUERE FOR THE CORRECT IMPEDNACE AT THE EXTERIOR OIL TYPE TRANSFORMER SERVICES. IF THE AMOUNT EXCEEDS 65KA, CONTRACTOR SHALL PROVIDE SUFFICIENT AIC RATING AND PROVIDE SUPPORT CALCULATIONS FOR JUSTIFICATION OF NEW AIC RATING.

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

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

O. CORROSION PROTECTION / WRAPPING IS REQUIRED ON ALL UNDER-SLAB OR UNDERGROUND FERROUS ELECTRICAL CONDUIT. CORROSION PROTECTION SHALL BE INSPECTED AND APPROVED BEFORE COVERING. THE MATERIAL USED FOR CORROSION PROTECTION SHALL BE UPC APPROVED AND STAMPED.

P. THE MAIN SWITCHBAORD CIRCUIT BREAKERS WITH A CONTINUOUS CURRENT TRIP SETTING FOR WHICH THE ACTUAL OVERCURRENT DEVICE INSTALLED IN A CIRCUIT BREAKER IS RATED OR CAN BE ADJUSTED IS 1200A OR HIGHER IT SHALL MEET THE ARC ENERGY REDUCTION WITH ACCORDANCE CEC 240.87(A) AND 240.87(B)

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA

CONSULTING ENGINEERS

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL ONE-LINE DIAGRAM - NEW

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

E5.02

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON A FULL SIZE SHEET ORIGINAL PAGE SIZE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:40:56 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH WHEN PRINTED ON THIS SHEETS ORIGINAL PAGE SIZE

LIGHTING FIXTURE SCHEDULE - Mod

Type	Manufacturer	Model	Lamp	Lumens	Color Temperature	Volts	Watts	Mounting	Description
P-4	FINELITE	S12 LED ID DCO-4-2E-B-835-CTO-30U70D-120V-FC-10%-SC-FA-CE-SW-C4-OBO	LED	2462 lm	3500 K	120 V	18.0 W	PENDANT @ 8'-0" AFF	SERIES 12 LED INDIRECT/DIRECT - 2E PENDANT.
P-8	FINELITE	S12 LED ID DCO-8-2E-B-835-CTO-30U70D-120V-FC-10%-SC-FA-CE-SW-C4-OBO	LED	4000 lm	3500 K	120 V	60.0 W	PENDANT @ 8'-0" AFF	SERIES 12 LED INDIRECT/DIRECT - 2E PENDANT.
W1	COOPER LIGHTING SOLUTIONS	GWS-SA1-A-740-U-T3-BK-BPC-OA/RA1014	LED	2846 lm	4000 K	120 V	20.0 W	SURFACE @ +10" A.F.G. TO BOTTOM OF FACEPLATE	SLIM LED WALL PACK. B1-U0-G1. REFER TO NOTES BELOW.

LIGHTING FIXTURE SCHEDULE NOTES:

1. COORDINATE LIGHT FIXTURE COLOR & FINISH WITH ARCHITECT (TYPICAL).
2. LIGHT FIXTURES MOUNTING SHALL BE PER MANUFACTURER INSTALLATION MANUAL.
3. LIGHTS FIXTURES TO BE CONNECTED TO EXISTING CIRCUIT SHOWN ON PLANS.

VOLTAGE DROP CALCULATIONS

Project: Glenwood Modernization

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

Circuit			Raceway	Conductor									
								Load		Line-to-Neutral		Line-to-Line	
Designation	Voltage	Phase	Metalic (M) or Non-Metalic (NM)	Material (AL) or (CU)	Nominal Size	Parallel Runs	Length in Feet	AMPS	Power Factor	Volt Drop	%	Volt Drop	%
PNL "AC-A"	208	3	NM	CU	350	1	130	180.0	85%			2.16	1.04
(E) PNL "A"	208	3	M	CU	101	1	37	80.0	85%			0.67	0.32
(E) PNL "A1"	208	3	M	CU	101	2	10	40.0	85%			0.05	0.02
PNL "AC-B"	208	3	NM	CU	102	2	353	180.0	85%			5.92	2.85
(E) PNL "B"	208	3	M	CU	1	1	35	60.0	85%			0.60	0.29
PNL "AC-C"	208	3	NM	CU	104	2	573	180.0	85%			6.64	3.19
(E) PNL "C"	208	3	M	CU	101	1	70	60.0	85%			0.95	0.46
PNL "AC-D"	208	3	NM	CU	350	2	402	320.0	85%			5.95	2.86
(E) PNL "D"	208	3	M	CU	101	1	35	100.0	85%			0.79	0.38
PNL "AC-E"	208	3	NM	CU	350	1	70	180.0	85%			1.16	0.56
(E) PNL "E"	208	3	M	CU	101	1	60	80.0	85%			1.09	0.52
(E) PNL "E1"	208	3	M	CU	101	1	5	40.0	85%			0.05	0.02
PNL "AC-F"	208	3	NM	CU	104	2	266	240.0	85%			4.11	1.97
(E) PNL "F"	208	3	M	CU	103	1	91	100.0	85%			1.49	0.72
PNL "AC-G"	208	3	NM	CU	104	2	330	240.0	85%			5.10	2.45
(E) PNL "G"	208	3	M	CU	103	1	96	100.0	85%			1.57	0.76
PNL "AC-H"	208	3	NM	CU	250	1	19	180.0	85%			0.39	0.19
(E) PNL "H"	208	3	M	CU	1	1	43	60.0	85%			0.74	0.36
PNL "AC-M1"	208	3	NM	CU	104	2	283	240.0	85%			4.37	2.10
(E) PNL "M1"	208	3	M	CU	103	1	15	100.0	85%			0.25	0.12

ONE LINE DIAGRAM FEEDER SCHEDULE

ALL FEEDERS SHOWN IN THIS FEEDER SCHEDULE ARE NOT NECESSARY USED ON THE ONE-LINE DIAGRAM(S) OR PLAN(S) IF NOT REQURIED

3Ø, 3W + GND CIRCUITS

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

3Ø, 4W + GND CIRCUITS

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

1Ø, 3W + GND CIRCUITS

3Ø, 4W + GND CIRCUITS

1504b	150	2"C	2"C	(4) #1/0	6
2504b	250	3"C	3"C	250 KCMIL	4
3004b	350	3"C	3"C	350 KCMIL	4

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

2254a	225	(2)3"C	(2)3"C	(4) #4/0	#1 (EACH)
2504a	250	(2)3"C	(2)3"C	(4) #4/0	#3 (EACH)
3004a	300	(2)3"C	(2)3"C	(4) #4/0	#3 (EACH)
4004a	400	(2)3"C	(2)3"C	(4) #4/0	#2 (EACH)
4004b	400	(2)3"C	(2)3"C	(4) #350	#2/0 (EACH)

MISCELLANEOUS

PS	PRIMARY SERVICE		(2)5"C	PULL STRING	N/A
SEC	SECONDARY SERVICE		(7)5"C	PULL STRING	N/A
EXIST	EXISTING FEEDER			(E) CONDUCTORS	(E)

NOTES:

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

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

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

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

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

ELECTRICAL SERVICE LOAD CALCULATION

EXISTING MAXIMUM PEAK DEMAND LOAD FOR THE MONTH OF MARCH 2023
(SOURCE: PG&E PREVIOUS 12 MONTHS DATA, 26 KW @ 0.90 pf) 28.9 KVA
PLUS 25% OF EXISTING CONNECTED LOAD 7.2 KVA
TOTAL EXISTING CONNECTED LOAD = 36.1 KVA

REMOVED EXISTING LOAD
FIRE ALARM PANELS 0.8 KVA
- 0.00 KVA
TOTAL LOAD REMOVED = 0.8 KVA

TOTAL EXISTING LOAD MINUS REMOVED LOAD = 35.3 KVA

ADDED NEW LOAD

(CEC 220)

INTERIOR LIGHTING 4468 SQ. FT. @ 3.00 VA PER SQ. FT. 13.40 KVA
25% CONTINUOS LOAD FACTOR 3.35 KVA

SHOW WINDOW (CEC 220-12) 0.20 KVA/L.F. 0.00 0.00 KVA
GENERAL PURPOSE RECEPTACLE OUTLETS 4.47 KVA
FIRST 10 KVA OR LESS @ 100% = 4.47 KVA
REMAINDER OVER 10 KVA = 0.00 @ 50% = 0.00 KVA

HEATING, VENTILATING AND AIR CONDITIOINING EQUIPMENT
HVAC 389.00 KVA
EF (1/2HP) 0.29 KVA EA. 12 3.46 KVA

EQUIPMENT AND APPLIANCES
HAND DRYER 1.00 KVA EA. 3 3.75 KVA
INSTANTANEOUS WATER HEATER 3.00 KVA EA. 4 12.00 KVA
MDF DATA RACKS 3.00 KVA EA. 2 6.00 KVA
IDF DATA RACKS 3.00 KVA EA. 10 30.00 KVA
FIRE ALARM PANEL 0.50 KVA EA. 10 5.00 KVA
KITCHEN EQUIPMENT 40.00 KVA EA. 1 40.00 KVA

LARGEST NEW MOTOR (2HP) = 2.70 KVA @ 25% = 3.38 KVA

TOTAL ADDED LOAD 513.81

EXISTING AND ADDED TOTAL SERVICE LOAD = 549.12 KVA

549.1 KVA @ 120/208 VOLT , 3 PHASE = 1525 AMPERES

PROVIDE 2000 AMP, 120/208 VOLT, 3 PHASE, 4 WIRE SERVICE.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

E5.03

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:00 AM

PLEASE RECYCLE

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

Branch Panel: AC-C

Location: BLDG "C"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 300 A
MCB Rating: 300 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - C1	40 A	2	2,413			180			1	20 A	REC -EXTERIOR WALL	2
3	--	--	--		2,413			0		1	20 A	SPARE	4
5	HP - C2	40 A	2			2,413			0	1	20 A	SPARE	6
7	--	--	--	2,413			0			1	20 A	SPARE	8
9	HP - C3	40 A	2		2,413			0		1	20 A	SPARE	10
11	--	--	--			2,413			0	1	20 A	SPARE	12
13	HP - C4	40 A	2	2,413			0			1	20 A	SPARE	14
15	--	--	--		2,413			0		1	20 A	SPARE	16
17	HP - C5	30 A	2			1,581			0	1	20 A	SPARE	18
19	--	--	--	1,581			0			1	20 A	SPARE	20
21	SPARE	40 A	2		0			0		1	20 A	SPARE	22
23	--	--	--			0			0	1	20 A	SPARE	24
25	SPARE	100 A	3	0			--			1	--	PFB	26
27	--	--	--		0			--		1	--	PFB	28
29	--	--	--			0			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	(E) PANEL "C"	150 A	3	9,185			--			1	--	SPACE	38
39	--	--	--		15,401			--		1	--	SPACE	40
41	--	--	--			17,425			--	1	--	SPACE	42
			Total Load:	18,031 VA	22,419 VA	23,623 VA							
			Total Amps:	150 A	192 A	202 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	26056 VA	104.63%	27263 VA		
Receptacle	180 VA	100.00%	180 VA	Total Conn. Load:	64,032 VA
Spare	38580 VA	100.00%	38580 VA	Total Est. Demand:	65,217 VA
				Total Conn. Current:	178 A
				Total Est. Demand Current:	181 A

Notes:

Branch Panel: AC-A

Location: BLDG "A"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 300 A
MCB Rating: 300 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - A1	40 A	2	2,413			180			1	20 A	REC - EXTERIOR WALL	2
3	--	--	--		2,413			0		1	20 A	SPARE	4
5	HP - A2	40 A	2			2,413			0	1	20 A	SPARE	6
7	--	--	--	2,413			0			1	20 A	SPARE	8
9	SPARE	40 A	2		0			0		1	20 A	SPARE	10
11	--	--	--			0			0	1	20 A	SPARE	12
13	SPARE	40 A	2	0			0			1	20 A	SPARE	14
15	--	--	--		0			0		1	20 A	SPARE	16
17	SPARE	15 A	2			0			--	1	--	PFB	18
19	--	--	--	0			--			1	--	PFB	20
21	SPARE	15 A	2		0			--		1	--	PFB	22
23	--	--	--			0			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	(E) PANEL "A"	150 A	3	14,539			--			1	--	SPACE	38
39	--	--	--		12,563			--		1	--	SPACE	40
41	--	--	--			10,213			--	1	--	SPACE	42
			Total Load:	19,379 VA	14,874 VA	12,541 VA							
			Total Amps:	164 A	127 A	105 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	11016 VA	110.95%	12223 VA		
Receptacle	180 VA	100.00%	180 VA	Total Conn. Load:	46,788 VA
Spare	36016 VA	100.00%	36016 VA	Total Est. Demand:	47,959 VA
				Total Conn. Current:	130 A
				Total Est. Demand Current:	133 A

Notes:

Branch Panel: AC-D

Location: BLDG "D"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA Type 1

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

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	SPARE	40 A	2	0			0			1	20 A	SPARE	2
3	--	--	--		0			0		1	20 A	SPARE	4
5	SPARE	40 A	2			0			0	1	20 A	SPARE	6
7	--	--	--	0			0			1	20 A	SPARE	8
9	SPARE	40 A	2		0			0		1	20 A	SPARE	10
11	--	--	--			0			0	1	20 A	SPARE	12
13	SPARE	100 A	3	0			0			1	20 A	SPARE	14
15	--	--	--		0			0		1	20 A	SPARE	16
17	--	--	--			0			0	1	20 A	SPARE	18
19	SPARE	100 A	3	0			--			1	--	PFB	20
21	--	--	--		0			--		1	--	PFB	22
23	--	--	--			0			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	(E) PANEL "D"	150 A	3	5,580			0			3	150 A	SPARE	38
39	--	--	--		7,380			0		--	--	--	40
41	--	--	--			8,400			0	--	--	--	42
			Total Load:	5,580 VA	7,380 VA	8,400 VA							
			Total Amps:	47 A	64 A	72 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Spare	21360 VA	100.00%	21360 VA		
				Total Conn. Load:	21,360 VA
				Total Est. Demand:	21,360 VA
				Total Conn. Current:	59 A
				Total Est. Demand Current:	59 A

Notes:

Branch Panel: AC-B

Location: BLDG "B"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 250 A
MCB Rating: 250 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - B1	40 A	2	2,413			180			1	20 A	REC - EXTERIOR WALL	2
3	--	--	--		2,413			0		1	20 A	SPARE	4
5	SPARE	40 A	2			0			0	1	20 A	SPARE	6
7	--	--	--	0			0			1	20 A	SPARE	8
9	SPARE	15 A	2		0			0		1	20 A	SPARE	10
11	--	--	--			0			0	1	20 A	SPARE	12
13	SPARE	15 A	2	0			0			1	20 A	SPARE	14
15	--	--	--		0			0		1	20 A	SPARE	16
17	PFB	--	1			--			--	1	--	PFB	18
19	PFB	--	1	--			--			1	--	PFB	20
21	PFB	--	1		--			--		1	--	PFB	22
23	PFB	--	1			--			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	(E) PANEL "B"	100 A	3	1,207			0			3	100 A	SPARE	38
39	--	--	--		4,535			0		--	--	--	40
41	--	--	--			3,346			0	--	--	--	42
			Total Load:	3,775 VA	6,880 VA	3,346 VA							
			Total Amps:	32 A	58 A	28 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	5508 VA	121.90%	6715 VA		
Receptacle	534 VA	100.00%	534 VA	Total Conn. Load:	13,965 VA
Spare	8090 VA	100.00%	8090 VA	Total Est. Demand:	15,153 VA
				Total Conn. Current:	39 A
				Total Est. Demand Current:	42 A

Notes:

PANEL "AC-C"	PANEL "AC-A"
PANEL "AC-D"	PANEL "AC-B"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

E5.04

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:03 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

Branch Panel: AC-G

Location: BLDG "G"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 35,000
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - G1	40 A	2	2,413			180			1	20 A	REC - EXTERIOR WALL	2
3	--	--	--		2,413			0		2	15 A	SPARE	4
5	HP - G2	40 A	2			2,413			0	--	--	--	6
7	--	--	--	2,413			0			1	20 A	SPARE	8
9	HP - G3	40 A	2		2,413			0		1	20 A	SPARE	10
11	--	--	--			2,413			0	1	20 A	SPARE	12
13	HP - G4	40 A	2	2,413			0			1	20 A	SPARE	14
15	--	--	--		2,413			0		3	100 A	SPARE	16
17	HP - G5	40 A	2			2,413			0	--	--	--	18
19	--	--	--	2,413			0			--	--	--	20
21	HP - G6	40 A	2		2,413			--		1	--	PFB	22
23	--	--	--			2,413			--	1	--	PFB	24
25	SPARE	40 A	2	0			--			1	--	PFB	26
27	--	--	--		0			--		1	--	PFB	28
29	SPARE	15 A	2			0			--	1	--	PFB	30
31	--	--	--	0			--			1	--	PFB	32
33	SPARE	15 A	2		0			--		1	--	PFB	34
35	--	--	--			0			--	1	--	PFB	36
37	(E) PANEL "G"	200 A	3	10,185			--			1	--	SPACE	38
39	--	--	--		10,484			--		1	--	SPACE	40
41	--	--	--			9,036			--	1	--	SPACE	42
			Total Load:	19,826 VA		19,944 VA		18,517 VA					
			Total Amps:	167 A		168 A		154 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	33048 VA	103.65%	34255 VA		
Receptacle	180 VA	100.00%	180 VA	**Total Conn. Load:**	58,286 VA
Spare	25790 VA	100.00%	25790 VA	**Total Est. Demand:**	59,481 VA
				Total Conn. Current:	162 A
				Total Est. Demand Current:	165 A

Notes:

Branch Panel: AC-E

Location: BLDG "E"
Supply From: MCB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 300 A
MCB Rating: 300 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - E1	40 A	2	2,413			180			1	20 A	REC - EXTERIOR WALL	2
3	--	--	--		2,413			0		2	15 A	SPARE	4
5	HP - E2	40 A	2			2,413			0	--	--	--	6
7	--	--	--	2,413			0			1	20 A	SPARE	8
9	HP - E3	40 A	2		2,413			0		1	20 A	SPARE	10
11	--	--	--			2,413			0	1	20 A	SPARE	12
13	HP - E4	40 A	2	2,413			0			1	20 A	SPARE	14
15	--	--	--		2,413			0		1	20 A	SPARE	16
17	HP - E5	30 A	2			1,581			0	1	20 A	SPARE	18
19	--	--	--	1,581			0			1	20 A	SPARE	20
21	SPARE	30 A	2		0			0		1	20 A	SPARE	22
23	--	--	--			0			0	1	20 A	SPARE	24
25	SPARE	15 A	2	0			--			1	--	PFB	26
27	--	--	--		0			--		1	--	PFB	28
29	SPARE	15 A	2			0			--	1	--	PFB	30
31	--	--	--	0			0			3	100 A	SPARE	32
33	SPARE	15 A	2		0			0		--	--	--	34
35	--	--	--			0			0	--	--	--	36
37	(E) PANEL "E"	150 A	3	11,216			--			1	--	SPACE	38
39	--	--	--		12,812			--		1	--	SPACE	40
41	--	--	--			15,497			--	1	--	SPACE	42
			Total Load:	20,040 VA		19,842 VA		21,705 VA					
			Total Amps:	167 A		165 A		181 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	26056 VA	104.63%	27263 VA		
Receptacle	180 VA	100.00%	180 VA	**Total Conn. Load:**	61,567 VA
Spare	36094 VA	100.00%	36094 VA	**Total Est. Demand:**	62,753 VA
				Total Conn. Current:	171 A
				Total Est. Demand Current:	174 A

Notes:

Branch Panel: AC-H

Location: BLDG "H"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 250 A
MCB Rating: 250 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - H1	25 A	2	1,165			180			1	20 A	REC - EXTERIOR WALL	2
3	--	--	--		1,165			200		1	20 A	IRRIGATION CONTROLLER AT BDLG H	4
5	HP - H2	40 A	2			2,415			0	1	20 A	SPARE	6
7	--	--	--	2,415			0			1	20 A	SPARE	8
9	SPARE	25 A	2		0			0		1	20 A	SPARE	10
11	--	--	--			0			0	1	20 A	SPARE	12
13	SPARE	25 A	2	0			--			1	--	PFB	14
15	--	--	--		0			--		1	--	PFB	16
17	SPARE	15 A	2			0			--	1	--	PFB	18
19	--	--	--	0			--			1	--	PFB	20
21	SPARE	15 A	2		0			--		1	--	PFB	22
23	--	--	--			0			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	(E) PANEL "H"	100 A	3	6,461			--			1	--	SPACE	38
39	--	--	--		6,981			--		1	--	SPACE	40
41	--	--	--			4,570			--	1	--	SPACE	42
			Total Load:	10,127 VA		8,299 VA		6,906 VA					
			Total Amps:	86 A		71 A		58 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	8524 VA	114.17%	9732 VA		
Power	200 VA	100.00%	200 VA	**Total Conn. Load:**	25,325 VA
Receptacle	180 VA	100.00%	180 VA	**Total Est. Demand:**	26,507 VA
Spare	16710 VA	100.00%	16710 VA	**Total Conn. Current:**	70 A
				Total Est. Demand Current:	74 A

Notes:

Branch Panel: AC-F

Location: BLDG "F"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 35,000
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	HP - F1	40 A	2	2,413			180			1	20 A	REC - EXTERIOR WALL	2
3	--	--	--		2,413			0		1	20 A	SPARE	4
5	HP - F2	40 A	2			2,413			0	1	20 A	SPARE	6
7	--	--	--	2,413			0			1	20 A	SPARE	8
9	HP - F3	40 A	2		2,413			0		1	20 A	SPARE	10
11	--	--	--			2,413			0	1	20 A	SPARE	12
13	HP - F4	40 A	2	2,413			0			1	20 A	SPARE	14
15	--	--	--		2,413			0		1	20 A	SPARE	16
17	HP - F5	30 A	2			1,165			--	1	--	PFB	18
19	--	--	--	1,165			--			1	--	PFB	20
21	HP - F6	30 A	2		1,165			--		1	--	PFB	22
23	--	--	--			1,165			--	1	--	PFB	24
25	SPARE	40 A	2	0			--			1	--	PFB	26
27	--	--	--		0			--		1	--	PFB	28
29	SPARE	100 A	3			0			--	1	--	PFB	30
31	--	--	--	0			--			1	--	PFB	32
33	--	--	--		0			--		1	--	PFB	34
35	SPACE	--	1			--			--	1	--	PFB	36
37	(E) PANEL "F"	200 A	3	10,427			--			1	--	SPACE	38
39	--	--	--		8,996			--		1	--	SPACE	40
41	--	--	--			8,305			--	1	--	SPACE	42
			Total Load:	18,817 VA		17,255 VA		15,339 VA					
			Total Amps:	159 A		146 A		128 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	28416 VA	104.25%	29623 VA		
Receptacle	180 VA	100.00%	180 VA	**Total Conn. Load:**	51,407 VA
Spare	23460 VA	100.00%	23460 VA	**Total Est. Demand:**	52,601 VA
				Total Conn. Current:	143 A
				Total Est. Demand Current:	146 A

Notes:

PANEL "AC-G"	PANEL "AC-E"
PANEL "AC-H"	PANEL "AC-F"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

E5.05

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:06 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS ONE INCH WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

(E) Branch Panel: A1

Location: BLDG "A"
Supply From: A
Mounting: Flush
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MLO
Mains Rating: 100 A
MCB Rating: MLO

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) MONTAGUE OVEN	20 A	1	1,000			1,200			1	20 A	(E) DISPOSAL	2
3	SPARE	50 A	2		0			1,200		1	20 A	(E) DISHWASHER	4
5	--	--	--			0			180	1	20 A	(E) REC	6
7	(E) EF-1	20 A	1	270			1,000			1	20 A	(E) REC	8
9	(E) EF-2	20 A	1		500			1,000		1	20 A	(E) MICRO	10
11	SPARE	20 A	1			0			1,000	1	20 A	(E) MICRO	12
13	(E) EF-3	20 A	1	670			1,200			1	20 A	(E) REFRIGERATOR	14
15	(E) EMS	20 A	1		100			700		1	20 A	(E) REFRIGERATOR	16
17	(E) FSD	20 A	1			100			682	2	15 A	(N) FC - A1 & FC - A2	18
19	SPARE	20 A	1	0			682			--	--	--	20
21	(E) WATER HEATER	30 A	2		1,783			0		2	15 A	SPARE	22
23	--	--	--			1,783			0	--	--	--	24
25	SPARE	20 A	1	0			0			1	20 A	SPARE	26
27	(E) EF-4	20 A	1		670			0		1	20 A	SPARE	28
29	SPARE	20 A	1			0			0	1	20 A	SPARE	30
			Total Load:	5,992 VA		5,953 VA		3,717 VA					
			Total Amps:	53 A		52 A		31 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	1364 VA	112.50%	1535 VA		
Spare	14356 VA	100.00%	14356 VA	**Total Conn. Load:**	15,658 VA
				Total Est. Demand:	15,821 VA
				Total Conn. Current:	43 A
				Total Est. Demand Current:	44 A

Notes:

Branch Panel: AC-M1

Location: BLDG "MPR"
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 3R

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

A.I.C. Rating: 35,000
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	SPARE	60 A	2	0			0			1	20 A	SPARE	2
3	--	--	--		0			0		1	20 A	SPARE	4
5	SPARE	60 A	2			0			0	1	20 A	SPARE	6
7	--	--	--	0			0			1	20 A	SPARE	8
9	SPARE	60 A	2		0			0		1	20 A	SPARE	10
11	--	--	--			0			0	1	20 A	SPARE	12
13	SPARE	30 A	2	0			0			1	20 A	SPARE	14
15	--	--	--		0			--		1	--	PFB	16
17	SPARE	30 A	2			0			--	1	--	PFB	18
19	--	--	--	0			--			1	--	PFB	20
21	SPARE	15 A	2		0			--		1	--	PFB	22
23	--	--	--			0			--	1	--	PFB	24
25	PFB	--	1	--			--			1	--	PFB	26
27	PFB	--	1		--			--		1	--	PFB	28
29	PFB	--	1			--			--	1	--	PFB	30
31	PFB	--	1	--			--			1	--	PFB	32
33	PFB	--	1		--			--		1	--	PFB	34
35	PFB	--	1			--			--	1	--	PFB	36
37	(E) PANEL "M1"	200 A	3	7,880			0			3	200 A	SPARE	38
39	--	--	--		7,970			0		--	--	--	40
41	--	--	--			7,300			0	--	--	--	42
			Total Load:	7,880 VA		7,970 VA		7,300 VA					
			Total Amps:	66 A		67 A		61 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Spare	23150 VA	100.00%	23150 VA		
				Total Conn. Load:	23,150 VA
				Total Est. Demand:	23,150 VA
				Total Conn. Current:	64 A
				Total Est. Demand Current:	64 A

Notes:

(E) Branch Panel: B

Location: BLDG "B"
Supply From: AC-B
Mounting: Surface
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG -KDG.B17	20 A	1	500			0			1	20 A	SPARE	2
3	(E) LTG -KDG.B17	20 A	1		500			1,100		1	20 A	(E) EF-6,(E) EF-7	4
5	(E) LTG -B17,B18,B19,B20,B21,B22	20 A	1			600			1,100	1	20 A	(E) EF-8,(E) EF-9	6
7	(N) IDF RACK	20 A	1	360			360			1	20 A	(E) REC	8
9	SPARE	20 A	1		0			360		1	20 A	(E) REC	10
11	(E) LTG -EXTERIOR BLDG	20 A	1			600			720	1	20 A	(E) REC	12
13	SPARE	20 A	1	0			--			1	--	SPACE	14
15	SPARE	20 A	1		0			2,250		1	20 A	(E) WH-1	16
17	SPARE	20 A	1			0			--	1	--	SPACE	18
19	SPARE	20 A	1	0			--			1	--	SPACE	20
21	SPARE	20 A	1		0			341		2	15 A	(N) FC - B1	22
23	SPARE	20 A	1			0			341	--	--	--	24
25	SPARE	20 A	1	0			0			1	20 A	SPARE	26
27	SPARE	20 A	1		0			--		1	--	SPACE	28
29	SPARE	20 A	1			0			--	1	--	SPACE	30
			Total Load:	1,207 VA		4,535 VA		3,346 VA					
			Total Amps:	10 A		41 A		31 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	682 VA	125.00%	853 VA		
Receptacle	360 VA	100.00%	360 VA	**Total Conn. Load:**	9,086 VA
Spare	8090 VA	100.00%	8090 VA	**Total Est. Demand:**	9,250 VA
				Total Conn. Current:	25 A
				Total Est. Demand Current:	26 A

Notes:

(E) Branch Panel: A

Location: BLDG "A"
Supply From: AC-A
Mounting: Flush
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG - A23,A24,A25,A26,A27	20 A	1	1,260			1,280			1	20 A	(E) LTG - PARKING P	2
3	(E) LTG - A28,A29	20 A	1		1,240			820		1	20 A	(E) LTG - PARKING T	4
5	(E) LTG - A30,A31,A32	20 A	1			870			1,010	1	20 A	(E) LTG - PARKING T	6
7	(E) LTG - A33	20 A	1	1,330			1,200			1	20 A	(E) COPIER	8
9	(E) LTG - A33	20 A	1		700			1,200		1	20 A	(E) COPIER	10
11	(E) LTG - EXTERIOR BUILDING	20 A	1			900			800	1	20 A	(E) REC	12
13	(E) FACP	20 A	1	500			540			1	20 A	(E) REC	14
15	(E) MDF	20 A	1		570			1,080		1	20 A	(E) REC	16
17	(E) COPIER	20 A	2			1,000			720	1	20 A	(E) REC	18
19	--	--	--	1,000			1,080			1	20 A	(E) REC	20
21	SPARE	20 A	1		0			1,000		1	20 A	(E) LTG - EXTERIOR	22
23	SPARE	20 A	1			0			1,200	1	20 A	(E) REC	24
25	(E) MPEO	20 A	1	360			0			1	20 A	SPARE	26
27	SPARE	20 A	1		0			0		1	20 A	SPARE	28
29	SPARE	20 A	1			0			0	1	20 A	SPARE	30
31	SPARE	20 A	1	0			0			1	20 A	SPARE	32
33	SPARE	20 A	1		0			0		1	20 A	SPARE	34
35	SPARE	20 A	1			0			0	1	20 A	SPARE	36
37	(E) PANEL "A1"	100 A	3	5,992			0			1	20 A	SPARE	38
39	--	--	--		5,953			0		1	20 A	SPARE	40
41	--	--	--			3,717			0	1	20 A	SPARE	42
			Total Load:	14,539 VA		12,563 VA		10,213 VA					
			Total Amps:	124 A		108 A		85 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	1364 VA	112.50%	1535 VA		
Spare	36016 VA	100.00%	36016 VA	**Total Conn. Load:**	37,314 VA
				Total Est. Demand:	37,477 VA
				Total Conn. Current:	104 A
				Total Est. Demand Current:	104 A

Notes:

(E) PANEL "A1"	PANEL "AC-M1"
(E) PANEL "B"	(E) PANEL "A"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

CONSULTING ENGINEERS

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

E5.06

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 9:41:09 AM

PLEASE RECYCLE

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

(E) Branch Panel: E

Location: BLDG "E" **Supply From:** AC-E **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: 10,000 **Mains Type:** MCB **Mains Rating:** 225 A **MCB Rating:** 225 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG - COMPUTER LAB E04	20 A	1	1,080			210			3	35 A	(E) CU-1	2
3	(E) LTG - COMPUTER LAB E04	20 A	1		660			210		--	--	--	4
5	(E) LTG - CLASSROOM E03	20 A	1			1,080			210	--	--	--	6
7	(E) LTG - CLASSROOM E03	20 A	1	660			270			1	20 A	(E) HEATER F-4	8
9	(E) LTG - CLASSROOM E02	20 A	1		1,080			1,080		1	20 A	(E) REC	10
11	(E) LTG - CLASSROOM E02	20 A	1			660			500	1	20 A	(E) RF-10	12
13	(E) LTG - CLASSROOM E01	20 A	1	1,080			341			2	15 A	(N) FC - E1	14
15	(E) LTG - CLASSROOM E01	20 A	1		660			341		--	--	--	16
17	(E) LTG - RESOURCE E05	20 A	1			620			682	2	15 A	(N) FC - E2 & EC -E3	18
19	(N) SF - E1	20 A	1	180			682			--	--	--	20
21	(E) LTG - OUTDOOR, P	20 A	1		680			1,872		2	30 A	(E) WH-2	22
23	(E) LTG - OUTDOOR, T	20 A	1			820			1,872	--	--	--	24
25	(N) FC - E4	15 A	2	341			0			1	20 A	SPARE	26
27	--	--	--		341			--		1	--	SPACE	28
29	(N) FC - E5	15 A	2			341			3,120	2	50 A	(E) LOAD	30
31	--	--	--	341			3,120			--	--	--	32
33	SPACE	--	1		--			3,120		2	50 A	(E) LOAD	34
35	SPACE	--	1			--			3,120	--	--	--	36
37	(E) PANEL "E1"	100 A	3	2,990			--			1	--	SPACE	38
39	--	--	--		2,800			--		1	--	SPACE	40
41	--	--	--			2,520			--	1	--	SPACE	42
			Total Load:	11,216 VA	12,812 VA	15,497 VA							
			Total Amps:	93 A	109 A	131 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	3590 VA	104.75%	3761 VA		
Spare	36094 VA	100.00%	36094 VA	Total Conn. Load:	39,520 VA
				Total Est. Demand:	39,684 VA
				Total Conn. Current:	110 A
				Total Est. Demand Current:	110 A

Notes:

(E) Branch Panel: C

Location: BLDG "C" **Supply From:** AC-C **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: 10,000 **Mains Type:** MCB **Mains Rating:** 225 A **MCB Rating:** 225 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG - CLASSROOM C16	20 A	1	1,080			540			1	20 A	(E) LTG - C14,C54-C58	2
3	(E) LTG - CLASSROOM C16	20 A	1		660			440		1	20 A	(E) LTG - BLDG.EXTERIOR-P	4
5	(E) LTG - CLASSROOM C15	20 A	1			1,080			1,100	1	20 A	(E) LTG - BLDG.EXTERIOR-T	6
7	(E) LTG - CLASSROOM C15	20 A	1	660			341			2	15 A	(N) FC - C1	8
9	(E) LTG - CLASSROOM C13	20 A	1		1,080			341		--	--	--	10
11	(E) LTG - CLASSROOM C13	20 A	1			660			682	2	15 A	(N) FC - C2 & FC - C3	12
13	(E) LTG - CLASSROOM C12	20 A	1	1,080			682			--	--	--	14
15	(E) LTG - CLASSROOM C12	20 A	1		660			1,000		1	20 A	(E) EXHAUST FANS	16
17	(E) REC	20 A	1			720			2,250	2	30 A	(E) WATER HEATER	18
19	(E) REC	20 A	1	900			2,250			--	--	--	20
21	(E) REC	20 A	1		720			1,080		1	20 A	(E) REC	22
23	(E) REC	20 A	1			900			1,080	1	20 A	(E) REC	24
25	(E) REC	20 A	1	540			341			2	15 A	(N) FC - C4	26
27	(E) REC	20 A	1		540			341		--	--	--	28
29	(E) REC	20 A	1			360			341	2	15 A	(N) FC - C5	30
31	(ER) INTERMED. DATA DIST. FRAME	20 A	1	500			341			--	--	--	32
33	(E) FAEP-C	20 A	1		100			180		1	20 A	(N) SF - C1	34
35	SPARE	20 A	1			0			0	1	20 A	SPARE	36
37	SPARE	20 A	1	0			0			1	20 A	SPARE	38
39	SPARE	20 A	1		0			8,300		2	100 A	(E) RELOCATABLES R7-R9	40
41	SPARE	20 A	1			8,300			0	--	--	--	42
			Total Load:	9,185 VA	15,401 VA	17,425 VA							
			Total Amps:	77 A	136 A	153 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	3590 VA	104.75%	3761 VA		
Spare	38580 VA	100.00%	38580 VA	Total Conn. Load:	42,005 VA
				Total Est. Demand:	42,169 VA
				Total Conn. Current:	117 A
				Total Est. Demand Current:	117 A

Notes:

(E) Branch Panel: E1

Location: BLDG "E" **Supply From:** E **Mounting:** Flush **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: 10,000 **Mains Type:** MLO **Mains Rating:** 100 A **MCB Rating:** MLO

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) REC	20 A	1	540			450			1	20 A	(E) REC	2
3	(E) REC	20 A	1		720			720		1	20 A	(E) REC	4
5	(E) REC	20 A	1			720			720	1	20 A	(E) REC	6
7	(E) REC	20 A	1	720			720			1	20 A	(E) REC	8
9	(E) REC	20 A	1		720			540		1	20 A	(E) REC	10
11	(E) REC	20 A	1			720			360	1	20 A	(E) REC	12
13	(E) REC	20 A	1	360			200			1	20 A	(E) IDF-E	14
15	SPARE	20 A	1		0			100		1	20 A	(E) FAEP-E	16
17	SPARE	20 A	1			0			0	1	20 A	SPARE	18
19	SPARE	20 A	1	0			0			1	20 A	SPARE	20
21	SPARE	20 A	1		0			0		1	20 A	SPARE	22
23	SPARE	20 A	1			0			0	1	20 A	SPARE	24
25	SPACE	--	1	--			--			1	--	SPACE	26
27	SPACE	--	1		--			--		1	--	SPACE	28
29	SPACE	--	1			--			--	1	--	SPACE	30
			Total Load:	2,990 VA	2,800 VA	2,520 VA							
			Total Amps:	25 A	24 A	21 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Spare	8310 VA	100.00%	8310 VA		
				Total Conn. Load:	8,310 VA
				Total Est. Demand:	8,310 VA
				Total Conn. Current:	23 A
				Total Est. Demand Current:	23 A

Notes:

(E) Branch Panel: D

Location: BLDG "D" **Supply From:** AC-D **Mounting:** Surface **Enclosure:** Type 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: 10,000 **Mains Type:** MCB **Mains Rating:** 225 A **MCB Rating:** 225 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG - MULTI-PURPOSE	20 A	1	1,000			500			1	20 A	(E) LTG - TRACK	2
3	(E) LTG - MULTI-PURPOSE	20 A	1		1,000			500		1	20 A	(E) LTG - TRACK	4
5	(E) LTG - MULTI-PURPOSE	20 A	1			1,000			1,000	1	20 A	(E) LTG - EXTERIOR	6
7	(E) LTG - MULTI-PURPOSE	20 A	1	1,000			1,000			1	20 A	(E) KILN	8
9	(E) LTG - RMS	20 A	1		500			3,300		2	50 A	(E) KILN	10
11	(E) LTG - STAGE	20 A	1			1,000			3,300	--	--	--	12
13	(E) REC	20 A	1	180			720			1	20 A	(E) REC	14
15	(E) REC	20 A	1		180			720		1	20 A	(E) REC	16
17	(E) REC	20 A	1			180			1,000	1	20 A	(E) ADA LIFT	18
19	(E) REC	20 A	1	180			1,000			1	20 A	(E) FUNACE F-6	20
21	(E) REC	20 A	1		180			1,000		1	20 A	(E) FUNACE F-5	22
23	(E) REC	20 A	1			360			560	1	20 A	(E) DUCT DETECTORS	24
25	SPARE	20 A	1	0			0			1	20 A	(E) EF-6	26
27	SPARE	20 A	1		0			0		1	20 A	(E) LTG - INVERTER	28
29	SPARE	20 A	1			0			0	1	20 A	SPARE	30
31	SPARE	20 A	1	0			0			1	20 A	(E) WATER HEATER	32
33	SPARE	20 A	1		0			--		1	--	SPACE	34
35	SPACE	--	1			--			--	1	--	SPACE	36
37	SPACE	--	1	--			--			1	--	SPACE	38
39	SPACE	--	1		--			--		1	--	SPACE	40
41	SPACE	--	1			--			--	1	--	SPACE	42
			Total Load:	5,580 VA	7,380 VA	8,400 VA							
			Total Amps:	47 A	64 A	72 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Spare	21360 VA	100.00%	21360 VA		
				Total Conn. Load:	21,360 VA
				Total Est. Demand:	21,360 VA
				Total Conn. Current:	59 A
				Total Est. Demand Current:	59 A

Notes:

(E) PANEL "E"	(E) PANEL "C"
(E) PANEL "E1"	(E) PANEL "D"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

E5.07

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:12 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS ONE INCH WHEN PRINTED ON THE SHEET'S ORIGINAL PAGE SIZE

(E) Branch Panel: H

Location: BLDG "H"
Supply From: AC-H
Mounting: Surface
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MLO
Mains Rating: 100 A
MCB Rating: MLO

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG	20 A	1	1,200			200			1	20 A	(E) IDF-H	2
3	(E) LTG EXTERIOR	20 A	1		800			840		1	20 A	(E) LTG EXTERIOR	4
5	(E) IRRIGATION	20 A	1			700			540	1	20 A	(E) F-9	6
7	(E) COMPUTER	20 A	1	1,000			750			1	20 A	(E) F-8	8
9	(E) COMPUTER	20 A	1		1,000			300		1	20 A	(E) SECURITY	10
11	(E) REC & MARQUEE	20 A	1			1,080			650	1	20 A	(E) FAEP-H	12
13	(E) REC	20 A	1	720			1,000			1	20 A	(E) FSD	14
15	(E) REC	20 A	1		450			900		1	20 A	(E) FLOOR BOXES	16
17	(E) REC	20 A	1			800			800	1	20 A	(E) FLOOR BOXES	18
19	(E) REC	20 A	1	640			300			1	20 A	(E) EF-1	20
21	(E) WATHER HEATER	20 A	1		1,200			840		1	20 A	(E) LTG	22
23	SPARE	20 A	1			0			0	1	20 A	SPARE	24
25	(N) FC - H1 & FC - H2	15 A	2	682			--			1	--	SPACE	26
27	--	--	--		682			--		1	--	SPACE	28
29	SPACE	--	1			--			--	1	--	SPACE	30
			Total Load:	6,461 VA		6,981 VA		4,570 VA					
			Total Amps:	56 A		61 A		38 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	1364 VA	112.50%	1535 VA		
Spare	16710 VA	100.00%	16710 VA	**Total Conn. Load:**	18,011 VA
				Total Est. Demand:	18,174 VA
				Total Conn. Current:	50 A
				Total Est. Demand Current:	50 A

Notes:

(E) Branch Panel: F

Location: BLDG "F"
Supply From: AC-F
Mounting: Surface
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG - CLASSROOM F11	20 A	1	1,080			560			1	20 A	(E) LTG - EXTERIOR-T	2
3	(E) LTG - CLASSROOM F11	20 A	1		660			580		1	20 A	(E) LTG - EXTERIOR-P	4
5	(E) LTG - CLASSROOM F10	20 A	1			1,080			600	1	20 A	(E) EXHAUST FAN EF-15,EF-14	6
7	(E) LTG - CLASSROOM F10	20 A	1	660			600			1	20 A	(E) EXHAUST FAN EF-12,EF-13	8
9	(E) LTG - CLASSROOM F09	20 A	1		1,080			750		2	20 A	(E) EWH-1	10
11	(E) LTG - CLASSROOM F09	20 A	1			660			750	--	--	--	12
13	(E) LTG - CLASSROOM F08	20 A	1	1,080			2,250			2	30 A	(E) WH-4	14
15	(E) LTG - CLASSROOM F08	20 A	1		660			750		--	--	--	16
17	(E) LTG - F06,F07,F46 THRU F49	20 A	1			1,370			341	2	15 A	(N) FC - F1	18
19	(E) REC-TIME CLOCK	20 A	1	1,080			341			--	--	--	20
21	(E) REC (DAMPER?)	20 A	1		900			682		2	15 A	(N) FC - F2 & FC - F3	22
23	(E) REC	20 A	1			540			682	--	--	--	24
25	(E) REC	20 A	1	720			100			1	20 A	(E) IDF-F	26
27	(E) REC	20 A	1		900			720		2	20 A	(E) WH-2	28
29	(E) REC	20 A	1			900			750	--	--	--	30
31	(E) REC	20 A	1	720			600			1	20 A	SPARE	32
33	(E) REC	20 A	1		360			341		2	15 A	(N) FC - F4	34
35	SPARE	20 A	1			0			341	--	--	--	36
37	SPACE	--	1	--			682			2	15 A	(N) FC - F5 & FC - F6	38
39	SPACE	--	1		--			682		--	--	--	40
41	SPACE	--	1			--			360	1	20 A	(N) SF - F1 & SF - F2	42
			Total Load:	10,427 VA		8,996 VA		8,305 VA					
			Total Amps:	86 A		76 A		69 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	4452 VA	103.83%	4623 VA		
Spare	23460 VA	100.00%	23460 VA	**Total Conn. Load:**	27,724 VA
				Total Est. Demand:	27,889 VA
				Total Conn. Current:	77 A
				Total Est. Demand Current:	77 A

Notes:

SWITCHBOARD: MSB

VOLTAGE: 120/208 Wye
AMPERE RATING: 2000 A
MAIN TYPE: MCB
MOUNTING: FLOOR

A.I.C. RATING: 65,000
BUSSING: 2000 A
ENCLOSURE TYPE: NEMA 3R
LOCATION: BLDG H

CKT	LOAD DESCRIPTION	POLES	OPD FRAME	OPD TRIP	Load	REMARKS
1	(E) LTG - CARPORT	1	20 A	20 A	1,000	
2	(ER) IRRIGATION CONTROLLER	3	60 A	60 A	12,970	
3	PANEL "AC-A"	3	400 A	300 A	46,788	
4	PANEL "AC-B"	3	250 A	250 A	13,965	
5	PANEL "AC-C"	3	400 A	300 A	64,032	
6	PANEL "AC-D"	3	400 A	400 A	21,360	
7	PANEL "AC-E"	3	400 A	300 A	61,567	
8	PANLE "AC-F"	3	400 A	400 A	51,407	
9	PANEL "AC-G"	3	400 A	400 A	58,286	
10	PANEL "AC-H"	3	250 A	250 A	25,325	
11	PANEL "AC-M1"	3	400 A	400 A	23,150	
12	(E) PANEL TKKA / TKKB	3	250 A	225 A	48,635	PART OF TKK PACKAGE
13	PFB	3	400 A	400 A	0	
14	PFB	3	250 A	250 A	0	
15	PFB	3	250 A	250 A	0	
16	PFB	3	400 A	300 A	0	
			TOTAL CONNECTED LOAD (VA):		427,554 VA	
			TOTAL CONNECTED LOAD (A):		1,187 A	

NOTES:

(E) Branch Panel: G

Location: BLDG "G"
Supply From: AC-G
Mounting: Surface
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 200 A
MCB Rating: 200 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E) LTG	20 A	1	1,200			1,080			1	20 A	(E) REC	2
3	(E) LTG EXTERIOR	20 A	1		1,000			720		1	20 A	(E) REC	4
5	(E) LTG	20 A	1			900			540	1	20 A	(E) REC	6
7	(E) COMPUTER	20 A	1	540			540			1	20 A	(E) COMPUTER	8
9	(E) COMPUTER	20 A	1		540			540		1	20 A	(E) COMPUTER	10
11	(E) REC	20 A	1			540			600	1	20 A	(E) FAEP-G	12
13	(E) REC	20 A	1	720			540			1	20 A	(E) SECURITY	14
15	(E) REC	20 A	1		1,080			540		1	20 A	(E) COMPUTER	16
17	(E) COMPUTER	20 A	1			540			540	1	20 A	(E) COMPUTER	18
19	(E) COMPUTER	20 A	1	540			540			1	20 A	(E) COMPUTER	20
21	(E) COMPUTER	20 A	1		540			540		1	20 A	(E) COMPUTER	22
23	(E) COMPUTER	20 A	1			540			900	1	20 A	(E) REC	24
25	(N) FC - G1 & FC - G2	15 A	2	682			720			1	20 A	(E) REC	26
27	--	--	--		682			1,080		1	20 A	(E) REC	28
29	(N) FC - G3 & FC - G4	15 A	2			682			2,000	1	30 A	(E) EWH-1	30
31	--	--	--	682			1,000			1	20 A	(E) IRRIGATION	32
33	(N) FC - G5 & FC - G6	15 A	2		682			2,000		1	30 A	(E) EWH-2	34
35	--	--	--			682			630	1	20 A	(E) EF-1 / TIME CLOCK	36
37	(E) LTG	20 A	1	1,100			360			1	20 A	(E) FSD	38
39	SPARE	20 A	1		0			600		1	20 A	(E) IDF-G	40
41	SPARE	20 A	1			0			0	1	20 A	SPARE	42
			Total Load:	10,185 VA		10,484 VA		9,036 VA					
			Total Amps:	86 A		89 A		75 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	4092 VA	104.17%	4263 VA		
Spare	25790 VA	100.00%	25790 VA	**Total Conn. Load:**	29,705 VA
				Total Est. Demand:	29,869 VA
				Total Conn. Current:	82 A
				Total Est. Demand Current:	83 A

Notes:

(E) PANEL "H"	(E) PANEL "F"
MSB	(E) PANEL "G"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA. 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

E5.08

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:15 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH WHEN PLOTTED ON A THIS SHEET'S ORIGINAL PAGE SIZE

(E) Branch Panel: M1

Location: BLDG "MPR"
Supply From: AC-M1
Mounting: Surface
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	(E)RF - 1	20 A	2	300			360			2	20 A	(E) REC	2
3	--	--	--		300			360		--	--	--	4
5	SPARE	20 A	2			0			360	2	20 A	(E) REC	6
7	--	--	--	0			360			--	--	--	8
9	SPARE	20 A	2		0			360		1	20 A	(E) REC	10
11	--	--	--			0			360	3	20 A	(E) REC	12
13	(E) FU - 1	20 A	3	300			360			--	--	--	14
15	--	--	--		300			360		--	--	--	16
17	--	--	--			300			1,200	1	20 A	(E) WINDOW ACTUATORS	18
19	(E) HVAC CONTROL	20 A	1	100			1,000			1	20 A	(E) SCOREBOARD	20
21	(E) REC - IDF	20 A	2		540			1,200		1	20 A	(E) WINDOW ACTUATORS	22
23	--	--	--			540			1,200	1	20 A	(E) RETRACT HOOP	24
25	SPARE	30 A	1	0			250			1	20 A	(E) PROJECTOR SCREEN	26
27	SPARE	30 A	1		0			700		1	20 A	(E) CURTAINS	28
29	(E) PROJECTOR	20 A	1			800			540	1	20 A	(E) REC	30
31	(E) PANEL "L1"	100 A	3	3,000			500			1	20 A	(E) LIFT	32
33	--	--	--		3,000			500		1	20 A	(E) LIFT	34
35	--	--	--			1,500			500	1	20 A	(E) LIFT	36
37	(E) SOUND TRACK	20 A	1	1,000			350			1	20 A	(E) FIRE BELL	38
39	(E) FACP	20 A	1		350			--		1	--	SPACE	40
41	SPACE	--	1			--			--	1	--	SPACE	42
			Total Load:	7,880 VA		7,970 VA		7,300 VA					
			Total Amps:	66 A		67 A		61 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Spare	23150 VA	100.00%	23150 VA		
				Total Conn. Load:	23,150 VA
				Total Est. Demand:	23,150 VA
				Total Conn. Current:	64 A
				Total Est. Demand Current:	64 A

Notes:

(E) Branch Panel: L1

Location: BLDG "MPR"
Supply From: M1
Mounting: Surface
Enclosure: Type 1

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

A.I.C. Rating: 10,000
Mains Type: MLO
Mains Rating: 125 A
MCB Rating:

Notes:

CKT	Load Name	Trip	Poles	A	B	C	A	B	C	Poles	Trip	Load Name	CKT
1	DO NOT REMOVE TWIST-OUT	--	1	--			--			1	--	DO NOT REMOVE TWIST-OUT	2
3	DO NOT REMOVE TWIST-OUT	--	1		--			--		1	--	DO NOT REMOVE TWIST-OUT	4
5	DO NOT REMOVE TWIST-OUT	--	1			--			--	1	--	DO NOT REMOVE TWIST-OUT	6
7	(E) LTG - HIGH BAY	20 A	1	1,500			900			1	20 A	(E) LUMEN LINK	8
9	(E) LTG - HIGH BAY	20 A	1		1,500			900		1	20 A	(E) LUMEN LINK	10
11	SPARE	20 A	1			0			900	1	20 A	(E) LUMEN LINK	12
13	(E) LTG -STAGE	20 A	1	250			0			1	20 A	SPARE	14
15	(E) LTG -STAGE	20 A	1		250			0		1	20 A	SPARE	16
17	(E) LTG -STAFE / MDX	20 A	1			250			0	1	20 A	SPARE	18
19	(E) LTG -STAGE	20 A	1	250			0			1	20 A	SPARE	20
21	(E) LTG -EXTERIOR	20 A	1		350			0		1	20 A	SPARE	22
23	(E) LTG - EXTERIOR	20 A	1			350			0	1	20 A	SPARE	24
25	(E) LCP RESCO	20 A	1	100			0			1	20 A	SPARE	26
27	SPARE	20 A	1		0			0		1	20 A	SPARE	28
29	SPACE	--	1			--			--	1	--	SPACE	30
			Total Load:	3,000 VA		3,000 VA		1,500 VA					
			Total Amps:	27 A		27 A		13 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Spare	7500 VA	100.00%	7500 VA		
				Total Conn. Load:	7,500 VA
				Total Est. Demand:	7,500 VA
				Total Conn. Current:	21 A
				Total Est. Demand Current:	21 A

Notes:

-	(E) PANEL "M1"
-	(E) PANEL "L1"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

E5.09

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:17 AM

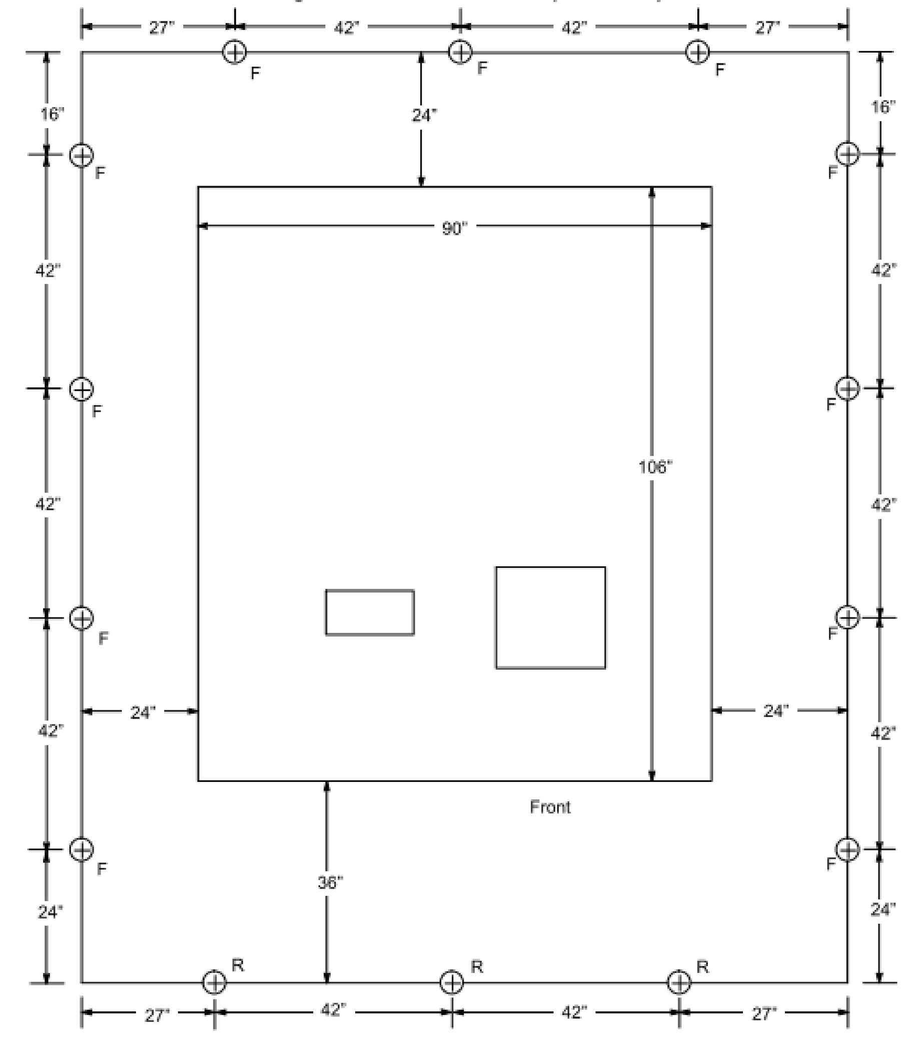
PLEASE RECYCLE

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

UG-1: General
Greenbook

Clearances and Location Requirements for Enclosures, Pads, and Underground Equipment

13. Preferred Barrier Post Arrangement for Transformers (continued)



F = Fixed
R = Removable

Figure 14
Style IIE-LB Pad
90" x 106"
(Document 045292)

Rev. #22: 03-25-22 | **051122 Page 15 of 28**

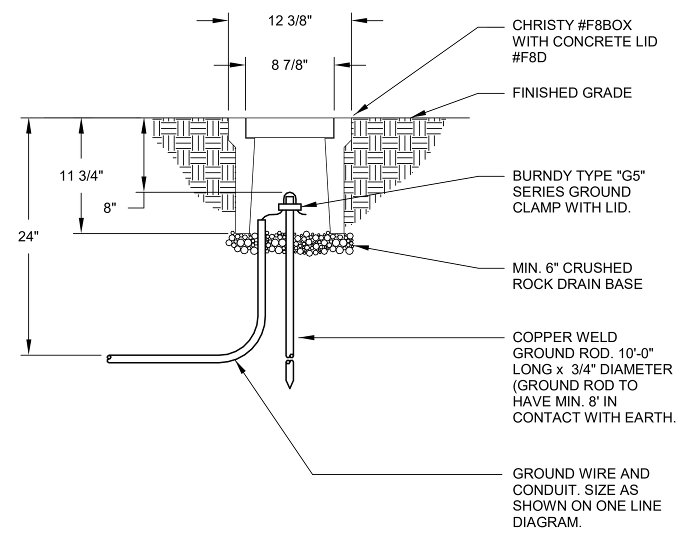
NOTES:

1. PG&E DETAIL WAS PROVIDED OR TAKEN FROM PG&E GREENBOOK AND IT IS SHOWN IS FOR REFERENCE ONLY.
2. CONTRACTOR SHALL VERIFY WITH PG&E GREENBOOK AND PROVIDE PREFABRICATED UTILTIY TRANSFORMER PAD TO EOR AND PG&E FOR REVIEW. CONTRACTOR SHALL ALSO REFERENCE PG&E ENGINEERING DRAWINGS.
3. TRANSFORMER FURNISHED AND INSTALLED BY PG&E.

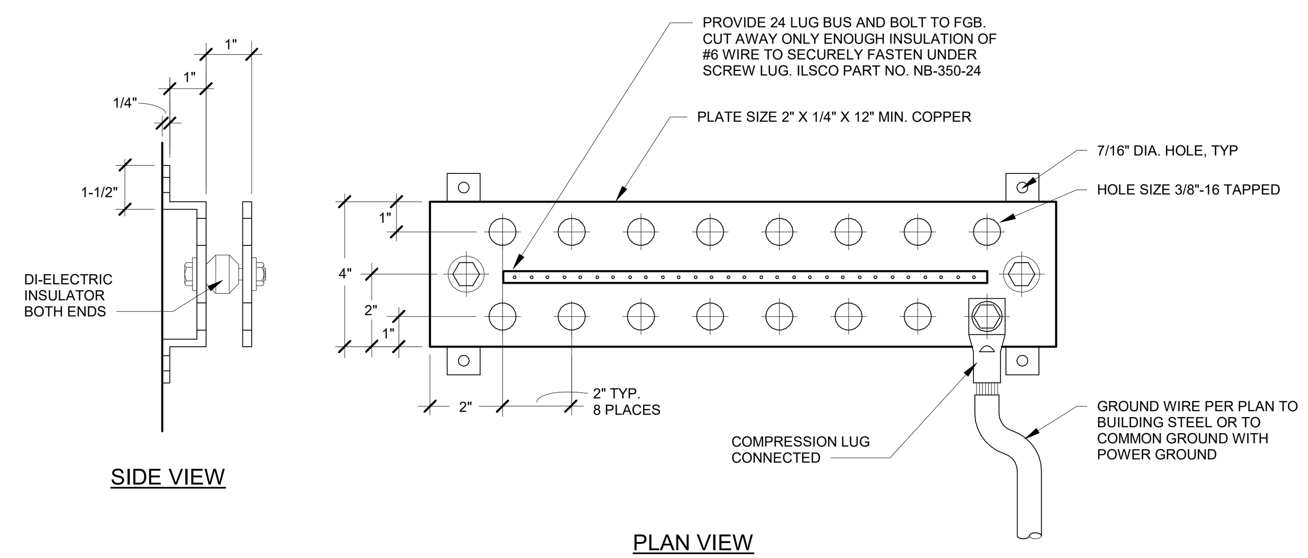
CLEARANCES AND LOCATION REQUIREMENTS FOR ENCLOSURES, PADS, AND UNDERGROUND EQUIPMENT — NTS — 8

KEY NOTES:

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



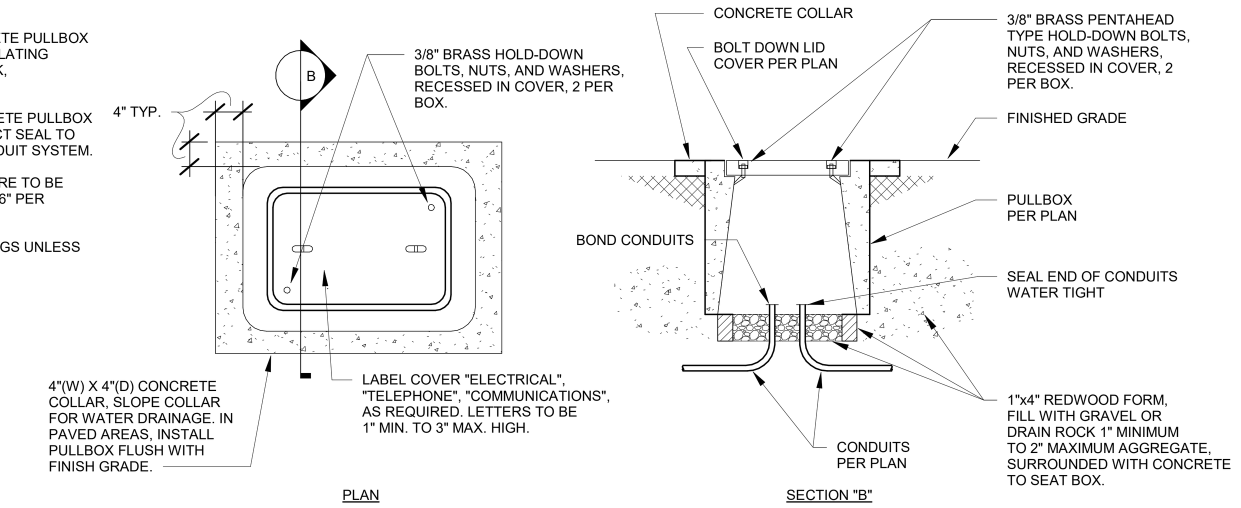
GROUNDING ROD DETAIL — NTS — 5



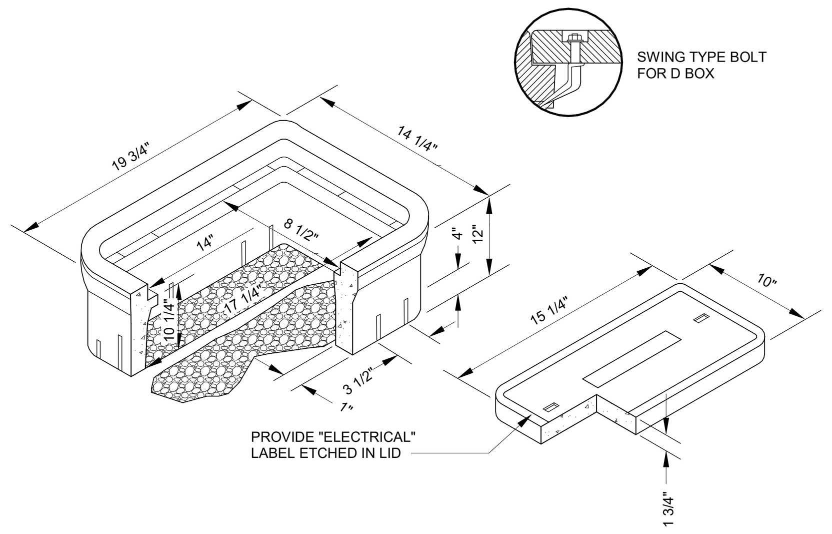
GROUND BUS BAR DETAIL — NTS — 6

NOTES:

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



UNDERGROUND CONCRETE PULLBOX DETAIL — NTS — 1



NOTE:

1. PROVIDE WITH CHRISTY #P36X12 12" REINFORCED CONCRETE EXTENSION OR APPROVED EQUAL. (NOT SHOWN)
2. PROVIDE FULL VEHICULAR RAISED BOX AND LID WHERE INSTALLED IN DRIVE AREAS.

ELECTRICAL PULLBOX DETAIL — NTS — 2

UG-1: Enclosures
Greenbook

Secondary Electric Underground Enclosures

24" x 36" (#3) Concrete Boxes for Full-Vehicular Traffic

Notes

1. Grade adjustment, when required, shall be made between the box and the extension or top section.
2. A base is not required.
3. All concrete parts shall be permanently identified as to the manufacturer on the inside surface. The weight shall be stenciled on the outside of all concrete parts.
4. All concrete parts shall be provided with four 7/8-inch diameter, 1-3/4-inch minimum deep inserts with UNC Class 2A threads.
5. Joint must be interchangeable with those shown in Detail D.
6. Install masitic sealant provided with enclosure assembly for all concrete-to-concrete joints below surface level.
7. The identification plate is an integral part of the cover and should be included by the manufacturer.
8. For new construction conduits shall enter the enclosure using 90 degree elbows rising into the enclosure. Refer to Figure 5 and Figure 6 on Page 7.

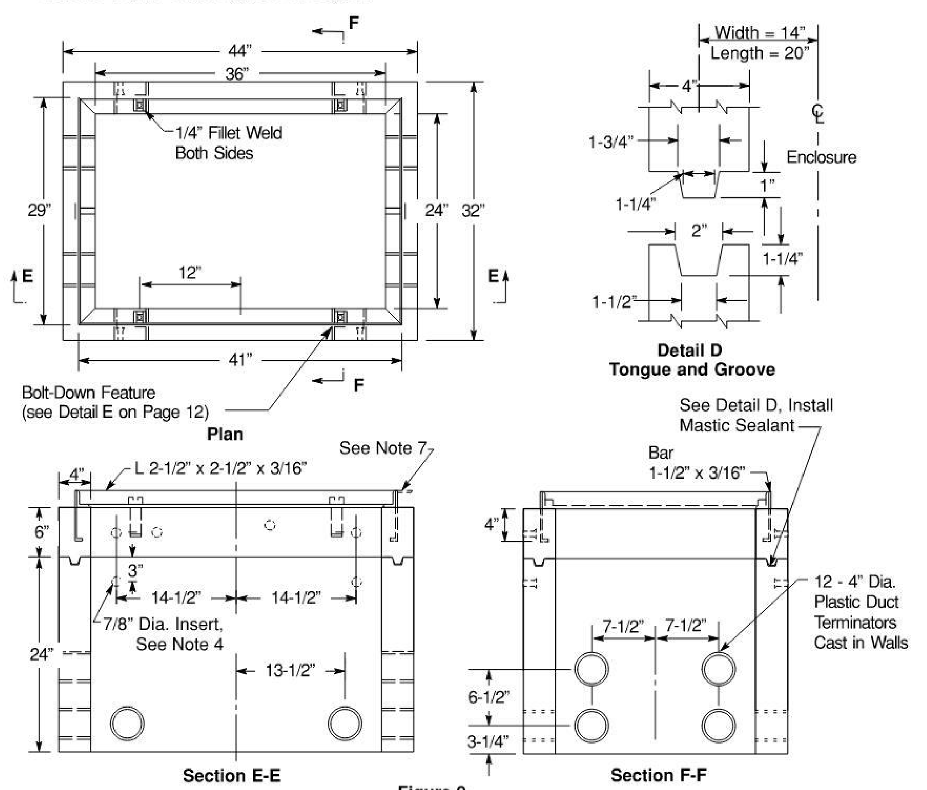


Figure 9
24" x 36" Concrete Box

Rev. #22: 03-25-22 | **028028 Page 11 of 14**

NOTES:

1. PG&E DETAIL WAS PROVIDED OR TAKEN FROM PG&E GREENBOOK AND IT IS SHOWN IS FOR REFERENCE ONLY.
2. CONTRACTOR SHALL VERIFY WITH PG&E GREENBOOK AND PROVIDE PREFABRICATED UTILTIY PULL BOX AND PAD TO EOR AND PG&E FOR REVIEWA AND APPROVAL. CONTRACTOR SHALL ALSO REFERENCE PG&E ENGINEERING DRAWINGS.

SECONDARY ELECTRIC UNDERGROUND ENCLOSURES — NTS — 9

UG-1: Transformers
Greenbook

Concrete Pad for Three-Phase, Loop-Style, Pad-Mounted Transformers

Concrete Pad Details for Style IID, IIE, and IIG Transformers

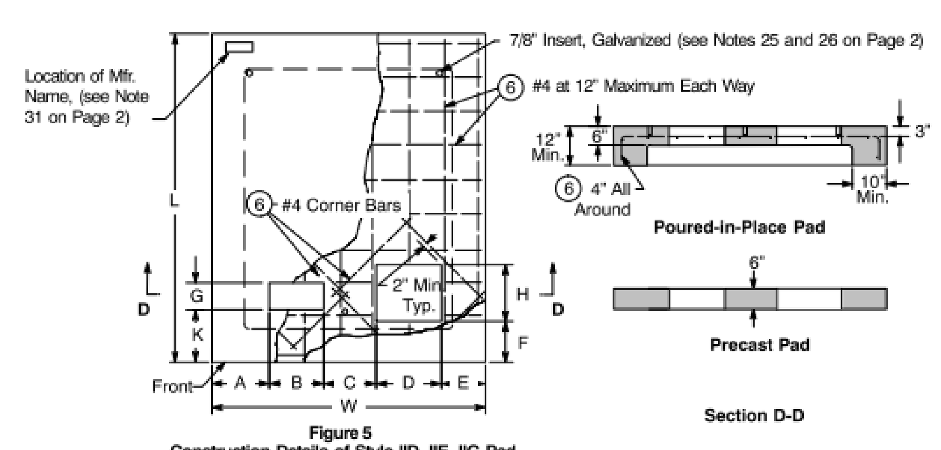


Figure 5
Construction Details of Style IID, IIE, IIG Pad
(see Figure 2 on Page 6 for pad arrangement)

Table 3 Dimensions and Codes for Style IID, IIE, and IIG Transformer Pads [1]

Transformer			Pad Dimensions (inches)											Code
Style	kVA Size	Approximate Maximum Weight (lbs)	A	B	C	D	E	F	G	H	K	L	W	
IID and IIE	75	4,600	17	16	15	19	13	10	6	17	14	61	80	040291
	(112.5) [2]	4,800												
	150	5,000												
	(225) [2]	5,500												
IIE	300	5,800	22	16	15	20	17	20	6	19	25	106	90	040292
	(500) [2]	6,100												
	750	9,000												
	1,000	11,000												
	1,500	13,000												
IIE	2,500	16,000	22	16	15	20	17	20	6	19	25	106	90	040292
IIG	2955/3325	22,000												

1 See Document 066211 for approved suppliers.
2 ( ) = Indicates a kVA size that is no longer purchased.

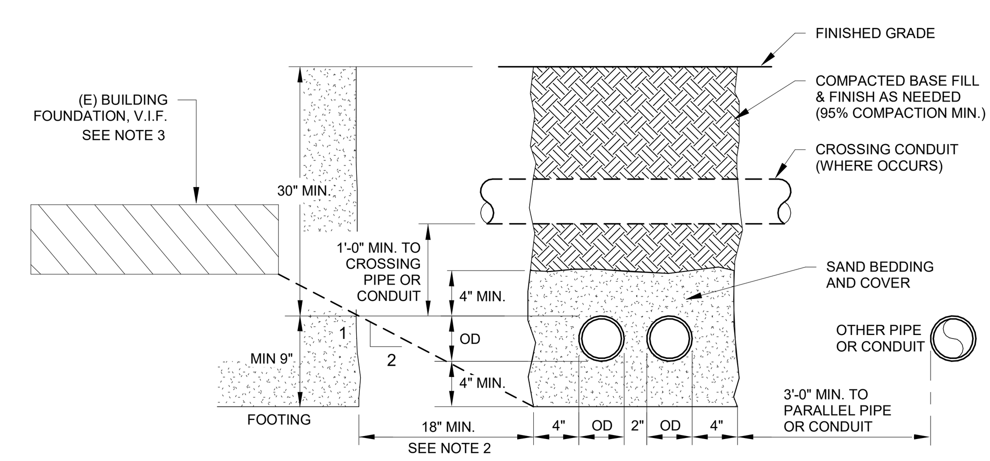
Revision Notes
Revision 13 has the following changes:
1. Add Note 10 on Page 1.

045292 Page 8 of 8 | Rev. #13: 12-01-19

NOTES:

1. PG&E DETAIL WAS PROVIDED OR TAKEN FROM PG&E GREENBOOK AND IT IS SHOWN IS FOR REFERENCE ONLY.
2. CONTRACTOR SHALL VERIFY WITH PG&E GREENBOOK AND PROVIDE PREFABRICATED UTILTIY TRANSFORMER PAD TO EOR AND PG&E FOR REVIEW. CONTRACTOR SHALL ALSO REFERENCE PG&E ENGINEERING DRAWINGS.
3. TRANSFORMER FURNISHED AND INSTALLED BY PG&E.

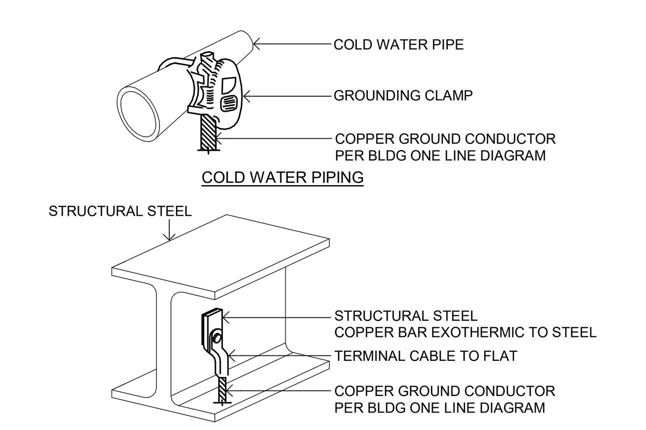
CONCRETE PAD FOR THREE-PHASE, LOOP-STYLE, PAD MOUNTED TRANSFORMERS — NTS — 7



NOTES:

1. TRENCHING LOCATED IN PAVED AREAS - ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.
2. ALL PIPES AND TRENCHES MUST ALSO CONFORM WITH CBC 1809A.14.
3. PER GEOTECH REPORT, BOTTOM OF TRENCHES SHALL NOT BE BELOW A 2:1 SLOPE EXTENDING FROM ANY BUILDING FOUNDATION.

TYPICAL TRENCH DETAIL — NTS — 3



GROUNDING CONNECTION METHODS DETAIL — NTS — 4

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

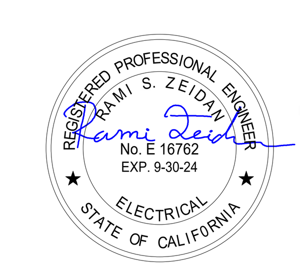
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265



FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL DETAILS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

E6.01

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:20 AM

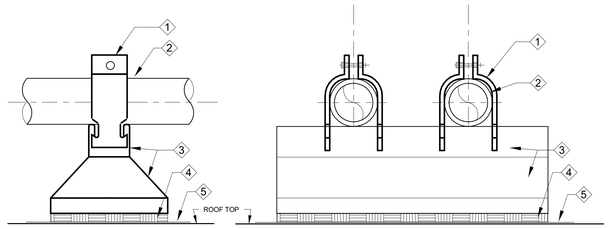
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON A FULL SHEET (ORIGINAL PAGE SIZE)

KEY NOTES:

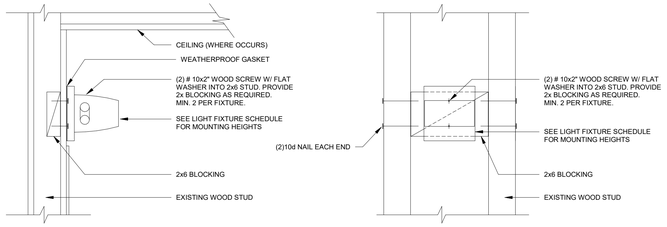
1. HOT-DIPPED GALVANIZED UNISTRUT CONDUIT CLAMP. SIZE AS REQUIRED.
2. CONDUIT AS NOTED ON DRAWINGS. LIMIT 40# TRIBUTARY TO EACH SUPPORT.
3. ROOFTOP SUPPORT WITH HOT-DIPPED GALVANIZED CHANNEL. MANUFACTURER PER SPECS.
4. SECURE TO ROOF WITH A FULL BED OF NON-HARDENING ADHESIVE TYPE MASTIC. ADHESIVE TO BE CAMPATIBLE WITH PVC ROOF MEMBRANE. VERIFY SPECIFICATION FOR COMPATIBILITY PRIOR TO INSTALATION.
5. PROVIDE SACRIFICIAL LAYER OF PVC ROOF MEMBRANE, UNDER SUPPORTS.

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



END VIEW SIDE VIEW

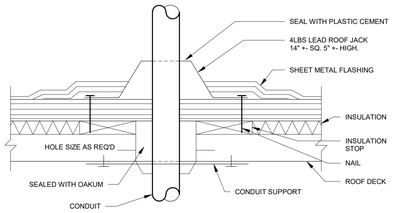
ROOF CONDUIT SUPPORT DETAIL — NTS — 4



GENERAL NOTES:

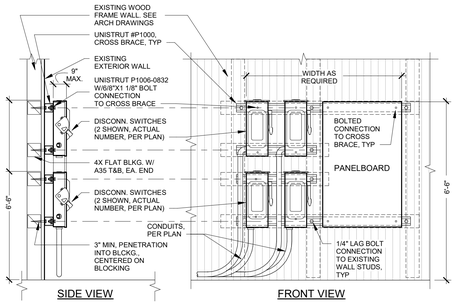
A. LIGHT FIXTURE TYPE "W1", MAX WEIGHT: 10 LBS.

WALL LIGHT FIXTURE MOUNTING DETAIL — NTS — 1



NOTES:
SEALANT TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR

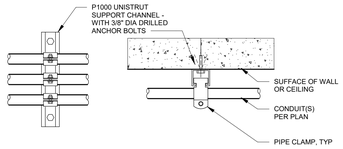
ROOF CONDUIT PENETRATION DETAIL — NTS — 5



SIDE VIEW FRONT VIEW

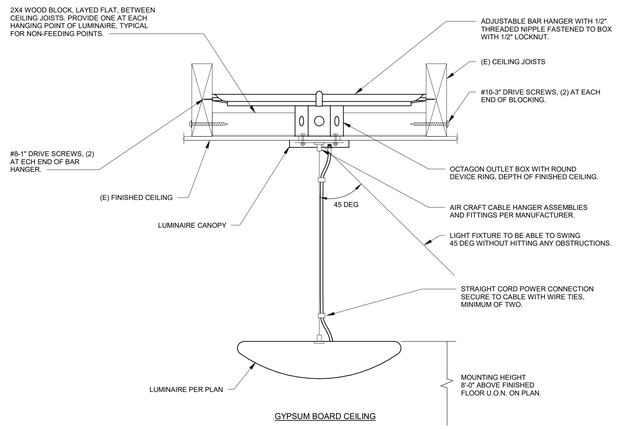
MAX WEIGHT = 200 LBS

SURFACE MTD PANEL & DISCONN(S) WALL MOUNTING DETAIL — NTS — 2



ELEVATION SECTION

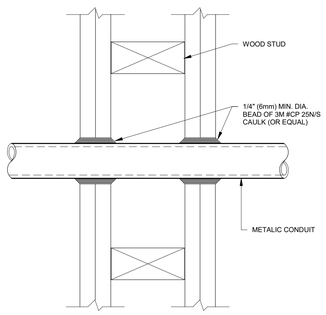
RACEWAY SUPPORT AT CONCRETE CEILING / WALL — NTS — 6



GENERAL NOTES:

A. LIGHT FIXTURE TYPE "P-4", MAX WEIGHT: 2.6 LBS/LF. 4'-0" ~ 10.4 LBS.

CABLE SUSPENDED LUMINAIRE WOOD FRAMING — NTS — 3



WOOD STUD WALL

NOTES:

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

CONDUIT PENETRATION FIRESTOP DETAIL - WOOD FRAMING — NTS — 7

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA

LP CONSULTING ENGINEERS

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: Z3-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL DETAILS

CONSTRUCTION DOCUMENTS

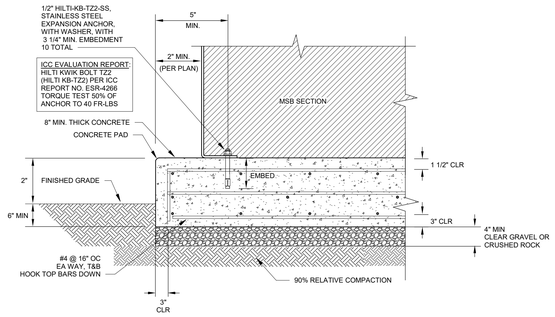
DATE: 2024.09.16 CLIENT PROJ NO:

SHEET:

E6.02

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:23 AM

PLEASE RECYCLE



"MSB" (ONE SECTION SHOWN)

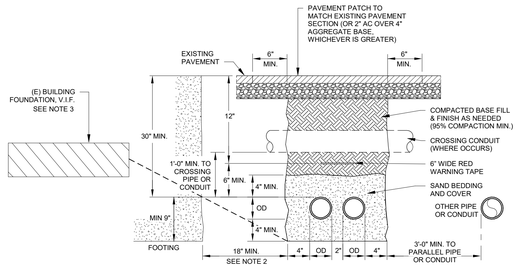
TOTAL MAX WEIGHT: 6000 LBS

NOTES:

1. CONCRETE PAD SHALL MEET PER PG&E REQUIREMENTS UNDER PG&E GREENBOOK.

CONCRETE USE	STRENGTH AT 28 DAYS UON	W/C RATIO	MAX AGGREGATE SIZE	WEIGHT	SHRINKAGE
ELECT PAD	3000 PSI	0.45 MAX	3/4" TO 1" (LS)	145 PCF	0.045%

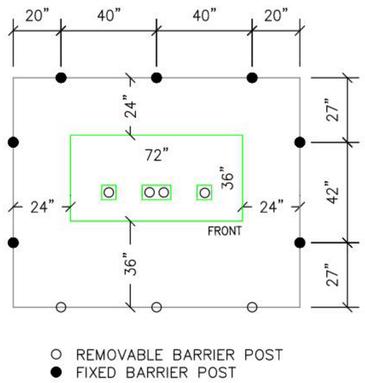
OUTDOOR SWITCHBOARD MOUNTING DETAIL — NTS — 3



NOTES:

1. TRENCHING LOCATED IN PAVED AREAS - ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.
2. ALL PIPES AND TRENCHES MUST ALSO CONFORM WITH CBC 1809A.14
3. PER GEOTECH REPORT, BOTTOM OF TRENCHES SHALL NOT BE BELOW A 2:1 SLOPE EXTENDING FROM ANY BUILDING FOUNDATION.

TYPICAL TRENCH DETAIL AT PAVEMENT — NTS — 4



NOTES:

1. PG&E DETAIL WAS PROVIDED OR TAKEN FROM PG&E GREENBOOK AND IT IS SHOWN IS FOR REFERENCE ONLY.
2. CONTRACTOR SHALL VERIFY WITH PG&E GREENBOOK AND PROVIDE PREFABRICATED UTILTIY PULL BOX AND PAD TO EOR AND PG&E FOR REVIEW. CONTRACTOR SHALL ALSO REFERENCE PG&E ENGINEERING DRAWINGS.
3. BOX FURNISHED AND INSTALLED BY PG&E.

CLEARANCES AND LOCATION REQUIREMENTS FOR ENCLOSURES, PADS, AND UNDERGROUND EQUIPMENT — NTS — 2

UG-1: General Greenbook

Clearances and Location Requirements for Enclosures, Pads, and Underground Equipment

13. Preferred Barrier Post Arrangement for Transformers (continued)

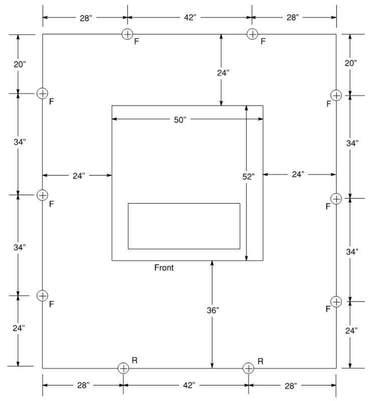


Figure 12
Style DF-LB Box Pad
50" x 52"
(Document 064309)

F = Fixed
R = Removable

Rev. #22: 03–25–22 **051122 Page 13 of 28**

NOTES:

1. PG&E DETAIL WAS PROVIDED OR TAKEN FROM PG&E GREENBOOK AND IT IS SHOWN IS FOR REFERENCE ONLY.
2. CONTRACTOR SHALL VERIFY WITH PG&E GREENBOOK AND PROVIDE PREFABRICATED UTILTIY TRANSFORMER PAD TO EOR AND PG&E FOR REVIEW. CONTRACTOR SHALL ALSO REFERENCE PG&E ENGINEERING DRAWINGS.
3. TRANSFORMER FURNISHED AND INSTALLED BY PG&E.

CLEARANCES AND LOCATION REQUIREMENTS FOR ENCLOSURES, PADS, AND UNDERGROUND EQUIPMENT — NTS — 1

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

ELECTRICAL DETAILS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

SHEET:

E6.03

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan:TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 9:41:25 AM

PLEASE RECYCLE

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

FIRE ALARM ABBREVIATIONS/SYMBOLS

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

FIRE ALARM GENERAL DEMO NOTES

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

FIRE ALARM GENERAL NOTES

1. THE INTENT OF THESE DRAWINGS AND/OR SPECIFICATIONS DESCRIBE A COMPLETE, FUNCTIONING FIRE ALARM SYSTEM (INCLUDING VOICE EVACUATION PER SB575) WITH DEVICES, WIRING AND FIRE ALARM CONTROL PANEL TO MEET THE REQUIREMENTS OF NFPA 72 AND 2022 CALIFORNIA FIRE CODE AND APPLICABLE LOCAL FIRE MARSHALL REGULATIONS AND REQUIREMENTS.
2. LOCATIONS OF EXISTING EQUIPMENT AND DEVICES SHOWN ON THESE PLANS ARE BASED ON AVAILABLE AS-BUILT PLANS AND LIMITED SITE SURVEYS. CONTRACTOR SHALL THOROUGHLY INSPECT THE EXISTING SYSTEM AND SITE CONDITIONS BEFORE BID. ADVISE THE SCHOOL'S REPRESENTATIVE OF ALL CONDITIONS REQUIRING IMMEDIATE ATTENTION OR MIGHT CAUSE DIFFICULTIES THAT ARE NOT ADDRESSED, OR INFERRED TO, IN THE CONTRACT DRAWINGS AND SPECIFICATIONS PRIOR TO NEW CONSTRUCTION AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
3. CONTRACTOR SHALL SUBMIT ANY ALTERATIONS OF THE APPROVED CONSTRUCTION DOCUMENTS TO THE SPECIAL INSPECTOR AND DSA FOR NEW APPROVALS. START INSTALLATION OF THE SYSTEM AFTER DETAILED PLANS, SPECIFICATIONS, NEW SHOP DRAWINGS AND SUBMITTALS HAS BEEN APPROVED BY DSA. CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR ANY DELAY.
4. PER DSA IR F-2 SECTION 1. WHEN, AS PART OF AN ALTERATION OR MODERNIZATION PROJECT OR CONSTRUCTION OF NEW BUILDING A FIRE PROTECTION/LIFE SAFETY IS PLACED OUT OF SERVICE AND AFFECTS ANY OCCUPIED PORTION OF AN EXISTING BUILDING UNDERGOING RENOVATION OR OCCUPIED BUILDINGS OR PORTIONS OF THE CAMPUS, THEN THE SCHOOL DISTRICT, DSA, AND THE ARCHITECT/ENGINEER IN GENERAL RESPONSIBLE CHARGE OF THE CONSTRUCTION PROJECT SHALL BE NOTIFIED IMMEDIATELY BY THE PROJECT INSPECTOR. IT WILL BE THE SCHOOL DISTRICT'S RESPONSIBILITY TO ESTABLISH, INSTRUCT AND MAINTAIN FIRE WATCH PERSONNEL IN/AT THE AFFECTED BUILDING(S). WHERE A FIRE ALARM SYSTEM IS OUT OF SERVICE, WARNING SIGNS SHALL BE POSTED AT ALL ENTRANCES TO ANY BUILDING TO INFORM THE OCCUPANTS. MODERNIZATIONS OF EXISTING BUILDINGS OR CONSTRUCTION OF NEW BUILDINGS THAT ARE NOT OCCUPIED BY THE PUBLIC, STAFF OR STUDENT DURING CONSTRUCTION, SHALL NOT REQUIRE A FIRE WATCH AS LONG AS THE CONSTRUCTION EFFORTS DO NOT AFFECT OTHER OCCUPIED AREAS OF THE BUILDING.
5. REQUEST FOR ADDITIONAL COSTS ASSOCIATED WITH RE-USE OF ANY EXISTING SYSTEM COMPONENT, INCLUDING CONDUITS, BOXES, CONTROL PANELS, ETC. WILL NOT BE CONSIDERED.
6. NO KNOWN EXISTING CEILING OR ATTIC SPACE IN ROOMS OR AREA WITH HARD CEILING. IF CEILING OR ATTIC SPACE OCCUR DURING FIELD CONSTRUCTION THAT REQUIRE ADDING DETECTORS ABOVE THE CEILING OR ATTIC SPACE, PROVIDE A CONSTRUCTION CHANGE DOCUMENT, OR A SEPARATE SHEET OF PLANS SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.
7. THE FIRE ALARM SYSTEM SHALL CONFORM TO THE 2022 CALIFORNIA FIRE CODE, ARTICLE 907, CBC 305 AND 2022 CALIFORNIA ELECTRICAL CODE, ARTICLE 760.
8. FIRE ALARM SYSTEM SHALL TRANSMIT ALARM, SUPERVISORY AND TROUBLE SIGNAL TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH 2022 NFPA 72 AND CBC 907.6.6.
9. CONTRACTOR SHALL PROVIDE A COMPLETE AND FUNCTIONAL CODE COMPLIANT SYSTEM WITH ALL REQUIRED HARDWARE, DEVICES, PROGRAMMING AND POINT/DEVICE DESCRIPTION SCHEDULES.
10. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC 901.6.3.
11. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.
12. INSTALLATION OF THE FIRE ALARM SYSTEM SHALL NOT BE STARTED UNTIL DETAILED SPECIFICATIONS, INCLUDING CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM HAVE BEEN APPROVED BY THE CALIFORNIA STATE FIRE MARSHAL, AND THE LOCAL FIRE MARSHAL.
13. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE ENFORCING AGENCY AND SPECIAL INSPECTOR. THE SCHOOL SHALL NOT BE IN OPERATION UNTIL THE IOR AND THE LOCAL FIRE MARSHAL HAS VERIFIED AND/OR SIGNED OFF ON OPERATIONAL CAPACITY OF THE FIRE ALARM SYSTEM.
14. ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND /OR TESTING.
15. CONTRACTOR SHALL SUBMIT THE SPECIAL INSPECTOR NFPA CERTIFICATE OF COMPLIANCE FORM TO THE SCHOOL REPRESENTATIVE FOR SUBMISSION TO THE FIRE DEPARTMENT.
16. BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION, THE SYSTEM INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE INSPECTOR OF RECORD TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND COMPLETELY TESTED IN ACCORDANCE WITH 2022 NFPA 72, SECTION 7.5.2 AND 7.6.
17. CONTRACTOR SHALL PROVIDE INTELLIGIBILITY TESTING USING INTELLIGIBILITY METERS APPROVED FOR SUCH USE. REFERENCE NFPA 72 CHAPTER 24. AN STI SCORE OF 7.0 IS A MINIMUM REQUIREMENT. CONTRACTOR SHALL IDENTIFY ALL ACOUSTICALLY DISTINGUISHABLE SPACES (ADS) ON CONTRACTOR SHOP DRAWINGS.
18. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
19. PROVIDE FIRE ALARM AUDIBLE SOUND LEVEL AT LEAST 15 DBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIED AREA, BUT NOT LESS THAN 75 DBA AT 10 FEET OR MORE THAN 120 DBA IN TOTAL, THROUGHOUT. SYNCHRONIZED TEMPORAL CODE 3 SOUND. (2022 NFPA 72, 18.4.2.1)
20. WALL MOUNTED VISIBLE NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND THEIR TOPS AT 96" MAXIMUM FROM FINISHED FLOOR.
21. WALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 90" MINIMUM FROM FINISHED FLOOR AND NO CLOSER THEN 6" TO A HORIZONTAL STRUCTURE.
22. A FLASHING VISUAL WARNING DEVICE HAVING A FREQUENCY OF NOT MORE THAN 60 FLASHES PER MINUTE [TWO (2) FLASHES OR LESS THAN ONE (1) FLASH PER SECOND] SHALL BE INSTALLED TO WARN THE HEARING-IMPAIRED AS SHOWN ON THE DRAWINGS. FLASHING VISUAL WARNING DEVICES VIEWABLE WITHIN THE SAME INTERIOR SPACE SHALL BE SYNCHRONIZED. (2022 NFPA 72, 18.5.3.1, 18.5.3.6 AND 18.5.5.7)
23. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1' FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM, DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
24. LOCATE SMOKE AND HEAT DETECTORS AT LEAST ONE FOOT AWAY FROM FLUORESCENT LIGHT FIXTURES.
25. CONTRACTOR SHALL AFFIX TO EACH FIELD DEVICE A DEVICE LABEL. DEVICE LABEL SHALL BE ARRANGED FOLLOWING DETAIL "FIRE ALARM CIRCUIT IDENTIFIERS". INITIATION DEVICES CONNECTED TO EQUIPMENT BY OTHERS SHALL HAVE A LABEL AFFIXED TO MODULE INDICATING THE EQUIPMENT CONNECTED.
26. ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER APPROVED LAB TESTING CRITERIA. APPROVED TYPES OF MATERIALS SHALL BE IDENTIFIED WITHIN THE PROJECT SPECIFICATIONS WITHIN THE FIRE ALARM SECTION.
27. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATER TIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
28. PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
29. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT OR RACEWAY WHEN PASSING THROUGH A FLOOR OR WALL TO A HEIGHT OF 7 FEET ABOVE THE FLOOR. FIRE ALARM WIRING ABOVE CEILING SHALL BE SUPPORTED BY THE BUILDING STRUCTURE SO AS NOT TO DAMAGE THE CABLE..
30. NO SPLICES SHALL BE ALLOWED FOR FIRE ALARM SYSTEM UNDERGROUND CABLES.
31. NEW FIRE ALARM WIRING SHALL NOT BE INSTALLED IN ANY RACEWAY WITH WIRING IN EXCESS OF 24 VOLT.
32. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
33. ALL FIRE ALARM EQUIPMENT BRANCH CIRCUITS SHALL BE DEDICATED AS PER 2022 NFPA 72, 10.6.5.1.2 AND ITS LOCATION BE CLEARLY LABELED AT THE FIRE ALARM CONTROL PANEL.
34. ALL FIRE ALARM EQUIPMENT POWER SOURCE CIRCUITS SHALL BE IDENTIFIED AT THE POWER SOURCE PER 2022 NFPA 72, 10.6.5.2. USING A RED CLEARLY MARKED DISCONNECT WITH LOCK-ON CAPABILITY. COORDINATE WITH ELECTRICAL.
35. MICROPHONES ASSOCIATED WITH EMERGENCY VOICE ALARM COMMUNICATION SYSTEMS (EVAC) SHALL BE ACCESSIBLE FOR USE, INSTALLED IN COMPLIANCE WITH CBC SECTIONS 11B-305 AND 11B-308.
36. WHERE ACCESSIBILITY IS NOT AVAILABLE TO THE NEW FIRE ALARM DEVICES LOCATED ABOVE THE CEILING/ATTIC SPACES, PROVIDE ACCESS PANELS TO THESE DEVICES, COORDINATE PRIOR TO THE EXECUTION OF WORK.
37. THE CONTRACTOR SHALL PROVIDE AS-BUILT SHOP DRAWINGS INDICATING CIRCUITING OF ALL DETECTOR AS AND OTHER DEVICES IN ALL THE BUILDINGS OF THIS PROJECT. AS-BUILT DRAWINGS SHALL BE STORED IN FIRE ALARM DOCUMENT CABINET INSTALLED ADJACENT TO FIRE ALARM CONTROL PANEL OR LOCATION APPROVED BY AUTHORITY HAVING JURISDICTION.
38. PROVIDE DOCUMENTATION CABINET TO BE INSTALLED PROXIMAL TO FACP (2022 NFPA 72, 7.7.2.1). ALL RECORD DOCUMENTATION SHALL BE STORED IN THE DOCUMENTATION CABINET (2022 NFPA 72 7.7.2.3). THE DOCUMENTATION CABINET TO BE PROMINENTLY LABELED "SYSTEM RECORD DOCUMENTS" (2022 NFPA 72 7.7.2.5).
39. BATTERIES SHALL BE MARKED WITH THE MONTH AND YEAR OF MANUFACTURE USING THE MONTH/YEAR FORMAT AS PER 2022 NFPA 72, 10.6.10.1.

FIRE ALARM MONITORING NOTE

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

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE OWNER 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 CHAPTERS 13, 26 AND 30.

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

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

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

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

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 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 PRE-APPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

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

MP	MD	PP	E	
☐	☐	☐	☒	OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.
☐	☐	☐	☐	OPTION 2: SHALL COMPLY WITH HCAi (OSHPD) PRE-APPROVAL (OPM#) #___________.

AS INCLUDED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS.

GOVERNING CODES & APPLICABLE STANDARDS

TITLE 24 CODES:

1. 2022 CALIFORNIA BUILDING STANDARD ADMINISTRATIVE CODE (CAC), (PART 1, TITLE 24, CCR).
2. 2022 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 AND 2 (PART 2, TITLE 24, CCR). (2021 EDITION INTERNATIONAL BUILDING CODE WITH 2019 CALIFORNIA AMENDMENTS.)
3. 2022 CALIFORNIA ELECTRICAL CODE, (PART 3, TITLE 24, CCR). (2020 EDITION NATIONAL ELECTRICAL CODE WITH 2022 CALIFORNIA AMENDMENTS).
4. 2022 CALIFORNIA MECHANICAL CODE (CMC), (PART 4, TITLE 24, CCR). (2021 EDITION IAPMO UNIFORM MECHANICAL CODE).
5. 2022 CALIFORNIA PLUMBING CODE (CPC), (PART 5, TITLE 24, CCR). (2021 EDITION IAPMO UNIFORM PLUMBING CODE WITH 2022 CALIFORNIA AMENDMENTS).
6. 2022 CALIFORNIA ENERGY CODE, (PART 6, TITLE 24. CCR). (2022 EDITION CALIFORNIA ENERGY COMMISSION BUILDING ENERGY EFFICIENCY STANDARDS).
7. 2022 CALIFORNIA FIRE CODE (CFC), (PART 9, TITLE 24, CCR). (2021 EDITION INTERNATIONAL FIRE CODE WITH 2022 CALIFORNIA AMENDMENTS).
8. 2022 CALIFORNIA REFERENCE CODE, (PART 12, TITLE 24. CCR).

REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS:

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

DEVICE DESIGNATION LEGEND

INITIATING DEVICES

EXAMPLE:

L1D001

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

AUDIBLE / VISUAL DEVICES

EXAMPLE:

110CD
N1-1-1

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

STYLE:4
CLASS:B

SCOPE OF WORK AND BUILDING INFORMATION

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

OCCUPANCY CLASSIFICATION: BUILDING A - B,E,3; BUILDING B,C,E,F,G,H,M - E

TYPE OF CONSTRUCTION: V-B

NUMBER OF STORIES: 1 STORY

SPRINKLER PROTECTION: NO

ALTERNATIVE PROTECTION: NOT APPLICABLE

TYPE OF SYSTEM: MANUAL, AUTOMATIC FIRE ALARM SYSTEM

FIRE ALARM DEVICE LEGEND

SYMBOL	QTY	EXISTING	MANUFACTURER	PART NO	DESCRIPTION	CSFM
FACP	1	EXISTING	NOTIFIER	NFS2-3030D (FACP) 16lbs	FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320, 1X AMPS-24, 1X HS-NCM-SF, 2X DAA2-5070-CLA, 2 BDA-70V, 4X DS-SFM, 1X ACPS-610, 1X SBB-D4, 1X EQDR-D4R - CONFIGURATION 2208011	7165-0028:0224
	1	EXISTING	NOTIFIER	LEM-320	LOOP EXPANDER MODULE, PROVIDES EVEN NUMBERED SLC LOOPS	7165-0028:0224
	4	EXISTING	NOTIFIER	DS-SFM	FIBER OPTION MODULE	7165-0028:0224
	1	EXISTING	NOTIFIER	LCM-320	LOOP CONTROL MODULE	7165-0028:0224
	1	EXISTING	NOTIFIER	HS-NCM-SF	HIGH-SPEED NETWORK COMMUNICATIONS MODULES	7165-0028:0224
	2	EXISTING	NOTIFIER	DAA2-5070	120 VAC DIGITAL AUDIO AMPLIFIER (50 W, 70VRMS), MAX ALARM CURRENT	7165-0028:0224
	1	EXISTING	NOTIFIER	ACPS-610	6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPPLY	7165-0028:0224
	2	EXISTING	NOTIFIER	NFC-BDA-70V (50W, 70V)	EXPANSION CARD 50W 70V	7165-0028:0224
	1	EXISTING	NOTIFIER	SBB-D4	BACKBOX ASSEMBLY, FOUR TIERS, BLACK, 40 LBS.	7165-0028:0224
	1	EXISTING	NOTIFIER	EQDR-D4R	EQUIPMENT DOOR ASSEMBLY, VENTED, 4 TIERS, RED	7165-0028:0224
	1	EXISTING	NOTIFIER	CPU2-3030D	NFS2-3030 FIRE ALARM CONTROL PANEL MAIN BOARD (CENTRAL PROCESSING UNIT), 120V POWER, INCLUDES CHASSIS, DISPLAY OPTION	7165-0028:0224
	1	EXISTING	NOTIFIER	AMPS-24	ADDRESSABLE POWER SUPPLY/BATTERY CHARGER	7165-0028:0224
NAC	4	EXISTING	NOTIFIER	FCPS-24S6	6-AMP, 24-VOLT POWER SUPPLY	7315-0028:0225
	4	EXISTING	NOTIFIER	FCPS-24S6 MAIN BOARD	FIRE ALARM POWER SUPPLY MAIN BOARD	7315-0028:0225
NAC	1	NEW	NOTIFIER	FCPS-24S6	6-AMP, 24-VOLT POWER SUPPLY	7315-0028:0225
	1	NEW	NOTIFIER	FCPS-24S6 MAIN BOARD	FIRE ALARM POWER SUPPLY MAIN BOARD	7315-0028:0225
F	57	NEW	NOTIFIER	NBG-12LX	DUAL-ACTION ADDRESSABLE PULL STATION. INCLUDES KEY LOCKING FEATURE.	7150-0028:0199
AIM	6	NEW	NOTIFIER	FMM-1	ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPUT	7300-0028:0219
AOM	1	NEW	NOTIFIER	FRM-1	ADDRESSABLE RELAY MODULE W/ FLASHSCAN, 2 FORM-C DRY CONTACTS	7300-0028:0219
H	3	NEW	NOTIFIER	FST-851H W/B210LP	INTELLIGENT ADDRESSABLE 195°F (88°C) THERMAL HEAT DETECTOR W/ FLASHSCAN, SOUNDER BASE, LOW FREQUENCY	7270-0028:0196 7300-1653:0109
H	2	NEW	NOTIFIER	FST-851H W/B300-6	INTELLIGENT ADDRESSABLE 195°F (88°C) THERMAL HEAT DETECTOR W/ FLASHSCAN	7270-0028:0196 7300-1653:0109
H	1	NEW	NOTIFIER	FST-951 W/B300-6	LOW-PROFILE 135°F FIXED THERMAL SENSOR. FLASHSCAN ONLY.	7270-0028:0502 7300-1653:0109
S	151	NEW	NOTIFIER	FSP-951 W/B300-6	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.	7272-0028:0503 7300-1653:0109
WP	23	NEW	SYSTEM SENSOR	SPSWK	OUTDOOR SPEAKER STROBE, STANDARD CD	7320-1653:0201
	3	NEW	SYSTEM SENSOR	SPSWL	SPEAKER/STROBE WALL MOUNT, WHITE	7320-1653:0201
C	38	NEW	SYSTEM SENSOR	SPSCWL	SPEAKER/STROBE CEILING MOUNT, WHITE	7320-1653:0505
	15	NEW	SYSTEM SENSOR	SWL	STROBE, WHITE	7125-1653:0504

FIRE ALARM CABLE SCHEDULE

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

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

CABLE ABBREVIATIONS:

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

FIRE ALARM SHEET INDEX

SHEET NUMBER	SHEET NAME
FA0.01	FIRE ALARM LEGENDS, NOTES, AND SCHEDULES
FA0.02	FIRE ALARM DETAILS & SEQUENCE OF OPERATIONS
FA0.03	FIRE ALARM RISER
FA0.04	FIRE ALARM RISER
FA0.05	FIRE ALARM CALCULATIONS
FA0.06	FIRE ALARM CALCULATIONS
FA1.21	FIRE ALARM SITE PLAN
FAD2.11	BLDG A FIRE ALARM DEMOLITION FLOOR PLAN
FAD2.12	BLDG B, C, & H FIRE ALARM DEMOLITION FLOOR PLANS
FAD2.13	BLDG F & G FIRE ALARM DEMOLITION FLOOR PLANS
FAD2.14	BLDG E & M FIRE ALARM DEMOLITION FLOOR PLAN
FA2.11	BLDG A FIRE ALARM FLOOR PLAN
FA2.12	BLDG B, C, & H FIRE ALARM FLOOR PLANS
FA2.13	BLDG F & G FIRE ALARM FLOOR PLANS
FA2.14	BLDG E & M FIRE ALARM FLOOR PLAN

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

FIRE ALARM LEGENDS, NOTES, AND SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** CLIENT PROJ NO:

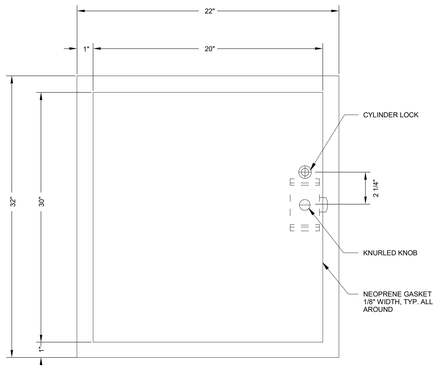
SHEET:

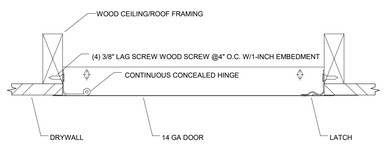
FA0.01

PLEASE RECYCLE

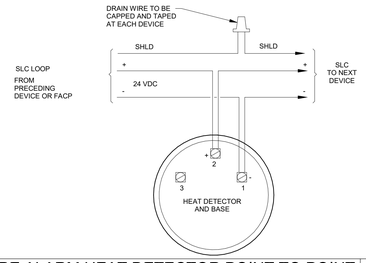
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:12 PM

THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED AT FULL SIZE ON THIS SHEET'S ORIGINAL PAGE SIZE

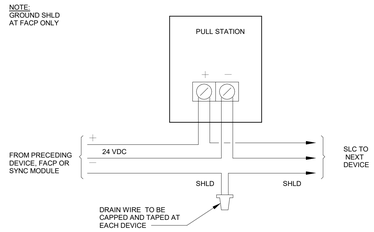




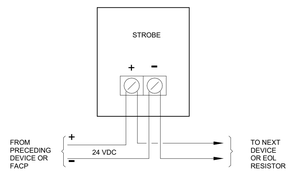
CEILING ACCESS PANEL DETAIL	NTS	12



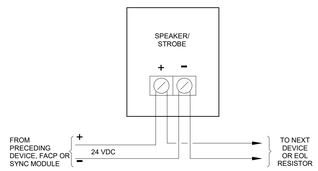
FIRE ALARM HEAT DETECTOR POINT TO POINT DIAGRAM	NTS	8



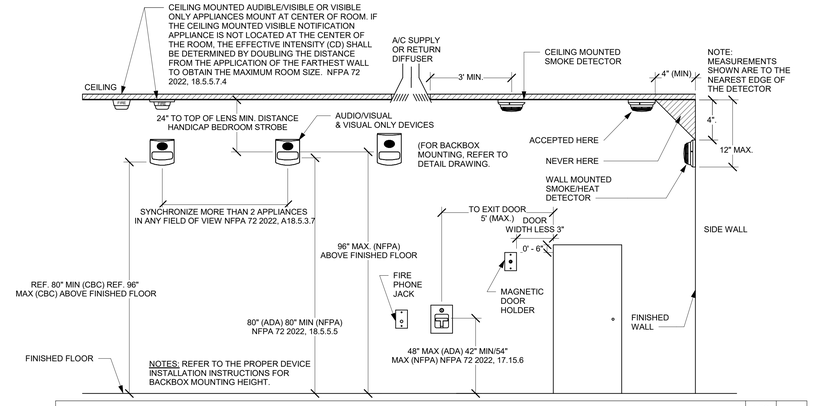
FIRE ALARM MANUAL PULL STATION POINT TO POINT DIAGRAM	NTS	9



FIRE ALARM STROBE POINT TO POINT DIAGRAM	NTS	10

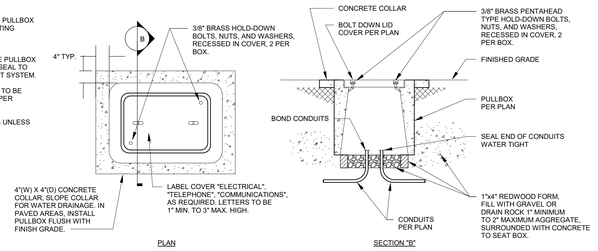


FIRE ALARM SPEAKER STROBE POINT TO POINT DIAGRAM	NTS	11



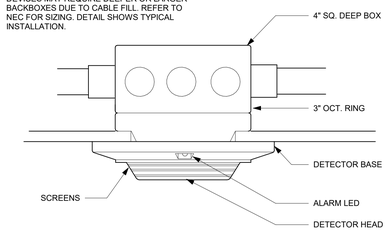
EQUIPMENT MOUNTING HEIGHTS	NTS	1

NOTES:
1. ALL SPLICES WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH AN INSULATING AND ENCAPSULATING RESIN PACK, SCOTCHCAST 4 OR EQUAL.
2. ALL CONDUIT WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH RTV DUCT SEAL TO PREVENT WATER ENTERING CONDUIT SYSTEM.
3. ALL CONDUCTORS AND CABLES ARE TO BE GROUPED AND WIRE TIED EVERY 6" PER CONDUIT FILL.
4. PROVIDE TWO 12" EXTENSION RINGS UNLESS NOTED OTHERWISE.
5. CONCRETE PULLBOX DESIGNED TO WITHSTAND H5-20 LOADING.

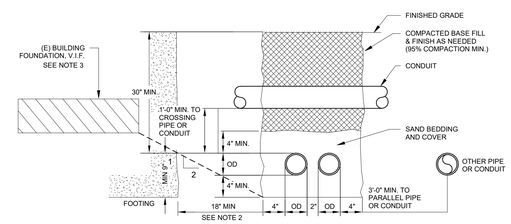


UNDERGROUND CONCRETE PULLBOX DETAIL	NTS	2

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

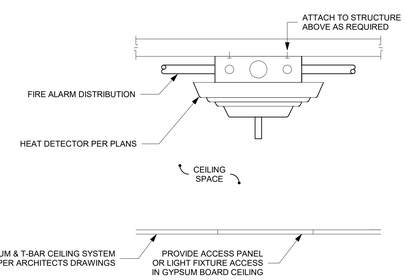


FIRE ALARM DETECTOR MOUNTING DETAIL (BELOW CEILING)	NTS	5

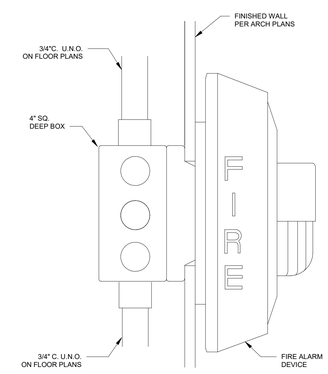


NOTES:
1. TRENCHING LOCATED IN PAVED AREAS - ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.
2. ALL PIPES AND TRENCHES MUST ALSO CONFORM WITH CBC 1809A.14.
3. PER GEOTECH REPORT, BOTTOM OF TRENCHES SHALL NOT BE BELOW A 2:1 SLOPE EXTENDING FORM ANY BUILDING FOUNDATION.

TYPICAL TRENCH DETAIL	NTS	3



FIRE ALARM DETECTOR MOUNTING DETAIL (ABOVE CEILING)	NTS	6



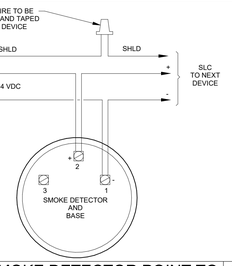
NOTE:
1. DEVICES MAY REQUIRE DEEPER OR LARGER BACKBOXES DUE TO CABLE FILL. REFER TO NEC FOR SIZING. DETAIL SHOWS TYPICAL INSTALLATION.
2. REFER TO 1/FA0.02 FOR BACKBOX/DEVICE MOUNTING HEIGHTS.

FIRE ALARM DEVICED MOUNTED ON WALL (TYP.)	NTS	4

	CTRL. UNIT ANNUNCIATION				NOTIFICATION								REQUIRED FIRE SAFETY CONTROL													
SYSTEM INPUTS / SYSTEM OUTPUTS	ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE TROUBLE SIGNAL	ACTUATE ALARM INDICATOR	ACTUATE EVACUATION SIGNALS	DISPLAY/PRINT CHANGE OF STATUS	TRANSMIT ALARM CONDITION SIGNAL TO SUPERVISORY STATION	TRANSMIT SUPERVISORY CONDITION SIGNAL TO SUPERVISORY STATION	TRANSMIT TROUBLE CONDITION SIGNAL TO SUPERVISORY STATION	RELEASE MAGNETICALLY HELD SMOKE DOORS	UNLOCK EXITS													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1 MANUAL FIRE ALARM BOXES	•	•					•			•			•	•			•			•							
2																											
3																											
4 SMOKE SENSOR/DETECTOR	•	•					•			•			•	•			•			•							
5																											
6																											
7 HEAT SENSOR/DETECTOR	•	•					•			•			•	•			•			•							
8																											
9 FIRE ALARM AC POWER FAILURE					•	•																					
10 FIRE ALARM SYSTEM LOW BATTERY					•	•										•											
11 OPEN CIRCUIT OR GROUND FAULT					•	•										•											
12 NOTIFICATION APPLIANCE CIRCUIT SHORT					•	•										•											
13																•											
14																											
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA

REMARKS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

FIRE ALARM SEQUENCE OF OPERATIONS	NTS	13



FIRE ALARM SMOKE DETECTOR POINT TO POINT DIAGRAM	NTS	7

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

REGISTERED PROFESSIONAL ENGINEER
SAMIT S. ZEIDAN
No. E16762
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

FIRE ALARM DETAILS & SEQUENCE OF OPERATIONS

CONSTRUCTION DOCUMENTS

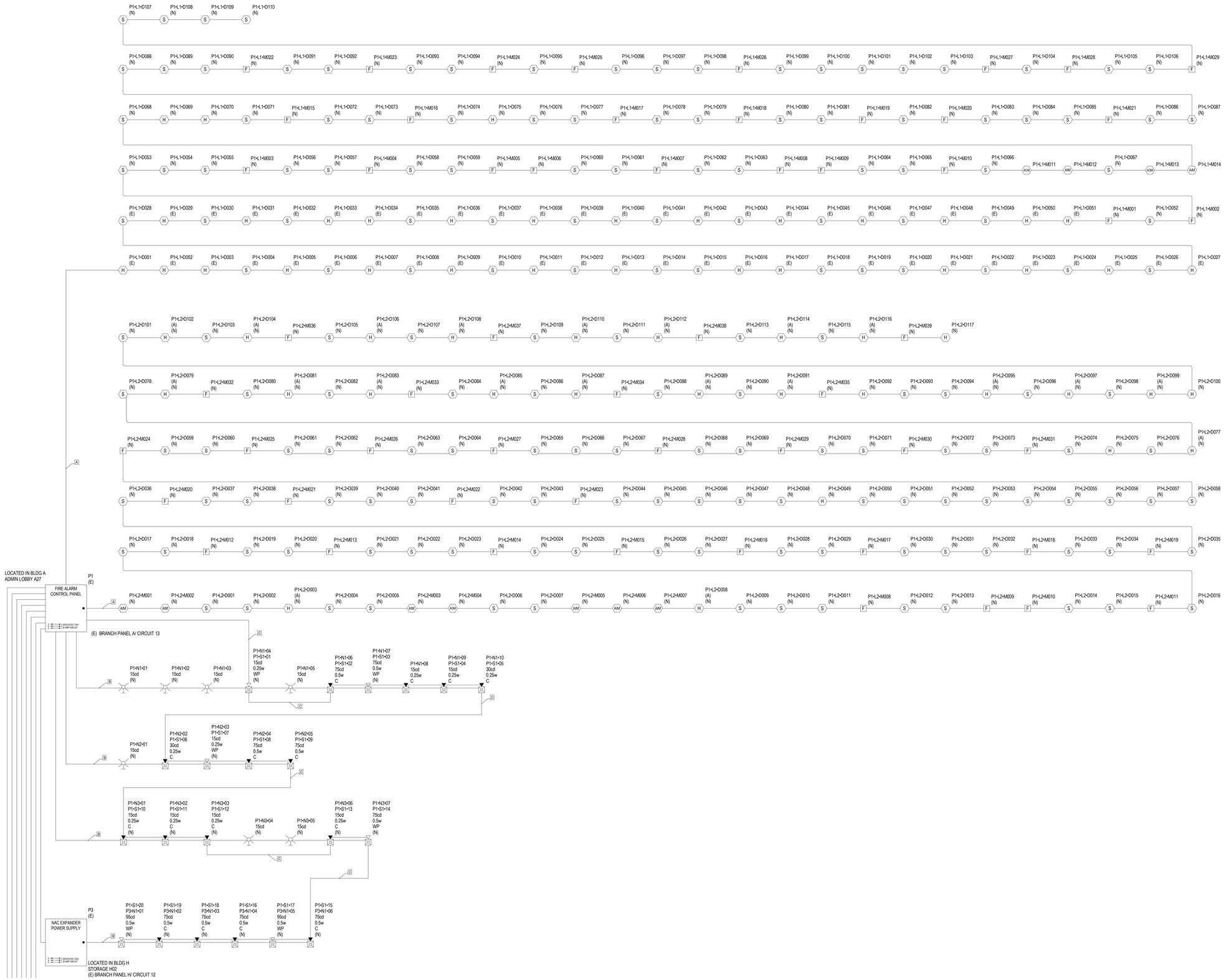
DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

FA0.02

Autodesk Docs://3584x001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:16 PM

PLEASE RECYCLE



1 FIRE ALARM RISER DIAGRAM

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

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

FIRE ALARM RISER

CONSTRUCTION DOCUMENTS

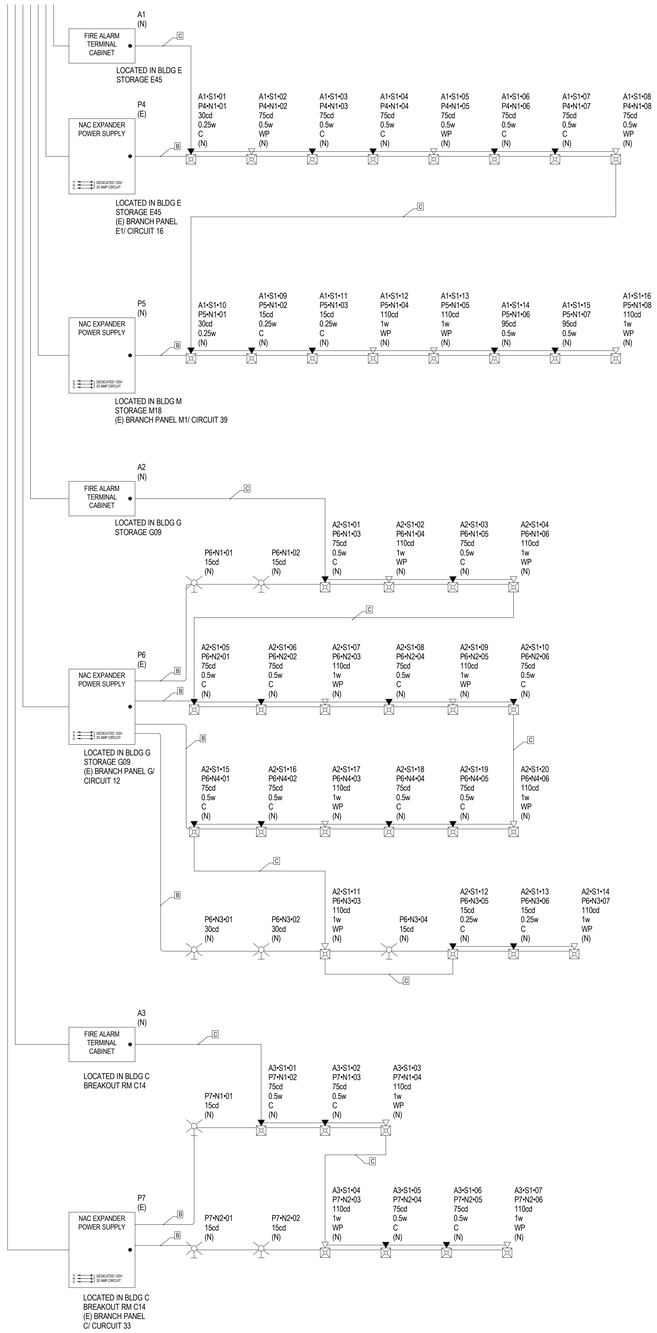
DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

FA0.03

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:18 PM



1 FIRE ALARM RISER DIAGRAM

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

THE LINE SHOWN ABOVE IS 1 INCH WHEN PLOTTED AT THE SHEET'S ORIGINAL PAGE SIZE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:33 PM

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

FIRE ALARM RISER

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

FA0.04

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1 INCH WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

PANEL P1 (NFS2-3030D (FACP)) BATTERY CALCULATION
(SECONDARY POWER SOURCE REQUIREMENTS)

					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL COMPONENTS		1	ACPS-610	6.5V A or 10.5V A Addressable Charging Power Supply	0.09	.09	0.09	.09
		1	AMPS-24	Addressable Power Supply/Battery Charger	0.13	.13	0	
		1	CPU2-3030D	NFS2-3030 Fire Alarm Control Panel Main Board (Central Processing Unit), 120V Power, Includes Chassis, Display Option	0.34	.34	0.34	.34
		2	DAA2-5070	120 VAC Digital Audio Amplifier (50 W, 70VRMS), Max Alarm Current	0.4	.8	3.75	**7.5**
		1	HS-NCM-SF	High-speed Network Communications Modules	0.4	.4	0.4	.4
		1	LCM-320	Loop Control Module	0.13	.13	0.13	.13
		1	LEM-320	Loop Expander Module, Provides Even Numbered SLC Loops	0.1	.1	0.1	.1
		2	NFC-BDA-70v (50W, 70V)	Expansion Card 50W 70V	0.11	.22	1.4	**2.8**
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P1-L1	AIM	2	FMM-1	Addressable Monitor Module W/ FlashScan, Supervises Class A or Class B of Dry Contact Input	0.00035	.0007	0.005	.01
	AOM	2	FRM-1	Addressable Relay Module W/ FlashScan, 2 Form-C Dry Contacts	0.000255	.00051	0.0065	.013
	S	56	FSP-951 w/B300-6	Addressable low-profile photoelectric smoke detector. FlashScan only.	0.0002	.0112	0.0045	.252
	S	24	FSP-951 w/B300-6 (EX)	Addressable low-profile photoelectric smoke detector. FlashScan only.	0.0002	.0048	0.0045	.108
	H	3	FST-851H w/B210LP	Intelligent Addressable 195°F (88°C) Thermal Heat Detector w/ Flashscan. Sounder Base, Low Frequency	0.0003	.0009	0.0065	.0195
	H	22	FST-851H w/B210LP (EX)	Intelligent Addressable 195°F (88°C) Thermal Heat Detector w/ Flashscan, Sounder Base, Low Frequency	0.0003	.0066	0.0065	.143
	H	5	FST-951 w/B300-6 (EX)	Low-profile 135°F fixed thermal sensor. FlashScan only.	0.0002	.001	0.0045	.0225
	F	25	NBG-12LX	Dual-action addressable pull station. Includes key locking feature.	0.000375	.009375	0.005	.125
P1-L2	AIM	6	FMM-1	Addressable Monitor Module W/ FlashScan, Supervises Class A or Class B of Dry Contact Input	0.00035	.0021	0.005	.03
	AOM	1	FRM-1	Addressable Relay Module W/ FlashScan, 2 Form-C Dry Contacts	0.000255	.000255	0.0065	.0065
	S	91	FSP-951 w/B300-6	Addressable low-profile photoelectric smoke detector. FlashScan only.	0.0002	.0182	0.0045	.4095
	H	23	FST-851H w/B210LP	Intelligent Addressable 195°F (88°C) Thermal Heat Detector w/ Flashscan, Sounder Base, Low Frequency	0.0003	.0069	0.0065	.1495
	H	2	FST-851H w/B300-6	Intelligent Addressable 195°F (88°C) Thermal Heat Detector W/ Flashscan	0.0003	.0006	0.0065	.013
	H	1	FST-951 w/B300-6	Low-profile 135°F fixed thermal sensor. FlashScan only.	0.0002	.0002	0.0045	.0045
	F	32	NBG-12LX	Dual-action addressable pull station. Includes key locking feature.	0.000375	.012	0.005	.16
P1-N1	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	0		0.041	.082
	C	1	SPSCWL	Speaker/Strobe Ceiling Mount, White 30cd	0		0.063	.063
	C	1	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.111
	WP	1	SPSWK	Outdoor Speaker Strobe, Standard cd 15cd	0		0.071	.071
	WP	1	SPSWK	Outdoor Speaker Strobe, Standard cd 75cd	0		0.158	.158
		1	SWL	Strobe, White 15cd	0		0.043	.043
		3	SWL	Strobe, White 15cd	0		0.06	.18
P1-N2	C	1	SPSCWL	Speaker/Strobe Ceiling Mount, White 30cd	0		0.063	.063
	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.222
	WP	1	SPSWK	Outdoor Speaker Strobe, Standard cd 15cd	0		0.071	.071
		1	SWL	Strobe, White 15cd	0		0.06	.06
P1-N3	C	4	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	0		0.041	.164
	WP	1	SPSWK	Outdoor Speaker Strobe, Standard cd 75cd	0		0.158	.158
		2	SWL	Strobe, White 15cd	0		0.06	.12
P1-S1	C	7	SPSCWL	Speaker/Strobe Ceiling Mount, White 0.25w	0		0	
	C	7	SPSCWL	Speaker/Strobe Ceiling Mount, White 0.5w	0		0	
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 0.25w	0		0	
	WP	4	SPSWK	Outdoor Speaker Strobe, Standard cd 0.5w	0		0	
					TOTAL STANDBY (A)	**2.28534**	TOTAL ALARM (A)	**4.392**

REQUIRED STANDBY TIME = 24 HOURS	
REQUIRED ALARM TIME = 15 MINUTES	
SECONDARY STANDBY LOAD (A)	**2.28534** 24 **54.85**
SECONDARY ALARM LOAD (A)	**4.392** 0.25 **3.6**
STANDBY AND ALARM SUBTOTAL (AMP HOURS)	**58.45**
DERATING FACTOR	1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)	**73.06**
PROVIDE (2) 12V 100AH BATTERIES	
*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.	

PANEL P3 (FCPS-24S6) BATTERY CALCULATION
(SECONDARY POWER SOURCE REQUIREMENTS)

PANEL POWER SUPPLY MAX CURRENT = 6A					TOTAL USED CAPACITY (IN ALARM) = 0.951A (15.85 %)			
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL COMPONENTS		1	FCPS-24S6 MAIN BOARD	Fire Alarm Power Supply Main Board	0.091	.091	0.145	.145
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P3-N1	C	4	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.444
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 95cd	0		0.181	.362
					TOTAL STANDBY (A)	.091	TOTAL ALARM (A)	.951

REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)	.091	24	**2.18**
SECONDARY ALARM LOAD (A)	.951	0.25	.24
STANDBY AND ALARM SUBTOTAL (AMP HOURS)		**2.42**	
DERATING FACTOR		1.25	
SECONDARY LOAD REQUIREMENTS (AMP HOURS)		**3.03**	
PROVIDE (2) 12V 7AH BATTERIES			
*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.			

PANEL P4 (FCPS-24S6) BATTERY CALCULATION
(SECONDARY POWER SOURCE REQUIREMENTS)

PANEL POWER SUPPLY MAX CURRENT = 6A					TOTAL USED CAPACITY (IN ALARM) = 1.126A (18.77 %)			
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL COMPONENTS		1	FCPS-24S6 MAIN BOARD	Fire Alarm Power Supply Main Board	0.091	.091	0.145	.145
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P4-N1	C	1	SPSCWL	Speaker/Strobe Ceiling Mount, White 30cd	0		0.063	.063
	C	4	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.444
	WP	3	SPSWK	Outdoor Speaker Strobe, Standard cd 75cd	0		0.158	.474
					TOTAL STANDBY (A)	.091	TOTAL ALARM (A)	**.126**

REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)	.091	24	**2.18**
SECONDARY ALARM LOAD (A)	**.126**	0.25	.28
STANDBY AND ALARM SUBTOTAL (AMP HOURS)		**2.47**	
DERATING FACTOR		1.25	
SECONDARY LOAD REQUIREMENTS (AMP HOURS)		**3.08**	
PROVIDE (2) 12V 7AH BATTERIES			
*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.			

PANEL P5 (FCPS-24S6) BATTERY CALCULATION
(SECONDARY POWER SOURCE REQUIREMENTS)

PANEL POWER SUPPLY MAX CURRENT = 6A					TOTAL USED CAPACITY (IN ALARM) = 1.138A (18.97 %)			
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL COMPONENTS		1	FCPS-24S6 MAIN BOARD	Fire Alarm Power Supply Main Board	0.091	.091	0.145	.145
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P5-N1	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	0		0.041	.082
	WP	3	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.606
		1	SPSWL	Speaker/Strobe Wall Mount, White 30cd	0		0.063	.063
		2	SPSWL	Speaker/Strobe Wall Mount, White 95cd	0		0.121	.242
					TOTAL STANDBY (A)	.091	TOTAL ALARM (A)	**.138**

REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)	.091	24	**2.18**
SECONDARY ALARM LOAD (A)	**.138**	0.25	.28
STANDBY AND ALARM SUBTOTAL (AMP HOURS)		**2.47**	
DERATING FACTOR		1.25	
SECONDARY LOAD REQUIREMENTS (AMP HOURS)		**3.09**	
PROVIDE (2) 12V 7AH BATTERIES			
*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.			

PANEL P6 (FCPS-24S6) BATTERY CALCULATION
(SECONDARY POWER SOURCE REQUIREMENTS)

PANEL POWER SUPPLY MAX CURRENT = 6A					TOTAL USED CAPACITY (IN ALARM) = 3.208A (53.47 %)			
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL COMPONENTS		1	FCPS-24S6 MAIN BOARD	Fire Alarm Power Supply Main Board	0.091	.091	0.145	.145
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P6-N1	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.222
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.404
		2	SWL	Strobe, White 15cd	0		0.043	.086
P6-N2	C	4	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.444
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.404
P6-N3	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	0		0.041	.082
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.404
		1	SWL	Strobe, White 15cd	0		0.043	.043
		2	SWL	Strobe, White 30cd	0		0.063	.126
P6-N4	C	4	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.444
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.404
					TOTAL STANDBY (A)	.091	TOTAL ALARM (A)	**3.208**

REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)	.091	24	**2.18**
SECONDARY ALARM LOAD (A)	**3.208**	0.25	.8
STANDBY AND ALARM SUBTOTAL (AMP HOURS)		**2.99**	
DERATING FACTOR		1.25	
SECONDARY LOAD REQUIREMENTS (AMP HOURS)		**3.73**	
PROVIDE (2) 12V 7AH BATTERIES			
*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.			

PANEL P7 (FCPS-24S6) BATTERY CALCULATION
(SECONDARY POWER SOURCE REQUIREMENTS)

PANEL POWER SUPPLY MAX CURRENT = 6A					TOTAL USED CAPACITY (IN ALARM) = 1.324A (22.07 %)			
					STANDBY CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL COMPONENTS		1	FCPS-24S6 MAIN BOARD	Fire Alarm Power Supply Main Board	0.091	.091	0.145	.145
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
P7-N1	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.222
	WP	1	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.202
		1	SWL	Strobe, White 15cd	0		0.043	.043
P7-N2	C	2	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	0		0.111	.222
	WP	2	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	0		0.202	.404
		2	SWL	Strobe, White 15cd	0		0.043	.086
					TOTAL STANDBY (A)	.091	TOTAL ALARM (A)	**.324**

REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD (A)	.091	24	**2.18**
SECONDARY ALARM LOAD (A)	**.324**	0.25	.33
STANDBY AND ALARM SUBTOTAL (AMP HOURS)		**2.52**	
DERATING FACTOR		1.25	
SECONDARY LOAD REQUIREMENTS (AMP HOURS)		**3.14**	
PROVIDE (2) 12V 7AH BATTERIES			
*BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION.			

1 **FIRE ALARM BATTERY CALCULATIONS**
SCALE: 1/8" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

FIRE ALARM CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

FA0.05

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:22 PM

PLEASE RECYCLE

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

P1 N1 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.74
Min. Operational Voltage:	16	End Of Line Voltage:	19.66
Max. Circuit Current (A):	1.5	Voltage Drop Percent:	3.65 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.708
Total Circuit Length (Ft):	171	Spare Current (A):	0.792
Total Circuit Resistance (Ω):	1.05078	Spare Current (A) Percent:	52.80 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	2	0.041	.082
		SWL	Strobe, White 15cd	1	0.043	.043
		SWL	Strobe, White 15cd	3	0.06	.18
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 30cd	1	0.063	.063
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 15cd	1	0.071	.071
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	1	0.111	.111
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 75cd	1	0.158	.158

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

P1 N2 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.44
Min. Operational Voltage:	16	End Of Line Voltage:	19.96
Max. Circuit Current (A):	1.5	Voltage Drop Percent:	2.16 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.416
Total Circuit Length (Ft):	173	Spare Current (A):	1.084
Total Circuit Resistance (Ω):	1.060925	Spare Current (A) Percent:	72.27 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SWL	Strobe, White 15cd	1	0.06	.06
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 30cd	1	0.063	.063
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 15cd	1	0.071	.071
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	2	0.111	.222

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

P1 N3 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	1.29
Min. Operational Voltage:	16	End Of Line Voltage:	19.11
Max. Circuit Current (A):	1.5	Voltage Drop Percent:	6.32 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.442
Total Circuit Length (Ft):	475	Spare Current (A):	1.058
Total Circuit Resistance (Ω):	2.915893	Spare Current (A) Percent:	70.53 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	4	0.041	.164
		SWL	Strobe, White 15cd	2	0.06	.12
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 75cd	1	0.158	.158

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

P3 N1 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	.67
Min. Operational Voltage:	16	End Of Line Voltage:	9.73
Max. Circuit Current (A):	3	Voltage Drop Percent:	3.29 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	.806
Total Circuit Length (Ft):	136	Spare Current (A):	2.194
Total Circuit Resistance (Ω):	0.83203	Spare Current (A) Percent:	73.13 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	4	0.111	.444
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 95cd	2	0.181	.362

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

P5 N1 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	1.83
Min. Operational Voltage:	16	End Of Line Voltage:	18.57
Max. Circuit Current (A):	3	Voltage Drop Percent:	8.95 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.993
Total Circuit Length (Ft):	299	Spare Current (A):	2.007
Total Circuit Resistance (Ω):	1.838743	Spare Current (A) Percent:	66.90 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	2	0.041	.082
		SPSWL	Speaker/Strobe Wall Mount, White 30cd	1	0.063	.063
		SPSWL	Speaker/Strobe Wall Mount, White 95cd	2	0.121	.242
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	3	0.202	.606

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

P7 N1 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.38
Min. Operational Voltage:	16	End Of Line Voltage:	20.02
Max. Circuit Current (A):	3	Voltage Drop Percent:	1.87 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.467
Total Circuit Length (Ft):	133	Spare Current (A):	2.533
Total Circuit Resistance (Ω):	0.81881	Spare Current (A) Percent:	84.43 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SWL	Strobe, White 15cd	1	0.043	.043
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	2	0.111	.222
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	1	0.202	.202

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

P7 N2 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.63
Min. Operational Voltage:	16	End Of Line Voltage:	19.77
Max. Circuit Current (A):	3	Voltage Drop Percent:	3.08 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.712
Total Circuit Length (Ft):	144	Spare Current (A):	2.288
Total Circuit Resistance (Ω):	0.881511	Spare Current (A) Percent:	76.27 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SWL	Strobe, White 15cd	2	0.043	.086
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	2	0.111	.222
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	2	0.202	.404

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

P4 N1 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	1.52
Min. Operational Voltage:	16	End Of Line Voltage:	18.88
Max. Circuit Current (A):	3	Voltage Drop Percent:	7.48 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.981
Total Circuit Length (Ft):	253	Spare Current (A):	2.019
Total Circuit Resistance (Ω):	1.554482	Spare Current (A) Percent:	67.30 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 30cd	1	0.063	.063
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	4	0.111	.444
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 75cd	3	0.158	.474

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

P6 N1 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.8
Min. Operational Voltage:	16	End Of Line Voltage:	19.6
Max. Circuit Current (A):	3	Voltage Drop Percent:	3.91 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.712
Total Circuit Length (Ft):	182	Spare Current (A):	2.288
Total Circuit Resistance (Ω):	1.120149	Spare Current (A) Percent:	76.27 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
		SWL	Strobe, White 15cd	2	0.043	.086
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	2	0.111	.222
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	2	0.202	.404

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

P6 N2 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	1.48
Min. Operational Voltage:	16	End Of Line Voltage:	18.92
Max. Circuit Current (A):	3	Voltage Drop Percent:	7.28 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.848
Total Circuit Length (Ft):	285	Spare Current (A):	2.152
Total Circuit Resistance (Ω):	1.750402	Spare Current (A) Percent:	71.73 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	4	0.111	.444
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	2	0.202	.404

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

P6 N3 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	1.65
Min. Operational Voltage:	16	End Of Line Voltage:	18.75
Max. Circuit Current (A):	3	Voltage Drop Percent:	8.06 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.655
Total Circuit Length (Ft):	409	Spare Current (A):	2.345
Total Circuit Resistance (Ω):	2.511836	Spare Current (A) Percent:	78.17 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 15cd	2	0.041	.082
		SWL	Strobe, White 15cd	1	0.043	.043
		SWL	Strobe, White 30cd	2	0.063	.126
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	2	0.202	.404

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

P6 N4 LUMP SUM REPORT

CIRCUIT SETTINGS		TOTALS	
Starting Calculation Voltage:	20.4	Max. Voltage Drop:	2.06
Min. Operational Voltage:	16	End Of Line Voltage:	18.34
Max. Circuit Current (A):	3	Voltage Drop Percent:	10.08 %
Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.848
Total Circuit Length (Ft):	395	Spare Current (A):	2.152
Total Circuit Resistance (Ω):	2.423952	Spare Current (A) Percent:	71.73 %

Circuit Wiring Properties: 'V' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded
Distance measured using drawn segment lengths with 10.00 % additional length calculated

DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)
	C	SPSCWL	Speaker/Strobe Ceiling Mount, White 75cd	4	0.111	.444
	WP	SPSWK	Outdoor Speaker Strobe, Standard cd 110cd	2	0.202	.404

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

1 FIRE ALARM BATTERY CALCULATIONS

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

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:24 PM

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:
**25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901**

PROJECT:
GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:
FIRE ALARM CALCULATIONS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16 | CLIENT PROJ NO:

SHEET:
FA0.06

PLEASE RECYCLE

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

KEY NOTES

1 (E) VOICE EVACUATION FIRE ALARM CONTROL UNIT W/MIC LOCATED IN ADMIN LOBBY A27.

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40PVC.
3. PER CFC 503.2.3 "FIRE APPARATUS ACCES ROADS SHALL BE DESIGINED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

1 FIRE ALARM SITE PLAN

SCALE: 1/32" = 1'-0"

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

FIRE ALARM SITE PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

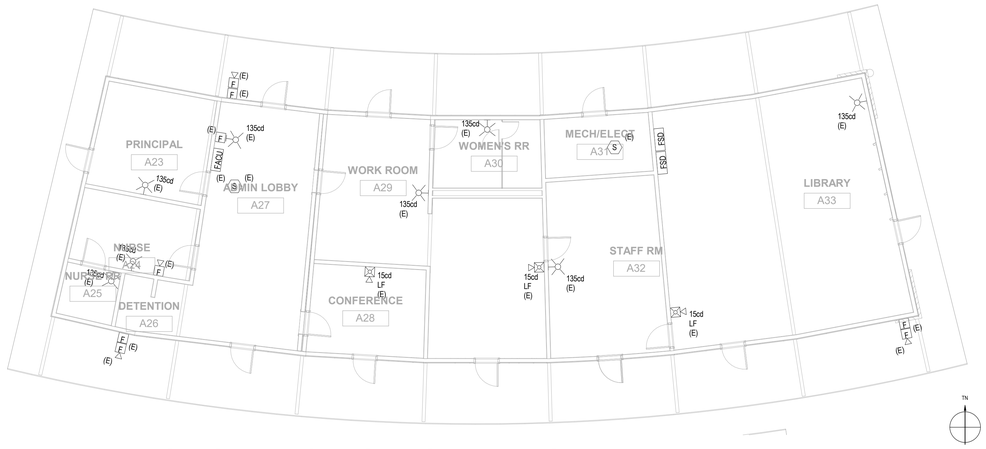
SHEET:

FA1.21

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:49 PM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PRINTED AT THIS SHEET'S ORIGINAL PAGE SIZE



1 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG A

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

0 4 8 12 16

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

REGISTERED PROFESSIONAL ENGINEER
SAMI S. ZEIDAN
No. E 16782
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A FIRE ALARM DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

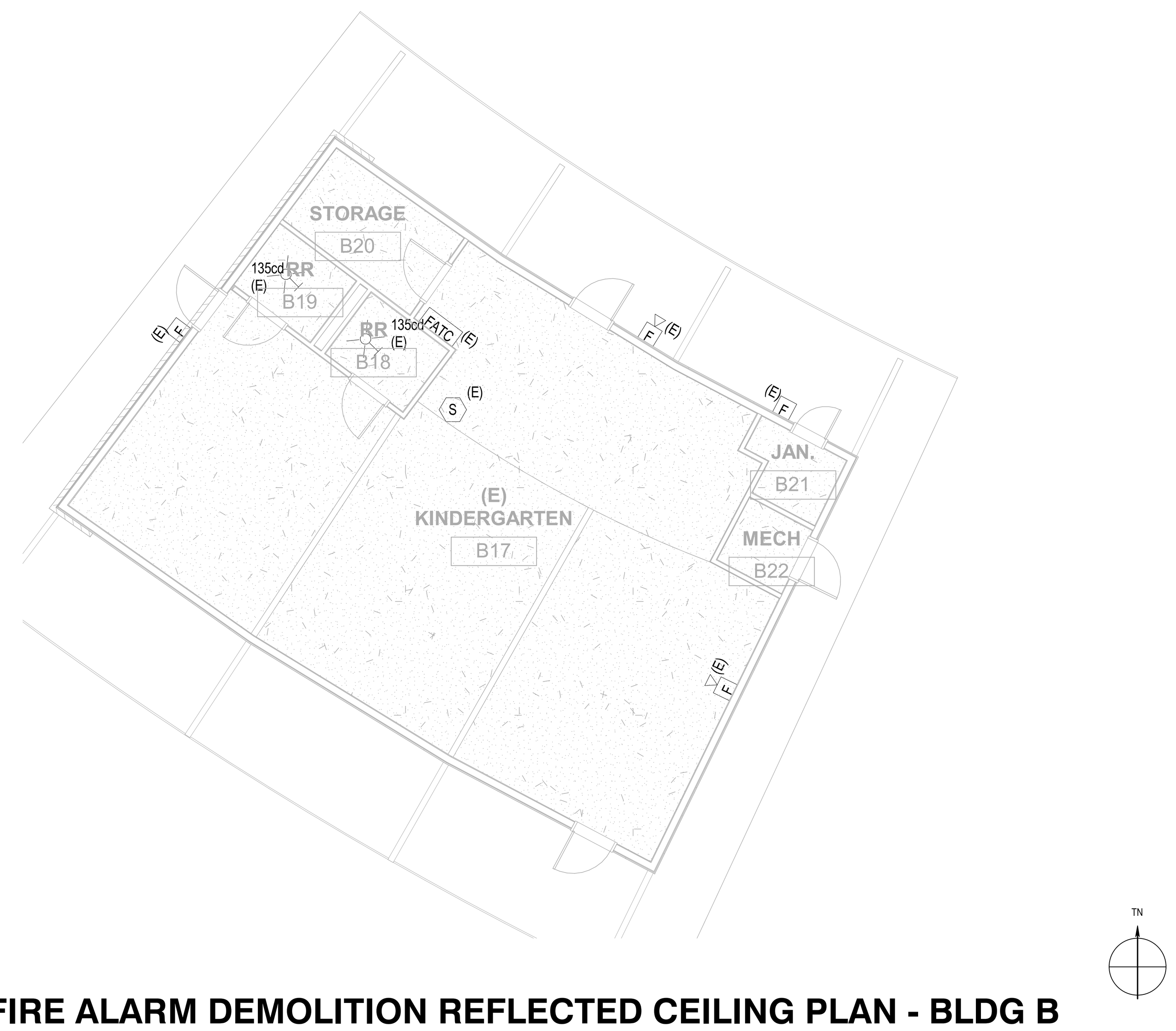
FAD2.11

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 1:21:09 PM

PLEASE RECYCLE

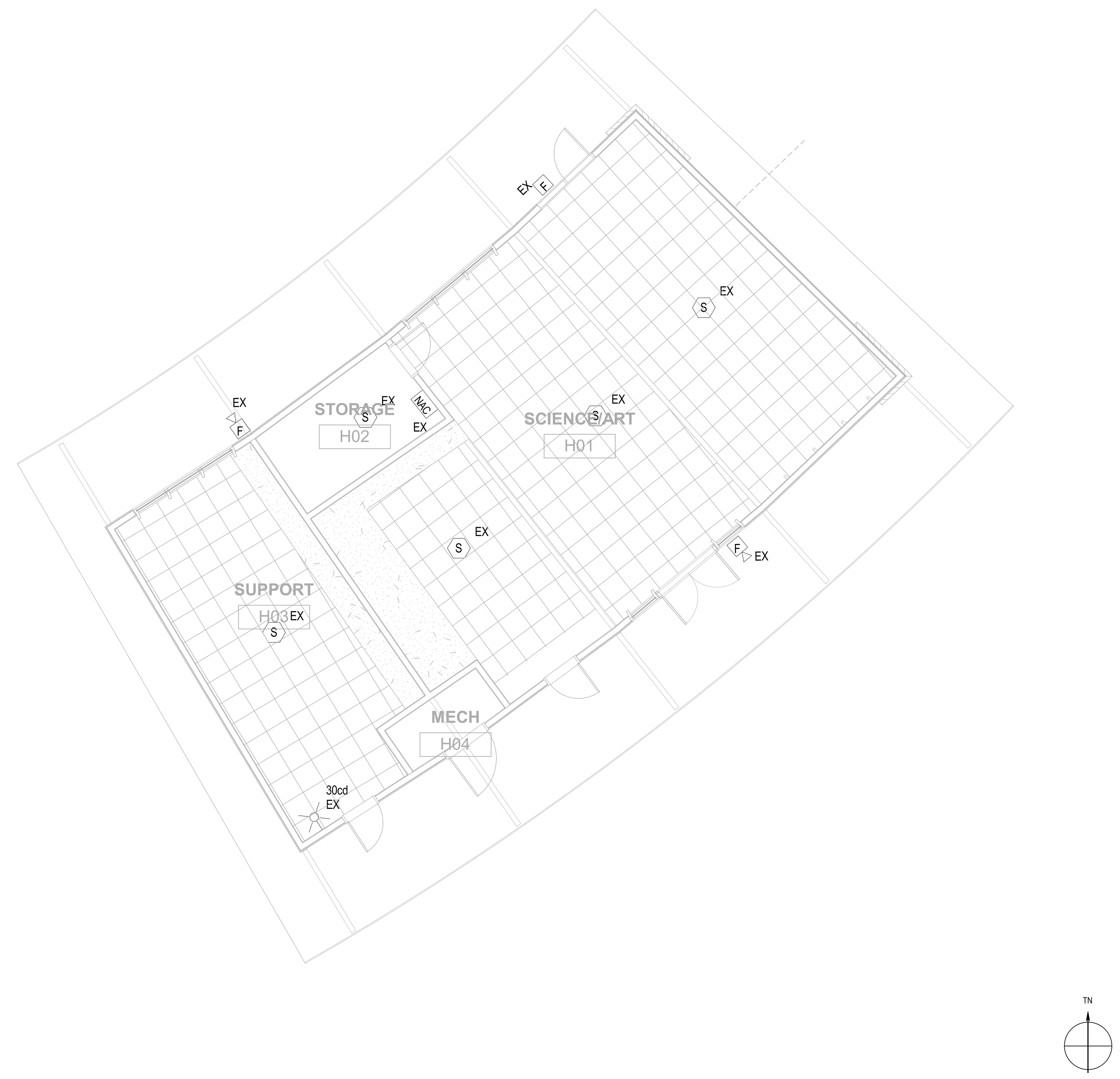
THE LINE SHOWN ABOVE IS
EXACTLY ONE INCH LONG AT THIS
SHEETS ORIGINAL PAGE SIZE

(#) KEY NOTES



3 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG B
SCALE: 1/8" = 1'-0"

0 4 8 12 16



2 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG H
SCALE: 1/8" = 1'-0"

0 4 8 12 16

1 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG C
SCALE: 1/8" = 1'-0"

0 4 8 12 16

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:21:13 PM

AGENCY APPROVAL:

REVIEWING AGENCIES
STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H FIRE ALARM DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

FAD2.12

PLEASE RECYCLE

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

KEY NOTES

2 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG F

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

0 4 8 12 16

1 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG G

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

0 4 8 12 16

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G FIRE ALARM DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

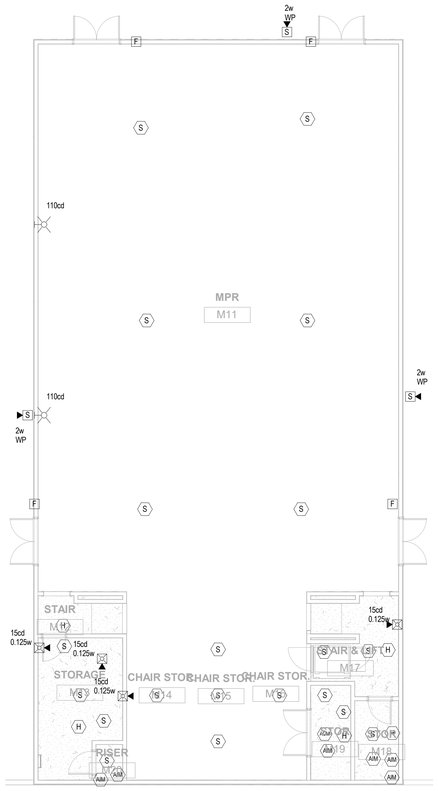
SHEET:

FAD2.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:21:18 PM

PLEASE RECYCLE

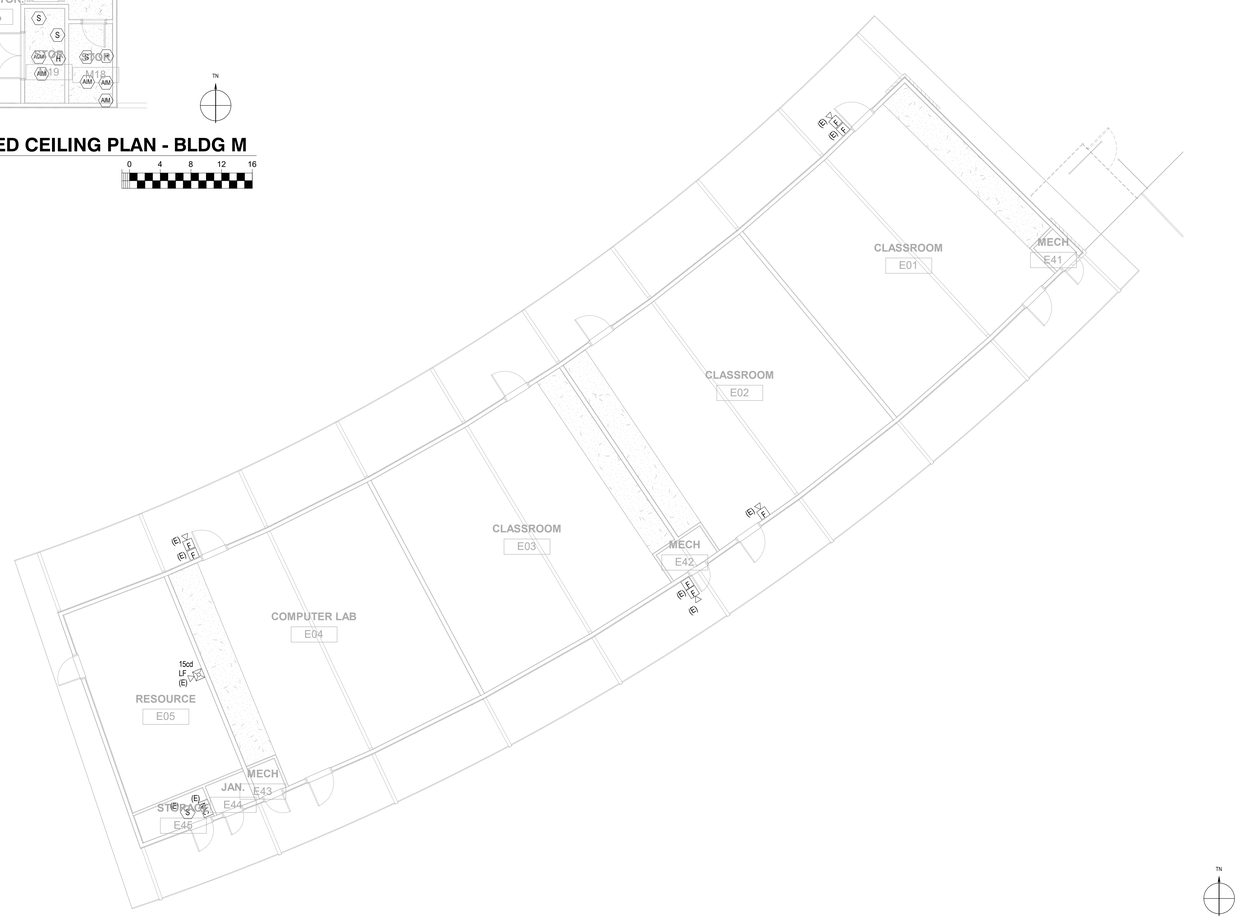
THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE



2 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG M

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

0 4 8 12 16



1 FIRE ALARM DEMOLITION REFLECTED CEILING PLAN - BLDG E

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

0 4 8 12 16

KEY NOTES

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

MEP & FS / Sustainability / CxA

CONSULTING ENGINEERS

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: Z3-2265

REGISTERED PROFESSIONAL ENGINEER
SAMI S. ZEIDAN
No. E 16782
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E & M FIRE ALARM DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

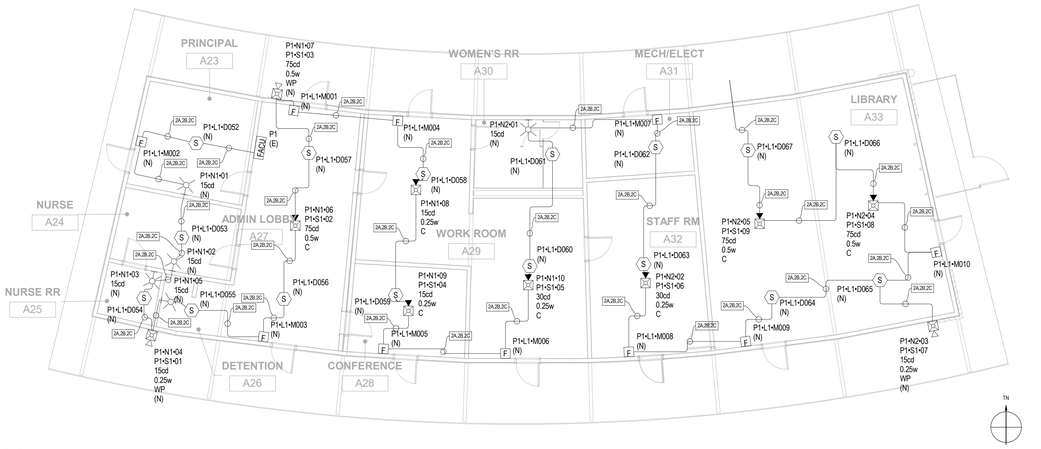
SHEET:

FAD2.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r2Z.rvt
9/19/2024 1:21:21 PM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PRINTED ON A THIS SHEET'S ORIGINAL PAGE SIZE



1 FIRE ALARM REFLECTED CEILING PLAN - BLDG A

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

0 4 8 12 16

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40PVC.
3. PER CFC 503.2.3 "FIRE APPARATUS ACCES ROADS SHALL BE DESIGINED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

REGISTERED PROFESSIONAL ENGINEER
SAMI S. ZEIDAN
No. E 16782
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A FIRE ALARM FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

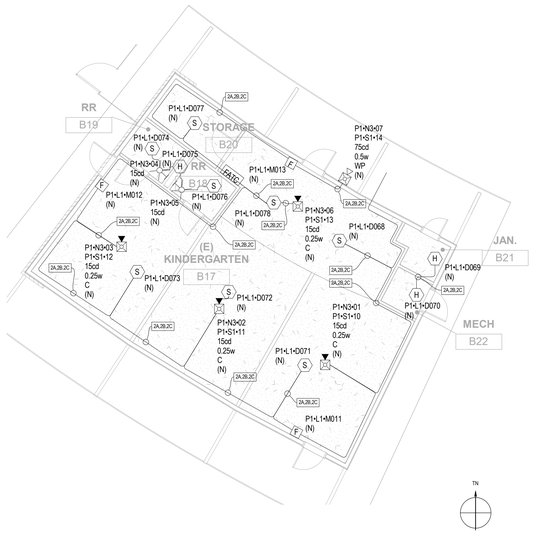
SHEET:

FA2.11

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 1:20:53 PM

PLEASE RECYCLE

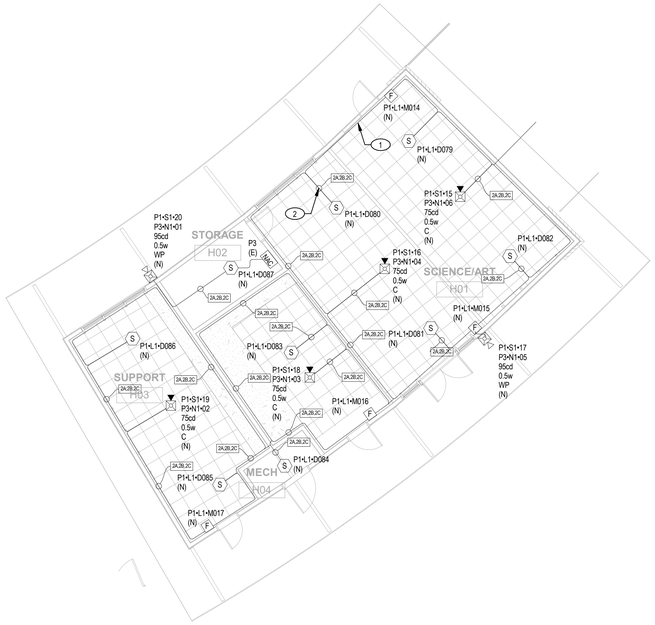
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH ON THIS SHEET'S ORIGINAL PAGE SIZE



3 FIRE ALARM REFLECTED CEILING PLAN - BLDG B

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

0 4 8 12 16



2 FIRE ALARM REFLECTED CEILING PLAN - BLDG H

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

0 4 8 12 16

1 FIRE ALARM REFLECTED CEILING PLAN - BLDG C

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

0 4 8 12 16

KEY NOTES

1 REFERENCE TECHNOLOGY SHEETS FOR WIRE MOLD 5500 MAIN SURFACE RACEWAY WIRING (TYP.). ANY FIRE ALARM CONDUCTORS WITHIN WIREMOLD NEED TO BE IN CONDUIT (TYP.).

2 ALL EXPOSED FIRE ALARM WIRE ON CEILINGS SHALL BE IN 2300 WIRE MOLD (TYP.).

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40PVC.
3. PER CFC 503.2.3 "FIRE APPARATUS ACCES ROADS SHALL BE DESIGINED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

REGISTERED PROFESSIONAL ENGINEER
SAMI S. ZEIDAN
No. E 16782
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H FIRE ALARM FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

FA2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:20:55 PM

PLEASE RECYCLE

2 FIRE ALARM REFLECTED CEILING PLAN - BLDG F

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

0 4 8 12 16

1 FIRE ALARM REFLECTED CEILING PLAN - BLDG G

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

0 4 8 12 16

KEY NOTES

1 REFERENCE TECHNOLOGY SHEETS FOR WIRE MOLD 5500 MAIN SURFACE RACEWAY WIRING (TYP.). ANY FIRE ALARM CONDUCTORS WITHIN WIREMOLD NEED TO BE IN CONDUIT (TYP.).

2 ALL EXPOSED FIRE ALARM WIRE ON CEILINGS SHALL BE IN 2300 WIRE MOLD (TYP.).

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40PVC.
3. PER CFC 503.2.3 "FIRE APPARATUS ACCES ROADS SHALL BE DESIGINED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G FIRE ALARM FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

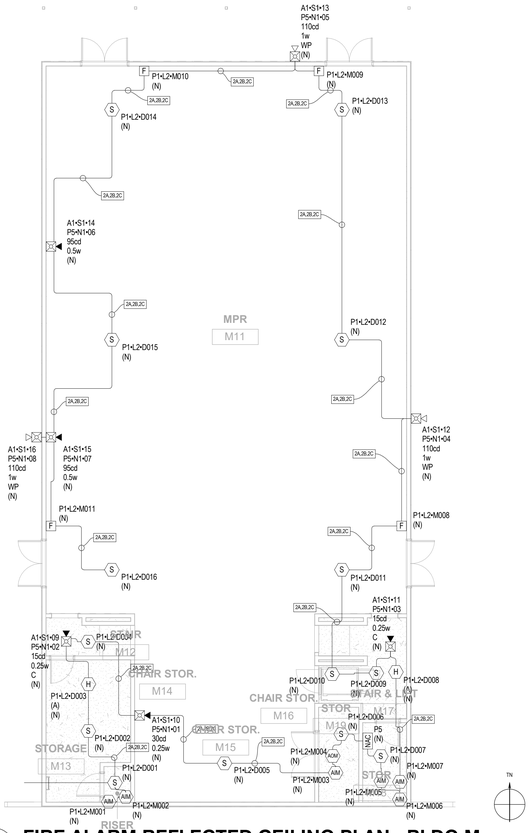
SHEET:

FA2.13

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:21:02 PM

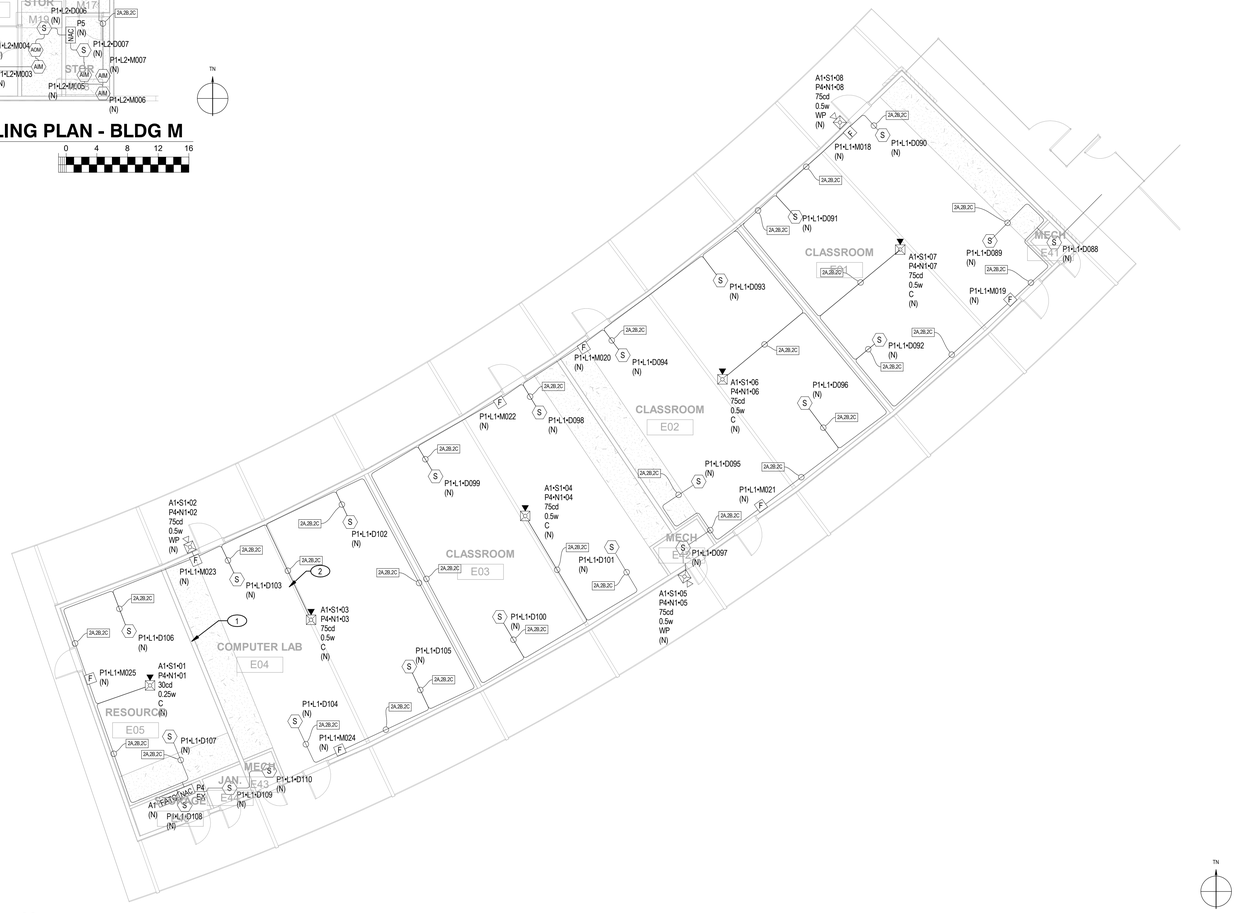
THE LINE SHOWN ABOVE IS 1" WHEN PLOTTED ON ANSI E SHEETS ORIGINAL PAGE SIZE



2 FIRE ALARM REFLECTED CEILING PLAN - BLDG M

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

0 4 8 12 16



1 FIRE ALARM REFLECTED CEILING PLAN - BLDG E

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

0 4 8 12 16

KEY NOTES

1 REFERENCE TECHNOLOGY SHEETS FOR WIRE MOLD 5500 MAIN SURFACE RACEWAY WIRING (TYP.). ANY FIRE ALARM CONDUCTORS WITHIN WIREMOLD NEED TO BE IN CONDUIT (TYP.).

2 ALL EXPOSED FIRE ALARM WIRE ON CEILINGS SHALL BE IN 2300 WIRE MOLD (TYP.).

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. UNDERGROUND CONDUITS SHALL BE SCH-40PVC.
3. PER CFC 503.2.3 "FIRE APPARATUS ACCES ROADS SHALL BE DESIGINED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

MEP & FS / Sustainability / CxA

CONSULTING ENGINEERS

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

REGISTERED PROFESSIONAL ENGINEER
RAMI S. ZEIDAN
No. E 16782
EXP. 9-30-24
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E & M FIRE ALARM FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16

CLIENT PROJ NO:

SHEET:

FA2.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan:TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 1:21:06 PM

PLEASE RECYCLE

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

CONTRACTOR(S) GUIDELINES:

28. ALL SPLICES SHALL UTILIZE 3M 710 MODULES. ALL CABLES MUST BE EQUIPPED TO PROVIDE A CONTINUOUS BOUND OF CABLE SHIELDS THROUGH ALL SPLICES.

29. PULL ROPES SHALL BE PLACED IN ALL VACANT CONDUITS.

30. ALL WORK MUST BE COMPLETED IN A NEAT AND PROFESSIONAL MANNER. THE WORK SITE SHALL BE KEPT CLEAN AND ALL DAMAGE TO OWNER'S PROPERTY REPAIRED.

31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING A FINAL CLEANUP OF THE WORK SITE PRIOR TO FINAL SYSTEM ACCEPTANCE.

32. CONTRACTOR SHALL REMOVE ALL COPPER, FIBER AND COAXIAL CABLES ABANDONED IN CONDUIT, CEILINGS AND WALLS PER CEC. CABLE SHALL INCLUDE ALL INTRABUILDING, RISER SYSTEMS AND STATION CABLES FOR ALL LOW VOLTAGE/TECHNOLOGY/STRUCTURED CABLING SYSTEMS.

33. CONTRACTOR(S) SHALL VERIFY ALL SITE CONDITIONS PRIOR TO BID.

34. IN ACCESSIBLE CEILING SPACES;

a. THE CONTRACTOR SHALL PROVIDE THE REQUIRED STUB UP(S) / OUT(S) AND BOXES WITH MUD-RINGS TO THE NEAREST ACCESSIBLE CEILING SPACE AND / OR NEAREST TECHNOLOGY PATHWAY INFRASTRUCTURE, REFERENCE PLANS AND SPECIFICATION FOR MORE INFORMATION.

b. THE DESIGNATED SCS / TECHNOLOGY CONTRACTOR(S) SHALL PROVIDE A J-HOOK PATHWAY SYSTEM AND REQUIRED SLEEVES. DO NOT USE CEILING TILE WIRE HANGERS, WATER OR ELECTRICAL PIPES, OR LIGHT FIXTURES TO HANG CABLE. CABLE MUST BE A MINIMUM OF 6 INCHES ABOVE THE CEILING TILE AND MUST NOT COME WITHIN TWELVE INCHES OF A LIGHT FIXTURE.

- THE SCS / TECHNOLOGY CONTRACTOR WILL PROVIDE THE PATHWAY REQUIRED FOR THE STRUCTURE CABLING SYSTEMS.
- THE DESIGNATED LOW VOLTAGE / TECHNOLOGY CONTRACTOR(S) FOR EACH "SUB-SYSTEM WILL PROVIDE THE PATHWAY REQUIRED FOR THE SYSTEMS, OUTSIDE WHAT IS CONSIDERED THE STRUCTURED CABLING SYSTEM.

35. IN INACCESSIBLE AND HARDLID CEILING SPACES;

a. THE CONTRACTOR SHALL PROVIDE ALL CONDUIT PATHWAYS, BOXES ETC. FOR A COMPLETE SYSTEM FROM THE MDF ROOM, IDF ROOM(S), IDF CABINET(S), AND ALL OTHER LOW VOLTAGE / TECHNOLOGY SYSTEMS HEADEND, CABINETS, TERMINAL CABINETS, ETC. TO THE POINT OF TERMINATION AT THE STATION END LOCATION PER PLANS AND SPECIFICATION.

TECHNOLOGY ABBREVIATIONS:

ACP	ACCESS CONTROL PROCESSOR	(N)	NEW
AFF	ABOVE FINISHED FLOOR	NC	NORMALLY CLOSED
AHJ	AUTHORITY HAVING JURISDICTION	NIC	NOT IN CONTRACT
AMP	AMPLIFIER	NO	NORMALLY OPEN
AOR	ARCHITECT OF RECORD	NTS	NOT TO SCALE
AUD	AUDIO	NVR	NETWORK VIDEO RECORDER
AUTO	AUTOMATIC	OC	ON CENTER
AUX	AUXILIARY	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
AV	AUDIOVISUAL		
AVc	AUDIOVISUAL CONTROLLER	OFOI	OWNER FURNISHED, OWNER INSTALLED
AWG	AMERICAN WIRE GAUGE		
BCT	BONDING CONDUCTOR FOR TELECOMMUNICATIONS CONDUIT	OSP	OUTSIDE PLANT
		PB	PULL BOX
C	CONDUIT	PIR	PASSIVE INFRARED
CATV	COMMUNITY ANTENNA TELEVISION	POE	POWER OVER ETHERNET
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	PR	PAIR OF CONDUCTORS
		PTZ	PAN TILT ZOOM
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED	PVC	POLYVINYL CHLORIDE
		PWR	POWER
CL	CENTERLINE	RCP	REFLECTED CEILING PLAN
DIV	DIVISION	REX	REQUEST TO EXIT
DC	DOOR CONTACT	RFI	REQUEST FOR INFORMATION
(E)	EXISTING	RMC	RIGID METALLIC CONDUIT
EC	ELECTRICAL CONTRACTOR	SM	SINGLE MODE
ECS	EMERGENCY COMMUNICATION SYSTEM	STR	STRANDS (OF FIBER)
		STP	SHIELDED TWISTED PAIR
EF	ENTRANCE FACILITY FOR TELECOMMUNICATION	SEC	SECURITY
		TBB	TELECOMMUNICATIONS BONDING BACKBONE
EMT	ELECTRIC METALLIC TUBING		
ER	EQUIPMENT ROOM	TELCO	TELEPHONE COMPANY
EXT	EXTERIOR	TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
(F)	FUTURE		
FACP	FIRE ALARM CONTROL PANEL	TMGB	TELECOMMUNICATION MAIN GROUNDING BUSBAR
FATC	FIRE ALARM TERMINAL CABINET		
FB	FLOORBOX	TYP	TYPICAL
FO	FIBER OPTIC	UON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	UPS	UNINTERRUPTIBLE POWER SUPPLY
IC	INTERCOM		
IDF	INTERMEDIATE DISTRIBUTION FRAME	UTP	UNSHIELDED TWISTED PAIR
		V	VOICE
ICP	INTRUSION CONTROL PROCESSOR	VSS	VIDEO SURVEILLANCE SYSTEM
INT	INTERIOR	WB	WALL BOX
IP	INTERNET PROTOCOL	WP	WEATHERPROOF
IT	INFORMATION TECHNOLOGY		
JB	JUNCTION BOX		
MDF	MAIN DISTRIBUTION FRAME		
MIC	MICROPHONE		
MM	MULTIMODE		
MPOE	MINIMUM POINT OF ENTRY		

EQUIPMENT ANCHORAGE NOTES:

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

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

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

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

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

PIPING, AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES:

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

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

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

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

MP MD PP E
☐ ☐ ☐ ☐ OPTION 2: SHALL COMPLY WITH HCAi (OSHPD) PRE-APPROVAL (OPM#) # ____.

AS INCLUDED IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES AND DETAILS.

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:27:42 AM

TECHNOLOGY PENETRATION NOTES:

1. UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL MAKE NO PENETRATION OF FLOORS, WALLS OR CEILING WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNERS REPRESENTATIVE.

2. WALL PENETRATIONS:

a. THE SCS AND/OR LV CONTRACTOR SHALL PROVIDE FIRE STOPPING FOR ALL COMMUNICATIONS RATED (AND IN SOME CASES NON-RATED, THAT WILL BE DESCRIBED BELOW THIS SECTION) PATHWAYS AND SPACES. THESE FIRE STOPPING DEVICES SHALL CONFORM TO (BUT NOT LIMITED TO) UL 1479, ASTM E814, BICSI TDMM, FIRE STOPPING ANSI/TIA-568-C, STANDARD FOR INSTALLING COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING, SECTION 5, CLAUSE 5.1 THROUGH 5.2.3, MANUFACTURES GUIDELINES OR OTHER PREVAILING CODE AND MUST BE AN APPROVED UL LISTED SYSTEM.

b. CABLE TRAY FIRE-STOPPING SHALL UTILIZE THE MULTI GANG FIRE-STOPPING SYSTEM THAT WILL BE ABLE TO STACK THE UNITS HORIZONTALLY AND/OR VERTICALLY IF REQUIRED DUE TO CURRENT AND/OR FUTURE CABLING DESIGNS.

c. THE CONTRACTOR SHALL INSTALL PENETRATION FIRE-STOP SEAL MATERIALS IN ACCORDANCE WITH DESIGN REQUIREMENTS, AND MANUFACTURER'S INSTRUCTIONS.

d. THE CONTRACTOR'S INSTALLER SHALL BE CERTIFIED, LICENSED OR OTHERWISE QUALIFIED BY THE FIRE-STOPPING MANUFACTURER AS HAVING BEEN PROVIDED THE NECESSARY TRAINING TO INSTALL MANUFACTURER'S PRODUCTS PER SPECIFIED REQUIREMENTS.

e. ALL THROUGH-PENETRATION SHALL BE A MANUFACTURED, UL CLASSIFIED, FIRE-STOP DEVICE / SYSTEM DESIGNED TO ALLOW CABLES TO PENETRATE FIRE-RATED WALLS WITH A BUILT-IN FIRE SEALING SYSTEM THAT AUTOMATICALLY ADJUSTS TO THE AMOUNT OF CABLES INSTALLED. THE FIRE-STOPPING DEVICE SHALL BE CAPABLE OF INSTALLATION IN NEW CONSTRUCTION OR RETROFIT IN EXISTING STRUCTURES.

f. THE CONTRACTOR MUST NOT USE CONCRETE OR OTHER NON-REMOVABLE SUBSTANCE FOR FIRE STOPPING ON CABLE TRAYS, WIREWAYS OR CONDUITS. CONTRACTORS WHO USE THIS METHOD WILL BE REQUIRED TO REPLACE ALL CABLES AFFECTED AND PROVIDE THE ORIGINAL SPECIFIED ACCESS TO EACH EFFECTED AREA. THIS REQUIREMENT ALSO APPLIES TO MAINTAINING FIRE RATINGS OF ALL FLOORS PENETRATED BY CONDUITS OR DEVICES DESIGNATED FOR USE BY VOICE AND DATA CABLING.

g. ANY PENETRATIONS THROUGH FIRE-RATED WALLS FOR CABLE PATHWAYS / CABLES SHALL BE SEALED BY USE OF A NON-PERMANENT FIRE BLANKET OR OTHER METHOD IN COMPLIANCE. THE CONTRACTOR MUST USE FIRE STOPPING ON CABLE TRAYS, WIREWAYS AND CONDUITS EITHER VERTICAL OR HORIZONTAL. FOUR DIFFERENT METHODS OF FIRE-STOPPING HAVE BEEN IDENTIFIED FOR THE HORIZONTAL THROUGH PENETRATIONS BETWEEN WALLS, RATED, RATED WITH ACOUSTIC PROPERTIES, NON-RATED, AND NON-RATED WITH ACOUSTIC PROPERTIES.

BELOW ARE METHODS TO ACCOMPLISH THESE DIFFERENT TYPES:
- SEALING OF RATED OPENINGS BETWEEN FLOORS OR THROUGH RATED WALLS, WHETHER EXISTING OR CREATED BY THE CONTRACTOR FOR PLACEMENT OF CABLE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SEALING MATERIAL AND APPLICATION SHALL BE AN APPROVED UL LISTED SYSTEM AND SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT IS ACCEPTABLE TO THE LOCAL FIRE AND BUILDING AUTHORITIES HAVING JURISDICTION OVER THIS WORK. CREATION OF SUCH OPENINGS AS ARE NECESSARY FOR CABLE PASSAGE BETWEEN LOCATIONS AS SHOWN ON THE DRAWINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY OPENINGS CREATED BY OR FOR THE CONTRACTOR AND LEFT UNUSED SHALL ALSO BE SEALED AS PART OF THIS WORK.
- RATED WALLS WITH THROUGH PENETRATIONS WITH ACOUSTIC PROPERTIES SHALL BE INSTALLED WITH FACTORY MANUFACTURED DEVICE. SUCH AS A STI "EZ PATH" OR WIREMOLD "FLAMESTOPPER" OR EQUAL. THE TYPICAL STC RATING IS TO BE EQUAL TO OR GREATER THAN THE WALL PENETRATED, (AVG IS A RATING OF 44 STC PER UBC RATINGS).
- NON-RATED PATHWAY, ALTHOUGH NOT REQUIRED TO BE FIRE-STOPPED, SHALL BE A MANUFACTURED DEVICE THAT WILL ALLOW FIRE-STOPPING TO BE INSTALLED IN THE FUTURE IF REQUIRED, (I.E. WIREMOLD "FLAMESTOPPER" OR EQUAL).
- A NON-RATED PATHWAY WITH ACOUSTIC PROPERTIES CAN BE FOUND IN AREAS SUCH AS, CONFERENCE ROOMS, HUMAN RESOURCE OFFICES, MEDICAL EXAMINATION ROOMS ETC. THESE ROOMS REQUIRE TO LIMIT THE AMOUNT OF AMBIENT NOISE THAT CAN TRAVEL FROM ONE ROOM TO THE OTHER THROUGH THE CEILING GRID. IF THIS WALL IS PENETRATED, INSTALL A SYSTEM THAT WILL RE-ESTABLISH THE STC RATING OF THE WALL, THE TYPICAL STC RATING IS AN AVERAGE OF 44 STC PER UBC RATINGS.

CONTRACTOR(S) GUIDELINES:

1. ALL TECHNOLOGY WORK SHALL COMPLY WITH DESIGN GUIDELINES AS WELL AS APPLICABLE FEDERAL, STATE, AND LOCAL CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS, THE DOCUMENTS SHALL GOVERN BUT THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE ANY CODE OR REGULATION.

2. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS AND/OR SPECIFICATIONS OR WITH CODE REQUIREMENTS, THE NOTE, CODE OR SPECIFICATION WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR THE HIGHER STANDARD SHALL PREVAIL.

3. OMISSIONS FROM THE DRAWINGS, SPECIFICATIONS OR THE MIS-DESCRIPTION OF DETAILS FROM WORK WHICH ARE CLEAR AND NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS, SPECIFICATIONS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MIS-DESCRIBED DETAILS OF THE WORK BUT THEY SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.

4. THE CONTRACTOR SHALL CHECK ALL DRAWINGS FURNISHED, IMMEDIATELY UPON THEIR RECEIPT AND SHALL PROMPTLY NOTIFY THE OWNER OF ANY DISCREPANCIES.

5. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE UNDERWRITERS LABEL (UL) AND SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.

6. THE CONTRACTOR SHALL NOT BORE, NOTCH OR IN ANY WAY CUT INTO ANY STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE ARCHITECT OR STRUCTURAL ENGINEER.

7. ALL CHANGES TO STRUCTURES (BUILDING, DRILLING, CORING, ETC.) NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED IN WRITING BY STRUCTURAL ENGINEER.

8. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, THE TELECOM DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. THE SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHEREVER POSSIBLE. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS, DATA INFORMATION AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATION SECTIONS WHERE SCS AND LOW VOLTAGE WORK INTERFACES WITH OTHER TRADES.

9. THE CONTRACTOR SHALL MAINTAIN AS-BUILT DRAWINGS TO REFLECT ALL CHANGES MADE DURING CONSTRUCTION AND ANY DEVIATIONS FROM THE ELECTRICAL AND TECHNOLOGY DRAWINGS. THIS INCLUDES DEVIATIONS FROM OUTLET NUMBERS AND ANY ADDITION, DELETION OR RELOCATION OF OUTLETS SHOWN ON WORKING DRAWINGS, PATHWAY ADDITIONS, DELETIONS OR RELOCATIONS. THE CONTRACTOR SHALL AFTER COMPLETION OF JOB, PROVIDE THE OWNER AN ELECTRONIC AND HARD COPY OF AS-BUILT WORK.

10. ANY DEVIATIONS FROM PLANS OR SPECS MUST BE APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.

11. ALL FOOTAGES ON DRAWINGS ARE ESTIMATED AND MUST BE VERIFIED BY CONTRACTOR PRIOR TO ORDERING MATERIAL.

12. ALL STATION CABLES SHALL BE NEATLY DRESSED AND SECURED EVERY FIVE FEET AT A MINIMUM.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILING TILE INCLUDING REPLACEMENT OF BROKEN OR DAMAGED TILES.

14. ALL LOCATIONS PASSING THROUGH A FIRE OR A SMOKE BARRIER MUST BE FIRE STOPPED USING APPROVED (UL CLASSIFIED) FIRE STOP SYSTEM, INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND PROPERLY LABELED.

15. CONDUIT SHALL BE FILLED TO MAXIMUM CAPACITY (PER CODE, STANDARDS, AND NORMS) BEFORE UTILIZING ANOTHER VACANT CONDUIT.

16. ALL STATION OUTLETS AND TERMINALS SHALL BE PROPERLY IDENTIFIED USING THE OWNER'S STANDARD INTERNAL DISTRIBUTION NUMBERING SCHEME. ALL LABELS SHALL BE PREPRINTED OR TYPED.

17. EACH BACKBONE RISER AND/OR OSP CABLE SHALL BE EQUIPPED WITH A PERMANENT LABEL INDICATING CABLE TYPE, PAIR OR OPTIC COUNTS, DISTANT ENDS, AND CABLE LENGTH. BOTH ENDS OF EACH CABLE AND AT EVERY MAINTENANCE HOLE, HAND HOLE, AND PULL BOX, SHALL BE SO LABELED.

18. FIBER BACKBONE CABLE SHALL BE PLACED WITH 6 FOOT MAINTENANCE LOOP AT BOTH ENDS OF THE RUN. THE MAINTENANCE LOOP SHALL BE SECURED IN SUCH A MANNER TO PROVIDE PROTECTION DURING SUBSEQUENT CABLE PULLS.

19. ALL STATION CABLES/OUTLETS SHALL BE TESTED AND DOCUMENTED USING A PAIR SCANNER SPECIFICALLY DESIGNED TO TEST THE TYPE OF CABLE INSTALLED (E.G. CATEGORY 6A). TEST RESULTS SHALL BE ONE PAGE PER AND NOTED WITH THE STATION/JACK NUMBERING SCHEME THAT IS STANDARDIZED FOR THE OWNER.

20. ALL FIBER OPTIC STATION AND RISER CABLE SHALL BE TESTED END-TO-END AND THE RESULTS (LOSS IN dB) NOTED ON A SEPARATE TYPED SHEET.

21. AFTER STATION CABLE IS TESTED AND DOCUMENTED, ONE PAIR FROM EACH VOICE STATION SHALL BE CROSS CONNECTED THROUGH EACH CLOSET BACK TO THE MAIN DISTRIBUTION FRAME. TELEPHONE NUMBER ASSIGNMENTS FOR EACH JACK MUST BE APPROVED BY THE TELECOM STAFF PRIOR TO IMPLEMENTATION. A WRITTEN RECORD OF ALL CROSS CONNECT ASSIGNMENTS WILL BE PROVIDED TO THE OWNER BY THE SCS CONTRACTOR.

22. FIBER CABLES SHALL BE SPLICED TOGETHER USING A FUSION SPLICE AND PLACED IN A FIBER SPLICE CASE THAT IS RE-ENTERABLE, FULLY DRESSED AND ENCLOSED TO FIT THE NUMBER AND TYPE OF CABLES TERMINATED.

23. CABLE TRAY SHALL BE PLACED IN MDF AND IDF(S) AS SHOWN ON DRAWINGS AND AS REQUIRED TO PROPERLY SECURE CABLES AND WIRE.

24. A BACKBONE CABLE ASSIGNMENT RECORD SHEET SHALL BE PREPARED (TYPED) PRIOR TO START OF ACCEPTANCE TESTING. ALL FLOOR PLANS SHALL BE NEATLY HAND NOTED WITH STATION JACK NUMBER AND CABLE LENGTH.

25. ALL CABLES SHALL BE CLEARLY LABELED WITH CABLE NUMBERS, PAIR ASSIGNMENTS AND DESIGNATION.

26. ALL CABLE TRAYS, LADDER RACKS, CONDUITS, EQUIPMENT RACKS, PROTECTOR PANELS, AND CABLE SHEATHS SHALL BE BONDED & GROUNDED TO EQUIPMENT GROUND WITH #6 WIRE (MIN.)

27. ALL SPLICES SHALL BE CONTAINED WITHIN AN APPROVED SPLICE CASE DESIGNED FOR MULTIPLE CLOSURE.

TECHNOLOGY CABLING NOTES:

1. THE USE OF LUBRICANTS SUCH AS CLEAR GLIDE, TO FACILITATE THE INSTALLATION OF CABLES IN CONDUITS IS ENCOURAGED FOR FRICTION REDUCTION AND TO MAINTAIN THE REQUIRED PULL TENSION. YELLOW 77 AND POLYWATER "F" IS PERMISSIBLE FOR USE AS A LUBRICANT FOR ISP TECHNOLOGY CABLING. THE USE OF OSP, LOW TEMPERATURE CABLE LUBRICANTS SHALL NOT BE ACCEPTABLE IN AN INDOOR PLENUM ENVIRONMENT. UNDER NO CIRCUMSTANCES SHALL CABLE PULLING LUBRICANT BE ALLOWED TO ACCUMULATE ON WALLS, FLOORS, BACKBOARDS, OR OTHER SURFACES OUTSIDE THE CONDUIT.

2. ANY CABLE DAMAGED OR EXCEEDING RECOMMENDED INSTALLATION PARAMETERS DURING INSTALLATION SHALL BE REPLACED BY THE CONTRACTOR BEFORE FINAL ACCEPTANCE AT NO COST TO THE OWNER.

3. EACH RUN OF CABLE BETWEEN THE TERMINATION BLOCK OR PATCH PANEL AND THE STATION CONNECTOR SHALL BE CONTINUOUS WITHOUT ANY JOINTS OR SPLICES.

4. ALL STATION CABLE SHALL BE PLACED IN THE INTERIOR OF WALLS UNLESS OTHERWISE NOTED OR OBSTRUCTED.

5. PROVIDE BUSHINGS, GROMMETS AND STRAIN-RELIEF FOR CABLES TERMINATING AT WALL-MOUNTED OUTLETS AND PATCH PANELS TO ENSURE DURABLE AND ROBUST CONNECTIONS. THE BUSHINGS AND GROMMETS ARE INTENDED TO PROTECT THE CABLES FROM ANY SHARP EDGES THAT PRESENT A RISK TO THE CABLES. ENSURE THAT ALL SHARP EDGES ARE COVERED TO PROTECT THE CABLES FROM DAMAGE.

6. ALL CABLE BUNDLES EXITING FLOOR OR WALL PENETRATIONS AND RUNNING INTO FURNITURE OR CASEWORK SHALL BE WRAPPED IN SPIRAL WRAP OR SPLIT-LOOM TUBING TO PROTECT THE CABLING AND PROVIDE A NEAT INSTALLATION.

7. ALL CABLE OR INNERDUCT SHALL RUN PARALLEL OR AT RIGHT ANGLES TO BUILDING WALL STRUCTURES.

8. IN SUSPENDED CEILING AND RAISED FLOOR AREAS WHERE DUCT, CABLE TRAYS OR CONDUIT ARE NOT AVAILABLE, CABLE BUNDLES SHALL BE SUPPORTED VIA "J" HOOKS ATTACHED TO THE BUILDING STRUCTURE AND FRAMEWORK AT A MAXIMUM OF FIVE (5) FOOT INTERVALS. MINIMUM 1 " WIDE J-HOOKS SHALL BE APPROPRIATELY SIZED TO ALLOW A MINIMUM OF 60% SPARE CAPACITY FOR FUTURE CABLE INSTALLATION. THE CONTRACTOR SHALL INCLUDE ALL COSTS IN BASE BID FOR ANY ADDITIONAL SUPPORTS/SEISMIC BRACING REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

9. THE CONTRACTOR SHALL BUNDLE, IN BUNDLES OF 48 OR LESS, STATION OR OTHER CABLING WITH 3/4" HOOK AND LOOP "VELCRO" STRIPS TIGHT ENOUGH TO HOLD THE BUNDLE TOGETHER IN A CYLINDRICAL SHAPE, BUT NOT SO TIGHT AS TO DEFORM THE CABLE GEOMETRY. IT SHALL BE POSSIBLE TO COMPLETELY ROTATE ALL HOOK AND LOOP TIES AROUND ALL CABLE BUNDLES. PLENUM RATED HOOK AND LOOP TIES WILL BE USED IN ALL PLENUM AREAS.

10. CABLES OR J-HOOKS SHALL NOT BE ATTACHED TO LIFT OUT CEILING GRID SUPPORTS OR LAID DIRECTLY ON THE CEILING GRID.

11. CABLES OR J-HOOKS SHALL NOT BE ATTACHED TO OR SUPPORTED BY FIRE SPRINKLER HEADS OR DELIVERY SYSTEMS OR ANY ENVIRONMENTAL SENSOR LOCATED IN THE CEILING AIR SPACE.

12. WHERE ADDITIONAL CONDUIT(S)/SLEEVE(S) ARE REQUIRED, BUT NOT PROVIDED BY THE CONTRACTOR, THE SCS AND/OR LV CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE SUCH CONDUIT(S)/SLEEVE(S). CONDUIT(S) AND SLEEVE(S) SHALL BE OF SUITABLE MATERIAL, SIZED, INSTALLED, FIRE-STOPPED, AND GROUNDED AS REQUIRED BY THE CEC, ANSI/TIA-569-D STANDARD AND ALL OTHER APPLICABLE CODES AND STANDARDS. SLEEVES SHALL CONSIST OF METALLIC CONDUIT DE-BURRED AND GROMMETTED ON BOTH ENDS WITH FLANGES OR OTHER MEANS TO PREVENT THE SLEEVE FROM SLIPPING OR FALLING OUT OF THE PARTITION. SLEEVES SHALL EXTEND A MINIMUM OF 6" ON BOTH SIDES OF THE PARTITION. OUTSIDE PERIMETER OF SLEEVES SHALL BE SEALED AGAINST SOUND, AIR, WATER, HEAT, OR AS REQUIRED BY PARTITION DESIGN. INSIDE OF SLEEVE SHALL BE SEALED SIMILARLY AFTER INSTALLATION OF ALL CABLING. CABLES SHALL BE INDEPENDENTLY SUPPORTED ON EITHER SIDE OF THE SLEEVE. SLEEVES SHALL NOT BE USED AS CABLE SUPPORTS. ANY CONDUIT(S) AND SLEEVE(S) ADDED BY THE SCS CONTRACTOR SHALL BE APPROVED BY THE OWNERS REPRESENTATIVE PRIOR TO ROUGH-IN.

13. IN THE EVENT CONTRACTOR IS REQUIRED TO REMOVE CEILING TILES, SUCH WORK SHALL NOT BREAK OR DISTURB GRID. REMOVAL OF THE CEILING GRID MUST BE COORDINATED WITH THE OWNERS REPRESENTATIVE. ALL INSULATION SHALL BE REPLACED IN ITS ORIGINAL LOCATION.

14. THE NUMBER OF CABLES IN EACH CONDUIT SHALL BE CONTROLLED TO ALLOW FOR FUTURE CABLE INSTALLATION AND TO STAY WITHIN THE MANUFACTURER'S MAXIMUM ALLOWABLE CABLE PULLING TENSION. CONDUIT FILL RATIOS SHALL NOT EXCEED THE CURRENT REQUIREMENTS OF THE CEC, ANSI/TIA-569-D, REFERENCE SECTION B.2, TABLES 1 AND 2 OF THIS DOCUMENT FOR ADDITIONAL REQUIREMENTS.

15. CONDUITS:
- ALL BACKBONE CABLING WILL RUN THROUGH DEDICATED CONDUITS.
- ALL NEW CONDUITS WILL BE SUPPLIED WITH A PULL STRING BY THE CONTRACTOR.
- EXISTING CONDUITS SHALL BE PROVEN TO BE CLEAR BY THE SCS AND/OR LV CONTRACTOR PRIOR TO PULLING OF CABLES.
- SCS AND/OR LV CONTRACTOR SHALL SUPPLY PULL STRING AND PULL ROPE FOR THE INSTALLATION OF ALL CABLES IN EXISTING CONDUITS.
- FOR ALL CONDUITS LEFT WITH AVAILABLE CAPACITY, SCS AND/OR LV CONTRACTOR SHALL REPLACE PULL STRINGS DURING THE COURSE OF HIS WORK.
- SCS AND/OR LV CONTRACTOR MUST SEAL ALL CONDUITS WITH AN APPROVED SEALING COMPOUND.

TECHNOLOGY GROUNDING SYSTEM NOTES:

1. THE CONTRACTOR SHALL PROVIDE A TELECOMMUNICATION GROUNDING BUSBAR (TGB) AND TELECOMMUNICATION BONDING BACKBONE (TBB) CABLE(S) AT EACH MDF ROOM AND IDF LOCATION. TERMINATE THE TBB ON GROUND BARS LOCATED AT EACH MDF ROOM AND IDF CABINET FROM BUILDING STEAL OR MAIN ELECTRICAL GROUND, OR AS OTHERWISE INDICATED ON THE DRAWINGS.

2. THE SCS CONTRACTOR SHALL UTILIZE A TELECOMMUNICATIONS BONDING BACKBONE (TBB) AS INDICATED IN THE DRAWINGS. GROUNDING MUST BE IN ACCORDANCE WITH THE CEC, ANSI/TIA-607-B AND ALL LOCAL CODES AND PRACTICES.

3. THE SCS CONTRACTOR SHALL BE RESPONSIBLE FOR BONDING ALL METALLIC SHEATH COMMUNICATIONS CABLES ENTERING THE BUILDING PER MANUFACTURER SPECIFICATIONS AND CEC 770-33, 800-33 AND 800-40. ALL GROUNDS SHALL CONSIST OF # 6-AWG COPPER WIRE AND SHALL BE SUPPLIED FROM AN APPROVED BUILDING GROUND AND BONDED TO THE MAIN ELECTRICAL GROUND. ALL CABLE SHEATHS AND SPLICE CASES SHALL BE GROUNDED TO A TELECOMMUNICATIONS GROUND BUS.

4. THE SCS CONTRACTOR SHALL PROVIDE GROUNDING AND BONDING FROM ALL HORIZONTAL EQUIPMENT INCLUDING DISTRIBUTION AND CROSS CONNECT FRAMES, PATCH PANELS, CABLE TRAYS, EQUIPMENT RACKS, LADDER TRAYS, CONDUITS, ACTIVE TELECOMMUNICATION EQUIPMENT, SLEEVES, TEST APPARATUS. EQUIPMENT SHALL BE BONDED TO THE TBB GROUND BARS UTILIZING A #6-AWG GREEN CONDUCTOR WITH 2-HOLE LONG BARREL COMPRESSION GROUNDING LUGS.

a. EACH EQUIPMENT CABINET AND RACK REQUIRES ITS OWN DEDICATED RACK GROUNDING BUSBAR (RGB) WITH A BONDING CONNECTION TO THE GROUNDING INFRASTRUCTURE. THE GROUNDING INFRASTRUCTURE CONSIST OF A TB, BY PROVIDING EVERY RACK/CABINET WITH ITS OWN DEDICATED #6 WAG (MIN.) GREEN CONDUCTORS BACK TO THE TOMB/TB. ALL GROUND CONDUCTOR ATTACHMENTS SHALL UTILIZE 2-HOLE LONG BARREL COMPRESSION LUGS.

b. HORIZONTAL CABLES SHALL BE GROUNDED IN COMPLIANCE WITH ANSI/TIA-607-C, FP 70 (EEC) AND LOCAL REQUIREMENTS AND PRACTICES.

c. IN RAISED-FLOOR ENVIRONMENTS, THE GROUND CONDUCTOR SHALL ATTACH TO THE LOWEST HOLES ON THE FRONT RAIL OF EACH RACK/CABINET.

d. RACK MOUNTED EQUIPMENT SHALL BE GROUNDED VIA THE CHASSIS, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

e. BONDING OF LADDER RACK SECTIONS: ATTACH BONDING STRAPS TO EACH LADDER RACK SECTION BY UTILIZING EITHER TWO (2) TRI-LOBULAR THREAD-FORMING SCREWS (NOT SELF-TAPPING OR SHEET METAL SCREWS) OR BY USING TWO (2) STANDARD BOLTS WITH TWO (2) "TYPE B" INTERNAL / EXTERNAL TOOTH LOCK WASHERS PER BOLT. IF THREAD-FORMING SCREWS ARE NOT USED, REMOVE PAINT AT EACH CONNECTION POINT AND USE AN APPROVED ANTI-OXIDANT PRIOR TO ATTACHING THE BONDING STRAP.

TECHNOLOGY TERMINAL BACKBOARD NOTES:

1. WHERE INDICATED ON DRAWINGS, CONTRACTOR TO PROVIDE NEW PLYWOOD TERMINAL BACKBOARDS. USE DOUGLAS FIR PLYWOOD, INTERIOR A/C GRADE, FINISHED ONE SIDE AND PRIME COAT PAINTED ON ALL SURFACES WITH A FINISH COAT OF FIRE RETARDANT WHITE ENAMEL. ON EACH PLYWOOD SHEET LEAVE ONE (1) FIRE MARSHAL STAMP UNPAINTED FOR INSPECTION. UNLESS OTHERWISE INDICATED, USE 8'-0" HIGH X LENGTH AS SHOWN ON DRAWINGS X 3/4" THICK PLYWOOD. REFERENCE BACKBOARD ELEVATIONS FOR MORE INFORMATION.

TECHNOLOGY PATHWAY NOTES:

1. PATHWAYS CAN BE DIVIDED UP INTO TWO SEPARATE CATEGORIES, OUTSIDE PLANT (OSP) AND INSIDE PLANT (ISP). IT IS THE SCS AND/OR LV SYSTEM(S) CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ALL EXISTING PATHWAYS (CONDUIT, CABLE TRAY, ETC) THAT WILL BE UTILIZED ON THE PROJECT, AND COORDINATE WITH THE ON-SITE ELECTRICAL OR GENERAL CONTRACTOR TO PROVE ALL PATHS SUBJECT TO BE USED ON THIS PROJECT, BEFORE INSTALLATION. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION ALL UNDERGROUND (OSP) PATHWAYS, NON-ACCESSIBLE AND OPEN CEILING SPACE PATHWAYS AS DESCRIBED IN SECTION F, CONTRACTOR GUIDELINES OF THESE TECHNOLOGY GENERAL NOTES.

2. ALL PULL-BOXES SHALL BE SIZED AND INSTALLED PER ANSI/TIA-569-D. PULL-BOXES FOR IN/UNDER SLAB CONDUIT RUNS ARE NOT PERMITTED UNLESS OTHERWISE NOTED. PULL-BOXES FOR OVERHEAD CONDUIT RUNS SHALL BE LOCATED ABOVE ACCESSIBLE CEILINGS WITHIN THE ACCESSIBLE CEILING SPACE AND SUPPORTED INDEPENDENTLY FROM THE STRUCTURE AND CONDUIT SUPPORTS. PULL-BOXES FOR ROOF MOUNTED OR EXTERIOR ABOVE GRADE APPLICATIONS SHALL BE NEMA 3R RATED. PULL-BOXES SHALL BE SIZED ACCORDING TO THE FOLLOWING: FOR FILL RATIO BASED CONDUIT SIZING REFER TO THE FILL RATIO TABLE 1A - 2B BELOW AND REFERENCE TO ANSI/TIA-569-D.

PULLBOX SIZING PER ANSI/TIA 569-D

Conduit Size	WIDTH	LENGTH	DEPTH	WIDTH INCREASE PER ADDITIONAL CONDUIT
1"	4"	15"...	3"	2"
2"	8"	36"	4"	5"
3"	61	48"	5"	6"
4"	101	60"	8"	8"

FILL RATIO TABLE 1A - Conduit

Conduit Size	.13	.18	.19	.20	.21	.22	.23	.24	.25	.26	.27	.28	.29	.30	.31	.32	.33	.34	.35	.37	.39
3/4"	16	8	7	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	1	1
1"	26	13	12	11	9	9	8	7	7	6	6	5	5	4	4	4	4	3	3	3	2
1 1/4"	45	23	21	19	17	15	14	13	12	11	10	9	9	8	7	7	6	6	6	5	5
1 1/2"	61	32	28	25	23	21	19	18	16	15	14	13	12	11	10	10	9	8	8	7	6
2"	101	52	47	42	38	35	32	29	27	25	23	21	20	18	17	16	15	14	13	12	11
2 1/2"	176	92	82	74	67	61	56	51	47	44	40	38	35	33	31	29	27	25	24	21	19
3"	266	139	124	112	102	93	85	78	72	66	61	57	53	50	46	43	41	38	36	32	29
3 1/2"	347	181	162	146	133	121	111	102	94	86	80	74	69	65	61	57	53	50	47	42	38
4"	444	231	208	187	170	155	142	130	120	111	103	95	89	83	78	73	68	64	61	54	49

FILL RATIO TABLE 2A - Cable Tray / Wire Basket / Raceway

Tray Size (WxD)	.13	.18	.19	.20	.21	.22	.23	.24	.25	.26	.27	.28	.29	.30	.31	.32	.33	.34	.35	.37	.39
4x4	482	251	225	203	184	168	154	141	130	120	111	103	96	90	84	79	74	70	66	59	53
6x4	723	377	338	305	277	252	231	212	195	180	167	155	145	135	127	119	112	105	99	89	80
12x4	1447	754	677	661	554	505	462	424	391	361	335	311	290	271	254	238	224	211	199	178	160
18x4	2170	1132	1016	917	831	758	693	636	587	542	503	467	436	407	381	358	336	317	299	267	241
24x4	2894	1509	1355	1222	1109	1010	924	849	782	732	671	623	581	543	509	477	449	423	399	357	321
6x6	1085	566	508	458	415	379	346	318	293	271	251	233	218	203	190	179	168	158	149	133	120
12x6	2170	1132	1016	917	831	758	693	636	587	542	503	467	436	407	381	358	336	317	299	267	241
18x6	3256	1698	1524	1375	1247	1137	1040	955	880	814	754	701	654	611	572	537	505	476	449	401	361
24x6	4341	2264	2032	1834	1663	1516	1387	1273	1174	1085	1006	935	872	815	763	716	673	634	598	535	482

PATHWAY SEPARATION FROM SOURCE OF ELECTROMAGNETIC ENERGY:

CONDITION	<2KVA	2-5 KVA	>5KVA
Unshielded Power Lines in Proximity to open PVC Pathways	5" (In.)	12" (In.)	24" (In.)
Unshielded Power Lines in Proximity to Grounded Metallic Pathways	2.5" (In.)	6" (In.)	12" (In.)
Power Lines enclosed in Metal Grounded Pathways in proximity to Grounded Metallic...	<1" (In.)	3" (In.)	6" (In.)

3. FOR ALL FIRESTOPPING OF SCS AND LV SYSTEMS PATHWAY RESPONSIBILITIES REFERENCE SECTION G, PENETRATION OF WALLS, FLOOR AND CEILINGS OF THESE TECHNOLOGY GENERAL NOTES.

4. FOR ALL OTHER SCS AND/OR LV SYSTEMS PATHWAY RESPONSIBILITIES REFERENCE SECTION F, CONTRACTOR GUIDELINES OF THESE TECHNOLOGY GENERAL NOTES.

5. OUTSIDE PLANT (OSP) PATHWAYS CAN BE BROKEN DOWN INTO THE FOLLOWING ITEMS, MAINTENANCE HOLES, HAND HOLES, PULLBOXES, AND CONDUITS.

a. WHILE ENTERING MAINTENANCE HOLES, HAND HOLES, PULLBOXES, FOLLOW ALL CODES AND SAFETY PRACTICES OF A "CONFINED SPACE". UTILIZE NECESSARY EQUIPMENT TO MAINTAIN ALL SAFE PULLING TENSIONS FOR THE CABLES TO BE INSTALLED. THIS INFORMATION CAN BE FOUND ON THE CABLE MANUFACTURER'S SPECIFICATIONS SHEETS.

b. BEFORE EXITING THE MAINTENANCE HOLE, HAND HOLE, PULLBOX, NOTE ON PAPER OR DIGITAL MEANS THE EXISTING AND NEW CABLE(S) LOCATION(S) AND ROUTE(S), AND PROVIDE A "BUTTERFLY" PRINT TO AHJ AND OWNER'S REPRESENTATIVE. LABEL THE INSTALLED MEDIA PER SPECIFICATIONS.

c. WITH DIRECTION OF OWNER OR OWNER'S REPRESENTATIVE, CHOOSE AND PROVE ALL CONDUITS BEFORE THE INSTALLATION OF THE MEDIA. MEASURE ALL PATHWAYS WITH MULE-TAPE PRIOR TO ORDERING MATERIAL. ALL LABOR AND MATERIAL COSTS ASSOCIATED WITH DISCREPANCIES BETWEEN DRAWINGS AND VERIFIABLE SITE CONDITIONS SHALL BE BORNE BY CONTRACTOR. COORDINATE WITH THE ELECTRICAL OR GENERAL CONTRACTOR (EC OR GC), IF CONDUITS ARE PLUGGED OR MISSING PULL ROPE.

d. TRAIL ALL BACKBONE MEDIA (I.E. COPPER, FIBER OR INNERDUCT) WITH A 3/8" YELLOW POLY-NYLON ROPE, LABEL THE ROPE, AND TIE OFF EITHER END, FOR FUTURE INSTALLATIONS.

e. PROVIDE AND INSTALL ALL HARDWARE NECESSARY TO SUPPORT THE CABLING TO THE WALLS OF THE MAINTENANCE HOLE, HAND HOLES, PULLBOX. (IF IT DOES NOT ALREADY EXIST) THIS HARDWARE IS TO BE CONSTRUCTED FOR THE AREA IT IS TO BE INSTALLED AND DESIGNED FOR THE PURPOSE INTENDED FOR ITS USE.

f. SCS AND/OR LV CONTRACTOR TO PROVIDE EXPANSION PLUGS IN ALL DUCTS/CONDUITS ENTERING THE BUILDING. SEAL ALL UNUSED DUCTS/CONDUITS WITH PLUGS THAT ALLOW THE PULL-STRING TO BE TIED OFF ON THE INSIDE.

6. INSIDE PLANT (ISP) PATHWAYS CAN BE BROKEN DOWN INTO THE FOLLOWING ITEMS, HOLLOW WALL PENETRATION, MEMBRANE PENETRATION, ACCESSIBLE CEILING (I.E. "J" HOOKS), AND CONDUIT.

7. CABLE RACEWAYS AND CONDUITS SHALL NOT BE FILLED GREATER THAN THE CEC, AND BICSI RECOMMENDED FILL FOR THE PARTICULAR RACEWAY OR CONDUIT SIZE FOR CLASS 2/3 WIRE/CABLE.

a. CONDUIT AND PATHWAY ROUTING SHOWN FOR THE SCS AND LV SYSTEMS ARE STRICTLY DIAGRAMMATICAL FOR THE PURPOSE OF THE BID TO ILLUSTRATE GENERAL METHODOLOGY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE BEST MEANS & METHODS FOR SCS & TECHNOLOGY CONDUIT AND PATHWAY INSTALLATION. ADDITIONALLY IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE INSTALLATION PLAN WITH THE OWNERS REPRESENTATIVE AND ALL TRADES PRIOR TO INSTALLATION. REFER TO PLANS AND GENERAL ELECTRICAL SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

b. CONDUIT PATHWAYS SHALL BE SUPPLIED BY THE ELECTRICAL OR GENERAL CONTRACTOR AS PER THE DRAWINGS, OTHER CONDUITS (IF ANY) MAY NEED TO BE COORDINATED WITH THE EC AND/OR GC OF THE PROJECT.

c. NO CABLE IS TO BE PULLED THROUGH A CONDUIT L-BEND "LB" (CONDULETS).

d. ALL EXPOSED CONDUIT AND HARDWARE SHALL BE PAINTED TO MATCH SURROUNDING SURFACES.

e. CONDUITS SHALL CONTAIN PLASTIC OR NYLON PULL TAPE RATED AT 200 LBS. WITH A MINIMUM OF 5 FEET OF EXTRA PULL TAPE COILED AT EACH END.

f. TERMINATE CONDUIT STUBS AND SLEEVES THAT PROTRUDE THROUGH STRUCTURAL FLOORS 2"-3" ABOVE THE FLOOR SURFACE.

g. INSTALL BUSHINGS AND BELL ENDS AS REQUIRED ON ALL CONDUITS.

h. FLEX CONDUIT IS UNACCEPTABLE FOR USE AS A COMMUNICATIONS CONDUIT EXCEPT AT SEISMIC JOINTS AND/OR IF APPROVED IN WRITING BY THE ENGINEER.

i. ALL UNDER SLAB OR IN-SLAB CONDUITS SHALL BE INSTALLED IN A MANNER THAT PREVENTS WATER INFILTRATION OF THE CONDUIT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE GROUND WATER, RAIN WATER OR CONSTRUCTION WATER IS PREVENTED FROM ENTERING AND/OR REMOVED FROM THE CONDUITS PRIOR TO PLACEMENT OF COMMUNICATIONS CABLES. SEE ELECTRICAL SPECIFICATIONS, DETAILS AND PLANS FOR ADDITIONAL CONDUIT SEALING REQUIREMENTS.

j. PROVIDE LABELING OF EACH CONDUIT PER GENERAL ELECTRICAL SPECIFICATIONS.

k. REINSTALL PULL-STRINGS IN ALL SCS AND LV ISP PATHWAYS AFTER USE TO FACILITATE FUTURE ADDITION OF CABLES.

l. IT IS THE SCS AND/OR LV CONTRACTOR'S RESPONSIBILITY TO REPORT ANY UNUSABLE OR INADEQUATE CONDUIT RUNS TO THE OWNER PRIOR TO PULLING ANY CABLE.

m. PULL BOXES ARE NOT TO BE USED IN LIEU OF A BEND, AND THE CONDUIT SHALL EXIT A PULLBOX ON THE WALL OPPOSITE THE WALL ENTERED.

n. CONDUITS SHALL;
- CONTAIN NO CONTINUOUS SECTIONS LONGER THAN 30M (98 FT.)
- CONTAIN NO MORE THAN (3) 90° BENDS (270° MAX.) OR (1) REVERSE BEND WITHOUT INSTALLING A PULL BOX SIZED PER STANDARDS & CODE.
- SPLIT CONDUITS IN PLACE OF PULL BOXES ARE UNACCEPTABLE.

o. CONDUIT BEND RADIUS SHALL BE;
- A MINIMUM OF 6 TIMES THE INTERNAL CONDUIT DIAMETER FOR CONDUITS 2" IN DIAMETER OR LESS.
- A MINIMUM OF 10 TIMES THE INTERNAL CONDUIT DIAMETER FOR CONDUITS MORE THAN 2" IN DIAMETER.

p. POWER SEPARATION:
- THE CONTRACTOR SHALL NOT PLACE ANY DISTRIBUTION CABLING ALONGSIDE POWER LINES, OR SHARE THE SAME CONDUIT, CHANNEL OR SLEEVE WITH ELECTRICAL APPARATUS. AT NO POINT SHALL THE COMMUNICATIONS CABLES BE TIED TO POWER CABLES OR OTHER BUILDING SERVICES. STATION CABLES AND TIE CABLES INSTALLED WITHIN CEILING SPACES SHALL BE ROUTED THROUGH THESE SPACES AT RIGHT ANGLES TO ELECTRICAL POWER CIRCUITS.
- AVOID ELECTROMAGNETIC INTERFERENCE (EMI) BY MAINTAINING ADEQUATE PHYSICAL SEPARATION BETWEEN TECHNOLOGY CABLING AND POSSIBLE SOURCES SUCH AS, BUT NOT LIMITED TO, ELECTRIC MOTORS, ELECTRIC PENCIL SHARPENERS, TRANSFORMERS, FLUORESCENT LIGHTS THAT SHARE DISTRIBUTION SPACE WITH TELECOMMUNICATIONS CABLING, COPIERS THAT SHARE WORK AREA SPACE WITH LINE CORDS AND TERMINALS, LARGE FAX MACHINES AND POWER CORDS THAT SUPPORTS SUCH EQUIPMENT.

PROJECT CODES AND STANDARDS:

APPLICABLE PROJECT BUILDING CODES, EFFECTIVE AS OF DATE: JANUARY 1, 2023

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC)
2022 CALIFORNIA BUILDING CODE (CBC)
2022 CALIFORNIA ELECTRICAL CODE (CEC)
2022 CALIFORNIA FIRE CODE (CFC)
2022 CALIFORNIA ENERGY CODE
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
2022 CALIFORNIA REFERENCED STANDARDS CODE
2022 NFPA 72: NATIONAL FIRE ALARM AND SIGNALING CODE, NATIONAL FIRE PROTECTION ASSOCIATION
2022 NFPA 1221: NATIONAL FIRE ALARM AND SIGNALING CODE, NATIONAL FIRE PROTECTION ASSOCIATION

APPLICABLE INDUSTRY STANDARDS, CURRENT EDITION

TIA-568: GENERIC CABLE STANDARDS
TIA-568-1: COMMERCIAL CABLE STANDARDS
TIA-568-2: BALANCED TWISTED PAIR CABLING AND COMPONENTS
TIA-568-3: OPTICAL CABLING FEEDER COMPONENTS
TIATIA-568-4: BROADBAND COAX CABLING AND COMPONENTS
TIA-569: TELECOMMUNICATION PATHWAYS AND SPACES
TIA-570: RESIDENTIAL TELECOMMUNICATIONS
TIA-598: OPTICAL FIBER CABLE COLOR CODING
TIA-606: ADMINISTRATIVE LABELING STANDARDS
TIA-607: TELECOMMUNICATIONS BONDING AND GROUNDING
TIA-758: TELECOMMUNICATIONS OUTSIDE PLANT
TIA-526-7: SINGLE-MODE FIBER STANDARDS
TIA-526-14: MULTI-MODE FIBER STANDARDS

TECHNOLOGY DESIGN DIRECTORY:

SENIOR DESIGNER:
NAME:---------- JOSIAH ZAMORA, CTS
WORK:--------- (916) 721-2938
MOBILE:------- (916) 996-3942
EMAIL:---------- jzamora@lpengineers.com

DESIGNER-I
NAME:---------- LISA JOHNSON
PHONE:-------- (916) 771-0778 x2913
EMAIL:---------- ljohnson@lpengineers.com

CONTRACTOR SUBMITTALS:

(SHOP DRAWINGS / PRODUCT SUBMITTALS / QUALIFICATIONS)

1. ORDERING AND INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL THE FOLLOWING:

a. CONTRACTOR FURNISHED SHOP DRAWINGS (SEE BELOW FOR LISTED SHOP DRAWING REQUIREMENTS)

b. PRODUCT SUBMITTAL DOCUMENTS

c. APPLICABLE TRADES QUALIFICATION CERTIFICATIONS HAVE BEEN APPROVED BY THE SYSTEMS ENGINEER AND/OR ARCHITECT AND IF (A. APPLICABLE, APPROVED BY THE DIVISION OF THE STATE ARCHITECT).

2. ANY DESIGN AND/OR INSTALLATION DISCREPANCIES/CHANGE ORDERS/REWORK (INCLUDING LABOR AND MATERIALS) INCURRED BEFORE OR AFTER CONTRACTOR FURNISHED SHOP DRAWINGS HAVE BEEN APPROVED SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR INSTALLATION SHOP DRAWINGS

3. IT SHALL BE UNDERSTOOD THAT THE DRAWINGS, DETAILS, AND ONE-LINES PROVIDED WITH THE DESIGN PACKAGE ARE DIAGRAMMATIC. DATA PRESENTED ON DESIGN DRAWINGS ARE AS ACCURATE AS PRELIMINARY SURVEYS AND PLANNING CAN DETERMINE UNTIL FINAL EQUIPMENT SELECTION IS MADE. ACCURACY IS NOT GUARANTEED AND FIELD VERIFICATION, OF ALL DIMENSIONS, ROUTING, ETC., BY THE CONTRACTOR IS REQUIRED.

4. DRAWINGS ARE PROVIDED TO SHOW THE INTENT OF THE DESIGN AND SPECIFICATION AND TO ASSIST THE CONTRACTOR IN SUBMITTING A BID. CONTRACTOR IS DIRECTED TO MAKE FIELD SURVEYS AS PART OF HIS WORK PRIOR TO SUBMITTING SYSTEM LAYOUT DRAWINGS (SHOP DRAWINGS). THE CONTRACTOR SHALL MAKE ALLOWANCE IN THE PROPOSAL TO COVER WHATEVER WORK IS REQUIRED TO COMPLY WITH THE INTENT OF THE DESIGN AND PROVIDE A FULLY FUNCTIONING COMPLETE, OPERABLE, AND INTEGRATED SYSTEM.

5. IN CASE OF DOUBT OF WORK INTENDED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REQUEST INSTRUCTIONS FROM THE ENGINEER OR OWNER PRIOR TO BID. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING A COMPLETE, OPERABLE, AND INTEGRATED FUNCTIONING SYSTEM.

6. INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED CONTRACTOR FURNISHED SHOP DRAWINGS (IN AUTOCAD 2010/ OR SIMILAR PROFESSIONAL DRAWING FORMAT) AND PRODUCT SUBMITTALS HAVE BEEN APPROVED BY THE DESIGNER AND/OR ARCHITECT AND IF (A. APPLICABLE, APPROVED BY THE DIVISION OF THE STATE ARCHITECT).

7. ANY AND ALL DESIGN AND/OR INSTALLATION DISCREPANCIES, CHANGE ORDERS, (INCLUDING LABOR, MATERIALS, AND SHIPPING) INCURRED WITHOUT CONTRACTOR SHOP DRAWINGS OR AFTER CONTRACTOR SHOP DRAWINGS HAVE BEEN APPROVED SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

8. ANY WORK PERFORMED WITHOUT APPROVED CONTRACTOR FURNISHED SHOP DRAWINGS AND SUBMITTALS SHALL NOT BE ALLOWED. IF WORK PERFORMED PRIOR TO APPROVE SHOP DRAWINGS, CONTRACTOR WILL DO SO AT THEIR OWN RISK.

9. ANY PRODUCTS THAT HAVE DEVIATED FROM THE SPECIFICATION OR DRAWINGS SHALL BE FLAGGED AS "SUBSTITUTION REQUEST".

TECHNOLOGY GENERAL NOTES:

1. ALL STRUCTURED CABLING SYSTEM (SCS) & LOW VOLTAGE (LV) CABLING USED THROUGHOUT THIS PROJECT SHALL COMPLY WITH THE REQUIREMENTS AS OUTLINED IN THE STANDARDS, CODES AND LOCAL REGULATIONS FOR THE FOLLOWING: ANSI/TIA-568-C, ANSI/TIA-569-D, ANSI/TIA-606-B, ANSI/TIA-607-B, BICSI TDMM (CURRENT VERSION), CEC ARTICLE 90, ARTICLE 300, CEC ARTICLE 645, CEC ARTICLE 646, CEC ARTICLE 725, CEC ARTICLE 760, CEC ARTICLE 770, CEC ARTICLE 800, CEC ARTICLE 830. THE SCS & TECHNOLOGY SYSTEM(S) MUST MEET ALL LOCAL AND OTHER PREVAILING CODES.

2. ALL SCS & LV CABLING SHALL BEAR UL LISTED TYPE CMP (PLENUM RATED) AND/OR CM/G (GENERAL PURPOSE) AND/OR CMR (RISER RATED). ALL FIBER OPTIC CABLING SHALL BEAR OFNP (PLENUM RATED) AND/OR OFNR (RISER RATED) AND/OR OFN/G (GENERAL PURPOSE). THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING APPROPRIATELY RATED CABLE FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.

3. ALL INSTALLATION SHALL BE DONE IN CONFORMANCE WITH ANSI/TIA-568-C STANDARDS AND MANUFACTURERS INSTALLATION GUIDELINES. THE CONTRACTOR SHALL ENSURE THAT THE CABLE'S MINIMUM BEND RADIUS AND, MAXIMUM PULLING TENSIONS OF THE SPECIFIED DISTRIBUTION CABLES ARE NOT EXCEEDED. THE CABLE BENDS MUST MAINTAIN THE PROPER RADIUS DURING THE PLACEMENT OF THE FACILITIES. FAILURE TO FOLLOW THE APPROPRIATE GUIDELINES WILL REQUIRE THE CONTRACTOR TO PROVIDE, IN A TIMELY FASHION, ANY ADDITIONAL MATERIAL AND LABOR NECESSARY TO PROPERLY RECTIFY THE SITUATION TO THE SATISFACTION AND WRITTEN APPROVAL OF THE OWNERS REPRESENTATIVE. THIS SHALL ALSO APPLY TO ANY AND ALL DAMAGES SUSTAINED TO THE CABLES BY THE CONTRACTOR DURING THE IMPLEMENTATION.

4. ALL SCS AND/OR LV INSTALLATIONS SHALL BE PERFORMED BY QUALIFIED TECHNICIANS FOR THAT SYSTEM. THE LABOR EMPLOYED BY THE CONTRACTOR SHALL BE REGULARLY EMPLOYED IN THE INSTALLATION AND REPAIR OF SCS AND/OR LV SYSTEMS AND SHALL BE ACCEPTABLE TO THE OWNERS REPRESENTATIVE TO ENGAGE IN THE INSTALLATION AND SERVICE OF THIS SYSTEM.

5. THE MDF AND IDF SPACES ARE DESCRIBED BELOW, AND ENCOMPASS THE AREAS THE COMMUNICATIONS CABLING EXISTS IN. THESE AREAS INCLUDE (BUT NOT LIMITED TO) THE BACKBOARDS, CABINETS, RACKS, FRAMES, LADDER RACKS, TERMINATION FIELDS, AND PATCH CORDS. (WALL AND RACK TYPES FOR COPPER AND FIBER). THE SCS CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE STANDARDS, CODES AND LOCAL REGULATIONS FOR THESE SPACES, (E.G. ANSI/TIA-568-C, ANSI/TIA-569-D, ANSI/TIA-606-B, ANSI/TIA-607-B , BICSI TDMM (CURRENT VERSION), CEC ARTICLE 90, ARTICLE 300, CEC ARTICLE 645, CEC ARTICLE 646, CEC ARTICLE 725, CEC ARTICLE 770, CEC ARTICLE 800, CEC ARTICLE 830.

6. THE WIRING OF THE SYSTEM SHALL BE EXECUTED IN ACCORDANCE WITH THE DRAWINGS AND THE EQUIPMENT MANUFACTURER'S WIRING DIAGRAMS. SHOULD ANY VARIATIONS IN THESE REQUIREMENTS OCCUR, THE CONTRACTOR SHALL NOTIFY THE OWNERS REPRESENTATIVE BEFORE MAKING ANY CHANGES. IT SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER - AUTHORIZED INSTALLER OF THE APPROVED EQUIPMENT TO INSTALL THE EQUIPMENT AND GUARANTEE THE SYSTEM TO OPERATE AS PER PLANS AND SPECIFICATIONS.

7. ALL MATERIALS SHALL BE NEW. NO USED OR RE-MANUFACTURED PARTS OR COMPONENTS SHALL BE ACCEPTED.

8. CABLE STORAGE: THE CONTRACTOR SHALL NOT ROLL OR STORE CABLE REELS WITHOUT AN APPROPRIATE UNDERLAY AND THE PRIOR WRITTEN APPROVAL OF OWNERS REPRESENTATIVE.

9. SPECIAL EQUIPMENT AND TOOLS: IN ORDER TO ENSURE THE LEAST AMOUNT OF CABLE UNTWISTING, IT IS REQUIRED THAT ALL CABLES SHALL BE STRIPPED USING A CABLE MANUFACTURER'S RECOGNIZED SPECIAL TOOL. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH ANY SPECIAL INSTALLATION EQUIPMENT OR TOOLS NECESSARY TO PROPERLY COMPLETE THE SYSTEM. THIS MAY INCLUDE, BUT IS NOT LIMITED TO, TOOLS FOR TERMINATING CABLES, TESTING AND SPLICING EQUIPMENT FOR COPPER/FIBER CABLES, COMMUNICATION DEVICES, JACK STANDS FOR CABLE REELS, OR CABLE WINCHES.

10. UNDER NO CIRCUMSTANCE ARE "CHANNEL LOCKS" OR OTHER PLIERS NOT DESIGNED BY THE SCS MANUFACTURE TO BE USED TO TERMINATE WAO JACKS.

TECHNOLOGY SHEET INDEX

SHEET NUMBER	SHEET NAME
T0.01	TECHNOLOGY PROJECT NOTES
T0.02	TECHNOLOGY SYMBOL LEGEND
T1.21	TECHNOLOGY SITE PLAN
TD2.11	BLDG A AND E TECHNOLOGY DEMOLITION FLOOR PLAN
TD2.12	BLDG B, C, & H TECHNOLOGY DEMOLITION FLOOR PLANS
TD2.13	BLDG F & G TECHNOLOGY DEMOLITION FLOOR PLANS
T2.11	BLDG A TECHNOLOGY FLOOR PLAN
T2.12	BLDG B, C, & H TECHNOLOGY FLOOR PLANS
T2.13	BLDG F & G TECHNOLOGY FLOOR PLANS
T2.14	BLDG E TECHNOLOGY FLOOR PLAN
T6.0.0	TECHNOLOGY ONE-LINES
T6.0.1	SECURITY AND AUDIO-VIDEO ONE-LINES
T7.0.0	TECHNOLOGY BACKBONE PATHWAY DETAILS
T7.0.1	TECHNOLOGY HORIZONTAL PATHWAYS
T7.0.2	TECHNOLOGY SYSTEMS DETAILS
T7.0.3	RATED ASSEMBLY PENETRATION DETAILS
T8.0.1	IDF RACK ELEVATIONS AND SCHEDULES

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY PROJECT NOTES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

T0.01

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH WHEN PLOTTED ON THE ORIGINAL PAGE SIZE

TECHNOLOGY SYMBOL LEGEND:

ALL NOTES ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS AND DETAILS

MARK	SYMBOL	DESCRIPTION	BACK BOX	PLASTER RING	MOUNTING HEIGHT	CONDUIT	CABLE MFR.	CABLE PRODUCT NUMBER	EQUIPMENT MFR.	EQUIPMENT PART NUMBER	MAX. LOAD	INSTALLATION NOTES	APPLICABLE DETAILS
1	ER	MAIN DISTRIBUTION FRAME (MDF)	N/A	N/A	N/A	N/A	N/A	N/A	EXISTING	EXISTING	N/A	N/A	N/A
2	TR / TE	INTERMEDIATE DISTRIBUTION FRAME (IDF)	N/A	N/A	N/A	N/A	N/A	N/A	EXISTING	EXISTING	N/A	N/A	1 T8.0.1; 2 T7.0.1
3	5500	MULTI-CHANNEL HIGH CAPACITY SURFACE MOUNTED RACEWAY	N/A	N/A	N/A	N/A	N/A	N/A	WIREMOLD	HIGH CAPACITY: WM5500 LOW CAPACITY: WM2300	N/A	N/A	8 T7.0.1
4		CONDUIT SLEEVES, SIZE AND QTY. AS NOTED PER PLAN	N/A	N/A	N/A	N/A	N/A	N/A	GENERAL	EMT / RIGID	N/A	N/A	N/A
5	J	NON-CONTINUOUS OPEN ENDED PATHWAY, J-HOOK W/ COLOR CLIP	N/A	N/A	N/A	N/A	N/A	N/A	B-LINE	BCH-32 / BCH-64	N/A	N/A	6 T7.0.1; 7 T7.0.1
6		VOICE WORK AREA OUTLET	5" SQ., 2-1/8" DEEP	1-DEVICE	+18" TO CENTER	1 EA. 1"C	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6	N/A	N/A	N/A	N/A	1 T6.0.0; 1 T7.0.1; 7 T7.0.1; 2 T7.0.2
7	#	DATA WORK AREA OUTLET, CAT6A DROP QTY. AS NOTED PER PLAN	5" SQ., 2-1/8" DEEP	1-DEVICE	+18" TO CENTER	1 EA. 1"C	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6	N/A	N/A	N/A	N/A	1 T6.0.0; 1 T7.0.1; 7 T7.0.1; 2 T7.0.2
8	#	DATA/VOICE WORK AREA OUTLET, CAT6A DROP QTY. AS NOTED PER PLAN	5" SQ., 2-1/8" DEEP	1-DEVICE	+18" TO CENTER	1 EA. 1"C	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6	N/A	N/A	N/A	N/A	1 T6.0.0; 1 T7.0.1; 7 T7.0.1; 2 T7.0.2
9	WAP	WIRELESS ACCESS POINT, 4 EA. CAT6A DROPS PER LOCATION	5" SQ., 2-1/8" DEEP	2-DEVICE	CEILING	1 EA. 1"C	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6	OFCI	OFCI	N/A	N/A	1 T6.0.0; 1 T7.0.1; 7 T7.0.1; 2 T7.0.2; 5 T7.0.2
10	S	NEW ANALOG SWEEP IP CLOCK W/ INTERCOM / PAGING SPEAKER IN EXISTING COMBO BOX	EXISTING	N/A	EXISTING	EXISTING	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6	CLOCK: SAPLING SPEAKER: LOWEL	CLOCK: SAP-1BS-12R-0 SPEAKER: 810-T72	N/A	N/A	N/A
11		INTERCOM / PAGING SPEAKER, LAY-IN CEILING	N/A	N/A	CEILING	1 EA. 1"C	WEST PENN WIRE	25355B	LOWELL	LT-810-72-BB	N/A	N/A	2 T6.0.0; 1 T7.0.1
12	S	INTERCOM / PAGING SPEAKER, HARD LID CEILING	MFR. SPECIFIC	N/A	+108" TO CENTER	1 EA. 1"C	WEST PENN WIRE	25355B	LOWELL	810-T72	N/A	CAULK AND SEAL SPEAKER BOX W/ WEATHERPROOF GROMMET	2 T6.0.0; 1 T7.0.1
13	S	EXTERIOR INTERCOM / PAGING SPEAKER, WALL MOUNT	MFR. SPECIFIC	N/A	+108" TO CENTER	1 EA. 1"C	WEST PENN WIRE	25355B	LOWELL	LUH-15TA	N/A	CAULK AND SEAL SPEAKER BOX W/ WEATHERPROOF GROMMET	2 T6.0.0; 1 T7.0.1
14		ANALOG SWEEP CLOCK, IP 1 EA. CAT6A DROP PER LOCATION	5" SQ., 2-1/8" DEEP	1-DEVICE	+84" TO CENTER	1 EA. 1"C	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6	SAPLING	SAP-1BS-12R-0	N/A	N/A	1 T6.0.0; 1 T7.0.1; 7 T7.0.1; 2 T7.0.2
15		INTERACTIVE MONITOR MOBILE CART	N/A	N/A	N/A	N/A	SYSTEM SPECIFIC	SYSTEM SPECIFIC	PROMETHEAN	SEE AUDIO-VIDEO ONE-LINE FOR ADDITIONAL INFORMATION	N/A	N/A	2 T6.0.1
16		LED TV MONITOR W/ WALL MOUNT	5" SQ., 2-1/8" DEEP	2-DEVICE	+60" TO CENTER	2 EA. 1-1/4"C	SYSTEM SPECIFIC	SYSTEM SPECIFIC	PROMETHEAN	SEE AUDIO-VIDEO ONE-LINE FOR ADDITIONAL INFORMATION	N/A	N/A	2 T6.0.1
17		SURVEILLANCE CAMERA, W/ 3-YEAR LICENSE 1 EA. CAT6A PER LOCATION	5" SQ., 2-1/8" DEEP	2-DEVICE	+108" TO CENTER	1 EA. 1"C	LEVITON	CAT6A (PLENUM): 10143424 JACK:6110G-R#6 FACEPLATE: 42080-3WS	VERKADA	CD52-E	N/A	N/A	1 T6.0.0; 1 T7.0.1; 2 T7.0.2; 3 T7.0.2; 4 T7.0.2
18	I	WALL / CEILING FIXED POSITION INTRUSION MOTION SENSOR	5" SQ., 2-1/8" DEEP	1-DEVICE	+96" TO BOTT.	1 EA. 3/4"C	WEST PENN WIRE	25244B 18AWG UNSHIELDED - PLENUM	BOSCH	SEE INTRUSION ALARM ONE-LINE FOR ADDITIONAL INFORMATION	N/A	N/A	1 T6.0.1; 1 T7.0.1; 6 T7.0.2
19		HIDDEN DOOR POSITION CONTACT, OPDT	N/A	N/A	ADD TOP OF DOOR	1 EA. 3/4"C	WEST PENN WIRE	25244B 18AWG UNSHIELDED - PLENUM	ABLOY	SEE INTRUSION ALARM ONE-LINE FOR ADDITIONAL INFORMATION	N/A	N/A	1 T6.0.1; 1 T7.0.1
20	KP	INTRUSION ALARM KEYPAD	N/A	N/A	+48" TO CENTER	1 EA. 3/4"C	WEST PENN WIRE	25244B 18AWG UNSHIELDED - PLENUM	DSC	SEE INTRUSION ALARM ONE-LINE FOR ADDITIONAL INFORMATION	N/A	N/A	1 T6.0.1; 1 T7.0.1

NOTES:

1. REFERENCE AUDIO VISUAL SPECIFICATIONS AND MANUFACTURER GUIDELINES WHEN DETERMINING BACK BOX SIZE FOR AUDIOVISUAL EQUIPMENT IF NOT SPECIFIED ABOVE.
2. USE EXTENSION RINGS, DEPTH AS REQUIRED, ON ALL BACK BOX LOCATIONS.
3. REFERENCE ANSI / EIA / TIA STANDARDS AS APPLICABLE.
4. ROUTE CONDUIT IN-WALL TO NEAREST TO ACCESSIBLE CEILING SPACE. CONTRACTOR SHALL NOTIFY ARCHITECT/DESIGNER IF CONDUITS ARE UNABLE TO BE INSTALLED IN-WALL PRIOR TO SURFACE MOUNTED CONDUIT INSTALLATION.
5. ALL PLASTER RINGS AND INSIDE OF BACK BOX SHALL BE PAINTED LIGHT BLUE FOR PRE-SHEETROCK / WALL PANEL IN-WALL INFRASTRUCTURE INSPECTION.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

MEP & FS / Sustainability / CxA

CONSULTING ENGINEERS

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY SYMBOL LEGEND

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

T0.02

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:27:44 AM

PLEASE RECYCLE

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

TECHNOLOGY GENERAL SHEET NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL BUILDING PLANS AND DIMENSIONS.
2. REFER TO ELECTRICAL DRAWINGS FOR ALL TECHNOLOGY POWER CIRCUIT REQUIREMENTS.
3. CONTRACTOR SHALL UTILIZE 3-DIMENSION TECHNOLOGY REVIT BIM MODEL FOR TRADES COORDINATION IN CONSTRUCTION. SYSTEMS INSTALLATION SHALL BE IN GENERAL PLACEMENT OF DESIGN AS SHOWN ON APPROVED CONSTRUCTION DRAWINGS AND/OR REVIT BIM MODELS.
4. ALL EQUIPMENT SHOWN ON CONSTRUCTION DOCUMENTS IS TO BE NEW, CONTRACTOR FURNISHED/CONTRACTOR INSTALLED UNLESS SPECIFIED ON DRAWINGS AND/OR SCHEDULES.
5. ALL TECHNOLOGY SYSTEMS MUD RINGS SHALL BE PAINTED BLUE FOR A PRE-SHEETROCK INSPECTION OF IN-WALL INFRASTRUCTURE.
6. ALL EXPOSED CONDUITS SHALL BE PRIMED WHITE AND PAINTED TO MATCH SURROUNDING AREA.
7. NETWORK STATION CABLING SHALL BE TERMINATED IN PATCH PANEL(S) IN SEQUENTIAL ORDER OF ROOM NUMBER, DROP ID. CABLES SHALL BE MACHINE LABELED AT PATCH PANEL FACE, AND AT CATEGORY CABLE (BOTH ENDS AS SHOWN ON DETAILS/SPECIFICATIONS).
8. TYPICAL DETAILS IN ONE ROOM PER BUILDING.

1 TECHNOLOGY SITE PLAN

SCALE: 1/32" = 1'-0"

0 32 64

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES (#)

1. NEW GROUND BOX WITH BASE EXTENSIONS AND LID. LID SHALL BE H20 TRAFFIC RATED AT ALL VEHICLE OR HIGH WEIGHT CAPACITY AREAS AND CONCRETE LID AT OTHER LOCATIONS, TYP., U.N.O. LIDS SHALL BE LABELED "SIGNAL" OR "COMMUNICATIONS" (TYP).
2. EXISTING MDF EQUIPMENT ROOM.
3. EXISTING IDF RACK AND CABINET TO REMAIN.
4. PROVIDE (N) DATA DROP CAT6A FOR IRRIGATION CONTROLLER. REFER TO LANDSCAPE PLAN SET FOR MORE INFORMATION AND REQUIREMENTS.

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA. 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY SITE PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

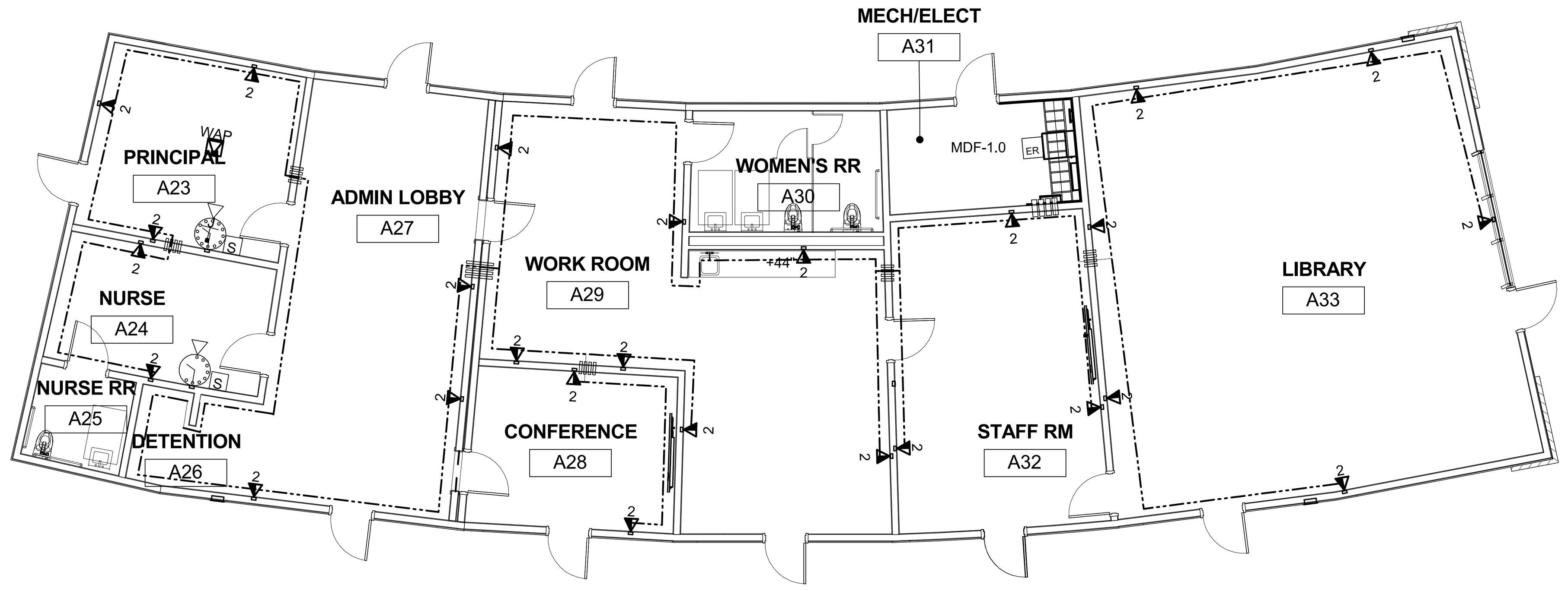
SHEET:

T1.21

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
8/19/2024 10:27:55 AM

PLEASE RECYCLE

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



2 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG A

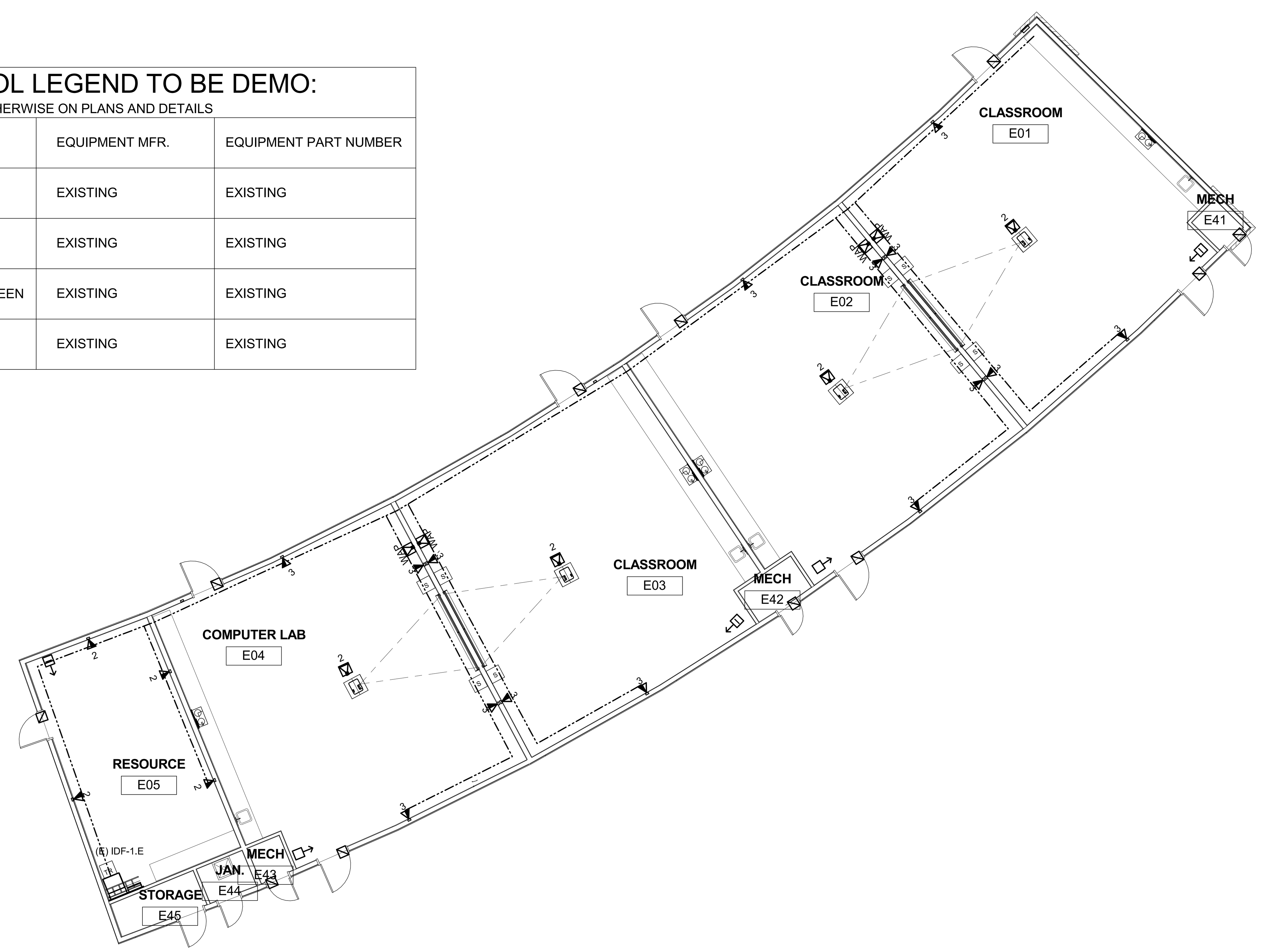
SCALE: 1/8" = 1'-0"

0 4 8 12 16

TECHNOLOGY EXISTING SYMBOL LEGEND TO BE DEMO:

ALL NOTES ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS AND DETAILS

MARK	SYMBOL	DESCRIPTION	EQUIPMENT MFR.	EQUIPMENT PART NUMBER
1		SURFACE MOUNTED RACEWAY	EXISTING	EXISTING
2		CEILING MOUNTED PROJECTOR	EXISTING	EXISTING
3		WALL MOUNTED SCREEN	EXISTING	EXISTING
1	S	WALL MOUNTED SPEAKERS	EXISTING	EXISTING



1 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG E

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

0 4 8 12 16

TECHNOLOGY DEMO NOTE(S)

AUDIO-VIDEO
1. REMOVE EXISTING AUDIO-VIDEO PROJECTORS, LED TV/MONITOR DISPLAYS, PROJECTION SCREENS, CONTROLS STATIONS, INPUT AND OUTPUT PLATES, SPEAKERS, AND ALL ASSOCIATED MOUNTING HARDWARE. WIPE DOWN AND INVENTORY ALL EQUIPMENT FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE ALL EXISTING AUDIO-VIDEO CABLING (VARIOUS MULTI-CONDUCTOR AND/OR CAT6) FROM THE AUDIO-VIDEO DEVICE TO THE TERMINATION HARDWARE, BLOCK, AND/OR BUILDING IDF PATCH PANEL.
4. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED AUDIO-VIDEO EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
5. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTRUSION ALARM
1. REMOVE EXISTING INTRUSION ALARM EDGE DEVICES, MOTION SENSORS AND DOOR CONTACTS.
2. REMOVE ALL EXISTING INTRUSION CABLING (VARIOUS MULTI-CONDUCTOR) FROM THE SECURITY DEVICE TO THE TERMINATION BLOCK AND/OR BUILDING CONTROL PANEL.
3. REMOVED INTRUSION ALARM EDGE DEVICES AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

SURVEILLANCE CAMERA
1. REMOVE EXISTING NETWORK VIDEO RECORDER, INTERIOR AND EXTERIOR CAMERAS. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS.
2. REMOVE ALL EXISTING CAMERA CABLING (CAT5/CAT5e/CAT6) FROM THE CAMERA OUTLET TO THE TERMINATION BLOCK AND/OR BUILDING IDF PATCH PANEL.
3. THE CONTRACTOR SHALL COORDINATE DELIVERY TO DISTRICT IT DEPARTMENT OR DISPOSE AT DISTRICT AUTHORIZATION.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. REMOVED CAMERAS AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTERMEDIATE DISTRIBUTION FRAME (IDF)
1. REMOVE ALL EXISTING RACK MOUNTED EQUIPMENT FROM EXISTING IDF EQUIPMENT RACK.
2. WIPE DOWN AND INVENTORY ACTIVE NETWORK EQUIPMENT, SWITCHES, COMMUNICATIONS MODULES, UPS, NETWORK INTERFACE CARDS SERIAL NUMBERS.
3. THE CONTRACTOR SHALL COORDINATE DELIVERY TO DISTRICT IT DEPARTMENT OR REUSE ACTIVE NETWORK EQUIPMENT AT MODERNIZED BUILDING IDF.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. THE MODERNIZED BUILDING IDF SHALL REUSE THE EXISTING FIBER OPTIC TERMINATION ENCLOSURE, NETWORK SWITCHES, SWITCH TRANSCEIVERS, HORIZONTAL WIRE MANAGERS, POWER DISTRIBUTION UNITS, AND UPS BATTERY BACKUP.
6. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED ACTIVE NETWORK EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
7. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
8. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

CONDUIT BACKBONE / CANOPY
1. UPON SUCCESSFUL (TESTED / APPROVED / DISTRICT ACCEPTED) TRANSITION TO NEW UNDERGROUND PATHWAYS AND FIBER BACKBONE ALL EXISTING OVERHEAD CANOPY CONDUITS, CABLES, AND BACK BOXES SHALL BE REMOVED.
2. ALL BUILDING AND CANOPY PENETRATIONS SHALL BE PATCHED, REPAIRED, AND PAINTED TO SIMILAR CONDITION OF SURROUNDING AREA.
3. ALL BUILDING PENETRATIONS SHALL BE SEALED FOR WEATHERPROOF, WATERTIGHT ENVELOPE.
4. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
5. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

SURFACE RACEWAY
1. REMOVE EXISTING COVERS FROM EXISTING SURFACE RACEWAYS AND STORE IN SECURE LOCATION FOR REUSE. DAMAGED SECTIONS SHALL BE REPLACED WITH NEW COVERS BY CONTRACTOR.
2. REMOVE EXISTING ABANDONED SMALL CAPACITY SURFACE RACEWAYS.
3. REMOVE EXISTING TECHNOLOGY AND SECURITY CABLING FROM LOW AND HIGH-CAPACITY RACEWAYS.
4. REMOVE EXISTING POWER AND DATA WORK AREA OUTLET SURFACE BACK BOXES. LOCATIONS SHALL BE RE-FITTED WITH APPROPRIATE FRONT FACING SURFACE MOUNT BACK BOXES.
5. REMOVED SURFACE RACEWAYS SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

DATA
1. REMOVE ALL EXISTING NETWORK CATEGORY CABLING (CAT5/CAT5e/CAT6) FROM THE WORK AREA OUTLET TO THE BUILDING IDF PATCH PANEL.
2. REMOVE ALL COPPER CABLING FROM SOURCE TO TERMINATION EQUIPMENT DESTINATIONS.
3. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

VOICE
1. REMOVE ALL EXISTING VOICE PHONE SETS (WALL OR DESK MOUNT). WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT OR REUSED AT MODERNIZED BUILDING.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE ALL EXISTING VOICE CABLING (ANALOG 1-PAIR, CAT5/CAT5e/CAT6) FROM THE VOICE OUTLET TO THE TERMINATION BLOCK AND/OR BUILDING IDF PATCH PANEL.
4. REMOVE ALL ANALOG COPPER CABLING FROM SOURCE TO TERMINATION EQUIPMENT DESTINATIONS.
5. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

WIRELESS ACCESS POINT (WAP)
1. REMOVE EXISTING WIRELESS ACCESS POINT AND ALL ASSOCIATED MOUNTING HARDWARE. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS, AND EXISTING ROOM NUMBER. STORE IN SECURE LOCATION FOR REINSTALLATION AT MODERNIZED ROOM. DAMAGED OR LOST WIRELESS ACCESS POINT OR MOUNTING ACCESSORIES SHALL BE REPLACED WITH NEW BY CONTRACTOR.
2. REMOVE ALL EXISTING NETWORK CATEGORY CABLING (CAT6) FROM THE WIRELESS ACCESS POINT OUTLET TO THE BUILDING IDF PATCH PANEL.
3. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

CLOCK
1. REMOVE EXISTING CLOCK. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS, AND EXISTING ROOM NUMBER.
2. REMOVE EXISTING CLOCK POWER SUPPLY AND TERMINATION BLOCKS.
3. REMOVE ALL EXISTING CLOCK CABLING (3-CONDUCTOR AND/OR CAT6) FROM THE CLOCK TO THE TERMINATION BLOCK OR BUILDING IDF PATCH PANEL.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED CLOCK EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTERCOM
1. REMOVE EXISTING INTERCOM MASTER CONTROLLER AND ALL TERMINATION BLOCKS. WIPE DOWN AND INVENTORY INTERCOM MASTER CONTROLLER FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE EXISTING INTERIOR AND EXTERIOR INTERCOM SPEAKERS.
4. DO NOT REMOVE EXISTING SURFACE MOUNT CLOCK/SPEAKER COMBO BOXES.
5. DO NOT REMOVE EXISTING RECESSED OR SURFACE MOUNT SPEAKER BOXES.
6. WIPE DOWN SPEAKER BOXES.
7. REMOVE ALL EXISTING SPEAKER CABLING (2-PAIR AND/OR CAT6) FROM THE EXISTING SPEAKER TO THE TERMINATION BLOCK.
8. REMOVED CLOCKS AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
9. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A AND E TECHNOLOGY DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

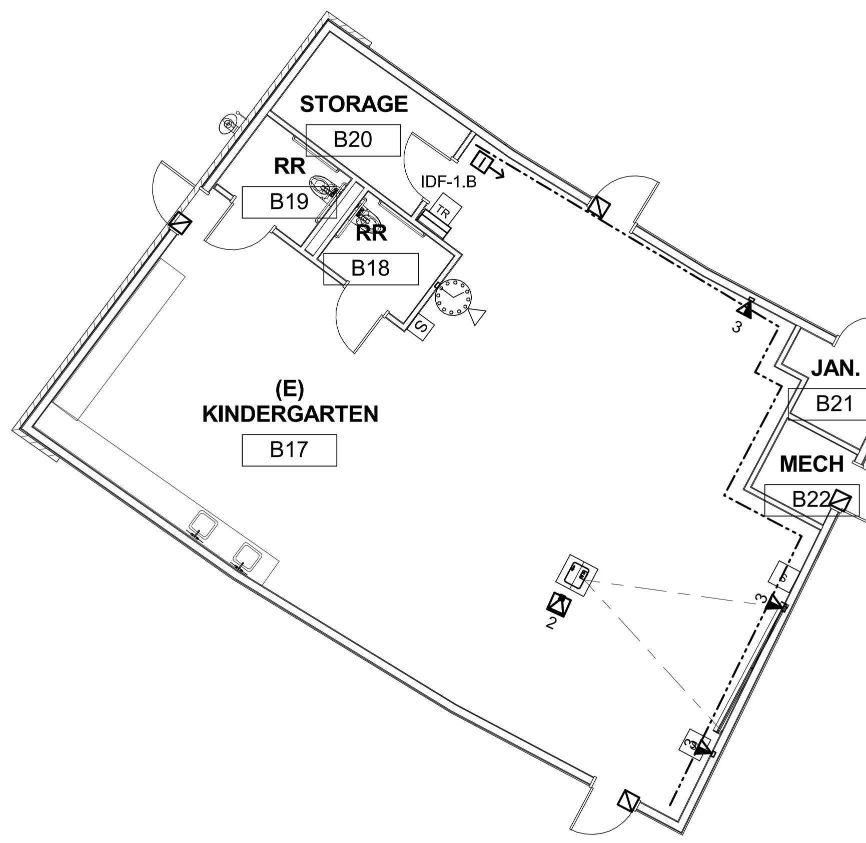
SHEET:

TD2.11

PLEASE RECYCLE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:30 AM

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

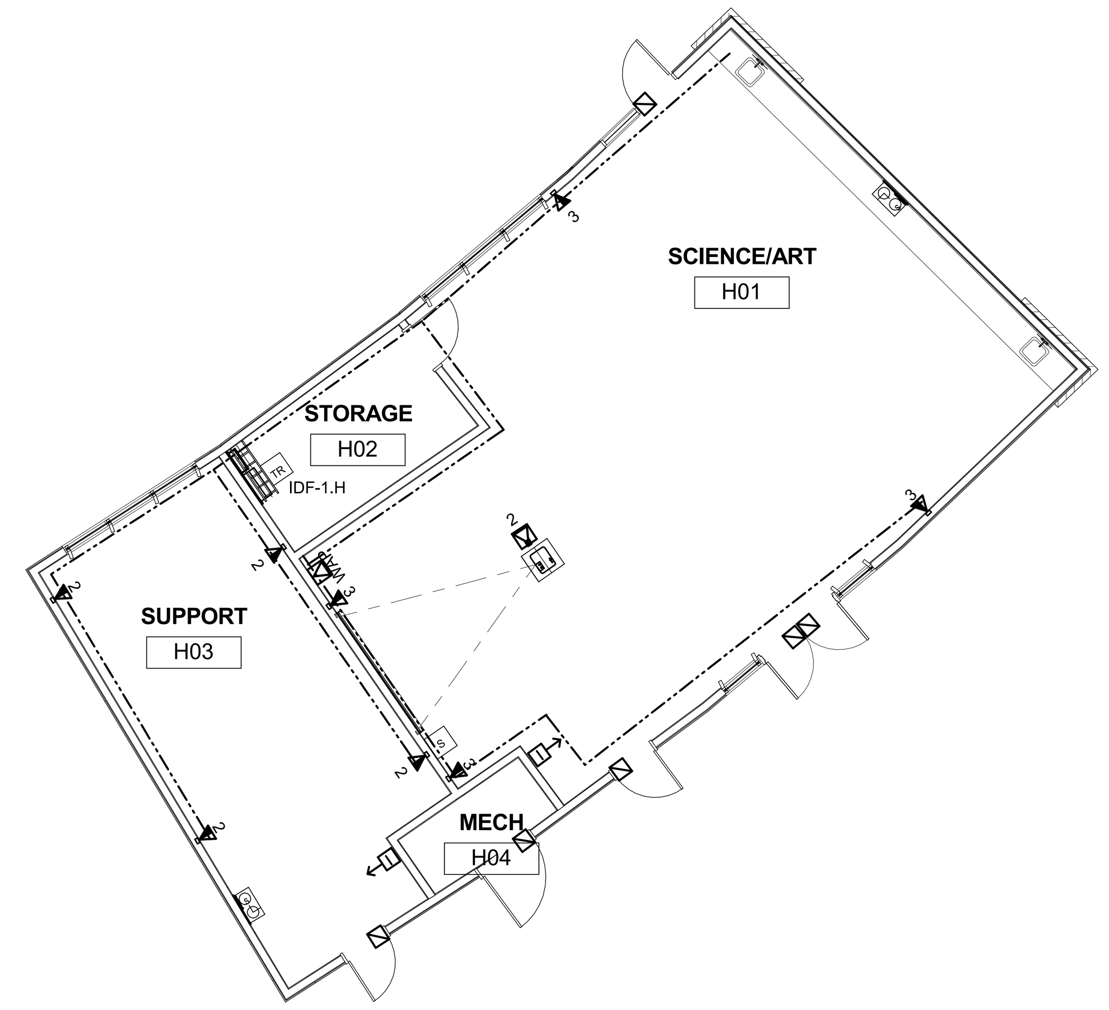


TN

3 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG B

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

0 4 8 12 16



TN

2 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG H

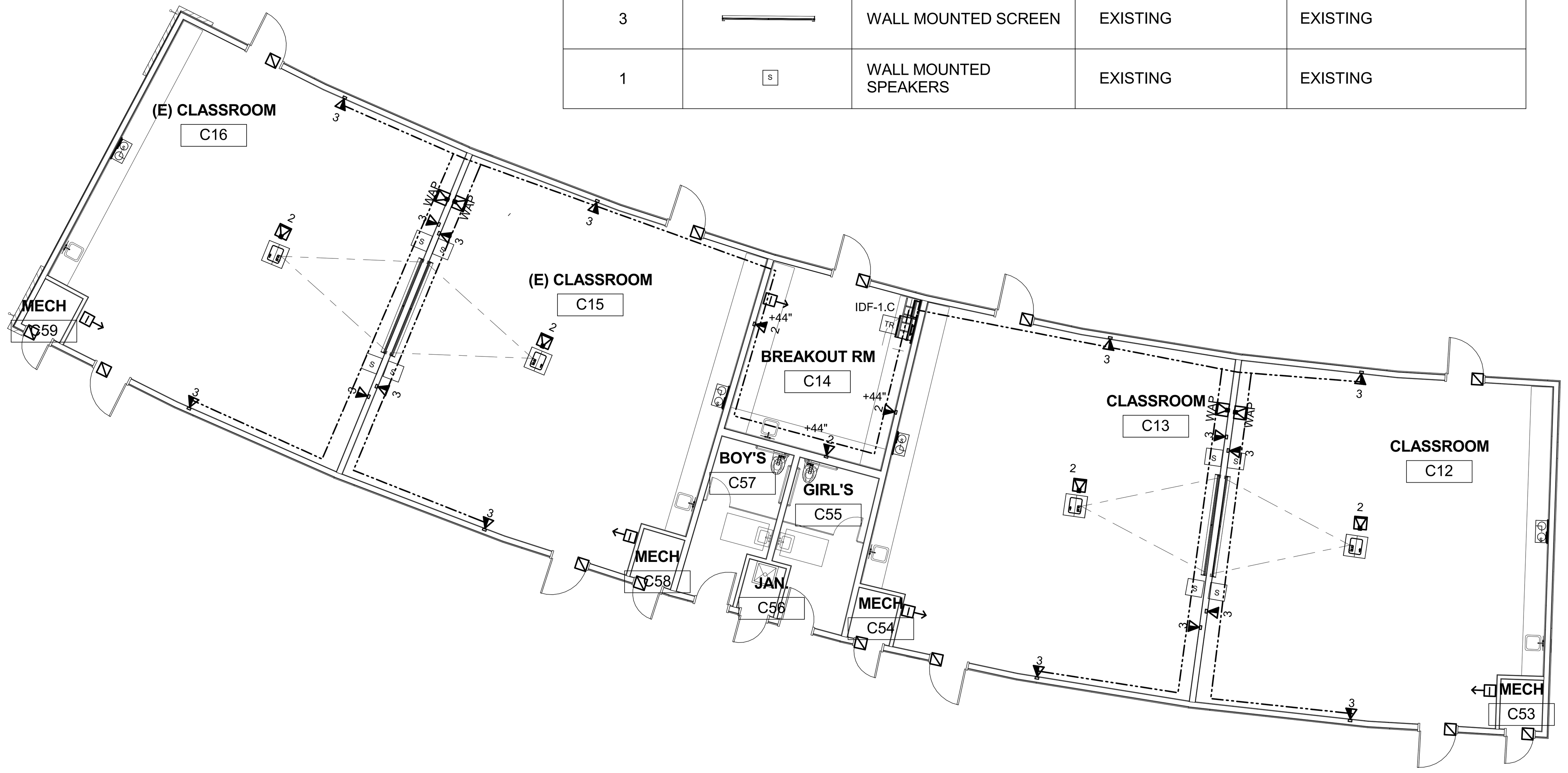
SCALE: 1/8" = 1'-0"

0 4 8 12 16

TECHNOLOGY EXISTING SYMBOL LEGEND TO BE DEMO:

ALL NOTES ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS AND DETAILS

MARK	SYMBOL	DESCRIPTION	EQUIPMENT MFR.	EQUIPMENT PART NUMBER
1	(line)	SURFACE MOUNTED RACEWAY	EXISTING	EXISTING
2	(projector symbol)	CEILING MOUNTED PROJECTOR	EXISTING	EXISTING
3	(screen symbol)	WALL MOUNTED SCREEN	EXISTING	EXISTING
1	S	WALL MOUNTED SPEAKERS	EXISTING	EXISTING



TN

1 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG C

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

0 4 8 12 16

TECHNOLOGY DEMO NOTE(S)

AUDIO-VIDEO
1. REMOVE EXISTING AUDIO-VIDEO PROJECTORS, LED TV/MONITOR DISPLAYS, PROJECTION SCREENS, CONTROLS STATIONS, INPUT AND OUTPUT PLATES, SPEAKERS, AND ALL ASSOCIATED MOUNTING HARDWARE. WIPE DOWN AND INVENTORY ALL EQUIPMENT FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE ALL EXISTING AUDIO-VIDEO CABLING (VARIOUS MULTI-CONDUCTOR AND/OR CAT6) FROM THE AUDIO-VIDEO DEVICE TO THE TERMINATION HARDWARE, BLOCK, AND/OR BUILDING IDF PATCH PANEL.
4. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED AUDIO-VIDEO EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
5. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTRUSION ALARM
1. REMOVE EXISTING INTRUSION ALARM EDGE DEVICES, MOTION SENSORS AND DOOR CONTACTS.
2. REMOVE ALL EXISTING INTRUSION CABLING (VARIOUS MULTI-CONDUCTOR) FROM THE SECURITY DEVICE TO THE TERMINATION BLOCK AND/OR BUILDING CONTROL PANEL.
3. REMOVED INTRUSION ALARM EDGE DEVICES AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

SURVEILLANCE CAMERA
1. REMOVE EXISTING NETWORK VIDEO RECORDER, INTERIOR AND EXTERIOR CAMERAS. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS.
2. REMOVE ALL EXISTING CAMERA CABLING (CAT5/CAT5e/CAT6) FROM THE CAMERA OUTLET TO THE TERMINATION BLOCK AND/OR BUILDING IDF PATCH PANEL.
3. THE CONTRACTOR SHALL COORDINATE DELIVERY TO DISTRICT IT DEPARTMENT OR DISPOSE AT DISTRICT AUTHORIZATION.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. REMOVED CAMERAS AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTERMEDIATE DISTRIBUTION FRAME (IDF)
1. REMOVE ALL EXISTING RACK MOUNTED EQUIPMENT FROM EXISTING IDF EQUIPMENT RACK.
2. WIPE DOWN AND INVENTORY ACTIVE NETWORK EQUIPMENT, SWITCHES, COMMUNICATIONS MODULES, UPS, NETWORK INTERFACE CARDS SERIAL NUMBERS.
3. THE CONTRACTOR SHALL COORDINATE DELIVERY TO DISTRICT IT DEPARTMENT OR REUSE ACTIVE NETWORK EQUIPMENT AT MODERNIZED BUILDING IDF.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. THE MODERNIZED BUILDING IDF SHALL REUSE THE EXISTING FIBER OPTIC TERMINATION ENCLOSURE, NETWORK SWITCHES, SWITCH TRANSCEIVERS, HORIZONTAL WIRE MANAGERS, POWER DISTRIBUTION UNITS, AND UPS BATTERY BACKUP.
6. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED ACTIVE NETWORK EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
7. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
8. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

CONDUIT BACKBONE / CANOPY
1. UPON SUCCESSFUL (TESTED / APPROVED / DISTRICT ACCEPTED) TRANSITION TO NEW UNDERGROUND PATHWAYS AND FIBER BACKBONE ALL EXISTING OVERHEAD CANOPY CONDUITS, CABLES, AND BACK BOXES SHALL BE REMOVED.
2. ALL BUILDING AND CANOPY PENETRATIONS SHALL BE PATCHED, REPAIRED, AND PAINTED TO SIMILAR CONDITION OF SURROUNDING AREA.
3. ALL BUILDING PENETRATIONS SHALL BE SEALED FOR WEATHERPROOF, WATERTIGHT ENVELOPE.
4. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
5. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

SURFACE RACEWAY
1. REMOVE EXISTING COVERS FROM EXISTING SURFACE RACEWAYS AND STORE IN SECURE LOCATION FOR REUSE. DAMAGED SECTIONS SHALL BE REPLACED WITH NEW COVERS BY CONTRACTOR.
2. REMOVE EXISTING ABANDONED SMALL CAPACITY SURFACE RACEWAYS.
3. REMOVE EXISTING TECHNOLOGY AND SECURITY CABLING FROM LOW AND HIGH-CAPACITY RACEWAYS.
4. REMOVE EXISTING POWER AND DATA WORK AREA OUTLET SURFACE BACK BOXES. LOCATIONS SHALL BE RE-FITTED WITH APPROPRIATE FRONT FACING SURFACE MOUNT BACK BOXES.
5. REMOVED SURFACE RACEWAYS SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

DATA
1. REMOVE ALL EXISTING NETWORK CATEGORY CABLING (CAT5/CAT5e/CAT6) FROM THE WORK AREA OUTLET TO THE BUILDING IDF PATCH PANEL.
2. REMOVE ALL COPPER CABLING FROM SOURCE TO TERMINATION EQUIPMENT DESTINATIONS.
3. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

VOICE
1. REMOVE ALL EXISTING VOICE PHONE SETS (WALL OR DESK MOUNT). WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT OR REUSED AT MODERNIZED BUILDING.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE ALL EXISTING VOICE CABLING (ANALOG 1-PAIR, CAT5/CAT5e/CAT6) FROM THE VOICE OUTLET TO THE TERMINATION BLOCK AND/OR BUILDING IDF PATCH PANEL.
4. REMOVE ALL ANALOG COPPER CABLING FROM SOURCE TO TERMINATION EQUIPMENT DESTINATIONS.
5. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

WIRELESS ACCESS POINT (WAP)
1. REMOVE EXISTING WIRELESS ACCESS POINT AND ALL ASSOCIATED MOUNTING HARDWARE. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS, AND EXISTING ROOM NUMBER. STORE IN SECURE LOCATION FOR REINSTALLATION AT MODERNIZED ROOM. DAMAGED OR LOST WIRELESS ACCESS POINT OR MOUNTING ACCESSORIES SHALL BE REPLACED WITH NEW BY CONTRACTOR.
2. REMOVE ALL EXISTING NETWORK CATEGORY CABLING (CAT6) FROM THE WIRELESS ACCESS POINT OUTLET TO THE BUILDING IDF PATCH PANEL.
3. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

CLOCK
1. REMOVE EXISTING CLOCK. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS, AND EXISTING ROOM NUMBER.
2. REMOVE EXISTING CLOCK POWER SUPPLY AND TERMINATION BLOCKS.
3. REMOVE ALL EXISTING CLOCK CABLING (3-CONDUCTOR AND/OR CAT6) FROM THE CLOCK TO THE TERMINATION BLOCK OR BUILDING IDF PATCH PANEL.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED CLOCK EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTERCOM
1. REMOVE EXISTING INTERCOM MASTER CONTROLLER AND ALL TERMINATION BLOCKS. WIPE DOWN AND INVENTORY INTERCOM MASTER CONTROLLER FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE EXISTING INTERIOR AND EXTERIOR INTERCOM SPEAKERS.
4. DO NOT REMOVE EXISTING SURFACE MOUNT CLOCK/SPEAKER COMBO BOXES.
5. DO NOT REMOVE EXISTING RECESSED OR SURFACE MOUNT SPEAKER BOXES.
6. WIPE DOWN SPEAKER BOXES.
7. REMOVE ALL EXISTING SPEAKER CABLING (2-PAIR AND/OR CAT6) FROM THE EXISTING SPEAKER TO THE TERMINATION BLOCK.
8. REMOVED CLOCKS AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
9. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H TECHNOLOGY DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

TD2.12

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:32 AM

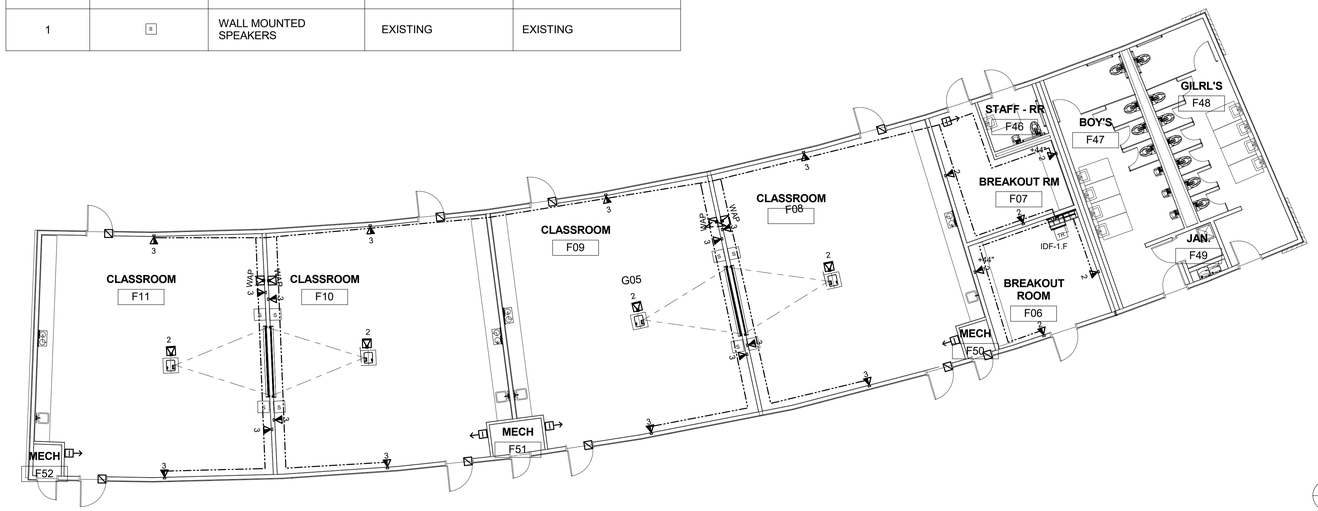
PLEASE RECYCLE

THE LINE SHOWN ABOVE IS ONE INCH WHEN PLOTTED AT FULL SIZE ON THE ORIGINAL PAGE SIZE

TECHNOLOGY EXISTING SYMBOL LEGEND TO BE DEMO:

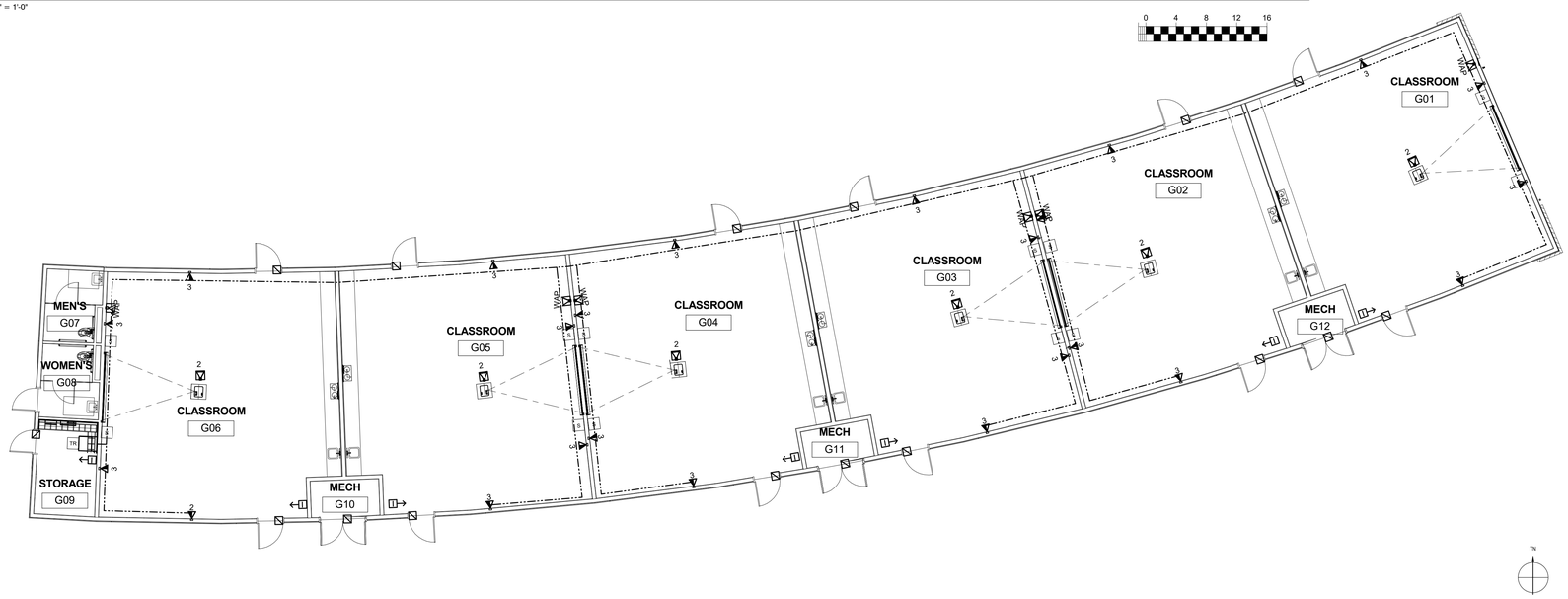
ALL NOTES ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS AND DETAILS

MARK	SYMBOL	DESCRIPTION	EQUIPMENT MFR.	EQUIPMENT PART NUMBER
1		SURFACE MOUNTED RACEWAY	EXISTING	EXISTING
2		CEILING MOUNTED PROJECTOR	EXISTING	EXISTING
3		WALL MOUNTED SCREEN	EXISTING	EXISTING
1	S	WALL MOUNTED SPEAKERS	EXISTING	EXISTING



2 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG F

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



1 TECHNOLOGY DEMOLITION FLOOR PLAN - BLDG G

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

TECHNOLOGY DEMO NOTE(S)

AUDIO-VIDEO

1. REMOVE EXISTING AUDIO-VIDEO PROJECTORS, LED TV/MONITOR DISPLAYS, PROJECTION SCREENS, CONTROLS STATIONS, INPUT AND OUTPUT PLATES, SPEAKERS, AND ALL ASSOCIATED MOUNTING HARDWARE. WIPE DOWN AND INVENTORY ALL EQUIPMENT FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE ALL EXISTING AUDIO-VIDEO CABLING (VARIOUS MULTI-CONDUCTOR AND/OR CAT6) FROM THE AUDIO-VIDEO DEVICE TO THE TERMINATION HARDWARE, BLOCK, AND/OR BUILDING IDF PATCH PANEL.
4. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED AUDIO-VIDEO EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
5. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTRUSION ALARM

1. REMOVE EXISTING INTRUSION ALARM EDGE DEVICES, MOTION SENSORS AND DOOR CONTACTS.
2. REMOVE ALL EXISTING INTRUSION CABLING (VARIOUS MULTI-CONDUCTOR) FROM THE SECURITY DEVICE TO THE TERMINATION BLOCK AND/OR BUILDING CONTROL PANEL.
3. REMOVED INTRUSION ALARM EDGE DEVICES AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

SURVEILLANCE CAMERA

1. REMOVE EXISTING NETWORK VIDEO RECORDER, INTERIOR AND EXTERIOR CAMERAS. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS.
2. REMOVE ALL EXISTING CAMERA CABLING (CAT5/CAT5e/CAT6) FROM THE CAMERA OUTLET TO THE TERMINATION BLOCK AND/OR BUILDING IDF PATCH PANEL.
3. THE CONTRACTOR SHALL COORDINATE DELIVERY TO DISTRICT IT DEPARTMENT OR DISPOSE AT DISTRICT AUTHORIZATION.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. REMOVED CAMERAS AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTERMEDIATE DISTRIBUTION FRAME (IDF)

1. REMOVE ALL EXISTING RACK MOUNTED EQUIPMENT FROM EXISTING IDF EQUIPMENT RACK.
2. WIPE DOWN AND INVENTORY ACTIVE NETWORK EQUIPMENT, SWITCHES, COMMUNICATIONS MODULES, UPS, NETWORK INTERFACE CARDS SERIAL NUMBERS.
3. THE CONTRACTOR SHALL COORDINATE DELIVERY TO DISTRICT IT DEPARTMENT OR REUSE ACTIVE NETWORK EQUIPMENT AT MODERNIZED BUILDING IDF.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. THE MODERNIZED BUILDING IDF SHALL REUSE THE EXISTING FIBER OPTIC TERMINATION ENCLOSURE, NETWORK SWITCHES, SWITCH TRANSCEIVERS, HORIZONTAL WIRE MANAGERS, POWER DISTRIBUTION UNITS, AND UPS BATTERY BACKUP.
6. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED ACTIVE NETWORK EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
7. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
8. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

CONDUIT BACKBONE / CANOPY

1. UPON SUCCESSFUL (TESTED / APPROVED / DISTRICT ACCEPTED) TRANSITION TO NEW UNDERGROUND PATHWAYS AND FIBER BACKBONE ALL EXISTING OVERHEAD CANOPY CONDUITS, CABLES, AND BACK BOXES SHALL BE REMOVED.
2. ALL BUILDING AND CANOPY PENETRATIONS SHALL BE PATCHED, REPAIRED, AND PAINTED TO SIMILAR CONDITION OF SURROUNDING AREA.
3. ALL BUILDING PENETRATIONS SHALL BE SEALED FOR WEATHERPROOF, WATERTIGHT ENVELOPE.
4. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
5. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

SURFACE RACEWAY

1. REMOVE EXISTING COVERS FROM EXISTING SURFACE RACEWAYS AND STORE IN SECURE LOCATION FOR REUSE. DAMAGED SECTIONS SHALL BE REPLACED WITH NEW COVERS BY CONTRACTOR.
2. REMOVE EXISTING ABANDONED SMALL CAPACITY SURFACE RACEWAYS.
3. REMOVE EXISTING TECHNOLOGY AND SECURITY CABLING FROM LOW AND HIGH-CAPACITY RACEWAYS.
4. REMOVE EXISTING POWER AND DATA WORK AREA OUTLET SURFACE BACK BOXES. LOCATIONS SHALL BE RE-FITTED WITH APPROPRIATE FRONT FACING SURFACE MOUNT BACK BOXES.
5. REMOVED SURFACE RACEWAYS SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

DATA

1. REMOVE ALL EXISTING NETWORK CATEGORY CABLING (CAT5/CAT5e/CAT6) FROM THE WORK AREA OUTLET TO THE BUILDING IDF PATCH PANEL.
2. REMOVE ALL COPPER CABLING FROM SOURCE TO TERMINATION EQUIPMENT DESTINATIONS.
3. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

VOICE

1. REMOVE ALL EXISTING VOICE PHONE SETS (WALL OR DESK MOUNT). WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT OR REUSED AT MODERNIZED BUILDING.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE ALL EXISTING VOICE CABLING (ANALOG 1-PAIR, CAT5/CAT5e/CAT6) FROM THE VOICE OUTLET TO THE TERMINATION BLOCK AND/OR BUILDING IDF PATCH PANEL.
4. REMOVE ALL ANALOG COPPER CABLING FROM SOURCE TO TERMINATION EQUIPMENT DESTINATIONS.
5. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

WIRELESS ACCESS POINT (WAP)

1. REMOVE EXISTING WIRELESS ACCESS POINT AND ALL ASSOCIATED MOUNTING HARDWARE. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS, AND EXISTING ROOM NUMBER. STORE IN SECURE LOCATION FOR REINSTALLATION AT MODERNIZED ROOM. DAMAGED OR LOST WIRELESS ACCESS POINT OR MOUNTING ACCESSORIES SHALL BE REPLACED WITH NEW BY CONTRACTOR.
2. REMOVE ALL EXISTING NETWORK CATEGORY CABLING (CAT6) FROM THE WIRELESS ACCESS POINT OUTLET TO THE BUILDING IDF PATCH PANEL.
3. REMOVED CATEGORY AND COPPER CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
4. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

CLOCK

1. REMOVE EXISTING CLOCK. WIPE DOWN AND INVENTORY DEVICE SERIAL NUMBERS, AND EXISTING ROOM NUMBER.
2. REMOVE EXISTING CLOCK POWER SUPPLY AND TERMINATION BLOCKS.
3. REMOVE ALL EXISTING CLOCK CABLING (3-CONDUCTOR AND/OR CAT6) FROM THE CLOCK TO THE TERMINATION BLOCK OR BUILDING IDF PATCH PANEL.
4. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
5. DISTRICT IT REVIEWED, AND AUTHORIZED UNUSED CLOCK EQUIPMENT SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND E-WASTE REQUIREMENTS.
6. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

INTERCOM

1. REMOVE EXISTING INTERCOM MASTER CONTROLLER AND ALL TERMINATION BLOCKS. WIPE DOWN AND INVENTORY INTERCOM MASTER CONTROLLER FOR CONTRACTOR COORDINATED DELIVERY TO DISTRICT IT DEPARTMENT.
2. ALL EQUIPMENT SHALL BE RETURNED IN "AS-IS" CONDITION.
3. REMOVE EXISTING INTERIOR AND EXTERIOR INTERCOM SPEAKERS.
4. DO NOT REMOVE EXISTING SURFACE MOUNT CLOCK/SPEAKER COMBO BOXES.
5. DO NOT REMOVE EXISTING RECESSED OR SURFACE MOUNT SPEAKER BOXES.
6. WIPE DOWN SPEAKER BOXES.
7. REMOVE ALL EXISTING SPEAKER CABLING (2-PAIR AND/OR CAT6) FROM THE EXISTING SPEAKER TO THE TERMINATION BLOCK.
8. REMOVED CLOCKS AND CABLING SHALL BE PROPERLY DISPOSED BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
9. ALL WASTE SHALL BE PLACED IN CONTRACTOR PROVIDED CONTAINERS; USE OF SITE DISPOSAL CONTAINERS IS PROHIBITED.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G TECHNOLOGY DEMOLITION FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

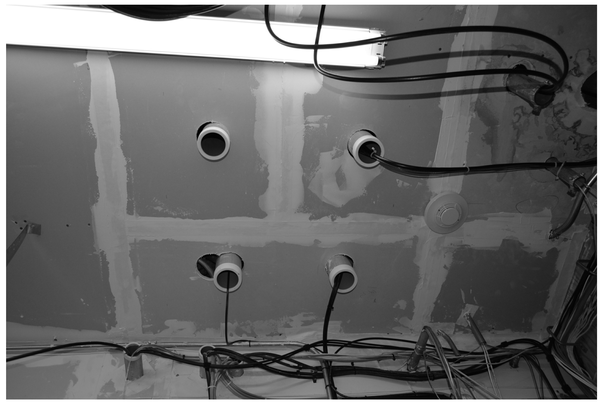
SHEET:

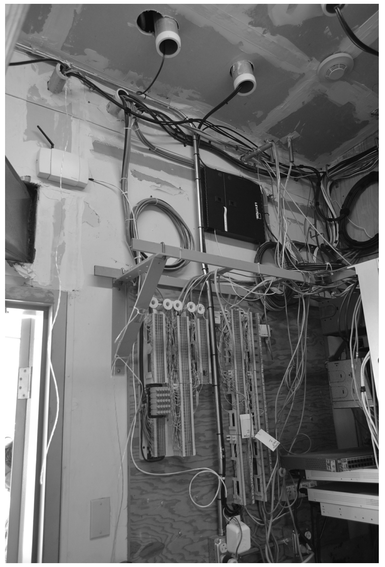
TD2.13

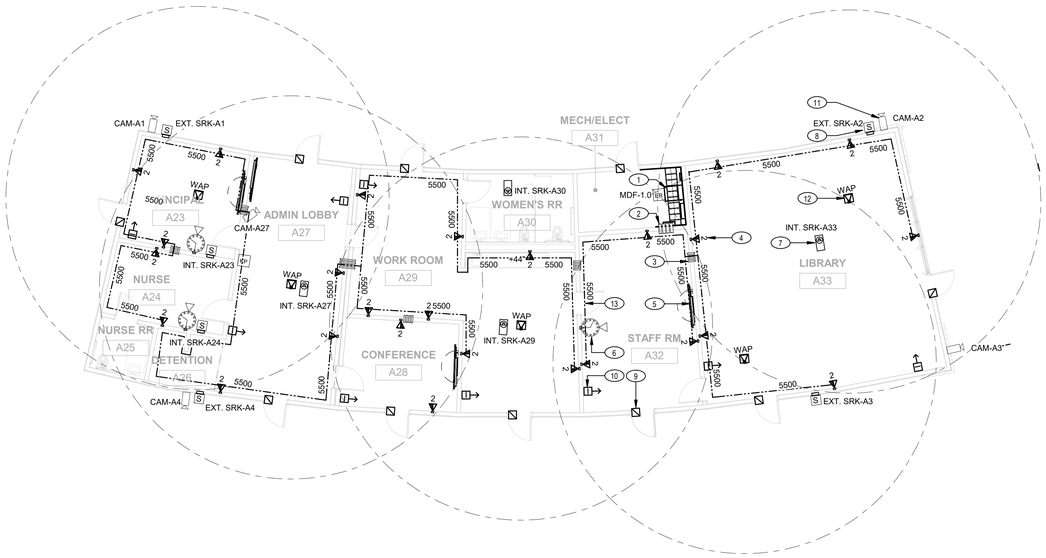
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:34 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL PAGE SIZE







1 TECHNOLOGY FLOOR PLAN - BLDG A

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

0 4 8 12 16

TECHNOLOGY GENERAL SHEET NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL BUILDING PLANS AND DIMENSIONS.
2. REFER TO ELECTRICAL DRAWINGS FOR ALL TECHNOLOGY POWER CIRCUIT REQUIREMENTS.
3. CONTRACTOR SHALL UTILIZE 3-DIMENSION TECHNOLOGY REVIT BIM MODEL FOR TRADES COORDINATION IN CONSTRUCTION. SYSTEMS INSTALLATION SHALL BE IN GENERAL PLACEMENT OF DESIGN AS SHOWN ON APPROVED CONSTRUCTION DRAWINGS AND/OR REVIT BIM MODELS.
4. ALL EQUIPMENT SHOWN ON CONSTRUCTION DOCUMENTS IS TO BE NEW, CONTRACTOR FURNISHED/CONTRACTOR INSTALLED UNLESS SPECIFIED ON DRAWINGS AND/OR SCHEDULES.
5. ALL TECHNOLOGY SYSTEMS MUD RINGS SHALL BE PAINTED BLUE FOR A PRE-SHEETROCK INSPECTION OF IN-WALL INFRASTRUCTURE.
6. ALL EXPOSED CONDUITS SHALL BE PRIMED WHITE AND PAINTED TO MATCH SURROUNDING AREA.
7. NETWORK STATION CABLING SHALL BE TERMINATED IN PATCH PANEL(S) IN SEQUENTIAL ORDER OF ROOM NUMBER, DROP ID. CABLES SHALL BE MACHINE LABELED AT PATCH PANEL FACE, AND AT CATEGORY CABLE (BOTH ENDS AS SHOWN ON DETAILS/SPECIFICATIONS).
8. TYPICAL DETAILS IN ONE ROOM PER BUILDING.

KEY NOTES

(#)

1 EXISTING MDF RACK AND CABINET TO REMAIN. SEE PHOTOS FOR ADDITIONAL INFORMATION.

2 NEW 4 EA. 4" CONDUIT SLEEVES. CAULK AND SEAL ALL SLEEVE ROUGH-IN GAPS, AND OPENINGS IN ACCORDANCE WITH REQUIRED FIRE RATINGS.

3 NEW 4 EA. 2" CONDUIT SLEEVES. CAULK AND SEAL ALL SLEEVE ROUGH-IN GAPS, AND OPENINGS IN ACCORDANCE WITH REQUIRED FIRE RATINGS.

4 NEW WALL NETWORK DATA / VOICE WORK AREA OUTLET (RJ45-F). PROVIDE JACK QTY. AS NOTED ON PLANS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.

5 NEW LED TV/MONITOR WITH MOUNT. INSTALL HORIZONTAL PATHWAYS, LED TV/MONITOR WALL MOUNT. LED TV/MONITOR, AV SYSTEM CABLING, AND WALL PLATES SHALL BE OWNER FURNISHED/OWNER INSTALLED. PROVIDE 1 EA. 120VAC/15A DEDICATED CIRCUIT. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

6 NEW 12" ANALOG WALL CLOCK. INSTALL HORIZONTAL PATHWAYS, CLOCK CABLING, CLOCK, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE TO MASTER CLOCK / NTP TIME SERVER, AND TEST TIME DISPLAY ACCURACY.

7 NEW AUDIO PLAYBACK SPEAKER. INSTALL HORIZONTAL PATHWAYS, BACK BOX, SPEAKER CABLING, AUDIOVISUAL (AV) PLAYBACK SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.

8 NEW EXTERIOR WALL INTERCOM / PAGING SPEAKER. INSTALL HORIZONTAL PATHWAYS, BACK BOX, SPEAKER CABLING, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST. CAULK AND SEAL BACK BOX AT ALL EXTERIOR WALL FINISH EDGES AND BOX FASTENER LOCATIONS FOR WATER-TIGHT CONNECTION.

9 NEW INTRUSION ALARM DOOR CONTACT. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, CONCEALED DOOR CONTACT AT UPPER FRAME, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.

10 NEW INTRUSION ALARM PROXIMITY MOTION SENSOR. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, MOTION SENSOR, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.

11 NEW EXTERIOR WALL SURVEILLANCE CAMERA WITH IR SENSOR, SMOKED DOME VANDAL COVER AND SUN SHIELD. INSTALL HORIZONTAL PATHWAYS, EXTERIOR BACK BOX, CAMERA CABLING, CAMERA, ACCESSORIES, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.

12 NEW CEILING WIRELESS ACCESS POINT STATION DROP (RJ45-F). PROVIDE 2 EA. CABLES AT ALL LOCATIONS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.

13 NEW SOLID BOTTOM SURFACE RACEWAY, WALL MOUNTED. PROVIDE RACEWAY, TRANSITION FITTINGS, END COVERS, AND ASSOCIATED JUNCTION ACCESSORIES. SURFACE RACEWAY SHALL BE PAINTED TO MATCH SURROUNDING WALL COLOR.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG A TECHNOLOGY FLOOR PLAN

CONSTRUCTION DOCUMENTS

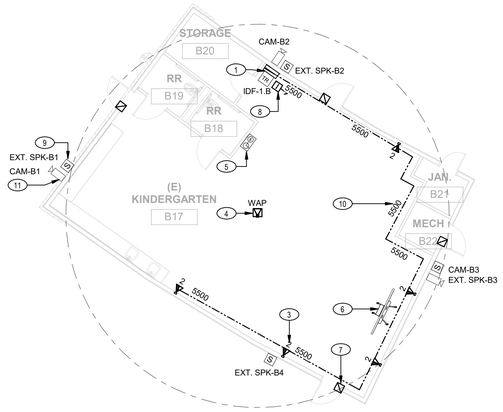
DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

T2.11

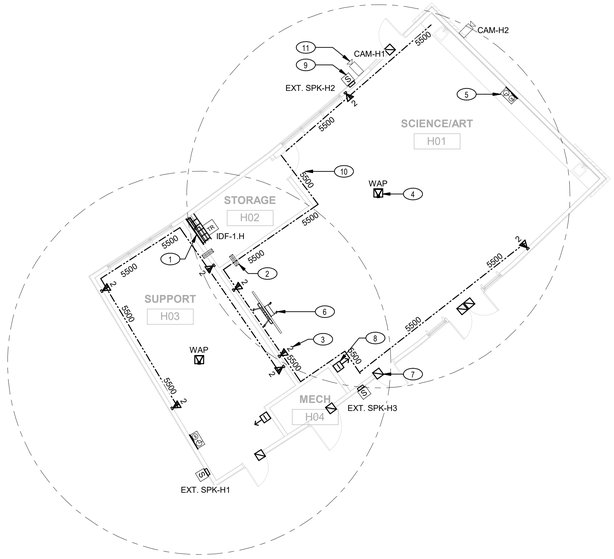
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
8/19/2024 10:27:59 AM

PLEASE RECYCLE



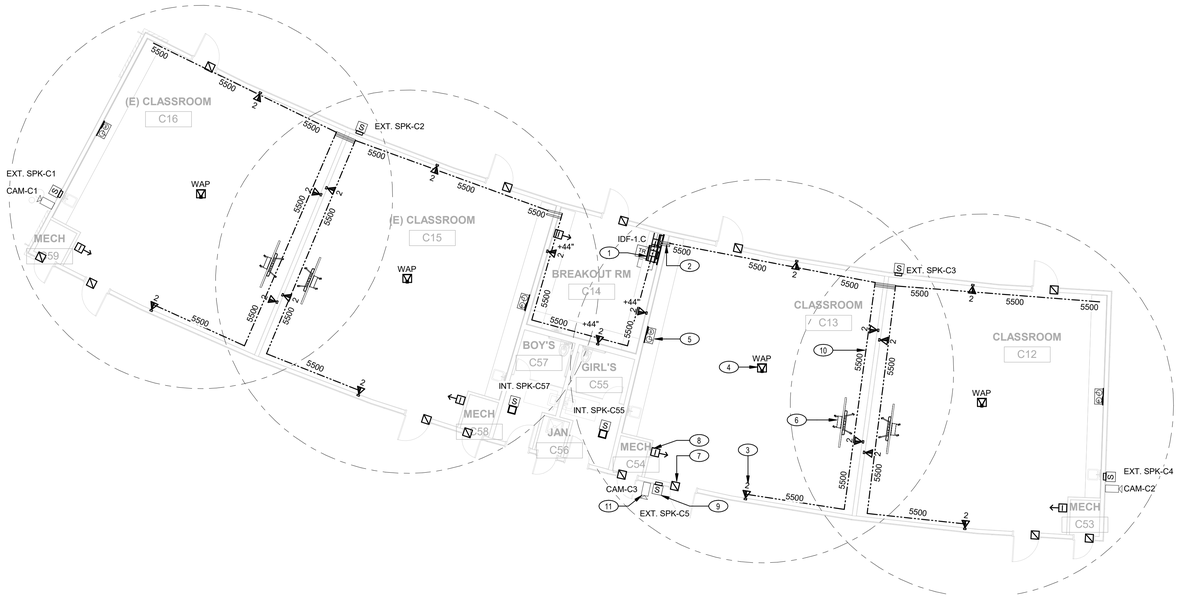
3 TECHNOLOGY FLOOR PLAN - BLDG B

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



2 TECHNOLOGY FLOOR PLAN - BLDG H

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



1 TECHNOLOGY FLOOR PLAN - BLDG C

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

TECHNOLOGY GENERAL SHEET NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL BUILDING PLANS AND DIMENSIONS.
2. REFER TO ELECTRICAL DRAWINGS FOR ALL TECHNOLOGY POWER CIRCUIT REQUIREMENTS.
3. CONTRACTOR SHALL UTILIZE 3-DIMENSION TECHNOLOGY REVIT BIM MODEL FOR TRADES COORDINATION IN CONSTRUCTION. SYSTEMS INSTALLATION SHALL BE IN GENERAL PLACEMENT OF DESIGN AS SHOWN ON APPROVED CONSTRUCTION DRAWINGS AND/OR REVIT BIM MODELS.
4. ALL EQUIPMENT SHOWN ON CONSTRUCTION DOCUMENTS IS TO BE NEW, CONTRACTOR FURNISHED/CONTRACTOR INSTALLED UNLESS SPECIFIED ON DRAWINGS AND/OR SCHEDULES.
5. ALL TECHNOLOGY SYSTEMS MUD RINGS SHALL BE PAINTED BLUE FOR A PRE-SHEETROCK INSPECTION OF IN-WALL INFRASTRUCTURE.
6. ALL EXPOSED CONDUITS SHALL BE PRIMED WHITE AND PAINTED TO MATCH SURROUNDING AREA.
7. NETWORK STATION CABLING SHALL BE TERMINATED IN PATCH PANEL(S) IN SEQUENTIAL ORDER OF ROOM NUMBER, DROP ID. CABLES SHALL BE MACHINE LABELED AT PATCH PANEL FACE, AND AT CATEGORY CABLE (BOTH ENDS AS SHOWN ON DETAILS/SPECIFICATIONS).
8. TYPICAL DETAILS IN ONE ROOM PER BUILDING.

KEY NOTES

#	
1	EXISTING IDF RACK AND CABINET TO REMAIN.
2	NEW 2 EA. 2" CONDUIT SLEEVES. CAULK AND SEAL ALL SLEEVE ROUGH-IN GAPS, AND OPENINGS IN ACCORDANCE WITH REQUIRED FIRE RATINGS.
3	NEW WALL NETWORK DATA / VOICE WORK AREA OUTLET (RJ45-F). PROVIDE JACK QTY. AS NOTED ON PLANS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.
4	NEW CEILING WIRELESS ACCESS POINT STATION DROP (RJ45-F). PROVIDE 2 EA. CABLES AT ALL LOCATIONS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.
5	NEW CLOCK / SPEAKER COMBINATION BOX. UTILIZE EXISTING COMBO BOX, INSTALL HORIZONTAL PATHWAYS, CLOCK CABLING, CLOCK, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE TO MASTER CLOCK AND INTERCOM MASTER STATION, AND TEST.
6	NEW OWNER FURNISHED/OWNER INSTALLED LED TV/MONITOR WITH CART. PROVIDE 1 EA. 120VAC/15A DEDICATED CIRCUIT. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
7	NEW INTRUSION ALARM DOOR CONTACT. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, CONCEALED DOOR CONTACT AT UPPER FRAME, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
8	NEW INTRUSION ALARM PROXIMITY MOTION SENSOR. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, MOTION SENSOR, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
9	NEW EXTERIOR WALL INTERCOM / PAGING SPEAKER. INSTALL HORIZONTAL PATHWAYS, BACK BOX, SPEAKER CABLING, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST. CAULK AND SEAL BACK BOX AT ALL EXTERIOR WALL FINISH EDGES AND BOX FASTENER LOCATIONS FOR WATER-TIGHT CONNECTION.
10	NEW SOLID BOTTOM SURFACE RACEWAY, WALL MOUNTED. PROVIDE RACEWAY, TRANSITION FITTINGS, END COVERS, AND ASSOCIATED JUNCTION ACCESSORIES. SURFACE RACEWAY SHALL BE PAINTED TO MATCH SURROUNDING WALL COLOR.
11	NEW EXTERIOR WALL SURVEILLANCE CAMERA WITH IR SENSOR, SMOKED DOME VANDAL COVER AND SUN SHIELD. INSTALL HORIZONTAL PATHWAYS, EXTERIOR BACK BOX, CAMERA CABLING, CAMERA, ACCESSORIES, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG B, C, & H TECHNOLOGY FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

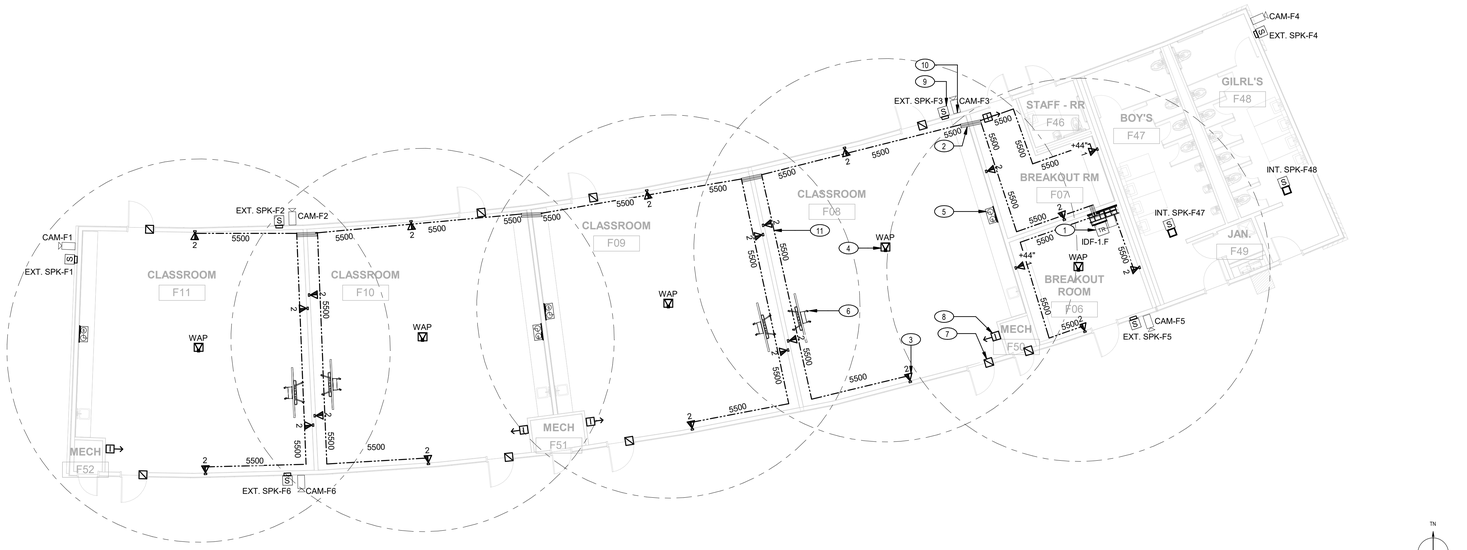
T2.12

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:04 AM

PLEASE RECYCLE

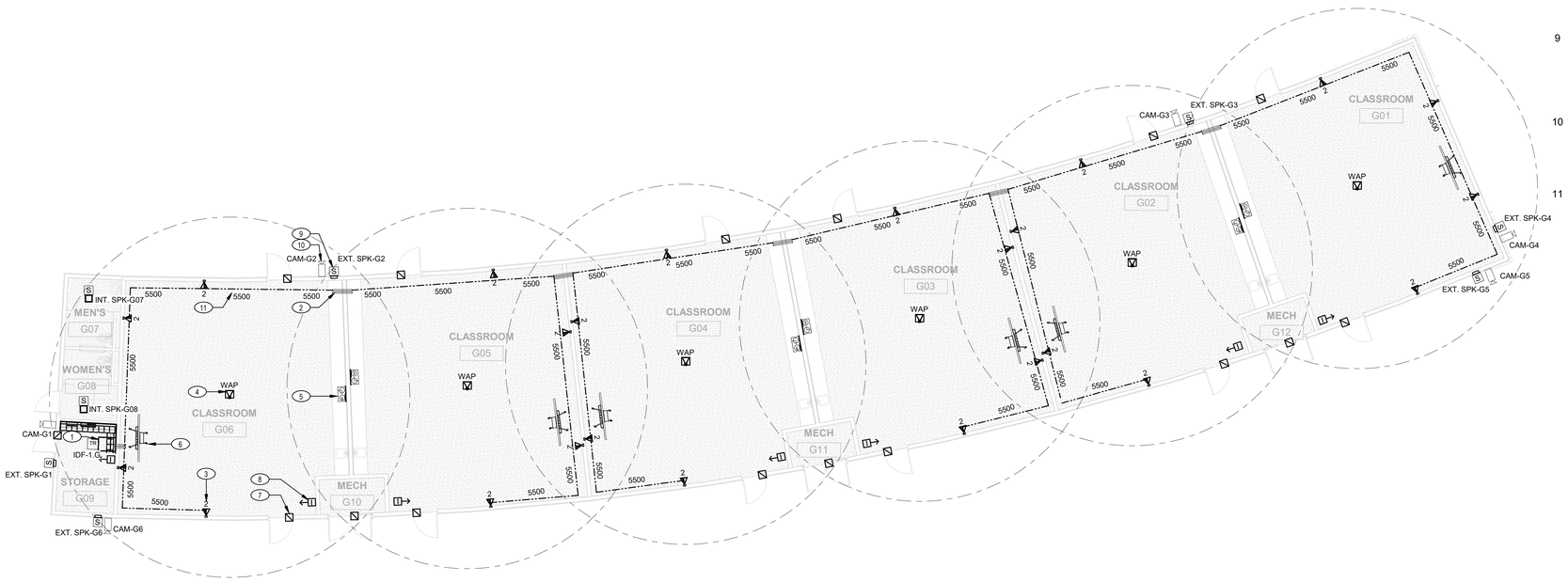
THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE



2 TECHNOLOGY FLOOR PLAN - BLDG F

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

0 4 8 12 16



1 TECHNOLOGY FLOOR PLAN - BLDG G

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

0 4 8 12 16

TECHNOLOGY GENERAL SHEET NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL BUILDING PLANS AND DIMENSIONS.
2. REFER TO ELECTRICAL DRAWINGS FOR ALL TECHNOLOGY POWER CIRCUIT REQUIREMENTS.
3. CONTRACTOR SHALL UTILIZE 3-DIMENSION TECHNOLOGY REVIT BIM MODEL FOR TRADES COORDINATION IN CONSTRUCTION. SYSTEMS INSTALLATION SHALL BE IN GENERAL PLACEMENT OF DESIGN AS SHOWN ON APPROVED CONSTRUCTION DRAWINGS AND/OR REVIT BIM MODELS.
4. ALL EQUIPMENT SHOWN ON CONSTRUCTION DOCUMENTS IS TO BE NEW, CONTRACTOR FURNISHED/CONTRACTOR INSTALLED UNLESS SPECIFIED ON DRAWINGS AND/OR SCHEDULES.
5. ALL TECHNOLOGY SYSTEMS MUD RINGS SHALL BE PAINTED BLUE FOR A PRE-SHEETROCK INSPECTION OF IN-WALL INFRASTRUCTURE.
6. ALL EXPOSED CONDUITS SHALL BE PRIMED WHITE AND PAINTED TO MATCH SURROUNDING AREA.
7. NETWORK STATION CABLING SHALL BE TERMINATED IN PATCH PANEL(S) IN SEQUENTIAL ORDER OF ROOM NUMBER, DROP ID. CABLES SHALL BE MACHINE LABELED AT PATCH PANEL FACE, AND AT CATEGORY CABLE (BOTH ENDS AS SHOWN ON DETAILS/SPECIFICATIONS).
8. TYPICAL DETAILS IN ONE ROOM PER BUILDING.

KEY NOTES

#	
1	EXISTING IDF RACK AND CABINET TO REMAIN.
2	NEW 2 EA. 2" CONDUIT SLEEVES. CAULK AND SEAL ALL SLEEVE ROUGH-IN GAPS, AND OPENINGS IN ACCORDANCE WITH REQUIRED FIRE RATINGS.
3	NEW WALL NETWORK DATA / VOICE WORK AREA OUTLET (RJ45-F). PROVIDE JACK QTY. AS NOTED ON PLANS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.
4	NEW CEILING WIRELESS ACCESS POINT STATION DROP (RJ45-F). PROVIDE 2 EA. CABLES AT ALL LOCATIONS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.
5	NEW CLOCK / SPEAKER COMBINATION BOX. UTILIZE EXISTING COMBO BOX, INSTALL HORIZONTAL PATHWAYS, CLOCK CABLING, CLOCK, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE TO MASTER CLOCK AND INTERCOM MASTER STATION, AND TEST.
6	NEW OWNER FURNISHED/OWNER INSTALLED LED TV/MONITOR WITH CART. PROVIDE 1 EA. 120VAC/15A DEDICATED CIRCUIT. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
7	NEW INTRUSION ALARM DOOR CONTACT. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, CONCEALED DOOR CONTACT AT UPPER FRAME, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
8	NEW INTRUSION ALARM PROXIMITY MOTION SENSOR. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, MOTION SENSOR, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
9	NEW EXTERIOR WALL INTERCOM / PAGING SPEAKER. INSTALL HORIZONTAL PATHWAYS, BACK BOX, SPEAKER CABLING, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST. CAULK AND SEAL BACK BOX AT ALL EXTERIOR WALL FINISH EDGES AND BOX FASTENER LOCATIONS FOR WATER-TIGHT CONNECTION.
10	NEW EXTERIOR WALL SURVEILLANCE CAMERA WITH IR SENSOR, SMOKED DOME VANDAL COVER AND SUN SHIELD. INSTALL HORIZONTAL PATHWAYS, EXTERIOR BACK BOX, CAMERA CABLING, CAMERA, ACCESSORIES, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
11	NEW SOLID BOTTOM SURFACE RACEWAY, WALL MOUNTED. PROVIDE RACEWAY, TRANSITION FITTINGS, END COVERS, AND ASSOCIATED JUNCTION ACCESSORIES. SURFACE RACEWAY SHALL BE PAINTED TO MATCH SURROUNDING WALL COLOR.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #. 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG F & G TECHNOLOGY FLOOR PLANS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

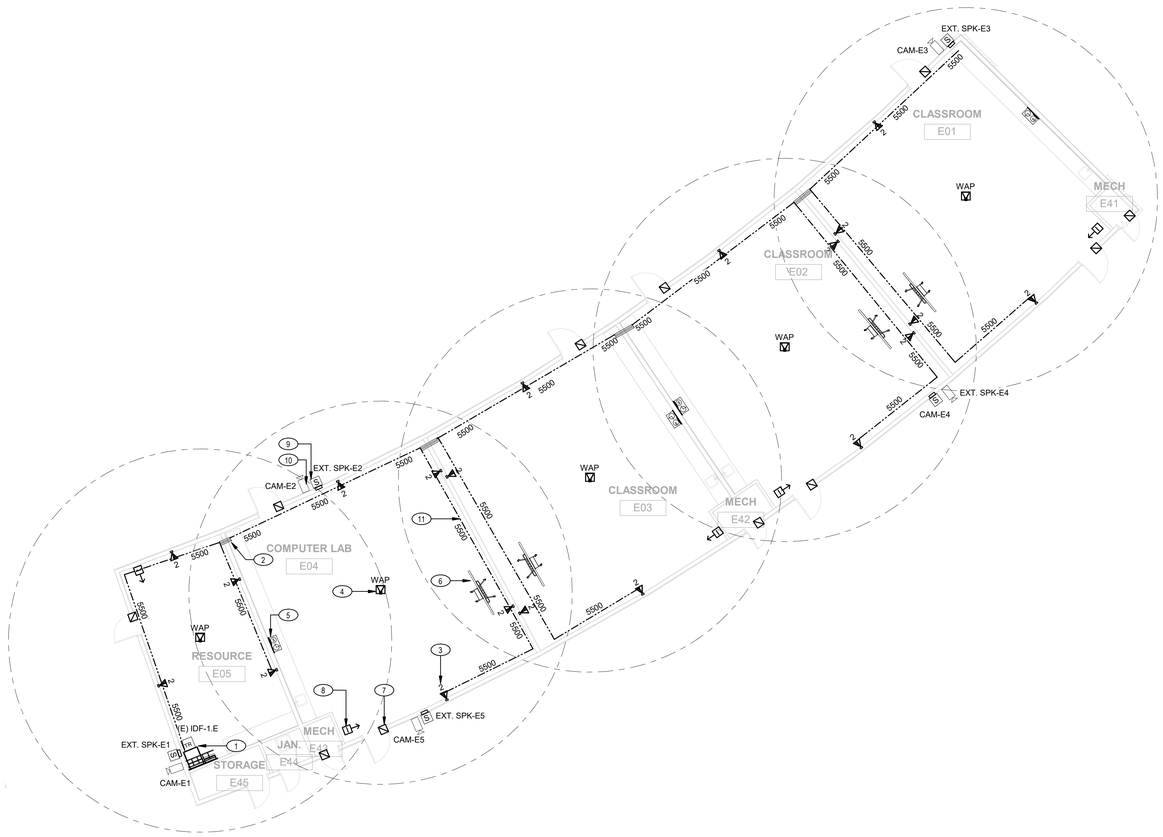
SHEET:

T2.13

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:11 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED ON THIS SHEET'S ORIGINAL PAGE SIZE



1 TECHNOLOGY FLOOR PLAN - BLDG E

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

TN

0 4 8 12 16

TECHNOLOGY GENERAL SHEET NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL BUILDING PLANS AND DIMENSIONS.
2. REFER TO ELECTRICAL DRAWINGS FOR ALL TECHNOLOGY POWER CIRCUIT REQUIREMENTS.
3. CONTRACTOR SHALL UTILIZE 3-DIMENSION TECHNOLOGY REVIT BIM MODEL FOR TRADES COORDINATION IN CONSTRUCTION. SYSTEMS INSTALLATION SHALL BE IN GENERAL PLACEMENT OF DESIGN AS SHOWN ON APPROVED CONSTRUCTION DRAWINGS AND/OR REVIT BIM MODELS.
4. ALL EQUIPMENT SHOWN ON CONSTRUCTION DOCUMENTS IS TO BE NEW, CONTRACTOR FURNISHED/CONTRACTOR INSTALLED UNLESS SPECIFIED ON DRAWINGS AND/OR SCHEDULES.
5. ALL TECHNOLOGY SYSTEMS MUD RINGS SHALL BE PAINTED BLUE FOR A PRE-SHEETROCK INSPECTION OF IN-WALL INFRASTRUCTURE.
6. ALL EXPOSED CONDUITS SHALL BE PRIMED WHITE AND PAINTED TO MATCH SURROUNDING AREA.
7. NETWORK STATION CABLING SHALL BE TERMINATED IN PATCH PANEL(S) IN SEQUENTIAL ORDER OF ROOM NUMBER, DROP ID. CABLES SHALL BE MACHINE LABELED AT PATCH PANEL FACE, AND AT CATEGORY CABLE (BOTH ENDS AS SHOWN ON DETAILS/SPECIFICATIONS).
8. TYPICAL DETAILS IN ONE ROOM PER BUILDING.

KEY NOTES

#	
1	EXISTING IDF RACK AND CABINET TO REMAIN.
2	NEW 2 EA. 2" CONDUIT SLEEVES. CAULK AND SEAL ALL SLEEVE ROUGH-IN GAPS, AND OPENINGS IN ACCORDANCE WITH REQUIRED FIRE RATINGS.
3	NEW WALL NETWORK DATA / VOICE WORK AREA OUTLET (RJ45-F). PROVIDE JACK QTY. AS NOTED ON PLANS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.
4	NEW CEILING WIRELESS ACCESS POINT STATION DROP (RJ45-F). PROVIDE 2 EA. CABLES AT ALL LOCATIONS. INSTALL HORIZONTAL PATHWAYS, CATEGORY CABLING, JACKS, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, AND TEST PERMANENT LINK. CABLES SHALL MAINTAIN PROPER BEND RADIUS AND BE KINK-FREE.
5	NEW CLOCK / SPEAKER COMBINATION BOX. UTILIZE EXISTING COMBO BOX, INSTALL HORIZONTAL PATHWAYS, CLOCK CABLING, CLOCK, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE TO MASTER CLOCK AND INTERCOM MASTER STATION, AND TEST.
6	NEW OWNER FURNISHED/OWNER INSTALLED LED TV/MONITOR WITH CART. PROVIDE 1 EA. 120VAC/15A DEDICATED CIRCUIT. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
7	NEW INTRUSION ALARM DOOR CONTACT. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, CONCEALED DOOR CONTACT AT UPPER FRAME, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
8	NEW INTRUSION ALARM PROXIMITY MOTION SENSOR. INSTALL HORIZONTAL PATHWAYS, HARDWARE CABLING, MOTION SENSOR, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
9	NEW EXTERIOR WALL INTERCOM / PAGING SPEAKER. INSTALL HORIZONTAL PATHWAYS, BACK BOX, SPEAKER CABLING, SPEAKER, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST. CAULK AND SEAL BACK BOX AT ALL EXTERIOR WALL FINISH EDGES AND BOX FASTENER LOCATIONS FOR WATER-TIGHT CONNECTION.
10	NEW EXTERIOR WALL SURVEILLANCE CAMERA WITH IR SENSOR, SMOKED DOME VANDAL COVER AND SUN SHIELD. INSTALL HORIZONTAL PATHWAYS, EXTERIOR BACK BOX, CAMERA CABLING, CAMERA, ACCESSORIES, ALL ASSOCIATED EQUIPMENT AND CABLE LABELS, CONFIGURE, AND TEST.
11	NEW SOLID BOTTOM SURFACE RACEWAY, WALL MOUNTED. PROVIDE RACEWAY, TRANSITION FITTINGS, END COVERS, AND ASSOCIATED JUNCTION ACCESSORIES. SURFACE RACEWAY SHALL BE PAINTED TO MATCH SURROUNDING WALL COLOR.

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA. 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

BLDG E TECHNOLOGY FLOOR PLAN

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

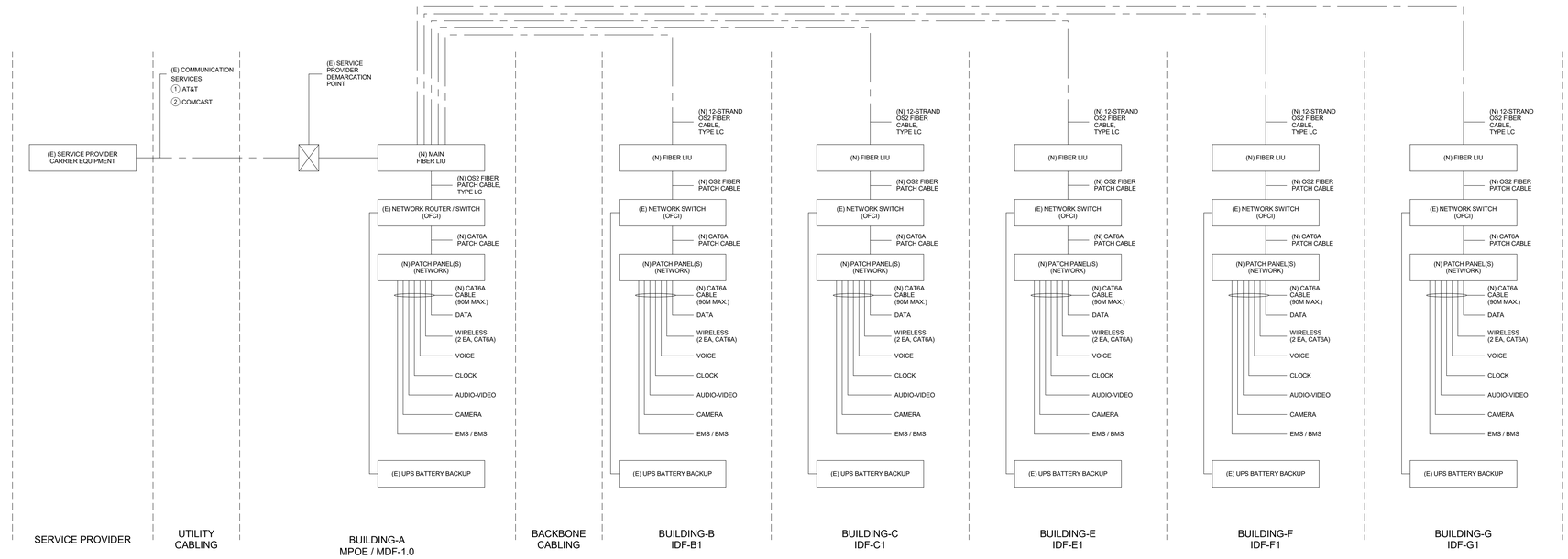
CLIENT PROJ NO:

SHEET:

T2.14

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
8/19/2024 11:25:15 AM

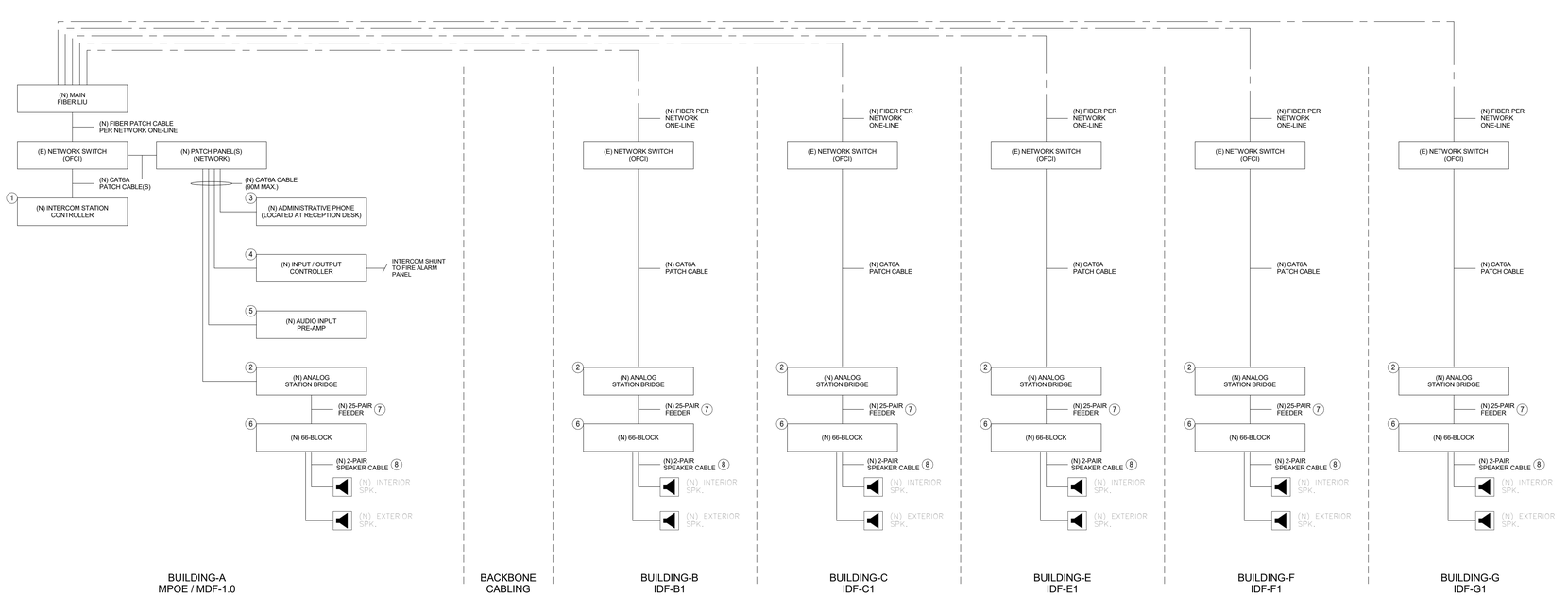
PLEASE RECYCLE



TECHNOLOGY NETWORK SYSTEM ONE-LINE | SCALE: N/A | 1

INTERCOM / PAGING MAJOR EQUIPMENT SCHEDULE

TAG ID	DESCRIPTION	MANUFACTURER	MODEL/PART NUMBER	MAX. LOAD
1	INTERCOM SYSTEM CONTROLLER (1 EA.)	BOGEN	NQ-SYSCTRL	N/A
2	INTERCOM ANALOG STATION BRIDGE, 24-PORT (120 WATT MAX, 40 WATT MAX. PER PORT)	BOGEN	NQ-E7030	N/A
3	ADMINISTRATION PHONE	BOGEN	NQ-T1100	N/A
4	INPUT / OUTPUT CONTROLLER	BOGEN	NQ-E7010	N/A
5	4-CHANNEL MATRIX PRE-AMP	BOGEN	NQ-P0100	N/A
6	66 BLOCK 25-PAIR W/ FEMALE AMPHENOL CONNECTOR	ICC	IC066SFT25	N/A
7	25-PAIR SHIELDED FEEDER, 22 AWG	SUPERIOR ESSEX	09-062-02	N/A
8	2-PAIR SHIELDED FEEDER, 22 AWG (RED/BLK=SPK., GRN/WHT=SPARE)	WEST PENN	25355B	N/A



INTERCOM / PAGING SYSTEM ONE-LINE AND MAJOR EQUIPMENT SCHEDULE | SCALE: N/A | 2

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY ONE-LINES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

T6.0.0

THE LINE SHOWN ABOVE IS 1" LONG WHEN PLOTTED ON A FULL SIZE SHEET ORIGINAL PAGE SIZE

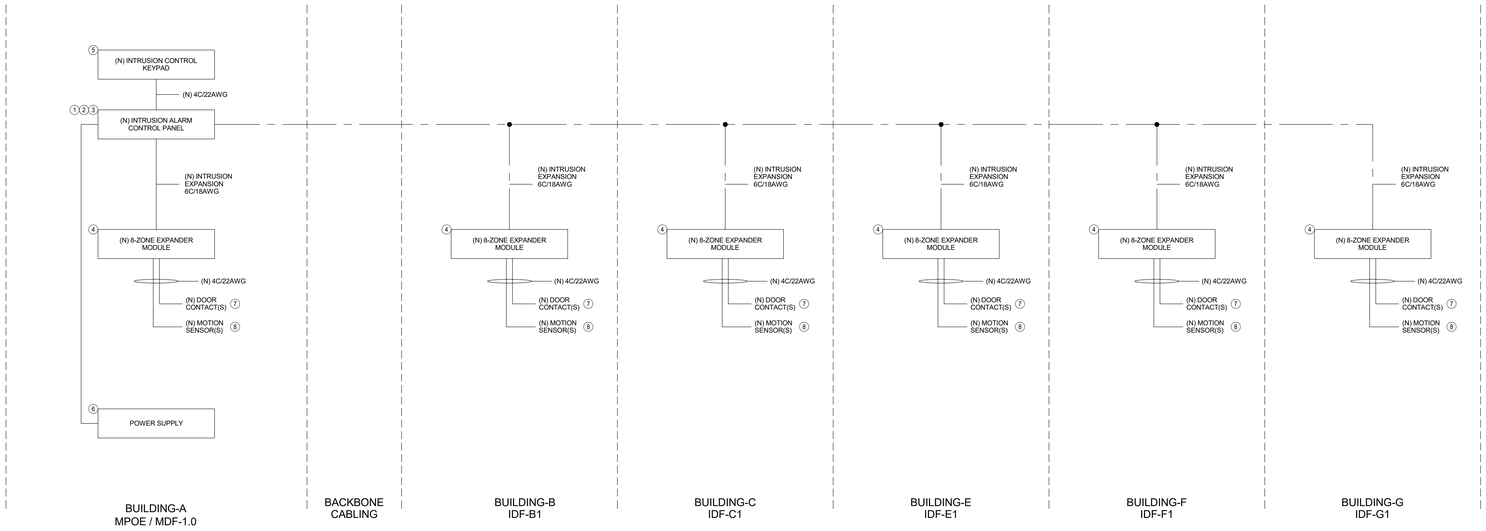
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_rZ1rvt
9/19/2024 10:28:17 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL PAGE SIZE

INTRUSION ALARM MAJOR EQUIPMENT SCHEDULE

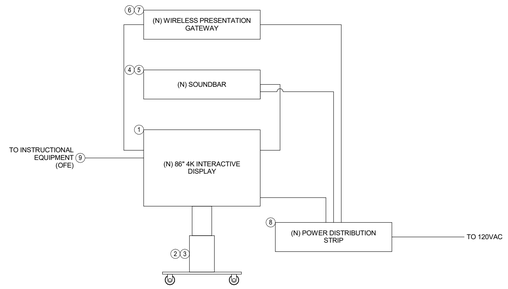
ROW ID	PRODUCT DESCRIPTION	MANUFACTURER	MODEL/PART NUMBER	MAX. LOAD
1	INTRUSION ALARM CONTROL PANEL WITH ENCLOSURE	DSC	PC1864	N/A
2	NETWORK INTERFACE MODULE	DSC	IT-120	N/A
3	WIRELESS RECEIVER	DSC	RF5132-433	N/A
4	8-ZONE EXPANDER MODULE	DSC	PC5108	N/A
5	INTRUSION CONTROL KEYPAD	DSC	PTK5507	N/A
6	12VDC POWER SUPPLY MODULE, SUPERVISED	DSC	PC5204	N/A
7	INTRUSION DOOR CONTACT	ABLOY	EA500	N/A
8	INTRUSION MOTION DETECTOR	BOSCH	ISC-CDL1-W15G	N/A
	CABLES AND CONNECTOR AS REQUIRED	LOT	LOT	N/A



INTRUSION ALARM ONE-LINE AND MAJOR EQUIPMENT SCHEDULE | SCALE: N/A | 1

AUDIO-VIDEO MAJOR EQUIPMENT SCHEDULE

ROW ID	PRODUCT DESCRIPTION	MANUFACTURER	MODEL/PART NUMBER	MAX. LOAD
1	86" 4K INTERACTIVE DISPLAY, (139.8 LBS.)	PROMETEAN	ACTIVEPANEL LX	N/A
2	MOBILE CART W/ ELECTRONIC HEIGHT ADJUST	CHIEF	LPE1U	200 LBS.
3	MOBILE CART REMOTE	CHIEF	PACREM	N/A
4	SOUNDBAR W/ BLUETOOTH	BOSE	838309-1100	N/A
5	UNIVERSAL MOUNT FOR SOUNDBAR	MONOPRICE	44900	33 LBS.
6	WIRELESS PRESENTATION GATEWAY	APPLE TV	4K 3RD GEN.	N/A
7	APPLE TV MOUNT	TOTALMOUNT	TOTALMOUNT PRO	N/A
8	POWER DISTRIBUTION STRIP, 7-OUTLET - 15A W/ 12' POWER CABLE	TRIPPLITE	TLP712B	N/A
9	HIGH SPEED ACTIVE HDMI CABLE W/ ETHERNET, 15'	KRAMER	CA-HM-15	N/A
	CABLES AND CONNECTOR AS REQUIRED	LOT	LOT	N/A



CLASSROOM AUDIO-VIDEO MOBILE CART ONE-LINE AND MAJOR EQUIPMENT SCHEDULE | SCALE: N/A | 2

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

SECURITY AND AUDIO-VIDEO ONE-LINES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

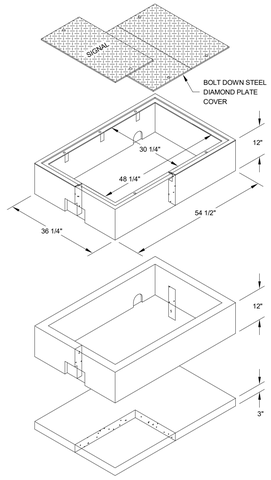
SHEET:

T6.0.1

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:19 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL PAGE SIZE



DESIGN LOAD: H-20 FULL TRAFFIC

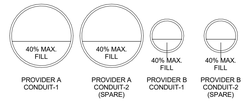
CATALOG NUMBER	PRODUCT	DESCRIPTION	APPROX. WT. (LBS.)
CYB304863JH	COVER	3 PIECE STEEL CHECKER PLATE WITH HOLD DOWN BOLTS	445
CYB3048EX	EXTENSION	12" HIGH REINFORCED CONCRETE	318
CYN48SL	SLAB	REINFORCED CONCRETE	417

NOTE:
1) METRIC DIMENSIONS ROUNDED TO NEAREST 5 MM.
2) FOR COMPLETE DESIGN AND PRODUCT INFORMATION CONTACT JENSEN PRECAST.

GROUND BOX, UTILITY SERVICE PROVIDER

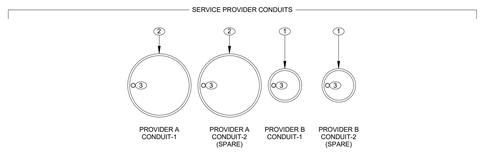
SCALE: N.T.S. — 6

1. (1) EA. 2" CONDUIT
2. (1) EA. 4" CONDUIT
3. 1/2" NYLON MULE STRING 900 LBS. PULL STRENGTH W/ FOOT MARKINGS



CONDUIT FILL CHART 40% FILL RATIO MAXIMUM	
CONDUIT DIA.	FILL RATIO (0.250" DIA.)
1"	6-CABLES
1-1/4"	10-CABLES
2"	26-CABLES
4"	102-CABLES

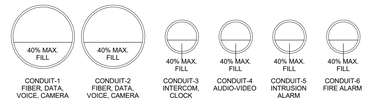
NOTE: CONTRACTOR SHALL BE REQUIRED TO UPSIZE CONDUIT AND/OR QTY AS NOTED PER FILL RATIO CABLE CAPACITY.



TECHNOLOGY CONDUIT LAYOUT, UTILITY SERVICE PROVIDER

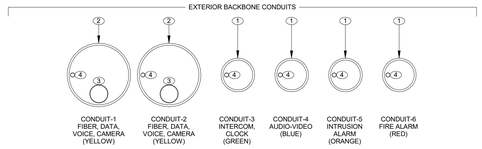
SCALE: N.T.S. — 1

1. (1) EA. 2" CONDUIT
2. (1) EA. 4" CONDUIT
3. (1) EA. 1" INNERDUCT OR 2" 1-CELL MAXCELL
4. 1/2" NYLON MULE STRING 900 LBS. PULL STRENGTH W/ FOOT MARKINGS



CONDUIT FILL CHART 40% FILL RATIO MAXIMUM	
CONDUIT DIA.	FILL RATIO (0.250" DIA.)
1"	6-CABLES
1-1/4"	10-CABLES
2"	26-CABLES
4"	102-CABLES

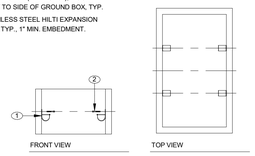
NOTE: CONTRACTOR SHALL BE REQUIRED TO UPSIZE CONDUIT AND/OR QTY AS NOTED PER FILL RATIO CABLE CAPACITY.

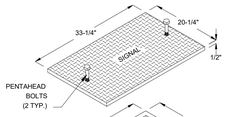


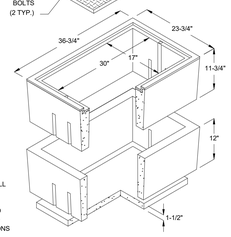
TECHNOLOGY CONDUIT LAYOUT, CAMPUS BACKBONE

SCALE: N.T.S. — 2

1. J-HOOK, 2" B-LINE (P/N: BCH32), MOUNT DIRECTLY TO SIDE OF GROUND BOX, TYP.
2. 1/4" STAINLESS STEEL HILTI EXPANSION ANCHOR, TYP., 1" MIN. EMBEDMENT.







NOTES:
1. DESIGN LOAD: H-20 FULL TRAFFIC.
2. ALL EXTENSIONS TO INCLUDE J-HOOKS, NO J-HOOKS IN MAIN BOX UNLESS NO EXTENSIONS USED.

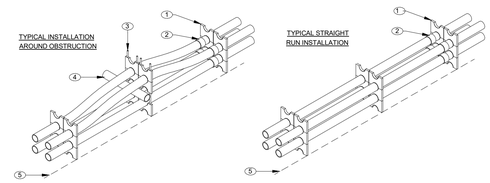
CATALOG NUMBER	PRODUCT	DESCRIPTION
CYB1730 CYN36SL	BOX WITH SLAB	REINFORCED CONCRETE
CY173051JH	COVER	STEEL CHECKER PLATE (H20 HEAVY DUTY)
CYB1730EXT	EXTENSION	12" HIGH REINFORCED CONCRETE
CYHDB1730	HOLD DOWN BOLT	HOLD DOWN PENTAHEAD BOLT (2 EA.)

GROUND BOX, CAMPUS BACKBONE

SCALE: N.T.S. — 7

1. BOTTOM & MIDDLE PLASTIC SPACERS EVERY 5' SHALL BE USED WHERE CONDUITS HAVE TO BE STACKED ON TOP OF ONE ANOTHER DUE TO SPACE LIMITATIONS.
2. COUPLING
3. REINFORCING STEEL RODS
4. OBSTRUCTION
5. TRENCH BOTTOM

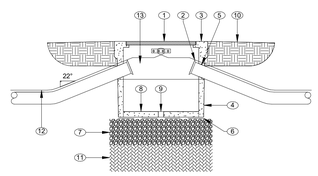
NOTES:
1. USE THESE DETAILS TO AVOID CONFLICTS WITH EXISTING OR NEW OBSTRUCTIONS.
2. SPACE TELECOMMUNICATIONS CONDUIT 6" FROM POWER CONDUIT (ABOVE 120V) AND 3" FROM ALL OTHER CONDUIT.



TECHNOLOGY UNDERGROUND CONDUIT TRANSITIONS

SCALE: N.T.S. — 3

1. LID PER, TYPE PER GROUND BOX DETAIL
2. BELL ENDS TYP.
3. PRE CAST REINFORCED CONCRETE BOX, SIZE PER PLANS
4. PRE CAST REINFORCED CONCRETE EXTENSIONS AS REQUIRED
5. SEAL AROUND CONDUIT, BOX & JUNCTION OF EXTENSION(S) WITH MORTAR
6. VAPOR RETARDER
7. 12" CRUSHED ROCK
8. REINFORCED CONCRETE BOTTOM
9. 1" DRAIN HOLE
10. FINISHED GRADE, SLOPE 1/8" OVER 12" EXTEND 4'-0"
11. COMPACTED SOIL
12. 10 AWG WIRE OR METAL TRACING TAPE PLACED ON TOP OF CONDUITS AND CONTINUOUS THROUGH OUT ENTIRE TRENCH LENGTH AND TERMINATING ON RISER UNISTRUT OR GROUNDING BAR IN GROUNDBOX
13. SERVICE LOOP

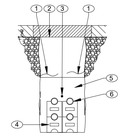


TECHNOLOGY GROUND BOX, CONDUIT ENTRY

SCALE: N.T.S. — 4

1. PLASTIC WARNING TAPE
2. LAST 12" AB MATERIAL AT 95% COMPACTION FOR ASPHALT AND CONCRETE, 90% FOR PLANTED AREAS
3. 10 AWG WIRE OR METAL TRACING TAPE PLACED ON TOP OF CONDUITS AND CONTINUOUS THROUGHOUT ENTIRE TRENCH LENGTH AND TERMINATING ON RISER UNISTRUT OR GROUNDING BAR IN GROUND BOX.
4. BOTTOM AND MIDDLE PLASTIC SPACERS EVERY 5'-0" SHALL BE USED WHERE CONDUITS HAVE TO BE STACKED ON TOP OF ONE ANOTHER DUE TO SPACE LIMITATIONS
5. SAND AT 90% COMPACTION
6. SIGNAL SYSTEMS CONDUITS

NOTES:
1. ALL UNDERGROUND AND TRENCHES SHALL CONFORM WITH CBC 1809A.14.



TECHNOLOGY CONDUIT TRENCH

SCALE: N.T.S. — 5

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects
3584-002-100
333 W. SAN CARLOS STREET,
STUDIO 750, SAN JOSE, CA, 95110
408 977 9160 / www.hmcarchitects.com

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:
LP CONSULTING ENGINEERS
MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY BACKBONE PATHWAY DETAILS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

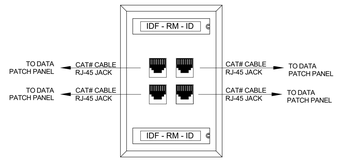
SHEET:

T7.0.0

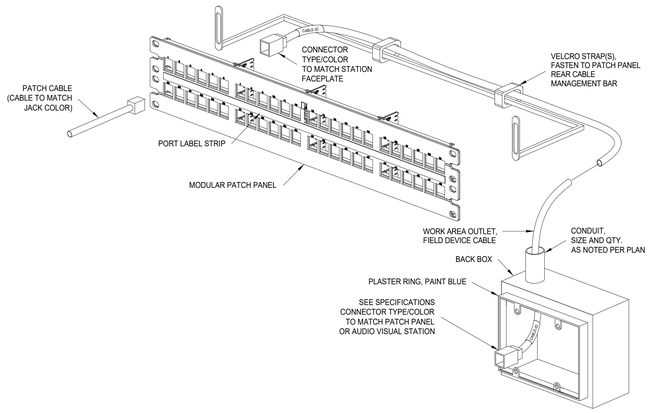
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r2Zrvt
9/19/2024 10:26:20 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" WHEN PRINTED ON ANSI D SHEETS ORIGINAL PAGE SIZE



WORK AREA OUTLET JACK FACE PLATE



TWISTED PAIR, HORIZONTAL DISTRIBUTION - TRANSMISSION CHANNEL | SCALE: NTS | 7

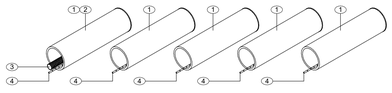
1. (1) EA. 2-1/2" CONDUIT
2. (1) EA. 4" CONDUIT, OCCURS AT EXTERIOR BACKBONE ONLY
3. 1" FIBER OPTIC INNER-DUCT
4. 1/2" NYLON MULE STRING, PN: NEPTCO WP900P

NOTE: AT ALL GROUND BOX, PULL BOX AND JUNCTION BOX LOCATIONS, THE ENDS OF CONDUITS SHALL BE PAINTED AND LABELED WITH CONDUIT IDENTIFICATION NUMBER.

CONDUIT FILL CHART 40% FILL RATIO MAXIMUM	
CONDUIT DIA.	FILL RATIO (0.250" DIA.)
1"	6-CABLES
1-1/4"	10-CABLES
2"	26-CABLES
4"	102-CABLES

NOTE: CONTRACTOR SHALL BE REQUIRED TO UPSIZE CONDUIT AND/OR QTY AS NOTED PER FILL RATIO CABLE CAPACITY.

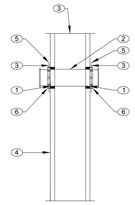
INTERIOR HORIZONTAL CONDUITS



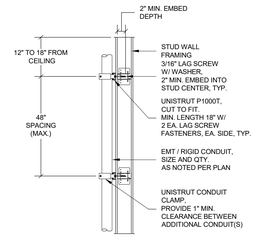
CONDUIT 1: YELLOW (FIBER/ DATA/ VOICE/ CAMERA)
CONDUIT 2: ORANGE (INTRUSION ALARM)
CONDUIT 3: GREEN (INTERCOM/ CLOCK)
CONDUIT 4: RED (FIRE ALARM)
CONDUIT 5: (SPARE FOR EMS/BMS)

TECHNOLOGY / SECURITY HORIZONTAL CONDUIT LAYOUT | SCALE: NTS | 1

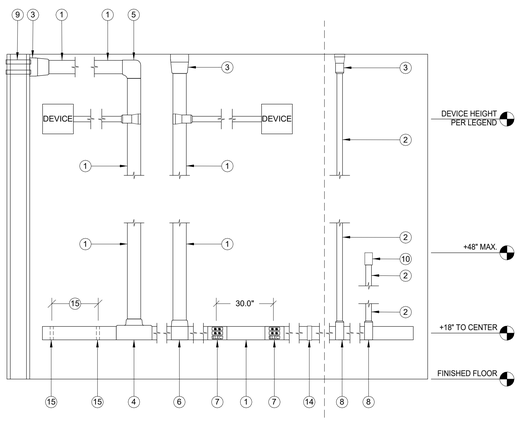
1. DRAFT STOP OR FIRE CAULK ACCORDING TO WALL PENETRATION DETAILS
2. THREADED, RIGID, OR IMC CONDUIT
3. SCREW ON BUSHING
4. WALL STUD
5. REDUCING WASHER OR PLATE
6. SCREW ON LOCKING RINGS FRONT & BACK (TYP.)

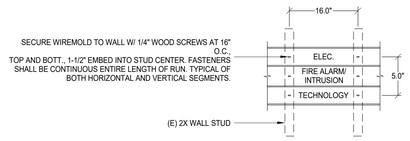


CONDUIT SLEEVE PENETRATION | SCALE: NTS | 2



VERTICAL CONDUIT, ANCHOR AND STRAP | SCALE: NTS | 3

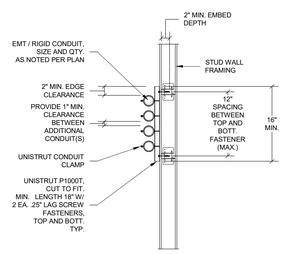




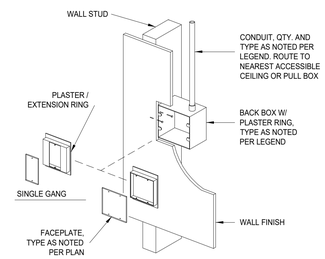
WIREMOLD SURFACE RACEWAY			
SYMBOL	DESCRIPTION	WM5500 PART NUMBER	WM2300 PART NUMBER
1	WIREMOLD WM5500	5500	N/A
2	WIREMOLD WM2300	N/A	2300
3	ENTRANCE END FITTING	5510D	2310A
4	FULL CAPACITY TEE (FIBER READY)	N/A	N/A
5	FULL CAPACITY FLAT ELBOW 90°	5511F0	2311DFO
6	TEE	5515	2315
7	DEVICE BRACKET W/ DUAL RJ FACEPLATE, DUPLEX FACEPLATE OR BLACK FACEPLATE AS NEEDED	5550 / 5507FRJ / 5507D / 5507B	5474 / 5574
8	TRANSITION FITTING FOR WM2300	5574	2348
9	CONDUIT SLEEVES, SIZE AND QTY. AS NOTED PER PLAN	N/A	N/A
10	DEVICE BOX	N/A	2348
11	END CAP	5510	2310B
12	INTERNAL ELBOW	5517FO	2317DFO
13	EXTERNAL ELBOW	5518FO	2318DFO
14	BASE SEAM COVER	5506	2306
15	WIRE CLIP	5500WC (INSTALL CLIPS AT 48" O.C. ENTIRE LENGTH OF WIREMOLD)	2300WC (INSTALL CLIPS AT 48" O.C. ENTIRE LENGTH OF WIREMOLD)
16	TRANSITION FITTING FOR WM5500 TO WM5400	5574A	N/A

NOTE:
1) DEVICE BOX (10) TO BE USED TO TRANSITION OVER CONDUIT AND SHALLOW WALL OBSTRUCTIONS (I.E. BULLETIN BOARD, TRIM, CASEWORK, ETC.) WHERE REQUIRED. UNDER NO CIRCUMSTANCES SHOULD SURFACE RACEWAY BE BENT OVER OBSTRUCTIONS.

SURFACE MOUNTED RACEWAY - ASSEMBLY COMPONENTS OVERVIEW WIREMOLD WM5500, WIREMOLD WM2300 (REFERENCE ONLY - NOT ACTUAL FLOOR PLAN LAYOUT) | SCALE: N/A | 6



HORIZONTAL CONDUIT, ANCHOR AND STRAP | SCALE: NTS | 4



BACK BOX W/ PLASTER RING | SCALE: NTS | 5

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY HORIZONTAL PATHWAYS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16 | CLIENT PROJ NO:

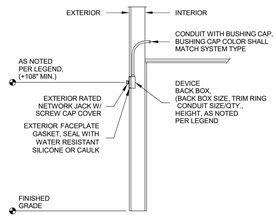
SHEET:

T7.0.1

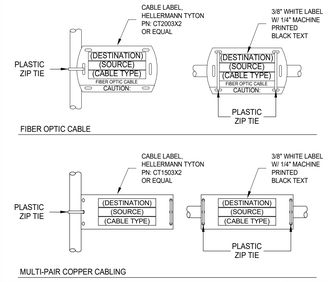
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/23/2024 12:31:47 PM

PLEASE RECYCLE

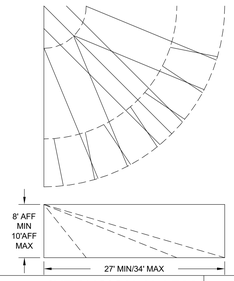
THE LINE SHOWN ABOVE IS 1" WHEN PRINTED ON A THIS SHEET'S ORIGINAL PAGE SIZE



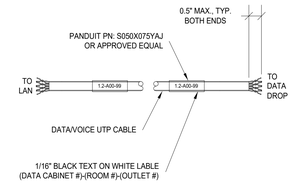
WIRELESS ACCESS POINT, EXTERIOR WALL | SCALE: NTS | 5



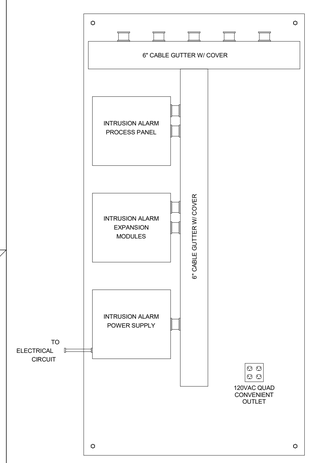
BACKBONE CABLE LABELS | SCALE: NTS | 1



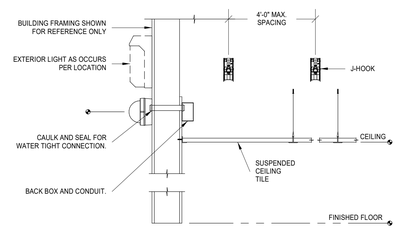
INTRUSION ALARM, MOTION SENSOR COVERAGE | SCALE: | 6



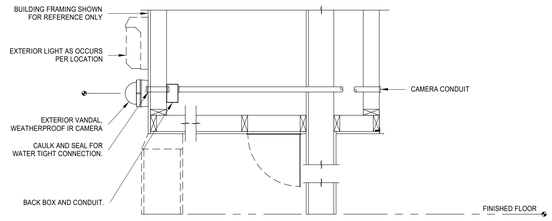
HORIZONTAL CABLE LABELS | SCALE: NTS | 2



INTRUSION ALARM HEAD END BACKBOARD LAYOUT | SCALE: | 7



EXTERIOR CAMERA MOUNTING W/ SUSPENDED CEILING TRANSITION | SCALE: NTS | 3



EXTERIOR CAMERA MOUNTING W/ HARD LID TO SUSPENDED CEILING TRANSITION | SCALE: NTS | 4

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

TECHNOLOGY SYSTEMS DETAILS

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16** | CLIENT PROJ NO:

SHEET:

T7.0.2

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan/TKO23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:25:24 AM

PLEASE RECYCLE

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

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814)
and ANSI/ULC263 (ASTM E119)

CLIV.R14288
Wall-opening Protective Materials

SpecSeal Power Shield Box Inserts, for use with flush device UL Listed Metallic Outlet Boxes without internal clamps installed with steel mud rings in framed wall assemblies. When protective material is used in outlet boxes on both sides of the wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the boxes are not installed back-to-back. Installation shall comply with the National Electrical Code (NFPA 70). The max outlet box dimensions, hourly rating, type of stud, use of stud cavity insulation and type of faceplate are tabulated below. Additional general construction features shall comply as follows:

A. Studs - Unless otherwise specified, the minimum stud width is 3-1/2 in. (89 mm).

B. Stud Cavity Insulation - Where indicated in the table below, stud cavity insulation to consist of min 3-1/2 in. (89 mm) thick fiberglass (min 0.5 pcf or 8 kg/m3) or mineral fiber (min 4 pcf or 64 kg/m3). Unless indicated as required, stud cavity insulation is optional.

C. Wall Design - Stud composition is indicated in the table below. Wall construction shall comply with the individual U300, U400 or V400 Series Wall and Partition Design in the Fire Resistance Directory.

D. Pad Dimensions - The minimum dimensions of the insert pad are shown in the table below. Pads may be cut to achieve dimensions shown in table and partial insert pads may be utilized.

Product	Max Outlet Box Size, in. (mm)	Outlet Box Type	Outlet Box Mfr	Pad Size, in. (mm)	Rating, hr	Stud	Cavity Insulation	Face Plate Type	Putty Ball
EP 23	2 x 3 x 2-1/4 (51 x 76 x 57) deep	-	-	1-7/8 x 2-3/4 (48 x 70)	2	Steel	No	Steel	-
EP 23	2 x 3 x 2-1/4 (51 x 76 x 57) deep	-	-	1-7/8 x 2-3/4 (48 x 70)	2	Steel	Yes	Plastic	-
EP 23	2 x 3 x 2-1/4 (51 x 76 x 57) deep	-	-	1-7/8 x 2-3/4 (48 x 70)	1	Steel or Wood	Yes	Plastic or Steel	-
EP 24	2-1/8 x 4 x 2-1/8 (54 x 102 x 54) deep	-	-	1-7/8 x 3-3/4 (48 x 95)	2	Steel	No	Steel	-
EP 24	2-1/8 x 4 x 2-1/8 (54 x 102 x 54) deep	-	-	1-7/8 x 3-3/4 (48 x 95)	2	Steel	Yes	Plastic	-
EP 24	2-1/8 x 4 x 2-1/8 (54 x 102 x 54) deep	-	-	1-7/8 x 3-3/4 (48 x 95)	1	Steel or Wood	Yes	Plastic or Steel	-
EP 44	4 x 4 x 2-1/8 (102 x 102 x 54) deep	-	-	3-3/4 x 3-3/4 (95 x 95)	2	Steel	No	Steel	-
EP 44	4 x 4 x 2-1/8 (102 x 102 x 54) deep	-	-	3-3/4 x 3-3/4 (95 x 95)	2	Steel	Yes	Plastic	-
EP 44	4 x 4 x 2-1/8 (102 x 102 x 54) deep	-	-	3-3/4 x 3-3/4 (95 x 95)	1	Steel or Wood	Yes	Plastic or Steel	-
EP 45	4-1/16 x 9 x 2-1/8 (119 x 119 x 54) deep	-	-	4-1/2 x 4-1/2 (114 x 114)	1 or 2	Steel or Wood	Yes	Plastic or Steel	-
EP 45	4-1/2 x 5 x 2-3/8 (114 x 127 x 60) deep	-	-	4-1/2 x 4-1/2 (114 x 114)	1 or 2	Steel or Wood	Yes	Plastic or Steel	-
EP 45	4-1/2 x 14 x 2-1/2 (114 x 356 x 64) deep	-	-	4-1/2 x 13-3/4 (114 x 349)	1 or 2	Steel or Wood	Yes	Plastic or Steel	-

SpecSeal Putty Pads, for use with flush device UL Listed Metallic Outlet Boxes installed with steel mud rings or UL Listed Nonmetallic Outlet Boxes in framed wall assemblies. When protective material is used on outlet boxes on both sides of the wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the boxes are not installed back-to-back. Installation shall comply with the National Electrical Code (NFPA 70). Min 3/16 in. (5 mm) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and to completely seal against the stud within the stud cavity. Adjoining pieces of moldable putty pads to be overlapped approx 1/2 in. (13 mm) at the seam. An additional 3/16 in. (5 mm) thickness of putty to be formed around the connector securing the end of each Type MC cable, electrical metallic tube (EMT) or conduit to the box. When nonmetallic box is used with Type NM cable, a 3/16 in. (5 mm) thickness of putty shall be formed around the cable at its connection to the box and extending a min of 1 in. (25 mm). The box composition, max device dimensions, hourly rating, type of stud and type of faceplate are tabulated below. Additional general construction features shall comply as follows:

A. Studs - Unless otherwise specified, the minimum stud width is 3-1/2 in. (89 mm).

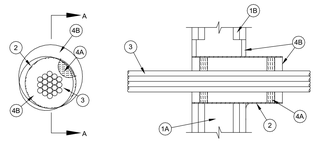
B. Stud Cavity Insulation - Unless indicated as required, stud cavity insulation is optional and may consist of min 3-1/2 in. (89 mm) thick fiberglass (min 0.5 pcf or 8 kg/m3) or mineral fiber (min 4 pcf or 64 kg/m3).

C. Wall Design - Stud composition is indicated in the table below. Wall construction shall comply with the individual U300, U400 or V400 Series Wall and Partition Design in the Fire Resistance Directory.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: October 30, 2013
CLIV 1

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 System No. W-L-3210

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 3/4 Hr	FT Rating - 3/4 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 3/4 Hr



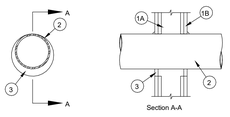
Section A-A

1. Wall Assembly - The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (76 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* - Thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, V300, U400 , V400 or W400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 6-1/2 in. (165 mm) when sleeve (Item 2) is installed. Max diam of opening is 4 in. (102 mm) when sleeve is not used.
   The hourly F rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Steel Sleeve - (Optional) - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT), steel conduit, Schedule 5 (or heavier) steel pipe sleeve or min 0.016 in. thick (0.41 mm, No. 28 ga) galv steel sleeve installed flush with wall surfaces. The annular space between the steel sleeve and periphery of opening shall be min 0 in. (continuous point contact) to max 2 in. (51 mm). When Schedule 5 steel pipe or EMT is used, sleeve may be installed flush with or extend up to 18 in. (46 cm) beyond one or both wall surfaces. Steel sleeve may be installed at an angle not greater than 45 degrees from perpendicular. Schedule 5 steel pipe or EMT sleeves may extend continuously beyond one wall surface. Sleeve to be rigidly supported when extending from the wall surfaces.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: June 13, 2016
W-L-3210 1

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 System No. W-L-1049

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Rating - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



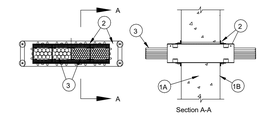
Section A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* - 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
1A. Metallic Sleeve - (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) to max 0.105 in. (2.7 mm) thick sheet steel. Length of steel sleeve to be equal to the thickness of wall. Longitudinal seam of sleeve welded or overlapped min 1 in. (25 mm). The ends of the steel sleeve shall be flush or recessed max 1/4 in. (6 mm) from wall surfaces.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: December 20,2013
W-L-1049 1

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 System No. W-J-3098

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 2 and 4 Hr (See Item 3)	F Ratings - 2 and 4 Hr (See Item 3)
T Ratings - 3/4 and 1 Hr (See Item 3)	FT Ratings - 3/4 and 1 Hr (See Item 3)
L Rating At Ambient - Less Than 1, 1.3, 4 or 7 CFM/Device Module (See Item 3)	FH Ratings - 2 and 4 Hr (See Item 3)
L Rating At 400 F - Less Than 1, 2 or 3 CFM/Device Module (See Item 3)	FTH Ratings - 3/4 and 1 Hr (See Item 3)
	L Rating At Ambient - Less Than 1, 1.3, 4 or 7 CFM/Device Module (See Item 3)
	L Rating At 400 F - Less Than 1, 2 or 3 CFM/Device Module (See Item 3)



Section A-A

1. Wall Assembly - Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete wall. Wall may also be constructed of any UL Classified Concrete Blocks*. Opening to be max 1/4 in. (6 mm) larger than width and height dimensions of firestop device(s).
   *See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Firestop Device* - One, two, three, four or seven firestop device modules ganged together. Each firestop device module consists of a 3 by 3 by 10-1/2 in. (76 by 76 by 267 mm) long steel tube with an intumescent material lining. Firestop device modules to be installed in accordance with the accompanying installation instructions. The space between the firestop device module(s) and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1/8 in. (3.2 mm). In round openings, the space between the firestop device and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). Firestop device module(s) secured in place by means of steel wall plates installed with gasketing material supplied with product. Steel wall plates installed on both sides of wall and secured to each device by means of steel set screws provided with device. Each firestop device module is to be installed with ends projecting an equal distance beyond each surface of the wall assembly. As an option, devices may be cast or grouted into wall assembly. When device is cast or grouted in place, the steel wall plates are optional.
   SPECIFIED TECHNOLOGIES INC - EZ PATH Series 33 Fire Rated Pathway
2A. Firestop Device* - Extension Module - (Optional, Not Shown) - Module attached to ends of 3 by 3 by 10-1/2 in. (76 by 76 by 267 mm) long firestop device (Item 3) to increase its length to facilitate installation in thicker walls. Each module consists of a 3 by 3 by 6 in. (76 by 76 by 152 mm) long galv steel tube with an intumescent material lining. Extension module to be installed in accordance with the accompanying installation instructions. When module is used, firestop device (Item 2) and extension module(s) secured in place by means of steel wall plates installed with gasketing material supplied with product. Steel wall plates installed on both sides of wall and secured to each device or extension module(s) by means of steel set screws provided with wall plates. Firestop device and extension module(s) assembly to be installed with ends projecting an equal distance beyond each surface of the wall assembly.
   SPECIFIED TECHNOLOGIES INC - EZ PATH Extension

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: January 23, 2014
W-J-3098 1

D. Metallic Outlet Boxes - Except as indicated in the table below, when steel outlet boxes are used and the boxes are interconnected by means of electrical metallic tube or conduit, a ball of putty is to be installed to plug the open end of each electrical metallic tube (EMT) or conduit within the outlet box. When MC cable is used and/or when the outlet boxes are not interconnected, the ball of putty is not required.

E. Nonmetallic Outlet Boxes - The box manufacturer is indicated in the table below. Boxes shall bear a 2 hr rating under the "Outlet Boxes and Fittings Classified for Fire Resistance" category in the Fire Resistance Directory.

Model	Max Outlet Box in. (mm)	Outlet Box Type	Outlet Box Mfr	Pad Size in. (mm)	Rating, hr	Stud	Cavity Insulation	Face Plate Type	Putty Ball
-	4 x 4 x 2-1/8 (102 x 102 x 54) deep	Steel	N.A.	-	1	Steel or Wood	-	Steel	No
-	4 x 4 x 2-1/8 (102 x 102 x 54) deep	Steel	N.A.	-	1	Steel or Wood	-	Plastic	Yes
-	4-11/16 x 4-11/16 x 2-1/8 (119 x 119 x 54) deep	Steel	N.A.	-	1 or 2	Steel or Wood	-	Steel	Yes
-	4-1/2 x 5 x 2-3/8 (114 x 127 x 60) deep	Steel	N.A.	-	1 or 2	Steel or Wood	-	Steel	Yes
-	4-1/2 x 14 x 2-1/2 (114 x 127 x 60) deep	Steel	N.A.	-	1 or 2	Steel or Wood	-	Steel	Yes
-	4 x 4 x 2 (95 x 102 x 51) deep	Polyvinyl Chloride	Lamson & Sessions	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	3-3/4 x 4 x 2 (95 x 102 x 76) deep	Phenolic	Allied Moulded Prods.	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	3-3/4 x 4 x 3 (95 x 102 x 76) deep	Polycarbonate	Thomas & Betts	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	3-3/4 x 4 x 3 (95 x 102 x 76) deep	Phenolic	Thomas & Betts	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	2-7/8 x 3-5/8 x 2-3/4 (57 x 95 x 70) deep	Polyvinyl Chloride	Pass & Seymour	-	1 or 2	Wood	-	Plastic or Steel	N.A.

SpecSeal Putty Pads , for use with maximum 4 by 4 by 2-1/8 in. (102 by 102 by 54 mm) deep flush device UL Listed Metallic Outlet Boxes installed with steel mud rings and with steel faceplates in 1 hr or 2 hr fire rated gypsum board wall assemblies constructed with min 5-1/2 in. (140 mm) wide wood or steel studs and with stud cavities filled with fiberglass (nom 0.5 pcf or 8 kg/m3) or mineral fiber (nom 4 pcf or 64 kg/m3) insulation. When protective material is used on outlet boxes on both sides of the wall as directed, the boxes may be installed back-to-back provided that the boxes on opposite sides of the wall are not interconnected with conduit or, when interconnected, the open end of the conduit within the outlet box is filled with a ball of putty. Installation shall comply with the National Electrical Code (NFPA 70). Min 3/16 in. (5 mm) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and to completely seal against the stud within the stud cavity. Adjoining pieces of moldable putty pads to be overlapped approx 1/2 in. (13 mm) at the seam. An additional 3/16 in. (5 mm) thickness of putty to be formed around the connector securing the end of each Type MC cable, electrical metallic tube (EMT) or conduit to the box.

SpecSeal EP23, EP24 and EP44 Power Shield Box Inserts and SpecSeal Putty Pads, for use with maximum 4 by 4 by 1-1/2 or 2-1/8 in. (102 by 102 by 38 or 54 mm) deep flush device UL Listed Metallic Outlet Boxes installed with steel mud rings and with steel or plastic faceplates in 1 hr or 2 hr fire rated gypsum board wall assemblies constructed with min 3-1/2 in. (89 mm) wide wood or steel studs. When both protective materials are used with outlet boxes on both sides of the wall as directed, the boxes may be installed back-to-back provided that the backs of the boxes are minimum 1/2 in. (13 mm) apart and provided that the boxes are not interconnected. Installation shall comply with the National Electrical Code (NFPA 70). Min 3/16 in. (5 mm) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and to completely seal against the stud within the stud cavity. Adjoining pieces of moldable putty pads to be overlapped approx 1/2 in. (13 mm) at the seam. An additional 3/16 in. (5 mm) thickness of putty to be formed around the connector securing the end of each Type MC cable, electrical metallic tube (EMT) or conduit to the box. An insert pad shall be installed to completely cover the back inside surface of each outlet box.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: October 30, 2013
CLIV 2

SpecSeal Putty Pads, for use with max 5 by 5 by 2 7/8 in. (127 by 127 by 73 mm) deep flush device UL Listed Metallic Outlet Boxes or UL Listed Communications-Circuit Accessories manufactured by Randl Industries Inc for use in 1 hr or 2 hr fire rated gypsum board wall assemblies framed with min 3-5/8 in. (92 mm) wide wood or steel studs and constructed as specified in the individual U300, U400, or V400 or W400 Series Wall and Partition Designs in the Fire Resistance Directory. Metallic outlet boxes to be provided with UL Listed Signal Appliance with steel cover plate manufactured by Cooper Wheelock Inc. Moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud unless otherwise noted) including nailing tabs and to completely seal against the stud within the stud cavity. Multiple moldable putty pads may be installed on an outlet box to attain the required minimum thickness of putty material. Additional putty material used to seal around each conduit and/or cable fitting on the exterior of each box. A min 3/16 in. (4.8 mm) thickness of putty material is required on the exterior surfaces of flush device boxes in 1 and 2 hr fire rated Wall and Partition Designs. When the moldable putty pad outlet box protective material is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the outlet boxes are not installed back to back, except as noted.

SpecSeal EP55 Power Shield Box Inserts, for use with max 5 by 5 by 2 7/8 in. (127 by 127 by 73 mm) deep flush device UL Listed Metallic Outlet Boxes or UL Listed Communications-Circuit Accessories manufactured by Randl Industries Inc for use in 1 hr or 2 hr fire rated gypsum board wall assemblies framed with min 3-5/8 in. (92 mm) wide wood or steel studs and constructed as specified in the individual U300, U400, or V400 or W400 Series Wall and Partition Designs in the Fire Resistance Directory. Metallic outlet boxes to be provided with UL Listed Signal Appliance with steel cover plate manufactured by Cooper Wheelock Inc. Power Shield Box Insert is to be applied to the back surface of the box and may be slit to accommodate communications-circuit accessories. When the Power Shield Box Insert is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the outlet boxes are not installed back to back, except as noted.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: October 30, 2013
CLIV 3

3. Cables - Aggregate cross-sectional area of cables in steel sleeve to be max 48 percent of the aggregate cross-sectional area of the opening or sleeve. Cables to be bundled and rigidly supported on both sides of wall assembly. When the sleeve (Item 2) is installed, the annular space between the cables and the sleeve shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). When the sleeve (Item 2) is not used, the annular space between the cables and the opening shall be a min 0 in. (point contact) to a max 1/2 in. (13 mm). Cable bundle, using cables described below, may penetrate the wall at an angle not greater than 45 degrees. Any combination of the following types and sizes of copper conductor cable may be used:
   A. Max 200 pair No. AWG (or smaller) copper conductor cable with polyvinyl chloride (PVC) or plenum-rated jacketing and insulation.
   B. Max 3/C No. 2/0 AWG (or smaller) aluminum or copper conductor service entrance cable with PVC insulation and jacket.
   C. Max 3/C No. 8 AWG (or smaller) nonmetallic sheathed (Romex) cable with copper conductors, PVC insulation and jacket.
   D. Max 50/C No. 2/0 AWG (or smaller) multiconductor power and control cables with XLPE or PVC insulation and XLPE or PVC jacket.
   E. Max RG/U (or smaller) coaxial cable with fluorinated ethylene or plenum-rated insulation and jacketing.
   F. Max 6/C 24AWG fiber optic cable with PVC or plenum-rated insulation and jacketing.
   G. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with PVC or plenum-rated insulation and jacket.
   H. Max 4/C No. 2/0 aluminum or copper conductor aluminum or steel Metal-Cladl# or Armored-Cladl# cable.
   I. Max 1x-in. (19 mm) copper ground cable with or without a PVC jacket.
4. Firestop System - The firestop system shall consist of the following:
   A. Packing Material - When required (See table in Item 4B), min 1 in. (25 mm) thickness of min 4.0 pcf (64 kg/m3) mineral wool batt insulation firmly packed into each end of sleeve as a permanent form. Packing material to be recessed from each end of sleeve as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* - Sealant or Putty - Fill material applied to appropriate thickness within steel sleeve, flush with edges of sleeve on both surfaces of wall. Min 1/2 in. (13 mm) thickness of fill material applied into annular space between sleeve and wall flush with both surfaces of the wall. Min 1/2 in. (13 mm) diam bead of sealant or "rope" of putty shall be applied around the perimeter of the sleeve on each side of the wall when sleeve extends beyond surface of wall and is installed at continuous point contact. See table below for fill material thickness requirements around cables.

Sealant or Putty Type	Thickness, In. (mm)	Packing Material Required
SpecSeal Series SSS Sealant or LCI Sealant	1/2 in. (13)	Yes
SpecSeal Series SSS Sealant or LCI Sealant	1 in. (25)	No
SpecSeal Putty	1 in. (25)	No

SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant or SpecSeal Putty

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: June 13, 2016
W-L-3210 2

2. Through Penetrant - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). For maximum 16 in. (406 mm) diam (or smaller) pipes, annular space shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe - Nom 36 in. (914 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe - Nom 36 in. (914 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing, nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   D. Copper Tubing - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe - Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.
   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: December 20,2013
W-L-1049 2

3. Cables - Cables may represent a 0 to 100 percent visual fill within the loading area for each firestop device module. Cables to be rigidly supported on both sides of the wall assembly. Any combination of the following types of cables may be used:
   A. Max 400 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.
   B. Max 350 kcmil single copper conductor power cable with XLPE jacket and insulation.
   C. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   D. Max 3/C No. 10 AWG metal clad or armored cable with steel or aluminum jacket.
   E. Max 3/C No. 8 AWG NM cable (Romex) with PVC insulation and jacket.
   F. Max four pair No. 22 AWG (or smaller) copper conductor data cable with PVC or plenum rated jacketing and insulation.
   G. Max RG/U coaxial cable with fluorinated ethylene insulation and jacketing.
   H. Optical fiber cable with PVC or polyethylene (PE) jacket and insulation and having a max diam of 5/8 in. (16 mm).
   When Item 3A, 3B, 3C, 3D or 3E is used, the F and FH Ratings are 2 hr and the T, FT and FTH Ratings are 3/4 hr.
   When max 200 pair No. 24 AWG telecommunication cable is used or when Item 3F, 3G or 3H is used, the F and FH Ratings are 4 hr and the T, FT and FTH Ratings are 1 hr.
   The L Rating for each empty firestop device module is less than 1 cfm at ambient and at 400F. When Item 3A is used, the L Rating for each firestop device module with 100 percent visual fill is 4 cfm at ambient and 3 cfm at 400F. When Item 3F is used, the L Rating for each firestop device module with 100 percent visual fill is 1.3 cfm at ambient and less than 1 cfm at 400F.When Item 3G or 3H is used, the L Rating for each firestop device module with 100 percent visual fill is 7 cfm at ambient and 2 cfm at 400F.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

STI ®
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876
Reproduced courtesy of Underwriters Laboratories, Inc.
Created or Revised: January 23, 2014
W-J-3098 2

RATED ASSEMBLY PENETRATION DETAILS | SCALE: NTS | 1

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778
CONSULTING ENGINEERS
www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

RATED ASSEMBLY PENETRATION DETAILS

CONSTRUCTION DOCUMENTS

DATE: 2024.09.16 | CLIENT PROJ NO:

SHEET:

T7.0.3

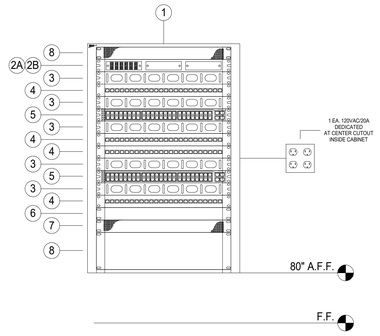
Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK/23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:26 AM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL PAGE SIZE

EQUIPMENT RACK MAJOR EQUIPMENT SCHEDULE

ROW ID	PRODUCT DESCRIPTION	MANUFACTURER	MODEL/PART NUMBER	MAX. LOAD
1	TECHNOLOGY EQUIPMENT RACK	EXISTING	EXISTING	300 LBS.
2A	FIBER LIU - 1RU	LEVITON	5R1UH-S03	N/A
2B	OS2 ADAPTER CASSETTE FOR ABOVE, TYPE LC	LEVITON	AS REQUIRED	N/A
3	HORIZONTAL WIRE MANAGER - 1RU	LEVITON	49253-LPM	N/A
4	PATCH PANEL WITH REAR WIRE MANAGER (24-PORT) - 1RU	LEVITON	49255-H24	N/A
5	DATA SWITCH, 48 PORT POE - 1RU	OWNER FURNISHED/ OWNER INSTALLED		N/A
	SMF FIBER TRANSCIEVER MODULE, LC (2 EA)			N/A
6	HORIZONTAL POWER DISTRIBUTION UNIT - 1RU	CHATSWORTH	12820-703	N/A
7	VENTED BLANK PANEL - 1RU	MIDDLE ATLANTIC	VT1	N/A
9	UPS BATTERY BACKUP (120VAC/20A) - 2RU	APC	SMX2200RMHV2U	N/A
	NETWORK MANAGEMENT CARD	APC	AP9641	N/A



TECHNOLOGY IDF
RACK ELEVATION AND EQUIPMENT SCHEDULE

SCALE: N/A

1

AGENCY APPROVAL:

REVIEWING AGENCIES STAMP HERE

SAN RAFAEL CITY SCHOOLS

HMC Architects

3584-002-100

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

ISSUE

Δ	DESCRIPTION	DATE

KEYNOTES

NOTES

CONSULTANT:

LP CONSULTING ENGINEERS

MEP & FS / Sustainability / CxA

1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0778

www.lpengineers.com
Job #: 23-2265

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

FACILITY:

25 W CASTLEWOOD DR
SAN RAFAEL, CA 94901

PROJECT:

GLENWOOD ES - HVAC, ELEC, TECH/LOW-VOLTAGE UPGRADE

SHEET NAME:

IDF RACK ELEVATIONS AND SCHEDULES

CONSTRUCTION DOCUMENTS

DATE: **2024.09.16**

CLIENT PROJ NO:

SHEET:

T8.0.1

Autodesk Docs://3584001000 SRCS Glenwood ES Master Plan-TK23-2116 Glenwood ES Mod_MEP+FA+T_r22.rvt
9/19/2024 10:28:28 AM

PLEASE RECYCLE