San Rafael City Schools

310 Nova Albion Way
San Rafael, CA 94903

Terra Linda High School
Innovation Hub
(Conversion of Existing Library)

320 Nova Albion Way
San Rafael, CA 94903

CONSTRUCTION DOCUMENTS

6/8/2018

HED

PROJECT TEAM

1. THE CONSTRUCTION CONTRACT IS FOR A COMPLETE AND FULLY FUNCTIONING INSTALLATION. THESE DOCUMENTS DESCRIBE THE DESIGN INTENT AND SPECIFIC REQUIREMENTS OF THE INSTALLATION. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL. THESE DOCUMENTS ARE NOT MEANT TO SHOW EVERY ITEM REQUIRED TO CONSTRUCT THE WORK. ITEMS SUCH AS BUT NOT LIMITED TO, FASTENERS, CONNECTORS, FILLERS, MISCELLANEOUS CLOSURE ELEMENTS, ANCILLARY CONTROL WIRING AND POWER WHERE REQUIRED FOR THE CONTROL OR OPERATION OF THE PROVIDED EQUIPMENT, ETC. ARE NOT ALWAYS SHOWN BUT ARE CONSIDERED TO BE INCLUDED IN THE SCOPE OF THE WORK. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A FULLY FUNCTIONING INSTALLATION WHICH MEETS THE DESIGN INTENT, INCLUDING THE SPECIFIC REQUIREMENTS INCLUDED IN THESE DOCUMENTS.
2. THESE DOCUMENTS DESCRIBE A SINGLE CONSTRUCTION CONTRACT. THE USE OF SUB-CONTRACTORS IS THE ELECTION OF THE GENERAL CONTRACTOR. THE DRAWINGS DO NOT INTEND TO DIVIDE THE WORK AMONG THE SUB-CONTRACTORS. WHERE THE DOCUMENTS IDENTIFY WORK WITH SUCH NOTES AS 'NOT IN MECHANICAL WORK' OR 'NOT IN ELECTRICAL WORK' OR 'SEE STRUCTURAL DRAWINGS,' IT MEANS THAT THE WORK IS NOT FURTHER DESCRIBED OR SPECIFIED ON THE DRAWING WHERE SUCH NOTES APPEAR; IT DOES NOT PRECLUDE THE CONTRACTOR FROM DELEGATING THE WORK TO THE ENTITIES OF HIS ELECTION. IN ADDITION, THE DIVISION OF THE CONTRACT DOCUMENTS INTO ARCHITECTURAL, STRUCTURAL, ELECTRICAL AND MECHANICAL OR OTHER DESIGN DISCIPLINES IS FOR CONVENIENCE ONLY, AND IS NOT INTENDED TO DIVIDE THE WORK AMONG THE CONTRACTOR'S VARIOUS SUB-CONTRACTORS NOR IMPLY THAT ALL OF THE WORK FOR A PARTICULAR TRADE IS SHOWN ONLY IN THOSE DRAWINGS OR SPECIFICATIONS.
3. REFERENCE TO "CONTRACTOR" IN THESE DOCUMENTS SHALL BE INTERPRETED AS REFERRING TO THE GENERAL CONTRACTOR OR TO ANY SUB-CONTRACTOR TO THE GENERAL CONTRACTOR, COLLECTIVELY OR AS INDIVIDUAL ENTITIES. FURTHER, REFERENCE TO A PARTICULAR SUB-CONTRACTOR IS FOR CONVENIENCE ONLY, AND IS NOT INTENDED TO LIMIT THE SCOPE OF THE WORK TO THAT TRADE OR LIMIT THE RESPONSIBILITIES OF THE GENERAL CONTRACTOR TO COORDINATE THE WORK OF ALL TRADES.
4. THE DRAWINGS AND PROJECT MANUAL ESTABLISH DETAILED MINIMUM REQUIREMENTS FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT. PARTIAL OR OUTDATED SETS OF CONTRACT DOCUMENTS ARE INCOMPLETE AND SHOULD NOT BE DISTRIBUTED OR UTILIZED.
5. ALL WORK IS TO COMPLY WITH ALL GOVERNING FEDERAL, STATE AND LOCAL CODES AND REGULATIONS IN FORCE AT THE TIME OF CONSTRUCTION.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FEES FOR ALL PERMITS PRIOR TO STARTING CONSTRUCTION. PERMITS ARE TO BE POSTED IN A CONSPICUOUS PLACE ON THE PROJECT SITE AS REQUIRED BY AUTHORITY HAVING JURISDICTION.
7. UNLESS SPECIFICALLY NOTED AS BEING RE-USED, ALL MATERIALS FURNISHED AT THE JOB SITE SHALL BE NEW AND FREE FROM DEFECTS, AND SHALL BE STORED AT THE SITE IN SUCH A MANNER AS TO PROTECT THEM FROM DAMAGE. ALL WORK SHALL BE OF BEST PRACTICE OF EACH TRADE.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND ALL SUB-CONTRACTORS TO REVIEW ALL DRAWINGS, PROJECT MANUAL, ADDENDA, ETC. IN ORDER TO ASSURE COORDINATION OF ALL WORK BY ALL TRADES. FAILURE TO REVIEW AND COORDINATE ALL CONTRACT DOCUMENTS BY THE GENERAL CONTRACTOR WITH THE SUB-CONTRACTORS FOR APPLICABLE PORTIONS OF THE WORK DOES NOT RELIEVE ANY PARTY FROM PERFORMING THE MATERIALS AND WORK REQUIRED FOR A COMPLETE INSTALLATION.
9. THE PROJECT MANUAL WHICH INCLUDES THE GENERAL CONDITIONS, SUPPLEMENTAL CONDITIONS AND TECHNICAL SPECIFICATIONS AND THE DRAWINGS ARE COMPLIMENTARY AND TOGETHER DESCRIBE THE PROJECT REQUIREMENTS. WHERE THERE ARE DISCREPANCIES BETWEEN THE PROJECT MANUAL AND THE DRAWINGS, THE CONTRACTOR SHALL ADVISE THE ARCHITECT OF SUCH AND REQUEST CLARIFICATION. IN GENERAL, THE PROJECT MANUAL TAKES PRECEDENCE OVER DRAWINGS. LARGE SCALE DETAILS TAKE PRECEDENCE OVER SMALL SCALE DETAILS.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLETELY COORDINATE WORK AS REQUIRED TO MEET THE DESIGN INTENT AS DEFINED BY THE DOCUMENTS. THE CONTRACTOR SHALL LAY OUT AND SEQUENCE THE INSTALLATION OF WORK SO THAT THE DIFFERENT SYSTEMS DO NOT OBSTRUCT INSTALLATION OF SUBSEQUENT WORK. IN GENERAL, SYSTEMS INSTALLED FIRST SHOULD BE AS HIGH AND AS TIGHT TO THE STRUCTURE AS POSSIBLE TO ALLOW SPACE FOR SYSTEMS WHICH FOLLOW.
11. THE GENERAL CONTRACTOR AND ALL SUB-CONTRACTORS SHALL VISIT THE SITE PRIOR TO BIDDING IN ORDER TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE IMPACT OF THE PROPOSED WORK INDICATED ON THE DRAWINGS AND SPECIFICATIONS ON THESE CONDITIONS. ANY QUESTIONS REGARDING THE COORDINATION OF NEW WORK WITH EXISTING CONDITIONS MUST BE SUBMITTED TO THE ARCHITECT IN WRITING PRIOR TO THE BID SUBMISSION AND WITH ADEQUATE TIME FOR RESPONSE TO ALL BIDDERS. THE ARCHITECT WILL RESPOND TO TIMELY QUESTIONS WITH A WRITTEN RESPONSE TO ALL BIDDERS.
12. ALL WORK NOTED "NIC" IS NOT IN CONTRACT. CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS PER REQUIREMENT ESTABLISHED BY OWNER.
13. THE EXISTING DIMENSIONS AND CONDITIONS INDICATED IN THESE DOCUMENTS ARE FROM ELECTRONIC CAD INFORMATION PROVIDED BY THE OWNER AND ARE ASSUMED TO BE ACCURATE AS SHOWN. THE CONTRACTOR SHALL VERIFY THE ACCURACY OF SUCH INFORMATION PRIOR TO THE START OF CONSTRUCTION, AND ADVISE THE ARCHITECT OF ANY DEVIATIONS OR CONFLICTS WITH THE INFORMATION SHOWN ON THE DRAWINGS.
14. DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR SHALL REFER TO THE DIMENSIONS INDICATED OR THE ACTUAL SIZES OF CONSTRUCTION ITEMS. WHERE NO DIMENSION OR METHODS OF DETERMINING A LOCATION EXISTS, VERIFY DIMENSION WITH ARCHITECT PRIOR TO LAYOUT AND INSTALLATION.
15. THE DRAWINGS AND REFERENCED DETAILS HAVE BEEN DIMENSIONED IN ORDER TO ESTABLISH THE CONTROL AND GUIDELINES FOR FIELD LAYOUT. WHERE DISCREPANCIES EXIST BETWEEN THE DRAWINGS AND FIELD CONDITIONS THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF SUCH PRIOR TO LAYOUT AND INSTALLATION.
16. DIMENSIONS ON DOCUMENTS ARE TO FACE OF STUDS FOR NEW CONSTRUCTION AND TO FACE OF FINISH MATERIALS FOR EXISTING CONSTRUCTION, UNLESS OTHERWISE INDICATED.
17. WHERE DIMENSIONS INDICATED ARE NOTED AS VERIFY IN FIELD (VIF) THE DIMENSION SHOWN IS THE BASIS OF DESIGN, BUT MAY DIFFER FROM ACTUAL CONDITIONS. CONTRACTOR SHALL VERIFY THESE DIMENSIONS WHILE LAYING OUT THE WORK AND REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO PROCEEDING. WHERE DIMENSIONS ARE NOTED AS "+\-" FIELD DIMENSIONS MAY VARY FROM THE NOTED DIMENSIONS BY MINOR AMOUNTS. DISCREPANCIES OF MORE THAN 1" SHOULD BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CONFIRMATION.
18. DETAILS ARE KEYED TO THE PLANS AT TYPICAL LOCATIONS. TYPICAL DETAILS APPLY TO ALL LOCATIONS WHICH ARE SIMILAR BUT ARE NOT NECESSARILY KEYED TO EVERY LOCATION TO WHICH THEY APPLY. CONTRACTOR IS RESPONSIBLE TO COORDINATE THE LOCATION OF ALL TYPICAL DETAILS AND INSTALL THE WORK INDICATED. FEATURES NOT SHOWN IN THEIR ENTIRETY SHALL BE COMPLETELY PROVIDED AS IF SHOWN IN FULL. IF DISCREPANCIES EXIST, CONTRACTOR IS TO REQUEST CLARIFICATION BY THE ARCHITECT OF SUCH CONDITIONS.
19. FINISH FLOOR ELEVATIONS REFER TO TOP OF CONCRETE SLAB, UNLESS NOTED OTHERWISE. WHERE CONCRETE SLAB IS DEPRESSED TO ACCOMMODATE SETTING BEDS, RAISED ACCESS FLOOR, OR OTHER SIMILAR FLOOR ASSEMBLIES, FINISH FLOOR ELEVATIONS ARE TO TOP OF FINISH FLOOR ASSEMBLY INDICATED.
20. FIRE RATING "TAPES" INDICATED ON FLOOR PLANS SHOW EXTENT OF FIRE RATED PARTITIONS, BARRIERS AND FIRE WALLS. RATING IN A PARTITION SHALL BE CONTINUOUS AND SHALL CONTINUE OVER DOORS AND WINDOWS WHETHER OR NOT THEY ARE SHOWN AS SUCH ON THE PLANS. REFER TO PARTITION DETAILS FOR REQUIREMENTS OF THE RATED ASSEMBLIES.
21. VERIFY AND COORDINATE SIZES, LOCATION AND MOUNTING REQUIREMENTS OF ALL EQUIPMENT AND FIXTURES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE REQUIRED BLOCKING, BACKING, SLEEVES, ETC. FOR A COMPLETE, NEAT INSTALLATION. COORDINATE INSTALLATION OF ALL SLEEVES AND OPENINGS AS REQUIRED THROUGH ALL EXISTING OR NEW CONSTRUCTION.
22. DETAILS INDICATE DESIGN INTENT OF WORK IN PLACE. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB CONDITIONS OR DIMENSIONS AND ARE TO BE INCLUDED AS PART OF THE WORK.
23. PROVIDE PROTECTION FOR PEDESTRIANS OR USERS OF ADJACENT AREAS OF THE BUILDING AS NECESSARY AND AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
24. MAINTAIN THE PREMISES CLEAN AND FREE OF TRASH AND DEBRIS. PROTECT PROJECT, THE SITE, AND PERSONAL PROPERTY FROM DAMAGES.
25. PROTECT WORK AREAS AND EXISTING ADJACENT AREAS, INCLUDING EXISTING UTILITIES, FROM DAMAGE. REPAIR, REPLACE, OR PATCH ANY DAMAGE DUE TO CONSTRUCTION. REPAIRED CONSTRUCTION IS SUBJECT TO REVIEW AND ACCEPTANCE BY ARCHITECT.
26. PROVIDE REQUIRED TEMPORARY UTILITIES, BRACING, SUPPORTS, SHORING, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN ADEQUACY AND SAFETY OF ERECTION.
27. CONTRACTOR SHALL MAINTAIN CURRENT UPDATED RECORD DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIME.
28. CONTRACTOR IS RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO SITE SAFETY AND SECURITY FOR WORKERS AND GENERAL MEMBERS OF THE PUBLIC.
29. METAL FABRICATIONS AND SUPPORT ASSEMBLIES WHETHER SHOWN OR NOT SHALL BE PROVIDED FOR THE STRUCTURAL SUPPORT OF MISCELLANEOUS ELEMENTS. GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING ENGINEERED STRUCTURAL ASSEMBLIES AND CALCULATIONS SHOWING COMPLIANCE WITH CODE REQUIREMENTS AND ACCOUNTING FOR STATIC AND DYNAMIC LOADS INCLUDING ANY WIND OR SEISMIC LOADS, THERMAL MOVEMENT OF SUPPORTING STRUCTURE AND DIMENSIONAL TOLERANCES OF THE BUILDING.
30. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL STIFFENERS, BRACING, BACK-UP PLATES AND SUPPORTING BRACKETS REQUIRED FOR THE BEST POSSIBLE INSTALLATION OF ALL TOILET ROOM ACCESSORIES AND PARTITIONS AND ALL WALL MOUNTED OR SUSPENDED MECHANICAL, ELECTRICAL OR MISCELLANEOUS EQUIPMENT.
31. PIPE SLEEVES IN MECHANICAL EQUIPMENT ROOMS EXTEND 2" ABOVE THE FLOOR LINE. FILL THE ANNULAR SPACES OF PIPE SLEEVES THROUGH THE FLOOR OR THROUGH RATED WALLS WITH FIRE SAFING AND SMOKE SEAL COMPOUND AS INDICATED ON THE SPECIFICATION, AND AS APPROVED BY THE AUTHORITY HAVING JURISDICTION. PROVIDE APPROVED RATED FIRE DAMPERS FOR ALL DUCTS PENETRATING FIRE RATED WALLS. FIRE DAMPER ASSEMBLIES, INCLUDING SLEEVES AND INSTALLATION PROCEDURES MUST BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO INSTALLATION. WHEREVER POSSIBLE, MANUAL RESET LEVER FOR THE FIRE DAMPER MUST BE PLACED ON NON-PUBLIC OR LAY-IN CEILING SIDE OF THE RATED WALL.
32. SIZES OF MECHANICAL EQUIPMENT PADS AND BASES SHOWN ON PLAN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DIMENSIONS OF ALL PADS AND BASES WITH THE APPROPRIATE EQUIPMENT MANUFACTURERS. CONTRACTOR SHALL COORDINATE MOUNTINGS WITH APPROPRIATE EQUIPMENT MANUFACTURERS. PADS AND BASES SHALL BE INDICATED ON SUBMITTALS AND BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO LAY-OUT OF REINFORCING STEEL OR STEEL DECK.
33. PROVIDE ACCESS PANELS FOR MECHANICAL AND ELECTRICAL EQUIPMENT AS REQUIRED BY APPLICABLE CODES. ALL ACCESS PANELS IN GYP BOARD SHALL BE CONCEALED, MUD-IN TYPE. ELECTRICAL J-BOXES, PLUMBING CLEANOUTS, FIRE DAMPERS AND OTHER SIMILAR ITEMS REQUIRING ACCESS ARE NOT TO BE LOCATED ABOVE GYPSUM BOARD OR SIMILAR NON-ACCESSIBLE CEILING.

PROJECT DATA

BUILDING TYPE	II A
BUILDING OCCUPANCY	E
NUMBER OF STORIES	2
BUILDING HEIGHT	40 FT.
BUILDING AREA	
FIRE SPRINKLERS	YES

SUMMARY OF WORK

CONVERSION OF EXISTING LIBRARY SPACE INTO CLASSROOMS, RECONFIGURATION OF INTERIOR WALLS, ADDITION OF DOORS AND WINDOWS AT THE INTERIOR AND EXTERIOR, MODIFICATION OF THE FIRE ALARM AND FIRE SPRINKLER SYSTEM AS REQUIRED FOR RECONFIGURED SPACE.

THE PRECEDING DESCRIPTION DOES NOT LIMIT THE EXTENT OF WORK. CONTRACTOR IS RESPONSIBLE FOR ALL WORK CONTAINED WITHIN THE CONTRACT DOCUMENTS.

PROJECT DIRECTORY

OWNER
SAN RAFAEL CITY SCHOOLS
310 NOVA ALBION WAY
SAN FRANCISCO, CA 94903
415.492.3136

ARCHITECT
HED
417 MONTGOMERY STREET, SUITE 400
SAN FRANCISCO, CA 94104
415.981.2345

STRUCTURAL
HED
417 MONTGOMERY STREET, SUITE 400
SAN FRANCISCO, CA 94104
415.981.2345

CIVIL

WILLIAM CLARK CIVIL
P.O. BOX 131
POINT REYES STATION, CA 94956
510.715.6018

MECHANICAL/PLUMBING
H&M MECHANICAL GROUP
8517 EARHART ROAD
OAKLAND, CA 94621

ELECTRICAL & FIRE ALARM
ALLIANCE ENGINEERING CONSULTANTS
4701 PATRICK HENRY DRIVE, BUILDING 10
SANTA CLARA,CA 95054

DSA NOTES

1. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENTS APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.

2. ONE SET OF D.S.A. APPROVED PLANS SHALL BE KEPT IN A PLAN BOX AND SHALL NOT BE USED BY THE WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT THE SAME INFORMATION. THE CONTRACTOR SHALL MAINTAIN, IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CONSTRUCTION CHANGE DOCUMENTS ON THE PREMISES AT ALL TIMES. THESE ARE TO BE UNDER THE CARE OF THE JOB SUPERINTENDENT.

3. A PROJECT INSPECTOR (CLASS 1) EMPLOYED BY THE DISTRICT (OWNER) CERTIFIED AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.

4. ALL D.S.A. FEES SHALL BE PAID FOR BY THE DISTRICT.

5. A DSA APPROVED LAB WITH A CURRENT L.E.A. APPROVAL NUMBER SHALL BE EMPLOYED AND PAID FOR BY THE DISTRICT.

6. UNLESS SPECIFIED ON STRUCTURAL DRAWINGS, ANY ALTERATIONS, OR MODIFICATIONS TO A STRUCTURAL ELEMENT BY CUTTING, DRILLING, BORING, BRACING, WELDING ETC. SHALL HAVE WRITTEN APPROVAL BY THE STRUCTURAL ENGINEER OF RECORD AND DSA PRIOR TO START OF WORK.
7. 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, CALIFORNIA CODE OF REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER, OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE OFFICE BEFORE PROCEEDING WITH THE WORK.

8. NO CHANGE OR REVISIONS SHALL BE MADE FOLLOWING WRITTEN APPROVAL WHICH AFFECTS ACCESS COMPLIANCE ITEMS UNLESS SUCH CHANGES OR REVISIONS ARE SUBMITTED TO THE DSA FOR APPROVAL

9. SUBSTITUTIONS AFFECTING DSA REGULATED ITEMS SHALL BE SUBMITTED AS A CONSTRUCTION CHANGE DOCUMENTS OR ADDENDA AND SHALL BE APPROVED BY DSA PRIOR TO FABRICATION AND INSTALLATION

10. CONSTRUCTION CHANGE DOCUMENTS MUST BE SIGNED BY THE FOLLOWINGS:
    ARCHITECT OR ENGINEER OF RECORD
    STRUCTURAL ENGINEER (WHEN APPLICABLE)
    DELEGATED PROFESSIONAL ENGINEER
    DSA

11. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.

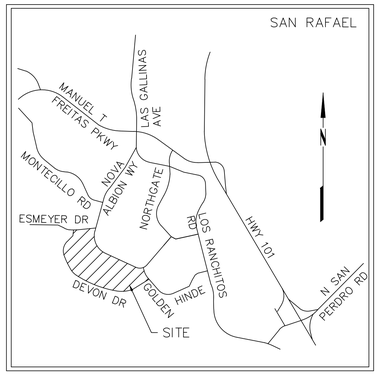
APPLICABLE CODES

- 2016 CALIFORNIA ADMINISTRATIVE CODE.....(CAC) (PART 1, TITLE 24, CCR)
- 2016 CALIFORNIA BUILDING CODE (CBC) VOLUMES 1 & 2.....(PART 2, TITLE 24, CCR) (2015 EDITION INTERNATIONAL BUILDING CODE WITH 2016 CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA ELECTRICAL CODE (CEC).....(PART 3, TITLE 24, CCR) (2014 EDITION NATIONAL ELECTRICAL CODE WITH 2016 CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA MECHANICAL CODE (CMC).....(PART 4, TITLE 24, CCR) (2015 EDITION IAPMO UNIFORM MECHANICAL CODE WIT`H 2016 CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA PLUMBING CODE (CPC).....(PART 5, TITLE 24, CCR) (2015 EDITION IAPMO UNIFORM PLUMBING CODE WITH 2016 CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA ENERGY CODE.....(PART 6, TITLE 24, CCR)
- 2016 CALIFORNIA FIRE CODE (CFC).....(PART 9, TITLE 24, CCR) (2015 EDITION OF INTERNATIONAL FIRE CODE WITH 2016 CALIFORNIA ADMENDMENTS)
- 2016 CALIFORNIA EXISTING BUILDING CODE (CEBC).....(PART 10, TITLE 24, CCR) (2015 EDITION OF INTERNATIONAL EXISTING BUILDING CODE WITH 2016 CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE.....(PART 11, TITLE 24, CCR)
- 2016 CALIFORNIA REFERENCE STANDARDS CODE.....(PART 12, TITLE 24, CCR)
- TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
- NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (2016 EDITION - CA AMENDED)
- NFPA 72 - 2016 NATIONAL FIRE ALARM AND SIGNALING CODE (CA AMENDED)
- NFPA 80 - STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES (2016 EDITION)
- UL 464 - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES (2003 EDITION)
- UL 521 - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS (1999 EDITION)
- UL 1971 - STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED (2002 EDITION)
- REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS

DEFERRED APPROVALS

NONE

VICINITY MAP



HAZARDOUS MATERIAL NOTE

THE ARCHITECT HAS NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL OR DISPOSAL OF, OR EXPOSURE OF PERSONS TO, HAZARDOUS MATERIALS OR TOXIC SUBSTANCES IN ANY FORM AT THE PROJECT SITE, INCLUDING BUT NOT LIMITED TO ASBESTOS, ASBESTOS PRODUCTS, POLYCHLORINATED BIPHENYL (PCB), LEAD PAINT OR OTHER TOXIC SUBSTANCES. THE FACT THAT THESE DOCUMENTS DO NOT INDICATE THE PRESENCE OF OR REMOVAL OR CONTAINMENT OF THE FOREGOING IS NOT INTENDED TO INDICATE THAT THESE MATERIALS OR SUBSTANCES, AMONG OTHERS, ARE NOT PRESENT AND ARE NOT REQUIRED TO BE REMOVED OR CONTAINED IN COMPLIANCE FEDERAL, STATE AND LOCAL REGULATIONS.

STATEMENT OF GENERAL CONFORMANCE

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

(Application No. 01-_____ File No. _____21-H1_____)

☒ The drawings or sheets listed on the cover or index sheet (signed by other than the Architect of Record.

☐ 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 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 find that:

☒ All drawings or sheets listed on the cover or index sheet
☐ This drawing or page

☒ is/are in general conformance with the project design, and
☒ has/have been coordinated with the project plans and specifications.

_____ 1-26-2018
Signature Date

Architect or Engineer designated to be in general responsible charge

Michael Myers
Print Name

C-36095 3-31-2019
License Number Expiration Date

or

☐ is/are in general conformance with the project design, and
☐ has/have been coordinated with the project plans and specifications.

_____ _____
Signature Date

Architect or Engineer designated to be in general responsible charge

_____
Print Name

_____ _____
License Number Expiration Date

DRAWING LIST

#	NAME	ISSUED FOR
G-000	COVER SHEET	
GENERAL		
G-001	GENERAL INFORMATION	
G-003	SIGNAGE DETAILS & EXISTING RESTROOMS	
G-012	CODE ANALYSIS SITE PLAN	
CIVIL		
C-001	TITLE SHEET	
C-002	GRADING SPECIFICATION	
C-101	GRADING AND DRAINAGE PLAN	
C-500	DETAILS	
C-600	CONSTRUCTION BEST MANAGEMENT PRACTICES (SWPP)	
STRUCTURAL		
S1.1	GENERAL NOTES	
S2.1	FOUNDATION PLAN & ROOF FRAMING PLAN	
S5.1	DETAILS	
ARCHITECTURAL		
A-001	ABBREVIATIONS & SYMBOL LEGEND	
AS-001	ARCHITECTURAL SITE PLAN	
AS-101	ENLARGED SITE PLAN AND DETAILS	
AD-101	DEMOLITION FLOOR PLAN	
AD-121	DEMOLITION REFLECTED CEILING PLAN	
A-101	IMPROVEMENT FLOOR PLAN	
A-121	REFLECTED CEILING PLAN	
A-201	EXTERIOR ELEVATIONS	
A-301	BUILDING SECTIONS	
A-302	BUILDING SECTIONS	
A-303	BUILDING SECTIONS	
A-401	INTERIOR ELEVATIONS	
A-402	INTERIOR ELEVATIONS	
A-502	WALL/PARTITION ASSEMBLIES, WALL FURRING DETAILS	
A-521	METAL FRAMING DETAILS	
A-522	METAL FRAMING DETAILS	
A-531	ROOF DETAILS	
A-561	DOOR DETAILS	
A-562	WINDOW DETAILS	
A-571	DETAILS SUSPENDED CEILING ASSEMBLY TYPICAL	
A-572	DETAILS SUSPENDED CEILING TYPICAL, PART B	
A-573	DETAILS SUSPENDED CEILING MTL. DECK, STEEL, COMP DECK	
A-574	DETAILS SUSPENDED CEILING ASSEMBLY WOOD, CONC.	
A-581	CASEWORK DETAILS	
A-591	MISCELLANEOUS DETAILS	
A-601	SCHEDULES, DOOR AND FRAME TYPES	
A-602	WINDOW SCHEDULES	
MECHANICAL		
M001	MECHANICAL LEGENDS AND NOTES	
M002	MECHANICAL SCHEDULES AND DETAILS	
M003	MECHANICAL CONTROLS	
M101	MECHANICAL DEMO PLAN	
M201	MECHANICAL FLOOR PLAN AND SECTION	
M301	MECHANICAL ROOF PLAN	
T24-1	TITLE 24	
T24-2	TITLE 24	
FIRE SPRINKLER SYSTEM		
FP001	FIRE SPRINKLER SYSTEM: NOTES AND SYMBOLS	
FP101	FIRE SPRINKLER SYSTEM: DEMO FLOOR PLAN	
FP201	FIRE SPRINKLER SYSTEM: FLOOR PLAN AND DETAILS	

#	NAME	
ELECTRICAL		
E0.1	GENERAL NOTES, LEGEND, ABBREVIATIONS AND DRAWING INDEX	
E0.2	CERTIFICATE OF COMPLIANCE TITLE 24	
E1.0	LIGHTING DEMOLITION PLAN	
E1.1	LIGHTING PLAN	
E2.0	ELECTRICAL DEMOLITION PLAN	
E2.1	ELECTRICAL PLAN	
E2.2	POWER PLAN - ROOF	
E3.1	SIGNAL PLAN	
E4.1	PARTIAL SINGLE LINE DIAGRAM AND SIGNAL RISER DIAGRAM	
E5.1	SCHEDULES AND DETAILS	
E5.2	DETAILS	
FIRE ALARM		
FA1.0	FIRE ALARM PLAN	
FA1.1	FIRE ALARM SITE PLAN	
FA2.1	FIRE ALARM PLAN	
FA3.1	FIRE ALARM RISER DIAGRAM, LEGEND AND EQUIPMENT LIST	
FA4.1	FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATION	
FA5.1	FIRE ALARM DETAILS	

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SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

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94903 (415) 492-3105

Date	Issued For
06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT

APP#: 01-117586

AC____FLS____SS_____
DATE_____

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA

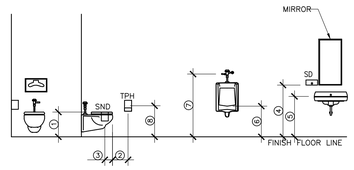
(415) 981-2345

WWW.HED.DESIGN

2017-03489-000

General Information

G-001

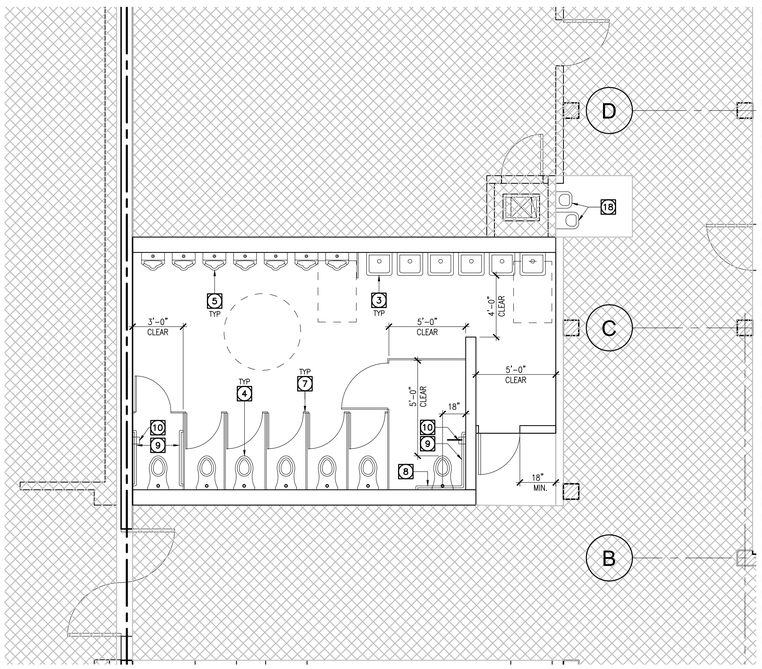


10 (E) RESTROOM ACCESSORIES
1/4" = 1'-0"

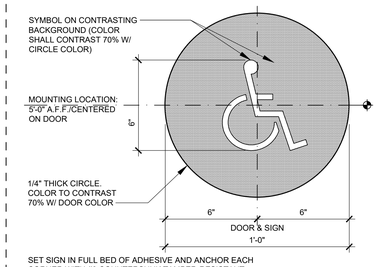
STANDARD TOILET FIXTURE AND ACCESSORY HEIGHTS		
AGE GROUP:	A = ADULT DIMENSIONS (AGE 12 AND OVER)	
	DIMENSIONS	A/E (INCHES)
①	TOILET SEAT HEIGHT	15
②	TOILET PAPER IN FRONT OF TOILET	12
③	NAPKIN DISPOSAL IN FRONT OF TOILET	6
④	DISPENSERS TO CONTROLS/MIRROR	40
⑤	LAVATORY TOP HEIGHT	34
⑥	URINALS UP HEIGHT	24
⑦	URINAL FLUSH VALVE HEIGHT	44 MAX
⑧	TOILET PAPER HEIGHT	30

LEGEND

- (E) WALL TO REMAIN
- (E) CONC. WALL
- (E) 2 HR RATED WALL
- SHADED AREA NOT IN SCOPE OF WORK
- RESTROOM ### — ROOM NAME & NUMBER (TAG)
- 30" X 48" ACCESSIBLE CLEAR SPACE
- 60" DIA. ACCESSIBLE CLEAR SPACE

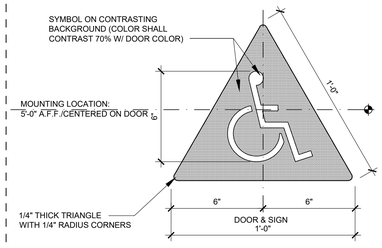


12 (E) BOYS ACCESSIBLE RESTROOM
1/4" = 1'-0"



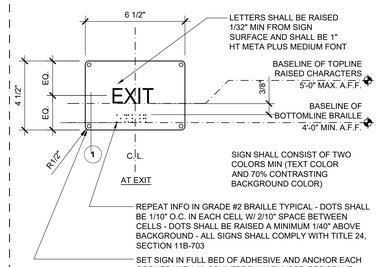
SET SIGN IN FULL BED OF ADHESIVE AND ANCHOR EACH CORNER WITH #8 COUNTERSUNK TAMPER-RESISTANT SCREWS. USE TYPE OF SCREW (SHEET METAL SCREW, WOOD SCREW OR CONCRETE SCREW) APPLICABLE FOR SUBSTRATE ANCHORAGE.

9 ACCESSIBLE GIRLS RR DOOR SIGN
3" = 1'-0"



SET SIGN IN FULL BED OF ADHESIVE AND ANCHOR EACH CORNER WITH #8 COUNTERSUNK TAMPER-RESISTANT SCREWS. USE TYPE OF SCREW (SHEET METAL SCREW, WOOD SCREW OR CONCRETE SCREW) APPLICABLE FOR SUBSTRATE ANCHORAGE.

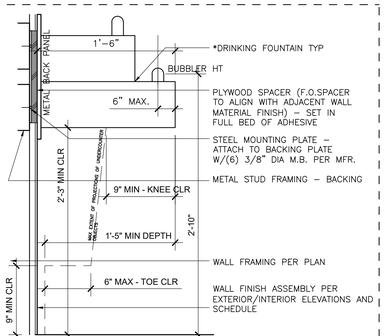
8 ACCESSIBLE BOYS RR SIGN
3" = 1'-0"



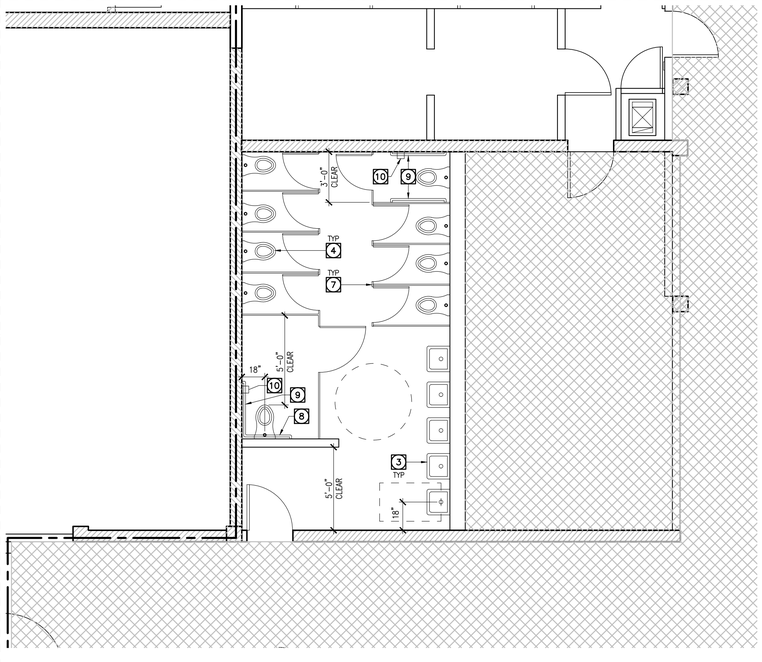
3 ACCESSIBLE EXIT SIGN
3" = 1'-0"

NOTES (TYPICAL, U.O.N.) 1

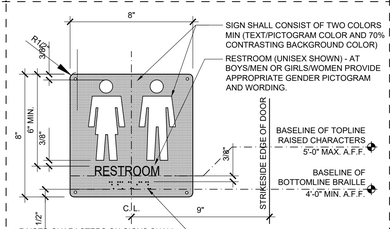
1. (E) DOOR ACCESSIBLE SIGN
2. (E) ROOM SIGN
3. (E) LAVATORY.
4. (E) TOILET.
5. (E) URINAL.
6. NOT USED.
7. (E) TOILET PARTITION.
8. (E) 1-1/2" DIA. X 36" GRAB BAR.
9. (E) 1-1/2' DIA. X 42" GRAB BAR.
10. (E) TOILET PAPER DISPENSER.
11. (E) SOAP DISPENSER.
12. (E) TOILET SEAT COVER DISPENSER.
13. (E) MIRROR.
14. (E) TRASH RECEPTACLE.
15. NOT USED.
16. NOT USED.
17. NOT USED.
18. (E) HI-LO DRINKING FOUNTAIN, SEE DET. 15/-



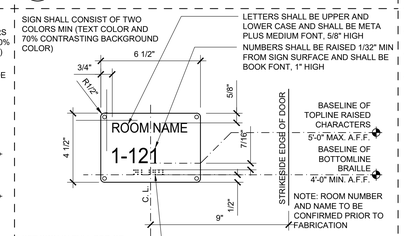
15 (E) HI-LO DRINKING FOUNTAIN
1/4" = 1'-0"



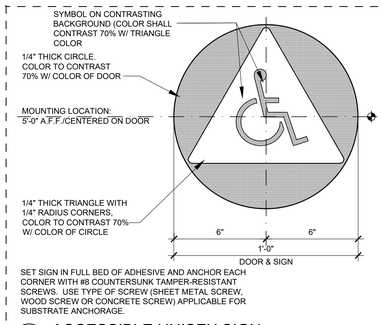
11 (E) GIRLS ACCESSIBLE RESTROOM
1/4" = 1'-0"



7 ACCESSIBLE RR WALL SIGN
3" = 1'-0"

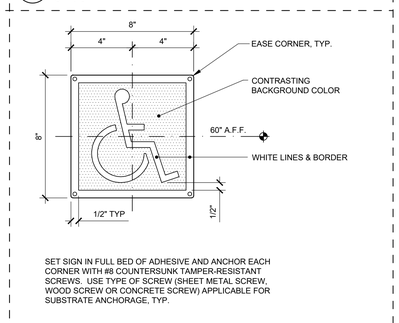


2 ROOM SIGN
3" = 1'-0"



SET SIGN IN FULL BED OF ADHESIVE AND ANCHOR EACH CORNER WITH #8 COUNTERSUNK TAMPER-RESISTANT SCREWS. USE TYPE OF SCREW (SHEET METAL SCREW, WOOD SCREW OR CONCRETE SCREW) APPLICABLE FOR SUBSTRATE ANCHORAGE.

6 ACCESSIBLE UNISEX SIGN
3" = 1'-0"



SET SIGN IN FULL BED OF ADHESIVE AND ANCHOR EACH CORNER WITH #8 COUNTERSUNK TAMPER-RESISTANT SCREWS. USE TYPE OF SCREW (SHEET METAL SCREW, WOOD SCREW OR CONCRETE SCREW) APPLICABLE FOR SUBSTRATE ANCHORAGE, TYP.

1 ACCESSIBLE BUILDING SIGN
1/4" = 1'-0"

SR
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

IDENTCATION STAMP
DIV. OF THE STATE ARCHITECT
APP#: 01-117586
AC____FLS____SS_____
DATE_____

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA
(415) 981-2345
WWW.HED.DESIGN

2017-03489-000

Signage Details & Existing Restrooms

G-003

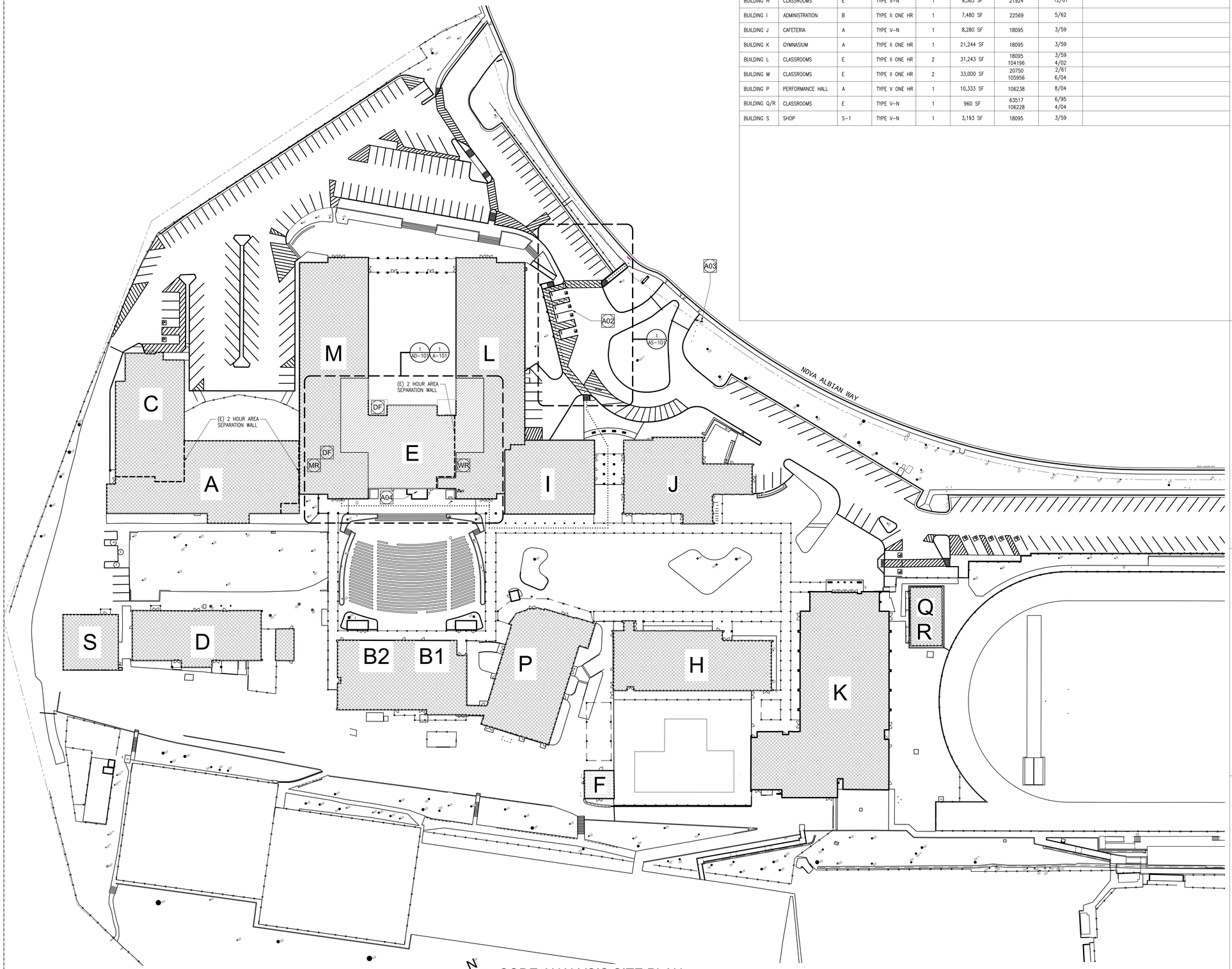
BUILDING DIRECTORY AND SUMMARY

BUILDINGS	DESCRIPTION	OCC. GROUP	TYPE OF CONST.	NO. OF STORIES	AREA	DSA APPL. #	DATE	COMMENTS
BUILDING A	CLASSROOMS	E	TYPE II ONE HR	2	17,110 SF	23360	4/63	
BUILDING B	CLASSROOMS	E	TYPE V-N	1	9,243 SF	18095/21646	3/59 9/61	
BUILDING C	DISTRICT OFFICES	E	TYPE V-N	2	22,722 SF	23260/24060	4/63 10/63	
BUILDING D	CLASSROOMS	E	TYPE V-N	1	8,213 SF	18095	3/59	
BUILDING E	CLASSROOMS	E	TYPE II ONE HR	2	10,986 SF	20750 105956	2/61 6/04	
BUILDING F	POOL EQUIPMENT	U	TYPE V-N	1	600 SF	20509	10/60	
BUILDING H	CLASSROOMS	E	TYPE V-N	1	9,385 SF	21924	12/61	
BUILDING I	ADMINISTRATION	B	TYPE II ONE HR	1	7,480 SF	22569	5/62	
BUILDING J	CAFETERIA	A	TYPE V-N	1	8,280 SF	18095	3/59	
BUILDING K	GYMNASIUM	A	TYPE II ONE HR	1	21,244 SF	18095	3/59	
BUILDING L	CLASSROOMS	E	TYPE II ONE HR	2	31,243 SF	18095 104196	3/59 4/02	
BUILDING M	CLASSROOMS	E	TYPE II ONE HR	2	33,000 SF	20750 105956	2/61 6/04	
BUILDING P	PERFORMANCE HALL	A	TYPE V ONE HR	1	10,333 SF	106238	8/04	
BUILDING Q/R	CLASSROOMS	E	TYPE V-N	1	960 SF	63517 106228	6/95 4/04	
BUILDING S	SHOP	S-1	TYPE V-N	1	3,193 SF	18095	3/59	

LEGEND

- EXISTING PROPERTY LINE
- BUILDING IN THE SCOPE OF WORK
- EXISTING BUILDING – NOT IN SCOPE
- DF DRINKING FOUNTAIN
- SR STAFF RESTROOM
- MR MEN RESTROOM
- WR WOMEN RESTROOM
- ACCESSIBLE PATH OF TRAVEL

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:
THE POT IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT WITH THE CBC HAVE BEEN IDENTIFIED AND THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS. DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THE ITEMS SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.



GENERAL NOTES

1. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

KEYNOTES

A01 EXISTING PAVED AREA
A02 EXISTING ACCESSIBLE PARKING PER A# 01-106489
A03 EXISTING TOW-AWAY SIGN
A04 EXISTING ELEVATOR

ACCESSIBLE PARKING SPACES

NUMBER OF PARKING SPACES: 70

NUMBER OF REQUIRED ACCESSIBLE SPACES: 3

6 VAN ACCESSIBLE SPACES PROVIDED

CODE ANALYSIS SITE PLAN

SCALE: 1" = 40'-0"

SR
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

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94104 USA

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WWW.HED.DESIGN

2017-03489-000

Code Analysis Site Plan

G-012

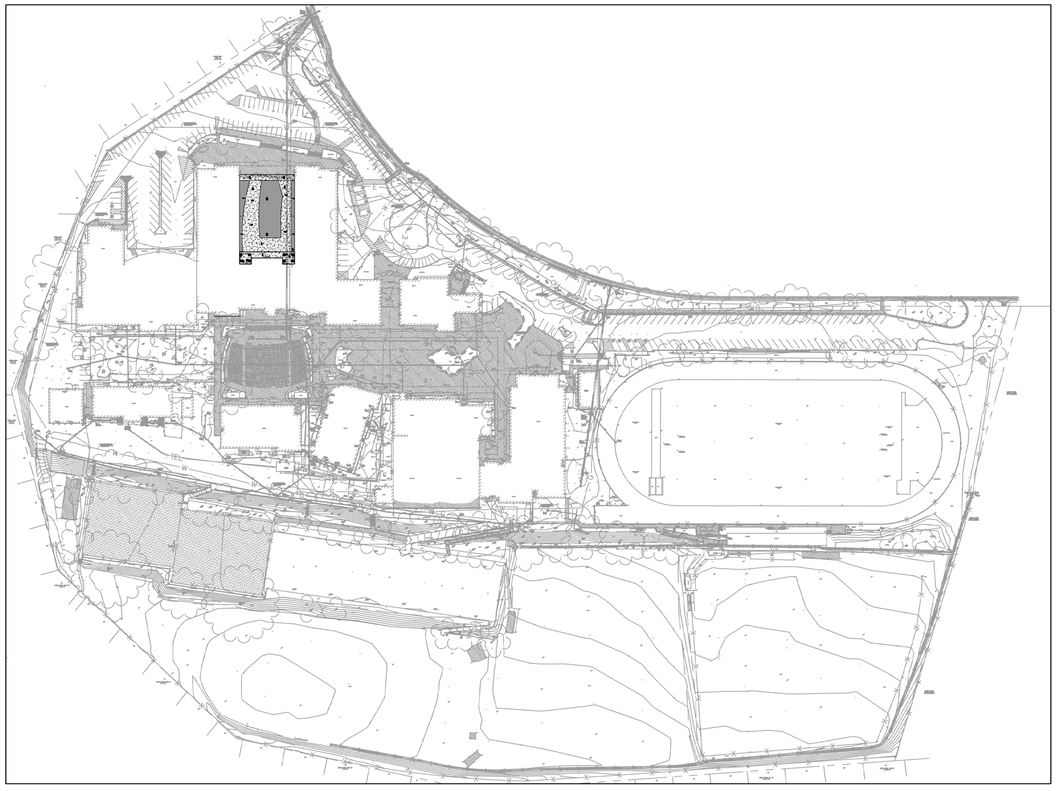
TERRA LINDA HIGH SCHOOL TERRA LINDA HS INNOVATION HUB

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		BOUNDARY
		PROPERTY LINE
		RETAINING WALL
		LANDSCAPE RETAINING WALL
		SUBDRAIN LINE
		TIGHTLINE
SD	SD	STORM DRAIN LINE
SS	SS	SANITARY SEWER LINE
W	W	WATER LINE
G	G	GAS LINE
P	P	PRESSURE LINE
JT	JT	JOINT TRENCH
		SET BACK LINE
		CONCRETE VALLEY GUTTER
		SWALE FLOW DIRECTION
CB	CB	CATCH BASIN
JB	JB	JUNCTION BOX
AD	AD	AREA DRAIN
AD	AD	SQUARE AREA DRAIN
		CURB INLET
SDMH	SDMH	STORM DRAIN MANHOLE
		FIRE HYDRANT
SSMH	SSMH	SANITARY SEWER MANHOLE
		STREET SIGN
222.57 INV	222.57 INV	SPOT ELEVATION
		FLOW DIRECTION
	D	DEMOLISH/REMOVE
		BENCHMARK
200	200	CONTOURS
XX" TREE		TREE TO BE REMOVED

ABBREVIATIONS

AB	AGGREGATE BASE	LF	LINEAL FEET
AC	ASPHALT CONCRETE	MAX	MAXIMUM
ACC	ACCESSIBLE	MH	MANHOLE
AD	AREA DRAIN	MIN	MINIMUM
BC	BEGINNING OF CURVE	MON.	MONUMENT
B & D	BEARING & DISTANCE	(N)	NEW
BM	BENCHMARK	NO.	NUMBER
BW/FG	BOTTOM OFWALL/FINISH GRADE	NTS	NOT TO SCALE
CB	CATCH BASIN	O.C.	ON CENTER
C & G	CURB AND GUTTER	O/	OVER
℄	CENTER LINE	OMC	OPTIMUM MOISTURE CONTENT
CPP	CORRUGATED PLASTIC PIPE (SMOOTH INTERIOR)	(PA)	PLANTING AREA
		PED	PEDESTRIAN
CO	CLEANOUT	PIV	POST INDICATOR VALVE
CONC	CONCRETE	PSS	PUBLIC SERVICES EASEMENT
CONST	CONSTRUCT or –TION	℗	PROPERTY LINE
CONC COR	CONCRETE CORNER	PP	POWER POLE
CY	CUBIC YARD	PUC	PUBLIC UTILITY EASEMENT
D	DIAMETER	PVC	POLYVINYL CHLORIDE
DI	DROP INLET	R	RADIUS
DIP	DUCTILE IRON PIPE	RCP	REINFORCED CONCRETE PIPE
EA	EACH	RIM	RIM ELEVATION
EC	END OF CURVE	RW	RAINWATER
EG	EXISTING GRADE	R/W	RIGHT OF WAY
EL	ELEVATIONS	S	SLOPE
EP	EDGE OF PAVEMENT	S.A.D.	SEE ARCHITECTURAL DRAWINGS
EQ	EQUIPMENT	SAN	SANITARY
EW	EACH WAY	SD	STORM DRAIN
(E)	EXISTING	SDMH	STORM DRAIN MANHOLE
FC	FACE OF CURB	SHT	SHEET
FF	FINISHED FLOOR	S.L.D.	SEE LANDSCAPE DRAWINGS
FG	FINISHED GRADE	SPEC	SPECIFICATION
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	SSMH	SANITARY SEWER MANHOLE
FS	FINISHED SURFACE	ST.	STREET
G	GAS	STA	STATION
GA	GAGE OR GAUGE	STD	STANDARD
GB	GRADE BREAK	STRUCT	STRUCTURAL
HDPE	HIGH DENSITY CORRUGATED POLYETHYLENE PIPE	T	TELEPHONE
		TC	TOP OF CURB
HORIZ	HORIZONTAL	TEMP	TEMPORARY
HI PT	HIGH POINT	TP	TOP OF PAVEMENT
H&T	HUB & TACK	TW/FG	TOP OF WALL/FINISH GRADE
ID	INSIDE DIAMETER	TYP	TYPICAL
INV	INVERT ELEVATION	VC	VERTICAL CURVE
JB	JUNCTION BOX	VCP	VITRIFIED CLAY PIPE
JT	JOINT TRENCH	VERT	VERTICAL
JP	JOINT UTILITY POLE	W/	WITH
L	LENGTH	W, WL	WATER LINE
LNDG	LANDING	WM	WATER METER
		WWF	WELDED WIRE FABRIC



KEY MAP
1" = 100'

NOTES:

1. ALL GENERAL NOTES, SHEET NOTES, AND LEGEND NOTES FOUND IN THESE DOCUMENTS SHALL APPLY, TYPICALLY THROUGHOUT IF INCONSISTENCIES ARE FOUND IN THE VARIOUS NOTATIONS, NOTIFY THE ENGINEER IMMEDIATELY IN WRITING REQUESTING CLARIFICATION.
2. THESE DRAWINGS AND THEIR CONTENT ARE AND SHALL REMAIN THE PROPERTY OF WILLIAM CLARK, P.E. INC. WHETHER THE PROJECT FOR WHICH THEY ARE PREPARED IS EXECUTED OR NOT. THEY ARE NOT TO BE USED BY ANY PERSONS ON OTHER PROJECTS OR EXTENSIONS OF THE PROJECT EXCEPT BY AGREEMENT IN WRITING AND WITH PPROPRIATE COMPENSATION TO THE ENGINEER.
3. ALL WORK SHALL COMPLY WITH APPLICABLE CODES AND TRADE STANDARDS WHICH GOVERN EACH PHASE OF WORK INCLUDING, BUT NOT LIMITED TO, CALIFORNIA MECHANICAL CODE, CALIFORNIA PLUMBING CODE, CALIFORNIA ELECTRICAL CODE, CALIFORNIA FIRE CODE, CALTRANS STANDARDS AND SPECIFICATIONS, AND ALL APPLICABLE STATE AND/OR LOCAL CODES AND/OR LEGISLATION.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND ALL SUBCONTRACTORS TO CHECK AND VERIFY ALL CONDITIONS, DIMENSIONS, LINES AND LEVELS INDICATED. PROPER FIT AND ATTACHMENT OF ALL PARTS IS REQUIRED. SHOLD THERE BE ANY DISCREPANCIES, IMMEDIATELY NOTIFY THE ENGINEER FOR CORRECTION OR ADJUSTMENT THE EVENTOF FAILURE TO DO SO, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTION OF ANY ERROR.
5. ALL DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED ON THE JOB BY EACH SUBCONTRACTOR BEFORE HE/SHE BEGINS HIS/HER WORK. ANY ERRORS, OMISSION, OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER/CONTRACTOR BEFORE CONSTRUCTION BEGINS.
6. COMMENCEMENT OF WORK BY THE CONTRACTOR AND/OR ANY SUBCONTRACTOR SHALL INDICATE KNOWLEDGE AND ACCEPTANCE OF ALL CONDITIONS DESCRIBED IN THESE CONSTRUCTION DOCUMENTS, OR EXISTING ON SITE, WHICH COULD AFFECT THEIR WORK.
7. IF THE CONTRACTOR OBSERVES OR OTHERWISE BECOMES AWARE OF ANY FAULT OR DEFECT IN THE PROJECT OR NONCONFORMANCE WITH THE CONTRACT DOCUMENTS, PROMPT WRITTEN NOTICE THEREOF SHALL BE GIVEN BY THE CONTRACTOR TO THE ARCHITECT AND/OR ENGINEER.
8. THE ENGINEER SHALL NOT HAVE CONTROL OF OR CHARGE OF AND SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
9. CONTRACTOR IS RESPONSIBLE FOR ALL IMPORT AND EXPORT QUANTITIES AND/OR DISPOSAL/IMPORT COSTS.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING AND MAKE PROVISIONS FOR WITHIN THEIR BID FOR A PROFESSIONAL LAND SURVEYOR TO PROVIDE CONSTRUCTION STAKING FOR THE PROJECT.

1-800-227-2600 CALL BEFORE YOU DIG USA UNDERGROUND SERVICE ALERT

SHEET INDEX

SAN RAFAEL CITY SCHOOLS

TERRA LINDA HS INNOVATION HUB

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
6/08/18	DSA SUBMITTAL

CIVIL ENGINEER
CLARK CIVIL ENGINEERING
12700 HIGHWAY ONE,
POINT REYES STATION, CA 94956
TEL (415) 295–4450
FAX (510) 372–0259
CCE PROJECT NO. 217039

FILE#: 21–H1 PTN#: 65466–28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP#:01–117586
AC___ FLS___ SS___
DATE___

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA

(415) 981-2345

WWW.HED.DESIGN

REGISTERED PROFESSIONAL ENGINEER WILLIAM C. CLARK No. 65497 Exp. 09-30-19 CIVIL

2017-03489-000

TITLE SHEET

C-001

GENERAL SITE NOTES:

1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING ON THIS WORK AND CONSIDER THE EXISTING CONDITIONS AND SITE CONSTRAINTS IN THE BID. CONTRACTOR SHALL BE IN THE POSSESSION OF AND FAMILIAR WITH ALL APPLICABLE GOVERNING AGENCIES STANDARD DETAILS AND SPECIFICATIONS PRIOR TO SUBMITTING OF A BID.
2. ALL WORK IN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO ALL APPLICABLE GOVERNING AGENCIES STANDARD DETAILS & SPECIFICATIONS.
3. PRIOR TO BEGINNING WORK, AND AFTER INITIAL HORIZONTAL CONTROL STAKING, CONTRACTOR SHALL FIELD CHECK ALL ELEVATIONS MARKED WITH (E) AND REPORT ANY DISCREPANCIES GREATER THAN 0.05' TO OWNER'S PROJECT MANAGER AND CIVIL ENGINEER.
4. DAMAGE TO ANY EXISTING SITE IMPROVEMENTS, UTILITIES AND/OR SERVICES TO REMAIN SHALL BE RESPONSIBLE OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
5. CONTRACTOR SHALL REPLACE ALL STRUCTURES AND GRATE LIDS FOR VAULTS, CATCH BASINS, ETC.., WITH VEHICULAR-RATED STRUCTURES IN ALL TRAFFIC ACCESSIBLE AREAS.
6. THE CONTRACTOR SHALL ADJUST TO FINAL GRADE ALL EXISTING AND/OR NEW MANHOLES, CURB INLETS, CATCH BASIN, VALVES, MONUMENT COVERS, AND OTHER CASTINGS WITHIN THE WORK AREA TO FINAL GRADE IN PAVEMENT AND LANDSCAPE AREAS UNLESS NOTED OTHERWISE.
7. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT TO BE LIMITED TO NORMAL WORKING HOURS AND THAT THE CONTRACTOR SHALL DEFEND INDEMNIFY AND HOLD THE OWNER, THE CONSULTING ENGINEER AND THE CITY HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE CONSULTING ENGINEER.
8. EXISTING PEDESTRIAN WALKWAYS, BIKE PATHS AND ACCESSIBLE PATHWAYS SHALL BE MAINTAINED, WHERE FEASIBLE, DURING CONSTRUCTION.
9. IF A CONFLICT ARISES BETWEEN THE SPECIFICATIONS AND THE PLANS NOTES, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.
10. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT BY A3GEO, TITLED "DESIGN LEVEL GEOTECHNICAL INVESTIGATION AND GEOLOGIC HAZARDS STUDY REPORT TERRA LINDA HIGH SCHOOL", DATED FEBRUARY 16, 2018.

TREE/PLANT PROTECTION NOTES:

1. PRIOR TO BEGINNING CONSTRUCTION ON SITE, CONTRACTOR SHALL IDENTIFY, CONFIRM WITH OWNER AND PROTECT EXISTING TREES AND PLANTS DESIGNED AS TO REMAIN.
2. PROVIDE 6 FOOT TALL TREE PROTECTION FENCE WITH DISTINCTIVE MARKING VISIBLE TO CONSTRUCTION EQUIPMENT, ENCLOSING DRIP LINES OF TREES DESIGNED TO REMAIN.
3. WORK REQUIRED WITHIN FENCE LINE SHALL BE HELD TO A MINIMUM, AVOID UNNECESSARY MOVEMENT OF HEAVY EQUIPMENT WITHIN FENCED AREA AND DO NOT PARK ANY VEHICLES UNDER DRIP LINE OR TREES. DO NOT STORE EQUIPMENT OR MATERIALS WITHIN FENCE LINE.
4. PRIOR TO REMOVING ROOTS AND BRANCHES LARGER THAN 2" IN DIAMETER OF TREES OR PLANTS THAT ARE TO REMAIN, CONSULT WITH THE OWNER'S PROJECT MANAGER.
5. ANY GRADE CHANGES GREATER THAN 6" WITHIN THE DRIPLINE OF EXISTING TREES SHALL NOT BE MADE WITHOUT FIRST CONSULTING THE ARCHITECT / CIVIL ENGINEER.
6. PROTECT EXISTING TREES TO REMAIN FROM SPILLED CHEMICALS, FUEL OIL, MOTOR OIL, GASOLINE AND ALL OTHER CHEMICALLY INJURIOUS MATERIALS; AS WELL AS FROM PADDLING OR CONTINUOUSLY RUNNING WATER. SHOULD A SPILL OCCUR, STOP WORK IN THAT AREA AND CONTACT THE INSPECTOR IMMEDIATELY. CONTRACTOR SHALL BE RESPONSIBLE TO MITIGATE DAMAGE FROM SPILLED MATERIAL AS WELL AS MATERIAL CLEAN UP.
7. PROVIDE TEMPORARY IRRIGATION TO ALL TREES AND PLANTS THAT ARE IN OR ADJACENT TO CONSTRUCTION AREAS WHERE EXISTING IRRIGATION SYSTEMS MAY BE AFFECTED BY THE CONSTRUCTION. ALSO PROVIDE TEMPORARY IRRIGATION TO RELOCATE TREES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ONGOING MAINTENANCE OF ALL TREES AND PLANTS DESIGNED TO REMAIN AND FOR MAINTENANCE OF RELOCATED TREES STOCKPILED DURING CONSTRUCTION. CONTRACTOR WILL BE REQUIRED TO REPLACE TREES OR PLANTS THAT DIE DUE TO LACK OF MAINTENANCE.
9. TREE PROTECTION ZONES NEED TO BE SET UP WITH FENCING AROUND TREES TO A MINIMUM DISTANCE OF 10 FEET FROM THE BUTTRESS FLAIR. NO EQUIPMENT, MATERIALS STORAGE, OR DIGGING IS ALLOWED WITHIN THE TREE PROTECTION ZONE WITHOUT WRITTEN AUTHORIZATION FROM THE PROJECT ARBORIST, ARBORIST SUPERVISOR OR AUTHORIZED DESIGNATE. ANY AUTHORIZED DIGGING WITHIN THE TREE PROTECTION ZONE MUST BE DONE BY HAND; I.E. PICK AND SHOVEL: CARE MUST BE TAKEN TO AVOID SEVERING ANY STRUCTURAL ROOTS. ANY ROOTS GREATER THAN 2" IN DIAMETER INCIDENTALLY SEVERED, WHETHER INSIDE OR OUTSIDE OF THE TREE PROTECTION ZONE, WILL NEED TO BE BROUGHT TO THE ATTENTION OF AND INSPECTED BY THE PROJECT ARBORIST, ARBORIST SUPERVISOR OR AUTHORIZED DESIGNATE; WHO WILL EVALUATE THE TREE IN QUESTION FOR IMPACTS TO BOTH LONG TERM HEALTH AND STABILITY. ANY ROOT SEVERANCE CONCLUDED TO COMPROMISE TREE STABILITY/SAFETY MAY RESULT IN TREE REMOVAL. ANY COSTS RESULTING FROM TREE REMOVALS WILL BE CHARGED TO THE PROJECT IN QUESTION. ANY COSTS FROM TREE REMOVALS RESULTING FROM VIOLATIONS OF THE COUNTY CODES WILL BE ABSORBED BY THE CONTRACTOR UP TO AND INCLUDING ANY FINES LEVIED BY THE COUNTY.

SITE MAINTENANCE:

1. REMOVE ALL DIRT, GRAVEL, RUBBISH, REFUSE, AND GREEN WASTE FROM STREET PAVEMENT AND STORM DRAINS ADJOINING THE SITE. LIMIT CONSTRUCTION ACCESS ROUTES ONTO THE SITE AND PLACE GRAVEL PADS AT THESE LOCATIONS. DO NOT DRIVE VEHICLES AND EQUIPMENT OFF THE PAVED OR GRAVELED AREAS DURING WET WEATHER.
2. SWEEP OR VACUUM THE STREET PAVEMENT AND SIDEWALKS ADJOINING THE PROJECT SITE AND THE ON-SITE PAVED AREAS ON A DAILY BASIS. SCRAPE CAKED-ON MUD AND DIRT FROM THESE AREAS BEFORE SWEEPING. CORNERS AND HARD TO REACH AREAS SHALL BE SWEPT MANUALLY.
3. CONTRACTOR SHALL: GATHER ALL CONSTRUCTION DEBRIS ON A REGULAR BASIS AND PLACE IT IN A DUMPSTER OR OTHER CONTAINER WHICH IS EMPTIED OR REMOVED ON A REGULAR BASIS. WHEN APPROPRIATE, USE TARPS ON THE GROUND TO COLLECT FALLEN DEBRIS OR SPLATTERS THAT COULD CONTRIBUTE TO STORM WATER RUNOFF POLLUTION.
4. IF THE STREET, SIDEWALKS AND/OR PARKING LOT ARE PRESSURE WASHED, DEBRIS MUST BE TRAPPED AND COLLECTED TO PREVENT ENTRY INTO THE STORM DRAIN SYSTEM. NO CLEANING AGENT MAY BE DISCHARGED INTO THE STORM DRAIN. IF ANY CLEANING AGENT OR DEGREASER IS USED, WASHED WATER MUST BE COLLECTED AND DISCHARGED TO THE SANITARY SEWER, SUBJECT TO THE APPROVAL OF THE OWNER'S PROJECT MANAGER, OR OTHERWISE DISPOSED OF THROUGH APPROVED DISPOSAL METHODS.
5. CREATE A CONTAINED AND COVERED AREA ON THE SITE FOR THE STORAGE OF BAGS, CEMENT, PAINTS, OILS, FERTILIZERS, PESTICIDES, OR OTHER MATERIAL USED ON THE SITE THAT HAVE THE POTENTIAL OF BEING WIND-BLOWN OR IN THE EVENT OF A MATERIAL SPILL.
6. NEVER CLEAN MACHINERY, EQUIPMENT OR TOOLS INTO A STREET, GUTTER OR STORM DRAIN.
7. ENSURE THAT CEMENT TRUCKS, PAINTERS, OR STUCCO/PLASTER FINISHING CONTRACTORS DO NOT DISCHARGE WASH WATER FROM EQUIPMENT, TOOLS OR RINSE CONTAINERS INTO GUTTERS OR DRAINS.
8. THE ON-SITE STORM DRAIN FACILITIES SHALL BE CLEANED A MINIMUM OF TWICE A YEAR AS FOLLOWS: IMMEDIATELY PRIOR TO OCTOBER 15TH AND ONCE IN JANUARY. ADDITIONAL CLEANING MAY BE REQUIRED IF FOUND NECESSARY BY THE INSPECTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR COST ASSOCIATED WITH CLEANING.
9. PREVENT DUST FROM LEAVING THE SITE AND ACCUMULATING ON ADJACENT AREAS.
10. PREVENT SEDIMENT LADEN STORM RUN-OFF FROM LEAVING THE SITE OR ENTERING STORM DRAIN OR SANITARY SEWER SYSTEMS.
11. MAINTAIN EXISTING TREES AND PLANTS THAT ARE TO REMAIN AS REQUIRED BY THE TREE AND PLANT PROTECTION NOTES ON THE SHEET.

STORM DRAIN NOTES:

1. ALL STORM DRAIN PIPE SHALL BE PVC (SDR-35) OR HDPE AS INDICATED ON THE SITE PLAN PER SECTION 33 40 00, SLOPED AT 2% UNLESS OTHERWISE SPECIFIED ON THE PLANS. PIPE SHALL BE SIZED AS SPECIFIED ON THE PLANS. ALL DIRECTION CHANGES SHALL BE MADE WITH A Y CONNECTION OR LONG SWEEP ELBOWS, REGULAR ELBOWS, AND TEE'S SHOULD BE AVOIDED.
2. USE DETECTABLE METALIZED WARNING TAPE APPROXIMATE 6" BELOW THE SURFACE. TAPE SHALL BE A BRIGHT COLOR AND IMPRINTED WITH "CAUTION- STORM DRAIN LINE BELOW", CALPICO TYPE 2 OR EQUAL.
3. PAINT THE TOP OF THE CURBS ADJACENT TO EACH CATCH BASIN INSTALLED UNDER THE WORK OR ADJACENT TO THIS SITE WITH THE WORDS "NO DUMPING". WORDING TO BE BLUE 4" HIGH LETTERS ON A PAINTED WHITE BACKGROUND.
4. ALL AREA DRAINS AND CATCH BASINS GRATES WITHIN PEDESTRIAN ACCESSIBLE AREAS SHALL MEET ADA REQUIREMENTS AND HAVE BOLT DOWN GRATES.
5. ALL TRENCHES SHALL BE BACKFILLED PER THE SPECIFICATIONS WITH APPROPRIATE TEST BY THE GEOTECHNICAL ENGINEER TO VERIFY COMPACTION VALUES.
6. FOR GRAVITY FLOW SYSTEMS CONTRACTOR SHALL VERIFY (POTHOLE IF NECESSARY) SIZE, MATERIAL, LOCATION AND DEPTH OF ALL SYSTEMS THAT ARE TO BE CONNECTED TO OR CROSSED PRIOR TO TRENCH OR INSTALLATION OF ANY GRAVITY FLOW SYSTEM.
7. COMPLETE SYSTEMS; ALL UTILITY SYSTEMS ARE DELINEATED IN SCHEMATIC MANNER ON THESE PLANS. CONTRACTOR IS TO PROVIDE ALL FITTINGS, ACCESSORIES, AND WORK NECESSARY TO COMPLETE THE UTILITY SYSTEM SO THAT IT IS FULLY FUNCTIONING FOR THE PURPOSE INTENDED.

DEMOLITION NOTES:

1. CONTRACTOR IS TO COMPLY WITH ALL GENERAL AND STATE REQUIREMENTS INVOLVING THE REMOVAL AND DISPOSAL OF HAZARDOUS MATERIAL(S).
2. THE CONTRACTOR SHALL LOCATE AND CLEARLY MARK (AND THEN PRESERVE THESE MARKERS) FOR THE DURATION OF CONSTRUCTION OF ALL TELEPHONE, DATA, STREET LIGHT, SIGNAL LIGHT AND POWER FACILITIES THAT ARE IN OR NEAR THE AREA OF CONSTRUCTION.
3. CONTRACTOR'S BID IS TO INCLUDE ALL VISIBLE SURFACE AND ALL SUBSURFACE FEATURES IDENTIFIED TO BE REMOVED OR ABANDONED IN THESE DOCUMENTS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR A SITE INSPECTION TO FULLY ACKNOWLEDGE THE EXTENT OF THE DEMOLITION WORK PRIOR TO BID.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS NECESSARY FOR ENCROACHMENT, GRADING, DEMOLITION, AND STATE JURISDICTIONS. THE CONTRACTOR SHALL PAY ALL FEES ASSOCIATED.
6. CONTRACTOR SHALL PAY DISPOSAL FEES.
7. BACKFILL ALL DEPRESSIONS AND TRENCHES FROM DEMOLITION OF FOUNDATIONS & UTILITIES TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
8. WITHIN LIMITS OF WORK, REMOVE CURBS, GUTTERS, LANDSCAPING, SIGNAGE, TREES, SCRUBS, ASPHALT, UNDERGROUND PIPES, ETC. AS INDICATED ON THE PLANS AND SPECS.
9. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
10. PRIOR TO BEGINNING DEMOLITION WORK ACTIVITIES, CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES OUTLINED IN THE CONSTRUCTION BEST MANAGEMENT PRACTICES.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING ALL DEMOLITION MATERIALS, OR STORING SELECTED ITEMS BY OWNER'S REPRESENTATIVE AT DESIGNATED LOCATIONS.
12. THE CONTRACTOR SHALL MAINTAIN ALL SAFETY DEVICES, AND SHALL BE RESPONSIBLE FOR CONFORMANCE TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS LAWS AND REGULATIONS.
13. THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING IMPROVEMENTS FACILITIES AND STRUCTURES WHICH ARE TO REMAIN. ANY ITEMS DAMAGED BY THE CONTRACTOR OR HIS AGENTS OF ANY ITEMS REMOVED FOR HIS USE SHALL BE REPLACED IN EQUAL OR BETTER CONDITION AS APPROVED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE.
14. COORDINATE WITH ELECTRICAL, PLUMBING AND ARCHITECTURAL DRAWINGS FOR UTILITY SHUT-DOWN / DISCONNECT LOCATIONS. CONTRACTOR IS TO SHUT OFF ALL UTILITIES AS NECESSARY PRIOR TO DEMOLITION. CONTRACTOR IS TO COORDINATE SERVICE INTERRUPTIONS WITH THE OWNER. DO NOT INTERRUPT SERVICES ADJACENT OFF-SITE OWNERS. ALSO SEE ARCHITECTURAL PLANS FOR ADDITIONAL DEMOLITION SCOPE OF WORK.
15. DEMOLITION INCLUDES REMOVAL OF ALL ITEMS ASSOCIATED WITH THE UTILITIES AND SHALL INCLUDE PREPARING THE SITE FOR NEW UTILITIES, BUILDINGS, RETAINING WALLS, ETC.
16. ALL MATERIALS TO BE DEMOLISHED AND REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LAWFULLY DISPOSED OF OFF-SITE.
17. THE PLAN IS NOT INTENDED TO BE A COMPLETE CATALOGUE OF ALL EXISTING STRUCTURES AND UTILITIES. THIS PLAN INTENDS TO DISCLOSE GENERAL INFORMATION KNOWN BY THE ENGINEER AND TO SHOW THE LIMITS OF THE AREA WHERE WORK WILL BE PERFORMED. THIS PLAN SHOWS THE EXISTING FEATURES TAKEN FROM A FIELD SURVEY, FIELD INVESTIGATIONS AND AVAILABLE INFORMATION. THIS PLAN MAY OR MAY NOT ACCURATELY REFLECT THE TYPE OR EXTENT OF THE ITEMS TO BE ENCOUNTERED AS THEY ACTUALLY EXIST. WHERE EXISTING FEATURES ARE NOT SHOWN, IT IS IMPLIED THAT THEY ARE NOT TO BE DEMOLISHED OR REMOVED. THE CONTRACTOR SHALL PERFORM A THOROUGH FIELD INVESTIGATION AND REVIEW OF THE SITE WITHIN THE LIMIT OF WORK SHOWN IN THIS PLAN SET TO DETERMINE THE TYPE, QUANTITY AND EXTENT OF ANY AND ALL ITEMS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXTENT OF EXISTING STRUCTURES AND UTILITIES AND QUANTITY OR WORK INVOLVED IN REMOVING THESE ITEMS FROM THE SITE.

WATER SYSTEM NOTES:

1. WHERE WATER LINES HAVE TO CROSS SANITARY SEWER LINES, DO SO AT A 90 DEGREE ANGLE AND WATER LINES SHALL BE MINIMUM OF 12" ABOVE THE TOP OF THE SANITARY SEWER LINES.
2. WATER LINES ARE SHOWN SCHEMATICALLY; CONTRACTOR SHALL IDENTIFY EACH ANGLE AND/ OR BEND THAT MAY BE REQUIRED TO ACCOMPLISH THE INTENDED DESIGN.
3. USE DETECTABLE METALIZED WARNING TAPE APPROXIMATELY 6" BELOW THE SURFACE, TAPE SHALL BE A BRIGHT COLOR AND IMPRINTED WITH "CAUTION-WATER LINE BELOW", CALPICO TYPE 2 OR EQUAL.
4. ALL WATER SERVICE CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY/TOWN OR APPLICABLE WATER DISTRICT STANDARDS.
5. PUBLIC AND PRIVATE WATER MAIN AND WATER SERVICE LINE 4-INCH THROUGH 12-INCH SHALL BE POLYVINYL CHLORIDE (PVC) AND SHALL MEET AWWA C900, RATED FOR 200 PSI CLASS PIPE WITH EPOXY COATED DUCTILE IRON FITTINGS AND FUSION EPOXY COATED GATE VALVES. ALL JOINTS SHALL FACTORY MANUFACTURED WITH BELL AND SPIGOT ENDS AND RUBBER GASKETS. NONMETALLIC WATER LINES HAVE TRACER WIRE INSTALLED.
6. CONNECTION TO THE EXISTING WATER MAIN SHALL BE APPROVED BY WATER COMPANY. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION PREPARE THE SITE, FURNISH ALL MATERIALS, INSTALL TAPPING TEE VALVE AND ALL THRUST BLOCKS. BACKFILL, RESTORE THE SURFACE, AND CLEANUP. ALL WET TAPS SHALL BE APPROVED BY CALIFORNIA WATER COMPANY (CALWATER). NONMETALLIC WATER LINES SHALL HAVE TRACER WIRES INSTALLED.
7. ALL WATER LINES 3" OR SMALLER SHALL BE TYPE K COPPER WITH SILVER BRAZED JOINTS. CONTRACTOR TO VERIFY PRESSURES FROM EXISTING LINES ARE ADEQUATE TO SERVICE BUILDINGS AS SPECIFIED BY THE PLUMBING PLANS.
8. ALL WATER LINES SHALL BE INSTALLED WITH 3' MINIMUM COVER.
9. ALL WATER VALVES SHALL BE PER CITY STANDARD.
10. ALL TEMPORARY AND/OR PERMANENT AIR-RELEASE AND BLOW-OFF VALVES SHALL BE PER CITY STANDARD AND AS DIRECTED BY THE CITY ENGINEER.
11. CONCRETE THRUST BLOCKS SHALL BE INSTALLED AT ALL TEES, CROSSINGS, BENDS (HORIZONTAL AND VERTICAL), AT SIZE CHANGES AND AT FIRE HYDRANTS PER CITY STANDARD. AWWA C600, SECTION 3.8 UNLESS NOTED OTHERWISE.
12. MECHANICALLY RESTRAINED JOINTS SHALL BE INSTALLED AT VERTICAL BENDS IN ACCORDANCE WITH CITY STANDARDS AND AS APPROVED BY THE CITY ENGINEER.
13. ALL WATER VALVES SHALL BE CLUSTERED, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.

SANITARY SEWER NOTES:

1. INSTALL DETECTABLE METALIZED WARNING TAPE APPROXIMATELY 6"-12" BELOW THE SERVICE IN NON-PAVED AREAS, AND AT THE BOTTOM OF BASEROCK FOR PAVED AREAS. GREEN IMPRINTED WITH "CAUTION- SANITARY SEWER LINE BELOW", CALPICO TYPE 2 OR EQUAL.
2. ALL SEWER WORK SHALL BE IN CONFORMANCE WITH THE CITY/TOWN OR APPROPRIATE SANITARY SEWER DISTRICT.
3. PUBLIC AND PRIVATE SANITARY SEWER MAIN AND SERVICE LINE 4-INCH THROUGH 8-INCH SHALL BE POLYVINYL CHLORIDE (PVC) SDR 26 GREEN SEWER PIPE AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION D3034-16 WITH GLUED JOINTS.

SITE FENCING NOTES:

1. CONTRACTOR SHALL PROVIDE A CONSTRUCTION FENCE AROUND THE ENTIRE AREA OF DEMOLITION AND CONSTRUCTION, INCLUDING ALL STAGING, STORAGE, CONSTRUCTION OFFICE AND LAYDOWN AREAS.
2. FENCE LOCATION MAY BE ADJUSTED FROM TIME TO TIME AS CONSTRUCTION PROCEEDS TO EXCLUDE SOME AREAS WHERE CONSTRUCTION WORK IS NOT BEING DONE AND THE AREA IS NOT OBJECTIONABLE IN VISUAL APPEARANCE, AT THE DISCRETION AND APPROVAL OF THE DISTRICT STAFF.
3. CONSTRUCTION FENCE SHALL BE A MINIMUM OF A 6' HIGH GALVANIZED CHAIN LINK FENCE WITH GREEN WINDSCREEN FABRIC ON THE OUTSIDE OF THE FENCE.
4. CONTRACTOR SHALL REPLACE THE GREEN FABRIC AT LEAST ONCE A YEAR OR AT SUCH A TIME AS IT BECOMES TATTERED AND UNSIGHTLY DUE TO WIND OR CONSTRUCTION ACTIVITIES.

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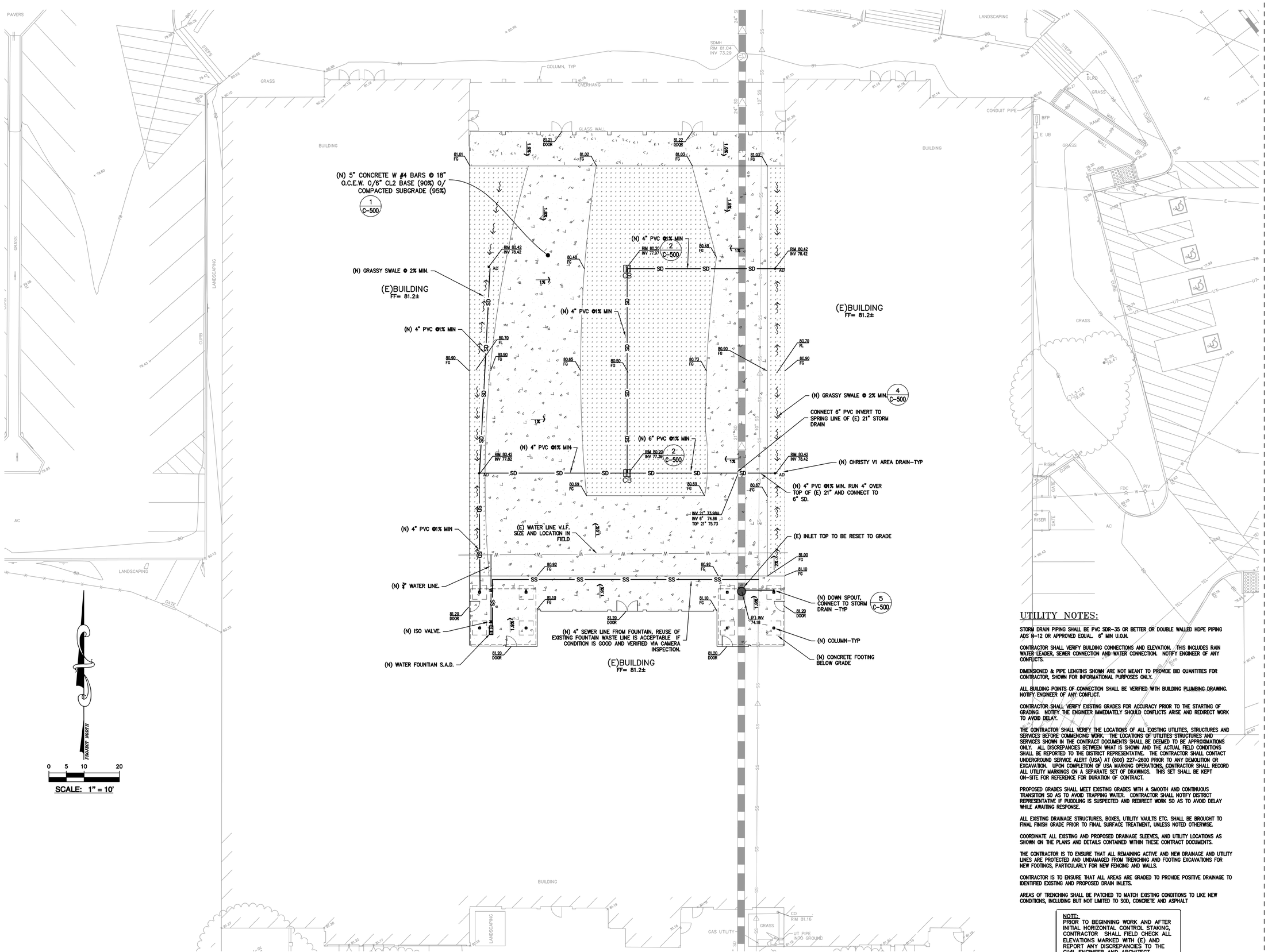
2017-03489-000

GRADING SPECIFICATIONS

C-002



UTILITY NOTES:

STORM DRAIN PIPING SHALL BE PVC SDR-35 OR BETTER OR DOUBLE WALLED HDPE PIPING ADS N-12 OR APPROVED EQUAL. 6" MIN U.O.N.

CONTRACTOR SHALL VERIFY BUILDING CONNECTIONS AND ELEVATION. THIS INCLUDES RAIN WATER LEADER, SEWER CONNECTION AND WATER CONNECTION. NOTIFY ENGINEER OF ANY CONFLICTS.

DIMENSIONED & PIPE LENGTHS SHOWN ARE NOT MEANT TO PROVIDE BID QUANTITIES FOR CONTRACTOR, SHOWN FOR INFORMATIONAL PURPOSES ONLY.

ALL BUILDING POINTS OF CONNECTION SHALL BE VERIFIED WITH BUILDING PLUMBING DRAWING. NOTIFY ENGINEER OF ANY CONFLICT.

CONTRACTOR SHALL VERIFY EXISTING GRADES FOR ACCURACY PRIOR TO THE STARTING OF GRADING. NOTIFY THE ENGINEER IMMEDIATELY SHOULD CONFLICTS ARISE AND REDIRECT WORK TO AVOID DELAY.

THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES AND SERVICES BEFORE COMMENCING WORK. THE LOCATIONS OF UTILITIES STRUCTURES AND SERVICES SHOWN IN THE CONTRACT DOCUMENTS SHALL BE DEEMED TO BE APPROXIMATIONS ONLY. ALL DISCREPANCIES BETWEEN WHAT IS SHOWN AND THE ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DISTRICT REPRESENTATIVE. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 227-2600 PRIOR TO ANY DEMOLITION OR EXCAVATION. UPON COMPLETION OF USA MARKING OPERATIONS, CONTRACTOR SHALL RECORD ALL UTILITY MARKINGS ON A SEPARATE SET OF DRAWINGS. THIS SET SHALL BE KEPT ON-SITE FOR REFERENCE FOR DURATION OF CONTRACT.

PROPOSED GRADES SHALL MEET EXISTING GRADES WITH A SMOOTH AND CONTINUOUS TRANSITION SO AS TO AVOID TRAPPING WATER. CONTRACTOR SHALL NOTIFY DISTRICT REPRESENTATIVE IF PUDDLING IS SUSPECTED AND REDIRECT WORK SO AS TO AVOID DELAY WHILE AWAITING RESPONSE.

ALL EXISTING DRAINAGE STRUCTURES, BOXES, UTILITY VAULTS ETC. SHALL BE BROUGHT TO FINAL FINISH GRADE PRIOR TO FINAL SURFACE TREATMENT, UNLESS NOTED OTHERWISE.

COORDINATE ALL EXISTING AND PROPOSED DRAINAGE SLEEVES, AND UTILITY LOCATIONS AS SHOWN ON THE PLANS AND DETAILS CONTAINED WITHIN THESE CONTRACT DOCUMENTS.

THE CONTRACTOR IS TO ENSURE THAT ALL REMAINING ACTIVE AND NEW DRAINAGE AND UTILITY LINES ARE PROTECTED AND UNDAMAGED FROM TRENCHING AND FOOTING EXCAVATIONS FOR NEW FOOTINGS, PARTICULARLY FOR NEW FENCING AND WALLS.

CONTRACTOR IS TO ENSURE THAT ALL AREAS ARE GRADED TO PROVIDE POSITIVE DRAINAGE TO IDENTIFIED EXISTING AND PROPOSED DRAIN INLETS.

AREAS OF TRENCHING SHALL BE PATCHED TO MATCH EXISTING CONDITIONS TO LIKE NEW CONDITIONS, INCLUDING BUT NOT LIMITED TO SOD, CONCRETE AND ASPHALT

NOTE:
PRIOR TO BEGINNING WORK AND AFTER INITIAL HORIZONTAL CONTROL STAKING, CONTRACTOR SHALL FIELD CHECK ALL ELEVATIONS MARKED WITH (E) AND REPORT ANY DISCREPANCIES TO THE CIVIL ENGINEER AND ARCHITECT.

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REGISTERED PROFESSIONAL ENGINEER WILLIAM C. CLARK No. 65497 Exp. 09-30-19 CIVIL

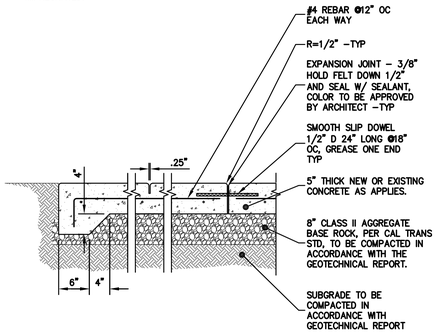
2017-03489-000

GRADING AND DRAINAGE PLAN

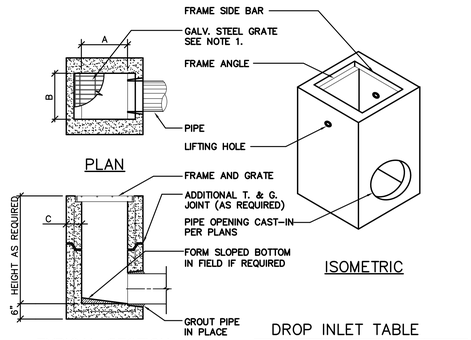
C-101

NOTES:

1. SLOPE ALL CONCRETE TO DRAIN 1% MIN.
2. NATURAL CONCRETE COLOR WITH BROOM FINISH.
3. EASE ALL EDGES R=1/2"
4. FELT SHALL BE NON-ASPHALTIC IMPREGNATED.



1 C-500 **CONCRETE PAVING**
NTS



TYPICAL SECTION

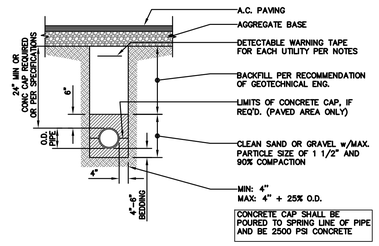
NOTES:

1. ADA COMPLIANT GRATE TO HAVE A 1/2" GAP MAXIMUM IN ANY DIRECTION.
2. FRAMES AND GRATES MAY BE SPECIFIED FOR PEDESTRIAN OR H20 TRAFFIC LOADING. ALL GRATES ARE BICYCLE PROOF. OPTIONAL GRATE LOCKING DEVICE AVAILABLE ON REQUEST SEE DRAWING "LOCK" ON PAGE 1-7. CLOSED- MESH GRATES OR CAST IRON FRAME AND GRATES ARE AVAILABLE ON REQUEST.
3. FOR SURFACE AND DISCHARGE OPTIONS AVAILABLE SEE DRAWING NO. "DI-30" PAGE 1-6 AND "DI-60" PAGE 1-5.
4. FRAMES AND GRATES DETAILS SEE PAGES 1-8, 1-9, AND 1-10.
5. WALL THICKNESSES ON ALL D.I.'S. CAN BE CHANGED UPON REQUEST.
6. 18" WIDE D.I.'S REPLACE THE OLD 16" WIDE BOX BK & 1K.

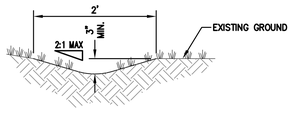
DROP INLET TABLE

MODEL No.	CPC MODEL NAME	A		B		C	
		IN	MM	IN	MM	IN	MM
CP1212	EK	12	300	12	300	4	100
CP1818	CK	18	450	18	450	5	125
CP1824	1K*	18	450	24	600	5	125
CP2424	2K	24	600	24	600	5	125
CP2430	3K	24	600	30	750	5	125
CP3030	5K	30	750	30	750	6	150
CP2436	1L	24	600	36	900	6	150
CP3636	1M	36	900	36	900	6	150
CP2448	3L	24	600	48	1200	6	150
CP3648	3M	36	900	48	1200	6	150
CP4848	1R	48	1200	48	1200	6	150

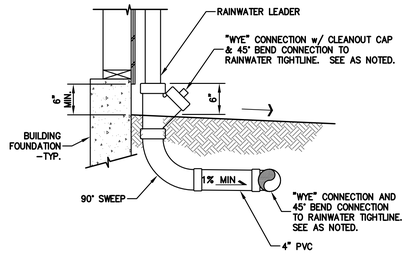
2 C-500 **CENTRAL PRECAST CATCH BASIN DETAIL**
NTS



3 C-500 **PIPELINE BACKFILL**
NTS



4 C-500 **GRASSY SWALE DETAIL**
NTS



5 C-500 **RAIN WATER LEADER TO TIGHTLINE CONNECTION**
NTS

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STATE OF CALIFORNIA

2017-03489-000

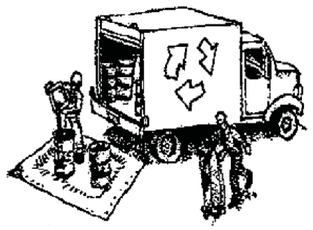
DETAILS

C-500

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

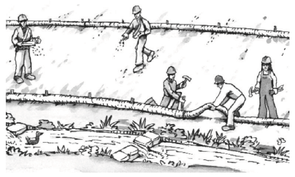
Maintenance and Parking

- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, steam cleaning equipment, etc.

Spill Prevention and Control

- ❑ Keep spill cleanup materials (rags, absorbents, etc.) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthwork & Contaminated Soils



Erosion Control

- ❑ Schedule grading and excavation work for dry weather only.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.

Sediment Control

- ❑ Protect storm drain inlets, gutters, ditches, and drainage courses with appropriate BMPs, such as gravel bags, fiber rolls, berms, etc.
- ❑ Prevent sediment from migrating offsite by installing and maintaining sediment controls, such as fiber rolls, silt fences, or sediment basins.
- ❑ Keep excavated soil on the site where it will not collect into the street.
- ❑ Transfer excavated materials to dump trucks on the site, not in the street.
- ❑ Contaminated Soils
- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - ■ Unusual soil conditions, discoloration, or odor.
  - ■ Abandoned underground tanks.
  - ■ Abandoned wells
  - ■ Buried barrels, debris, or trash.

Paving/Asphalt Work

- ❑ Avoid paving and seal coating in wet weather, or when rain is forecast before fresh pavement will have time to cure.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

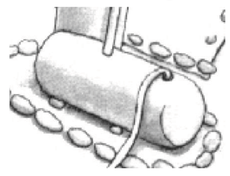
Sawcutting & Asphalt/Concrete Removal

- ❑ Completely cover or barricade storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

Concrete, Grout & Mortar Application

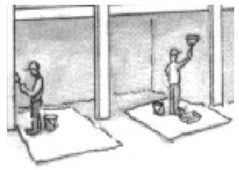
- ❑ Store concrete, grout and mortar under cover, on pallets and away from drainage areas. These materials must never reach a storm drain.
- ❑ Wash out concrete equipment/trucks offsite or in a contained area, so there is no discharge into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ Collect the wash water from washing exposed aggregate concrete and remove it for appropriate disposal offsite.

Dewatering



- ❑ Effectively manage all run-on, all runoff within the site, and all runoff that discharges from the site. Divert run-on water from offsite away from all disturbed areas or otherwise ensure compliance.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known contamination, testing is required prior to reuse or discharge of groundwater. Consult with the Engineer to determine whether testing is required and how to interpret results. Contaminated groundwater must be treated or hauled off-site for proper disposal.

Painting & Paint Removal



Painting cleanup

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or surface waters.
- ❑ For water-based paints, paint out brushes to the extent possible. Rinse to the sanitary sewer once you have gained permission from the local wastewater treatment authority. Never pour paint down a drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of residue and unusable thinner/solvents as hazardous waste.

Paint removal

- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead or tributyltin must be disposed of as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.

Landscape Materials

- ❑ Contain stockpiled landscaping materials by storing them under tarps when they are not actively being used.
- ❑ Stack erodible landscape material on pallets. Cover or store these materials when they are not actively being used or applied.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

Storm drain polluters may be liable for fines of up to $10,000 per day!

SAN RAFAEL CITY SCHOOLS

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Date	Issued For
6/08/18	DSA SUBMITTAL

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2017-03489-000

CONSTRUCTION BEST MANAGEMENT PRACTICES (SWPP)

C-600

General Notes

1. Interpretation of drawings & specifications
   - A) For convenience, specifications have been prepared for this project and are arranged in several sections, but such separation shall not be considered as the limits of the work required by any separate trade. The terms and conditions of such limitations are wholly between the contractor and his subcontractors.
   - B) In general, the working details will indicate dimensions, positions and kind of construction, and the specifications will indicate qualities and methods. Any work indicated on the working details mentioned but not in the specifications, or vice versa, shall be furnished as though fully set forth in both. Work not particularly detailed, marked or specified, shall be the same as similar parts that are detailed, marked or specified. If conflicts occur between drawings and specifications, the most expensive materials or methods will prevail.
   - C) Should an error appear in the working details or specifications or in work done by others affecting this work, the contractor shall notify the architect at once and in writing. If the Contractor proceeds with the work so affected without having given such written notice and without receiving the necessary approval, decision or instruction in writing from the owner, then he shall have no valid claim against the owner, for the cost of so proceeding and shall make good any resulting damage or defect. No verbal approval, decision, or instruction shall be valid or be the basis for any claim against the owner, its officers, employees or agents. The foregoing includes typical errors in the specifications or notational errors in the working details where the interpretation is doubtful or where the error is sufficiently apparent as to place a reasonably prudent contractor on notice that, should he elect to proceed, he is doing so at his own risk.
2. Construction shall conform to all applicable codes and regulations.
3. Shop Drawing Note:
   - A) Shop drawings shall be submitted in the form of one reproducible and two copies of each sheet.
   - B) The purpose of shop drawing submittals by the Contractor is to demonstrate to the Structural Engineer that he understands the design concept by indicating which materials he intends to furnish and install, and by detailing the fabrication and installation methods he intends to use.
   - C) Prior to fabrication, shop drawings shall be submitted for review to the Structural Engineer. Shop drawing submittals shall include, but are not necessarily limited to structural steel, reinforcing steel, glued laminated beams, and pre-fabricated wood roof framing items such as I-joists and trusses.
   - D) Prior to submission the Contractor shall review all submittals for conformance with the contract documents and shall stamp submittals as being "Reviewed for Conformance".
   - E) Shop drawing submittals processed by the Structural Engineer are not change orders.
   - F) Any detail on the shop drawing that deviates from the contract documents shall clearly be marked with the note "This is a change".
   - G) Shop drawings or calculations submitted for review that require resubmittal for re-review shall be billed hourly for such time to the General Contractor. Re-review will not proceed without written approval from the General Contractor for additional engineering review services.
4. Safety Note:
   - A) It is the Contractors responsibility to comply with the pertinent sections, as they apply to this project, of the "Construction Safety Orders" issued by the State of California latest edition, and all OSHA requirements.
   - B) The owner and the Structural Engineer do not accept any responsibility for the Contractor's failure to comply with these requirements.
   - C) The Contractor shall be responsible for adequate design and construction of all forms and shoring required.
5. The Contractor shall notify the Architect and Structural Engineer where a conflict or a discrepancy occurs between the structural drawings and any other portion of the contract documents or existing field conditions. Such notification shall be given in due time so as not to affect the construction schedule. In case of a conflict between structural drawings and specifications, the more restrictive condition shall take precedence unless written approval has been given for the least restrictive. Contractor shall verify all dimensions with architectural and structural drawings prior to commencing any work.
6. Where no specific detail is shown, the construction shall be identical or similar to that indicated for like cases of construction on this project. Should there be any question, contact the Architect and Structural Engineer prior to proceeding.
7. When construction attaches to an existing building, a complete set of drawings of the existing building shall be kept on the job site. Contractor to obtain these drawings from the owner.
8. Contractor shall provide an allowance equal to 2% of the bid for structural steel, misc. iron and reinforcing steel to be used at the discretion of the structural engineer. Unused amount to revert to the owner upon completion of the job.
9. Any substitutions for structural members, hardware, or details shall be reviewed by the Architect and Structural Engineer. Such review will be billed on a time and materials basis to the General Contractor with no guarantee that the substitution will be allowed.
10. Do not scale drawings. Contact the Architect or Structural Engineer for any dimensions not shown.
11. These drawings are not complete until reviewed and accepted by local building officials and signed by the owner and the Structural Engineer.
12. All drawings and written material appearing herein constitutes the original and unpublished work of the Structural Engineer and the same may not be duplicated, used or disclosed without written consent of the Structural Engineer.
13. The structure shown on these drawings is structurally sound only in its completed form. The stability of this structure depends on the diaphragms and the bracing members shown. The Contractor is to provide for the design and construction of shoring for all earth, forms, concrete, steel, wood, and masonry to resist gravity, earth, wind, seismic, and construction loads. Shoring shall remain in place until all diaphragms and lateral resisting elements are in place in their entirety.

Design Criteria

1. Code: 2019 California Building Code
2. Design Live Loads:

Area	Live Load	Remarks
Roof	20 psf	Reducible

3. Earthquake Design Loads:
   - Equivalent Lateral Force Procedure
   - Site Class "D"
   - S_S=1.000 F_a=1.500 S_{DS}=1.000 Seismic Design Category "D"
   - S_1=0.600 F_v=0.900 S_{D1}=0.600 C_S=0.500
   - I_E=1.25, Risk Category III
   - R=2½ (Special Steel Cantilever Columns)
   - Horizontal Structural Irregularities:
     - None
   - Vertical Structural Irregularities:
     - None
   - Seismic Base Shear, V=0.500 W
   - Seismic Base Shear, V=0.650 W (with redundancy factor = 1.3)
4. Wind Design Load:
   - Simplified Procedure — Basic Wind Speed, V = 115 mph, V_{asd} = 89 mph
   - Surface Roughness 'C' — Risk Category III
   - Exposure 'C'
5. Design Snow Loads: N/A

Foundations

1. Allowable soil bearing pressures utilized for design are based on soil class 5 materials in accordance with Table 1806A.2 of the 2016 California Building Code.
2. A licensed Geotechnical Engineer shall observe all footing excavations prior to placement of reinforcing steel and concrete to verify soil bearing meets minimum requirements listed.
3. Foundation depths indicated on plans are for estimating purposes only. Actual depths are to be determined by the Geotechnical Engineer on the jobsite.
4. When structural observation is required, structural engineer shall observe footing reinforcing steel prior to concrete placement. Provide 48 hours notice to structural engineer prior to concrete placement.
5. The contractor shall be solely responsible for all excavation procedures including, but no limited to, lagging, shoring and protection of adjacent property, structures, streets, and utilities in accordance with the local building department.
6. After clearing and before placement of any fill, exposed native soil shaould be scarified, moisture conditioned, and compacted to at least 90% relative compaction.
7. Foundation type: conventional spread footings
   - Spread footing design values:
   - Allowable Bearing Pressures
     - DL+LL — 1500 psf
     - DL+LL+wind or seismic — 2000 psf
   - Lateral Resistance
     - Passive Pressure — 100 pcf
     - Coefficient of friction — N/A
   - Minimum footing dimensions — depth= 18" (below lowest adjacent pad grade); width = 24" spread footings

Concrete

1. Structural concrete shall attain 28 day compressive strength as required in note #22.
2. Concrete mix design shall be prepared by an independent laboratory approved by the Structural Engineer. Selection of concrete mix proportions shall be per CBC Section 1905A.2.
3. Cement shall conform to ASTM C-150 type II.
4. Concrete aggregates shall conform to ASTM C-33. Aggregates for lightweight concrete shall conform to ASTM C-330.
5. Reinforcing steel shall conform to ASTM A615- grade 60 for #4 and larger, and ASTM A615-grade 40 for #3 and smaller, except reinforcing steel to be welded shall conform to ASTM A706.
6. Reinforcing steel shall be fabricated according to "Manual of Standard Practice for Reinforced Concrete Construction".
7. Welded wire fabric shall conform to ASTM A-185.
8. Minimum clear concrete cover for reinforcing shall be as follows unless noted otherwise:

cast against earth	3"
cast in forms and exposed to earth or weather	
#6 & larger	2"
#5 & smaller	1½"
not exposed to earth or weather	
slabs, walls, joists	
#11 & smaller	¾"
beams, columns, girders	1½"
tilt-up panels cast on slab exposed to weather	
#8 & smaller	1"
#9 & larger	2"

9. All reinforcement shall be continuous without splices where possible.
10. Remove all debris from forms before casting any concrete.
11. Reinforcing, dowels, bolts, anchors, sleeves, etc., to be embedded in concrete shall be tied securely in position before placing concrete.
12. Maximum free fall of concrete shall be 6'-0".
13. Consolidate concrete placed in forms by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with the recommended practices of ACI 309 to suit the type of concrete and project conditions.
14. No wood spreaders allowed. No wood stakes allowed in areas to be concreted.
15. Place non-shrink grout under base plates, sill plates, etc as indicated on the drawings. Non-shrink grout shall be "Masterflow 928 Grout by Master Builders Technologies or approved equal with a minimum f'c of 7500 psi @ 28 days.
16. Concrete strengths: (max slump=4")

Class	Item	f'c @ 28 days	Max Aggregate Size	Weight	Max W/C Ratio
A.	Footings	3000 psi	1½"	145	0.60
B.	Exterior paving	2500 psi	1"	145	0.60

Structural Steel

1. Fabrication, erection and materials shall conform with the AISC Specification for the Design, Fabrication, and Erection of Structural Steel for Building, and California Building Code, latest edition.
2. Structural steel W and WT shapes shall conform with ASTM A992 steel. Structural steel angles, channels, miscellaneous channels, and plates shall conform with ASTM A36 steel
3. Steel pipe shall conform to ASTM A-53, Types E or S, grade B.
4. Structural steel tubing shall conform to ASTM A-500, grade B.
5. Welding shall be done by the electric arc process in accordance with American Welding Society standards, using only certified welders. All groove welds shall have complete penetration unless noted otherwise. All exposed welds shall be ground. All welding to be done using E70xx electrodes. In addition, welding of ASTM A572 grade 50 steel and ASTM A992 Steel shall be done with electrodes capable of depositing weld metal with a maximum diffusible hydrogen content of 16ml/100g (H16).
6. All welds used in members of the SLRS shall be made with a filler metal that can produce welds that have a minimum Charpy V-Notch toughness of 20 ft-lb at 0° F as determined by the appropriate AWS A5 classification test method or manufacturer certification.
7. Welds designated as demand critical welds (D-C weld) shall be made with a filler metal that can produce welds that have a minimum Charpy V-Notch toughness of 20 ft-lb at -20° F as determined by the appropriate AWS classification test method or manufacturer certification, and 40 ft-lb at 70° F as determined by Appendix X or other approved method.
8. All structural steel shall be erected plumb and true to line. Temporary bracing shall be installed and shall be left in place until other means are provided to adequately brace the structure.
9. Place non-shrink grout under all base plates before adding vertical load. For non-shrink grout see concrete Note #15.
10. Bolted connections shall consist of unfinished bolts conforming to ASTM A-307 unless noted otherwise. Where high strength bolts are indicated, bolts conforming to ASTM A325-N shall be provided (provide A325-SC bolts where indicated.)
11. Anchor bolts shall be ASTM F1554 grade 36 u.n.o. in drawings.
12. Holes for unfinished bolts shall be of the same nominal diameter of the bolt plus 1/16". Use standard AISC gage and pitch for bolts except as noted otherwise.
13. Holes for anchor bolts embedded in concrete shall be of the same nominal bolt diameter plus 3/16" unless noted otherwise.
14. All structural steel shall receive minimum of one shop coat of red primer paint. Do not paint areas to be field welded, to receive friction type high strength bolts, or to be embedded in concrete. Provide additional painting as noted in the specifications.
15. Structural steel below grade shall have 3" minimum of concrete cover.

Test and Inspections

1. Tests and Inspections shall be provided as required on "DSA-103 Statement of Special Inspection & Testing" and must be in accordance with the 2016 CBC.
2. All tests and inspections shall be performed by an independent inspection agency, which is approved by DSA. Jobsite visits by the Structural Engineer do not constitute inspections and are not a substitute for inspection.
3. It is the contractors sole responsibility to see that these tests and inspections are performed.
4. Items requiring tests and/or special inspection are identified below. The list below is intended to provide a quick reference as to what tests and/or inspections are required. For the complete listing of tests and inspections required see "DSA-103 Statement of Special Inspection & Testing". Required items are noted as "■".

Tests:

- ☐ A. Fill compaction
- ■ B. Concrete
- ■ C. Sampling and Testing of Reinforcing Steel
- ■ D. Mill Certificates for Reinforcing Steel
- ☐ E. Masonry Cores
- ☐ F. Concrete Block Units
- ☐ G. Grout & Mortar
- ☐ H. All complete penetration groove welds by ultrasonic testing or radiography
- ☐ I. Sampling & Testing of Structural Steel
- ■ J. Mill Certificates for Structural Steel
- ☐ K. Expansion and Epoxy anchors

Inspections:

- ■ A. Footing excavation (by Geotech)
- ☐ B. Pile / pier installation
- ■ C. Reinforcement placement
- ■ D. Concrete placement
- ☐ E. Placing & stressing tendons
- ☐ F. Rebar couplers
- ☐ G. Masonry Placement & grouting
- ■ H. Shop welding
- ■ I. Field welding
- ☐ J. High strength bolting
- ☐ K. Expansion and Epoxy anchors
- ☐ L. Shear stud installation
- ☐ M. Spray applied fireproofing

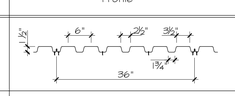
Metal Deck

1. Provide metal decking of type and gauge as shown on plans. Decking shall have the following minimum section properties (n.c. For dimensioned cross sections of deck types see S1.1). Deck section properties shown are for Verco Steel Decks.

Location	Type	Gauge	I (in⁴)	S+ (in³)	S- (in³)
Roof	PLB-36	18	0.302	0.314	0.331

2. Metal floor deck shall be composite type, conforming to ASTM A 653 SS or ASTM A1063 SS grade 50 minimum and shall have a galvanized, G-60 grade coating.
3. Metal roof deck shall conform to ASTM A 653 SS or ASTM A1063 SS Grade 50 minimum or equal and shall have a galvanized, G-60 grade coating.
4. Prior to fabrication, the Contractor shall submit shop drawings to the Architect and Structural Engineer for review. Shop drawings should indicate deck gauge, size, and layout as well as closure conditions, welds to supports and side lap details.
5. Connection and welding of decking to structural supports and at deck side seams shall be as specified in the structural drawings.
6. No conduit or non-structural items may be placed in concrete fill over metal deck.
7. When placing concrete over metal deck, concrete should first be placed over beams and girders rather than at mid-span of the metal deck and concrete should not be added beyond the finished depth of the slab.
8. All metal deck receiving concrete fill shall have factory-punched vent tabs to provide 1% ventilation typical.

Metal Deck Sections

Deck Type	Profile	No. attachms per sheet
PLB-36 roof deck		4-#12 sms

1 SCHEDULE — No Scale

Abbreviations

addl.....Additional
alt.....Alternate
AISC.....American Institute of Steel Construction
APA.....American Plywood Association
ASTM.....American Society for Testing and Materials
AWS.....American Welding Society
AB.....Anchor bolt
arch.....Architect/Architectural
bm.....Beam
brg.....Bearing
btwn.....Between
blkg.....Blocking
b.s.....Both sides
bott.....Bottom
bn.....Boundary nailing
clg.....Ceiling
c-c.....Center to center
℄.....Center line
clr.....Clear
col.....Column
CP.....Complete Penetration
conc.....Concrete
cmu.....Concrete masonry unit
conn.....Connection
C-J.....Construction Joint
cont.....Continuous
csk.....Contersink
CTJ.....Control Joint
D-C Weld.....Demand Critical Weld
DL.....Dead Load
det.....Detail
diag.....Diagonal
dia.....Diameter
do.....Ditto
DF.....Douglas Fir
dbl.....Double
dn.....Down
dwg.....Drawings
ea.....Each
e.f.....Each Face
embed.....Embedment
e.n.....Edge Nailing
ew.....Each Way
elev.....Elevation
eq.....Equal
equip.....Equipment
(e).....Existing
E.J.....Expansion Joint
FC.....Face of concrete
FB.....Face of block
FS.....Face of Stud
fin.....Finish
F.F.....Finish floor
flr.....Floor
ftg.....Footing
fnd.....Foundation
frmg.....Framing
galv.....Galvanized
ga.....Gauge
glb.....Glued-laminated beam
hgr.....Hanger
hdr.....Header
ht.....Height
HSS.....Hollow Steel Section
hk.....Hook
horiz.....Horizontal
int.....Interior
inv.....Inverted
jst.....Joist
lt. wt.....Light weight
LL.....Live Load
LLH.....Long leg horizontal
LLV.....Long leg vertical
LVL.....Laminated veneer lumber
mfr.....Manufacturer
max.....Maximum
mech.....Mechanical
MI.....Malleable iron
min.....Minimum
misc.....Miscellaneous
mtl.....Metal
(n).....New
nts.....Not to scale
oc.....On center
OWJ.....Open web joist
opng.....Opening
opp.....Opposite
o.h.....Opposite Hand
PP.....Partial penetration
pc.....piece
PL.....Plate
pcf.....Pounds per cubic foot
psf.....Pounds per square foot
psi.....Pounds per square inch
PAF.....Powder actuated fasteners
p.t.....Pressure treated
r. rad.....Radius
RDWD.....Redwood
reinf.....Reinforcing
reqd.....Required
rf.....Roof
r.o.....Rough opening
sched.....Schedule
s.a.d.....See architectural drawings
s.m.d.....See mechanical drawings
s.t.s.....Self tapping screw
shtg.....Sheathing
sht.....Sheet
SFRS.....Seismic Force Resisting System
sms.....Sheet metal screw
slm.....Similar
s.o.g.....Slab on grade
stagg.....Staggered
std.....Standard
stl.....Steel
stfnr.....Stiffener
struct.....Structural
symm.....Symmetrical
t.n.....Toe nail
t&b.....Top & bottom
t.o.c.....Top of concrete
t.o.f.....Top of framing
t.o.p.....Top of plate
t.o.s.....Top of Steel
t.o.w.....Top of Wall
t&g.....Tongue & Groove
TS.....Tube Steel
typ.....Typical
u.n.o.....Unless noted otherwise
vert.....Vertical
v.i.f.....Verify in field
w/.....With
w/in.....Within
w/o.....Without
wp.....Work point
w.h.s.....Welded headed studs
WWF.....Welded wire fabric
WCLIB.....West Coast Lumber Inspection Bureau

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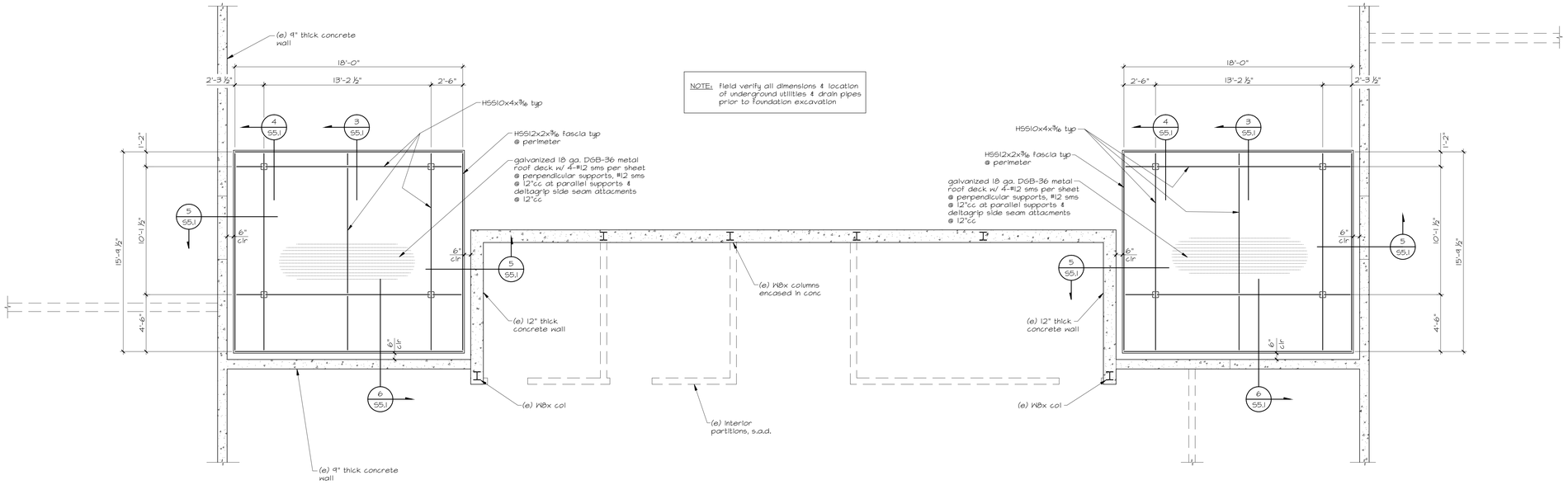
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY L. FRY
No. 4310
Exp. 12/31/19
STRUCTURAL
STATE OF CALIFORNIA

2017-03489-000

GENERAL NOTES

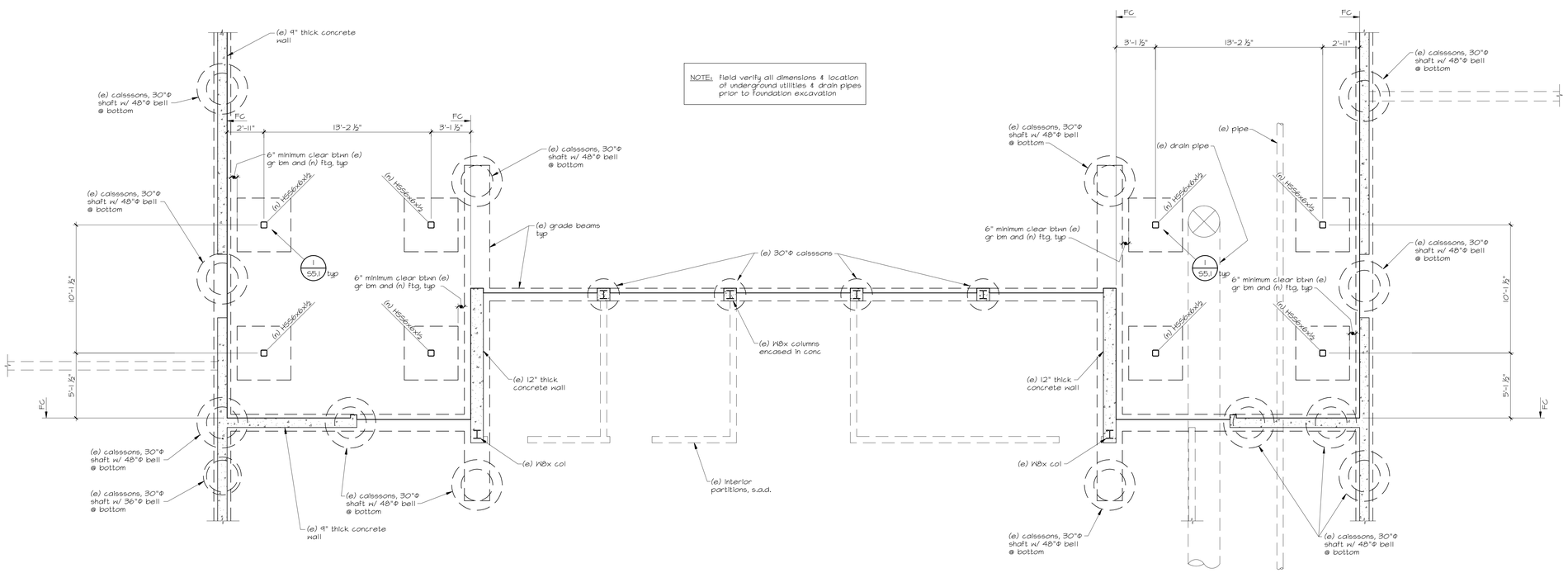
S1.1



B CANOPY ROOF FRAMING PLAN

¼"=1'-0"

North



A PARTIAL FOUNDATION PLAN

¼"=1'-0"

SAN RAFAEL CITY SCHOOLS
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT

APP#: 01-117586

AC FLS SS

DATE

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA

(415) 981-2345

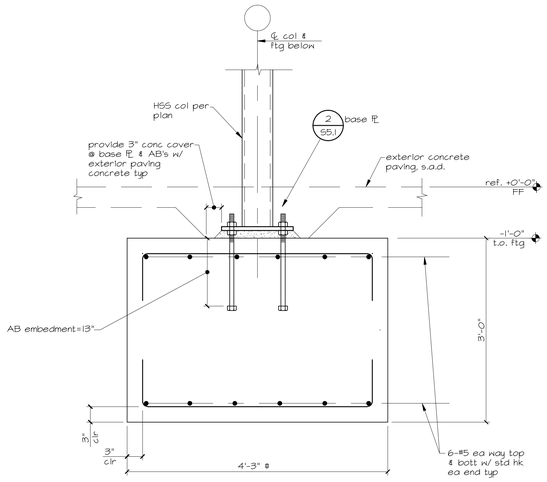
WWW.HED.DESIGN

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY L. JIRE
No. 4310
Exp. 12/31/19
STRUCTURAL
STATE OF CALIFORNIA

2017-03489-000

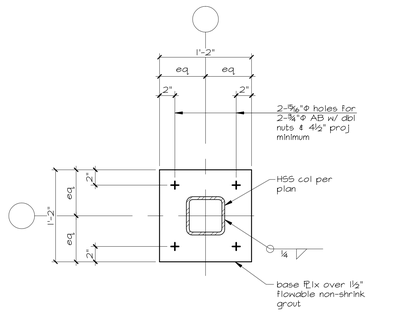
FOUNDATION PLAN & ROOF FRAMING PLAN

S2.1



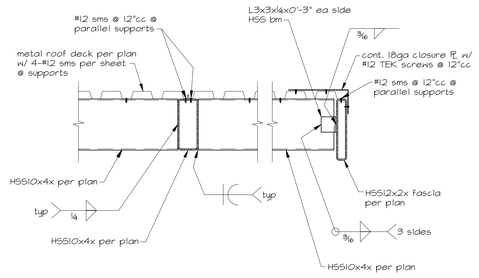
1 SPREAD FOOTING

1"=1'-0"



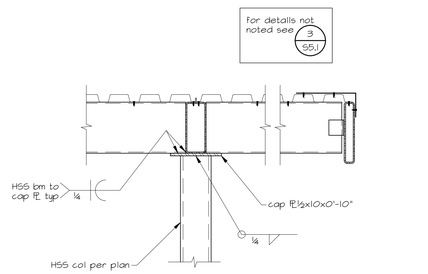
2 DETAIL

1½"=1'-0"



3 OVERHANG/FASCIA DETAIL

1"=1'-0"



4 HSS COLUMN/BEAM CONN

1"=1'-0"

5 OVERHANG/FASCIA DETAIL

1"=1'-0"

6 OVERHANG/FASCIA DETAIL

1"=1'-0"

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STATE OF CALIFORNIA

2017-03489-000

DETAILS

S5.1

ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED IN THIS PROJECT

A.B./ANCHOR BOLT
ABV./ABOVE
A.C./ASPHALTIC CONCRETE
A.C.T./ACOUSTICAL CEILING TILE
A/C/AIR CONDITIONING
ACOUS./ACOUSTICAL
A.D./AREA DRAIN
ADMIN./ADMINISTRATION
ADJ./ADJUSTABLE
A.F.F./ABOVE FINISHED FLOOR
AGGR./AGGREGRATE
AL./ALUMINUM
ALT./ALTERNATE
A.P./ACCESS PANEL
APP/APPLICATION
APPROX./APPROXIMATE
ARCH./ARCHITECTURAL
ASPH./ASPHALT
ATTEN./ATTENUATING

BD./BOARD
BET./BETWEEN
B.F./BRACED FRAME
BLDG./BUILDING
BLK./BLOCKING
BM./BEAM
BOT./BOTTOM

CAB./CABINET
C/C/CENTER TO CENTER
CEM./CEMENT
CER./CERAMIC
C.F./CUBIC FEET
CH./CHANNEL
C.I./CAST IRON
C.J./CONTROL JOINT
C.L./CENTERLINE
CLG./CEILING
CLKG./CAULKING
CLO./CLOSET
CLR./CLEAR
C.M.U./CONCRETE MASONRY UNIT
COL./COLUMN
COMP./COMPUTER
CONC./CONCRETE
CONF./CONFERENCE
CONT./CONTINUOUS
CONTR./CONTRACTOR
CONST./CONSTRUCTION
CORR./CORRIDOR
CPT./CARPET
C.R./COLD-ROLLED
CSMT./CASEMENT
C.T./CERAMIC TILE
CTR./CENTER
CTSK./COUNTERSUNK
C.Y./CUBIC YARDS

D./DRYER
DBL./DOUBLE
DECK./DECKING
DEG./DEGREE
DEMO./DEMOLITION
DEPT./DEPARTMENT
DET./DETAIL
D.F./DRINKING FOUNTAIN
DIA./DIAMETER
DIM./DIMENSION
DIR./DIRECTION
DIST./DISTRIBUTION
DIV./DIVISION
DN./DOWN
DR./DOOR
D.S./DOWNSPOUT
D.S.A./ DIVISION OF STATE ARCHITECT
D.S.P./DRY STAND PIPE
DWG./DRAWING

E./EAST
(E)/EXISTING
EA./EACH
E.J./EXPANSION JOINT
EL./ELEVATION
ELAS./ELASTOMERIC
ELEC./ELECTRICAL
ELEV./ELEVATOR
EMER./EMERGENCY
ENCL./ENCLOSURE
ENGR./ENGINEER
EQ./EQUAL
EQUIP./EQUIPMENT
E.S./EACH SIDE
EXP./EXPANSION
EXH./EXHAUST
EXIST./EXISTING
EXT./EXTERIOR
E.W./EACH WAY

F./FREEZER
F.A./FIRE ALARM
F.A.F./FORCED AIR FURNACE
F.D./FLOOR DRAIN
FND./FOUNDATION
F.E./FIRE EXTINGUISHER
F.E.C./FIRE EXTINGUISHER & CABINET
FED./FEDERAL
F.V./FIELD VERIFY
F.F./FINISH FLOOR
F.H.C./FIRE HOSE CABINET
FIN./FINISH
FIX./FIXTURE
F.L./FLOW LINE
FLR./FLOOR
FLUOR./FLUORESCENT
F.O./FACE OF
F.O.C./FACE OF CONCRETE
F.O.F./FACE OF FINISH
F.O.M./FACE OF MASONRY
F.O.S./FACE OF STUD
F.O.W./FACE OF WALL
FPRF./FIREPROOF(ING)
FRMG/FRAMING
F.R.T./FIRE RETARDANT TREATED
F.R.P./FIBERGLASS REINFORCED POLYESTER
F.S./FLOOR SINK
F.S.E./FOOD SERVICE EQIPMENT
FT./FOOT OR FEET
FTG./FOOTING
FURR./FURRING
FUT./FUTURE

GA./GAUGE
GALV./GALVANIZED
G.L.B./GLUE- LAMINATED (WOOD) BEAM
GL./GLASS
GND./GROUND
G.R.G./GLASS REINFORCED GYPSUM
G.S.M./GALVANIZED SHEET METAL
GYP./GYPSUM
G.W.B./GYPSUM WALL BOARD

H.B./HOSE BIBB
H.C./HOLLOW CORE HDWR./HARDWARE
HDWD./HARDWOOD
HT./HEIGHT
H.M./HOLLOW METAL
HORIZ./HORIZONTAL
H.P./HIGH POINT
HVAC/HEATING, VENTILATING, AIR CONDITIONING

I.D./INSIDE DIAMETER
IN./INCH
INCAND./INCANDESCENT
INCR./INCREMENT
INFO./INFORMATION
INSUL./INSULATION
INT./INTERIOR

JAN./JANITOR
JST./JOIST
JT./JOINT

KIT./KITCHEN
K.P./KICK PL

LAB./LABORATORY
LAM./LAMINATE
LAV./LAVATORY
LB./POUND
L.F./LINEAR FEET
L.H./LEFT HAND
LIN./LINEAR
LKR./LOCKER
L.L.H./LONG LEG HORIZONTAL
L.P./LOW POINT
LT./LIGHT
LVR./LOUVER

MACH./MACHINE
MAINT./MAINTENANCE
MATL./MATERIAL
MAS./MASONRY
MAX./MAXIMUM
M.B./MARKER BOARD or MACHINE BOLT
M.C./MEDICINE CABINET
MECH./MECHANICAL
MEMB./MEMBRANE
MET./METAL
MFR./MANUFACTURER
MIN./MINIMUM
MIR./MIRROR
MISC./MISCELLANEOUS
MK./MARK
M.O./MASONRY OPENING
MTD./MOUNTED
MTL./METAL
MUL./MULLION

N./NORTH
(N)/NEW
N/A/NOT APPLICABLE
N.E./NORTHEAST
N.I.C./NOT IN CONTRACT
NO./NUMBER
NOM./NOMINAL
N.T.S./NOT TO SCALE
N.W./NORTHWEST

OBS./OBSCURE
O.C./ON CENTER
O.D./OUTSIDE DIAMETER or DIMENSION
O.F.C.I./OWNER FURNISHED, CONTRACTOR INSTALLED
O.F.D./OVERFLOW DRAIN
O.F.S./OVERFLOW SCUPPER
O.H./OVER HEAD
OPNG./OPENING
OPP. HD./ OPPOSITE HAND
OZ./OUNCE

P.A./PLANTING AREA
P.B./PANIC BAR
P.C.P./PRECAST CONCRETE PANEL
PERIM./PERIMETER
PL./PLATE
PL. G./PLATE GLASS
P.LAM./PLASTIC LAMINATE
PLAS./PLASTER
PLBG./PLUMBING
PLYWD./PLYWOOD
PNL./PANEL
PR./PAIR
PREP./PREPARATION
P.S.F./POUNDS PER SQUARE FOOT
P.S.I./POUNDS PER SQUARE INCH
P.T./PRESSURE TREATED
PT./POINT
P.T.D./PAPER TOWEL DISPENSER
PTN./PARTITION
PVC/POLYVINYL CHLORIDE
PVMT./PAVEMENT

R./RISER OR REFRIGERATOR
(R)/REMOVE
R.A./RETURN AIR
RAD./RADIUS
R.B./RUBBER BASE
R.C.P./REFLECTED CEILING PLAN
R.D./ROOF DRAIN
REF./REFERENCE
REFR./REFRIGERATION
REINF./REINFORCED
REQD./REQUIRED
REV./REVISION OR REVISED
RESIL./RESILIENT
R.H./RIGHT HAND
RM./ROOM
R.O./ROUGH OPENING
RWD./REDWOOD
R.W.L./RAINWATER LEADER

S./SOUTH
S.A./SUPPLY AIR
S.B./SCOREBOARD
S.C./SOLID CORE
S.C.D./SEE CIVIL DRAWINGS
SCHED./SCHEDULE
S.D./STORM DRAIN
S.D.S./SEE DOOR SCHEDULE
S.E./SOUTHEAST
S.E.D./SEE ELECTRICAL DRAWINGS
SECT./SECTION
S.F./SQUARE FOOT (FEET)
S.F.S./SEE (ROOM) FINISH SCHEDULE
S.G.S./SEE GLAZING SCHEDULE
SHT./SHEET
SHTG./SHEATHING
SIM./SIMILAR
S.L.D./SEE LANDSCAPE DRAWINGS
S.M./SHEET METAL
SL /SLOPE
SMACNA /SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
S.M.D./SEE MECHANICAL DRAWINGS
S.M.S/SHEET METAL SCREW
S.N.D./SANITARY NAPKIN DISPENSER
S.N.R./SANITARY NAPKIN RECEPTACLE
S.O.G./SLAB ON GRADE
S.P.D./SEE PLUMBING DRAWINGS
SPEC./SPECIFICATION
SPR/SPRINKLERED
S.P.S./SEE PARTITION SCHEDULE
SQ./SQUARE
S.S.D./SEE STRUCTURAL DRAWINGS
STD./STANDARD
STL./STEEL
STRL./STRUCTURAL
S4S/SURFACE FOUR SIDES
S2S/SURFACE TWO SIDES
S.S./STAINLESS STEEL
SVC/SERVICE
STOR /STORAGE
SUSP./SUSPENDED
S.W./SOUTHWEST
S.W.S./SEE WINDOW SCHEDULE
SYM./SYMMETRICAL

T./TREAD
T.B./TACKBOARD
TECH./TECHNOLOGY
TEL/E./TELEPHONE
TEMP./TEMPERED OR TEMPERATURE
TER./TERRAZZO
T.& G/TONGUE & GROOVE
THK./THICK
THRES./THRESHOLD
T.O./TOP OF
T.O.C./TOP OF CURB or CONCRETE
T.O.D./TOP OF DECKING
T.O.M./TOP OF MASONRY
T.O.P./TOP OF PAVEMENT or PARAPET
T.O.S./TOP OF STEEL
T.O.W/TOP OF WALL
T.S./TUBULAR STEEL
T.S.C.D./TOILET SEAT COVER DISPENSER
T.T.D./TOILET TISSUE DISPENSER
TV/TELEVISION
TYP./TYPICAL

U.B.C./UNIFORM BUILDING CODE
U.G./UNDERGROUND
U.L./UNDERWRITERS LABORATORY
UNF./UNFINISHED
U.O.N./UNLESS OTHERWISE NOTED
UR./URINAL

V.C.T./VINYL COMPOSITION TILE
VERT./VERTICAL
VEST./VESTIBULE
V.G.D.F./VERTICAL GRAIN DOUGLAS FIR
V.I.F./VERIFY IN FIELD
VOL./VOLUME
V.T.R./VENT THRU ROOF (S..P.D.
V.W.C./VINYL WALL COVERING

W./WEST OR WASHER
W/ /WITH
W.C./WATER CLOSET
WD./WOOD
WDW./WINDOW
W.F./WIDE FLANGE
WGL/WIRE GLASS
W.H./WATER HEATER
W.I./WOODWORK INSTITUTE
W.O./WHERE OCCURS
W/O/WITHOUT
W.P./WORKING POINT
WSCT./WAINSCOT
W.S.P./WET STANDPIPE
WT./WEIGHT
W.W.F./WELDED WIRE FABRIC

& /AND
@ /AT
d /PENNY
/POUND OR NUMBER

SYMBOL LEGEND

PROPERTY LINE

DF DRINKING FOUNTAIN

SR STAFF RESTROOM

BR BOYS RESTROOM

GR GIRLS RESTROOM

G101 OPENING (TAG)

E05B DOOR TAG

RESTROOM E01-R1 ROOM NAME & NUMBER (TAG)

ACCESSIBLE PATH OF TRAVEL

1 A102 DETAIL NUMBER

SHEET NUMBER WHERE SECTION, DETAIL, PLAN RESIDES

SR
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS
Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

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417 Montgomery Street
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San Francisco, CA
94104 USA

(415) 981-2345

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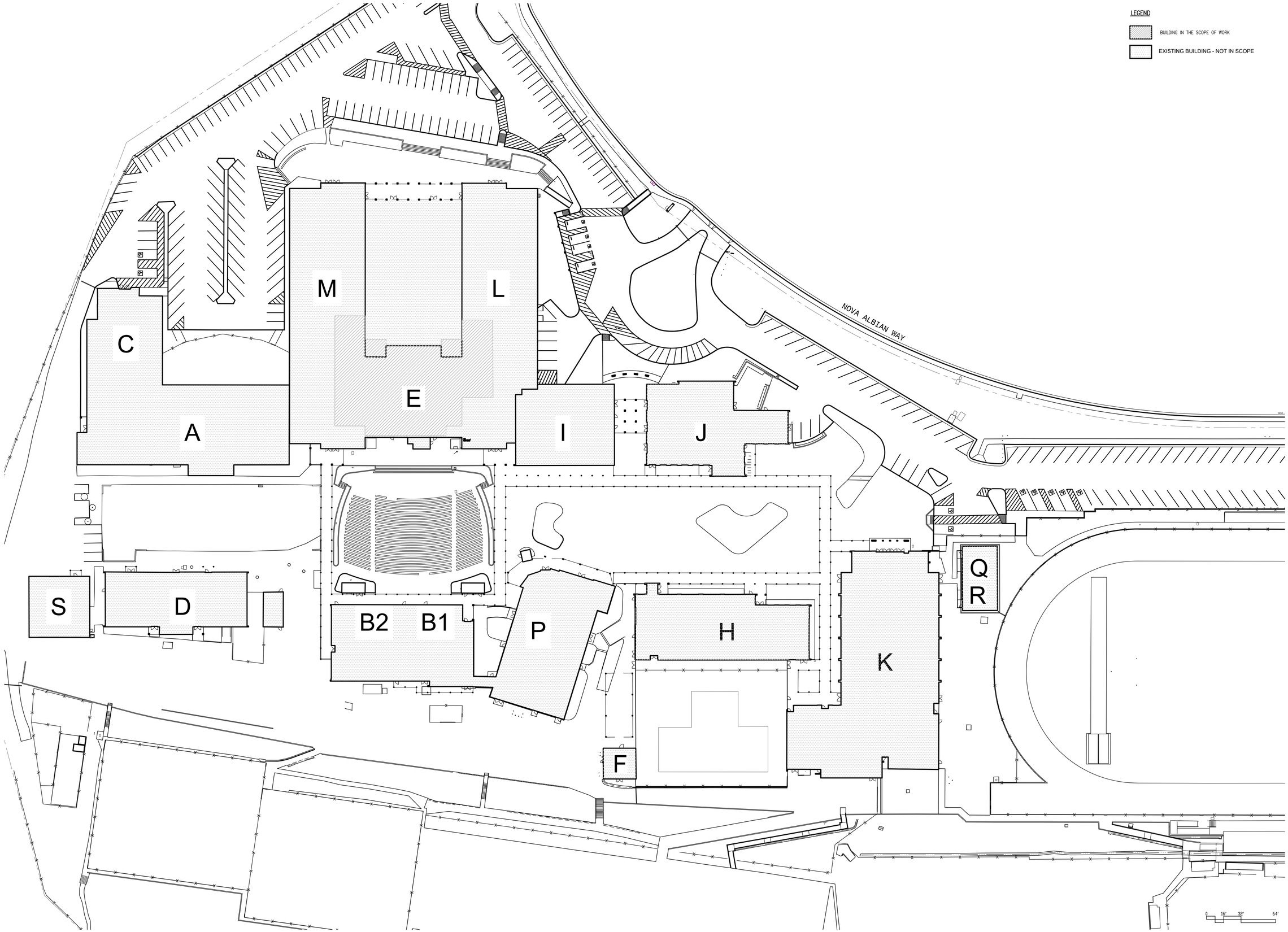
Abbreviations &
Symbol Legend

A-001



N

ARCHITECTURAL SITE PLAN

SR
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

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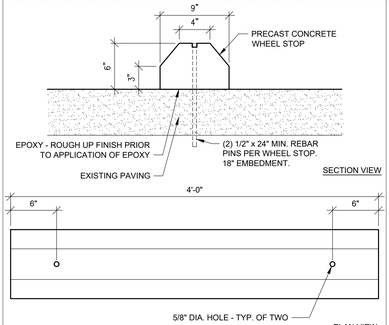
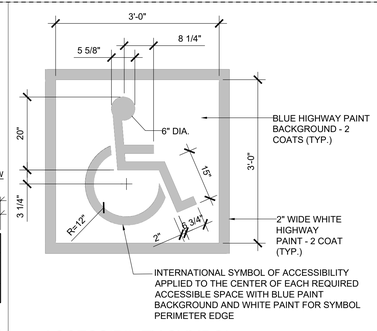
Architectural
Site Plan

AS-001



3 PARKING BUMPER
1-1/2" = 1'-0"



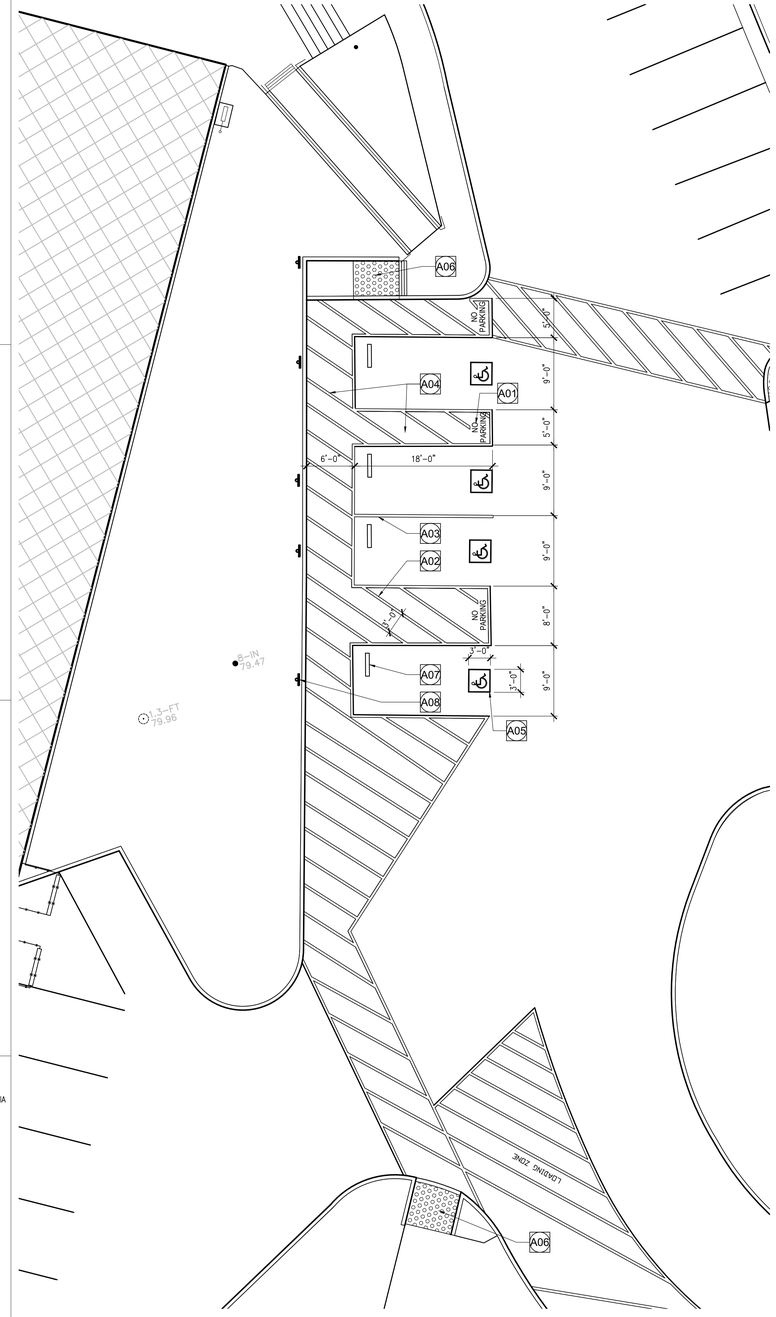
2 ACCESSIBILITY SYMBOL
1" = 1'-0"

LEGEND

- EXISTING PROPERTY LINE
- BUILDING IN THE SCOPE OF WORK
- EXISTING BUILDING – NOT IN SCOPE

GENERAL NOTES

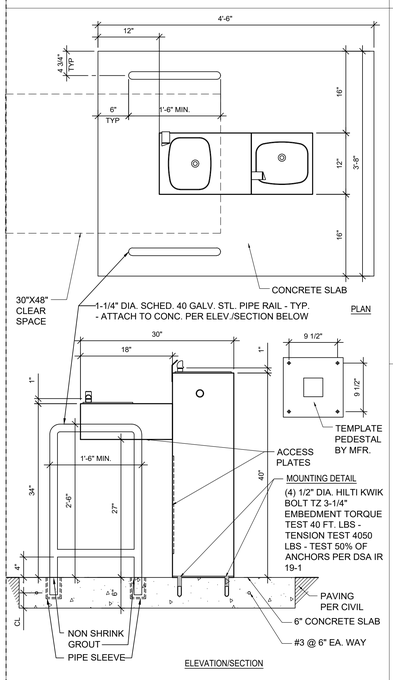
1. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. REMOVE (E) STRIPING BY WET BLASTING METHOD.
3. EXISTING ACCESSIBLE PARKING PER APP. NO. 01-106489



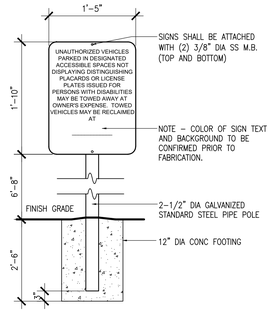
1 ENLARGED ACCESSIBLE PARKING PLAN
1/4" = 1'-0"

KEYNOTES

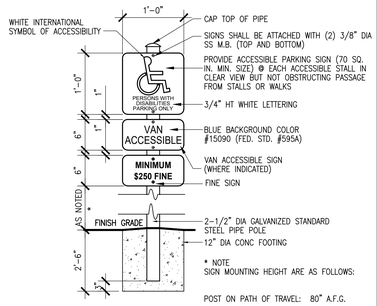
A01 12" HIGH LETTERS "NO PARKING" PAINTED WHITE
A02 4" WIDE WHITE STRIPING
A03 4" WIDE BLUE STRIPING, TYP. AT OUTLINE OF ACCESSIBLE PARKING STALLS
A04 (E) 2% MAX SLOPE IN ALL DIRECTIONS
A05 ACCESSIBILITY SYMBOL PER DETAIL -/-
A06 (E) TRUNCATED DOMES TO REMAIN, PROTECT
A07 PARKING BUMPER PER DETAIL -/-
A08 ACCESSIBLE VAN PARKING SIGN PER DETAIL -/-



14 HI-LO DRINKING FOUNTAIN
1" = 1'-0"



5 (E) TOW-AWAY SIGN
1" = 1'-0"



4 (E) ACCESSIBLE PARKING SIGN
1" = 1'-0"

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Enlarged Site Plan and Details

AS-101

DEMOLITION NOTES

THESE NOTES APPLY TO THE ENTIRE AREA OF SITE DEMOLITION. THE PLANS ARE A DIAGRAMMATIC INDICATION OF THE GENERAL AREAS IN WHICH DEMOLITION MUST TAKE PLACE TO INSTALL NEW IMPROVEMENTS. THE CONTRACTOR WILL PROVIDE COMPLETE DEMOLITION AND REMOVAL WHETHER SPECIFICALLY SHOWN, OR NOTED ON THE PLANS OR SPECIFICATIONS. THE CONTRACTOR WILL FIELD VERIFY ALL QUANTITIES AND LOCATIONS OF IMPROVEMENTS IN THIS AREA :

1. CONCRETE PAVING, CURBS, WALKS, ETC. TO BE DEMOLISHED: SAWCUT AND REMOVE TO THE NEAREST CONTROL OR EXPANSION JOINT U.N.O REMOVE SUBGRADE AS REQUIRED FOR NEW IMPROVEMENTS.

2. DISCARDED/REMOVED PAVING SHALL BE DISPOSED OF OFFSITE AND NOT REUSED (I.E., BASE FILL MATERIAL).

3. ASSOCIATED EXISTING FILLS EXTENDING INTO PLANNED PAVEMENT AND FLATWORK MAY BE LEFT IN PLACE PROVIDED THAT THE UPPER 18" OF FILL BELOW PAVEMENT SUBGRADE IS RE-WORKED AND COMPACTED TO THE REQUIRED VALUE.

4. TREES AND SHRUBS DESIGNATED FOR REMOVAL SHALL HAVE THE ROOT BALLS AND ANY ROOTS GREATER THAN 3" DIAMETER REMOVED COMPLETELY. MATURE TREES ARE ESTIMATED TO HAVE ROOT BALLS EXTENDING TO DEPTHS OF 2 TO 4 FEET, DEPENDING ON THE TREE SIZE. SIGNIFICANT ROOT ZONES ARE ANTICIPATED TO EXTEND TO THE DIAMETER OF THE TREE CANOPY. GRADE DEPRESSIONS RESULTING FROM ROOT BALL REMOVAL SHOULD BE CLEANED OF LOOSE MATERIAL AND BACKFILLED.

5. DISCONNECT, REMOVE AND CAP ALL IRRIGATION HEADS, LINES, VALVES, BOXES, ETC. AND ASSOCIATED CONTROLS WITHIN THE AREA OF DEMOLITION.

6. UNDERGROUND UTILITY DEMOLITION, PROTECTION, AND/OR TRENCHING FOR NEW UTILITIES SHALL BE INCLUDED IN SCOPE OF WORK. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL WORK REQUIRED WHERE NEW UNDERGROUND UTILITY LINES ARE TO BE INSTALLED.

7. DISCONNECT, REMOVE AND CAP ALL POWER, SIGNAL, SEWER, WATER, GAS, ETC. WITHIN THE AREA OF DEMOLITION. UTILITIES EXTENDING BEYOND THE IMPROVEMENT AREA MAY BE ABANDONED IN PLACE PROVIDED THE ENDS ARE PLUGGED WITH CONCRETE, THEY DO NOT CONFLICT WITH PLANNED IMPROVEMENTS, AND THAT THE TRENCH FILLS DO NOT POSE SIGNIFICANT RISK TO THE PLANNED SURFACE IMPROVEMENTS.

8. AFTER DEMOLITION OF EXISTING ITEMS IS COMPLETE, CLEAN AND PREP AREA AS REQUIRED TO RECEIVED NEW WORK.

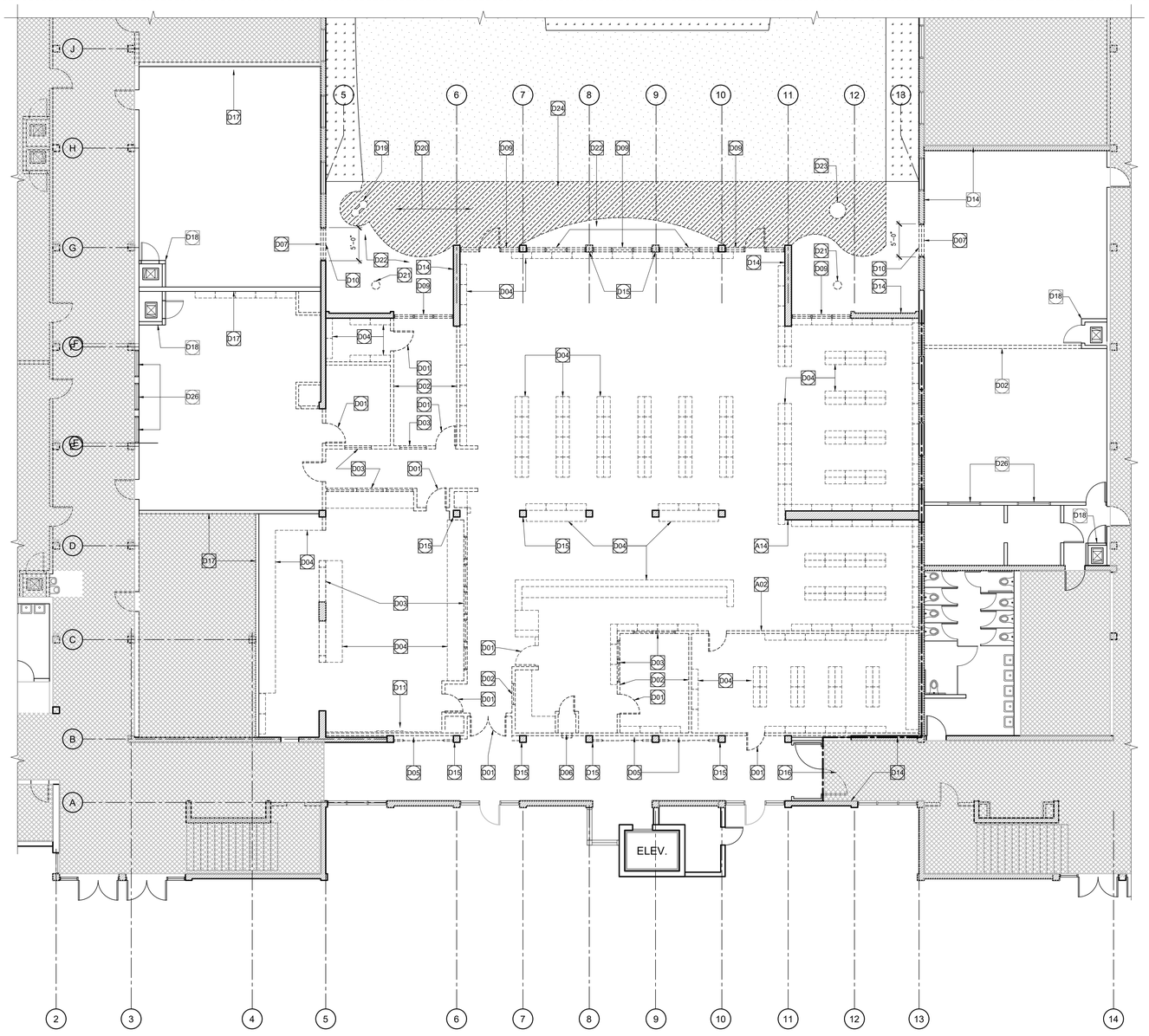
9. FOR EXTENT OF DEMOLITION, CONTRACTOR TO VERIFY FINISHED ELEVATIONS/SLOPES AS INDICATED. WHERE NEW WORK MEETS EXISTING SURFACES PROVIDE FLUSH TRANSITION U.O.N.

10. WHERE EXISTING SITE UTILITY YARD BOXES, CLEANOUTS, CATCH BASINS, ETC. OCCUR WITHIN AREAS OF IMPROVEMENTS REMOVE AND REINSTALL TO NEW FINISH GRADE. CONTRACTOR SHALL SURVEY THE AREA AND INCLUDE ALL REQUIRED IN BID.

11. IN ADDITION TO THOSE AREAS NOTED FOR GENERAL DEMOLITION, THE CONTRACTOR MAY CONDUCT ADDITIONAL DEMOLITION, AND REPLACEMENT OF MATERIALS TO FACILITATE CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL REPLACEMENT SHALL CONFORM TO THE PLANS AND SPECIFICATIONS FOR NEW WORK.

LEGEND

- (E) WALL TO REMAIN
- (E) CONC. WALL
- (E) INT. WALL TO BE DEMOLISHED
- (E) DOOR TO BE REMOVED
- (E) CONC. PAVEMENT TO BE REMOVED
- AREA NOT IN SCOPE OF WORK
- (E) 2 HR RATED WALL



1 DEMOLITION FLOOR PLAN
1/8" = 1'-0"

GENERAL NOTES

1. REFER TO CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION NOT SHOWN HERE.

NOTES (TYPICAL, U.O.N.)

1. REMOVE (E) DOOR, (E) DOOR FRAME & ALL RELATED ACCESSORIES.
2. REMOVE (E) INT. WALL
3. REMOVE (E) INT. WINDOW
4. REMOVE (E) CASEWORK
5. REMOVE (E) DISPLAY CASE
6. REMOVE (E) BOOK DROP
7. REMOVE (E) EXT. WINDOW
8. REMOVE (E) FLOORING
9. REMOVE (E) STOREFRONT
10. REMOVE (E) CONC. WALL
11. REMOVE (E) MARKER BOARD
12. NOT USED
13. NOT USED
14. (E) CONC. WALL TO REMAIN, PROTECT
15. (E) CONC. COLUMN TO REMAIN, PROTECT
16. (E) DOOR TO REMAIN, PROTECT
17. (E) INT. PARTITION TO REMAIN
18. (E) MECH CLOSET TO REMAIN, PROTECT.
19. REMOVE (E) DRINKING FOUNTAIN
20. REMOVE (E) CONC. PAVEMENT
21. REMOVE (E) TREE
22. REMOVE (E) LANDSCAPE AREA & PREP FOR NEW CONCRETE PAVEMENT
23. (E) CATCH BASIN TO REMAIN, PROTECT
24. (E) CONC. PAVEMENT TO REMAIN, PROTECT
25. NOT USED
26. (E) INT. WINDOW TO REMAIN.

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Demolition
Floor Plan

AD-101

1 DEMOLITION REFLECTED CEILING PLAN
1/8" = 1'-0"

LEGEND

- AREA NOT IN THE SCOPE OF WORK
- (E) LIGHT FIXTURE TO BE REMOVED
- (E) RETURN REGISTER TO BE REMOVED, SMD
- (E) SUPPLY REGISTER TO BE REMOVED, SMD
- (E) SUSPENDED CEILING TO BE REMOVED
- (E) ACOUSTICAL METAL PAN CEILING
- (E) GYPSUM WALLBOARD CEILING TO BE REMOVED
- (E) GYPSUM WALLBOARD CEILING
- (E) SUSPENDED ACOUSTICAL CEILING

DEMOLITION KEYNOTES (TYPICAL, U.O.N.)

1. REMOVE (E) LIGHT FIXTURES.
2. REMOVE (E) SUSPENDED ACOUSTICAL CEILING.
3. REMOVE (E) SOFFIT AND ALL ASSOCIATED ACCESSORIES.
4. (E) SUSPENDED ACOUSTICAL CEILING TO REMAIN, PROTECT.
5. (E) STRUCTURAL DECK, PROTECT.
6. NOT USED.
7. (E) GYP. CEILING TO REMAIN, PROTECT.
8. (E) LIGHT FIXTURE TO REMAIN, PROTECT.

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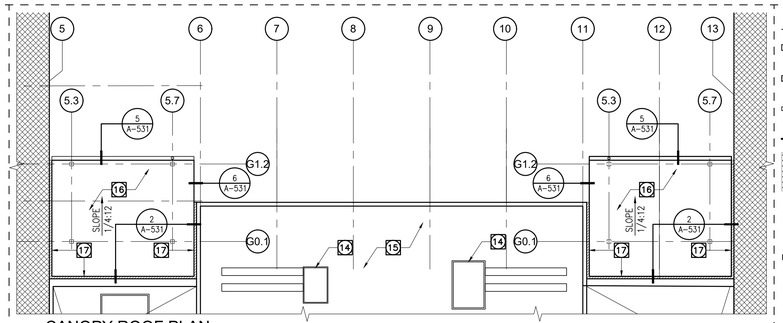
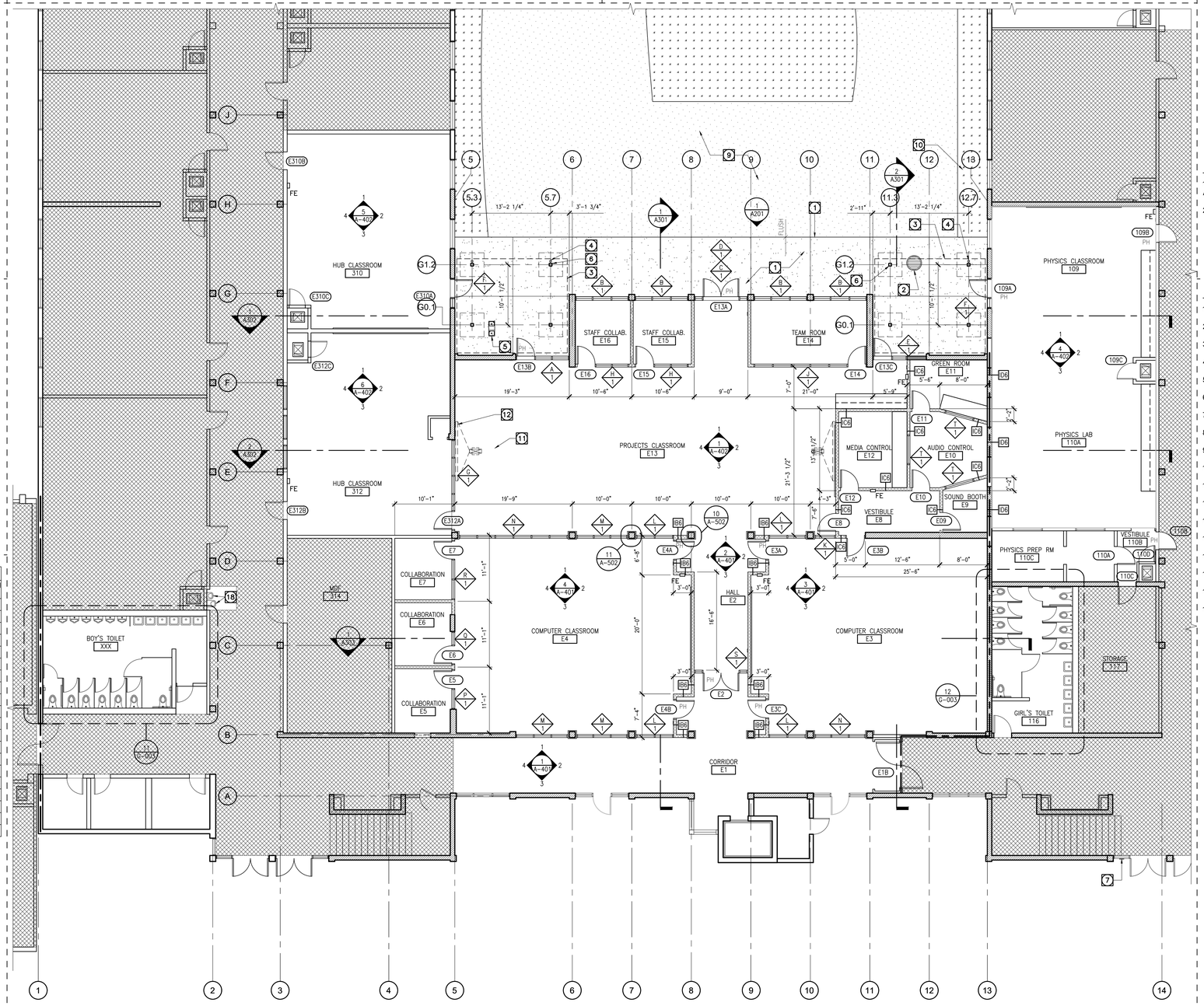
Demolition Reflected Ceiling Plan

AD-121



2 CANOPY ROOF PLAN
1/8" = 1'-0"



1 FLOOR PLAN
1/8" = 1'-0"

LEGEND

- (E) WALL TO REMAIN
- (E) CONC. WALL
- NON-RATED INTERIOR WALL
- (E) 2 HR RATED WALL
- SHADED AREA NOT IN SCOPE OF WORK

RESTROOM ### — ROOM NAME & NUMBER (TAG)

G101 — DOOR TAG. SEE DOOR SCHEDULE

A / 1 — WINDOW TAG. SEE WINDOW SCHEDULE

PH — PANIC HARDWARE

FE — FIRE EXTINGUISHER CABINET

ID6 — WALL TAG, SEE SHEET A-502 FOR WALL ASSEMBLIES
- FRAMING MEMBER SIZE (2=2.5", 4=4", 6=6"...)
- WALL TYPE DESIGNATION (A, B, C...)
- INTERIOR (I) OR EXTERIOR (X) WALL ASSEMBLY

GENERAL NOTES

1. REFER TO STRUCTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
2.

NOTES (TYPICAL, U.O.N.) 1

1. CONC. PAVEMENT
2. CATCH BASIN
3. MTL. CANOPY ABOVE, SEE DET. 2/-.
4. DOWNSPOUT, SEE DET. 7/A-531
5. HI-LO DRINKING FOUNTAIN, SEE DET. 14/AS-101
6. COLUMN, SSD.
7. ACCESSIBLE BUILDING SIGN, SEE DET. 1/G-003
8. NOT USED.
9. (E) CONC. PAVEMENT, PROTECT.
10. (E) LANDSCAPE, PROTECT.
11. PROJECTOR, SEE RCP.
12. PROJECTION SCREEN, SEE RCP.
13. ACCESSIBLE EXIT SIGN, SEE DET. 3/G-003.
14. (E) ROOFTOP MECH. UNITS, SMD.
15. (E) ROOF TO REMAIN, PROTECT.
16. ROOF SYSTEM ASSEMBLY, SEE DET. 1/A-531.
17. ROOF EXPANSION COVER.
18. (E) HI-LO DRINKING FOUNTAIN, SEE DET. 15/G-003

EXITING REQUIREMENTS

ROOM NO.	ROOM NAME	AREA NET SF	FUNCTION OF SPACE	AREA PER OCC	OCC TOTAL	EXIT WIDTH REQUIRED	EXIT WIDTH PROVIDED
E2	CORRIDOR	242	ACCESSORY	300	3	< 2"	144"
E3	CLASSROOM	1268	EDUCATIONAL	20	64	13"	72"
E4	CLASSROOM	1266	EDUCATIONAL	20	64	13"	72"
E5	COLLABORATION	100	ACCESSORY	50	2	< 2"	36"
E6	COLLABORATION	100	ACCESSORY	50	2	< 2"	36"
E7	COLLABORATION	100	ACCESSORY	50	2	< 2"	36"
E8	VESTIBULE	118	ACCESSORY	100	2	< 2"	36"
E9	SOUND BOOTH	61	ACCESSORY	50	2	< 2"	36"
E10	AUDIO CONTROL	148	ACCESSORY	50	3	< 2"	36"
E11	GREEN ROOM	115	ACCESSORY	50	3	< 2"	36"
E12	MEDIA CONTROL	147	ACCESSORY	50	3	< 2"	36"
E13	PROJECT RM	2016	EDUCATIONAL	50	40	8"	36"
E14	TEAM ROOM	208	EDUCATIONAL	20	10	2"	36"
E15	STAFF	100	ACCESSORY	50	2	< 2"	36"
E16	STAFF	100	ACCESSORY	50	2	< 2"	36"
109	CLASSROOM	745	EDUCATIONAL	20	37	8"	72"
110	CLASSROOM	745	EDUCATIONAL	20	37	8"	72"
110A	PREP-AREA	176	ACCESSORY	100	2	< 2"	36"
310	CLASSROOM	881	EDUCATIONAL	20	44	9"	72"
312	CLASSROOM	916	EDUCATIONAL	20	45	9"	72"

NOTES:

1. EXIT WIDTH CALCULATED WITH .20 WIDTH FACTOR

3 EXITING REQUIREMENTS
NTS

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Improvement
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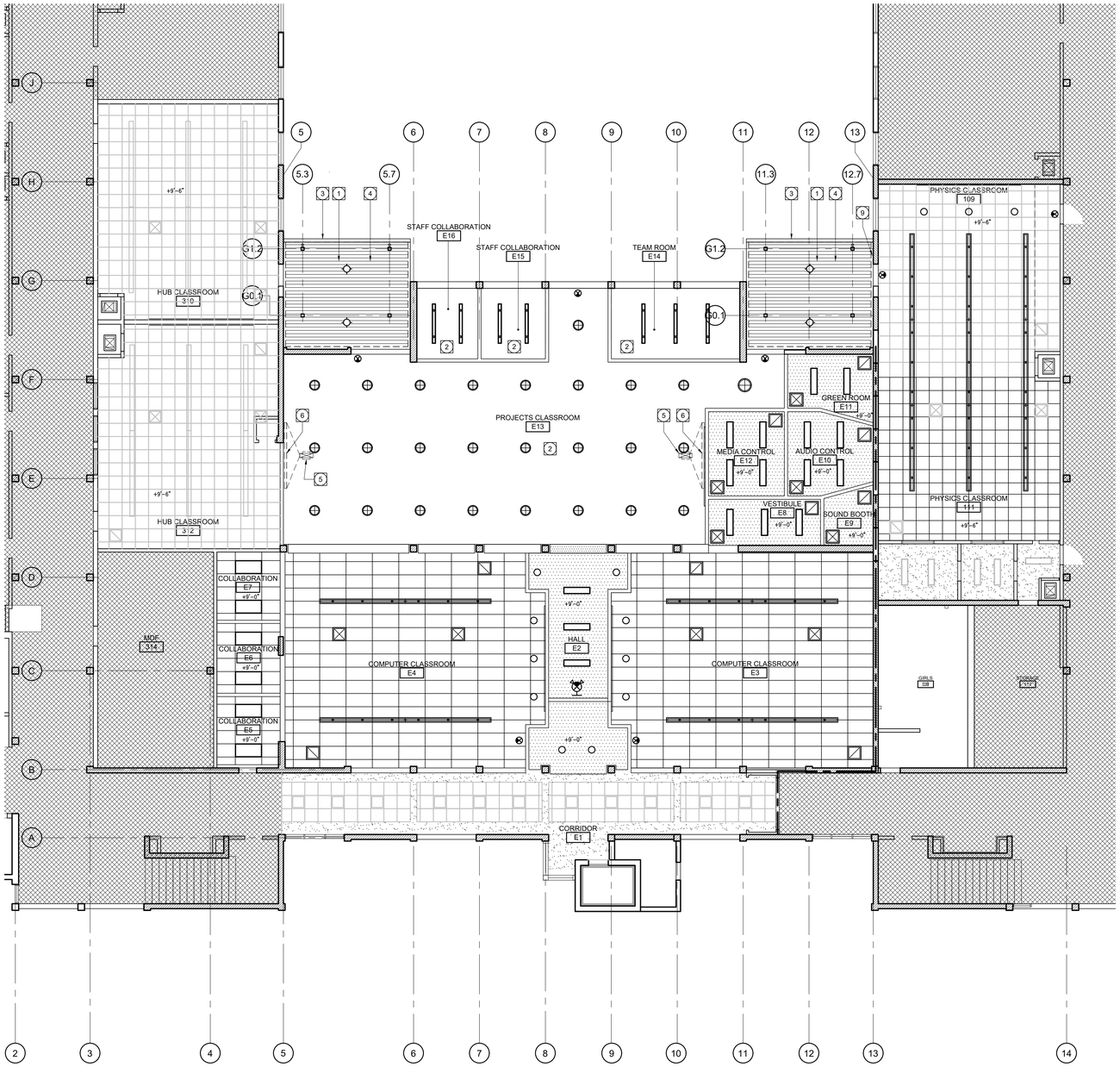
A-101



1 DEMOLITION REFLECTED CEILING PLAN
1/8" = 1'-0"

LEGEND

- AREA NOT IN THE SCOPE OF WORK
- PENDENT LIGHT FIXTURE, SED
- PENDENT LIGHT FIXTURE, SED
- SURFACE MOUNTED LIGHT FIXTURE, SED
- EXTERIOR LIGHT FIXTURE, SED
- LIGHT FIXTURE, SED
- RETURN REGISTER, SMD
- SUPPLY REGISTER, SMD
- 2x4 SUSPENDED AOUSTICAL CEILING, SEE SHEET A-121
- 2x2 SUSPENDED AOUSTICAL CEILING, SEE SHEET A-121
- METAL SOFFIT PANEL
- GYPSUM WALLBOARD CEILING
- (E) SUSPENDED ACOUSTICAL CEILING
- (E) LIGHT FIXTURE
- EXIT SIGN, SED

NOTES (TYPICAL, U.O.N.)

1. MTL. DECK, PAINT.
2. OPEN TO STRUCTURAL DECK ABOVE, PAINT.
3. MTL. GUTTER.
4. MTL. CANOPY.
5. O.F.C.I. WALL-MOUNTED PROJECTOR.
6. PROJECTION SCREEN.
7. CEILING SPEAKER.
8. DOWNSPOUT.
9. EXPANSION JOINT COVER ASSEMBLY.

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Reflected Ceiling Plan

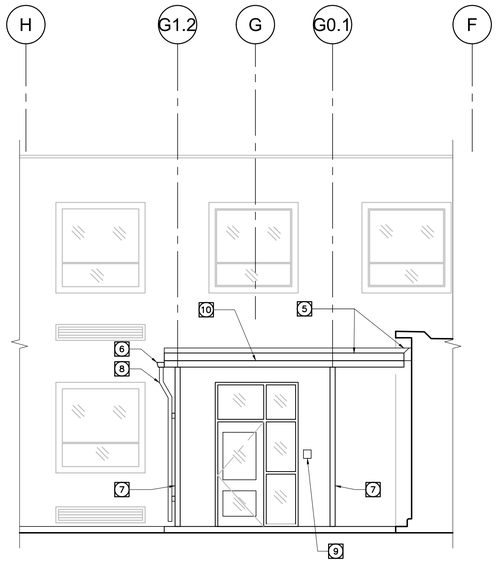
A-121

GENERAL NOTES

1. REFER TO ELECTRICAL, MECHANICAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

NOTES (TYPICAL, U.O.N.) 1

1. (E) MECH. UNITS , PROTECT
2. (E) CONC. WALL, PROTECT.
3. (E) CONC. COLUMN, PROTECT.
4. CEMENT PLASTER SYSTEM.
5. METAL EXPANSION COVER, SEE DETAIL 2/A-531.
6. METAL GUTTER, SEE DETAIL 5/A-531.
7. STEEL COLUMN, SSD.
8. METAL DOWNSPOUT, SEE DETAIL 7/A-531.
9. ROOM SIGNAGE, SEE DETAIL 2/G-003.
10. METAL CANOPY, SSD.



2 EXTERIOR ELEVATION - EAST (WEST SIM.)
1/4" = 1'-0"

1 EXTERIOR ELEVATION - NORTH
1/4" = 1'-0"

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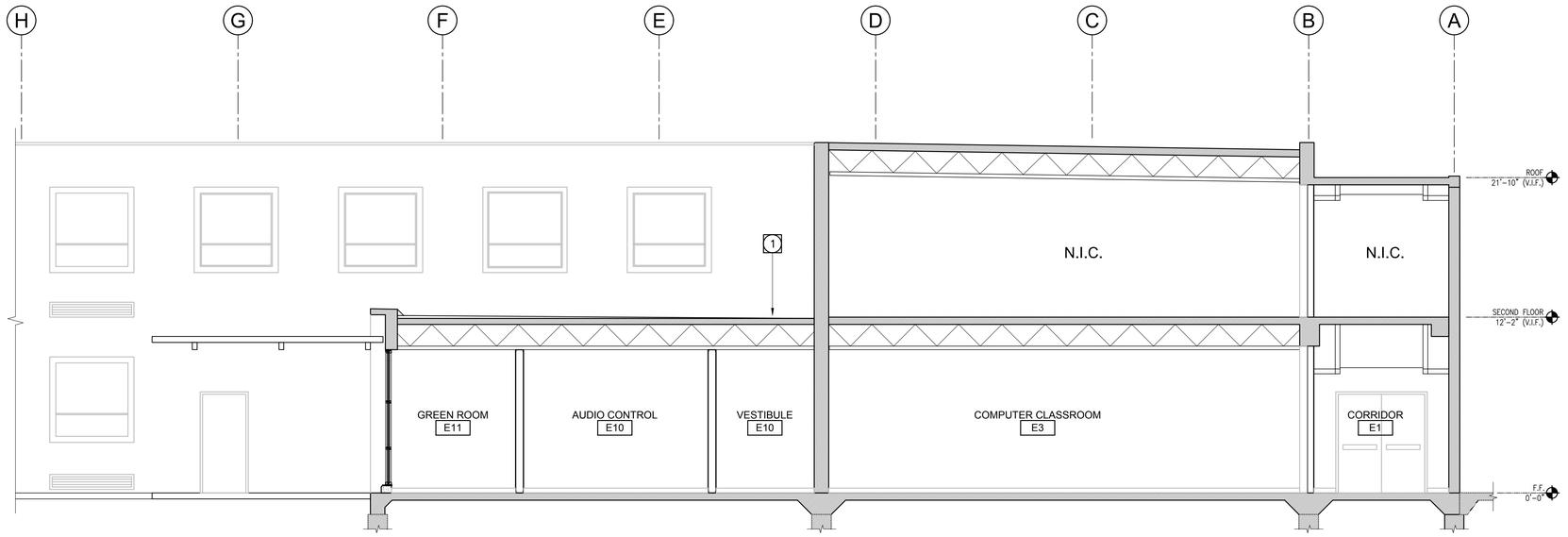
Exterior Elevations

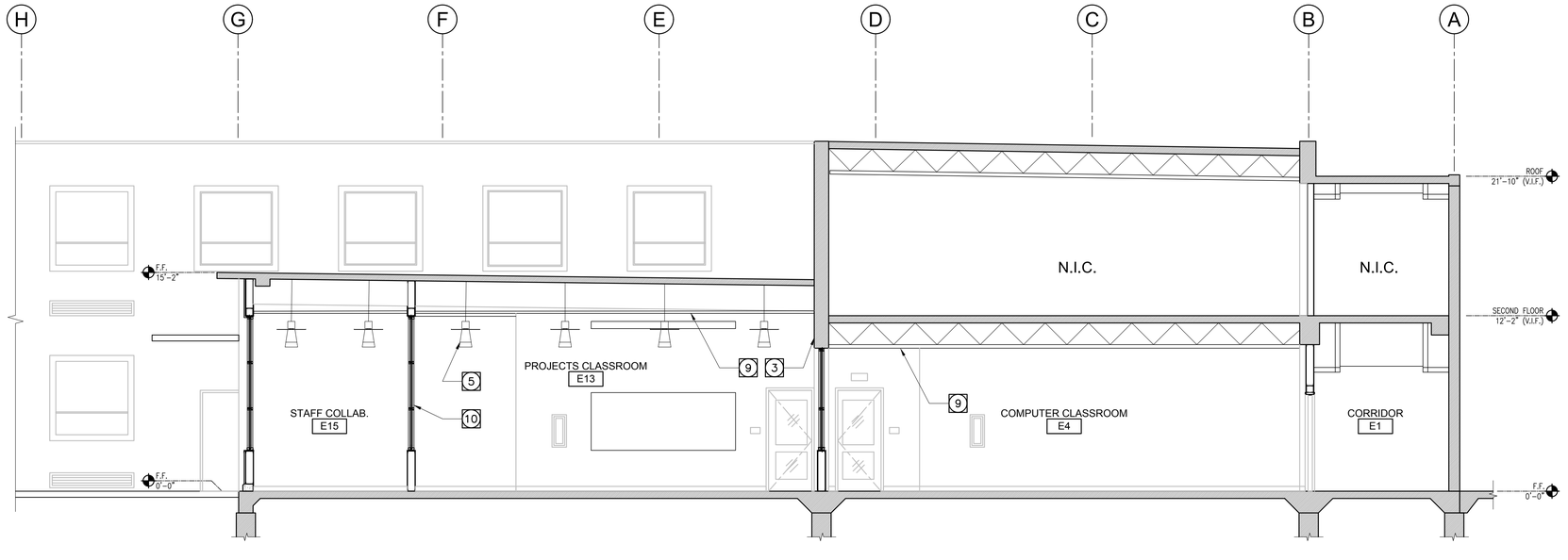
A-201

NOTES (TYPICAL, U.O.N.)

1. (E) CONC. ROOF STRUCTURE, PROTECT.
2. (E) CONC. WALL, PROTECT.
3. (E) CEILING, SEE RCP.
4. (E) CONC. SLAB, SEE FINISH SCHEDULE
5. LIGHT FIXTURE, SED.
6. ALUMINUM STOREFRONT.
7. EXTERIOR CANOPY.
8. CONC. SLAB.
9. CEILING, SEE RCP.
10. INT. WALL.



2 BUILDING SECTION
1/4" = 1'-0"



1 BUILDING SECTION
1/4" = 1'-0"

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Building Sections

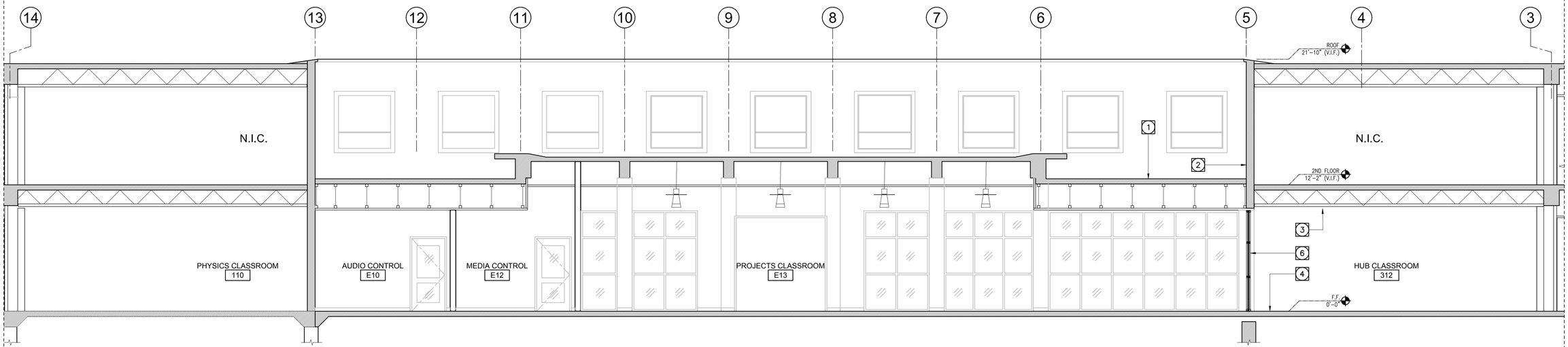
A-301

NOTES (TYPICAL, U.O.N.) [1]

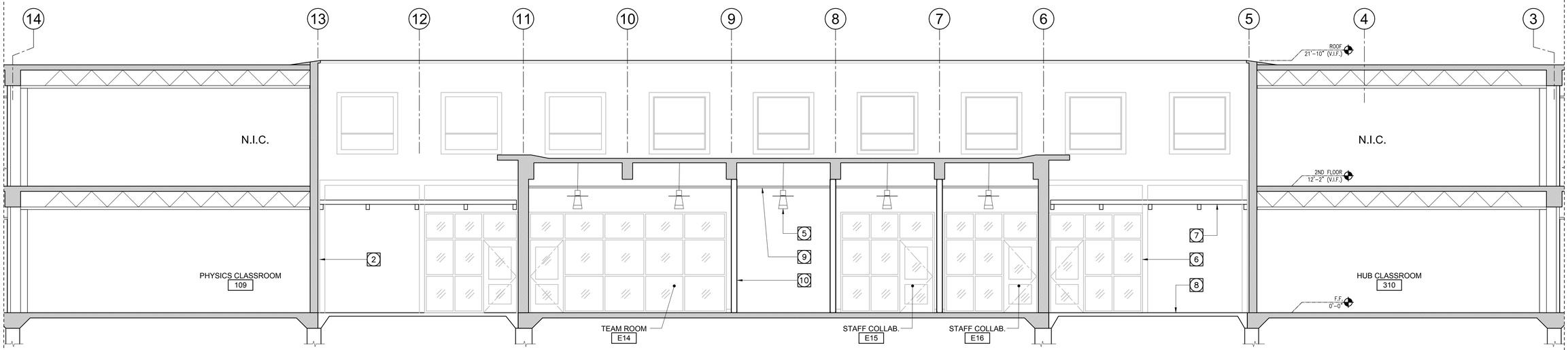
1. (E) CONC. ROOF STRUCTURE, PROTECT.
2. (E) CONC. WALL, PROTECT.
3. (E) CEILING, SEE RCP.
4. (E) CONC. SLAB, SEE FINISH SCHEDULE
5. LIGHT FIXTURE, SED.
6. ALUMINUM STOREFRONT.
7. EXTERIOR CANOPY.
8. CONC. SLAB.
9. CEILING, SEE RCP.
10. INT. WALL.

GENERAL NOTES

1. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
2. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.



2 BUILDING SECTION
1/4" = 1'-0"



1 BUILDING SECTION
1/4" = 1'-0"

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Building Sections

A-302

GENERAL NOTES

1. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.

2. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

NOTES (TYPICAL, U.O.N.) (1)

1. (E) CONC. ROOF STRUCTURE, PROTECT.

2. (E) CONC. WALL, PROTECT.

3. (E) CEILING, SEE RCP.

4. (E) CONC. SLAB, SEE FINISH SCHEDULE

5. LIGHT FIXTURE, SED.

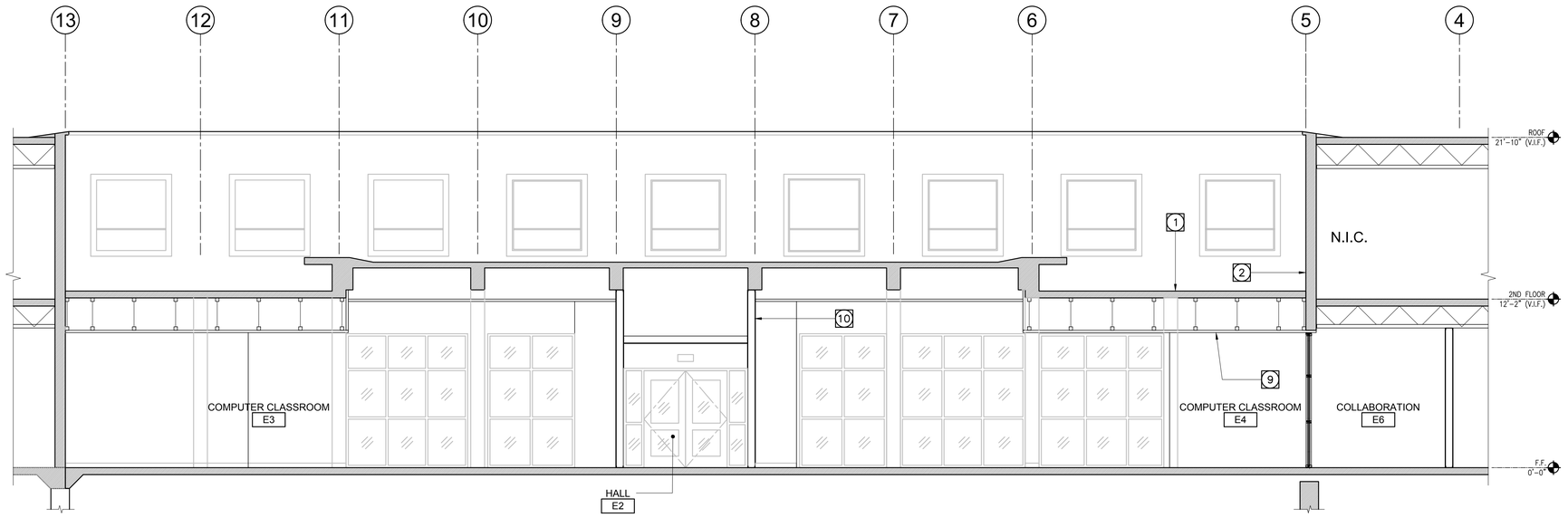
6. ALUMINUM STOREFRONT.

7. EXTERIOR CANOPY.

8. CONC. SLAB.

9. CEILING, SEE RCP.

10. INT. WALL.



1 BUILDING SECTION
1/4" = 1'-0"

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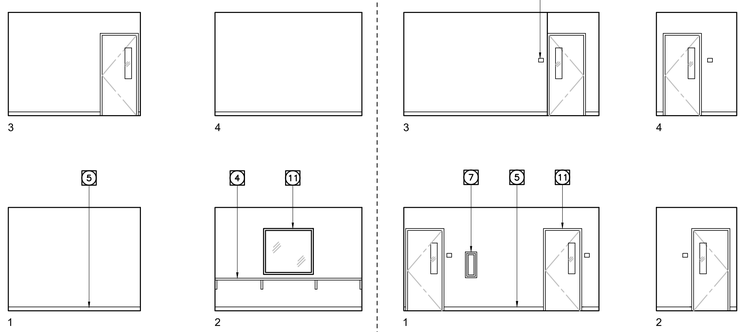
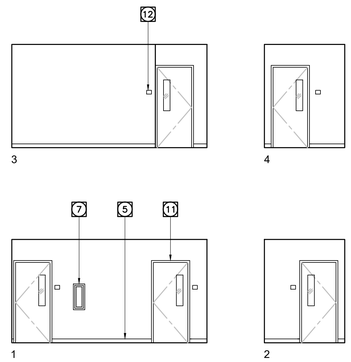
Building Sections

A-303

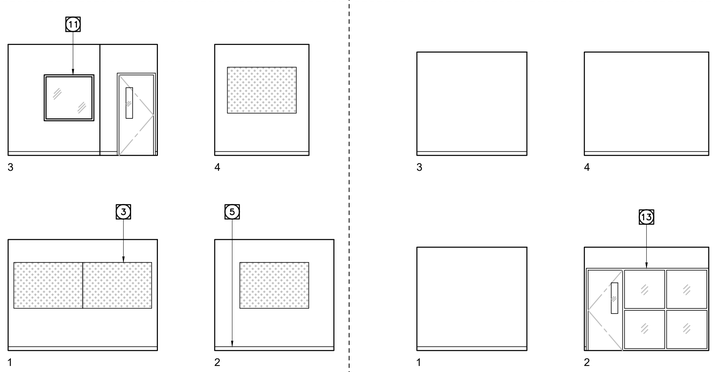


12 E12 - MEDIA CONTROL
3/16" = 1'-0"



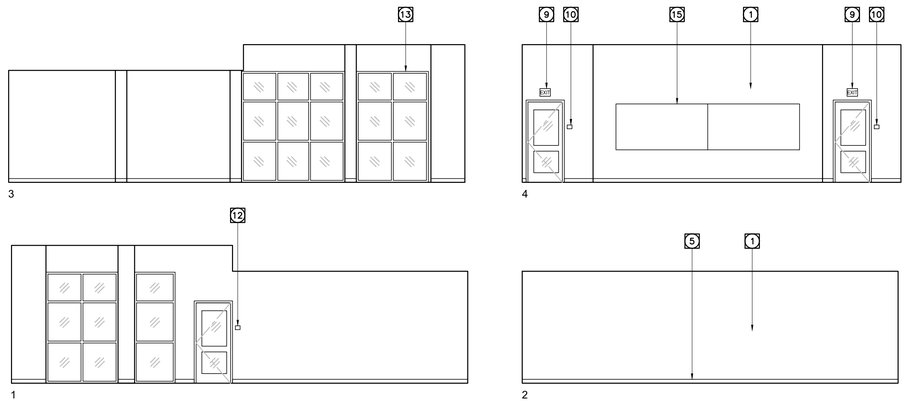
8 E8 - VESTIBULE
3/16" = 1'-0"

4 E4 - COMPUTER CLASSROOM
3/16" = 1'-0"

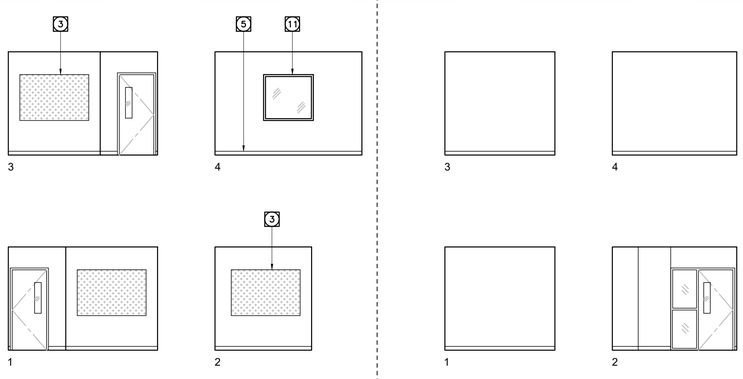


11 E11 - GREEN ROOM
3/16" = 1'-0"

7 E7 - COLLABORATION
3/16" = 1'-0"

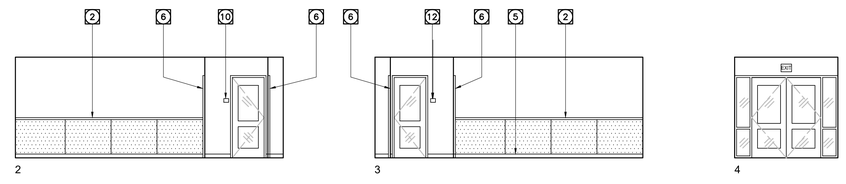


3 E3 - COMPUTER CLASSROOM
3/16" = 1'-0"

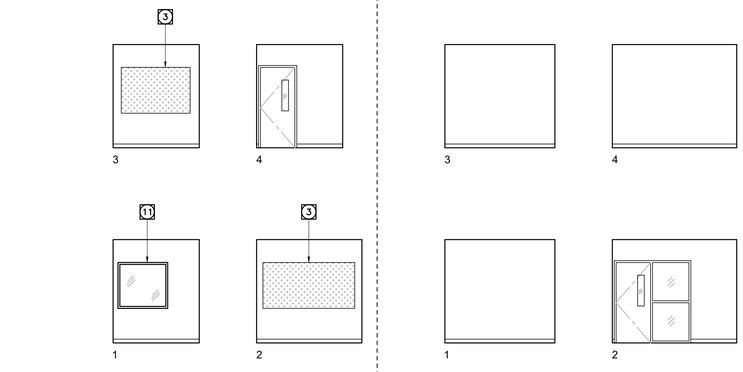


10 E10 - AUDIO CONTROL
3/16" = 1'-0"

6 E6 - COLLABORATION
3/16" = 1'-0"



2 E2 - HALL
3/16" = 1'-0"



9 E9 - SOUND BOOTH
3/16" = 1'-0"

5 E5 - COLLABORATION
3/16" = 1'-0"

1 E1 - CORRIDOR
3/16" = 1'-0"

GENERAL NOTES

1. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
2. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. FOR TYPICAL CASEWORK TYPE AND DETAILS, SEE SHEET A-581.
4. FOR TYPICAL BACKING SCHEDULE, SEE DETAIL 19/A-521.

NOTES (TYPICAL, U.O.N.)

1. GYPSUM BOARD, TYP.
2. PLASTIC LAMINATED PANEL, SEE DETAIL 5/A-591.
3. ACOUSTIC WALL PANEL, SEE DETAIL 7/A-591.
4. WALL MOUNTED PLASTIC LAMINATED COUNTERTOP.
5. WALL BASE PER FINISH SCHEDULE.
6. S.S. CORNER GUARD, SEE DETAIL 6/A-591.
7. FIRE EXTINGUISHER AND RECESSED CABINET, SEE DETAIL 4/A-591.
8. FIRE ALARM DEVICE, SED.
9. ILLUMINATED EXIT SIGN, SED.
10. TACTILE EXIT SIGN PER DOOR SCHEDULE, SEE DETAIL 3/G-003.
11. WINDOW PER PLAN, TYP.
12. ROOM SIGNAGE, SEE DETAIL 2/G-003
13. ALUMINUM STOREFRONT SYSTEM
14. CLOCK/SPEAKER, SED.
15. MARKER BOARD, SEE DETAIL 3/A-591.
16. PROJECTOR SCREEN, SEE DETAIL 10/A-591
17. PROJECTOR, SEE DETAIL 9/A-591

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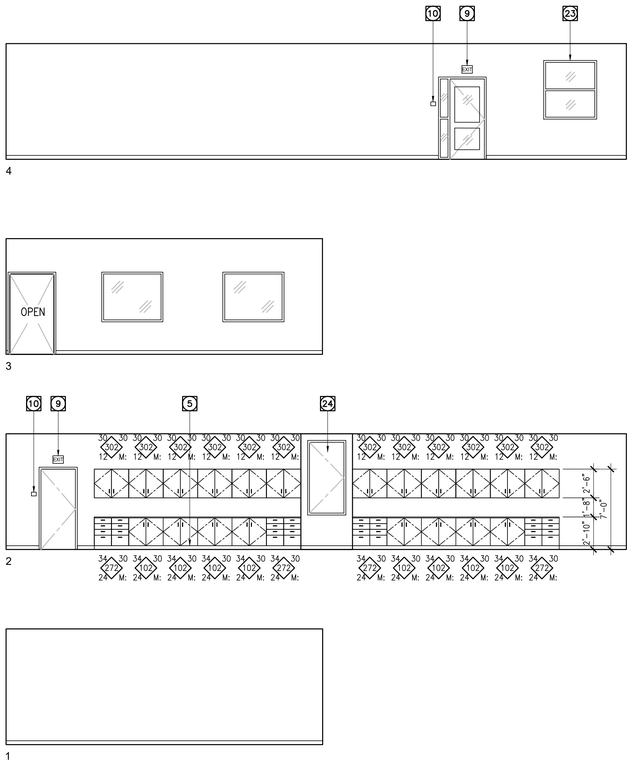
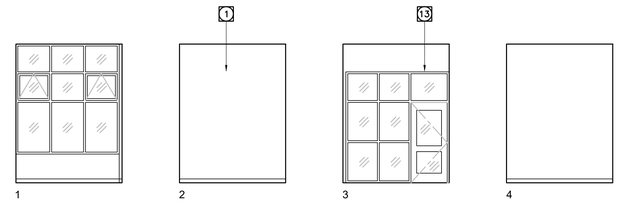
Interior Elevations

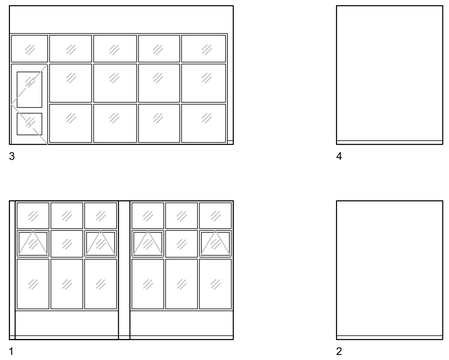
A-401



4 109 & 110 - PHYSICS CLASSROOM AND LAB
3/16" = 1'-0"



3 E15 & E16 - STAFF COLLABORATION
3/16" = 1'-0"



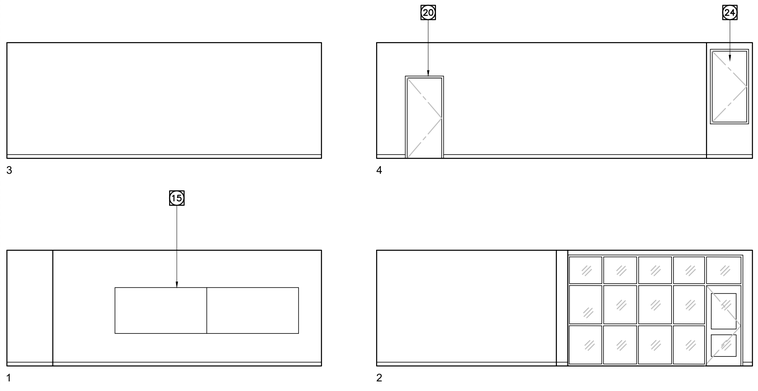
2 E14 - TEAM ROOM
3/16" = 1'-0"

GENERAL NOTES

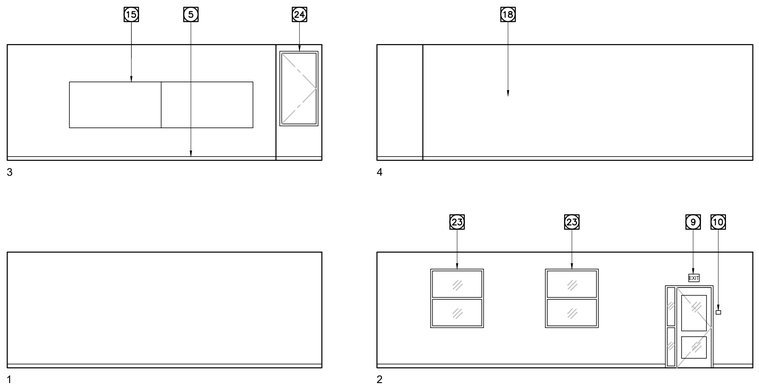
1. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
2. REFER TO ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. FOR TYPICAL CASEWORK TYPE AND DETAILS, SEE SHEET A-581.
4. FOR TYPICAL BACKING SCHEDULE, SEE DETAIL 19/A-521.

NOTES (TYPICAL, U.O.N.) 1

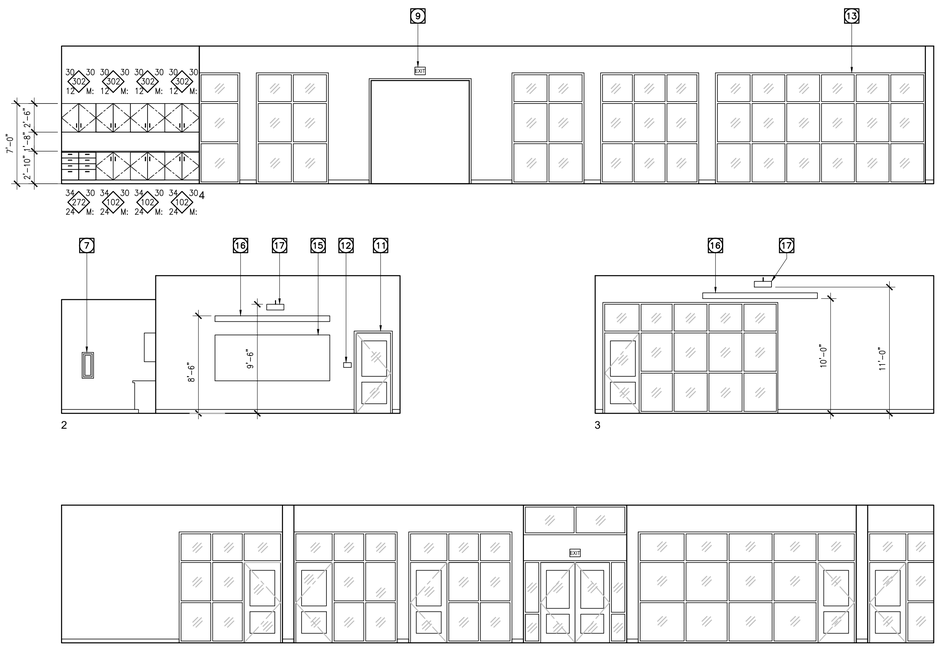
1. GYPSUM BOARD, TYP.
2. PLASTIC LAMINATED PANEL, SEE 5/A-591.
3. NOT USED.
4. NOT USED.
5. WALL BASE PER FINISH SCHEDULE.
6. S.S. CORNER GUARD, SEE DETAIL 6/A-591.
7. FIRE EXTINGUISHER AND RECESSED CABINET, SEE DETAIL 4/A-591.
8. FIRE ALARM DEVICE, SED.
9. ILLUMINATED EXIT SIGN, SED.
10. TACTILE EXIT SIGN PER DOOR SCHEDULE, SEE DETAIL 3/G-003.
11. NOT USED.
12. ROOM SIGNAGE PER DOOR SCHEDULE, SEE DETAIL 2/G-003.
13. ALUMINUM STOREFRONT SYSTEM
14. CLOCK/SPEAKER, SED.
15. MARKER BOARD, SEE DETAIL 3/A-591.
16. WALL MOUNTED PROJECTION SCREEN, SEE DETAIL 10/A-591.
17. WALL MOUNTED PROJECTOR, SEE DETAIL 9/A-591.
18. (E) GYPSUM BOARD, PROTECT.
19. (E) EXIT SIGN, PROTECT.
20. (E) DOOR, PROTECT.
21. (E) STOREFRONT, PROTECT.
22. (E) ELEVATOR, PROTECT.
23. (E) WINDOW, PROTECT.
24. (E) MECH. CLOSET, PROTECT.



6 312 - HUB CLASSROOM
3/16" = 1'-0"



5 310 - HUB CLASSROOM
3/16" = 1'-0"



1 E13 - PROJECTS CLASSROOM
3/16" = 1'-0"

SR
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

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320 Nova Albion Way
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Date	Issued For
06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

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APP#: 01-117586

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DATE____

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA

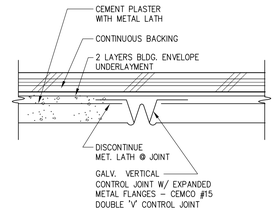
(415) 981-2345

WWW.HED.DESIGN

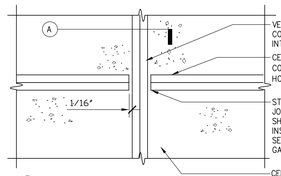
2017-03489-000

Interior Elevations

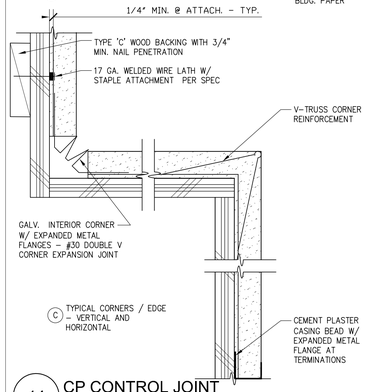
A-402



(A) VERTICAL JOINT

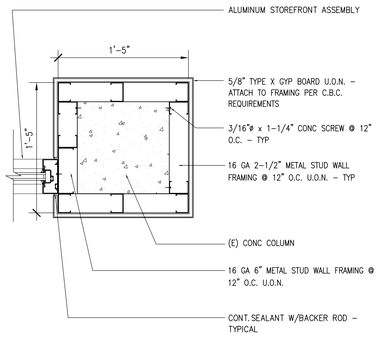


(B) CONTROL JOINT ELEVATION

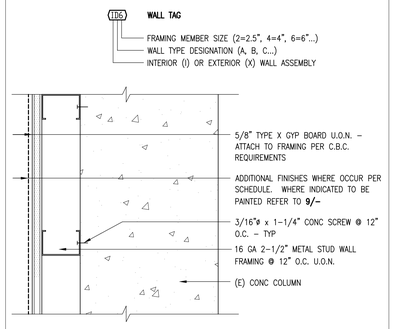


(C) TYPICAL CORNERS / EDGE – VERTICAL AND HORIZONTAL

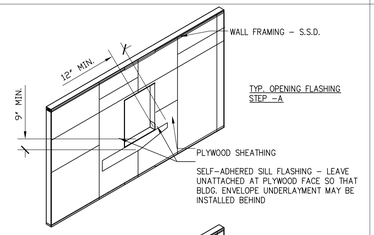
14 CP CONTROL JOINT
SCALE

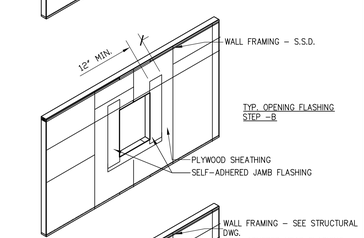


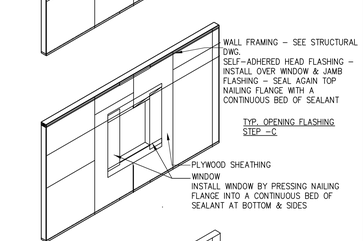
11 STOREFRONT@ FURRED (E) CONC. COL
1-1/2" = 1'-0"

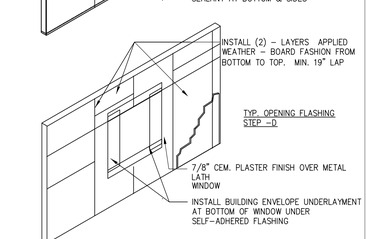


3 INTERIOR WALL ASSEMBLY - TYPE ID
3" = 1'-0"

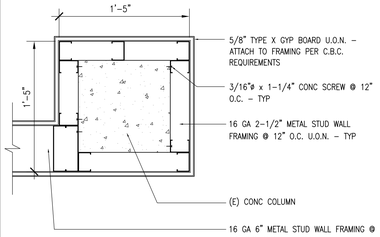




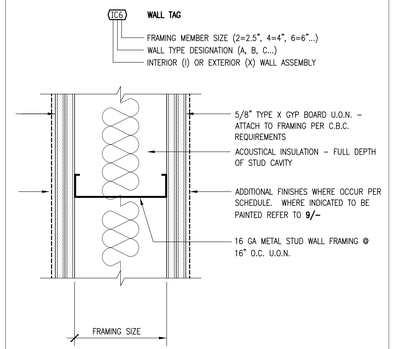




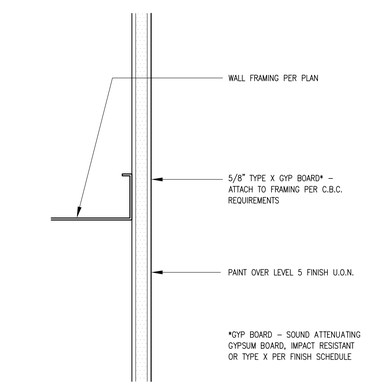
13 TYP. OPENING FLASHING INSTALLATION
NTS



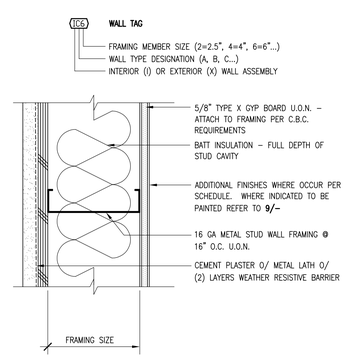
10 FURRED @ (E) CONC. COL
1-1/2" = 1'-0"



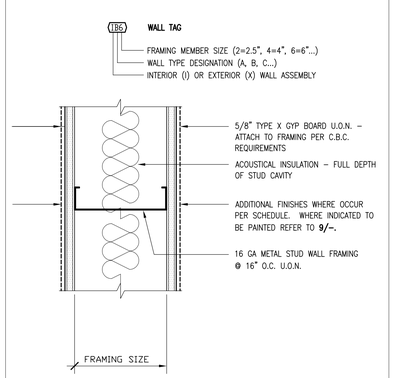
2 INTERIOR WALL ASSEMBLY - TYPE IC
3" = 1'-0"



9 GYPSUM BOARD FINISH
6" = 1'-0"



5 EXTERIOR WALL ASSEMBLY - TYPE XD
3" = 1'-0"



1 INTERIOR WALL ASSEMBLY - TYPE IB
3" = 1'-0"

INTERIOR WALLS

1. ALL INTERIOR FINISHES TO MEET THE FOLLOWING MINIMUM FIRE RESISTIVE REQUIREMENTS:

   FLAME SPREAD DEVELOPED < 25
   SMOKE DEVELOPED < 50

2. ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRE CAULKED AS DETAILED OR AS LISTED IN SPECIFICATIONS

METAL STUD FRAMING NOTES

1. SEE SHEETS D5.1 AND 5.2 FOR TYPICAL REQUIRED METAL STUD FRAMING & NOTES

INSULATION NOTES

1. ALL TYPES TO CONFORM TO UL LISTED DESIGNS – SEE SPECIFICATIONS

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DATE_____

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417 Montgomery Street
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San Francisco, CA
94104 USA

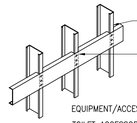
(415) 981-2345

WWW.HED.DESIGN

2017-03489-000

Wall/Partition Assemblies, Wall Furring Details

A-502

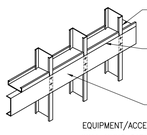


EQUIPMENT/ACCESSORIES TO BE ANCHORED:

TOILET ACCESSORIES, CHALK AND TACK BOARDS, BASE CABINETS, TALL STORAGE CABINETS, SLIDING MARKER BOARD ASSEMBLY, ETC.

MOUNT ITEM TO CHANNEL WITH #12 S.M.S. U.O.N.

TYPE A – METAL STUD WALL

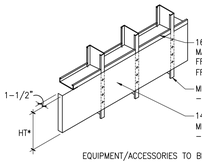


EQUIPMENT/ACCESSORIES TO BE ANCHORED:

WALL HUNG CABINETS, WALL HUNG EQUIPMENT, GRAB BARS, FUME HOODS, ETC.

MOUNT ITEM TO CHANNEL WITH #12 S.M.S. U.O.N.

TYPE B – METAL STUD WALL



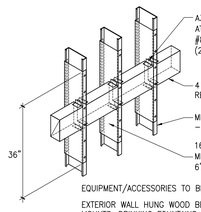
*HEIGHT AS REQ'D FOR PROPER MOUNTING OF EQUIPMENT – 18" MIN.

EQUIPMENT/ACCESSORIES TO BE ANCHORED:

WALL HUNG LAVATORIES & PLUMBING FIXTURES, TV MOUNTS, DRINKING FOUNTAINS, ETC.

MOUNT ITEM TO CHANNEL WITH #12 S.M.S. U.O.N.

TYPE C – METAL STUD WALL



EQUIPMENT/ACCESSORIES TO BE ANCHORED:

EXTERIOR WALL HUNG WOOD BENCHES, TV MOUNTS, DRINKING FOUNTAINS, ETC.

MOUNT ITEM TO BLOCKING WITH 3/8" LAG SCREWS U.O.N.

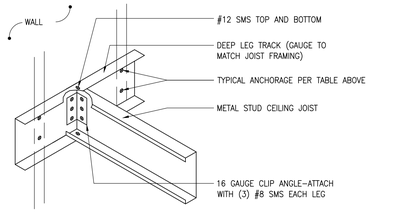
TYPE D – METAL STUD WALL

TYPICAL NOTES:

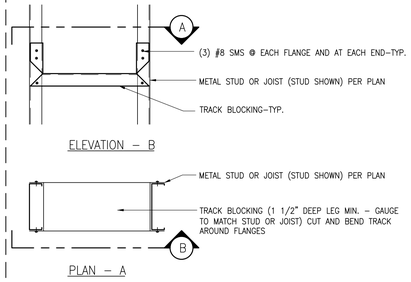
1. WALL STUD FLANGES ARE CONTINUOUS
2. SEE TYPICAL WALL FRAMING SCHEDULE FOR GAUGE OF STUDS
3. VERIFY LENGTH, HEIGHT, LOCATION AND NUMBER REQUIRED WITH EQUIPMENT AND ACCESSORY MANUFACTURER.
4. CONTRACTOR IS RESPONSIBLE TO INSURE WALL FINISH IS SMOOTH & PLUMB FOR THE ITEM THAT BACKING PLATE IS INTENDED FOR

TYP. METAL FRAMING BACKING 1/2"=1'–0" | 19

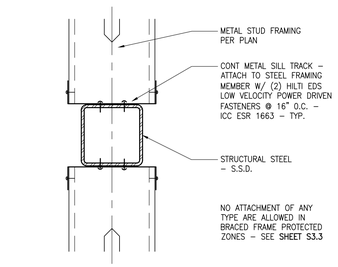
CONDITION	ANCHORAGE
CONC:	(2) 3/8"ø EXPANSION ANCHORS @ 24" O.C. PER SHEET S1.1
METAL:	(2) #10 SMS @ 16" O.C. MAX.
STRUCTURAL STEEL:	(2) HILTI EDS LOW VELOCITY POWER DRIVEN FASTENERS @ 24" O.C. – ICC ESR 1663



TYP. MTL. FRAMING LEDGER ATTACH. 1–1/2"=1'–0" | 18

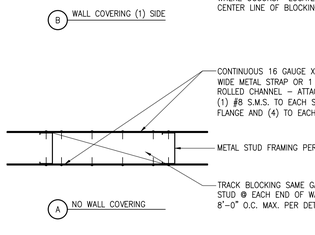


TYP. TRACK BLOCKING 1–1/2"=1'–0" | 17



TYP. METAL FRAMING TO STRUCTURAL STEEL 3"=1'–0" | 16

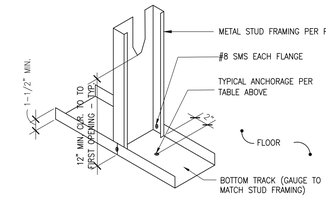
CONDITION	ANCHORAGE
CONC:	(2) 3/8"ø EXPANSION ANCHORS @ 24" O.C. PER SHEET S1.1
METAL:	(2) #10 SMS @ 16" O.C. MAX.
STRUCTURAL STEEL:	(2) HILTI EDS LOW VELOCITY POWER DRIVEN FASTENERS @ 24" O.C. – ICC ESR 1663

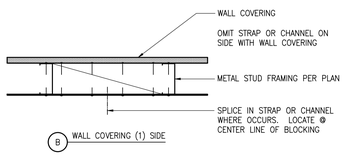


TYP. WALL TO WALL ANCHORAGE 1–1/2"=1'–0" | 15

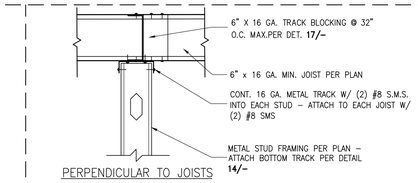
CONDITION	ANCHORAGE
CONC SLAB:	METAL TRACK – ATTACH W/ 0.145 SHANK DIAMETER HILTI X–DNI @ 32" O.C. WITH STEEL WASHER – 6" MAX. FROM ENDS – MIN. EMBEDMENT 1–1/2" – ICC ESR #2379
CONC CURB:	SEE STRUCTURAL DRAWINGS

NOTE:
PROVIDE ADDITIONAL ANCHORAGE @ EACH SIDE OF JAMB STUD AND EACH BACKING PLATE STUD.

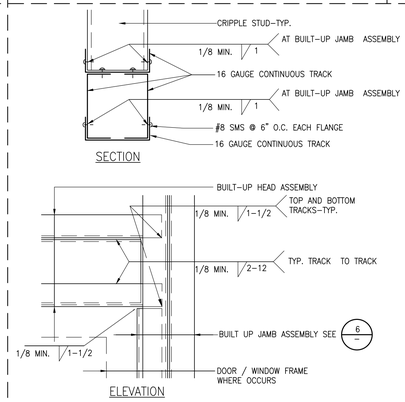




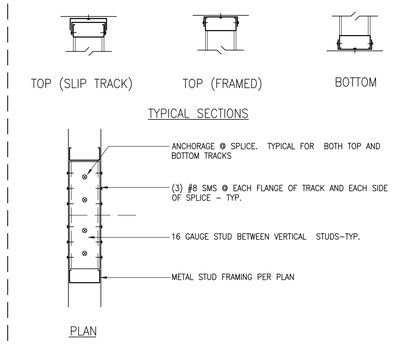
TYP. BOTTOM TRACK ANCHORAGE 1–1/2"=1'–0" | 14



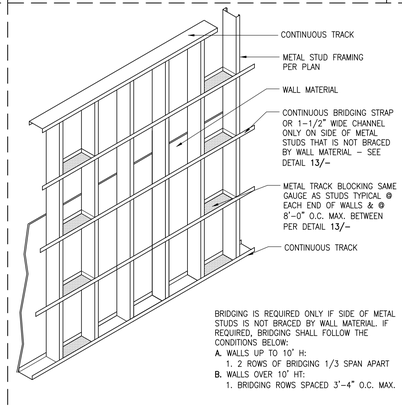
PARTITION TRACK ATTACHMENT AT METAL JOIST FRAMING 1–1/2"=1'–0" | 12



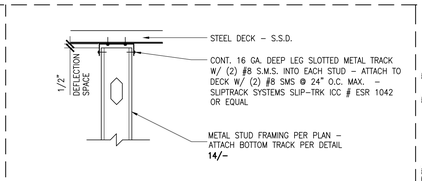
OPENING HEADER – 16'–0" MAX WIDTH 3"=1'–0" | 11



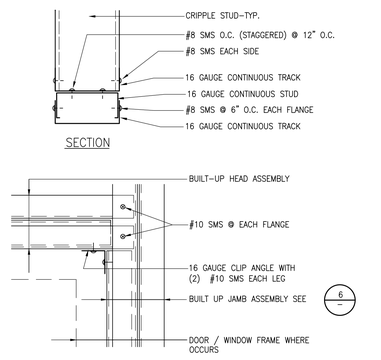
TYP. METAL FRAMING TRACK SPLICE 1–1/2"=1'–0" | 10



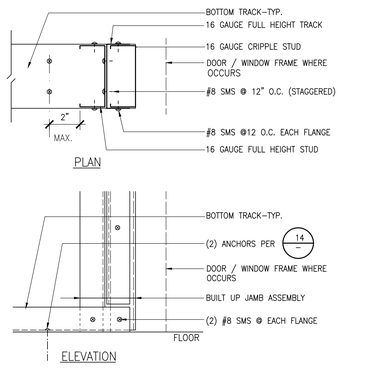
TYP. METAL FRAMING BRIDGING 1/2"=1'–0" | 9



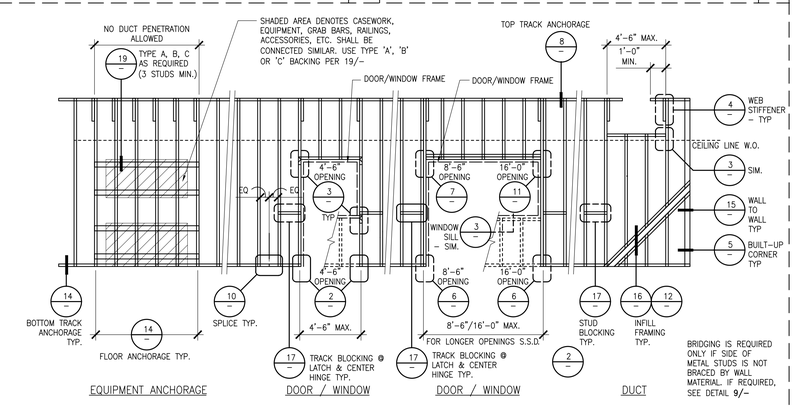
TYP. TRACK ATTACHMENT – DECK 1–1/2"=1'–0" | 8



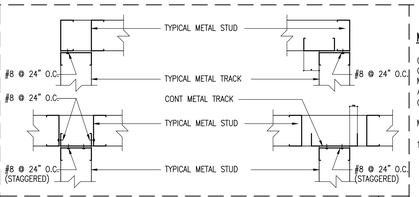
OPENING HEADER – 8'–6" MAX WIDTH 3"=1'–0" | 7



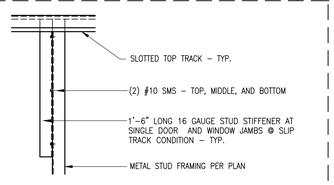
TRACK ANCHORAGE – 16'–0" OPENING 3"=1'–0" | 6



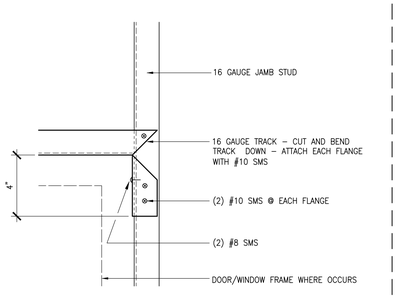
TYPICAL INTERIOR STUD WALL FRAMING (NON LOAD–BEARING WALLS ONLY) 1/4"=1'–0" | 1



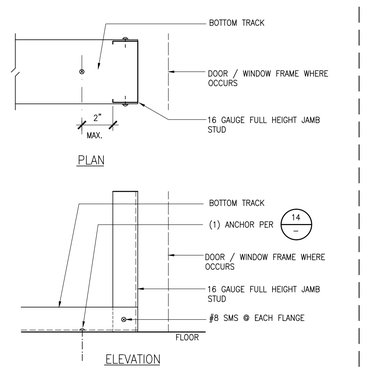
BUILT–UP CORNER ASSEMBLIES 1–1/2"=1'–0" | 5



TYP. STUD STIFFENER 1–1/2"=1'–0" | 4



OPENING HEADER – 4'–6" MAX WIDTH 3"=1'–0" | 3



TRACK ANCHORAGE – 4'–6" OPENING 3"=1'–0" | 2

METAL FRAMING NOTES

GALVANIZED METAL STUDS ARE / HAVE BEEN CHOSEN BASED ON I.C.C. REPORT NO. ESR–3064P. METAL STUDS SHALL BE MADE OF MINIMUM CHIPS APPROVED STANDARD FOR RECYCLED CONTENT AND CONFORM TO ASTM A–653 (GALVANIZING).

METAL FRAMING SHALL BE THE FOLLOWING:

1. FOR INTERIOR WALLS/PARTITIONS WITH GYPSUM BOARD OR PLASTER ON EITHER ONE OR BOTH SIDES, USE THE FOLLOWING, U.O.N.:
   A. HEIGHTS UP TO 16'–0" 16 GA X 4" MIN DEEP STUDS @ 16" O.C.
   B. HEIGHTS UP TO 26'–0" 16 GA X 6" MIN DEEP STUDS @ 16" O.C.
   C. STUD AND JOIST FLANGE SHALL BE 1–5/8" DEEP
   D. TRACK FLANGE SHALL BE 1 1/4" MIN. DEEP
2. FOR EXTERIOR WALLS SEE STRUCTURAL DRAWINGS.
3. TOP AND BOTTOM TRACKS FOR ALL STUD WALLS/PARTITIONS SHALL BE THE SAME SIZE AND GAUGE AS STUDS, EXCEPT USE 16 GAUGE TRACKS AS INDICATED FOR BACKING, SLIP TRACKS, ETC.
4. WHERE CABINETS ARE TO BE ANCHORED TO STUD WALLS/PARTITIONS, FOLLOW TYPICAL DETAILS FOR STUDS AND BACKING.
5. ALL STUDS, JOISTS, AND TOP TRACK SHALL CONFORM WITH ASTM A–653, GRADE "A" FOR 20 GAUGE AND LIGHTER AND GRADE "C" FOR 18 GAUGE AND HEAVIER

TYPICAL CONNECTIONS U.O.N.:

1. TRACK TO STUD: #8 SMS EACH FLANGE
2. DOUBLE STUDS: #8 SMS @ 12" O.C. (WEB TO WEB) (STAGGERED)
3. BUILT UP CORNERS: #8 SMS @ 24" O.C.
4A. FACE OF MEMBER TO FLANGE OF MEMBER ≤ = 4": (2) #10 SMS
4B. FACE OF MEMBER TO FLANGE OF MEMBER > = 4": (3) #10 SMS
5. LAPPED CONNECTION: (2) #8 SMS (WEB TO WEB)
6. TOP PLATE TO JOIST: (2) #8 SMS
7. TOP PLATE TO BLOCKING: #8 SMS @ 4" O.C.
8. TOP PLATE TO RIDGE TRACK: #8 SMS @ 4"O.C.

MINIMUM ATTACHMENT OF APPROVED WALL COVERINGS TO PROVIDE CONTINUOUS ADEQUATE LATERAL SUPPORT FOR STUD FLANGES:

WALL COVERING WITH DIRECT ATTACHMENT:

APPROVED LATHS FOR PLASTER: PER CBC TABLE 2507.2. LATH, PLASTERING & ACCESSORIES

SINGLE AND DOUBLE–PLY GYPSUM WALLBOARD: PER CBC TABLE 2508.1 INSTALLATION OF GYPSUM CONSTRUCTION

PLYWOOD (NON–STRUCTURAL): #6 PHILLIPS BUGLE HEAD SMS (1/4" MIN PENETRATION) SPACED PER CBC SECTION 2304.9

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310 NOVA ALBION WAY
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Terra Linda HS Innovation Hub

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06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT

APP#: 01-117586

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DATE_____

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA

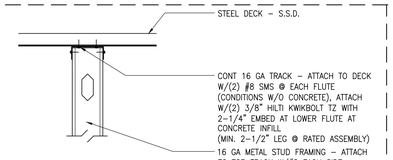
(415) 981-2345

WWW.HED.DESIGN

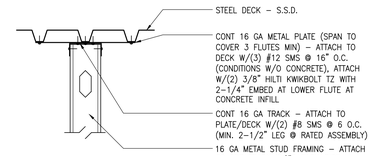
2017-03489-000

Metal Framing Details

A-521

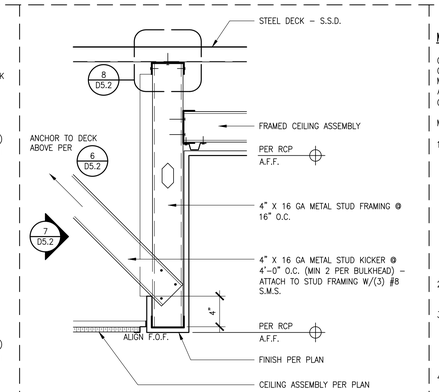


PERPENDICULAR TO DECKING

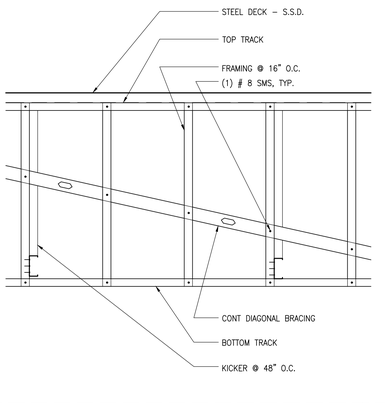


PARALLEL TO DECKING

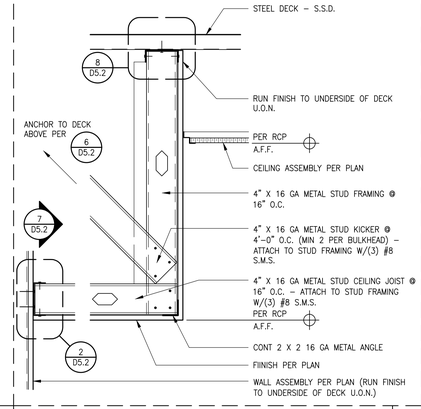
TRACK ATTACHMENT – DECK 1-1/2"=1'-0" 8



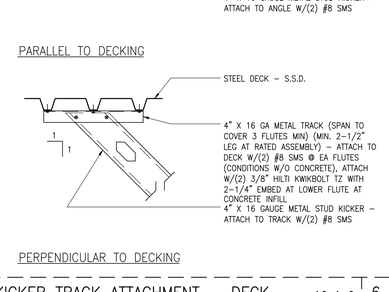
CEILING BULKHEAD 1-1/2"=1'-0" 4



BULKHEAD/SOFFIT FRAMING ELEVATION 1"=1'-0" 7



SOFFIT 1-1/2"=1'-0" 3

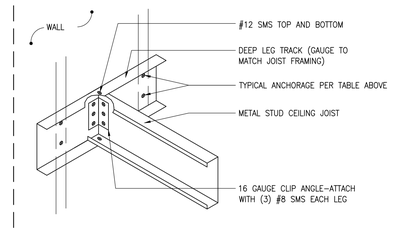


PARALLEL TO DECKING

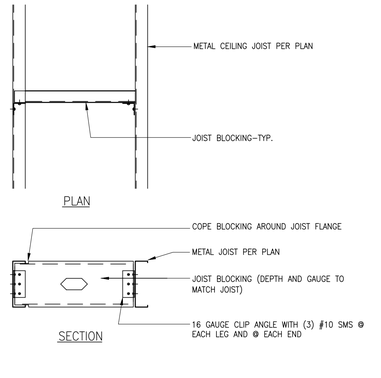
PERPENDICULAR TO DECKING

KICKER TRACK ATTACHMENT – DECK 1-1/2"=1'-0" 6

CONDITION	ANCHORAGE
CONC:	(2) 3/8"ø EXPANSION ANCHORS @ 24" O.C. PER SHEET S1.1
METAL:	(2) #10 SMS @ 16" O.C. MAX.
STRUCTURAL STEEL:	(2) HILTI EDS LOW VELOCITY POWER DRIVEN FASTENERS @ 24" O.C. – ICC ESR 1663



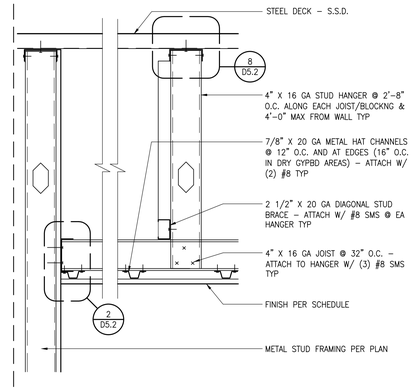
TYP. MTL. FRAMING LEDGER ATTACH. 1-1/2"=1'-0" 2



PLAN

SECTION

JOIST BLOCKING 1-1/2"=1'-0" 5



FRAMED CEILING 1-1/2"=1'-0" 1

METAL FRAMING NOTES

GALVANIZED METAL STUDS ARE / HAVE BEEN CHOSEN BASED ON I.C.C. REPORT NO. ESR-3064P. METAL STUDS SHALL BE MADE OF MINIMUM CHIPS APPROVED STANDARD FOR RECYCLED CONTENT AND CONFORM TO ASTM A-653 (GALVANIZING).

METAL FRAMING SHALL BE THE FOLLOWING:

1. FOR INTERIOR WALLS/PARTITIONS WITH GYPSUM BOARD OR PLASTER ON EITHER ONE OR BOTH SIDES, USE THE FOLLOWING, U.O.N.:
   A. HEIGHTS UP TO 16'-0" 16 GA X 4" MIN DEEP STUDS @ 16" O.C.
   B. HEIGHTS UP TO 26'-0" 16 GA X 6" MIN DEEP STUDS @ 16" O.C.
   C. STUD AND JOIST FLANGE SHALL BE 1-5/8" DEEP
   D. TRACK FLANGE SHALL BE 1 1/4" MIN. DEEP
2. FOR EXTERIOR WALLS SEE STRUCTURAL DRAWINGS.
3. TOP AND BOTTOM TRACKS FOR ALL STUD WALLS/PARTITIONS SHALL BE THE SAME SIZE AND GAUGE AS STUDS, EXCEPT USE 16 GAUGE TRACKS AS INDICATED FOR BACKING, SLIP TRACKS, ETC.
4. WHERE CABINETS ARE TO BE ANCHORED TO STUD WALLS/PARTITIONS, FOLLOW TYPICAL DETAILS FOR STUDS AND BACKING.
5. ALL STUDS, JOISTS, AND TOP TRACK SHALL CONFORM WITH ASTM A-653, GRADE "A" FOR 20 GAUGE AND LIGHTER AND GRADE "C" FOR 18 GAUGE AND HEAVIER

TYPICAL CONNECTIONS U.O.N.:

1. TRACK TO STUD: #8 SMS EACH FLANGE
2. DOUBLE STUDS: #8 SMS @ 12" O.C.
   (WEB TO WEB) (STAGGERED)
3. BUILT UP CORNERS: #8 SMS @ 24" O.C.

4A. FACE OF MEMBER TO FLANGE OF MEMBER ≤ = 4": (2) #10 SMS

4B. FACE OF MEMBER TO FLANGE OF MEMBER > = 4": (3) #10 SMS

5. LAPPED CONNECTION: (3) #8 SMS (WEB TO WEB)
6. TOP PLATE TO JOIST: (2) #8 SMS
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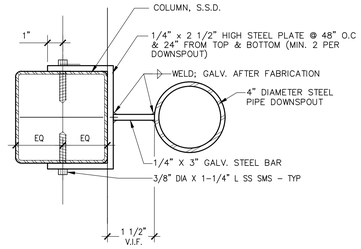
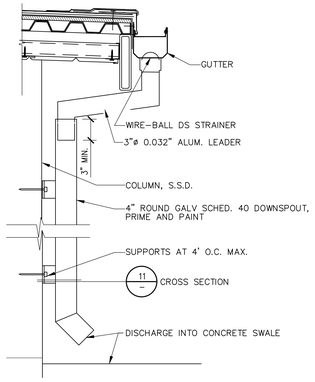
Metal Framing Details

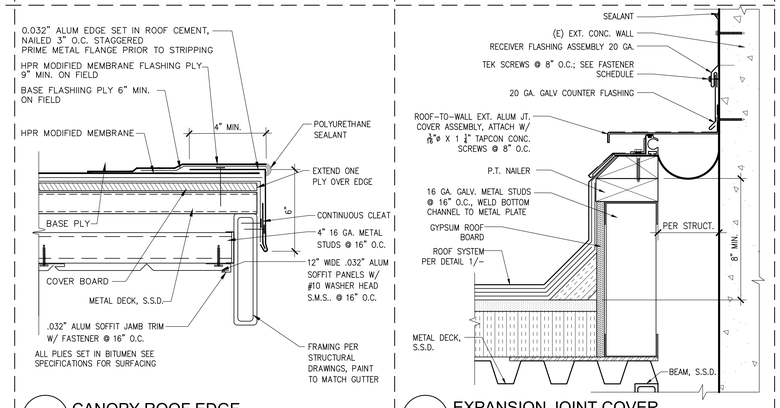
A-522



11 DOWNSPOUT ANCHORAGE
SCALE

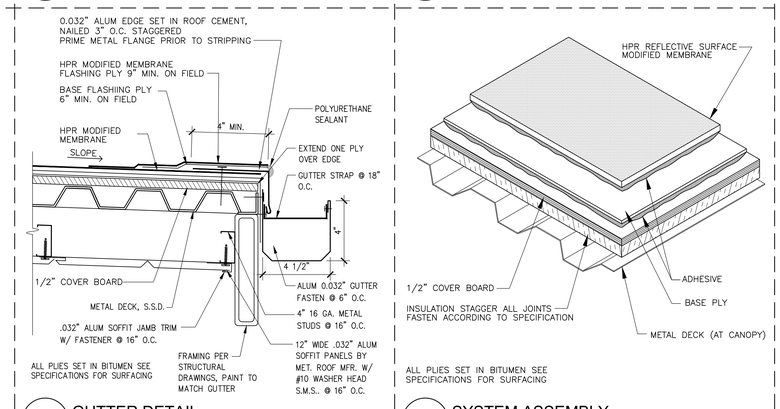


7 LEADER PIPE & DOWNSPOUT
NTS



6 CANOPY ROOF EDGE
3" = 1'-0"

2 EXPANSION JOINT COVER
3" = 1'-0"



5 GUTTER DETAIL
3" = 1'-0"

ALL PLIES SET IN BITUMEN SEE SPECIFICATIONS FOR SURFACING

1 SYSTEM ASSEMBLY
NTS

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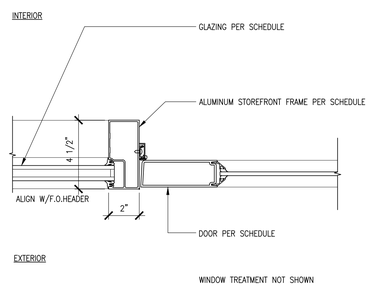
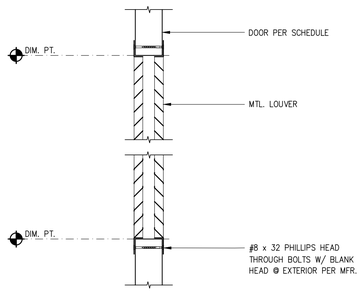
Roof Details

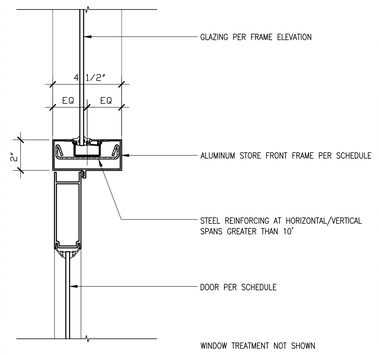
A-531



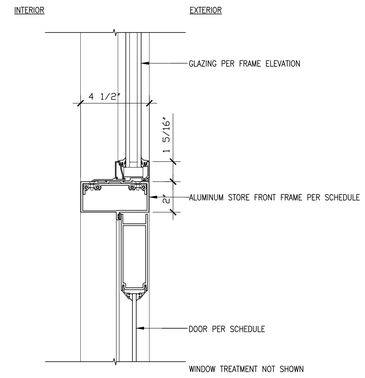
8 EXT. S.F. DOOR/WINDOW-JAMB
3" = 1'-0"



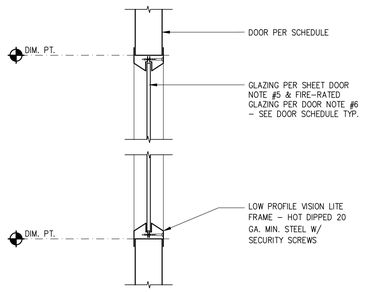
4 DOOR LOUVER
3" = 1'-0"



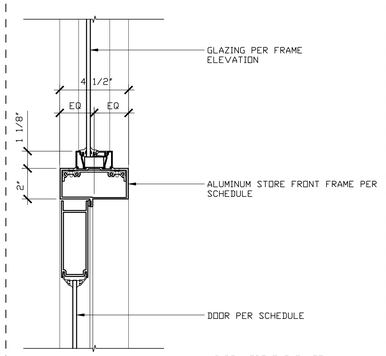
11 INT. S.F. DOOR/WINDOW-JAMB
3" = 1'-0"



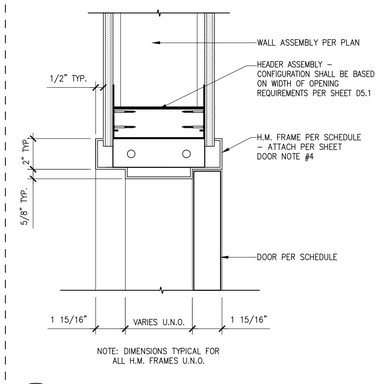
7 EXT. S.F. DOOR-HEAD/TRANSOM-SILL
3" = 1'-0"



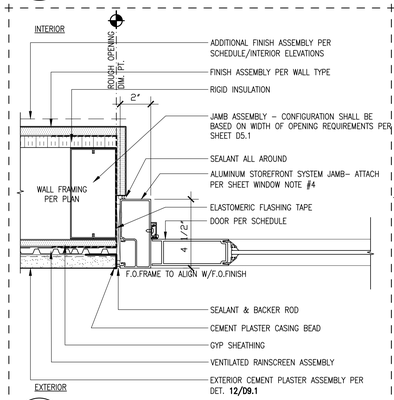
3 DOOR LITE
3" = 1'-0"



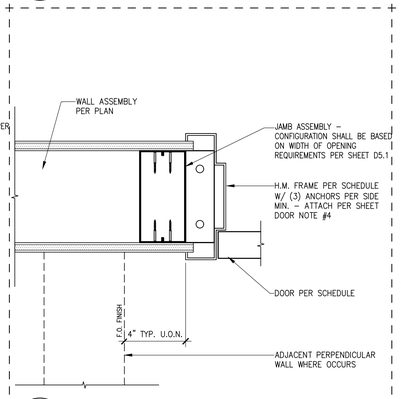
10 INT. S.F. DOOR-HEAD/TRANSOM-SILL
3" = 1'-0"



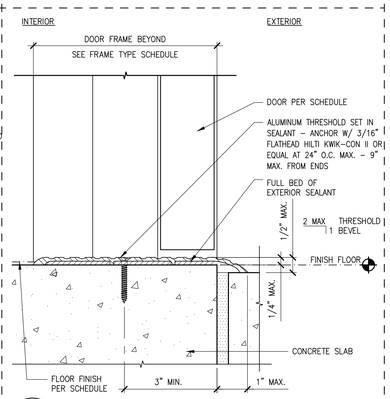
6 TYP. INTERIOR H.M. DOOR HEAD
3" = 1'-0"



9 EXT. S.F. DOOR-JAMB (MTL)
3" = 1'-0"



5 TYP. INTERIOR H.M. DOOR JAMB
3" = 1'-0"



1 TYPICAL DOOR THRESHOLD
6" = 1'-0"

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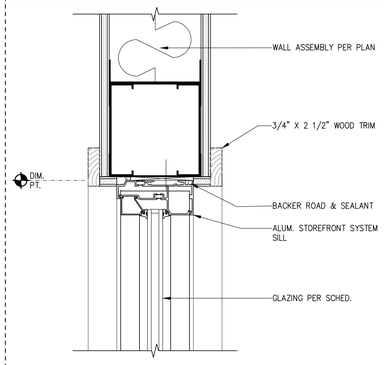
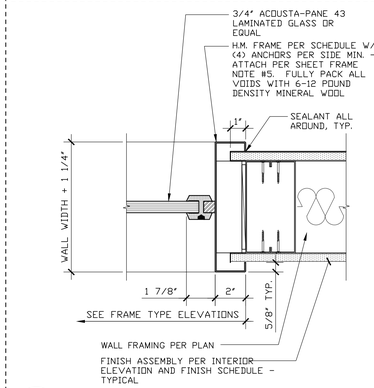
Door Details

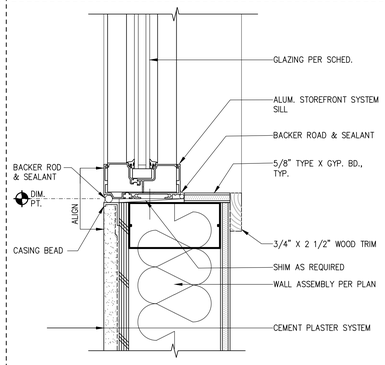
A-561



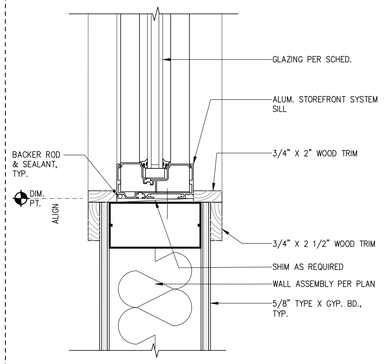
12 INT. STOREFRONT HEAD
3" = 1'-0"



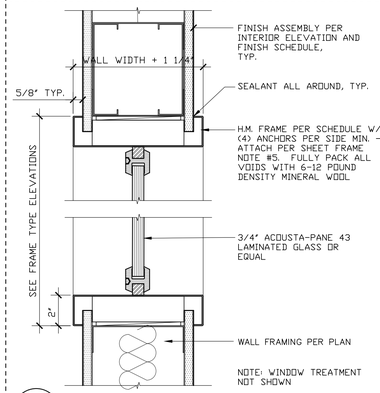
8 INT. ACOUSTIC WINDOW JAMB
SCALE



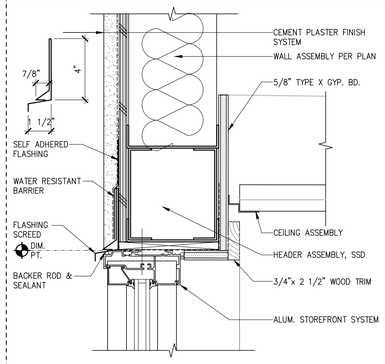
4 EXT. STOREFRONT JAMB
3" = 1'-0"



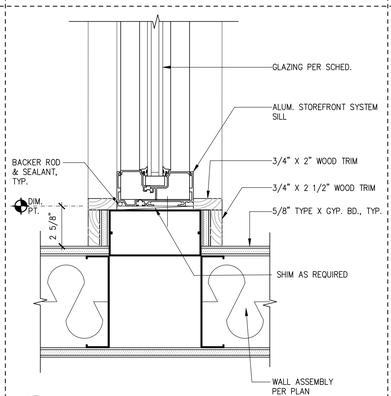
11 INT. STOREFRONT JAMB
3" = 1'-0"



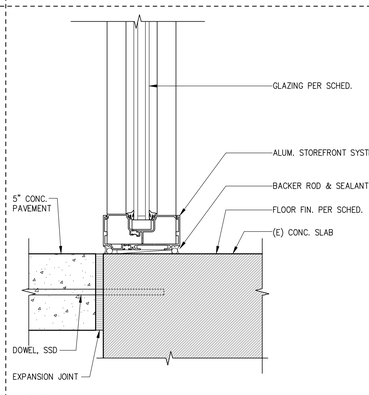
7 INT. ACOUSTIC WINDOW HEAD/SILL
3"=1'-0"



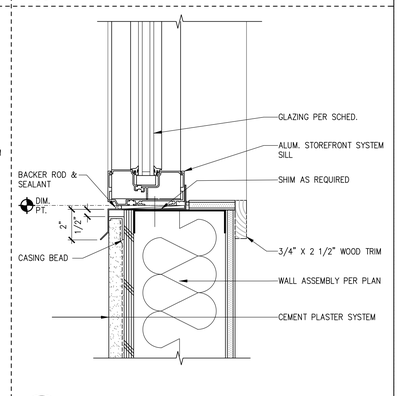
3 EXT. STOREFRONT HEAD
3" = 1'-0"



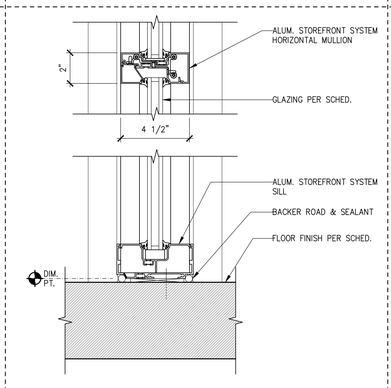
10 INT. STOREFRONT JAMB
3" = 1'-0"



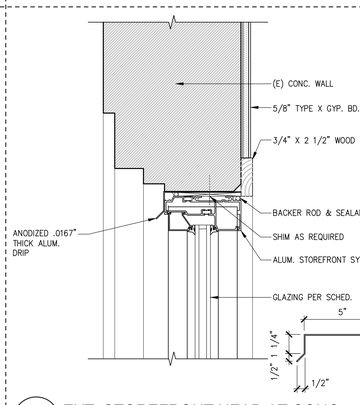
6 EXT. STOREFRONT SILL AT CONC.
3" = 1'-0"



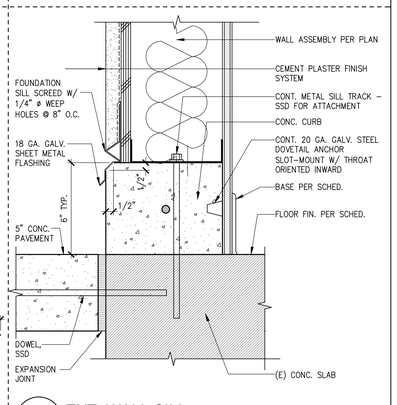
2 EXT. STOREFRONT SILL
3" = 1'-0"



9 DETAIL
3" = 1'-0"



5 EXT. STOREFRONT HEAD AT CONC.
3" = 1'-0"



1 EXT. WALL SILL
3" = 1'-0"

NOTES:

1. OVERALL DIMENSIONS SHOWN ARE NOMINAL DESIGN DIMENSIONS – SEE DETAILS AND FIELD VERIFY ROUGH OPENING DIMENSIONS TO DETERMINE OVERALL FABRICATION DIMENSIONS.
2. HOLLOW METAL FRAME FACE DIMENSION IS 2 INCHES U.O.N. SEE DETAILS FOR FRAME PROFILES.
3. ALL HOLLOW METAL FRAMES ARE FIELD PAINTED U.O.N.
4. CONNECT HOLLOW METAL FRAMES TO WALLS AS FOLLOWS:
   METAL STUDS: STEEL STUD ANCHORS @24" O.C. MAX. ALL AROUND AND 9" MAX. FROM ENDS. – (3) PER JAMB MIN. (1) ANCHOR @ HEAD MIDSPAN @ DOORS WIDER THAN 3'-0". (4) #8 X 3/4" FLAT HEAD SHEET METAL SCREWS PER ANCHOR TYPICAL.
   CONCRETE: 3/8" DIA. HILTI EXPANSION ANCHOR @ 24" O.C. MAX. – 6" FROM ENDS – (2) PER SIDE MIN.
5. ALL GLAZING IN DOORS AND ALL SIDELITE/TRANSOM GLAZING TO BE LAMINATED GLASS U.O.N.

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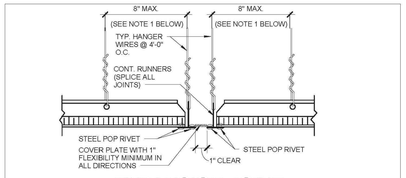
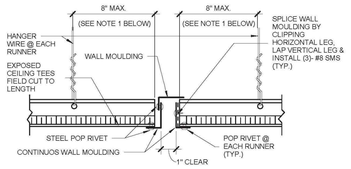
Window Details

A-562



EXPANSION JOINT



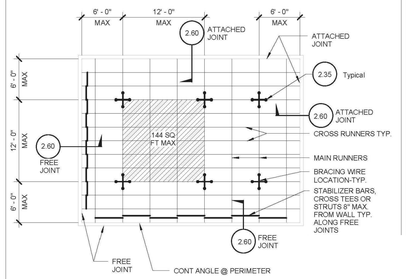
EXPANSION JOINT ALTERNATE

EXPANSION JOINTS AT THE INTERSECTION OF CORRIDORS AND AT JUNCTIONS OF CORRIDORS AND LOBBIES OR OTHER SIMILAR AREAS

NOTES:

1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS. FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : SUSPENDED ACOUSTICAL CEILING - EXPANSION JOINT AT INTERSECTIONS	rev.	09-21-15	2.40



NOTE:
BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 144 SQ. FT. MAX. IN ROOMS OVER 144 SQ. FT.

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : TYPICAL CEILING PLAN FOR 12'-0" x 12'-0" Brace Assembly Spacing	rev.	09-21-15	2.12

STRUCTURAL CONDITION OF FLOOR / ROOF ABOVE COMPRESSION STRUT	APPLICABLE DETAIL
METAL DECK	5.20
CONCRETE OVER METAL DECK	5.21
CONCRETE SLAB, BEAM, OR JOIST	5.30
STRUCTURAL STEEL	5.40
SAWN TIMBER WITH GYPSUM BOARD	5.50
SAWN TIMBER WITHOUT GYPSUM BOARD	5.60

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : COMPRESSION STRUT CONNECTION TO STRUCTURE - CONNECTION MATRIX	rev.	09-21-15	5.10

DSA IR 25-2.13 METAL SUSPENSION SYSTEMS FOR LAY-IN PANEL CEILINGS

1. CEILING SYSTEM GENERAL NOTES:

1.01 Ceiling system components shall comply with ASTM C635-07 and Section 5.1 of ASTM E580-10a.

1.02 The ceiling grid system must be rated heavy duty as defined by ASTM C635-08
.

1.03 Ceiling systems. The following ceiling system(s) is/are part of the scope of this project:

Manufacturer's Name ARMSTRONG
Product Name and Evaluation Report Type/Number PRELUDE XL ICC ESR 1308
Manufacturer's Model Number - main runner 7301 HD,
Manufacturer's catalog number - cross runner XL 8320 MRC

1.04 Seismic Wall Clip:

Manufacturer's Model BERC 2

1.05 Ceiling panels shall not support any light fixtures, air terminals or devices.

1.06 For ceiling installations utilizing acoustical tile panels of mineral or glass fiber, it is not mandatory to provide 3/4" clearance between the acoustical tile panels and the wall on the sides of the ceiling which are free to slip. For all other ceiling panel types, provide 3/4" clearance between the ceiling panel and the wall on the sides of the ceiling free to slip.

2. MATERIALS:

2.01 Ceiling wire shall be Class 1 zinc coated (galvanized) carbon steel conforming to ASTM A641-09a. Wire shall be #12 gage (0.106" diameter) with soft temper and minimum tensile strength = 70 ksi.

2.02 Galvanized sheet steel (including that used for metal stud and track compression struts/post) shall conform to ASTM A653-11, or other equivalent sheet steel listed in Section A2.1 of the North American Specification for the Design of Cold-Formed Steel Structural Members 2007, including supplement 2 dated 2010 (AISI S100-07/S2-10). Material 43 mil (18 gage) and lighter shall have minimum yield strength of 33 ksi. Material 54 mil (16 gage) and heavier shall have a minimum yield strength of 50 ksi.

2.03 Electrical metallic tube (EMT) shall be ANSI C80.3/UL 797 carbon steel with G90 galvanizing. EMT shall have minimum yield strength (Fy) of 30 ksi and minimum ultimate strength (Fu) of 48 ksi.

3. ATTACHMENT OF HANGER AND BRACING WIRES:

3.01 Separate all ceiling hanger and bracing wires at least six (6) inches from all unbraced ducts, pipes, conduit, etc.

3.02 Hanger and bracing wires shall not attach to or bend around obstructions including but not limited to: piping, ductwork, conduit and equipment.

3.03 Hanger wires that are more than one (horizontal) in six (vertical) out of plumb shall have counter-sloping wires.

3.04 Slack safety wires shall be considered hanger wires for installation and testing requirements.

3.05 Hanger and bracing wire anchorage to the structure shall be installed in such a manner that the direction of the anchorage aligns closely with the direction of the wire, (e.g. bracing wire ceiling clips must be bent as shown in the details and rotated as required to align closely with the direction of the wire, screw eyes in wood must be installed so they align closely with the direction of the wire, etc.)

4. FASTENERS AND WELDING:

4.01 Sheet metal screws shall comply with ASTM C1513-10, ASME B18.6.4-89 (R2005). Penetration of screws through joined material shall not be less than three exposed threads.

4.02 Expansion anchors shall be:

Manufacturer's Name HILTI
Product Name and Evaluation Report Type/Number KWIK BOLT TZ ESR 1917
Manufacturer's Load for each size specified (per CBC 1913A.7.2) SEE 12/SI

4.03 Power-Actuated Fasteners shall be:

Manufacturer's Name HILTI
Product Name and Evaluation Report Type/Number X-U or X-P ESR 2269.

4.04 If not otherwise specified in the evaluation report, power-actuated fasteners installed in steel shall be installed so the entire pointed end of the fastener is driven through the steel member.

4.05 Power-actuated fasteners in concrete are not permitted for bracing wires.

4.06 Concrete reinforcement and prestressing tendons shall be located by non-destructive means prior to installing post - installed anchor.

4.07 Welding shall be in accordance with AWS D1.3 using E60XX series electrodes.

5. TESTING: All field testing must be performed in the presence of the project inspector.

5.01 Post-installed anchors in concrete used to support hanger wires shall be tested at a frequency of 10 percent. Power actuated fasteners in concrete shall be field tested for 200 lbs. in tension. All other post-installed anchors in concrete shall be tested in accordance with CBC Section 1913A.7.

5.02 Post-installed anchors in concrete used to attach bracing wires shall be tested at a frequency of 50 percent in accordance with CBC Section 1913A.7.

6. LIGHT FIXTURES:

6.01 All light fixtures shall be positively attached to the ceiling suspension systems by mechanical means to resist a horizontal force equal to the weight of the fixture. A minimum of two screws or approved fasteners are required at each light fixture, per ASTM E580, Section 5.3.1.

6.02 Surface-mounted light fixtures shall be attached to the main runner with at least two positive clamping devices. The clamping device shall completely surround the supporting ceiling runner and be made of steel with a minimum thickness of #14 gage. Rotational spring catches do not comply. A #12 gage slack safety wire shall be connected from each clamping device to the structure above. Provide additional supports when light fixtures are eight (8) feet or longer or exceed 56 lb. Maximum spacing between supports shall not exceed eight (8) feet.

6.03 Light fixtures weighing less than or equal to 10 lb. shall have a minimum of one (1) #12 gage slack safety wire connected from the fixture housing to the structure above.

6.04 Light fixtures weighing less than or equal to 10 lb. shall have a minimum of one (1) #12 gage slack safety wire connected from the fixture housing to the structure above.

6.05 Light fixtures weighing greater than 10 lb. but less than or equal to 56 lbs. may be supported directly on the ceiling runners, but they shall have a minimum of two (2) #12 gage slack safety wires connected from the fixture housing at diagonal corners to the structure above.

Exception: All light fixtures greater than two by four feet weighing less than 56 lbs. shall have a #12 gage slack safety wire at each corner.

6.06 All light fixtures weighing greater than 56 lb. shall be independently supported by not less than four (4) taut #12 gage hanger wires (one at each corner) attached from the fixture housing to the structure above or other approved hangers. The four (4) taut #12 gage wires or other approved hangers, including their attachment to the structure above, shall be capable of supporting four (4) times the weight of the fixture.

7. SERVICES WITHIN THE CEILING:

7.01 All flexible sprinkler hose fitting mounting brackets, ceiling-mounted air terminals or other services shall be positively attached to the ceiling suspension systems by mechanical means. Screws or approved fasteners are required. A minimum of two attachments are required at each component.

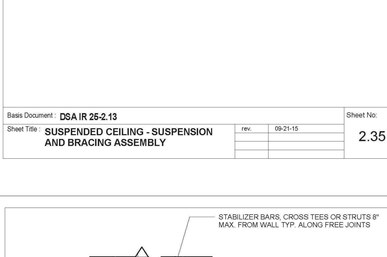
7.02 Ceiling-mounted air terminals or other services weighing less than or equal to 20 lb. shall have one (1) #12 gage slack safety wire attached from the terminal or service to the structure above.

7.03 Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing more than 20 lb. but less than or equal to 56 lb. shall have two (2) #12 gage slack safety wires (at diagonal corners) connected from the terminal or service to the structure above.

7.04 Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing more than 56 lb. shall be supported directly from the structure above by not less than four (4) taut #12 gage hanger wires attached from the terminal or service to the structure above or other approved hangers.

8. OTHER DEVICES WITHIN THE CEILING:

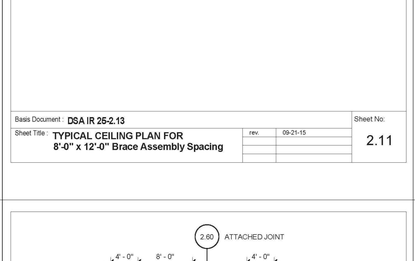
8.01 All lightweight miscellaneous devices, such as strobe lights, occupancy sensors, speakers, exit signs, etc., shall be attached to the ceiling grid. In addition, devices weighing more than 10 lbs. shall have a #12 gage slack safety wire anchored to the structure above. Devices weighing more than 20 lb. shall be supported independently from the structure above.



NOTES:

1. STRUTS SHALL NOT REPLACE HANGER WIRES.
2. THE MINIMUM ACCEPTABLE ANGLE IS DETERMINED SUCH THAT THE WIRES DO NOT INTERFER WITH THE RUNNERS, LIGHT FIXTURES, ETC. AND REMAIN STRAIGHT AND UNOBSTRUCTED.

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : SUSPENDED ACOUSTICAL CEILING - SUSPENSION AND BRACING ASSEMBLY	rev.	09-21-15	2.35

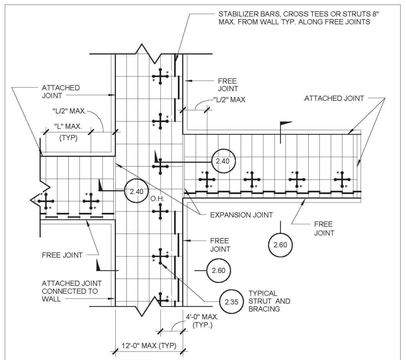


NOTE:
BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 96 SQ. FT. MAX. IN ROOMS OVER 144 SQ. FT.

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : TYPICAL CEILING PLAN FOR 8'-0" x 12'-0" Brace Assembly Spacing	rev.	09-21-15	2.11

STRUCTURAL CONDITION OF FLOOR/ ROOF ABOVE SUSPENDED CEILING	APPLICABLE HANGER WIRE DETAIL	APPLICABLE BRACING WIRE DETAIL
METAL DECK	4.20	4.30
CONCRETE OVER METAL DECK	4.21	4.31
CONCRETE SLAB, BEAM, OR JOIST	4.22	4.32
STRUCTURAL STEEL	4.23	4.33
METAL STUD WALL	4.24	4.34
SAWN TIMBER	4.25, 4.29	4.35
WOOD I JOIST	4.26	4.36, 4.37
WOOD CHORD TRUSS	4.27, 4.29	4.38, 4.29
OPEN WEB STEEL JOIST	4.28, 4.29	4.39, 4.29

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : HANGER AND BRACING WIRE CONNECTION MATRIX	rev.	09-21-15	4.11

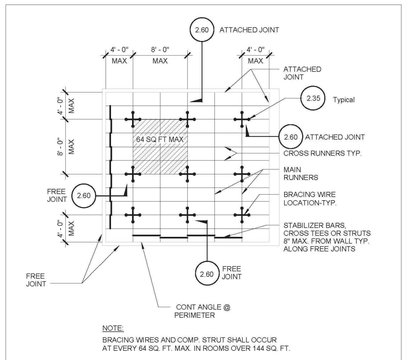


LOCATION OF EXPANSION/SLIP JOINTS IN CORRIDORS

NOTES:

1. "L"IS MAX. BRACE ASSEMBLY SPACING PER CEILING PLAN DETAIL. FOR EXAMPLE, WHERE 8' x 12' SPACING IS SPECIFIED, USE "L" = 8'.

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : SUSPENDED ACOUSTICAL CEILING- CORRIDOR CEILING PLAN (Schools)	rev.	09-21-15	2.30



NOTE:
BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 64 SQ. FT. MAX. IN ROOMS OVER 144 SQ. FT.

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : TYPICAL CEILING PLAN FOR 8'-0" X 8'-0" Brace Assembly Spacing	rev.	09-21-15	2.10

COMPRESSION STRUT TABLE

EMT COMPRESSION STRUT	MAXIMUM LENGTH
1/2" DIAMETER EMT (0.042" WALL THICKNESS)	5'-10"
3/4" DIAMETER EMT (0.049" WALL THICKNESS)	7'-8"
1" DIAMETER EMT (0.057" WALL THICKNESS)	9'-9"
1 1/4" DIAMETER EMT (0.065" WALL THICKNESS)	12'-9"
1 1/2" DIAMETER EMT (0.065" WALL THICKNESS)	14'-9"
2" DIAMETER EMT (0.065" WALL THICKNESS)	18'-10"

CHANNEL COMPRESSION STRUT	MAXIMUM LENGTH
250S125-33	5'-0"
250S137-33	6'-10"
362S137-33	8'-0"
250137-43	8'10"
400S137-43	10'-10"

Basis Document : DSA IR 25-2.13			Sheet No:
Sheet Title : COMPRESSION STRUT TABLE	rev.	09-21-15	3.21

SHEET NOTES

1. ALL NOTES AND DRAWINGS ARE PER DSA IR 25-2.13.

CEILING NOTES (DSA IR 25-2.13) | 1

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06/08/18	DSA SUBMITTAL

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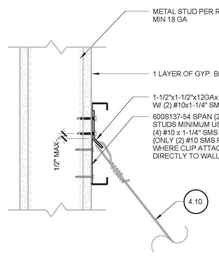
(415) 981-2345
WWW.HED.DESIGN

2017-03489-000

Details Suspended Ceiling Assembly Typical

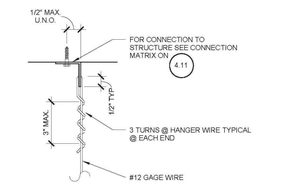
A-571



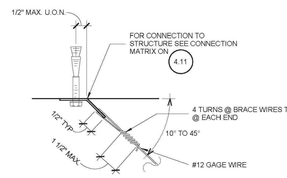
Basis Document : **DSA IR 25-2.13** | Sheet No: 4.34

Sheet Title : **BRACING WIRE CONNECTION TO METAL STUD WALL**

rev.	09-21-15



HANGER WIRE

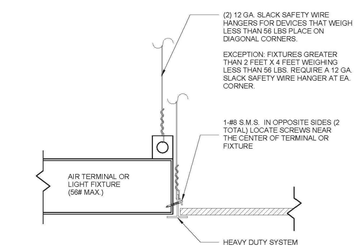


BRACING WIRE

Basis Document : **DSA IR 25-2.13** | Sheet No: 4.10

Sheet Title : **HANGER AND BRACING WIRE CONNECTION - TYPICAL WIRE TURNS**

rev.	09-21-15



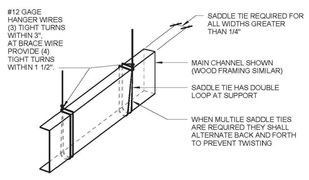
Basis Document : **DSA IR 25-2.13** | Sheet No: 2.80

Sheet Title : **SUSPENDED ACOUSTICAL CEILING - LIGHT FIXTURES/ AIR TERMINAL SUPPORT DETAIL**

rev.	09-21-15
rev.	02-10-16

SHEET NOTES

1. ALL NOTES AND DRAWINGS ARE PER DSA IR 25-2.13.



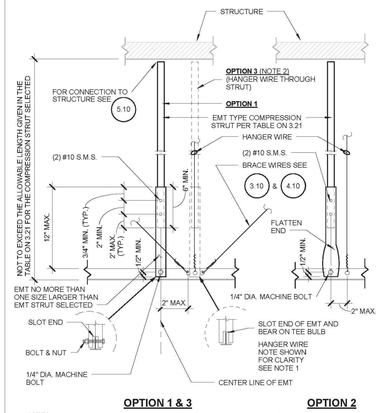
TYPICAL SADDLE TIE DETAIL

HANGER WIRE CONDITION SHOWN. BRACE WIRE CONDITION SIMILAR

Basis Document : **DSA IR 25-2.13** | Sheet No: 4.29

Sheet Title : **TYPICAL SADDLE TIE DETAIL**

rev.	09-21-15



OPTION 1 & 3

NOTES:

1. MACHINE BOLT IS NOT REQUIRED ON OPTION 3
2. APPLICABLE TO SAWN TIMBER WITHOUT GYPSUM BOARD ONLY.

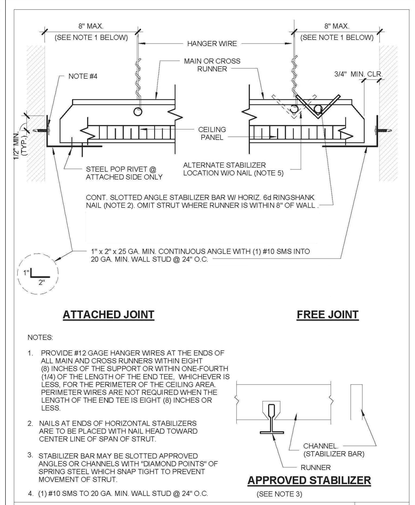
OPTION 2

SEE OPTION 1 FOR INFORMATION NOT SHOWN

Basis Document : **DSA IR 25-2.13** | Sheet No: 3.20

Sheet Title : **SUSPENDED ACOUSTICAL CEILING - EMT TYPE STRUT**

rev.	09-21-15



ATTACHED JOINT **FREE JOINT**

NOTES:

1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.
2. NAILS AT ENDS OF HORIZONTAL STABILIZERS ARE TO BE PLACED WITH NAIL HEAD TOWARD CENTER LINE OF SPAN OF STRUT.
3. STABILIZER BAR MAY BE SLOTTED APPROVED ANGLES OR CHANNELS WITH "DIAMOND POINTS" OF SPRING STEEL WHICH SNAP TIGHT TO PREVENT MOVEMENT OF STRUT.
4. (1) #10 SMS TO 20 GA. MIN. WALL STUD @ 24" O.C.

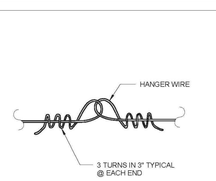
APPROVED STABILIZER

(SEE NOTE 3)

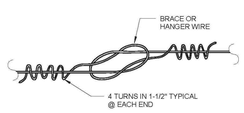
Basis Document : **DSA IR 25-2.13** | Sheet No: 2.60

Sheet Title : **CEILING PERIMETER**

rev.	09-21-15



HANGER WIRE ONLY



HANGER OR BRACE WIRE

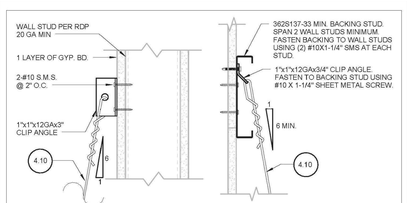
NOTES:

WIRE SPLICES ARE SHOWN LOOSELY TIED FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE DRAWN TIGHT TO COMPLETE INSTALLATION WHEN CONSTRUCTED.

Basis Document : **DSA IR 25-2.13** | Sheet No: 6.10

Sheet Title : **CEILING WIRE SPLICES**

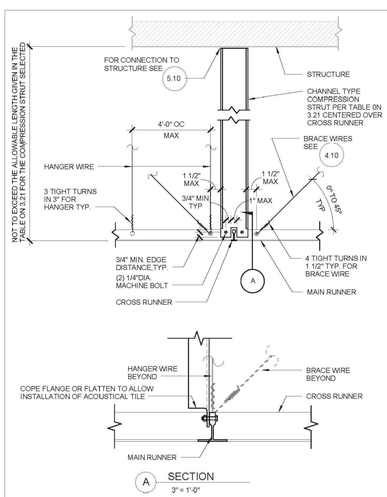
rev.	09-21-15



Basis Document : **DSA IR 25-2.13** | Sheet No: 4.24

Sheet Title : **HANGER WIRE CONNECTION TO METAL STUD WALL**

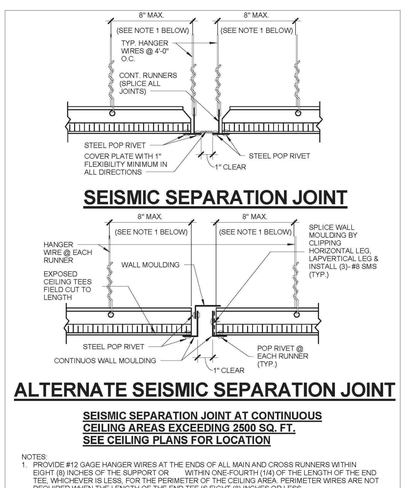
rev.	09-21-15



Basis Document : **DSA IR 25-2.13** | Sheet No: 3.10

Sheet Title : **SUSPENDED ACOUSTICAL CEILING - CHANNEL TYPE STRUT**

rev.	09-21-15



SEISMIC SEPARATION JOINT AT CONTINUOUS CEILING AREAS EXCEEDING 2500 SQ. FT. SEE CEILING PLANS FOR LOCATION

NOTES:

1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.

Basis Document : **DSA IR 25-2.13** | Sheet No: 2.45

Sheet Title : **SUSPENDED ACOUSTICAL CEILING - SEISMIC SEPARATION JOINT**

rev.	09-21-15

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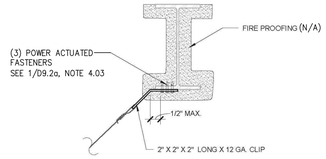
WWW.HED.DESIGN

2017-03489-000

Details Suspended Ceiling Assembly Typical - Part B

A-572



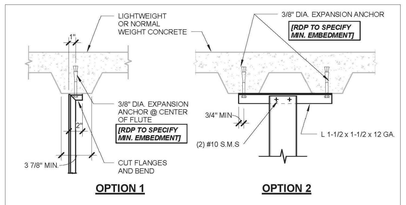
BRACING WIRE

NOTES :

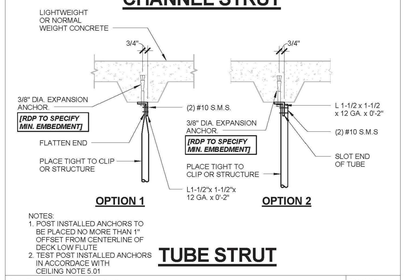
1. BEAM FLANGE THICKNESS SHALL NOT BE LESS THAN 3/16".
2. RDP IN RESPONSIBLE CHARGE, IOR, AND CONTRACTOR SHALL VERIFY THAT NO PAF IS INSTALLED IN THE PROTECTED ZONE OF ANY STEEL MEMBER. SEE ANSI/AISC 341-10
3. REFER TO 4.10 FOR ADDITIONAL DETAILS

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : BRACING WIRE CONNECTION TO STRUCTURAL STEEL	4.33

rev.	09-21-15



CHANNEL STRUT

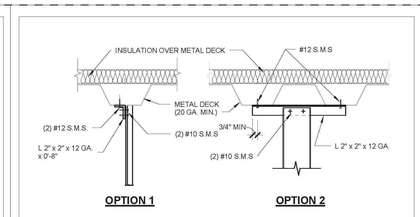


NOTES:
1. POST INSTALLED ANCHORS TO BE PLACED NO MORE THAN 1" OFFSET FROM CENTERLINE OF DECK LOW FLUTE
2. TEST POST INSTALLED ANCHORS IN ACCORDANCE WITH CEILING NOTE 5.01

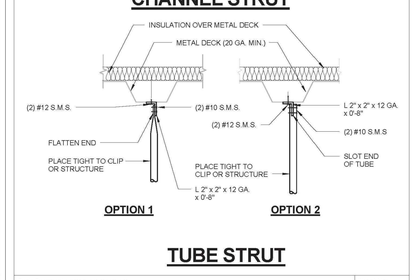
TUBE STRUT

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : STRUT CONNECTION TO CONCRETE OVER METAL DECK	5.21

rev.	09-21-15



CHANNEL STRUT



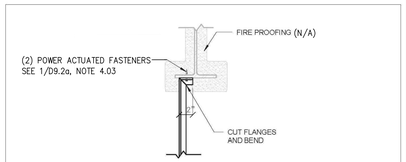
TUBE STRUT

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : STRUT CONNECTION TO METAL DECK	5.20

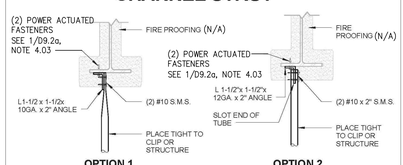
rev.	09-21-15

SHEET NOTES

1. ALL NOTES AND DRAWINGS ARE PER DSA IR 25-2.13.



CHANNEL STRUT



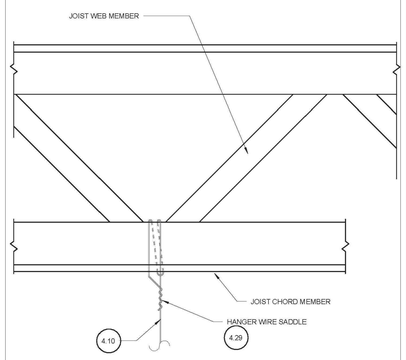
TUBE STRUT

NOTES:

1. STRUCTURAL STEEL MEMBER SHALL NOT BE LESS THAN 3/16".
2. RDP IN RESPONSIBLE CHARGE, I.O.R. AND CONTRACTOR SHALL VERIFY THAT NO PAF IS INSTALLED IN THE PROTECTED ZONE OF ANY STEEL MEMBER. SEE ANSI/AISC 341-10.
3. REFER TO 5.20 AND 5.30 FOR ADDITIONAL INFORMATION.

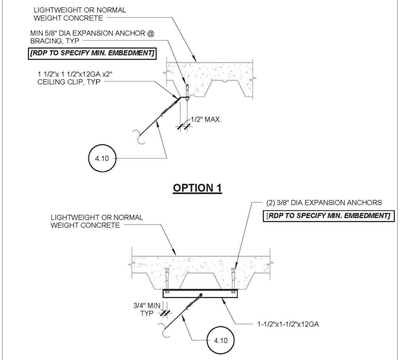
Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : STRUT CONNECTION TO STRUCTURAL STEEL	5.40

rev.	09-21-15



Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : HANGER WIRE CONNECTION TO OPEN WEB STEEL JOIST	4.28

rev.	09-21-15

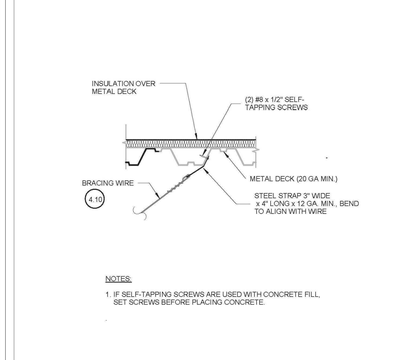


NOTES:

1. TEST POST INSTALLED ANCHORS IN ACCORDANCE WITH CEILING NOTE 5.02
2. REFER TO 4.10 FOR ADDITIONAL DETAILS
3. POST INSTALLED ANCHORS TO BE PLACED NO MORE THAN 1" OFFSET FROM CENTERLINE OF DECK LOW FLUTE.

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : BRACING WIRE CONNECTION TO CONCRETE OVER METAL DECK	4.31

rev.	09-21-15



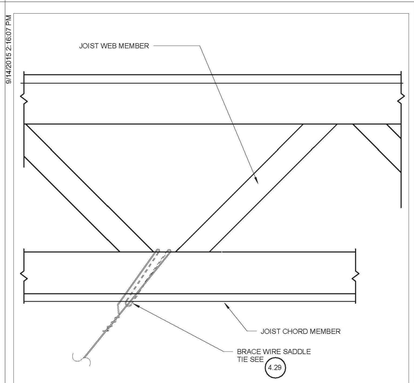
NOTES:

1. IF SELF-TAPPING SCREWS ARE USED WITH CONCRETE FILL, SET SCREWS BEFORE PLACING CONCRETE.

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : BRACING WIRE CONNECTION AT METAL DECK	4.30

rev.	09-21-15

9/14/2015 2:16:07 PM

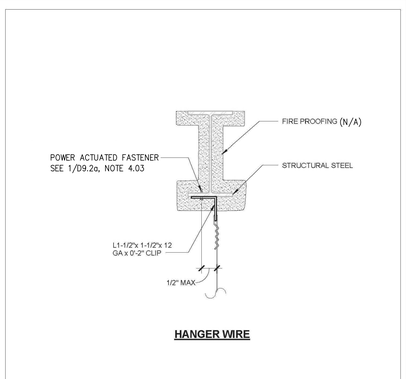


NOTES:

1. BRACE WIRE SHALL ALIGN PARALLEL WITH THE TRUSS BOTTOM CHORD

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : BRACE WIRE CONNECTION TO OPEN-WEB STEEL JOIST	4.39

rev.	09-21-15



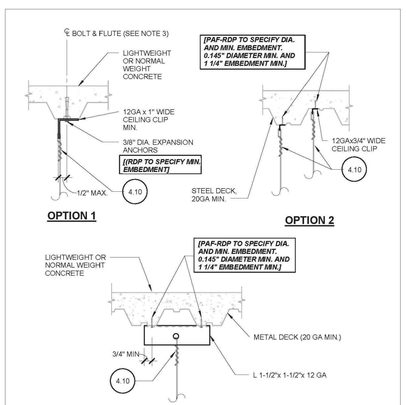
HANGER WIRE

NOTES :

1. BEAM FLANGE THICKNESS SHALL NOT BE LESS THAN 3/16".
2. RDP IN RESPONSIBLE CHARGE, IOR AND CONTRACTOR SHALL VERIFY THAT NO PAF IS INSTALLED IN THE PROTECTED ZONE OF ANY STEEL MEMBER. SEE ANSI/AISC 341-10
3. REFER TO 4.10 FOR ADDITIONAL DETAILS

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : HANGER WIRE CONNECTION TO STRUCTURAL STEEL	4.23

rev.	09-21-15

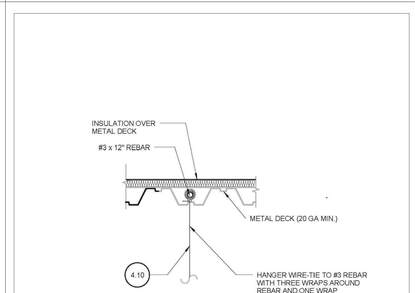


NOTES:

1. REFER TO 4.10 FOR ADDITIONAL DETAILS.
2. POST INSTALLED ANCHORS TO BE PLACED NO MORE THAN 1" OFFSET FROM CENTERLINE OF DECK LOW FLUTE
3. TEST POST INSTALLED ANCHORS IN ACCORDANCE WITH CEILING NOTE 5.01.

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : HANGER WIRE CONNECTION TO CONCRETE OVER METAL DECK	4.21

rev.	09-21-15



NOTES:

1. REFER TO 4.10 FOR ADDITIONAL DETAILS.

Basis Document : DSA IR 25-2.13	Sheet No:
Sheet Title : HANGER WIRE CONNECTION TO METAL DECK	4.20

rev.	09-21-15

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06/08/18	DSA SUBMITTAL

FILE#: 21-H1 PTN#: 65466-28

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APP#: 01-117586

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DATE_____

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Suite 400
San Francisco, CA
94104 USA

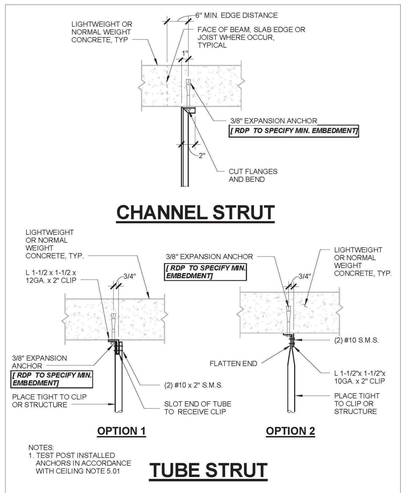
(415) 981-2345

WWW.HED.DESIGN

2017-03489-000

Details Suspended Ceiling Assembly Metal Deck, Steel, Comp Deck

A-573

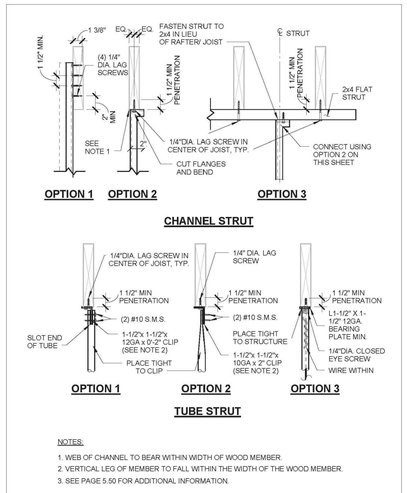


Basis Document : **DSA IR 25-2.13**

Sheet Title : **STRUT CONNECTION TO CONCRETE SLAB, BEAM, JOIST SOFFIT**

rev.	09-21-15

Sheet No: 5.30



NOTES:

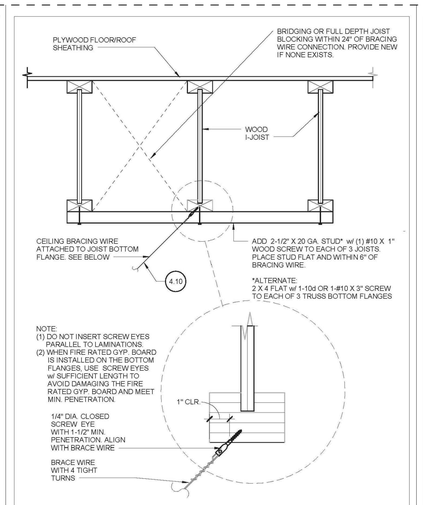
1. WEB OF CHANNEL TO BEAR WITHIN WIDTH OF WOOD MEMBER.
2. VERTICAL LEG OF MEMBER TO FALL WITHIN THE WIDTH OF THE WOOD MEMBER.
3. SEE PAGE 5.50 FOR ADDITIONAL INFORMATION.

Basis Document : **DSA IR 25-2.13**

Sheet Title : **STRUT CONNECTION TO SAWN TIMBER WITHOUT GYPSUM BOARD**

rev.	09-21-15

Sheet No: 5.60

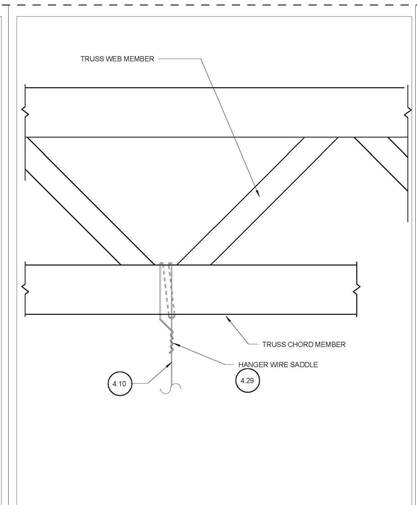


Basis Document : **DSA IR 25-2.13**

Sheet Title : **BRACE WIRE CONNECTION TO WOOD I - JOIST**

rev.	09-21-15

Sheet No: 4.37



Basis Document : **DSA IR 25-2.13**

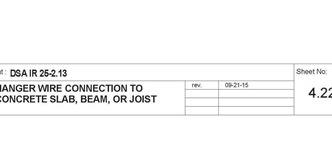
Sheet Title : **HANGER WIRE CONNECTION TO WOOD CHORD TRUSS**

rev.	09-21-15

Sheet No: 4.27

SHEET NOTES

1. ALL NOTES AND DRAWINGS ARE PER DSA IR 25-2.13.



NOTES:

1. TEST POST INSTALLED ANCHORS IN ACCORDANCE WITH CEILING NOTE 5.02
2. REFER TO 4.10 FOR ADDITIONAL DETAILS

Basis Document : **DSA IR 25-2.13**

Sheet Title : **BRACING WIRE CONNECTION TO CONCRETE SLAB, BEAM OR JOIST**

rev.	09-21-15

Sheet No: 4.32

NOTES:

1. WEB OF CHANNEL TO BEAR WITHIN WIDTH OF THE WOOD MEMBER.
2. FOR ANGLE ORIENTED IN THE STANDARD POSITION, VERTICAL LEG TO FALL WITHIN THE WIDTH OF THE WOOD MEMBER.

Basis Document : **DSA IR 25-2.13**

Sheet Title : **STRUT CONNECTION TO SAWN TIMBER WITH GYPSUM BOARD**

rev.	09-21-15

Sheet No: 5.50

Basis Document : **DSA IR 25-2.13**

Sheet Title : **BRACE WIRE CONNECTION TO WOOD I - JOIST**

rev.	09-21-15

Sheet No: 4.36

Basis Document : **DSA IR 25-2.13**

Sheet Title : **HANGER WIRE CONNECTION TO WOOD I JOIST**

rev.	09-21-15

Sheet No: 4.26

NOTES:

1. REFER TO 4.10 FOR ADDITIONAL DETAILS
2. TEST POST INSTALLED ANCHORS IN ACCORDANCE WITH CEILING NOTE 5.01.

Basis Document : **DSA IR 25-2.13**

Sheet Title : **HANGER WIRE CONNECTION TO CONCRETE SLAB, BEAM, OR JOIST**

rev.	09-21-15

Sheet No: 4.22

NOTES:

1. BRACE WIRE SHALL ALIGN PARALLEL WITH THE TRUSS BOTTOM CHORD

Basis Document : **DSA IR 25-2.13**

Sheet Title : **BRACE WIRE CONNECTION TO WOOD CHORD TRUSS**

rev.	09-21-15

Sheet No: 4.38

Basis Document : **DSA IR 25-2.13**

Sheet Title : **BRACING WIRE CONNECTION TO SAWN TIMBER**

rev.	09-21-15

Sheet No: 4.35

Basis Document : **DSA IR 25-2.13**

Sheet Title : **HANGER WIRE CONNECTION TO SAWN TIMBER**

rev.	09-21-15

Sheet No: 4.25

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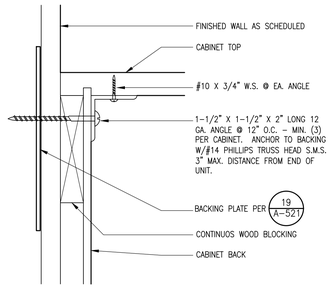
(415) 981-2345

WWW.HED.DESIGN

2017-03489-000

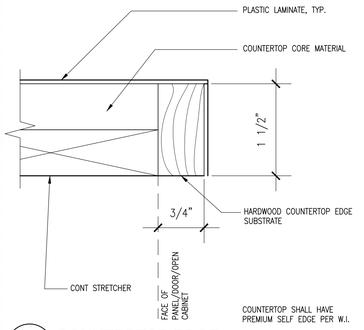
Details Suspended Ceiling Assembly Wood, Conc.

A-574



NOTE: PROVIDE CONCEALED ANCHORS @ ALL OPEN SHELVES, CABINETS, ETC.

12 UPPER CABINET ANCHORAGE
6" = 1'-0"



COUNTERTOP SHALL HAVE PREMIUM SELF EDGE PER W.I.

8 COUNTERTOP EDGE
NTS

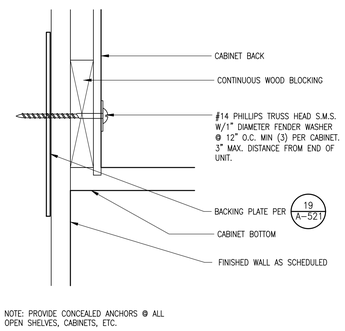
1. GRADE: CUSTOM, EXCEPT AS HEREIN MODIFIED.
2. W.I. CONSTRUCTION STYLE: STYLE A FRAMELESS.
3. W.I. CONSTRUCTION TYPE: TYPE I MULTIPLE SELF-SUPPORTING UNITS RIGIDLY JOINED TOGETHER.
4. W.I. DOOR AND DRAWER FRONT STYLE: FLUSH OVERLAY.
5. PROVIDE LOCKS ON ALL DOORS AND DRAWERS, TO BE KEYED THE SAME WITHIN EACH ROOM U.O.N.
6. PROVIDE ATTACHMENTS PER CASEWORK MOUNTING DETAILS AND PER BACKING PLATE SCHEDULE. SEE "CASEWORK ATTACHMENT" SCHEDULE, SEE DETAIL 5/-
7. BASE FOR FLOOR MOUNTED CASEWORK TO MATCH HEIGHT AND MATERIAL MOUNTED ON WALL U.O.N. PROVIDE FINISH BASE MATERIAL PER FINISH SCHEDULE AND EXTENDING TO WALLS AT ALL CABINET RETURNS, BACK PANELS AND END PANELS.
8. SHELVING: COMPLY WITH THE FOLLOWING, FOR A LOAD FACTOR OF 50#/S.F. EXCEPT AS MODIFIED BELOW:

A. FIXED SHELVING BETWEEN VERTICAL MEMBERS OF THE CABINET BODY, AND ADJUSTABLE SHELVING CONCEALED:
   1) USE 3/4" MDF UP TO 25" LONG.
   2) USE 1" MDF UP TO 34" LONG.
   3) USE 3/4" COMBINATION CORE PLYWOOD WITH HARDWOOD VENEER 2 SIDES UP TO 46" LONG.

B. ADJUSTABLE SHELVING, EXPOSED:
   1) USE 3/4" 3 OR 5 PLY PANELS, COMBINATION CORE WITH HARDWOOD VENEER PLIES UP TO 40" LONG.

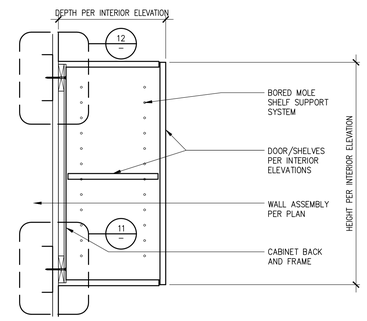
9. FILLER PANELS: FOR SPACES OF 3" OR MORE, USE FLUSH-TYPE FILLER PANELS, WITH SURFACES AND EDGING TO MATCH CABINETS.
10. PRE-CUT OPENINGS: FABRICATE WORK WITH PRE-CUT OPENINGS, WHEREVER POSSIBLE, TO RECEIVE HARDWARE AND SIMILAR ITEMS. LOCATE OPENINGS ACCURATELY AND USE TEMPLATES OR ROUGH-IN DIAGRAMS FOR PROPER SIZE AND SHAPE. SMOOTH THE EDGES OF CUTOUTS AND WHERE LOCATED IN COUNTER TOPS AND SIMILAR EXPOSURES, SEAL THE EDGES OF CUTOUTS WITH A WATER-RESISTANT COATING.
11. PROVIDE CUTOUTS IN CASEWORK FOR ELECTRICAL SERVICE AND ACCESS POINTS.
12. CABINET DOORS: SHALL BE OF COMBINATION CORE PLYWOOD.
13. INSTALLATION SHALL COMPLY WITH W.I. CERTIFIED SEISMIC INSTALLATION PROGRAM.

3 CABINET SCHEDULE NOTES
NTS

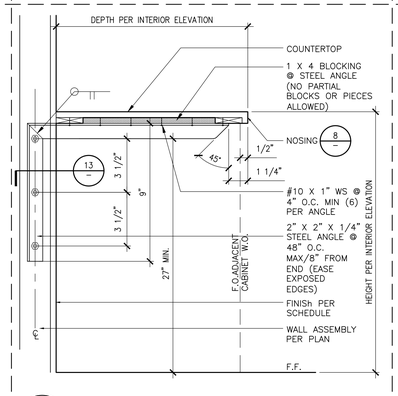


NOTE: PROVIDE CONCEALED ANCHORS @ ALL OPEN SHELVES, CABINETS, ETC.

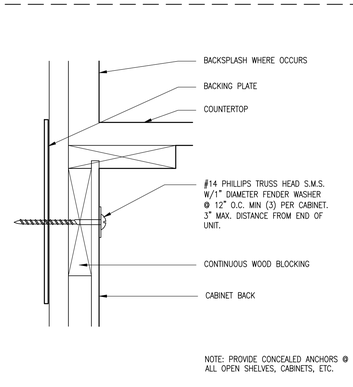
11 UPPER CABINET ANCHORAGE II
6" = 1'-0"



7 UPPER CABINET
1-1/2" = 1'-0"

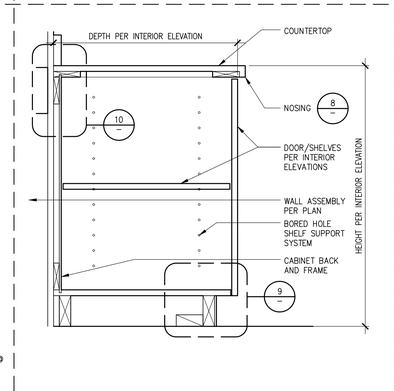


14 CANTILEVERED COUNTER
3" = 1'-0"

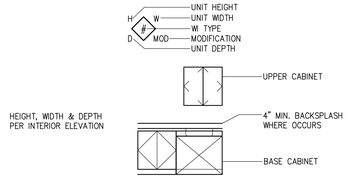


NOTE: PROVIDE CONCEALED ANCHORS @ ALL OPEN SHELVES, CABINETS, ETC.

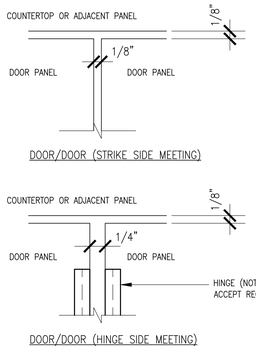
10 BASE CABINET ANCHORAGE
6" = 1'-0"



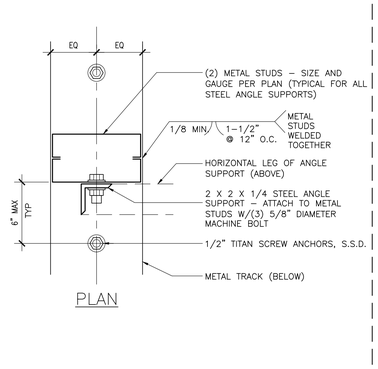
6 BASE CABINET
1-1/2" = 1'-0"



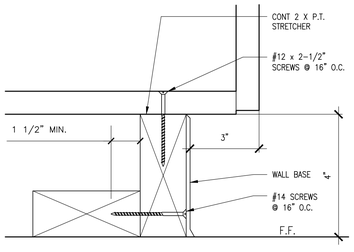
CASEWORK ELEVATIONS PER INTERIOR ELEVATIONS



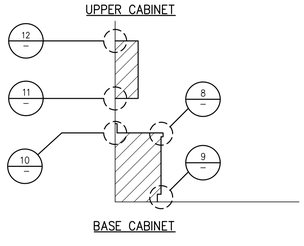
17 DOOR CLEARANCES
NTS



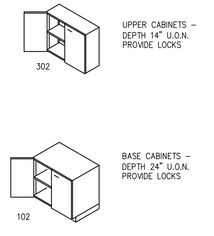
13 ANGLE SUPPORT
3" = 1'-0"



9 BASE CABINET ANCHORAGE
6" = 1'-0"



5 ATTACHMENT DETAILS
NTS



CASEWORK SHOWN ON THIS LEGEND ARE PARTIAL SAMPLE USED THROUGHOUT THIS PROJECT. REFER TO PLANS AND INTERIOR ELEVATIONS FOR APPLICABLE W.I. TYPES

1 CASEWORK LEGEND
NTS

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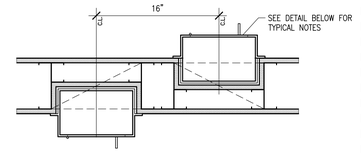
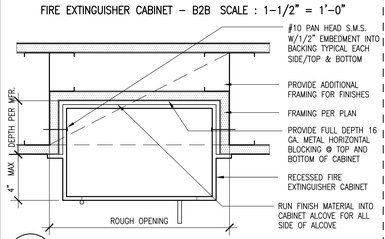
Casework Details

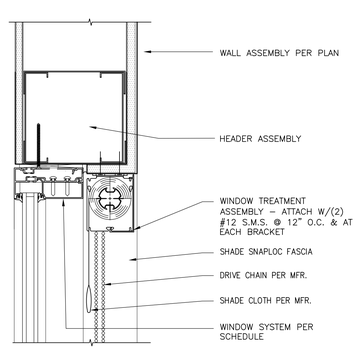
A-581



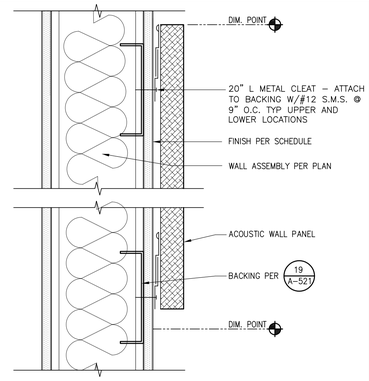
FIRE EXTINGUISHER CABINET – B2B SCALE : 1-1/2" = 1'-0"



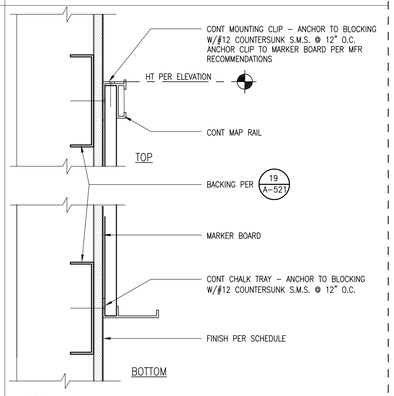
4 FIRE EXTINGUISHER CABINET
3" = 1'-0"



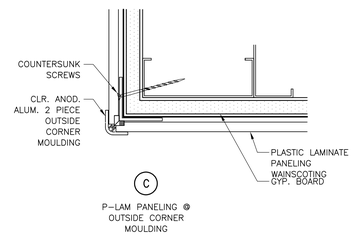
11 WINDOW SHADE
3" = 1'-0"



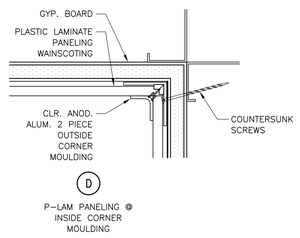
7 ACOUSTIC WALL PANEL
3" = 1'-0"



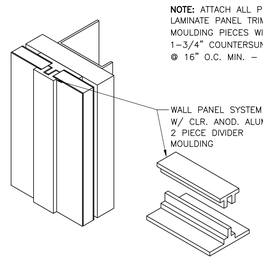
3 MARKER BOARD
3" = 1'-0"

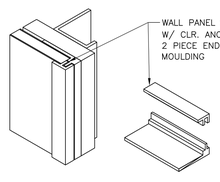


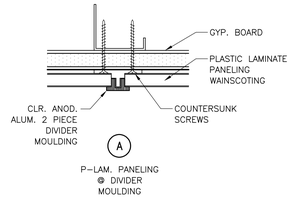
C
P-LAM PANELING @ OUTSIDE CORNER MOULDING



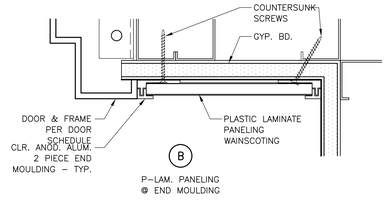
D
P-LAM PANELING @ INSIDE CORNER MOULDING





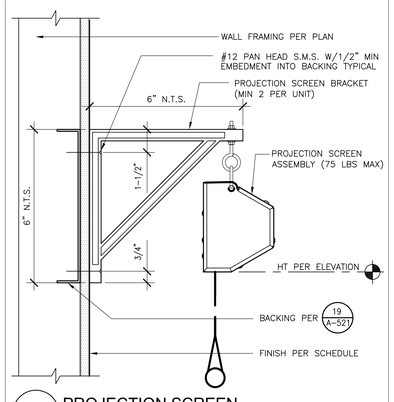


A
P-LAM. PANELING @ DIVIDER MOULDING

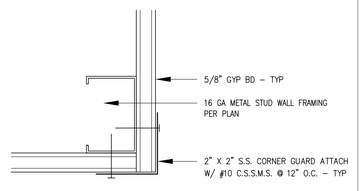


B
P-LAM. PANELING @ END MOULDING

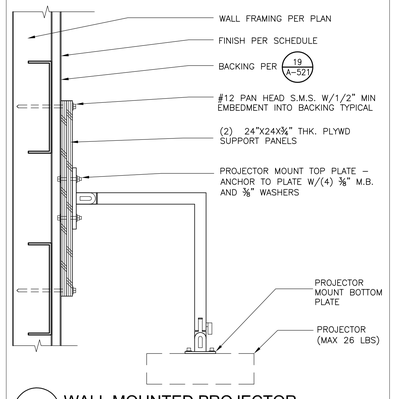
17 TYP. P-LAM. PANELING DIVIDER MOULDING
6" = 1'-0"



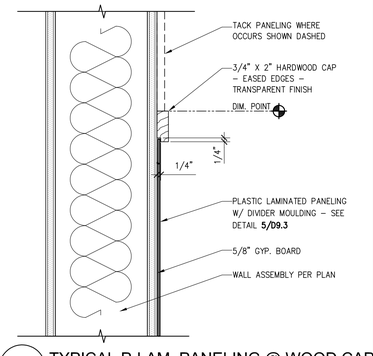
10 PROJECTION SCREEN
3" = 1'-0"



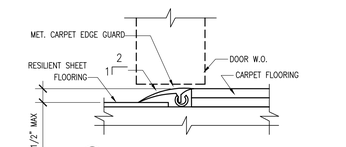
6 CORNER GUARD
6" = 1'-0"



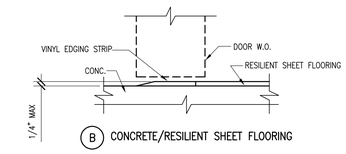
9 WALL MOUNTED PROJECTOR
3" = 1'-0"



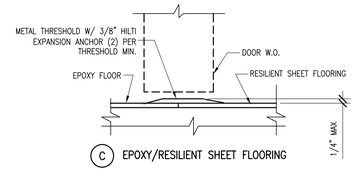
5 TYPICAL P-LAM. PANELING @ WOOD CAP
3" = 1'-0"



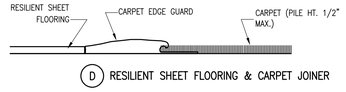
A CARPET/RESILIENT SHEET FLOORING



B CONCRETE/RESILIENT SHEET FLOORING



C EPOXY/RESILIENT SHEET FLOORING



D RESILIENT SHEET FLOORING & CARPET JOINER

1 FLOOR TRANSITIONS
6" = 1'-0"

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417 Montgomery Street
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San Francisco, CA
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(415) 981-2345
WWW.HED.DESIGN

2017-03489-000

Miscellaneous Details

A-591

FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR		BASE		WALL								CEILING		NOTES
						NORTH		EAST		SOUTH		WEST				
		MATL	FIN	MATL	FIN	MATL	FIN	MATL	FIN	MATL	FIN	MATL	FIN	MATL	FIN	
E1	CORRIDOR	VCT	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT/GYP	FF/P	REPLACEMENT FINISHES TO MATCH (E)
E2	HALL	VCT	FF	RES	FF	–	–	GYP/FRP	P/FF	–	–	GYP/FRP	P/FF	GYP	FF	PARTIAL HEIGHT FRP PANELING
E3	COMPUTER CLASSROOM	LINO	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E4	COMPUTER CLASSROOM	LINO	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E5	COLLABORATION	LINO	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E6	COLLABORATION	LINO	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E7	COLLABORATION	LINO	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E8	VESTIBULE	LINO	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E9	SOUND BOOTH	CPT	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E10	AUDIO CONTROL	CPT	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E11	GREEN ROOM	CPT	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E12	MEDIA CONTROL	CPT	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ACT	FF	
E13	PROJECTS CLASSROOM	PC	FF	RES	FF	GYP/FRP	P	GYP/FRP	P	GYP/FRP	P	GYP/FRP	P	ES	P	PARTIAL HEIGHT FRP PANELING
E14	TEAM ROOM	PC	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ES	P	
E15	STAFF COLLABORATION	PC	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ES	P	
E16	STAFF COLLABORATION	PC	FF	RES	FF	GYP	P	GYP	P	GYP	P	GYP	P	ES	P	
109	PHYSICS CLASSROOM	(E)	(E)	(E)	(E)	(E)	P	(E)	P	(E)	P	(E)	P	(E)	FF	
110A	PHYSICS LAB	(E)	(E)	(E)	(E)	(E)	P	(E)	P	(E)	P	(E)	P	(E)	FF	
110B	VESTIBULE	(E)	(E)	(E)	(E)	(E)	P	(E)	P	(E)	P	(E)	P	(E)	FF	
110C	PHYSICS PREP ROOM	(E)	(E)	(E)	(E)	(E)	P	(E)	P	(E)	P	(E)	P	(E)	FF	
310	HUB CLASSROOM	(E)	(E)	(E)	(E)	(E)	P	(E)	P	(E)	P	(E)	P	(E)	FF	
312	HUB CLASSROOM	(E)	(E)	(E)	(E)	(E)	P	(E)	P	(E)	P	(E)	P	(E)	FF	

FINISHES NOTES

1. SEE FLOOR PLANS, REFLECTED CEILING PLANS AND INTERIOR ELEVATIONS FOR ADDITIONAL FINISH AND MATERIAL INFORMATION. THE FINISH SCHEDULE CALLS OUT MAJOR MATERIALS ONLY. CABINETS, MARKER BOARDS, AND TACK PANELING ARE NOT INDICATED IN FINISH SCHEDULE. SEE INTERIOR ELEVATIONS FOR THESE AND OTHER ITEMS NOT CALLED OUT IN THE FINISH SCHEDULE

2. TRANSITION BETWEEN DISSIMILAR FLOORING MATERIALS SHALL OCCUR UNDER INTERVENING DOORS. SEE ALSO DETAIL **XXX** FOR FLOOR TRANSITION DETAILS

3. INTERIOR PAINT FINISH – ALL PAINTED SURFACES TO RECEIVE SEMI-GLOSS FINISH UNLESS OTHERWISE NOTED

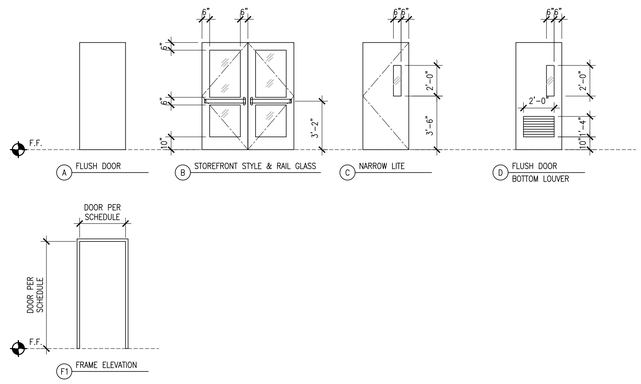
4. WHERE TACK PANELING, CASEWORK, MARKERBOARDS, ETC. OCCUR OVER GYPSUM BOARD, DO NOT PAINT GYPSUM BOARD

5. ALL FLOOR FINISHES SHALL BE FIRM & SLIP RESISTANT IN ACCORDANCE WITH **C.B.C. SECTION 11B-302**

12 FINISH SCHEDULE

DOOR AND FRAME SCHEDULE

DOOR #	SIZE	THK	TYPE	MATL	FIN	INT/EXT	RATING MIN	HDWR GRP	HDWR PH	FRAME TYPE	FRAME MATL	FRAME FIN	DETAIL HEAD	DETAIL JAMB	DETAIL SILL	SIGNAGE PER (G-003)	NOTES
E1B	(E) PAIR 3'0"X7'0"	1 3/4"	(E)	HM	P	INT	(E)	06	(E)	(E) F1	HM	P	(E)	(E)	(E)	–	
E2	PAIR 3'0"X7'0"	1 3/4"	B	AL	FF	INT	–	05	Y	A2	AL	FF	10/A-561	11/A-561	1/A-591	2 & 3	
E3A	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	04	Y	F1	HM	P	6/A-561	5/A-561	1/A-591	2 & 3	
E3B	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	10	N	F1	HM	P	6/A-561	5/A-561	1/A-591	2	PROVIDE ACOUSTIC GASKETING
E3C	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	04	Y	F1	HM	P	6/A-561	5/A-561	1/A-591	2 & 3	
E4A	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	04	Y	F1	HM	P	6/A-561	5/A-561	1/A-591	2 & 3	
E4B	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	04	Y	F1	HM	P	6/A-561	5/A-561	1/A-591	2 & 3	
E5	3'0"X7'0"	1 3/4"	A	SCW	P	INT	–	09	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
E6	3'0"X7'0"	1 3/4"	A	SCW	P	INT	–	09	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
E7	3'0"X7'0"	1 3/4"	A	SCW	P	INT	–	09	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
E8	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	10	N	F1	HM	P	6/A-561	5/A-561	1/A-591	2	PROVIDE ACOUSTIC GASKETING
E9	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	11	N	F1	HM	P	6/A-561	5/A-561	1/A-591	2	PROVIDE ACOUSTIC GASKETING
E10	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	11	N	F1	HM	P	6/A-561	5/A-561	1/A-591	2	PROVIDE ACOUSTIC GASKETING
E11	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	11	N	F1	HM	P	6/A-561	5/A-561	1/A-591	2	PROVIDE ACOUSTIC GASKETING
E12	3'0"X7'0"	1 3/4"	C	SCW	P	INT	–	11	N	F1	HM	P	6/A-561	5/A-561	1/A-591	2	PROVIDE ACOUSTIC GASKETING
E13A	PAIR 3'0"X7'0"	1 3/4"	B	AL	FF	EXT	–	01	Y	A2	AL	FF	7/A-561	8&9/A-561	1/A-561	1 & 3	
E13B	3'0"X7'0"	1 3/4"	B	AL	FF	EXT	–	02A	Y	A2	AL	FF	7/A-561	8&9/A-561	1/A-561	2 & 3	
E13C	3'0"X7'0"	1 3/4"	B	AL	FF	EXT	–	02A	Y	A2	AL	FF	7/A-561	8&9/A-561	1/A-561	2 & 3	
E14	3'0"X7'0"	1 3/4"	A	SCW	P	INT	–	08	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
E15	3'0"X7'0"	1 3/4"	A	SCW	P	INT	–	08	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
E16	3'0"X7'0"	1 3/4"	A	SCW	P	INT	–	08	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
109A	3'0"X7'0"	1 3/4"	B	AL	FF	EXT	–	02	Y	A2	AL	FF	7/A-561	8&9/A-561	1/A-561	2 & 3	
109B	(E) 3'0"X7'0"	1 3/4"	(E) C	(E) SCW	P	INT	20 MIN	14	Y	(E) F1	(E) HM	P	(E)	(E)	(E)	2 & 3	
109C	(E) 3'0"X5'0"	1 3/4"	(E)	(E)	P	INT	–	12	N	(E) F1	(E) HM	P	(E)	(E)	(E)	–	
110A	(E) 3'0"X7'0"	1 3/4"	D	SCW	P	INT	–	13	N	(E) F1	(E) HM	P	(E)	(E)	(E)	2	
110B	(E) 3'0"X7'0"	1 3/4"	(E) C	(E) SCW	P	INT	20 MIN	14	Y	(E) F1	(E) HM	P	(E)	(E)	(E)	2 & 3	
110C	(E) 3'0"X7'0"	1 3/4"	(E)	(E)	P	INT	–	15	N	(E) F1	(E) HM	P	(E)	(E)	(E)	2	
110D	(E) 3'0"X5'0"	1 3/4"	(E)	(E)	P	INT	–	12	N	(E) F1	(E) HM	P	(E)	(E)	(E)	–	
E310A	3'0"X7'0"	1 3/4"	B	AL	FF	EXT	–	03	N	A2	AL	FF	7/A-561	8&9/A-561	1/A-561	2	
E310B	3'0"X7'0"	1 3/4"	(E)	(E)	P	INT	–	16	N	(E) F1	(E) HM	P	(E)	(E)	(E)	2	
E310C	(E) 3'0"X5'0"	1 3/4"	(E)	(E)	P	INT	–	12	N	(E) F1	(E) HM	P	(E)	(E)	(E)	–	
E312A	3'0"X7'0"	1 3/4"	B	AL	FF	INT	–	07	N	A1	AL	FF	10/A-561	11/A-561	1/A-591	2	
E312B	(E) 3'0"X7'0"	1 3/4"	(E)	(E)	P	INT	–	16	N	(E) F1	(E) HM	P	(E)	(E)	(E)	2	
E312C	(E) 3'0"X5'0"	1 3/4"	(E)	(E)	P	INT	–	12	N	(E) F1	(E) HM	P	(E)	(E)	(E)	–	



1 DOOR AND FRAME SCHEDULE
1/4" = 1'-0"

FINISH SCHEDULE MATERIAL LEGEND	
ACP	ACOUSTICAL CEILING PANEL
ACP2	BLACK ACOUSTICAL CEILING PANEL
ACP3	BLACK ACOUSTICAL BOARD
AL	ALUMINUM
AWP	ACOUSTICAL WALL PANELING
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CPT	CARPET
CT	CERAMIC TILE
EP	EPOXY FLOORING
ES	EXPOSED STRUCTURE
ETZ	EPOXY TERRAZZO FLOORING
EXT	EXTERIOR
FF	FACTORY FINISH
FIN	FINISH
FRP	FIBERGLASS REINFORCED PLASTIC PANELING
GL	GLASS
GYP	GYPSUM BOARD
HM	HOLLOW METAL
INT	INTERIOR
IRGB	IMPACT RESISTANT GYPSUM BOARD
LINO	LINOLEUM
MATL	MATERIAL
P	PAINT
PC	POLISHED CONCRETE
PLP	PLASTIC LAMINATE PANELING
PLY	PLYWOOD
RES	RESILIENT RUBBER BASE
SCW	SOLID CORE DOOR
SLR	CONCRETE SEALER
SS	STAINLESS STEEL
TP	TRANSPARENT FINISH
VRB	VENTED RESILIENT RUBBER BASE
WD	WOOD
WDM	WOOD FLOORING SYSTEM WITH MASONITE

DOOR NOTES:

1. OVERALL DIMENSIONS SHOWN ARE NOMINAL DESIGN DIMENSIONS – SEE DETAILS AND FIELD VERIFY ROUGH OPENING DIMENSIONS TO DETERMINE OVERALL FABRICATION DIMENSIONS.
2. HOLLOW METAL FRAME FACE DIMENSION IS 2 INCHES U.O.N. SEE DETAILS FOR FRAME PROFILES.
3. ALL HOLLOW METAL FRAMES ARE FIELD PAINTED U.O.N.
4. CONNECT HOLLOW METAL FRAMES TO WALLS AS FOLLOWS:
   METAL STUDS: STEEL STUD ANCHORS @24" O.C. MAX. ALL AROUND AND 9" MAX. FROM ENDS. – (3) PER JAMB MIN. (1) ANCHOR @ HEAD MIDSPAN @ DOORS WIDER THAN 3'-0". (4) #8 X 3/4" FLAT HEAD SHEET METAL SCREWS PER ANCHOR TYPICAL.
   CONCRETE: 3/8" DIA. HILTI EXPANSION ANCHOR @ 24" O.C. MAX. – 6" FROM ENDS – (2) PER SIDE MIN.
5. ALL GLAZING IN DOORS AND ALL SIDELITE/TRANSOM GLAZING TO BE LAMINATED GLASS U.O.N.
6. ALL GLAZING IN FIRE RATED DOORS TO BE FIRE RESISTANT SAFETY GLASS U.O.N.
7. ALL DOORS ARE TO BE 1 3/4" THICK U.O.N.

DOOR SCHEDULE NOTES:

A. FOR DOOR HARDWARE (HDWR) REFER TO **SPECIFICATIONS.**

B. ALL EXTERIOR DOORS ARE TO OPEN 180 DEGREES DEPENDING ON THEIR LOCATION U.O.N.

C. PROVIDE BACKING @ ALL WALL MOUNTED DOOR STOP LOCATIONS.

D. ALL DOORS IN PATH OF TRAVEL SHALL:
- PROVIDE 32" OF CLEAR ACCESS
- BE PROVIDED W/ LEVER TYPE LOCKS & LATCHES
- BE OPERATED W/ A MAX. FORCE OF 5# INTERIOR AND 5# EXTERIOR
- HAVE MAX. THRESHOLD HEIGHT OF 1/2" IF BEVELED 1:2

DOOR SCHEDULE MATERIAL LEGEND	
AL	ALUMINUM
EXT	EXTERIOR
FF	FACTORY FINISH
FIN	FINISH
GL	GLASS
GRP	GROUP
HDWR	HARDWARE
HM	HOLLOW METAL
INT	INTERIOR
MATL	MATERIAL
P	PAINT
PH	PANIC HARDWARE
SCW	SOLID CORE DOOR
SS	STAINLESS STEEL
STL	STEEL
THK	THICKNESS
TP	TRANSPARENT FINISH

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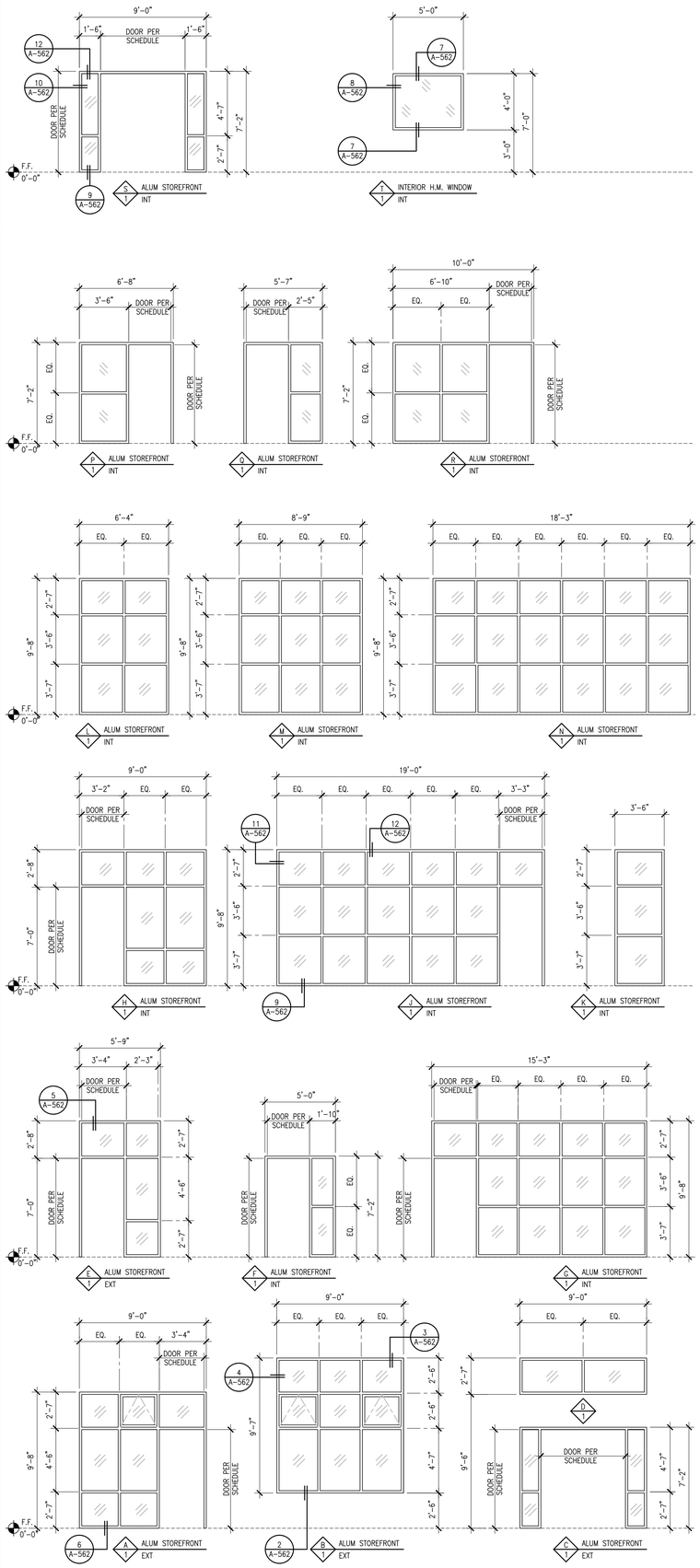
Schedules, Door and Frame Types

A-601



1 WINDOW TYPES
1/4" = 1'-0"

GENERAL NOTES:

1. OVERALL DIMENSIONS SHOWN ARE NOMINAL DESIGN DIMENSIONS – SEE DETAILS AND FIELD VERIFY ROUGH OPENING DIMENSIONS TO DETERMINE OVERALL FABRICATION DIMENSIONS.
2. HOLLOW METAL FRAME FACE DIMENSION IS 2 INCHES U.O.N. SEE DETAILS FOR FRAME PROFILES.
3. ALL HOLLOW METAL FRAMES ARE FIELD PAINTED U.O.N.
4. CONNECT HOLLOW METAL FRAMES TO WALLS AS FOLLOWS:
   METAL STUDS: STEEL STUD ANCHORS @24" O.C. MAX. ALL AROUND AND 9" MAX. FROM ENDS. – (3) PER JAMB MIN. (1) ANCHOR @ HEAD MIDSPAN @ DOORS WIDER THAN 3'-0". (4) #8 X 3/4" FLAT HEAD SHEET METAL SCREWS PER ANCHOR TYPICAL.
   CONCRETE: 3/8" DIA. HILTI EXPANSION ANCHOR @ 24" O.C. MAX. – 6" FROM ENDS – (2) PER SIDE MIN.
5. ALL GLAZING IN DOORS AND ALL SIDELITE/TRANSOM GLAZING TO BE LAMINATED GLASS U.O.N.

GLAZING SCHEDULE	
GT 1	CLEAR INSULATING GLASS
GT 2	LOW-E COATED CLEAR INSULATING GLASS
GT 3	LAMINATED GLASS

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2017-03489-000

Window Schedule

A-602

MECHANICAL NOTES & SPECIFICATIONS

1. THESE DRAWINGS AND NOTES SHALL BE READ IN CONJUNCTION WITH AND BE CONSIDERED TO BE PART OF A SEPARATE AND COMPLETE MECHANICAL SPECIFICATION.

2. ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2016 EDITION OF CALIFORNIA BUILDING CODES AND ALL OTHER APPLICABLE CODES AND REGULATIONS, INCLUDING 2016 CALIFORNIA GREEN BUILDING STANDARDS (PART 11) AND 2016 CALIFORNIA ENERGY CODES (PART 6).

3. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED FEES, PERMITS AND INSPECTIONS.

4. COORDINATE ENTIRE INSTALLATION OF THE HVAC SYSTEM(S) WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. PROVIDE ALL FITTINGS, OFFSETS, AND TRANSITIONS AS REQUIRED FOR A COMPLETE AND WORKABLE INSTALLATION. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ITEMS TO BE PROVIDED BY OTHER TRADES WHERE MENTIONED IN THE CONTRACT DOCUMENTS PRIOR TO BID - NO EXCEPTIONS. THEY SHALL BE RESPONSIBLE FOR A COMPLETE WORKING SYSTEM PER CONTRACT DOCUMENTS.

50. COORDINATE ALL WORK WITH THE ARCHITECTURAL, STRUCTURAL DRAWINGS AND DRAWINGS OF OTHER TRADES. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL WORK, STRUCTURAL MEMBERS AND WORK OF OTHER TRADES. NO ITEM SUCH AS PIPE, DUCT, ETC. SHALL BE IN CONTACT WITH ANY EQUIPMENT. ANY ERRORS, OMISSIONS, DISCREPANCIES, DEFICIENCIES, OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR, THE ARCHITECT AND THE ENGINEER PRIOR TO PROCEEDING WITH ANY AFFECTED WORK.

51.

52. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING EQUIPMENT, DUCTWORK, AND REGISTERS PRIOR TO INSTALLATION OF ANY NEW EQUIPMENT, DUCTWORK OR REGISTERS. IF THE EXISTING DUCTWORK SIZE IS SMALLER THAN THE NEW DUCTWORK SIZE, AND/OR THE EXISTING DUCTWORK IS NOT IN THE NOTED LOCATION, THE CONTRACTOR IS TO NOTIFY OWNER IMMEDIATELY AND NO NEW DUCTWORK IS TO BE INSTALLED UNTIL THE ISSUE IS RESOLVED.

53. COORDINATE THE LOCATION OF ALL ROOF OPENINGS AND THE LOCATION OF ALL ROOF MOUNTED EQUIPMENT WITH THE STRUCTURAL AND ARCHITECTURAL PLANS PRIOR TO ANY FABRICATION AND INSTALLATION.

14. PLATFORMS, CURBS, AND FLASHING FOR MECHANICAL EQUIPMENT SHALL BE AS INDICATED ON THE STRUCTURAL AND ARCHITECTURAL PLANS, UNLESS NOTED OTHERWISE. WHERE THERE IS A CONFLICT WITH THE MECHANICAL PLANS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER PRIOR TO FABRICATION AND INSTALLATION.

15. COORDINATE THE LOCATIONS OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES WITH THE ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL LIGHTING LAYOUT, FIRE SPRINKLER SYSTEM, AND ARCHITECTURAL ROOM ELEVATIONS. THE ARCHITECT AND ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY CONFLICTS PRIOR TO FABRICATION AND INSTALLATION.

16. EQUIPMENT, DUCTS, PIPING, AND OTHER DEVICES AND MATERIALS INSTALLED OUTSIDE OF THE BUILDING OR OTHERWISE EXPOSED TO THE WEATHER SHALL BE COMPLETELY WEATHER PROOFED AND PAINTED TO MATCH. COORDINATE WITH ARCHITECT PRIOR TO PAINTING.

32. CONTRACTOR SHALL VERIFY ALL CLEARANCES AND AVAILABLE SPACE FOR DUCTWORK PRIOR TO ORDERING AND/OR FABRICATION.

33. DIMENSIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MUST BE CONFIRMED ON SITE.

34. PRIOR TO OCCUPANCY THE ENTIRE HVAC SYSTEMS SHALL BE BALANCED BY AN INDEPENDENT AIR BALANCE CONTRACTOR FOR AIR IN ACCORDANCE AND PROCEDURES WITH (AABC) ASSOCIATED AIR BALANCE COUNCIL STANDARDS, (NEBB) NATIONAL ENVIRONMENTAL BALANCING BUREAU , OR (TABB) TESTING ADJUSTING AND BALANCING BUREAU. SYSTEMS SHALL BE BALANCED AS INDICATED ON PLANS INCLUDING OUTSIDE AIR VENTILATION. FINAL BALANCING SHALL BE WITHIN 10% FOR SUPPLY, RETURN AND OUTSIDE AIR QUANTITIES INDICATED. WHERE THERE IS A CONFLICT IN PLANS, THE AIR BALANCE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO BALANCING OF SYSTEM. IF NOT DONE SO THE AIR BALANCE CONTRACTOR SHALL BEAR ALL COSTS INCURRED FOR WORK THAT MUST BE RE-BALANCED DUE TO CONFLICTS ON CONTRACT DOCUMENTS. CONTRACTOR SHALL PROVIDE THREE COPIES OF THE AIR BALANCE REPORT TO THE ENGINEER FOR APPROVAL. PROVIDE PROCEDURES AND REPORTING PER CAL GREEN CODES SECTION 5.410.4.3, SECTION 5.410.4.3.1 AND SECTION 5.410.4.4.

35. CONTROLS CONTRACTOR AND AIR BALANCE CONTRACTOR SHALL COORDINATE WORK AND PERFORM NECESSARY TASKS AS REQUIRED TO OBTAIN AIR FLOW QUANTITIES FOR SYSTEMS SHOWN HEREIN.

36. PROVIDE TO BUILDING OWNER, PER CAL GREEN CODE SECTION 5.410.4.5, AND CMC 514.0, OPERATING PROCEDURES FOR THE USE, INSPECTION, TESTING, AND MAINTENANCE OF EQUIPMENT MANUAL INCLUDING INSPECTION AND REPORTS AS APPLICABLE.

37. PROVIDE OPERATING PROCEDURES FOR COOKING EQUIPMENT PER CMC SECTION 514.1.

38. EQUIPMENT, ACCESSORIES AND RELATED PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES, AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.

39. MAINTENANCE LABEL SHALL BE AFFIXED TO ALL MECHANICAL EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED FOR THE OWNER'S USE. LABEL SHALL IDENTIFY THE UNIT DESIGNATION PER PLANS AND THE SPACE IT SERVES.
    - 39.1. EQUIPMENT: 4-1/2"X1-1/2" ENGRAVED PLASTIC-LAMINATED SIGN WITH 1/2" WHITE LETTERS ON BLACK BACKGROUND.
    - 39.2. VALVES: 1-1/2" DIAMETER BRASS DISC STAMPED WITH 3/8" HIGH LETTERS IDENTIFYING TYPE OF SERVICE AND VALVE NUMBER.
    - 39.3. PIPING: SELF-STICKING PIPE MARKERS CONSISTING OF PIPE SERVICE WORDING AND ARROW INDICATING DIRECTION OF FLOW ON ANSI COLOR BACKGROUND. MAXIMUM SPACING OF 50 FEET APART. SECURE MARKER WITH 2-1/4" WIDE SELF-STICKING CLEAR TAPE AROUND PERIPHERY OF MARKER.

40. PROVIDE MANUAL VOLUME DAMPERS AND BACKDRAFT DAMPERS FOR OUTSIDE AIR INTAKES ON ALL AIR HANDLING EQUIPMENT AND EXHAUST FANS SERVING CONDITIONED SPACES. EXCEPTION: EQUIPMENT WITH FACTORY AIR ECONOMIZERS.

41. OUTSIDE AIR INTAKES SHALL MEET AS A MINIMUM CODE REQUIRED CLEARANCES FROM EXHAUST, FLUE, FUEL BURNING APPLIANCES AND PLUMBING VENT OUTLETS. FOR GAS/ELECTRIC AIR CONDITIONING UNITS WHERE THE CODE REQUIRED CLEARANCES ARE NOT MET, A FACTORY FLUE GAS DEFLECTOR AND EXTENSION SHALL BE USED TO MINIMIZE THESE CLEARANCES. CONTRACTOR SHALL DETERMINE LOCATIONS WHERE REQUIRED PRIOR TO BID. THIS SHALL BE PROVIDED AT NO ADDITIONAL COST.

42. ALL HVAC EQUIPMENT SERVING NORMALLY OCCUPIED SPACES SHALL HAVE MERV 8 FILTERS UNLESS OTHERWISE NOTED.

43. AIR FILTERS SHALL BE STATE FIRE MARSHALL APPROVED AND LISTED, PREFORMED FILTERS HAVING COMBUSTIBLE FRAMING SHALL BE TESTED AS A COMPLETE ASSEMBLY. INSTALLED FILTERS SHALL BE CLEARLY LABELED BY THE MANUFACTURE INDICATING THE MERV RATING, AND THE FILTER SPECIFICATION SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL. AIR FILTERS SHALL BE ACCESSIBLE FOR CLEANING OR REPLACEMENT.

44. EQUIPMENT WITH MOVING PARTS, FIXED OR FLEXIBLY MOUNTED, SHALL BE PROVIDED WITH FLEXIBLE DUCT AND PIPE CONNECTIONS AND SHALL BE BRACED OR ANCHORED TO COMPLY WITH THE REQUIREMENTS OF TITLE 24.

45. HVAC EQUIPMENT SHALL BE CERTIFIED BY THE CALIFORNIA ENERGY COMMISSION TO COMPLY WITH THE LATEST EFFICIENCY STANDARDS.

46. AC UNITS PROVIDED WITH ECONOMIZER CYCLE DAMPERS SHALL HAVE DAMPERS SET UP TO CLOSE AUTOMATICALLY ON FAN SHUTDOWN. DAMPERS SHALL NOT USE LINKAGE ARRANGEMENT BUT RATHER DIRECT DRIVE ACTUATORS.

47. AIR HANDLING EQUIPMENT SERVING CONDITIONED SPACES SHALL PROVIDE CONTINUOUS OUTSIDE AIR TO SPACES IN OCCUPIED MODE. CONTROLS SHALL BE PROVIDED TO PROVIDE THE MINIMUM RATE OF OUTDOOR AIR REQUIRED BY THE STATE ENERGY REGULATIONS.

48. CONTRACTOR TO SUBMIT ALL EQUIPMENT, DUCTWORK, AIR DISTRIBUTION DEVICES, AND OTHER ACCESSORIES TO THE ENGINEER FOR APPROVAL PRIOR TO ANY ORDERING OF SUCH ITEMS.

49. CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING AIR CONDITIONING EQUIPMENT WITH THE THRU-BASE POWER, CONTROL, AND GAS CONNECTIONS. VERIFY ALL CONNECTION LOCATIONS WITH UNIT MANUFACTURER AND COORDINATE WITH OTHER TRADES AS NECESSARY.

50. DUCTWORK, PIPING, CONDUIT, ETC. PENETRATING FIRE RATED CONSTRUCTION SHALL HAVE APPROVED FIRE STOPPING.

51. CONTROL SCHEMATICS ARE FOR REFERENCE ONLY. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ELECTRICAL DEVICES REQUIRED AND SEQUENCE OF OPERATION.

52. WHERE THE CONTROLS CONTRACTOR IS RETAINED BY THE OWNER THEY SHALL BE RESPONSIBLE TO FURNISH AND INSTALL ALL DEVICES, WIRING, AND TERMINATIONS REQUIRED FOR A COMPLETE AND FUNCTIONAL INSTALLATION. COORDINATE ALL WORK AND REQUIREMENTS WITH OTHER TRADES INCLUDING THE GENERAL, MECHANICAL, AND ELECTRICAL CONTRACTORS PRIOR TO BID. CONTRACTOR SHALL FOLLOW ALL SUBMITTAL REQUIREMENTS PER DRAWINGS AND SPECIFICATIONS.

53. LINE VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT. ALL LINE VOLTAGE CONDUIT AND WIRING, INCLUDING FINAL CONNECTIONS, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THE ELECTRICAL DRAWINGS OR SPECIFIED IN THE ELECTRICAL SECTION OF THE SPECIFICATIONS. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS OF GOVERNING BODIES HAVING JURISDICTION THEREOF.

54. LOW VOLTAGE CONDUIT AND WIRING AS APPLICABLE, INCLUDING FINAL CONNECTIONS, SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR AS INDICATED ON THE MECHANICAL DRAWINGS OR SPECIFIED IN THE MECHANICAL SECTION OF THE SPECIFICATIONS.

55. LOW VOLTAGE WIRING SHALL BE IN CONDUIT WITHIN CONCEALED WALLS AND WHERE EXPOSED.

56. ELECTRICAL CONTRACTOR SHALL PROVIDE REQUIRED RELAY ACCESSORIES FOR CONNECTION OF 120V/1Ø VENTILATION EQUIPMENT TO 277V/1Ø LIGHTING AS APPLICABLE.

57. WHERE HVAC CONTROL WIRING IS REQUIRED BETWEEN BUILDINGS, PROVIDE UNDERGROUND CONDUIT WITH PULL STRING(S) FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR FOR THE ENERGY MANAGEMENT SYSTEM WIRING TERMINATIONS ONLY. CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT AND WIRING TERMINATIONS FOR BETWEEN BUILDINGS.

58. THERMOSTATS SHALL HAVE LOCKABLE COVERS (WHERE INDICATED ON PLANS) AND SHALL BE OF THE ELECTRONIC, PROGRAMMABLE, AUTOMATIC CHANGEOVER TYPE TO SEQUENCE HEATING OR COOLING. SET POINT RANGE SHALL BE 10F° BETWEEN FULL HEATING AND COOLING. THEY SHALL HAVE CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70°F, AND COOLING AT A TEMPERATURE NOT LESS 78°F. ADJUSTABLE TEMPERATURE DIFFERENTIAL SHALL BE 1½F°. CONTROL LIMITS SHALL BE FROM 55°F TO 85°F. MOUNT TOP OF BOX AT NO MORE THAN 42 INCHES ABOVE FLOOR OR AS REQUIRED BY LOCAL AUTHORITIES FOR ACCESSIBILITY. IN ADDITION, THERMOSTAT(S) SHALL HAVE THE CAPABILITY TO CONNECT AND RESPOND TO A OCCUPANT CONTROLLED DEMAND RESPONSE SIGNAL OR PRICE SIGNAL FOR RESETTING OF ROOM SETPOINTS.

59. THERMOSTATS THAT ARE PART OF AN ENERGY MANAGEMENT SYSTEM SHALL FOLLOW CONTROL SPECIFICATIONS AND DRAWING REQUIREMENTS.

60. SHOULD THE LOCATION OF THE THERMOSTAT NOT MEET THE ADA HEIGHT REQUIREMENTS DUE TO OBSTRUCTIONS, THEN AN ALTERNATE LOCATION SHALL BE PROPOSED OR REQUESTED BY THE CONTRACTOR THAT SHALL BE APPROVED BY THE ENGINEER AND ARCHITECT.

61. LINE VOLTAGE THERMOSTATS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

62. DUCTWORK CONSTRUCTION SHALL BE INSTALLED, SEALED AND INSULATED TO MEET THE REQUIREMENTS OF CMC SECTIONS 601.0, 602.0, 603.0, 604.0, 605.0, AND ANSI /SMACNA-006 2006 HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE 3RD EDITION.

63. PROVIDE POLLUTANT CONTROL PER CAL GREEN 2016 CODES SECTION 5.504.1-3 FOR TEMPORARY VENTILATION, COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION, AND USE OF LOW VOC SEALANTS

65. ALL SUPPLY, RETURN AND EXHAUST DUCT JOINTS SHALL BE SEALED PER CALIFORNIA MECHANICAL CODE CHAPTER 6 REQUIREMENTS. SEAL CLASS B.

66. DUCTWORK CONSTRUCTION SHALL MEET THE FOLLOWING SYSTEM PRESSURE REQUIREMENTS:
    - 66.1. UPSTREAM OF VARIABLE AIR VOLUME BOX - 4 INCH WATER COLUMN
    - 66.2. ALL OTHER DUCTWORK - 2 INCH WATER COLUMN

67. RECTANGULAR DUCTWORK SHALL BE SHEET METAL CONSTRUCTED OR SPIRAL ROUND, ERECTED, AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS, PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS, CHAPTER 6 OF THE CALIFORNIA MECHANICAL CODES, OR THE APPLICABLE STANDARDS ADOPTED BY (SMACNA) SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION.

68. ALL FLEXIBLE DUCT SHALL NOT EXCEED FIVE FEET IN LENGTH TO RESPECTIVE DIFFUSERS, GRILLES, OR OTHER AIR DEVICES.

69. INSTALL DRYER VENT DUCTWORK IN CONFORMANCE TO CMC SECTION 504.4.3.

70. KITCHEN HOOD(S): DUCTWORK SERVING TYPE I AND TYPE II HOODS SHALL BE INSTALLED IN CONFORMANCE TO SECTION 510.0.

71. DISHWASHER HOOD EXHAUST DUCTWORK SHALL BE ALUMINUM, SEALED WATER TIGHT, AND SLOPED DOWNWARD TOWARD THE HOOD FOR PROPER DRAINAGE.

72. AT THE TIME OF ROUGH INSPECTION AND DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENTS, OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS TO REDUCE THE AMOUNT OF DEBRIS WHICH MAY COLLECT IN THE SYSTEM.

73. LIMIT USE OF PERMANENT HVAC SYSTEMS DURING CONSTRUCTION TO CONDITIONING NECESSARY FOR MATERIAL AND EQUIPMENT INSTALLATION. IF PERMANENT HVAC IS USED DURING CONSTRUCTION, INSTALL MERV-8 FILTERS ON RETURNS, AND REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY, OR ,IF THE BUILDING IS OCCUPIED DURING ALTERATION, AT THE CONCLUSION OF CONSTRUCTION.

74. PROVIDE SEISMIC RESTRAINTS TO ALL DUCTWORK, PIPE, AND EQUIPMENT SUPPORTS IN ACCORDANCE WITH THE LATEST SMACNA GUIDELINES FOR SEISMIC RESTRAINT OF MECHANICAL SYSTEMS. SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH SEISMIC ANCHORAGE AND ISOLATION SUPPORTS.

75. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OR THE FIELD REPRESENTATIVE OF THE DIVISION OF THE STATE ARCHITECT.

76. RECTANGULAR DUCT TURNS IN SUPPLY, RETURN, AND EXHAUST DUCTS SHALL HAVE TURNING VANES UNLESS OTHERWISE NOTED, OR SHALL HAVE A INNER RADIUS TURN OF NO LESS THAN THE WIDTH OF THE DUCT.

77. DUCTWORK HANDLING CONDITIONED AIR SHALL BE INSULATED OR LINED. INTERIOR DUCTWORK SHALL BE INSULATED WITH A NON-FIBEROUS MATERIAL, R=4.2. ALL SUPPLY AND RETURN DUCTWORK EXPOSED TO WEATHER SHALL BE INTERNALLY LINED WITH 2" THICK DUCT LINER UNLESS OTHERWISE INDICATED OR SPECIFIED. ALL DUCT SIZES INDICATED ON PLANS ARE NET INSIDE DIMENSIONS. ALL INSULATION SHALL HAVE A FLAME SPREAD OF NOT MORE THAN 25 AND A SMOKE DENSITY NOT EXCEEDING 50.

78. CONTRACTORS OPTIONS: WHERE ROUND LINED DUCTWORK IS INDICATED, CONTRACTOR MAY USE RECTANGULAR DUCTWORK OF EQUIVALENT NET FREE AREA OR PRESSURE DROP (WHICHEVER IS MOST RESTRICTIVE).

79. MANUAL VOLUME DAMPERS SHALL BE PROVIDED IN ALL DUCT BRANCHES TO INDIVIDUAL DIFFUSERS, GRILLES, AND REGISTERS, AS WELL AS OUTSIDE AIR INTAKE DUCTS. DAMPERS SHALL BE LOCATED AT THE BRANCH DUCT LOCATIONS. THE MECHANICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF DAMPERS WITH THE AIR BALANCING CONTRACTOR PRIOR TO BID, SO AS TO ENSURE ACCESSIBILITY AFTER INSTALLATION. IN LOCATIONS WHERE THESE DAMPERS ARE INACCESSIBLE, CABLE OPERATED ADJUSTMENT CONTROLS SHALL BE PROVIDED AT NO ADDITIONAL COST. OPPOSED BLADE DAMPERS SHALL NOT BE PERMITTED UNLESS OTHERWISE NOTED.

80. PROVIDE AUTOMATIC FIRE DAMPERS AT ALL PENETRATIONS OF RATED CEILINGS AND WALLS THROUGHOUT. CONTRACTOR SHALL COORDINATE FIRE-RATED AREAS WITH THE ARCHITECTURAL DRAWINGS AND OTHER TRADES PRIOR TO INSTALLATION AND SHALL NOTIFY PERTINENT PARTIES PRIOR TO ANY WORK PERFORMED IN THESE AREAS. IN ADDITION, CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE PROPER ACCESS FOR DAMPERS INSTALLED. THE DAMPER FIRE RATING SHALL BE COMPATIBLE WITH THE CEILING/WALL ASSEMBLY RATING.

81. LOCATION OF FIRE-RATED CEILINGS AND WALLS ARE AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

82. DUCTWORK PASSING THROUGH FIRE RATED CORRIDORS AND LOBBIES, BUT HAS NO AIR INLET/OUTLET, SHALL BE MINIMUM 26 GAUGE SHEET METAL CONSTRUCTION.

83. DUCT SMOKE DETECTORS FOR AIR MOVING EQUIPMENT HAVING MORE THAN 2000 CFM SHALL HAVE DUCT SMOKE DETECTOR, BUT ARE NOT REQUIRED PER 2016 CMC 608.0 EXCEPTION WHERE ALL AREAS SERVED BY SAID EQUIPMENT HAS DIRECT EGRESS WITHIN 100 FEET.

84. FIRE AND/OR SMOKE DAMPER(S) SHALL BE PROVIDED AS REQUIRED BY THE LATEST CALIFORNIA BUILDING CODE INCLUDING ALL OCCUPANCY SEPARATION WALLS AND AS INDICATED HEREIN.

85. CONTRACTOR SHALL FURNISH FLUSH MOUNTED FIRE AND/OR SMOKE DAMPER(S), SO THAT DAMPER DOES NOT EXTEND PAST WALL FOR AREAS WITHOUT CEILINGS FOR QUALITY WORKMANSHIP.

86. SMOKE DAMPERS SHALL BE CONTROLLED BY (AREA?) SMOKE DETECTORS FURNISHED UNDER DIVISION 26. DUCT MOUNTED SMOKE DETECTORS SHALL BE FURNISHED UNDER DIVISION 16 AND INSTALLED BY MECHANICAL CONTRACTOR. ALL POWER AND SIGNAL WIRING FOR ALARM SYSTEM SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 26. LOW VOLTAGE WIRING AND INTERLOCK FOR SHUT DOWN CONTROLS SHALL BE BY CONTROLS CONTRACTOR.

87. FOR INACCESSIBLE AREAS THE CONTRACTOR SHALL PROVIDE ACCESS PANELS FOR ALL DAMPERS, EQUIPMENT, SMOKE DETECTORS, AND CONTROL DEVICES. THESE PANELS SHALL MATCH THE RATING OF THE WALL AND/OR CEILING THAT THEY ARE LOCATED IN. MINIMUM ACCESS PANEL SIZES SHALL BE 12"X12" FOR HAND ACCESS AND 30"x30" MINIMUM FOR BODY ACCESS. WHERE A LARGER ACCESS PANEL IS REQUIRED DUE TO INSTALLATION CONSTRAINTS OR EQUIPMENT SIZE, THE CONTRACTOR SHALL DO SO AT NO ADDITIONAL COST AND SHALL OBTAIN PRIOR APPROVAL FROM THE ARCHITECT, ENGINEER AND DSA.

88. HVAC CONTRACTOR TO REMOVE ALL LEFT OVER DUCTWORK SCRAPES, ETC. (IF ANY) AND LEAVE PREMISES CLEAN AND FREE OF ANY TRASH OR DEBRIS DUE TO THEIR WORK.

SUBSTITUTION OF MATERIALS

1. EQUALS: THE DESIGN HAS BEEN BASED ON THE MANUFACTURER'S NAME AND PRODUCT LISTED ON THE DRAWINGS. OTHER MANUFACTURER'S NAMES LISTED IN THE SPECIFICATIONS MAY BE SELECTED AND CONSIDERED 'AS EQUAL' FOR QUALITY ONLY, HOWEVER, THEY MUST MATCH THE PERFORMANCE, CONSTRUCTION, FIT AND FEATURES OF THOSE SELECTED FOR DESIGN. THE ACCEPTANCE OF THESE DOES NO RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PROVIDING THE REQUIRED MATERIALS AND PROVIDING A WORKABLE SYSTEM. THOSE ITEMS NOTED AS 'NO SUBSTITUTIONS' SHALL BE FURNISHED WHEN SPECIFIED.

2. SHOULD THE CONTRACTOR THE WISH TO SUBSTITUTE EQUIPMENT OR MATERIAL OTHER THAN THOSE CONSIDERED FOR THE BASIS OF DESIGN, THE CONTRACTOR SHALL SUBMIT INFORMATION AS CALLED FOR IN THE 'REQUEST FOR SUBSTITUTION' SPECIFICATIONS, AND SUBMIT REQUIRED INFORMATION FOR BOTH THE SPECIFIED OR SCHEDULED ITEM AND THE PROPOSED SUBSTITUTE ITEM. THESE SUBMITTALS MUST SHOW THAT BOTH THE SPECIFIED AND THE SUBSTITUTE MATERIAL MATCH IN QUALITY, PERFORMANCE, CONSTRUCTION, FIT AND FEATURES OF THOSE SELECTED FOR DESIGN. ANY EQUIPMENT OR MATERIAL SUBMITTED FOR SUBSTITUTION WITHOUT THE COMPARISON INFORMATION WILL NOT BE REVIEWED OR ACCEPTABLE.

3. LIABILITY OF SUBSTITUTIONS: PERFORMANCE OF SUBSTITUTIONS MUST BE EQUAL TO THE ITEM SPECIFIED. SHOULD THE SUBSTITUTED ITEM FAIL TO PERFORM ACCORDING TO SPECIFICATIONS, REPLACE WITH THE ORIGINALLY SPECIFIED ITEM WITHOUT EXTRA COMPENSATION ON REQUEST OF THE ARCHITECT ANY TIME WITHIN THE GUARANTEE PERIOD.

M/E/P COMPONENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCED AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN 2016 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

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.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

DUCTWORK AND PIPING DISTRIBUTION BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7, 13.6.8, AND 2016 CBC SECTION 1616A.1.23, 1616A.1.24, 1616A.1.25 AND 1616A.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., SMACNA OR OSHPD OPM) 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 THE BRACE LOADS.

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

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

MP ☒ MD ☒ PP ☐ E ☐ OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM#); (I.E. OPM 0114-13 B-LINE, OPM#-0043-13 MASON INDUSTRIES INC., AND OPM#-0203-13 M.W. SAUSSE & CO. INC.), AS MODIFIED TO SATISFY ANCHORAGE REQUIREMENTS OF ACI 318 CHAPTER 17.

MP ☒ MD ☒ PP ☐ E ☐ OPTION 3: SHALL COMPLY WITH SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION (2009), INCLUDING ANY ADDENDA. FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR APPLICABLE SEISMIC DESIGN CATEGORY 'E' FOR THE PROJECT AND CONDITIONS.

COPIES OF THE OPM MANUAL(S) SHALL BE ON THE JOBSITE PRIOR TO START OF HANGING AND BRACING OF THE DUCTWORK AND PIPE DISTRIBUTION SYSTEMS.

MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	AFF	ABOVE FINISHED FLOOR
	AL	ACOUSTICALLY LINED
	BOD	BOTTOM OF DUCT
	CFM	CUBIC FEET PER MINUTE
○—	BDD	DAMPER: BACKDRAFT
	FSD	DAMPER: FIRE/SMOKE
	FD	DAMPER: FIRE
═╫═	MVD	DAMPER: MANUAL VOLUME
	Ø	DIAMETER
	DN	DOWN
	DS	DISCONNECT SWITCH
Ⓢ—		DUCT SMOKE DETECTOR
	EER	ENERGY EFFICIENCY RATIO
	EA	EXHAUST AIR
	F	FAN
	FLA	FULL LOAD AMPS
◯◯◯◯		FLEXIBLE DUCT
	HP	HORSEPOWER
	MCA	MINIMUM CIRCUIT AMPACITY
	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MS	MOTOR STARTER
	RL	REFRIGERANT LIQUID
	RS	REFRIGERANT SUCTION
	OA	OUTSIDE AIR
	RA	RETURN AIR
	SA	SUPPLY AIR
	TA	TRANSFER AIR
	TP	RATED THRU PENETRATION
	SEER	SEASONAL EER
	SAD	SEE ARCHITECTURAL DRAWING
	SSD	SEE STRUCTURAL DRAWING
	(CO_2)	SENSOR: CARBON DIOXIDE
	Ⓣ	THERMOSTAT
	TYP	TYPICAL
	UON	UNLESS OTHERWISE NOTED
	WT	WEIGHT
	24x12	RECTANGULAR DUCT - INCHES
	12"	ROUND DUCT - INCHES

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JOHN CHOU
No. M34214
2/22/2018

MECHANICAL
LEGENDS &
NOTES

M001

PACKAGE GAS/ELECTRIC AIR CONDITIONING UNITS

TAG	MANUF.	MODEL	NET TOTAL CLG. CAP (KBTUH)	SEER/EER	HEATING INPUT (KBTUH)	AFUE (%)	AIR FLOW (CFM)	EXT. STATIC PRESS. (IN. WC)	HP	MCA/MOCP	ELECT. V/ϕ/HZ	POWER EXHAUST MANUF.	POWER EXHAUST HP/FLA	POWER EXHAUST MCA/MOCP	POWER EXHAUST V/ϕ/HZ	OPER. WEIGHT (LBS)	ACCESSORIES	REMARKS	MOUNTING DETAIL
AC-E4	TRANE	YHC072F4ELA	72.0	-/12.0	80.0	80.0	2400	0.8	1	15.1/20	460/3/60	CANFAB	2.0/4.0	5.0/9.0	460/3/60	1232	AE, HEF, RC, VF, SD, HAD, TTBU, PE	SINGLE ZONE VAV	1

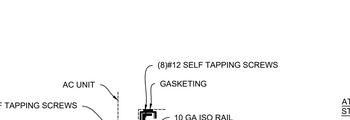
ACCESSORIES:
AE: DRY BULB AIR ECONOMIZER
HEF: HIGH EFFICIENCY FILTRATION (MERV8)
RC: ROOF CURB, 14" HIGH, VIBRATION ISOLATION CURB
VF: VERTICAL FLUE EXTENSION
HAD: HINGED ACCESS DOOR
RCUEK: ROOF CURB UTILITY EXTENSION KIT
TTBU: THROUGH THE BASE UTILITY PROVISION (ELECTRIC, CONDENSATE, AND GAS PIPING)
PE : POWERED EXHAUST
SD: DUCT SMOKE DETECTOR

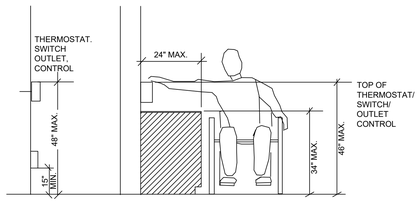
1. PROVIDE UNITS WITH OPEN MULTI PROTOCOL CONTROLLER FOR DISTRICT ALERTON CONTROL EMS
2. PROVIDE ALL ECONOMIZERS WITH BELIMO ACTUATORS TO BE CONTROLLED BY EMS CONTRACTOR

DIFFUSER, REGISTER AND GRILLE SCHEDULE

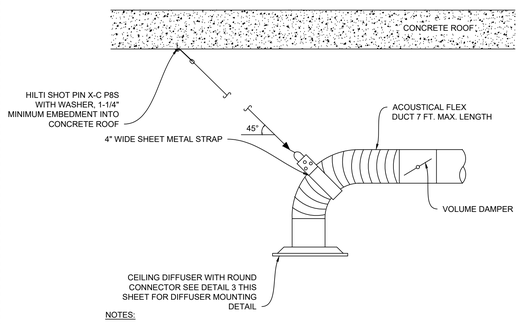
TAG	MANUF.	MODEL	FACE TYPE	MOUNTING	PATTERN	DAMPER	MATERIAL	FINISH	ACCESSORIES
A	TITUS	TDC	LOUVER	T-BAR	4-WAY	--	STEEL	WHITE ENAMEL	
B	TITUS	PAR	PERFORATED	T-BAR	--	--	STEEL	WHITE ENAMEL	
C	TITUS	300RS	HORIZ. BLADE	FLUSH	ADJUSTABLE	--	STEEL	WHITE ENAMEL	
D	TITUS	350ZR	HORIZ. BLADE	FLUSH	--	--	STEEL	WHITE ENAMEL	PAINTED BLACK BEHIND GRILLE
G	THERMAFUSER	TF-HC	SQUARE	T-BAR	W	--	STEEL	WHITE ENAMEL	DIGITAL WALL ADJUSTER

PROVIDE EARTHQUAKE TABS FOR TBAR APPLICATION





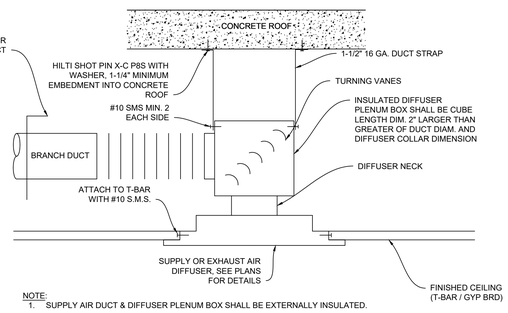
CONTROL DEVICE MOUNTING DETAIL | SCALE: N.T.S | 6



NOTES:

USE 12 GA. WIRE FOR REGISTERS AND GRILLES UP TO 24"x24". FOR REGISTERS AND GRILLES UP TO 36"x38" USE 8 GA. WIRE.

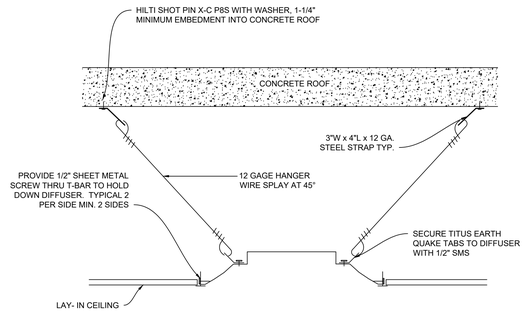
ROUND NECK CEILING DIFFUSER



NOTE:
1. SUPPLY AIR DUCT & DIFFUSER PLENUM BOX SHALL BE EXTERNALLY INSULATED.
2. DETAIL SHALL APPLY TO SQUARE NECKED CEILING DIFFUSER AIR OUTLETS AND OTHER CEILING OUTLETS LOCATED BELOW DUCTWORK, BEAMS AND OTHER OBSTACLES WHERE CLEARANCES WILL NOT ALLOW GRADUAL TOP BENDING FLEXIBLE DUCT CONNECTIONS.

SQUARE NECK CEILING DIFFUSER

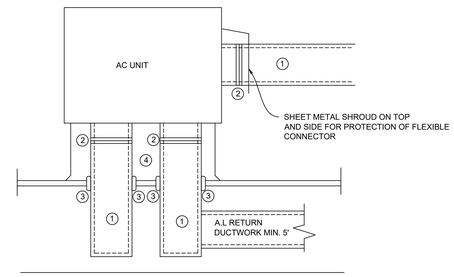
CEILING DIFFUSER INSTALLATION DETAIL | SCALE: N.T.S | 5



NOTES:

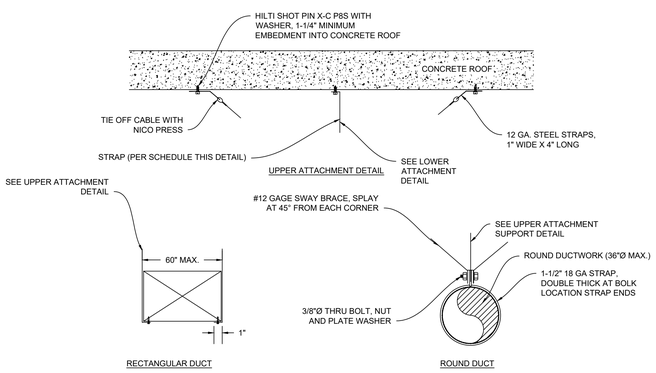
USE 12 GA. HANGER WIRE FOR REGISTERS AND GRILLES UP TO 24"x24". FOR REGISTERS AND GRILLES UP TO 36"x36" USE 8 GA. HANGER WIRE.

LAY IN DIFFUSER MOUNTING DETAIL | SCALE: N.T.S | 3



1. LINED SUPPLY AND RETURN PLENUM DROPS, REFER TO PLANS FOR SIZES
2. FLEXIBLE CONNECTOR. PROVIDE ENOUGH SLACK TO PROVIDE 2" MOVEMENT
3. SEAL ALL OPENING WITH SILICON.
4. FILL SPACE WITH 2 LAYERS OF ANDS FIBER GLASS INSULATION, 15% COMPRESSED

DUCT CONNECTION TO AC UNIT DETAIL | SCALE: N.T.S | 2



RECTANGULAR DUCT

ROUND DUCT

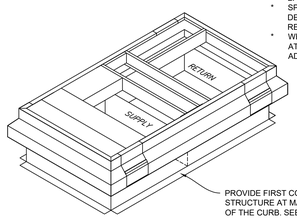
WIRE/STRAP SUPPORT SIZES
#12 GA. WIRE OR 1"X22 GA. STRAP FOR DUCTS 10"Ø AND DOWN
#8 GA. WIRE OR 1"X22 GA. STRAP FOR DUCTS FROM 11-18"Ø
2-#10 GA. OR 1"X22 GA. STRAP FOR DUCTS FROM 19-24"Ø
2-#8 GA. OR 1"X22 GA. STRAP FOR DUCTS FROM 25-36"Ø
#10 GA. WIRE OR 1"X22 GA. STRAP FOR HALF OF DUCT PERIMETER IS 30"
#8 GA. WIRE OR 1"X22 GA. STRAP FOR DUCTS FROM 11-18"Ø
2-#10 GA. OR 1"X22 GA. STRAP FOR DUCTS FROM 19-24"Ø
2-#8 GA. OR 1"X22 GA. STRAP FOR DUCTS FROM 25-36"Ø

NOTES:
INSTALLATION SHALL COMPLY W/ LATEST SMACNA STANDARDS. SUBMIT SHOP DRAWINGS FOR MOUNTING TO ENGINEER. ALL ALTERNATE INSTALLATIONS SHALL BE APPROVED BY ENGINEER.

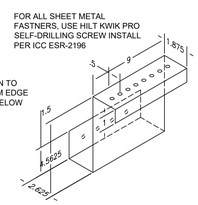
MAXIMUM SUPPORT SPACING OF 12'

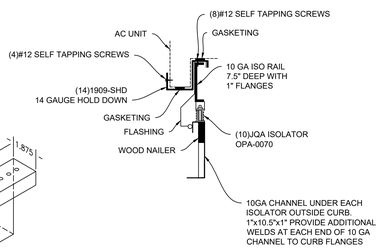
NOTES:
SEISMIC SWAY BRACING ONLY REQUIRED FOR EXPOSED DUCTWORK AND DUCTWORK EXCEEDING 33"Ø . ANY SEISMIC RESTRAINT SHALL COMPLY WITH THE OPM# AS INDICATED IN DUCTWORK AND PIPING DISTRIBUTION BRACING NOTES ON SHEET M0.01

DUCT SUPPORT | SCALE: N.T.S | 4



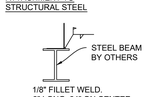
* FULL PERIMETER BASE CURB MIN. 16 GA. WOOD NAILER, RAIL, FLASHING AND WATER AND AIR BARRIER.
* SPRING ISOLATION WITH 2" STATIC DEFLECTION AND EARTHQUAKE RESTRAINTS
* WEATHER TIGHT ACCESS DOORS AT EACH ISOLATOR LOCATION FOR ADJUSTMENTS.





NOTE: SEE ARCHITECTURAL DRAWINGS FOR ROOF CURB INSTALLATION AND FLASHING DETAILS

ATTACHMENT TO STRUCTURAL STEEL



1/8" FILLET WELD. 2" LONG, 24" ON CENTER MIN. (2) CONNECTIONS ALONG EACH SIDE

AC ROOF CURB AND ISOLATOR | SCALE: N.T.S | 1

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MECHANICAL SCHEDULES & DETAILS

M002

SEQUENCE OF OPERATION:

1. EACH AC UNIT WILL BE DIRECTLY CONTROLLED BY ITS OWN DEDICATED EMS UNITARY CONTROLLER.

2. EMS UNITARY CONTROLLER WILL BE CONNECTED TO A WALL MOUNTED ELECTRONIC ZONE TEMPERATURE SENSOR WITH INTEGRAL CO2 SENSOR AS WELL AS A TOUCH SCREEN LCD INTERFACE WHICH INCLUDES DIGITAL PUSHBUTTONS FOR WARMER/COOLER SETPOINT CONTROL, ROOM TEMPERATURE DISPLAY, ROOM CO2 DISPLAY, AMBIENT OSA TEMPERATURE DISPLAY AND DIGITAL PUSHBUTTON AFTER-HOURS OVERRIDE TIMER CONTROL. PROVIDE VISUAL LED INDICATOR LIGHTS AT WALL MOUNTED SENSOR WHICH COMMUNICATE ZONE STATUS AND AC UNIT OPERATION.

3. UNIT FAN OPERATION: DURING THE OCCUPIED MODE AS DETERMINED BY EMS TIME SCHEDULE, THE UNIT FAN SHALL BE COMMANDED TO RUN CONTINUOUSLY AS NORMAL OPERATION. DURING THE UNOCCUPIED MODE AS DETERMINED BY EMS TIME SCHEDULE, THE FAN CYCLES WITH DEMAND AND THE TEMPERATURE IS CONTROLLED BY THE NIGHT COOLING AND HEATING SETPOINTS.

4. DEMAND CONTROL VENTILATION: EMS UNITARY CONTROLLER WILL BE CONNECTED TO A WALL MOUNTED CO2 SENSOR TO MONITOR ZONE CO2 CONCENTRATION. SHOULD THE CO2 CONCENTRATION RISE ABOVE CO2 ALARM SETPOINT OF 800 PPM (ADJUSTABLE: MAXIMUM 1,000 PPM) DURING OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE ACTIVELY COMMANDED TO THE UPPER MIN CFM THRESHOLD. WHEN CO2 CONCENTRATION IS BELOW CO2 ALARM SETPOINT, THE EMS UNITARY CONTROLLER SHALL USE THE LOWER MIN CFM THRESHOLD. EMS UNITARY CONTROLLER IS ALLOWED TO USE THE LOWER MIN CFM THRESHOLD ONLY WHEN ZONE CO2 SENSOR IS DETERMINED TO BE OPERATING WITHIN ACCEPTABLE RANGE AND SHALL SWITCH TO THE UPPER MIN CFM THRESHOLD SHOULD THE CO2 SENSOR FAIL.

5. AUTOMATIC DEMAND SHED CONTROLS: EMS SHALL BE PROGRAMMED WITH CAPABILITY TO IMPLEMENT CENTRALIZED DEMAND SHED FOR ALL NON-CRITICAL ZONES. CRITICAL ZONES SHALL NOT BE IMPACTED BY DEMAND SHED CONSERVATION MEASURES. UPON ACTIVATION OF A DEMAND SHED COMMAND FROM THE MAIN EMS SERVER VIA EMS OPERATING SOFTWARE, ZONE EMS UNITARY CONTROLLER SHALL INCREASE (STEP UP) CURRENT COOLING SETPOINT BY A MINIMUM OF 4°F (ADJUSTABLE) AND/OR LOWER (STEP DOWN) CURRENT HEATING SETPOINT BY A MINIMUM OF 4°F (ADJUSTABLE). COOLING AND HEATING SETPOINTS SHALL RESET TO ORIGINAL PREVIOUS SETTINGS ONCE THE DEMAND SHED COMMAND IS RELEASED AT THE MAIN EMS SERVER. ALL TEMPERATURE STEP UP/STEP DOWN AND RESET CHANGES SHALL BE PROGRAMMED TO OCCUR AT A DEFINED RATE OF CHANGE AS DETERMINED BY AUTHORIZED FACILITY OPERATOR USING EMS OPERATING SOFTWARE. IN ADDITION TO THE IMPLEMENTATION OF AUTOMATIC DEMAND SHED CONTROL STRATEGIES, THE EMS SHALL ALLOW FOR SYSTEM-WIDE GLOBAL ADJUSTMENT TO ALL COOLING AND HEATING SETPOINTS FROM MAIN EMS SERVER APART FROM DEMAND SHED CONSERVATION MEASURES AND SHALL ALLOW FOR ALL GLOBAL SETPOINT CHANGE COMMANDS TO BE DEACTIVATED.

6. ECONOMIZER CONTROL: EMS UNITARY CONTROLLER SHALL BE DIRECTLY CONNECTED TO DISCHARGE AIR AND RETURN AIR TEMPERATURE SENSORS AND SHALL SENSE AMBIENT OUTSIDE AIR TEMPERATURE BY WAY OF GLOBAL DDC PROGRAMMING FOR MAIN EMS OSA TEMP SENSOR. EMS UNITARY CONTROLLER SHALL ALSO BE DIRECTLY CONNECTED TO ECONOMIZER DAMPER ACTUATOR, INCLUDING POSITION FEEDBACK SIGNAL. SEE MINIMUM OUTDOOR AIR SECTION FOR MIN CFM NORMAL SETTING COMMAND OF ECONOMIZER DAMPERS. THE EMS UNITARY CONTROLLER SHALL CONTINUOUSLY COMPARE THE CURRENT OSA TEMPERATURE TO THE ESTABLISHED AIR ECONOMIZER HIGH LIMIT SHUT OFF (ECON LOCK OUT) TEMPERATURE ALARM THRESHOLD. WHEN CURRENT OSA TEMP IS LESS THAN OR EQUAL TO ECON LOCK OUT TEMP, EMS UNITARY CONTROLLER SHALL USE THE OUTSIDE AIR FOR FREE COOLING. WHEN THE OUTDOOR AIR DAMPER IS OPEN 100% FOR MORE THAN 5 MINUTES (ADJUSTABLE) AND THE NEED-COOLING SIGNAL CONTINUES TO INCREASE OR REACHES A MAXIMUM OF 100%, MECHANICAL COOLING WILL BE ACTIVATED. THE ECONOMIZER WILL REMAIN IN USE DURING MECHANICAL COOLING AS LONG AS DISCHARGE AIR TEMPERATURE REMAINS ABOVE 45°F AND CURRENT OSA TEMP IS LESS THAN OR EQUAL TO ECON LOCK OUT TEMP. WHEN OSA TEMP IS ABOVE ECON LOCK OUT TEMP, ECONOMIZER WILL BE DEACTIVATED AND ECONOMIZER SHALL BE COMMANDED TO MIN CFM SETTING. ECONOMIZER WILL ALSO BE COMMANDED TO MIN CFM SETTING WHEN UNIT IS IN HEATING MODE. WHEN UNIT FAN IS NOT OPERATING, ECONOMIZER DAMPER SHALL BE COMMANDED TO CLOSED POSITION IN RELATION TO OUTSIDE AIR. NOTE: ALL POWER EXHAUST FAN OPERATIONS SHALL BE CONTROLLED BY SEPARATE NON-EMS EXTERNAL DEVICES AS PROVIDED BY THE AC UNIT MANUFACTURER.

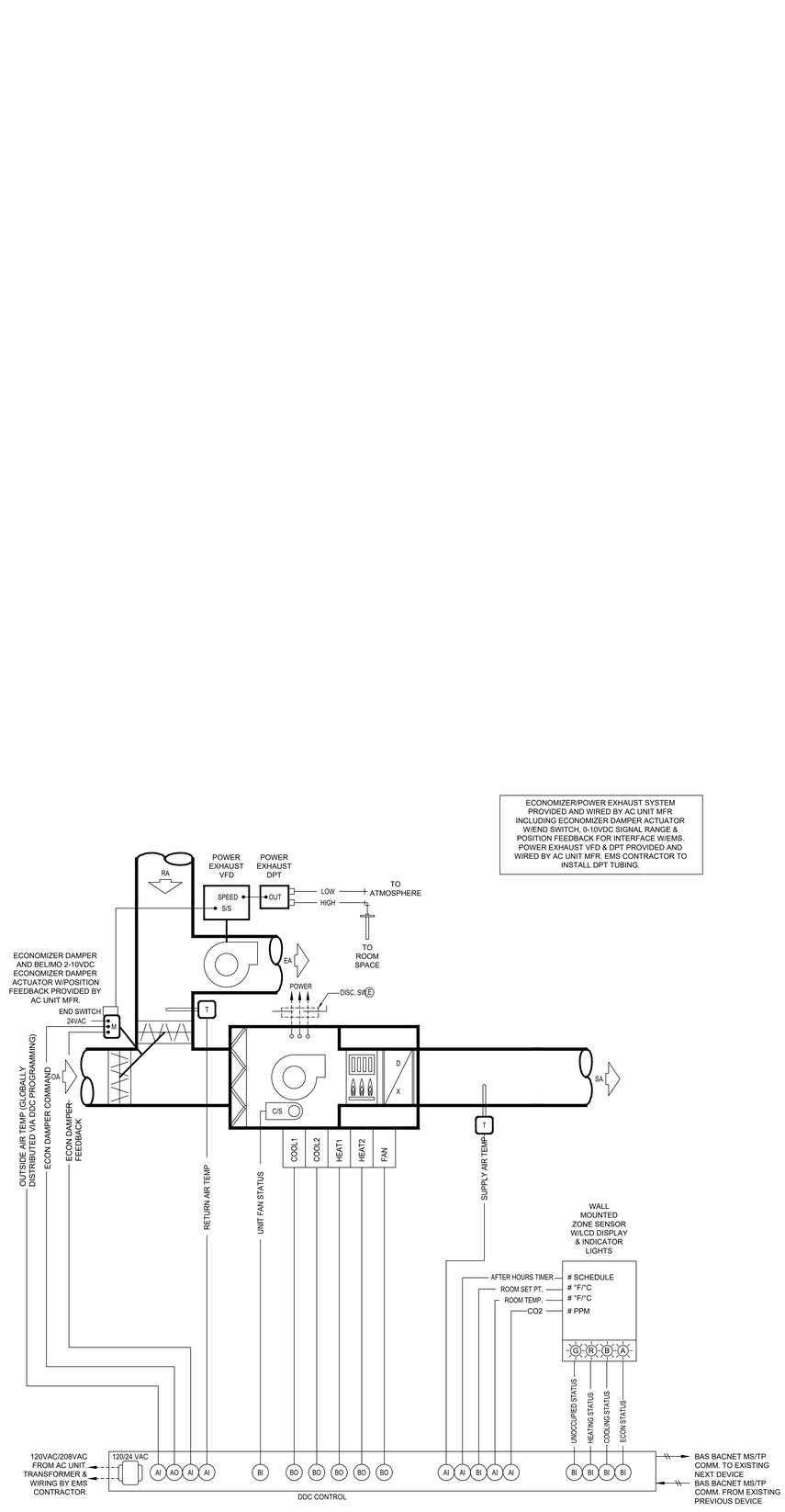
7. HEATING OPERATION: THE CONTROLLER COMPARES THE HEATING SETPOINT WITH THE SPACE TEMPERATURE AND DETERMINES A NEED-HEATING CONTROL SIGNAL TO STAGE A GAS REGULATING VALVE ON THE UNIT. ECONOMIZER TO BE COMMANDED TO MIN CFM SETTING AND MECHANICAL COOLING TO BE LOCKED OUT DURING HEATING MODE.

8. COOLING OPERATION: THE CONTROLLER COMPARES THE COOLING SETPOINT WITH THE SPACE TEMPERATURE AND DETERMINES A NEED-COOLING SIGNAL. THE FIRST STAGE OF COOLING WILL ENABLE THE ECONOMIZER TO PROVIDE FREE COOLING FOR AS LONG AS POSSIBLE. THE SECOND STAGE WILL ENABLE THE COMPRESSOR(S) TO MAINTAIN THE ROOM SET POINT. MECHANICAL HEATING TO BE LOCKED OUT DURING COOLING MODE.

9. FAULT DETECTION DIAGNOSTICS: THE EMS DDC CONTROLLER SHALL MONITOR FAULT STATUS OF THE FOLLOWING CONDITIONS AND BROADCAST RESULTS VIA EMS NETWORK:
   a. AIR TEMPERATURE SENSOR FAILURE/FAULT - SHOULD ANY SUPPLY, RETURN OR OUTSIDE AIR TEMPERATURE SENSOR ASSOCIATED WITH THE EMS DDC ZONE CONTROLLER BE DISCONNECTED FROM THE SYSTEM, AN ALARM SHALL BE GENERATED AND BROADCAST. OR SHOULD ANY SUPPLY, RETURN OR OUTSIDE AIR TEMPERATURE SENSOR ASSOCIATED WITH THE EMS DDC ZONE CONTROLLER RETURN A VALUE FOR TEMPERATURE OUTSIDE THE RANGE OF NORMAL OPERATING CONDITIONS, AN ALARM SHALL BE GENERATED AND BROADCAST.
   b. UNIT NOT ECONOMIZING WHEN IT SHOULD - SHOULD ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS NOT MATCH THE COMMANDED ECONOMIZER POSITION WHEN THE ECONOMIZER IS ENABLED FOR MORE THAN 3 MINUTES (ADJUSTABLE), AN ALARM SHALL BE GENERATED AND BROADCAST.
   c. UNIT ECONOMIZING WHEN IT SHOULD NOT - SHOULD ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS INDICATE THAT THE ECONOMIZER DAMPER IS OPEN BEYOND THE MIN CFM SETTING WHEN THE ECONOMIZER IS NOT ENABLED FOR MORE THAN 3 MINUTES (ADJUSTABLE), AN ALARM SHALL BE GENERATED AND BROADCAST.
   d. DAMPER NOT MODULATING - SHOULD ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS NOT MATCH THE COMMANDED ECONOMIZER DAMPER POSITION FOR MORE THAN 3 MINUTES (ADJUSTABLE), AN ALARM SHALL BE GENERATED AND BROADCAST.
   e. EXCESS OUTDOOR AIR - SHOULD ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS INDICATE THAT THE ECONOMIZER DAMPER IS OPEN BEYOND THE MIN CFM SETTING IN COOLING MODE WHEN OSA IS ABOVE ECON LOCK OUT SETPOINT OR IS OPEN BEYOND MIN CFM IN HEATING MODE, AN ALARM SHALL BE GENERATED AND BROADCAST.

10. MONITORING - THE FOLLOWING CONDITIONS SHALL BE MONITORED AND DISPLAYED AT EMS OPERATOR WORKSTATION/GRAPHICAL USER INTERFACE:
    a. SUPPLY, RETURN, OUTSIDE AIR AND ROOM TEMPERATURES.
    b. ROOM CO2 CONCENTRATION.
    c. CURRENT MODE (HEATING/COOLING/FAN).
    d. SUPPLY AIR TEMPERATURE ATTAINED LAST TIME UNIT WAS IN HEATING.
    e. SUPPLY AIR TEMPERATURE ATTAINED LAST TIME UNIT WAS IN COOLING.
    f. CURRENT COMMAND STATUS OF FAN, ECONOMIZER, COMPRESSOR AND GAS VALVE.
    g. RUN TIME METERS ON FAN, COMPRESSOR, AND HEAT
    h. FAN STATUS THRU CURRENT SWITCH.
    i. ECONOMIZER ACTUATOR FEEDBACK STATUS.

ECONOMIZER/POWER EXHAUST SYSTEM PROVIDED AND WIRED BY AC UNIT MFR INCLUDING ECONOMIZER DAMPER ACTUATOR W/END SWITCH, 0-10VDC SIGNAL RANGE & POSITION FEEDBACK FOR INTERFACE W/EMS. POWER EXHAUST VFD & DPT PROVIDED AND WIRED BY AC UNIT MFR. EMS CONTRACTOR TO INSTALL DPT TUBING.



AC UNIT CONTROL DIAGRAM

SCALE: N.T.S

1

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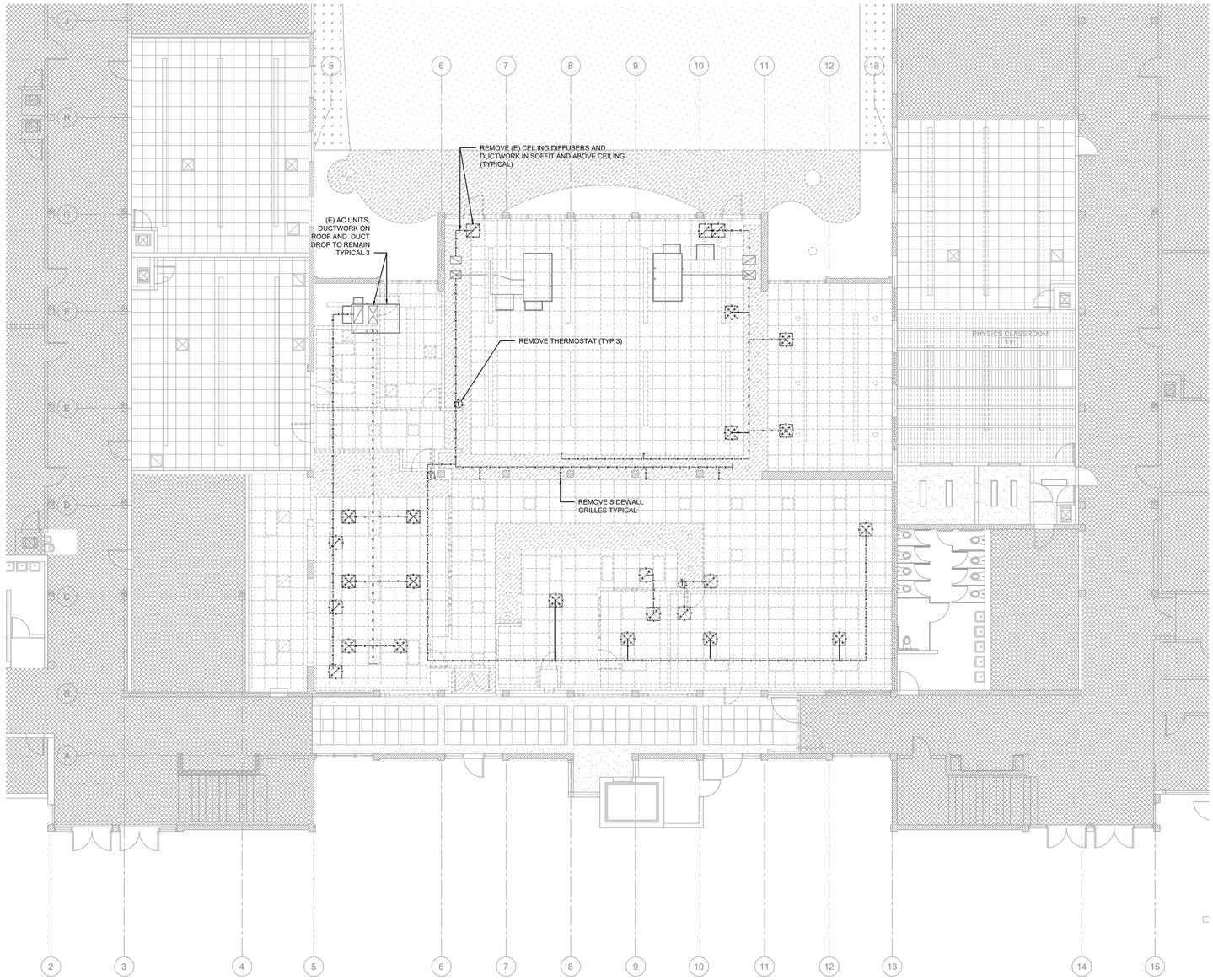
MECHANICAL CONTROLS

M003



1 MECHANICAL DEMOLITION FLOOR PLAN
1/8" = 1'-0"

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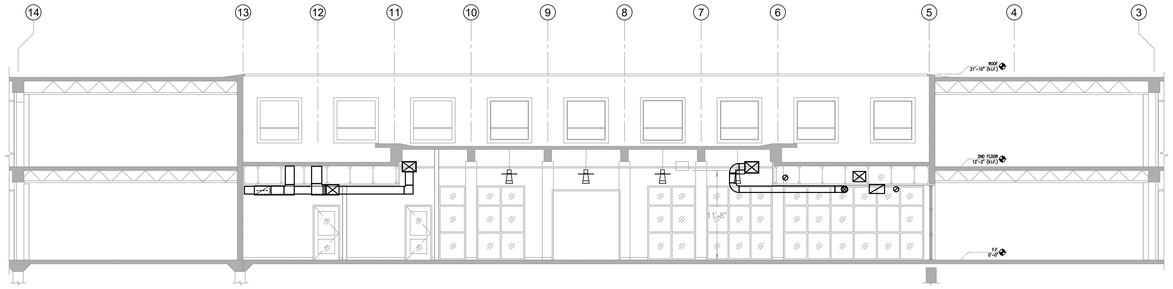
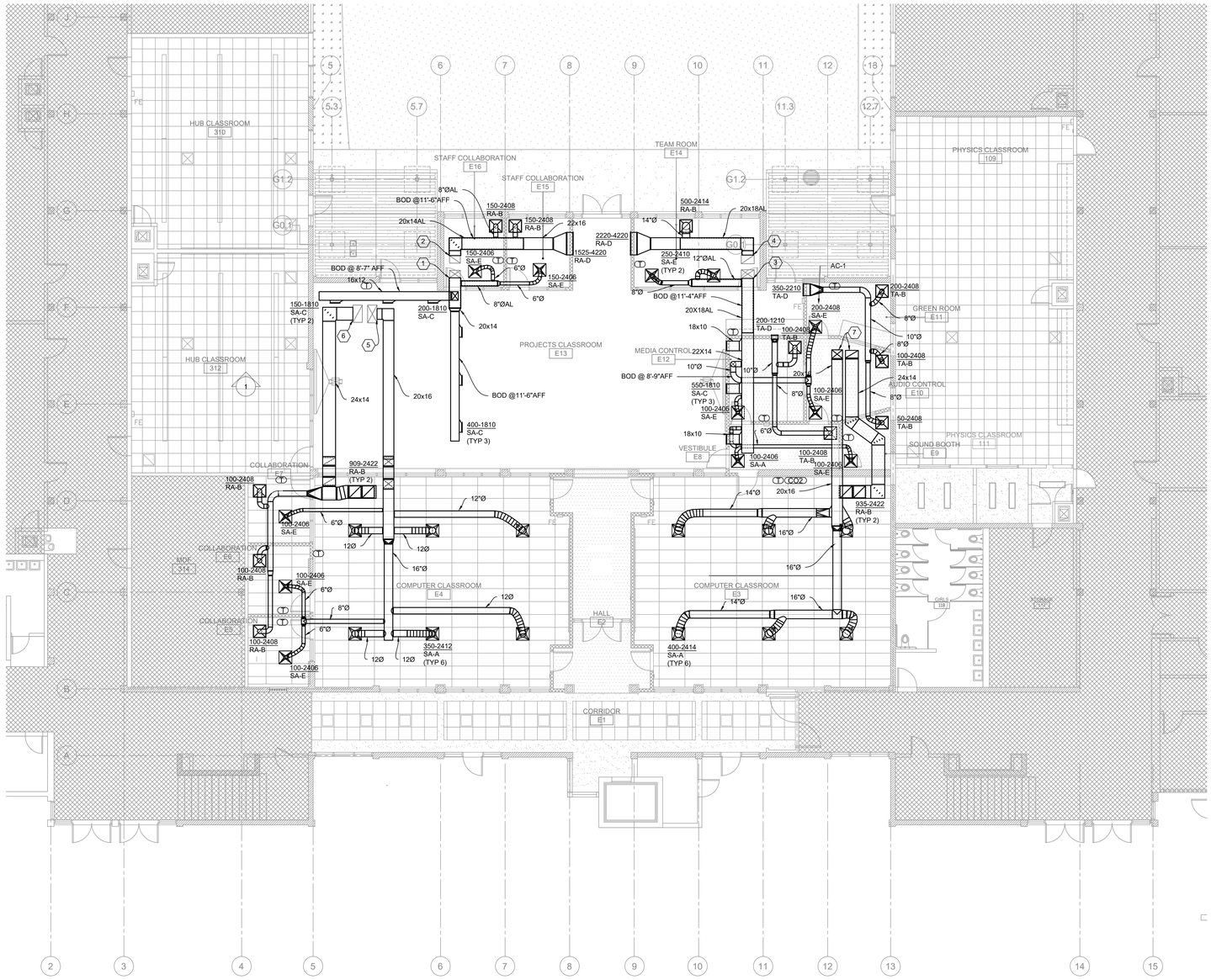
MECHANICAL
DEMO PLAN

M101



2 MECHANICAL SECTION -1
1/8" = 1'-0"



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1/8" = 1'-0"

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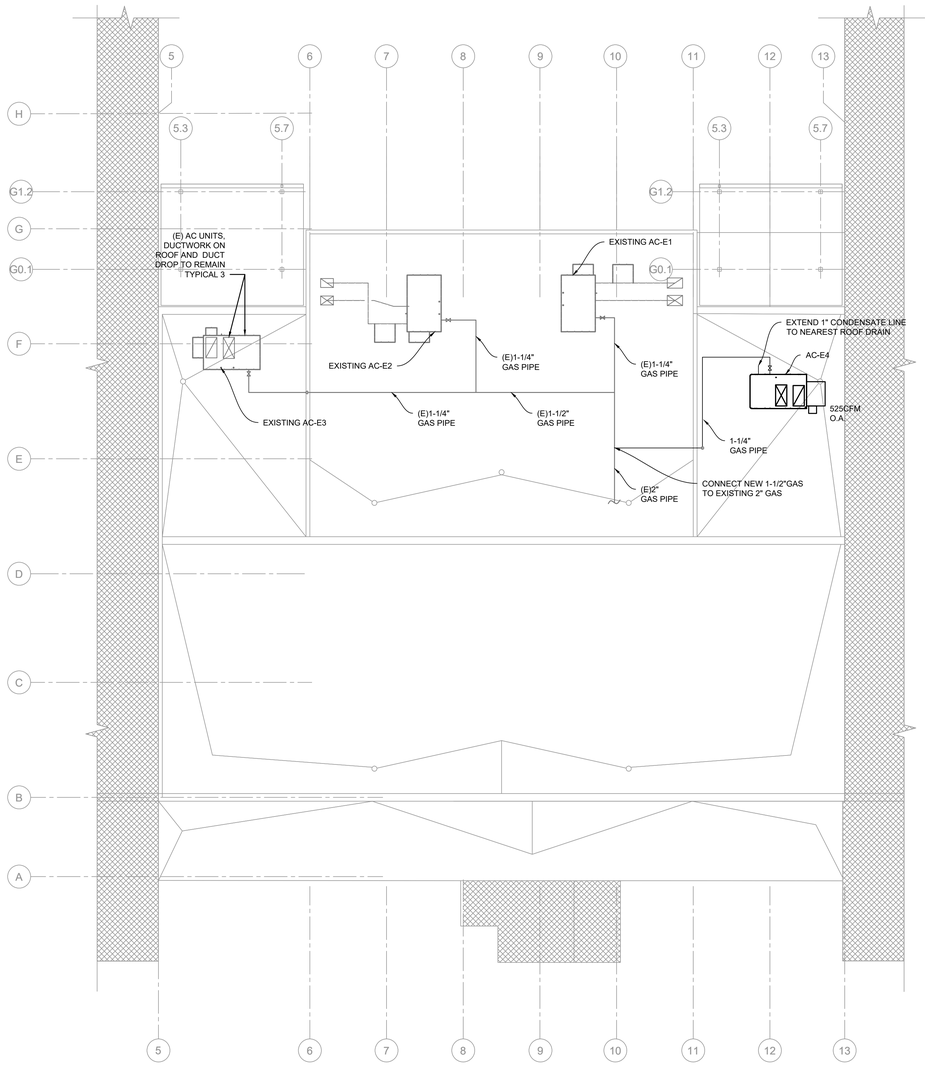
MECHANICAL FLOOR PLAN AND SECTION

M201



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

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MECHANICAL
ROOF PLAN

M301

STATE OF CALIFORNIA

FENESTRATION WORKSHEET

CEC-NRCC-ENV-02-E (Revised 09/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ENV-02-E
Fenestration Worksheet	(Page 1 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

A. WINDOWS DETAILS Worksheet - *§140.3(a)6B, C and D*

NOTE: 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. Site-built fenestration less than 1,000 ft² see Reference Nonresidential Appendix NA6.
Prescriptively, skylights shall have a glazing material or diffuser that has a measured haze value greater than 90%, determined according to ASTM D1003, or other test method approved by the Energy Commission.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
			Fenestration						Overhang				
			U-Factor		SHGC		VT		Dimensions			Calculated	
Tag/ID	Window Type (e.g., Window-1)	Surface Area	Proposed	Allowed	Proposed	Allowed	Proposed	Allowed	H	V	H/V	(R)SHGC Proposed	Max (R)SHGC Allowed
1	Window	270	0.470	0.470	0.310	0.310	0.460	0.46	0.0	0.1	0.00	0.310	0.310
2	Window	405	0.470	0.470	0.310	0.310	0.460	0.46					
3	Window	270	0.470	0.470	0.310	0.310	0.460	0.46					

B. WEST WINDOW AREA CALCULATION - See §140.3(a)5A

01. **Gross West** Exterior Wall Area	150	ft² × 0.40 =	60	ft²	40% of **Gross West Facing** Exterior Wall Area; or
02. **West** Display Linear Perimeter	0	FT × 6 ft =	0	ft²	**West** Display Perimeter Area
03. Enter Larger of 1 or 2			60	ft²	Maximum Standard **West** Area
04. Enter Proposed **West** Window Area			0	ft²	Proposed **West** Window Area

*Note: If the PROPOSED **WEST** WINDOW AREA is greater than the MAXIMUM STANDARD **WEST** AREA then the envelope component approach may not be used.*

C. WINDOW AREA CALCULATION - See §140.3(a)5A

01. Gross Exterior Wall Area	2,682	ft² × 0.40 =	1,073	ft²	40% of Gross Exterior Wall Area or
02. Linear Display Perimeter	0	FT × 6 ft =	0	ft²	Display Perimeter Area
03. Enter The Larger of 1 or 2			1,073	ft²	Maximum Standard Area
04. Enter Proposed Window Area			945	ft²	Proposed Window Area

Note: If the PROPOSED WINDOW AREA is greater than the MAXIMUM STANDARD AREA then the envelope component approach may not be used.

STATE OF CALIFORNIA

FENESTRATION WORKSHEET

CEC-NRCC-ENV-02-E (Revised 09/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ENV-02-E
Fenestration Worksheet	(Page 2 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

D. SKYLIGHT AREA CALCULATION - See §143(a)6A

	ACTUAL GROSS ROOF AREA		STANDARD ALLOWED SKYLIGHT AREA
01. IF Atrium/Skylight Height is ≤ 55 ft; **or**	3,206	ft² × 0.05 =	160 ft²
2. IF Atrium/Skylight Height is > 55 ft		ft² × 0.10 =	ft²
03. Proposed Skylight Area (from plans)		0 ft²	
04. Skylight SSR %[1, 2] = Proposed Skylight Area <u>Divided</u> by Actual Gross Roof Area =		0.0 %	
05. Haze material value greater than 90% according to ASTM D1003, or other approved method by the Energy Commission			Yes ☐ / No ☐

1. If the SKYLIGHT SSR % is less than or equal to 5% then choose the appropriate column in Table 140.3-B and C and row in Table 140.3-D.
2. If the SKYLIGHT SSR % is greater than 5% then the Envelope Component Approach may not be used.

E. RELOCATABLE PUBLIC SCHOOL BUILDINGS - See Section140.3(a)8

Option 1

☐ For Specific Climate Zone, use Table 140.3-B - Prescriptive Envelope Criteria.	☐ Specific Climate Zone Metal Identification Label – Place two labels on each relocatable school building and indicate on the building plans.
	Indicate location from the building plans:

Option 2

☐ For Any (All) Climate Zone, use Table 140.3-D - Prescriptive Envelope Criteria.	☐ Any (All) Climate Zone Metal Identification Label - Place two labels on each relocatable school building and indicate on the building plans.
	Indicate location from the building plans:

STATE OF CALIFORNIA

FENESTRATION WORKSHEET

CEC-NRCC-ENV-02-E (Revised 09/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ENV-02-E
Fenestration Worksheet	(Page 3 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Bikash Vaidya	Documentation Author Signature: Bikash Vaidya
Company: H & M Mechanical Group	Signature Date: 6/6/2018
Address: 8517 Earhart Rd #230	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Oakland, CA 94621	Phone: 510 569 2000

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:	Responsible Designer Signature:
Company : HED	Date Signed:
Address: 417 Montgomery Street	License:
City/State/Zip: San Francisco, CA 94104	Phone: 415-981-2345

ENVELOPE MANDATORY MEASURES: NONRESIDENTIAL ENV-MM

Project Name *Terra Linda High School - Building E Innovative Hub*	Date *6/6/2018*

DESCRIPTION

Building Envelope Measures:

§110.8(a):	Installed insulating material shall have been certified by the manufacturer to comply with the California Quality Standards for insulating material, Title 20 Chapter 4, Article 3.
§110.8(c):	All Insulating Materials shall be installed in compliance with the flame spread rating and smoke density requirements of Sections 2602 and 707 of Title 24, Part 2.
§110.8(g):	Heated slab floors shall be insulated according to the requirements in Table 110.8-A.
§110.7(a):	All Exterior Joints and openings in the building that are observable sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed.
§110.6(a):	Manufactured fenestration products and exterior doors shall have air infiltration rates not exceeding 0.3 cfm/ft.² of window area, 0.3 cfm/ft.² of door area for residential doors, 0.3 cfm/ft.² of door area for nonresidential single doors (swinging and sliding), and 1.0 cfm/ft.² for nonresidential double doors (swinging).
§110.6(a):	Fenestration U-factor shall be rated in accordance with NFRC 100, or the applicable default U-factor.
§110.6(a) :	Fenestration SHGC shall be rated in accordance with NFRC 200, or NFRC 100 for site-built fenestration, or the applicable default SHGC.
§110.6(b):	Site Constructed Doors, Windows and Skylights shall be caulked between the unit and the building, and shall be weatherstripped (except for unframed glass doors and fire doors).
§120.7(a):	The opaque portions of the roof/ceiling that separates conditioned spaces from unconditioned spaces or ambient air shall meet the applicable U-Factor requirements as follows: **Metal Building-** The weighted average U-factor of the roof assembly shall not exceed 0.098. **Wood Framed and Others-** The weighted average U-factor of the roof assembly shall not exceed 0.075.
§120.7(b):	The opaque portions of walls that separate conditioned spaces from unconditioned spaces or ambient air shall meet the applicable U-factor as follows: **Metal Building-** The weighted average U-factor of the wall assembly shall not exceed 0.113. **Metal Framed-** The weighted average U-factor of the wall assembly shall not exceed 0.151. **Light Mass Walls-** A 6 inch or greater Hollow Core Concrete Masonry Unit shall have a U-factor not to exceed 0.440. **Heavy Mass Walls-** An 8 inch or greater Hollow Core Concrete Masonry Unit shall have a U-factor not to exceed 0.690. **Wood Framed and Others-** The weighted average U-factor of the wall assembly shall not exceed 0.110. **Spandrel Panels and Opaque Curtain Wall-** The weighted average U-factor of the spandrel panels and opaque curtain wall assembly shall not exceed 0.280. **Demising Walls-**. The opaque portions of framed demising walls shall meet the requirements of Item A or B below: A. Wood framed walls shall be insulated to meet a U-factor not greater than 0.099. B. Metal Framed walls shall be insulated to meet a U-factor not greater than 0.151.
§120.7(c):	The opaque portions of floors and soffits that separate conditioned spaces from unconditioned spaces or ambient air shall meet the applicable U-Factor requirements as follows: **Raised Mass Floors-** Shall have a minimum of 3 inches of lightweight concrete over a metal deck or the weighted average U-factor of the floor assembly shall not exceed 0.269. **Other Floors-**The weighted average U-factor of the floor assembly shall not exceed 0.071.

STATE OF CALIFORNIA

MECHANICAL SYSTEMS

CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 1 of 4)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

A. MECHANICAL COMPLIANCE DOCUMENTS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2016 Nonresidential Manual
Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

YES	NO	Comp. Doc./Worksheet #	Title
☑	☐	NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
☑	☐	NRCC-MCH-01-E (Part 2 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-02-A to 11-A). Required on plans for all submittals.
☑	☐	NRCC-MCH-01-E (Part 3 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-12-A to 18-A). Required on plans where applicable.
☑	☐	NRCC-MCH-02-E (Part 1 of 2)	Mechanical Dry Equipment Summary is required for all submittals with Central Air Systems. It is optional on plans.
☑	☐	NRCC-MCH-02-E (Part 2 of 2)	Mechanical Wet Equipment Summary is required for all submittals with chilled water, hot water or condenser water systems. It is optional on plans.
☐	☑	NRCC-MCH-03-E	Mechanical Ventilation and Reheat is required for all submittals with multiple zone heating and cooling systems. It is optional on plans.
☐	☑	NRCC-MCH-07-E (Part 1 of 2)	Power Consumption of Fans. Required on plans where applicable
☐	☑	NRCC-MCH-07-E (Part 2 of 2)	Power Consumption of Fans, Declaration. Required on plans where applicable

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STATE OF CALIFORNIA

MECHANICAL SYSTEMS

CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 2 of 4)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

B. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck – The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-02-A	MCH-03-A	MCH-04-A	MCH-05-A	MCH-06-A	MCH-07-A	MCH-08-A	MCH-09-A	MCH-10-A	MCH-11-A
Equipment Requiring Testing or Verification	# of Units	Outdoor Air	Single Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Control Ventilation (DCV)	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
Trane YHC072F	1	☑	☑	☐	☑	☑	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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STATE OF CALIFORNIA

MECHANICAL SYSTEMS

CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 3 of 4)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

C. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck – The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-12-A	MCH-13-A	MCH-14-A	MCH-15-A	MCH-16-A	MCH-17-A	MCH-18-A
Equipment Requiring Testing or Verification	# of Units	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Supply Air Temperature Reset Controls	Condenser Water Reset Controls	ECMS
Trane YHC072F	1	☐	☐	☐	☐	☐	☐	☐

STATE OF CALIFORNIA

MECHANICAL SYSTEMS

CEC-NRCC-MCH-01-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 4 of 4)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Bikash Vaidya	Documentation Author Signature: Bikash Vaidya
Company: H & M Mechanical Group	Signature Date: 6/6/2018
Address: 8517 Earhart Rd #230	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Oakland, CA 94621	Phone: 510 569 2000

RESPONSIBLE PERSON'S DECLARATION STATEMENT

Responsible Designer Name: John Chou	Responsible Designer Signature:
Company: H&M Mechanical Group	Date Signed: 6/6/2018
Address: 8517 Earhart Rd Suite 230	License:
City/State/Zip: Oakland, CA 94621	Phone:

STATE OF CALIFORNIA

HVAC DRY & WET SYSTEM REQUIREMENTS

CEC-NRCC-MCH-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Dry & Wet System Requirements	(Page 1 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

A. Equipment Tags and System Description[1] – Dry Systems		AC-E4		
MANDATORY MEASURES	***T-24 Sections***	***Reference to the Requirements in the Contract Documents[2]***		
Heating Equipment Efficiency[3]	110.1 or 110.2(a)	M0.02		
Cooling Equipment Efficiency[3]	110.1 or 110.2(a)	M0.02		
HVAC or Heat Pump Thermostats	110.2(b), 110.2(c)	M0.02		
Furnace Standby Loss Control	110.2(d)	M0.02		
Low Leakage AHUs	110.2(f)	M0.02		
Ventilation[4]	120.1(b)	M0.02		
Demand Control Ventilation[5]	120.1(c)4	M0.02		
Occupant Sensor Ventilation Control[6]	120.1(c)5, 120.2(e)3	M0.02		
Shutoff and Reset Controls[7]	120.2(e)	M0.02		
Outdoor Air and Exhaust Damper Control	120.2(f)	M0.02		
Isolation Zones	120.2(g)	M0.02		
Automatic Demand Shed Controls	120.2(h)	M0.02		
Economizer FDD	120.2(i)	M0.02		
Duct Insulation	120.4	M0.02		
PRESCRIPTIVE MEASURES		M0.02		
Equipment is sized in conformance with 140.4(a & b)	140.4(a & b)	Y Y/N	Y/N	Y/N
Supply Fan Pressure Control	140.4(c)	M0.02		
Simultaneous Heat/Cool[8]	140.4(d)	M0.02		
Economizer	140.4(e)	M0.02		
Heat and Cool Air Supply Reset	140.4(f)	M0.02		
Electric Resistance Heating[9]	140.4(g)	M0.02		
Duct Leakage Sealing and Testing[10]	140.4(l)	M0.02		

Notes:

1. Provide equipment tags (e.g. AHU 1 to 10) and system description (e.g. Single Duct VAV reheat) as appropriate. Multiple units with common requirements can be grouped together.
2. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system.
3. The referenced plans and specifications must include all of the following information: equipment tag, equipment nominal capacity, Title 24 minimum efficiency requirements, and actual rated equipment efficiencies. Where multiple efficiency requirements are applicable (e.g. full- and part-load) include all. Where appliance standards apply (110.1), identify where equipment is required to be listed per Title 20 1601 et seq.
4. Identify where the ventilation requirements are documented for each central HVAC system. Include references to both central unit schedules and sequences of operation. If one or more spaces is naturally ventilated identify where this is documented in the plans and specifications. Multiple zone central air systems must also provide a MCH-03-E compliance document.
5. If one or more spaces has demand controlled ventilation identify where it is specified including the sensor specifications and the sequence of operation.
6. If one or more space has occupant sensor ventilation control identify where it is specified including the sensor specifications and the sequence of operation
7. If the system is DDC identify the sequences for the system start/stop, optimal start, setback (if required) and setup (if required). For all systems identify the specification for the thermostats and time clocks (if applicable).
8. Identify where the heating, cooling and deadband airflows are scheduled for this system. Include a reference to the specification of the zone controls. Provide a MCH-03-E compliance document.
9. Enter N/A if there is no electric heating. If the system has electric heating indicate which exception to 140.4(g) applies.
10. If duct leakage sealing and testing is required, a MCH-04-A compliance document must be submitted.

STATE OF CALIFORNIA

HVAC DRY & WET SYSTEM REQUIREMENTS

CEC-NRCC-MCH-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Dry & Wet System Requirements	(Page 2 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

B. Equipment Tags and System Description[1] – Wet Systems				
MANDATORY MEASURES	***T-24 Sections***	***Reference to the Requirements in the Contract Documents[2]***		
Heating Hot Water Equipment Efficiency[3]	110.1			
Cooling Chilled and Condenser Water Equipment Efficiency[3]	110.1, 140.4(i)			
Open and Closed Circuit Cooling Towers conductivity or flow-based controls	110.2(e) 1			
Open and Closed Circuit Cooling Towers Maximum Achievable Cycles of Concentration (LSI)[6]	110.2(e) 2			
Open and Closed Circuit Cooling Towers Flow Meter with analog output	110.2(e) 3			
Open and Closed Circuit Cooling Towers Overflow Alarm	110.2(e) 4			
Open and Closed Circuit Cooling Towers Efficient Drift Eliminators	110.2(e) 5			
Pipe Insulation	120.3			
PRESCRIPTIVE MEASURES				
Cooling Tower Fan Controls	140.4(h)2, 140.4(h)5	Y/N	Y/N	Y/N
Cooling Tower Flow Controls	140.4(h)3			
Centrifugal Fan Cooling Towers[4]	140.4(h)4			
Air-Cooled Chiller Limitation[5]	140.4(j)			
Variable Flow System Design	140.4(k)			
Chiller and Boiler Isolation	140.4(k)			
CHW and HHW Reset Controls	140.4(k)			
WLHP Isolation Valves	140.4(k)			
VSD on CHW, CW & WLHP Pumps >5HP	140.4(k)			
DP Sensor Location	140.4(k)			

Notes:

1. Provide equipment tags (e.g. CH 1 to 3) or system description (e.g. CHW loop) as appropriate. Multiple units with common requirements can be grouped together.
2. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system.
3. The referenced plans and specifications must include all of the following information: equipment tag, equipment nominal capacity, Title 24 minimum efficiency requirements, and actual rated equipment efficiencies. Where multiple efficiency requirements are applicable (e.g. full- and part-load) include all. For chillers operating at non-standard efficiencies provide the Kadj values. For chillers also note whether the efficiencies are Path A or Path B.
4. Identify if cooling towers have propeller fans. If towers use centrifugal fans document which exception is used.
5. If air-cooled chillers are used, document which exceptions have been used to comply with 140.4(j) and the total installed design capacity of the air-cooled chillers in the chilled water plant.
6. Identify the existence of a completed MCH-06-E when open or closed circuit cooling towers are specified to be installed, otherwise enter "N/A".

STATE OF CALIFORNIA

HVAC SYSTEM REQUIREMENTS

CEC-NRCC-MCH-02-E (Revised 06/14) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Wet System Requirements	(Page 3 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Bikash Vaidya	Documentation Author Signature: Bikash Vaidya
Company: H & M Mechanical Group	Signature Date: 6/6/2018
Address: 8517 Earhart Rd #230	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Oakland, CA 94621	Phone: 510 569 2000

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: John Chou	Responsible Designer Signature:
Company : H&M Mechancial Group	Date Signed: 6/6/2018
Address: 8517 Earhart Rd Suite 230	License: M34214
City/State/Zip: Oakland, CA 94621	Phone: 510.569.2000

STATE OF CALIFORNIA

REQUIRED ACCEPTANCE TESTS

CEC-NRCC-MCH-04-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-04-E
Required Acceptance Tests	(Page 1 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

A. MECHANICAL COMPLIANCE FORMS & WORKSHEETS

(indicate if worksheet is included)

For detailed instructions on the use of this and all Energy Standards compliance documents, refer to the 2016 Nonresidential Manual
Note: The Enforcement Agency may require all compliance documents to be incorporated onto the building plans. The NRCC-MCH-04-E and NRCC-MECH-05-E are alternative compliance documents to NRCC-MCH-01-E, NRCC-MCH-02-E and NRCC-MCH-03-E for projects using only single zone packaged HVAC systems.

YES	NO	Form	Title
✓		NRCC-MCH-04-E (1 of 2)	Certificate of Compliance. Required on plans when used.
✓		NRCC-MCH-04-E (2 of 2)	Mechanical Acceptance Tests. Required on plans when used.
✓		NRCC-MCH-05-E (1 of 2)	HVAC Prescriptive Requirements. It is required on plans when used.
✓		NRCC-MCH-05-E (2 of 2)	Mechanical SWH Equipment Summary is required for all submittals with service water heating, pools or spas. It is required on plans where applicable.

STATE OF CALIFORNIA

REQUIRED ACCEPTANCE TESTS

CEC-NRCC-MCH-04-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-04-E
Required Acceptance Tests	(Page 2 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

STATE OF CALIFORNIA

REQUIRED ACCEPTANCE TESTS

CEC-NRCC-MCH-04-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-04-E
Required Acceptance Tests	(Page 3 of 3)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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Documentation Author Name: Bikash Vaidya	Documentation Author Signature: Bikash Vaidya
Company: H & M Mechanical Group	Signature Date: 6/6/2018
Address: 8517 Earhart Rd #230	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Oakland, CA 94621	Phone: 510 569 2000

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: John Chou	Responsible Designer Signature:
Company : H&M Mechancial Group	Date Signed: 6/6/2018
Address: 8517 Earhart Rd Suite 230	License: M34214
City/State/Zip: Oakland, CA 94621	Phone: 510.569.2000

STATE OF CALIFORNIA

REQUIREMENTS FOR PACKAGED SINGLE ZONE UNITS

CEC-NRCC-MCH-05-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-05-E
Requirements for Packaged Single-Zone Units	(Page 1 of 2)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

Equipment Tag(s)[1]		AC-E4					
MANDATORY MEASURES	***T-24 Sections***	***Requirement[3]***	***As Scheduled[3]***	***Requirement[3]***	***As Scheduled[3]***	***Requirement[3]***	***As Scheduled[3]***
Heating Equipment Efficiency[4]	110.1 or 110.2(a)	78% AFUE	81% AFUE				
Cooling Equipment Efficiency[4]	110.1 or 110.2(a)	11.0 EER	12.6 EER				
Thermostats[5]	110.2(b), 110.2(c)	Setback	Setback				
Furnace Standby Loss Control[6]	110.2(d)	n/a					
Low Leakage AHU	110.2(f)	NR	none				
Ventilation[7]	120.1(b)	525	525				
Demand Control Ventilation[8]	120.1(c)4	NR	Yes				
Occupant Sensor Ventilation Control[8]	120.1(c)5, 120.2(e)3						
Shutoff and Reset Controls[9]	120.2(e)	Req	Occupancy Se				
Outdoor Air and Exhaust Damper Control	120.2(f)	Req	Auto				
Automatic Demand Shed Controls	120.2(h)	NR	none				
Economizer FDD	120.2(i)	Req	Yes				
Duct Insulation	120.4	n/a	none				
PRESCRIPTIVE MEASURES							
Equipment is sized in conformance with 140.4 (a & b)	140.4(a & b)	25,181 Btu/hr 62,489 Btu/hr	64,000 Btu/hr 63,250 Btu/hr				
Economizer	140.4(e)	Req	Fixed Temp (In				
Electric Resistance Heating[10]	140.4(g)	No	No				
Duct Leakage Sealing and Testing.[11]	140.4(l)	NR	No				

Notes:

1. *Provide equipment tags (e.g. AC1 or AC1 to 10). Multiple units of the same make and model with the same application and accessories can be grouped together.*
2. *Enter the following information as appropriate: Unit Manufacturer; Unit Model Number (including all accessories); Description of the unit (e.g. gas-pack or heat pump; rated heating capacity (enter "N/A" if no heating); and, rated cooling capacity (enter "N/A" if no cooling). For unit capacities include the units (e.g. kBtuh or tons).*
3. *For each requirement, enter the minimum requirement from the Standard In the left column (under "Standard Requirement"). In the right column (under "As Scheduled") enter the value for the units as specified.*
4. *Where there is more than one requirement (e.g. full and part load efficiency) enter both with the appropriate labels (e.g. COP and IEER).*
5. *In the left column identify the thermostatic requirements from the standard (e.g. programmable setback thermostat or heat pump with electric heat). . In the right column indicate the capabilities of the thermostat as scheduled.*
6. *If the unit has a furnace which is rated at ≥225,000 Btuh of capacity, indicate the rated standby loss and ignition source (e.g. IID). If there is no furnace or the unit is rated for <225,000 Btuh indicate "N/A".*
7. *In the left column, enter both the required ventilation value from Table 120.1A and for the number of occupants times 15 cfm/person. In the right column enter the actual minimum ventilation as scheduled. If the space is naturally ventilated enter "N/A" in the left column and "the space is naturally ventilated" in the right column.*
8. *If the space is required to have either DCV or Occupant Sensor Ventilation Control indicate "required" in the left column (otherwise indicate "N/A" in the left column). If either DCV or Occupant Sensor Ventilation Control is provided indicate "provided" in the right column (otherwise indicate "N/A" in the right column)*
9. *In the left column indicate the required time controls from the standard. In the right column identify the device that provides this functionality (e.g. EMCS or programmable timeclock).*
10. *Enter N/A if there is no electric heating. If the system has electric heating indicate which exception to 140.4(g) applies.*
11. *If duct leakage sealing and testing is required, a **MCH-04-A** compliance document must be submitted.*

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Date	Issued For
06/08/18	DSA SUBMITTAL

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JOHN CHOU
No. M34214
[illegible]/22/2018
MECHANICAL

TITLE 24

T24-1

REQUIREMENTS FOR PACKAGED SINGLE ZONE UNITS

CEC-NRCC-MCH-05-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-05-E
Requirements for Packaged Single-Zone Units	(Page 2 of 2)
Project Name: Terra Linda High School - Building E Innovative Hub	Date Prepared: 6/6/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name: Bikash Vaidya	Documentation Author Signature: Bikash Vaidya
Company: H & M Mechanical Group	Signature Date: 6/6/2018
Address: 8517 Earhart Rd #230	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Oakland, CA 94621	Phone: 510 569 2000

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Responsible Designer Name: John Chou	Responsible Designer Signature: [signature]
Company : H&M Mechancial Group	Date Signed: 6/6/2018
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TITLE 24

T24 -2

DSA REQUIRED FIRE SPRINKLER NOTES

1. INSTALLATION SHALL CONFORM TO THE FOLLOWING CODES.
   A. BUILDING: NFPA 13 (2016)
   B. INSPECTION, TESTING AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEMS (WITH CALIFORNIA AMENDMENTS): NFPA 25
   C. PUBLIC SAFETY: C.C.R. TITLE 19, STATE FIRE MARSHAL
2. PROVIDE EARTHQUAKE BRACING PER NFPA 13 (2016) CHAPTER 9.3.5.
3. NFPA 13 (2016) CH. 9.3.4: CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS, FLOOR, PLATFORM AND FOUNDATION, INCLUDING DRAINS, FIRE DEPARTMENT CONNECTIONS, AND OTHER AUXILIARY PIPING.
4. NFPA 13 (2016) CH. 10.10.2.1: UNDERGROUND MAINS AND LEAD-IN CONNECTIONS TO SYSTEM RISER SHALL BE COMPLETELY FLUSHED BEFORE CONNECTION IS MADE TO OVERHEAD SPRINKLER PIPING SYSTEMS (WITNESSED BY THE INSPECTOR OF RECORD).
5. NFPA 13 (2016) CH. 10.10.2.2.1: ALL PIPING AND APPURTENANCES SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE HYDROSTATICALLY TESTED AT 200 PSI AND SHALL MAINTAIN THAT PRESSURE WITHOUT LOSS FOR 2 HOURS (WITNESSED BY THE INSPECTOR OF RECORD). LOCAL FIRE DEPARTMENT SHALL BE NOTIFIED OF DATE AND TESTING SO THAT THEY MAY OBSERVE TESTING.
6. NFPA 13 (2016) CH. 6.2.9: PROVIDE SPARE SPRINKLER HEAD CABINET, SPRINKLER WRENCH AND NO FEWER THAN 6 SPARE SPRINKLER HEADS MATCHING THE TYPES AND TEMPERATURE RATING IN EACH PROTECTED BUILDING FOR SYSTEMS LESS THAN 300 SPRINKLERS (12 SPARE SPRINKLER HEADS FOR SYSTEMS 300 TO 1000 SPRINKLERS). MOUNT CABINET 5 FT.-6 FT. A.F.F. NEAR SYSTEM RISER.
7. NFPA 13 (2016) CH. 9.3.6.3: THE END SPRINKLER ON A LINE SHALL BE RESTRAINED AGAINST EXCESSIVE VERTICAL AND LATERAL MOVEMENT.
8. NFPA 13 (2016) CH. 9.3.6.1: PROVIDE RESTRAIN OF BRANCH LINES BY USE OF ONE OF THE FOLLOWING:
   1) A LISTED SWAY BRACE ASSEMBLY
   2) A WRAPAROUND U-HOOK SATISFYING THE REQUIREMENTS OF 6-4.5.3 EXCEPTION NO.3
   3) NUMBER 12, 440 LB WIRE INSTALLED AT LEAST 45 DEGREES FROM THE VERTICAL PLANE AND ANCHORED ON BOTH SIDE OF THE PIPE.
9. NFPA 72 CH. 5.7.2: SPRINKLER FLOW SWITCH SHALL BE TESTED BY INSPECTOR OF RECORD TO CONFIRM THAT WHEN THE INSPECTOR'S TEST VALVE IS ACTIVATED AN ALARM WILL SOUND NO LESS THAN 20 SECONDS AND NOT MORE THAN 90 SECONDS AFTER INITIAL FLOW. INSPECTOR'S TEST PIPING SHALL DISCHARGE TO EXTERIOR.
10. NFPA 13 (2016) CH. 6.9.3.1: FLOW SWITCH SHALL BE CONNECTED TO A 10 INCH OUTSIDE ALARM BELL AT EACH RISER.
11. NFPA 13 (2016) FIGURE A.8.17.1: APPROVED IDENTIFICATION SIGNS SHALL BE PROVIDED FOR OUTSIDE ALARM BELL WHICH STATES: "SPRINKLER FIRE ALARM - WHEN BELL RINGS CALL 911 / FIRE DEPARTMENT".
12. NFPA 13 (2016) FIGURE A.25.5: A PERMANENT HYDRAULIC DESIGN DATA PLACARD SHALL BE ATTACHED TO EACH RISER.
13. NFPA 13 (2016) FIGURE 25.1: SPRINKLER CONTRACTOR (C-16) SHALL COMPLETE AND SIGN "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR ABOVEGROUND PIPING". THIS FORM SHALL BE GIVEN TO THE INSPECTOR OF RECORD WHO WILL TURN-IN FOR DSA RECORDS.
14. NFPA 24 (2016) FIGURE 10.10.1: SPRINKLER CONTRACTOR (C-16) SHALL COMPLETE AND SIGN "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING" AND DISTRIBUTE PER NFPA 24 CH. 10.10.1 AND NFPA 13 CH. 10.10.1.
15. NFPA 13 (2016) CH. 24.2.3.4: THE MAIN DRAIN VALVE SHALL BE OPEN AND REMAIN OPEN UNTIL THE SYSTEM PRESSURE STABILIZES. THE STATIC AND RESIDUAL PRESSURES SHALL BE RECORDED ON THE CONTRACTOR'S MATERIAL AND TEST CERTIFICATE (WITNESSED BY INSPECTOR OF RECORD). MAIN DRAIN SHALL DISCHARGE TO EXTERIOR.
16. TITLE 19 ARTICLE 906(A): A LABEL OF THE SELF ADHESIVE TYPE SHALL BE PLACED ON THE FIRE DEPARTMENT CONNECTION OR ON THE RISER FOR FIRE SPRINKLER SYSTEM WITH THE DATE OF SERVICE AND/OR DATE INSTALLATION WAS PERFORMED AND LICENSE NUMBER OF PERSON PERFORMING SERVICE WORK.
17. NFPA 13 (2016) CH. 7.7.1.5: CAUTION SIGNS SHALL BE ATTACHED TO ALL VALVES CONTROLLING SPRINKLERS. THE CAUTION SIGN SHALL BE WORDED AS FOLLOWS: "THIS VALVE CONTROLS FIRE PROTECTION EQUIPMENT. DO NOT CLOSE UNTIL AFTER FIRE HAS BEEN EXTINGUISHED. USE AUXILIARY VALVES WHEN NECESSARY TO SHUT OFF SUPPLY TO AUXILIARY EQUIPMENT. CAUTION: AUTOMATIC ALARM MAY BE SOUNDED IF THIS VALVE IS CLOSED".
18. NFPA 13 (2016) CH. 8.17.2.4.7.1: EACH FIRE DEPARTMENT CONNECTION TO SPRINKLER SYSTEMS SHALL BE DESIGNATED BY A SIGN HAVING RAISED OR ENGRAVED LETTERS AT LEAST 1 IN. IN HEIGHT ON PLATE OR FITTING READING SERVICE DESIGN.
19. CBC (2016) CH. 903.4.1: CONNECTIONS TO PROTECTED PREMISES AND SUPERVISING STATION FIRE ALARM SYSTEMS SHALL BE TESTED TO VERIFY PROPER IDENTIFICATION AND RETRANSMISSION OF ALARMS FROM AUTOMATIC FIRE EXTINGUISHING SYSTEMS. (WITNESSED BY PROJECT ENGINEER).
20. CBC (2016) CH. 904.3.1: MAIN FIRE ALARM PANEL VALVE MONITORING AND WATER FLOW ALARM AND TROUBLE SIGNALS SHALL BE DISTINCTLY DIFFERENT AND SHALL BE AUTOMATICALLY TRANSMITTED TO AN APPROVED CENTRAL STATION MONITORING COMPANY.
21. THE INSPECTOR'S TEST VALVE LOCATION SHALL BE INSTALLED WITHIN THE MOST HYDRAULICALLY REMOTE SYSTEM AREA. THE PIPE SIZE SHALL BE NO LESS THAT 1 INCH WITH A SMOOTH BORE, CORROSION RESISTANT ORIFICE, PROVIDING THE EQUIVALENT FLOW OF THE SMALLEST ORIFICE OF THE SPRINKLER TYPES INSTALLED WITHIN THE SYSTEM. THE DISCHARGE SHALL BE TO THE EXTERIOR OF THE BUILDING.

GENERAL NOTES AND SPECIFICATIONS

1. ALL WORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS
2. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED UTILITY SERVICES, INSPECTIONS AND PERMITS.
3. DESIGN IS BASED ON DRAWINGS PROVIDED BY OWNER. CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND NOTIFY OWNER'S REPRESENTATIVE IMMEDIATELY IF A DISCREPANCY BETWEEN THE DRAWING AND THE ACTUAL SITE CONDITION OCCURS. STOP THE WORK THAT IS AFFECTED AND OBTAIN INSTRUCTION FROM THE OWNER'S REPRESENTATIVE BEFORE THE WORK CAN BE RESTARTED.
4. FURNISH AND INSTALL ALL MATERIAL, EQUIPMENT AND LABOR AS SHOWN AND AS NECESSARY FOR A COMPLETE WORKABLE SYSTEM.
5. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT AND LOCATION OF PIPING AND EQUIPMENT. PIPE LENGTHS SHOWN ARE APPROXIMATE CENTER TO CENTER LENGTHS BETWEEN FITTINGS. CONTRACTOR SHALL DETERMINE THE ACTUAL MEASUREMENTS AND MAKE CHANGES AND DEVIATIONS SUCH AS OFFSETS IN PIPES THAT ARE NECESSARY TO MEET SITE CONDITIONS AND TO COORDINATE WORK WITH OTHER TRADES. ALL DEVIATIONS TO THE CONTRACT DOCUMENTS, WHETHER SHOWN OR NOT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MADE AT NO EXTRA EXPENSE TO THE OWNER.
6. COORDINATE ALL CUTTING AND PATCHING WITH GENERAL CONTRACTOR. INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING TO THEIR WORK.
7. CONTRACTOR SHALL RESTORE ALL DAMAGE AND CLEAN THE PREMISES ON A DAILY BASIS.
8. CONTRACTOR SHALL GUARANTEE THAT THE WORK DONE UNDER THIS SPECIFICATION WILL BE FREE FROM FAULTY MATERIALS OR WORKMANSHIP AND HEREBY AGREES, UPON RECEIVING NOTIFICATION FROM THE OWNER, AND TO OWNER'S ENTIRE SATISFACTION, TO CORRECT ALL DEFECTS, DAMAGES OR IMPERFECTIONS APPEARING IN SAID WORK FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FILING OF COMPLETION.
9. SUBMIT FOUR (5) SETS OF SHOP DRAWINGS MANUFACTURER'S PRODUCT LITERATURE FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION OF WORK.
10. USE ALL NEW MATERIALS. PIPE ARE SCHEDULE 10 FOR 2-1/2" AND LARGER, SCHEDULE 40 FOR 2" AND SMALLER. PIPING OUTSIDE THE BUILDING ARE GALV. STEEL.
11. HANGERS ARE ADJUSTABLE RING TYPE OR STRAP.
12. TO PROVIDE ADEQUATE HEADROOM, THE SPRINKLER PIPING SHALL BE MAINTAINED AS HIGH AS POSSIBLE ABOVE THE FLOOR IN FINISHED AREAS.
13. PROVIDE A LOCAL WATER-FLOW ALARM.
14. PROVIDE IDENTIFICATION SIGNS AS REQUIRED ON ALL FIRE DEPARTMENT CONNECTIONS, VALVES, PIPES, SPRINKLERS. ETC. INCLUDING "RISER ROOM" SIGN.
15. ALL PIPE PENETRATIONS AT WALL AND FLOOR SHALL COMPLY WITH STRUCTURAL DESIGN AND CALIFORNIA BUILDING CODE. OBTAIN APPROVAL TO DRILL HOLES AT STRUCTURAL MEMBERS FROM STRUCTURAL ENGINEER BEFORE COMMENCEMENT OF WORK.
16. CONTRACTOR SHALL ENSURE THAT NO LIGHT FIXTURE, SOFFIT OR OTHER CEILING-MOUNTED OBJECT OBSTRUCTS DISCHARGE FROM SPRINKLERS.
17. ALL PIPES, FITTINGS AND VALVES SHALL BE PAINTED PER ARCHITECTURAL SPECIFICATIONS. SPRINKLERS SHALL BE FACTORY PAINTED.
18. VERIFY OR PROVIDE FIRE ALARMS ACCEPTABLE TO FIRE DEPT. OBTAIN ALL REQUIRED PERMITS PRIOR TO START OF CONSTRUCTION.
19. PROVIDE CENTRAL ALARM SYSTEM MONITORED BY A CENTRAL ALARM COMPANY. THIS MONITORED SYSTEM SHALL INCLUDE WATER FLOW INDICATORS AND TAMPER SWITCHES ON ALL CONTROL VALVES. EACH BUILDING SHALL BE PROVIDED THE CENTRAL ALARM SYSTEM INDIVIDUALLY. COORDINATE ENTIRE INSTALLATION WITH OWNER-SELECTED MONITORING CO.
20. PROVIDE OWNER WITH TWO (2) SETS OF AS-BUILT DRAWINGS AND TWO (2) BOUND SETS OF ALL OPERATING MANUALS, TESTING INSTRUCTIONS, DIAGRAMS, SERVICE CONTRACTS, GUARANTEES, ETC.

SCOPE OF WORK

DEMOLITION AND CAPPING OF 13 EXISTING FIRE SPRINKLER HEADS IN THE SPACE. RELOCATION OF 50 EXISTING HEADS TO A NEW LOCATION BASED ON THE NEW LAYOUT . REPLACEMENT OF ALL EXISTING FIRE SPRINKLER HEADS WITH NEW FIRE SPRINKLER HEADS. (TOTAL EXISTING HEADS IN AREA OF SCOPE OF WORK : 63, TOTAL NUMBER OF PROPOSED SPRINKLER HEAD : 50)

SHEET INDEX

ABBREVIATIONS

A.P.	ACCESS PANEL	MAX.	MAXIMUM
A.F.F.	ABOVE FINISHED FLOOR	MIN.	MINIMUM
A.F.G.	ABOVE FINISHED GRADE	N.I.C.	NOT IN CONTRACT
BEL.	BELOW	OS&Y	OUTSIDE SCREW & YOKE
B.O.R.	BOTTOM OF RISER	PIV	POST INDICATOR VALVE
CLG.	CEILING	RN	RISER NIPPLE
DN.	DOWN	S.A.D.	SEE ARCHITECTURAL DRAWINGS
DR	DROP NIPPLE	S.C.D.	SEE CIVIL DRAWINGS
DSA	DIVISION OF THE STATE ARCHITECT	S.M.D.	SEE MECHANICAL DRAWINGS
DSP	DRY STAND PIPE	S.P.D.	SEE PLUMBING DRAWINGS
(E)	EXISTING	SSD	SEE STRUTURAL DRAWINGS
FDC	FIRE DEPARTMENT CONNECTION	S/W	SWITCH
FIG.	FIGURE	T.O.R.	TOP OF RISER
FR.	FROM	TYP.	TYPICAL
HT.	HEIGHT	U.G.	UNDERGROUND
H.V.	HOSE VALVE	U.O.N.	UNLESS OTHERWISE NOTED
		W/	WITH

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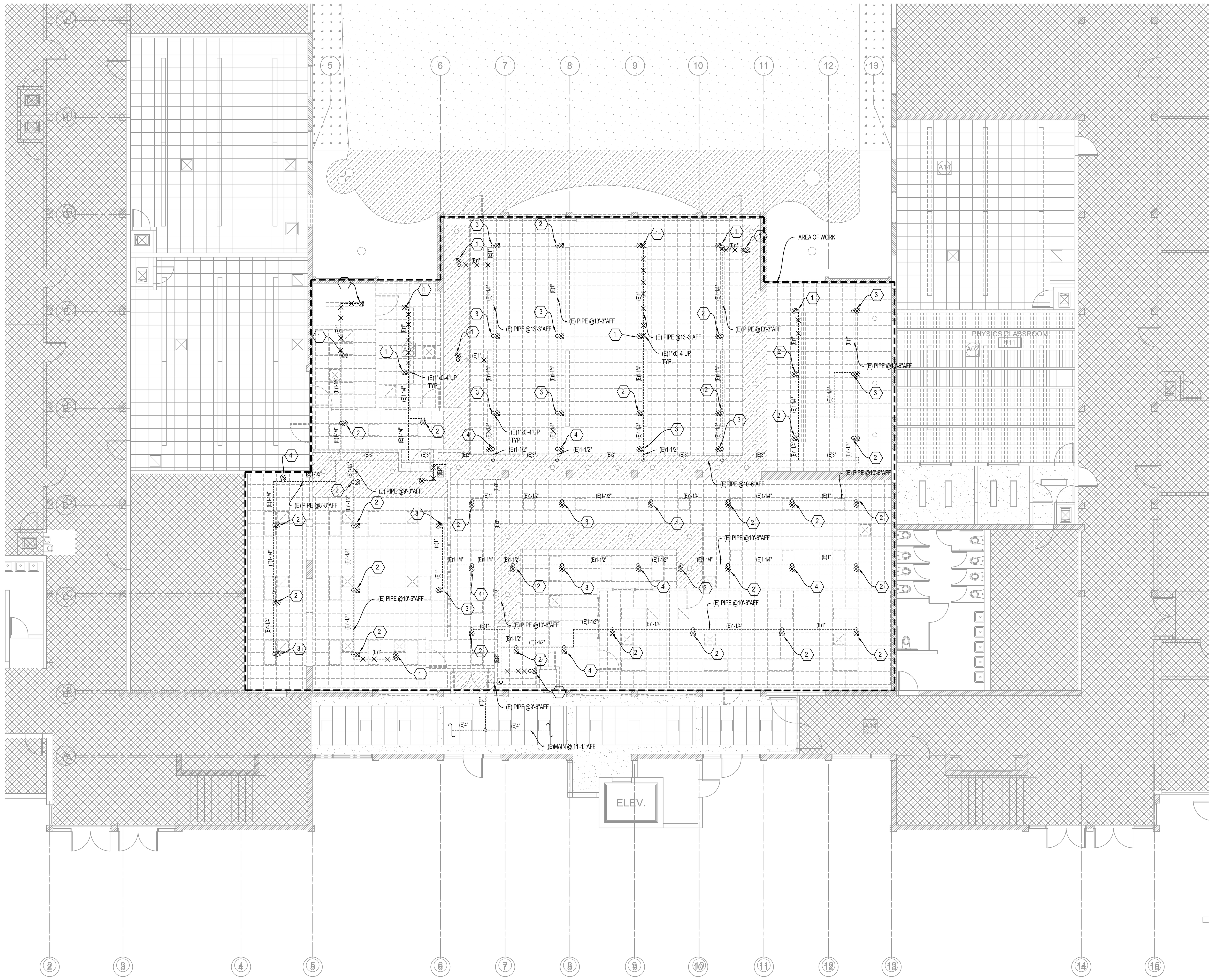
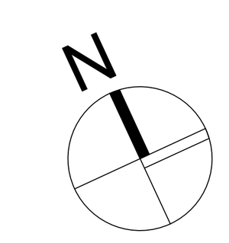
FIRE SPRINKLER SYSTEM :DEMO PLAN

FP001





FIRE SPRINKLER SYSTEM: DEMOLITION FLOOR PLAN
1/8" = 1'-0"

⬡	DEMO SHEET NOTES
1	REMOVE EXISTING HEAD AND PIPE
2	REMOVE EXISTING HEAD AND EXISTING 1" PIPE TO THE TOP OF RISER NIPPLE
3	REMOVE EXISTING HEAD, EXISTING PIPE AND 90° ELBOW ON THE TOP OF THE RISER NIPPLE
4	REMOVE EXISTING HEAD AND CAP PIPE CLOSE TO RISER NIPPLE

⊗	EXISTING SPRINKLER HEAD TO BE REMOVED REPLACE ALL EXISTING HEADS WITH NEW HEADS
------------	EXISTING PIPE
-×---×---×-	EXISTING PIPE TO BE REMOVED

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FIRE SPRINKLER SYSTEM :DEMO PLAN

FP002

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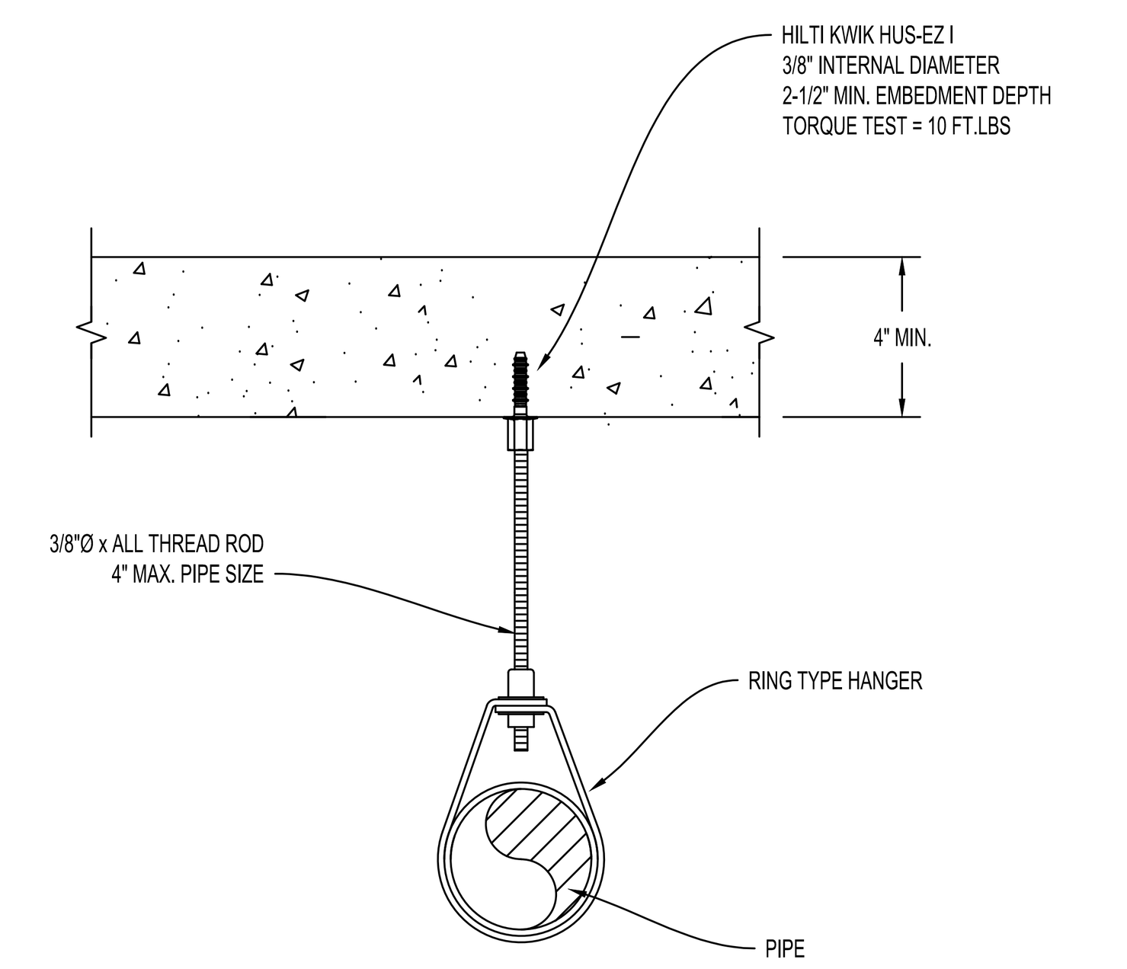
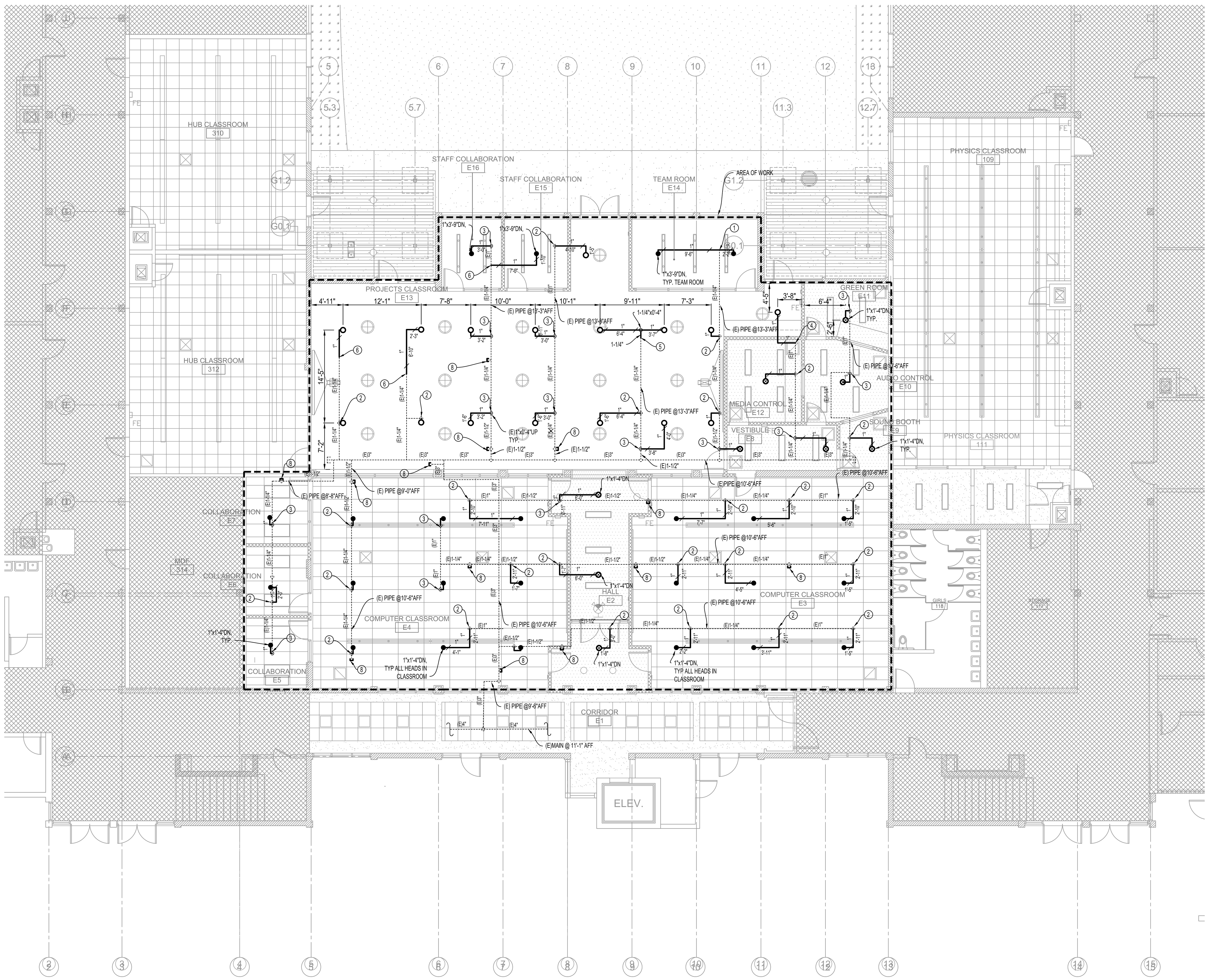


RING TYPE HANGER (⁄)
NO SCALE
FOR CONCRETE SLAB



FIRE SPRINKLER SYSTEM : FLOOR PLAN
1/8" = 1'-0"

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TOTAL NUMBER OF EXISTING HEADS IN SPACE = 63
TOTAL NUMBER OF PROPOSED HEADS IN SPACE = 50
TOTAL NUMBER OF EXISTING HEADS CAPPED = 13

#	SHEET NOTES
1	ADD NEW TEE FITTING TO EXISTING 1-1/4" PIPE AND CONNECT NEW 1" PIPES FOR NEW SPRINKLER HEADS.
2	CONNECT NEW 1" PIPE TO EXISTING 1" 90° ELBOW ON TOP OF THE EXISTING RISER NIPPLE.
3	REPLACE EXISTING 1" 90° ELBOW ON TOP OF THE RISER NIPPLE WITH NEW 1" 90 ELBOW. CONNECT NEW 1" PIPE. PROVIDE NECESSARY FITTING TO CONNECT TO EXISTING PIPE.
4	CONNECT NEW 1" PIPE TO EXISTING 1" PIPE
5	CONNECT NEW 1-1/4" PIPE TO EXISTING 1-1/4 PIPE
6	CONNECT NEW 1" PIPE TO EXISTING 1-1/4" PIPE
7	REPLACE EXISTING 1" 90 ELBOW ON TOP OF THE RISER NIPPLE WITH NEW 1" 90 ELBOW. CONNECT NEW 1" PIPE.
8	CAP EXISTING PIPE

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PIPE LEDGEND

Line	Pipe
-----------------	EXISTING PIPE
————	NEW PIPE

SPRINKLER LEGEND

	SYMBOL	COUNT	TYPE	RESPONSE	TEMP	K-FACTOR	ORIFICE	MANUFACTURER	MODEL	SIN	FINISH	REMARKS
1	⊗	9	PENDENT	QUICK	155°F	5.6	1/2"	VIKING	MICROFAST MODEL M	VK302	CHROME	W/ VIKING MODEL F-1 ADJUSTABLE ESCUTCHEON
2	○	16	UPRIGHT ON SPRIG	QUICK	155°F	5.6	1/2"	VIKING	MICROFAST MODEL M	VK300	BRASS	
3	●	25	CONCEALED PENDENT	QUICK	155°F	5.6	1/2"	VIKING	MIRAGE	VK462	BRASS	W/ VIKING STANDARD COVER PLATE- POLISHED CHROME

FIRE SPRINKLER SYSTEM : FLOOR PLAN AND DETAILS
FP003

GENERAL NOTES

1. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH 2013 EDITION OF THE CALIFORNIA ELECTRICAL CODE, SPECIFICATIONS AND STANDARD, THE LATEST RULES AND REGULATIONS OF THE SAFETY ORDERS ISSUED BY THE DIVISION OF INDUSTRIAL SAFETY, THE NATIONAL BOARD OF FIRE UNDERWRITERS AND ALL APPLICABLE STATE AND LOCAL CODES ISSUED BY AUTHORITIES HAVING JURISDICTION.
2. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS. VISIT CONSTRUCTION SITE AND ATTEND THE PRE-BID MEETING TO BE FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANYWAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
3. THIS CONTRACTOR SHALL INCLUDE ALL CONTINGENCIES WHICH MAY ARISE AND WHICH MAY BE REQUIRED BY ALTERATION AND DEMOLITION WORK. THIS IS TO INCLUDE ALL REMOVAL, RELOCATION AND REWORKING OF ELECTRICAL OUTLETS, CONDUITS, WIRING AND ITEMS FOR ELECTRICAL EQUIPMENT REQUIRED AND ANY NECESSARY SPLICING OR EXTENSION OF EXISTING CONDUIT AND WIRING SYSTEMS. THE ELECTRICAL CONTRACTOR SHALL VISIT JOB SITE AND DETERMINE EXTENT OF THE WORK.
4. FIELD VERIFY TO CONFIRM ALL FIRE RESISTIVE CEILINGS AND WALLS. PROVIDE FIRE STOP SEALS PER UNIFORM BUILDING CODE FOR CONDUIT PENETRATION THROUGH FIRE RESISTIVE FLOORS, WALLS AND CEILINGS.
5. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITER'S LABORATORIES AND BEAR THEIR LABEL.
6. CONDUIT ROUTING SHOWN IS ESSENTIALLY DIAGRAMMATIC. CONTRACTOR SHALL LAYOUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES. ALL EXPOSED CONDUIT, BOXES, FITTINGS, SUPPORT, ETC. SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
7. THE CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND OTHER DRAWINGS RELATED TO THIS PROJECT FOR ADDITIONAL WORK TO BE PROVIDED.
8. ANY POWER SHUTDOWN SHALL BE COORDINATED WITH SCHOOL DISTRICT CONSTRUCTION COORDINATOR. A SHUTDOWN SCHEDULE SHALL BE PRESENTED TO SCHOOL DISTRICT FOR APPROVAL TWO WEEKS PRIOR TO COMMENCEMENT OF WORK. SHUTDOWN SHALL BE PERFORMED IN OVERTIME HOURS IF SO DIRECTED BY SCHOOL DISTRICT.
10. ALL FEEDER AND BRANCH CIRCUIT CONDUITS SHALL BE INSTALLED CONCEALED IN FINISHED AREA, UNLESS OTHERWISE NOTED. CUT AND PATCH (E) WALL OR CEILING AS REQUIRED.
11. ALL PENETRATIONS THROUGH FIRE RESISTIVE WALLS SHALL BE TOTALLY SEALED TO PREVENT THE SPREAD OF SMOKE, FIRE, TOXIC GASES, AND WATER THROUGH THE PENETRATION BEFORE, DURING AND AFTER A FIRE CONDITION. THE FIRE RATING OF THE SEALED PENETRATION SHALL BE AT LEAST THAT OF THE WALL INTO WHICH IT IS INSTALLED. THE SEAL SHALL PERMIT THE VIBRATION, EXPANSION AND/OR CONTRACTION OF THE CONDUIT PASSING THROUGH THE PENETRATION WITHOUT THE SEAL CRACKING OR CRUMBLING.
20. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CONDUCTORS SHALL BE 12 AWG THWN STRANDED COPPER ONLY.
21. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CONDUIT SHALL BE 3/4".
22. GREEN INSULATED GROUND CONDUCTORS SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUIT WIRING.
23. PROVIDE LABELS ON ALL EQUIPMENT AND DEVICES. LABELS SHALL BE SELF-ADHESIVE PHENOLIC TYPE AND WHITE LETTER ON BLACK BACKGROUND, PROVIDE BRADY OR DYMO TYPE LABELS (CIRCUIT IDENTIFICATION) FOR ALL SWITCHES AND RECEPTACLES.
24. THE CONTRACTOR SHALL PROVIDE TYPEWRITTEN DIRECTORIES FOR ALL ELECTRICAL PANELS INVOLVED IN THIS PROJECT. THE PANEL DIRECTORIES SHALL REFLECT THE AS-BUILT CIRCUITS. ONE COPY OF THE SCHEDULE SHALL BE TAPED TO THE INSIDE OF THE PANEL DOOR, AND ONE COPY SHALL BE SUBMITTED TO THE ENGINEER AS AN "AS-BUILT" DRAWING.
25. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION PER CBC REQUIREMENTS.
26. CERTAIN REMODELING OF ELECTRICAL FACILITIES WILL BE REQUIRED IN THE EXISTING BUILDING. THE DRAWINGS SHOWING LOCATION OF EQUIPMENT IN EXISTING AREAS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL CONCEAL ALL WORK; IF THIS NOT POSSIBLE, SURFACE RACEWAY SUCH AS WIREMOLD SHALL BE USED ONLY WITH THE APPROVAL OF THE ARCHITECT AND OWNER.
27. THE CONTRACTOR SHALL BE CURRENT SIGNATORY TO IBEW. THE CONTRACTOR SHALL EMPLOY QUALIFIED, LICENSED IN STATE OF CALIFORNIA AND EXPERIENCED WORKMEN FOR THIS WORK. ALL RESTORATION WORK SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND/OR OWNER AND IOR.
28. WHERE CONDUIT IS ROUTED ON ROOF STRUCTURES, PROVIDE SUPPORT AT 10'-0" O.C. MAXIMUM.
29. ALL EXPOSED CONDUIT BELOW 7'-0" SHALL BE RSC AND ALL EXPOSED HARDWARE SHALL BE "HOT DIPPED" GALVANIZED. ALL INTERIOR CONDUITS MAY BE EMT, UNLESS OTHERWISE NOTED.
30. ALL WIRES SHALL BE IN CONDUIT.
31. DEMOLITION WORK SHALL BE PROVIDED AS REQUIRED TO ACCOMPLISH NEW WORK CALLED FOR. EXISTING INGROUND PULLBOXES AND CONDUIT LOCATED OUTDOOR WHICH WILL BE AFFECTED BY NEW WORK SHALL BE RELOCATED TO A NEW LOCATION PER DISTRICT DIRECTION. THIS MAY REQUIRE CUTTING PORTION OF EXISTING CONDUIT AND SPLICING OF (E) WIRES. ELECTRICAL CONTRACTOR SHALL EXTEND NEW CONDUIT AND WIRES TO THE NEW LOCATION AS REQUIRED TO PUT IT BACK IN SERVICE.
32. PROVIDE ARC-FLASH HAZARD WARNING ON ELECTRICAL EQUIPMENT PER CEC 20/6 ARC. 110.16. WARNING SIGNS SHALL BE WITH WHITE LETTERS ON RED BACKGROUND WITH MINIMUM 3/8 INCH HIGH LETTERING. INDOORS SIGN SHALL BE ENGRAVED PLASTIC LAMINATED INSTRUCTION SIGNS WITH APPROVED LEGEND WHERE INSTRUCTIONS ARE NEEDED FOR SYSTEM OR EQUIPMENT OPERATION. INSTALL METAL BACKED BUTYRATE SIGNS FOR OUTDOOR SYSTEM.
33. THE CONTRACTOR SHALL MAINTAIN AT THE JOB SITE, AN UP TO DATE "AS BUILT" DRAWING SET. THE "AS BUILT" DRAWING SET SHALL REFLECT ALL APPROVED CHANGES TO THE DESIGN DRAWINGS. THE "AS BUILT" DRAWING SET SHALL BE KEPT CLEAN AND IN GOOD CONDITION AND SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE UPDATED DAILY AND BE CHECKED WEEKLY BY IOR. THE PROGRESS PAYMENT IS TIED TO THEIR COMPLETION.
34. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SCHEDULE AND PERFORM A COMPLETE FUNCTIONAL TEST IN THE PRESENCE OF DSA IOR TO DEMONSTRATE TO THE OWNER THAT THE NEW INSTALLATION IS OPERATING AS INTENDED TEST RESULTS SHALL BE SENT TO DISTRICT FOR IOR AND AOR. ANY DEFECTS OR DEFICIENCIES IN THE MATERIALS OR WORK SHALL BE CORRECTED IMMEDIATELY BY AND AT THE CONTRACTOR'S EXPENSE.

LEGEND

- HOMERUN TO PANEL, HASHMARKS INDICATE NUMBER OF #12 AWG WIRES IF MORE THAN (3); (T) INDICATES GROUND.
- CONDUIT AND CONDUCTORS CONCEALS IN WALL OR CEILING
- CONDUIT AND WIRES CONCEALED IN FLOOR OR UNDERGROUND
- CONDUIT STUBBED OUT IN ACCESSIBLE LOCATION, CAP AND MARK LOCATION
- CONDUIT RISER
- SURFACE MOUNTED ELECTRICAL PANELBOARD, 277/480V
- SURFACE MOUNTED ELECTRICAL PANELBOARD, 120/208V
- RECESSED MOUNTED ELECTRICAL PANELBOARD, 120/208V
- PULLBOX, SIZE AS SHOWN ON THE DRAWING
- J — JUNCTION BOX OR PULL BOX, SIZE PER CODE.
- PENDANT MOUNT LIGHT FIXTURE
- STAGE LIGHT FIXTURE
- 4FT. LIGHT FIXTURE
- 4FT. LIGHT FIXTURE WITH EMERGENCY BATTERY BACK-UP
- EXIT LIGHT
- EMERGENCY LIGHT
- WALL PACK LIGHT
- DISCONNECT SWITCH
- 2P $T — HORSEPOWER RATED MANUAL SWITCH, 20A/2P, 240V, SQUARE "D", CLASS 2510
- D $a,b — nPODM 2P DX
  2 CHANNEL ON/OFF TOGGLE WITH DIMMING
  SUBSCRIPT "a,b" DENOTES SWITCH LEGS
- D $a — nPODM DX
  1 CHANNEL ON/OFF TOGGLE WITH DIMMING
  SUBSCRIPT "a" DENOTES SWITCH LEG
- (OS) A — nCM PDT 10
  SENSORSWITCH nLIGHT CEILING MOUNT LOW VOLTAGE EXTENDED RANGE / HIGH SENSITIVITY 360° DUAL TECHNOLOGY (DIGITAL PIR + MICROPHONICS) OCCUPANCY SENSOR.
- (OS) B — nCM PDT 9
  SENSORSWITCH nLIGHT CEILING MOUNT LOW VOLTAGE STANDARD RANGE / HIGH SENSITIVITY 360° DUAL TECHNOLOGY (DIGITAL PIR + MICROPHONICS) OCCUPANCY SENSOR.
- (OS) C — nCM PDT 9 ADCX
  SENSORSWITCH nLIGHT CEILING MOUNT LOW VOLTAGE STANDARD RANGE / HIGH SENSITIVITY 360° DUAL TECHNOLOGY (DIGITAL PIR + MICROPHONICS) OCCUPANCY SENSOR. INTEGRAL LOW VOLTAGE DAYLIGHT SENSOR
- PP — nPP 16 D
  SENSORSWITCH nLIGHT DIGITAL POWER PACK, 16A, 120/277VAC WITH 0-10 VDC DIMMING
- PP PL — nPP16 PL T24
  SENSORSWITCH nLIGHT DIGITAL POWER PACK WITH INTEGRAL 16A RELAY. 120/277VAC. CHASE NIPPLE MOUNT. PROVIDES UP TO 40mA BUS CURRENT PER PORT. FOR RECEPTACLE LOADS TRACKING OCCUPANCY.
- WALL MOUNTED OCCUPANCY SENSOR,
  SENSOR SWITCH CAT # WSXPDTNL WH
- DUPLEX RECEPTACLE, NEMA 5-20R, 20AMP, 120V, +18" A.F.F., U.O.N.
- FOURPLEX RECEPTACLE, NEMA 5-20R, 20AMP, 120V, +18" A.F.F., U.O.N.
- SINGLE RECEPTACLE, NEMA 6-30R, 30AMP, 250V, +18" A.F.F., U.O.N.
- CEILING MOUNTED DUPLEX RECEPTACLE, NEMA 5-20R, 20AMP, 120V
- CEILING MOUNTED FOURPLEX RECEPTACLE, NEMA 5-20R, 20AMP, 120V
- AP — WIRELESS ACCESS POINT WITH (2) DATA PORTS WITH PLATE MOUNTED IN A SINGLE GANG BOX
- WALL MOUNTED (2) PORT DATA OUTLET
- UNV — COMBINATION FLOOR MOUNTED BOX WITH (1) DUPLEX RECEPTACLE AND (2) DATA PORTS, THOMAS & BETTS CAT #842 SC (FLOOR BOX) WITH COVER CAT #P-64-GFCI
- VIDEO PROJECTOR
- WALL MOUNTED COMBINATION OF CLOCK AND SPEAKER
- WALL MOUNTED SPEAKER
- (S) — CEILING MOUNTED SPEAKER
- (DC) — DOOR CONTACT
- (CR) — CARD READER
- KP — ARM/DISARM KEYPAD
- (SC) — SECURITY CAMERA, MINI DOME
- (1) — SHEET NOTE REFERENCE, SEE NOTE 1
- 1 / E1.1 — DETAIL TAG. REFER TO DETAIL 1 ON SHEET NUMBER E1.1

ABBREVIATIONS

A AMP	AMPERE
AFF	ABOVE FINISHED FLOOR
AP	ACCESS POINT
BRKR	BREAKER
C	CONDUIT, CLOCK
CATV	CABLE TELEVISION
CBC	CALIFORNIA BUILDING CODE
CCTV	CLOSED CIRCUIT TELEVISION
CEC	CALIFORNIA ELECTRIC CODE
CKT	CIRCUIT
CO	CONDUIT ONLY WITH PULL ROPE
CPS	CURRICULUM AND PRESENTATION SYSTEM
CSC	CLOCK/SPEAKER CABINET
(E)	EXISTING
FU	FUSE
(G)	GROUND, GUARD
IDF	INTERMEDIATE DISTRIBUTION FRAME
MAX	MAXIMUM
MDF	MAIN DISTRIBUTION FRAME
MIN	MINIMUM
MPOE	MAIN POINT OF ENTRY
MSTC	MAIN SIGNAL TELEPHONE CABINET
MTB	MAIN TELEPHONE BOARD
NEC	NATIONAL ELECTRICAL CODE
NL	NIGHT LIGHT
NTS	NOT TO SCALE
O.C.	ON CENTER
PA	PUBLIC ADDRESS
PEU	PHOTOELECTRIC UNIT
PH, ø	PHASE
PNL	PANEL
(R)	RELOCATED
RECEPT.	RECEPTACLE
SAD	SEE ARCHITECTURAL DRAWINGS
STC	SATELLITE TERMINAL CABINET
TRANSF.	TRANSFORMER
TB	TELEPHONE BOARD
TC	TERMINAL CAN
TMGB	TELECOMMUNICATION MAIN GROUNDING BUSBAR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLT
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

MEP COMPONENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENT PRESCRIBED IN THE 2016 CBC, SECTION 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

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.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENT PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7, 13.6.8 AND 2016 CBC, SECTIONS 1616A.1.23, 1616A.1.24, 1616A.1.25 AND 1616A.1.26.
THE METHOD OF SHOWING BRACING AND ATTACHMENT TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (e.g., SMACNA OR OSHPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS.
MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

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

MP☐MD☐PP ☐E☒
OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM#); (I.E. OPM # 0043-13 MASON INDUSTRIES INC., AND OPM # 0203-13 M.W. SAUSSE & CO. INC.)

MP☐MD☐PP ☐
OPTION 3: SHALL COMPLY WITH THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION (2009), INCLUDING ANY ADDENDA. FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL AND CONNECTION CONNECTION LEVEL FOR THE PROJECT AND CONDITIONS.

DRAWING INDEX

LIST OF APPLICABLE CODES

1. 2016 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR)
2. 2016 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 & 2 (PART 2, TITLE 24, CCR)
3. 2016 CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24, CCR)
4. 2016 CALIFORNIA MECHANICAL CODE (PART 4, TITLE 24, CCR)
5. 2016 CALIFORNIA PLUMBING CODE (PART 5, TITLE 24, CCR)
6. 2016 CALIFORNIA ENERGY CODE (PART 6, TITLE 24, CCR)
7. 2013 CALIFORNIA ELEVATOR SAFETY CONSTRUCTION CODE (PART 7, TITLE 24, CCR)
8. 2016 CALIFORNIA FIRE CODE (PART 9, TITLE 24, CCR)
9. 2016 CALIFORNIA REFERENCE STANDARDS CODE (PART 12, TITLE 24, CCR)
10. NFPA 13, 2016 EDITION, THE INSTALLATION OF AUTOMATIC SPRINKLER SYSTEMS, AS AMENDED
11. NFPA 14, 2016 EDITION, THE INSTALLATION OF STANDPIPE, PRIVATE HYDRANT AND HOSE SYSTEMS
12. NFPA 24, 2016 EDITION, THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES
13. NFPA 72, 2016 EDITION, NATIONAL FIRE ALARM CODE, AS AMENDED

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Date	Issued For
06/08/18	DSA Sumittal

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PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

FILE☐ 21-H1 PTN☐ 65486-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP☐: 01-117586
AC____ FLS____ SS____
DATE_____

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WWW.HED.DESIGN

2017-03489-000

GENERAL NOTES, ABBREVIATIONS AND DRAWING INDE☐

E0.1

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STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 1 of 6)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

A. General Information

Climate Zone: 3	Conditioned Floor Area:					
	Unconditioned Floor Area: 0					
Building Type:	☑	Nonresidential	☐	High-Rise Residential	☐	Hotel/Motel
☐ Schools	☐	Relocatable Public Schools	☑	Conditioned Spaces	☐	Unconditioned Spaces
Phase of Construction:	☐	New Construction	☐	Addition	☑	Alteration
Method of Compliance:	☑	Complete Building	☐	Area Category	☐	Tailored
Project Address: 2521 GOODWIN AVE						

B. Lighting Compliance Documents (select yes for each document included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance documents, refer to the Nonresidential Manual published by the California Energy Commission.

YES	NO	COMP. DOC.	TITLE
☑	☐	NRCC-LTI-01-E	Certificate of Compliance. All Pages required on plans for all submittals.
☑	☐	NRCC-LTI-02-E	Lighting Controls, Certificate of Compliance, and PAF Calculation. All Pages required on plans for all submittals.
☑	☐	NRCC-LTI-03-E	Indoor Lighting Power Allowance
☐	☑	NRCC-LTI-04-E	Tailored Method Worksheets
☐	☑	NRCC-LTI-05-E	Line Voltage Track Lighting Worksheets
☐	☐	NRCC-LTI-06-E	Indoor Lighting Existing Conditions

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 2 of 6)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

C. Summary of Allowed Lighting Power

Conditioned and Unconditioned space Lighting must not be combined for compliance

	Indoor Lighting Power for Conditioned Spaces		Watts	Indoor Lighting Power for Unconditioned Spaces		Watts
01	**Installed** Lighting NRCC-LTI-01-E, Table H, page 5	+	1,941	**Installed** Lighting NRCC-LTI-01-E, Table H, page 5	+	0
02	Portable Only for Offices NRCC-LTI-01-E, Table G, page 4	+				
03	Minus Lighting Control Credits NRCC-LTI-02-E, page 2	-	0	Minus Lighting Control Credits NRCC-LTI-02-E, page 2	-	0
04	Adjusted **Installed** Lighting Power (row 1 plus row 2 minus row 3)	=	1,941	Adjusted **Installed** Lighting Power (row 1 minus row 3)	=	0
	Complies ONLY if **Installed ≤ Allowed** (Box 04 < Box 05)			Complies ONLY if **Installed ≤ Allowed** (Box 04 < Box 05)		
05	**Allowed** Lighting Power Conditioned NRCC-LTI-03-E, page 1. Alterations with replacement luminaires that have at least 50/35% lower power compared to the original existing luminaires, may instead use the allowed wattage from NRCC-LTI-06, page 2		3,302	**Allowed** Lighting Power Unconditioned NRCC-LTI-03-E, page 1. Alterations with replacement luminaires that have at least 50/35% lower power compared to the original existing luminaires, may instead use the allowed wattage from NRCC-LTI-06, page 2		0

D. Declaration of Required Certificates of Installation

Declare by selecting yes for all of the Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Compliance Document/Title	
☑	☐	NRCI-LTI-01-E - Must be submitted for all buildings	☐ Field Inspector
☐	☑	NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-03-E - Must be submitted for a line-voltage track lighting integral current limiter, or for a supplementary overcurrent protection panel used to energize only line-voltage track lighting, to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room, or a theater to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	☐ Field Inspector

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 3 of 6)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

E. Declaration of Required Certificates of Acceptance

Declare by selecting yes for all of the Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Compliance Document/Title	
☑	☐	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐ Field Inspector
☐	☑	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	☐ Field Inspector
☐	☑	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	☐ Field Inspector
☐	☑	NRCA-LTI-05-A – Must be submitted for institutional tuning power adjustment factor (PAF).	☐ Field Inspector

A Separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:
☑ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**

F. Indoor Lighting Schedule and Field Inspection Energy Checklist

- ☐ The actual indoor lighting power listed on the next 2 pages includes all installed permanent and planned portable lighting systems.
- ☐ When Complete Building Method is used for compliance, list each different type of luminaire on separate lines.
- ☐ When Area Category Method or Tailored Method is used for compliance, list each different type of luminaire by each different function area on separate lines
- ☐ Also include track lighting in schedule, and submit the track lighting compliance document (NRCC-LTI-05-E) when line-voltage track lighting is installed.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

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CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 5 of 6)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

A Separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:
☑ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**

H. Indoor Lighting Schedule and Field Inspection Energy Checklist

Luminaire Schedule		Installed Watts					Location	Field Inspector [1]	
01	02	03	04		05	06	07	08	
Name or Item Tag	Complete Luminaire Description (i.e, 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast)	Watts per Luminaire	How wattage was determined: CEC Default from NA8	How wattage was determined: According to §130.0(c)	Number Luminaires	Total Installed Watts in this area (H03 x H05)	Primary Function area in which these luminaires are installed	Pass	Fail
A,A1	31W LED LIGHT	31.0	☑	☐	35	1,085	Comp Bldg Office	☐	☐
B,B1	20W LED LIGHT	20.0	☑	☐	2	40	Comp Bldg Office	☐	☐
C	158W LED LIGHT	158.0	☑	☐	2	316	Comp Bldg Office	☐	☐
C1	78W LED LIGHT	78.0	☑	☐	2	156	Comp Bldg Office	☐	☐
D	40W LED LIGHT	40.0	☑	☐	4	160	Comp Bldg Office	☐	☐
E	32W LED LIGHT	32.0	☑	☐	2	64	Comp Bldg Office	☐	☐
F,F1	24W LED LIGHT	24.0	☑	☐	5	120	Comp Bldg Office	☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
					INSTALLED WATTS PAGE TOTAL:	1,941	Enter sum total of all pages into NRCC-LTI-01-E; Page 2		

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 6 of 6)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: DOAN TRANG HOANG	Documentation Author Signature:
Company: Alliance Engineering Consultants, Inc	Signature Date:
Address: 4701 PATRICK HENRY DRIVE, BLDG 10	CEA Certification Identification (if applicable):
City/State/Zip: SANTA CLARA, CA 95054	Phone: 408–970–9888

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.
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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: KENNETH S. NGAI	Responsible Designer Signature:
Company: ALLIANCE ENGINEERING CONSULTANTS, INC.	Date Signed: 06/08/2018
Address: 4701 PATRICK HENRY DRIVE, BLDG 10	License: E11537
City/State/Zip: ,SANTA CLARA, CA 95054	Phone: 408-970-9888

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

STATE OF CALIFORNIA
INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-02-E
Indoor Lighting - Lighting Controls	(Page 1 of 3)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

A. Mandatory Lighting Control Declaration Statements (Indicate if the measure applies by checking yes or no below.)

YES	NO	Control Requirements
☐	☑	Lighting shall be controlled by self-contained lighting control devices which are certified to the Energy Commission according to the Title 20 Appliance Efficiency Regulations in accordance with Section 110.9.
☐	☑	Lighting shall be controlled by a lighting control system or energy management control system in accordance with §110.9. An Installation Certificate shall be submitted in accordance with Section 130.4(b).
☐	☑	One or more Track Lighting Integral Current Limiters shall be installed which have been certified to the Energy Commission in accordance with §110.9 and §130.0. Additionally, an Installation Certificate shall be submitted in accordance with Section 130.4(b).
☐	☑	A Track Lighting Supplementary Overcurrent Protection Panel shall be installed in accordance with Section 110.9 and Section 130.0. Additionally, an Installation Certificate shall be installed in accordance with Section 130.4(b).
☑	☐	All lighting controls and equipment shall comply with the applicable requirements in §110.9 and shall be installed in accordance with the manufacturer's instructions in accordance with Section 130.1.
☐	☑	All luminaires shall be functionally controlled with manually switched ON and OFF lighting controls in accordance with Section 130.1(a).
☑	☐	General lighting shall be separately controlled from all other lighting systems in an area. Floor and wall display, window display, case display, ornamental, and special effects lighting shall each be separately controlled on circuits that are 20 amps or less. When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled; in accordance with Section 130.1(a)4.
☑	☐	The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot shall meet the multi-level lighting control requirements in accordance with Section 130.1(b).
☑	☐	All installed indoor lighting shall be equipped with controls that meet the applicable Shut-OFF control requirements in Section 130.1(c).
☐	☑	Lighting in all Daylit Zones shall be controlled in accordance with the requirements in Section 130.1(d) and daylit zones are shown on the plans.
☐	☑	Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Responsive Signal in accordance with Section 130.1(e).
☑	☐	Before an occupancy permit is granted for a newly constructed building or area, or a new lighting system serving a building, area, or site is operated for normal use, indoor lighting controls serving the building, area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4.(a). The controls required to meet the Acceptance Requirements include automatic daylight controls, automatic shut-OFF controls, and demand responsive controls.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — January 2016

STATE OF CALIFORNIA
INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-02-E
Indoor Lighting - Lighting Controls	(Page 2 of 3)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

A separate document must be filled out for Conditioned and Unconditioned Spaces. This page is used only for the following:
☑ CONDITIONED SPACES ☐ UNCONDITIONED SPACES

B. Mandatory and Prescriptive Indoor Lighting Control Schedule, PAF Calculation, and Field Inspection Checklist

Lighting Control Schedule			Standards Complying With [1] (✓ all that apply, or enter 'E' if Exempted)							PAF Credit Calculation [2]: Watts of Controlled Lighting	PAF	Control Credit (K x L)	✓ if Acceptance Test Required	Field Inspector	
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	
Location in Building	Type/Description of Lighting Control (i.e.: occupancy sensor, automatic time switch, dimmer, automatic daylight, etc...)	# of Units	§130.1(a)	§130.0(b)	§130.1(c)	§130.1(d)	§130.1(e)	§140.6(a)2	§140.6(d)					Pass	Fail
OFFICES	Multi Level	13	☐	☑	☐	☐	☐	☐	☐				✓	☐	☐
OFFICES	Occupancy Sensor	19	☐	☐	☑	☐	☐	☐	☐				✓	☐	☐
STAFF 3, RECEPTION 1	Multi Level	4	☐	☑	☐	☐	☐	☐	☐				✓	☐	☐
STAFF 3, RECEPTION 1	Occupancy Sensor	6	☐	☐	☑	☐	☐	☐	☐				✓	☐	☐
TOILETS, JANITOR, ELEC	Occupancy Sensor	6	☐	☐	☑	☐	☐	☐	☐				✓	☐	☐
			☐	☐	☐	☐	☐	☐	☐					☐	☐
Control Credit PAGE TOTAL (Sum of Column 13):												0			
IF MULTIPLE PAGES ARE USED, ENTER SUM TOTAL OF Control Credit for all pages HERE (Sum of all Column 13):												0			
												Enter Control Credit total into NRCC-LTI-01-E; Page 1.			

1. §130.1(a) = Manual area controls; §130.0(b) = Multi Level; §130.1(c) = Auto Shut-Off; §130.1(d) = Mandatory Daylight; §130.1(e) = Demand Responsive; §140.6(d) = Additional lighting controls installed to earn a PAF; §140.6(d) = Prescriptive Secondary Sidelit Daylight Controls.
2. Check Table 140.6-A for correct Factor. PAFs shall not be traded between conditioned and unconditioned spaces. As a condition to earn a PAF, an Installation Certificate is also required to be filled out, signed, and submitted.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — January 2016

STATE OF CALIFORNIA
INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-02-E
Indoor Lighting - Lighting Controls	(Page 3 of 3)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name:	Documentation Author Signature:
Company: Alliance Engineering Consultants, Inc	Signature Date:
Address:	CEA Certification Identification (if applicable):
City/State/Zip: ,	Phone:

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Responsible Designer Name: KENNETH S. NGAI	Responsible Designer Signature:
Company: ALLIANCE ENGINEERING CONSULTANTS, INC.	Date Signed: 06/08/2018
Address: 4701 PATRICK HENRY DRIVE, BLDG 10	License: E11537
City/State/Zip: ,SANTA CLARA, CA 95054	Phone: 408-970-9888

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — January 2016

STATE OF CALIFORNIA
INDOOR LIGHTING POWER ALLOWANCE
CEC-NRCC-LTI-03-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-03-E
Certificate of Compliance - Indoor Lighting Power Allowance	(Page 1 of 4)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

A separate page must be filled out for Conditioned and Unconditioned Spaces. This page is only for:
☑ CONDITIONED spaces ☐ UNCONDITIONED spaces

A. SUMMARY TOTALS OF LIGHTING POWER ALLOWANCES

☐ If using Complete Building Method for compliance, use only the total in column (a) as total allowed building watts.
☐ If using Area Category Method, Tailored Method, or a combination of Area Category and Tailored Method for compliance, use only the total in column (b) as the total allowed building watts

	(a)	(b)
01 Complete Building Method Allowed Watts. Documented in section B of NRCC-LTI-03-E (below on this page)	3,302	
02 Area Category Method Allowed Watts. Documented in section C-1 of NRCC-LTI-03-E (below on this page)		
03 Tailored Method Allowed Watts. Documented in section A of NRCC-LTI-04-E		
TOTAL ALLOWED BUILDING WATTS. Enter number into correct cell on NRCC-LTI-01, Page 2, Row 1	3,302	

☐ Check here if building contains both conditioned and unconditioned areas.

B. COMPLETE BUILDING METHOD LIGHTING POWER ALLOWANCE

01	02		03		04
TYPE OF BUILDING (From §140.6 Table 140.6-B)	WATTS PER ft^2	X	COMPLETE BLDG. AREA	=	ALLOWED WATTS
Comp Bldg Office	0.80		4,128		3,302
	Total Area:				
Total Watts. Enter Total Watts into section A, row 1 (Above on this page)					

C-1 AREA CATEGORY METHOD TOTAL LIGHTING POWER ALLOWANCES	Watts
Total from section C-2.	
Total from section C-3.	
Total Watts. Enter Total Watts into section A, row 2 (Above on this page).	
For Alterations Only – Reduced lighting power option (Total Allowed Watts x 0.85). Enter this value into section A, row 2 if using this option.	

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

STATE OF CALIFORNIA
INDOOR LIGHTING POWER ALLOWANCE
CEC-NRCC-LTI-03-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-03-E
Certificate of Compliance - Indoor Lighting Power Allowance	(Page 4 of 4)
Project Name: TERRA LINDA HS – INNOVATION HUB	Date Prepared: 06/08/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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Documentation Author Name: DOAN TRANG HOANG	Documentation Author Signature:
Company: Alliance Engineering Consultants, Inc	Signature Date:
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Responsible Designer Name: KENNETH S. NGAI	Responsible Designer Signature:
Company: ALLIANCE ENGINEERING CONSULTANTS, INC.	Date Signed: 06/08/2018
Address: 4701 PATRICK HENRY DRIVE, BLDG 10	License: E11537
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CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance — April 2016

SAN RAFAEL CITY SCHOOLS
310 NOVA ALBION WAY
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Terra Linda HS
Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
06/08/18	DSA Sumittal

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10 Santa Clara, CA 95054
phone (408) 970-9888 fax (408) 970-9316 www.aec-engineers.com
PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER — KENNETH S. NGAI — No. 11537 — Exp. 6/30/19 — ELECT. — STATE OF CALIFORNIA

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP#: 01-117586
AC____FLS____SS_____
DATE________________

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA
(415) 981-2345
WWW.HED.DESIGN

2017-03489-000

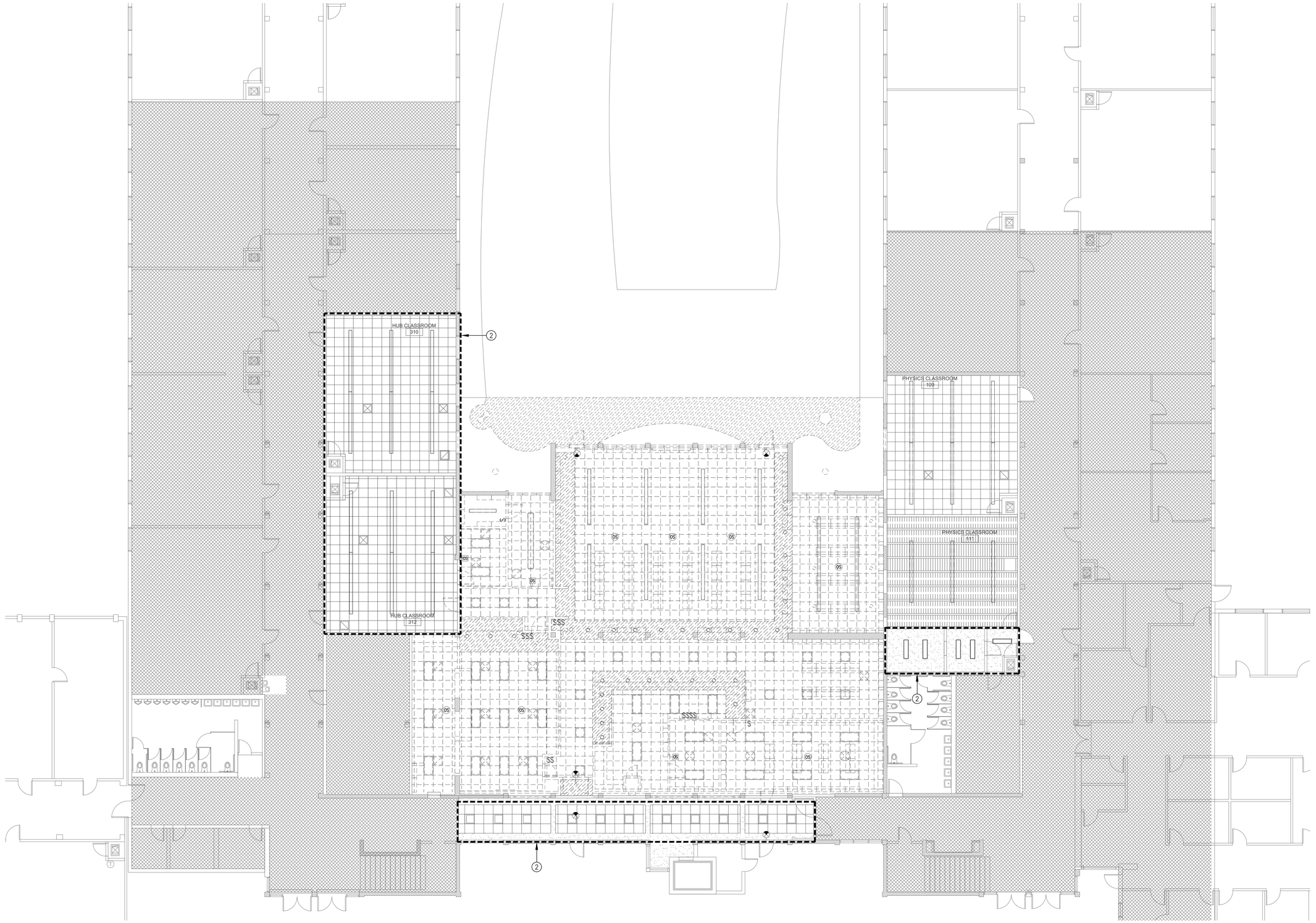
CERTIFICATE OF COMPLIANCE
TITLE 24
INDOOR LIGHTING

E0.2

FILE: M:\101-17-08 Kennedy MS(RCSD)\0E02.dwg Nov 30, 2017 12:27 pm Scale: 1=1 by: TRANG
XREFS: KEN SHEET BORDER 30X42.dwg

SHEET NOTES:

1. ALL (E) ELECTRICAL ITEMS SHOWN SHALL BE DISCONNECTED AND REMOVED, UON.
2. (E) ELECTRICAL ITEMS IN THIS AREA TO REMAIN. PROTECT AND MAINTAIN CIRCUIT CONTINUITY.



1 / E1.0 LIGHTING DEMOLITION PLAN ①
SCALE: 1/8"= 1'-0"

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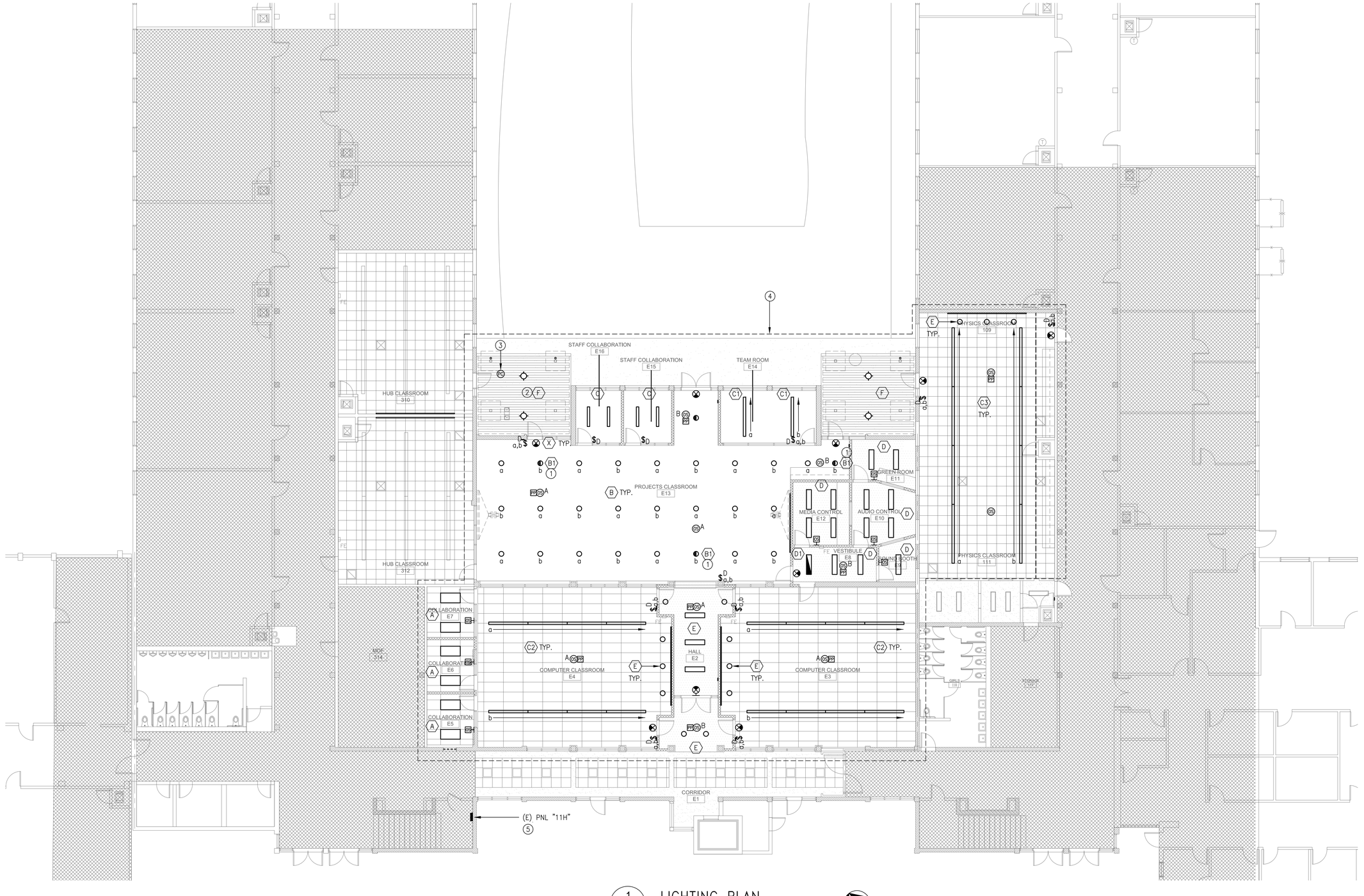
LIGHTING
DEMOLITION PLAN

E1.0

SHEET NOTES:

1. PROVIDE UNISTRUT HOT WIRE TO EMERGENCY BALLAST.
2. LIGHT FIXTURE SHALL BE CONTROLLED WITH PHOTOCELL MOUNTED ON THE ROOF.
3. PHOTOCELL MOUNTED ON THE ROOF, TORK CAT #2107.
4. ALL LIGHT FIXTURES IN THIS AREA OF WORK SHALL BE HOMERUN TO (E) PANEL "11H"-19. PROVIDE 3/4"C, 2 #12 & 1 #12 GND.
5. PROVIDE (N) 20/1P CIRCUIT BREAKER IN (E) SPACE CKT #19. (N) CIRCUIT BREAKER TYPE AND INTERRUPTING RATING SHALL MATCH (E).



1 / E1.1 LIGHTING PLAN
SCALE: 1/8"= 1'-0"

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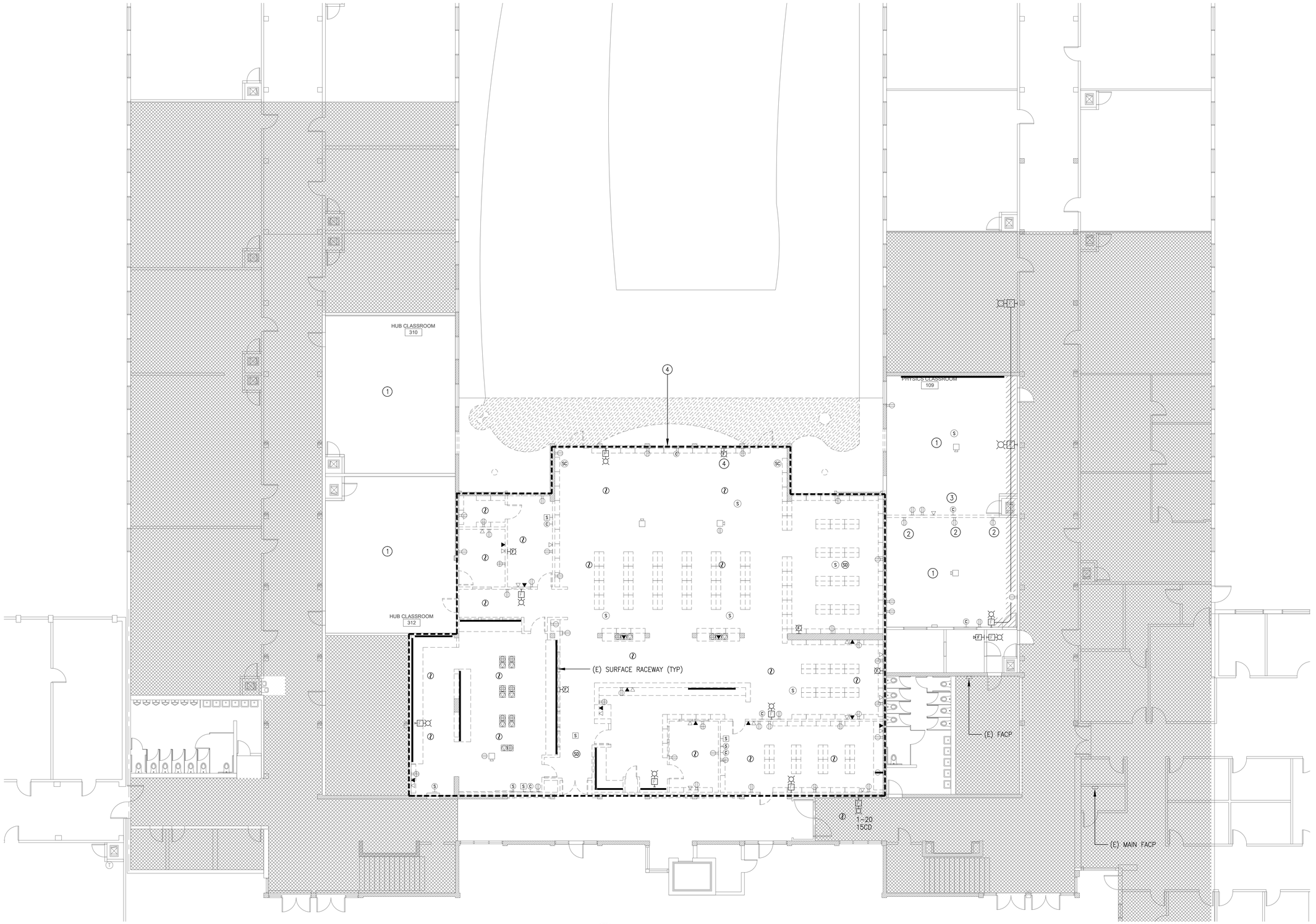
LIGHTING PLAN

E1.1

SHEET NOTES:

1. ALL ELECTRICAL ITEMS IN THIS ROOM ARE (E) TO REMAIN, UON.
2. DISCONNECT AND REMOVED (E) RECEPTACLE AND ASSOCIATED WIRES AND CONDUIT UP TO THE NEXT JUNCTION BOX WHICH IS TO REMAIN.
3. RELOCATE (E) CLOCK IN THE (N) WORK.
4. ALL (E) ELECTRICAL ITEMS SHOWN IN THIS AREA SHALL BE DISCONNECTED AND REMOVED ALONG WITH ASSOCIATED WIRES AND CONDUIT UP TO SOURCE. (E) FIRE ALARM DEVICES SHALL RELOCATED AND RECONNECTED IN THE (N) WORK.



1 / E2.0 ELECTRICAL DEMOLITION PLAN

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

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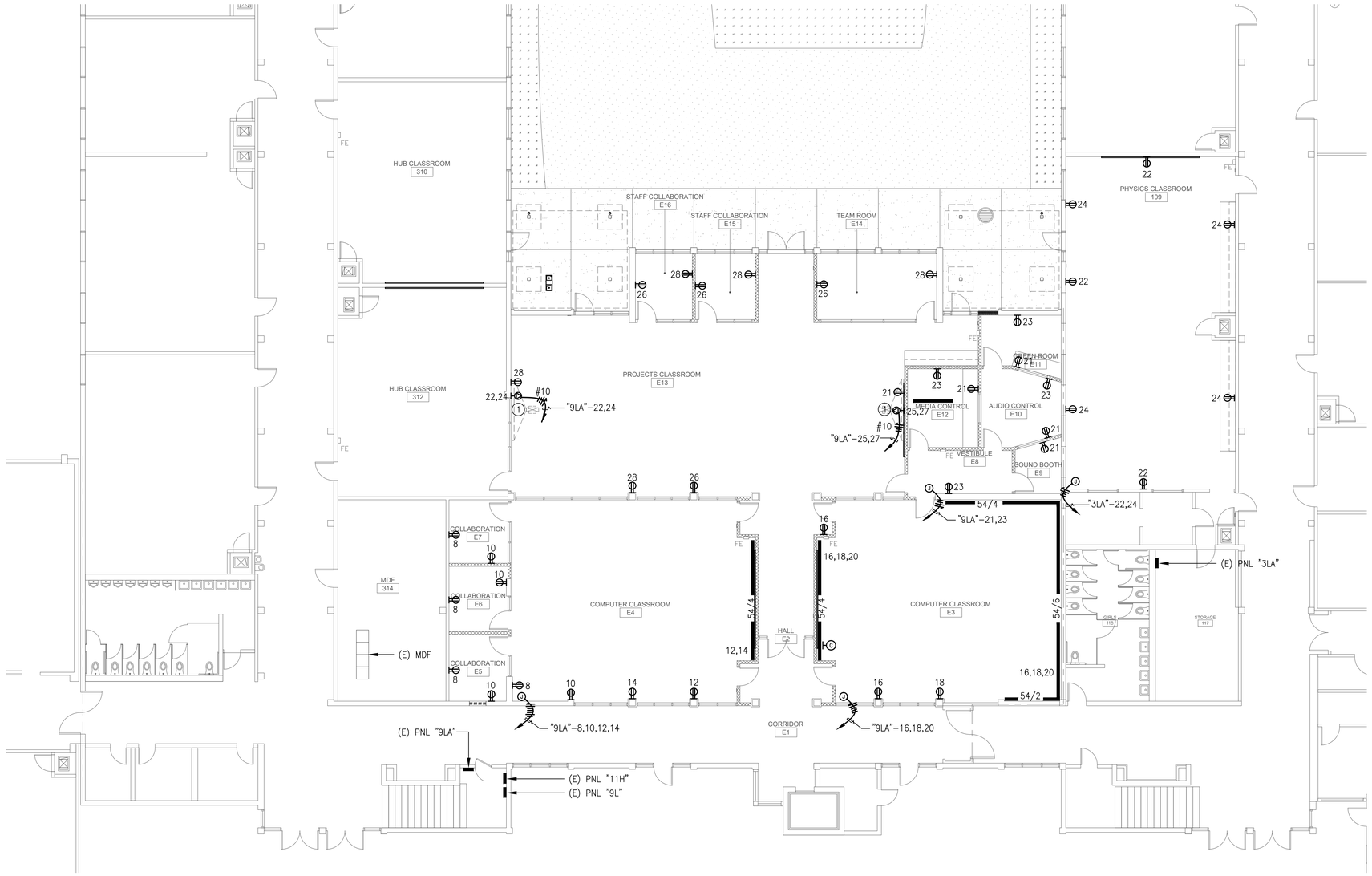
2017-03489-000

ELECTRICAL
DEMOLITION PLAN

E2.0



1 E2.1 POWER PLAN

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

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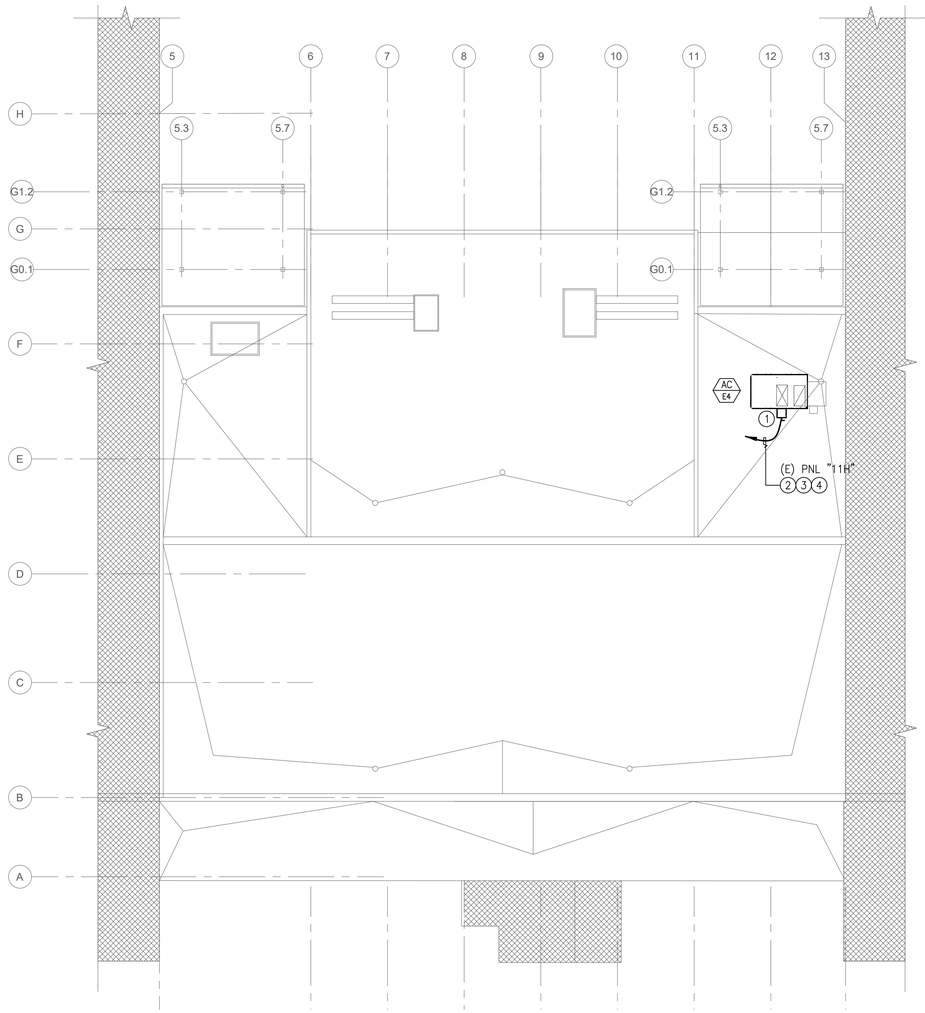
2017-03489-000

POWER PLAN

E2.1

SHEET NOTES:

1. PROVIDE 30A/3P, 240V MAX. FUSIBLE DISCONNECT SWITCH IN NEMA 3R ENCLOSURE WITH (3) 20A FUSES.
2. RUN CONDUIT ON THE ROOF AND PROVIDE CONDUIT SUPPORT AT 8FT. INTERVAL MAXIMUM.
3. REFER TO DWG. 5/E6.1 FOR CONDUIT SUPPORT.
4. SEE DWG. E2.1 FOR PANEL LOCATION.



1 / E2.2 POWER PLAN – ROOF

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

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WWW.HED.DESIGN

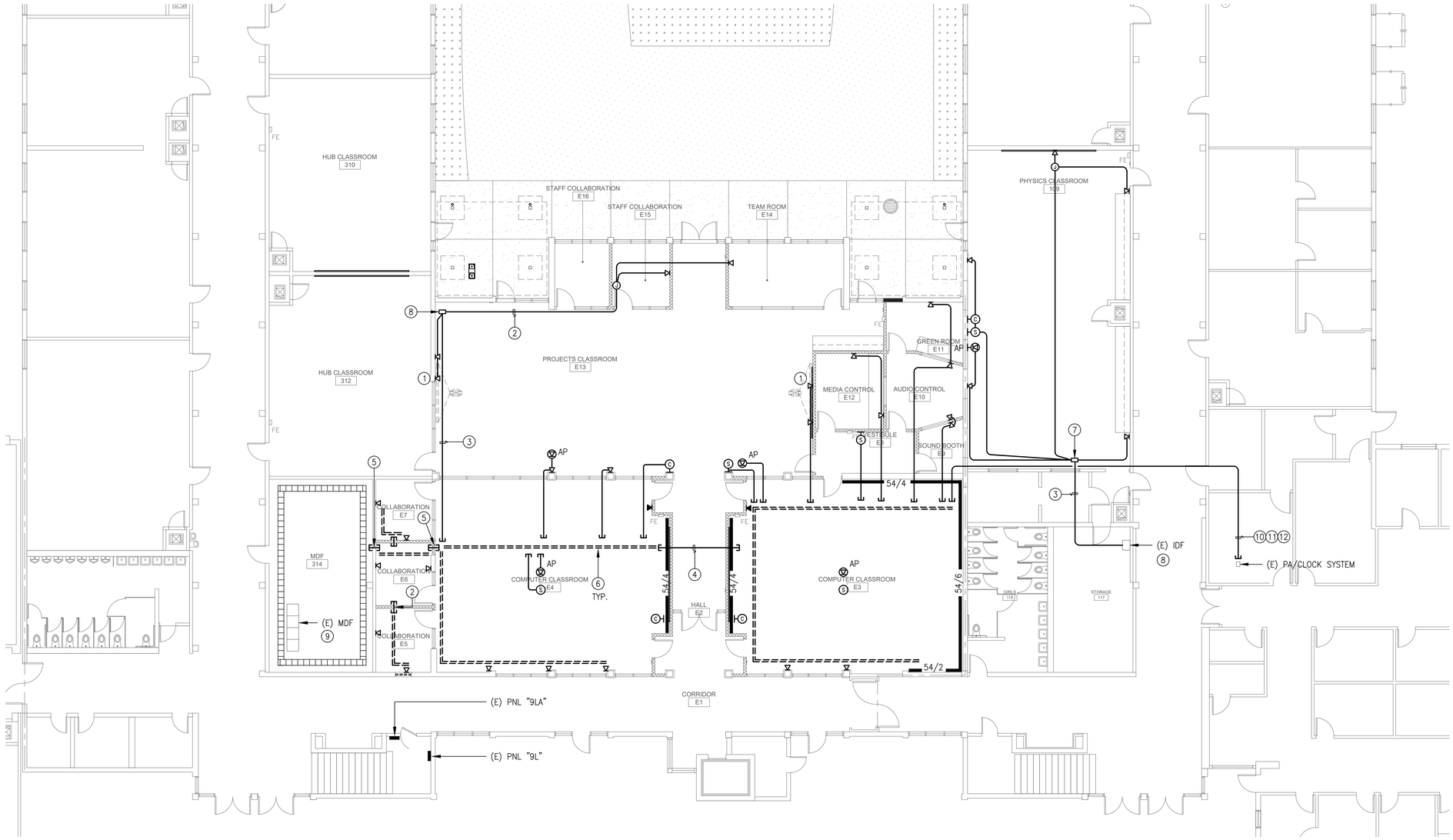
2017-03489-000

POWER PLAN
ROOF

E2.2

SHEET NOTES:

1. DATA OUTLET FOR SMARTBOARD. COORDINATE WITH ARCHITECT FOR EXACT LOCATION.
2. 1 1/4"C (LOW VOLTAGE)
3. 1 1/2"C (LOW VOLTAGE)
4. (3) 2"C (LOW VOLTAGE)
5. (5) 2"C
6. PROVIDE 3" J-HOOKS FOR LOW VOLTAGE CABLE SUPPORT ALONG DOUBLE LINES AT 4FT ON CENTER.
7. PROVIDE 10"x8"x6" NEMA 1 PULLBOX AND SECURE ON THE WALL.
8. CONNECT (N) DATA CABLES IN (E) IDF PATCH PANEL. PROVIDE ALL NECESSARY CAT 6 PATCH CORD AS REQUIRED AND ALL OTHER DATA COMPONENTS FOR A COMPETE INSTALLATION.
9. CONNECT (N) DATA CABLES IN (E) PATCH PANEL SPARE PORTS. PROVIDE ADDITIONAL CAT 6 PATCH PANEL (MODULAR), CAT 6 PATCH CORD AS REQUIRED FOR A COMPETE INSTALLATION.
10. 1 1/4"C (CLOCK/SPEAKER)
11. RUN CONDUIT ABOVE CEILING AND PROVIDE CONDUIT SUPPORT AT 8FT. INTERVAL MAXIMUM.
12. IF (E) PATHWAY FOR CLOCK/PA CAN BE RE-USED, THEN NOTE (11) IS NOT REQUIRED.
13. FIELD VERIFY AND UTILIZE (E) CABLE LADDER TO RUN (N) CABLES.



1 E3.1 SIGNAL PLAN
SCALE: 1/8"= 1'-0"

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PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

FILE#: 21-H1 PTN#: 65486-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP#: 01-117586
AC___FLS___SS___
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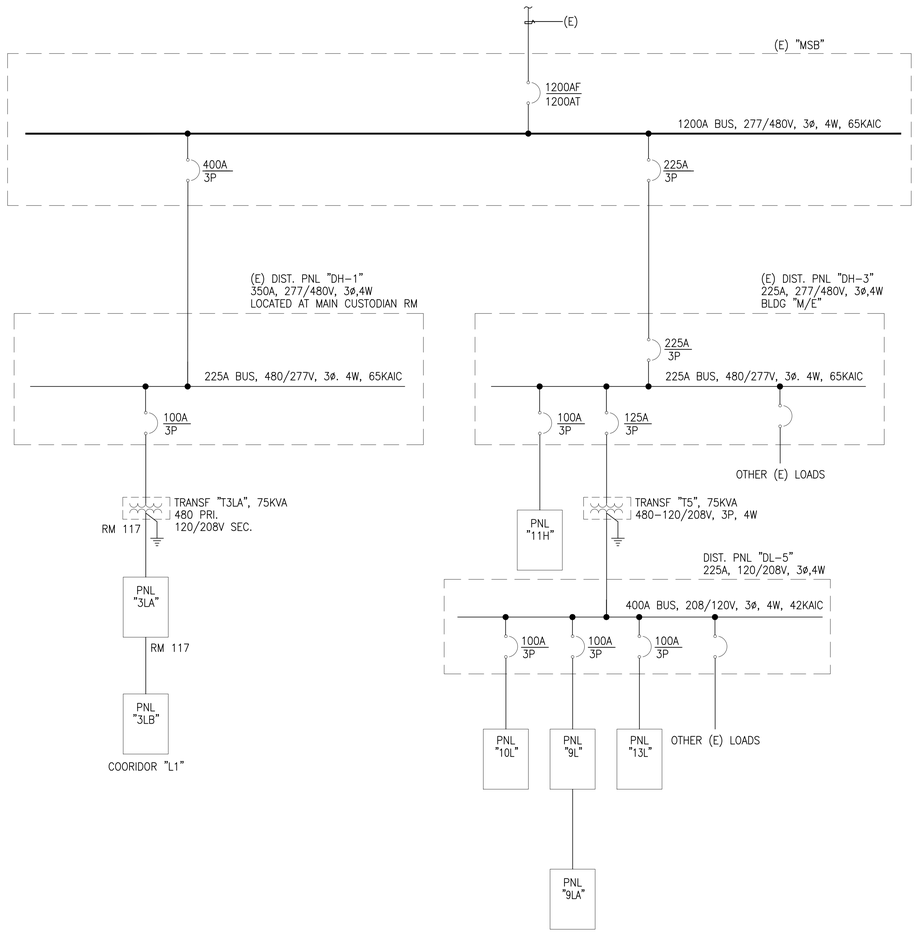
SIGNAL PLAN

E3.1

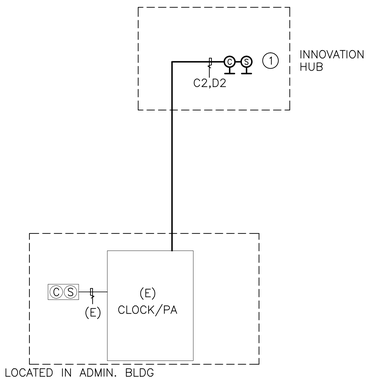


1 E4.1 SINGLE LINE DIAGARM ②

SHEET NOTES:

1. REFER TO SIGNAL PLAN FOR EXACT QUANTITY OF DEVICES.
2. ALL EQUIPMENT AND CABLES ARE (E) TO REMAIN (FOR INFORMATION ONLY).
3. CLOCK AND SPEAKERS SHALL MATCH (E).

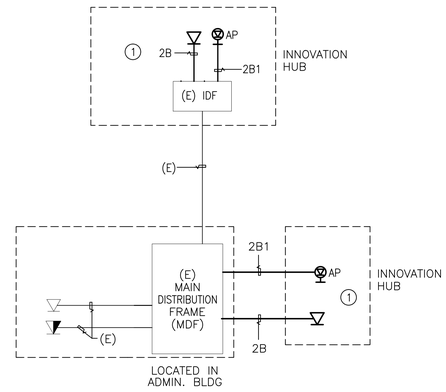
TYPE	CLOCK AND INTERCOM CABLE SCHEDULE
	DESCRIPTION
C2	2 #18 SHIELDED
D1	3 #12 THWN CLOCK – TRUNK CABLE.
D2	WEST PENN 238 CLOCK



2 E4.1 CLOCK & PUBLIC ADDRESS SYSTEM RISER DIAGRAM ③

NOT TO SCALE

TYPE	DATA/VOICE CABLE SCHEDULE
	DESCRIPTION
B	4 PAIR CAT-6 (VOICE-WHITE/DATA-BLUE)
B1	4 PAIR CAT 6A (WIRELESS PORT)



3 E4.1 DATA/VOICE SYSTEM RISER DIAGRAM

NOT TO SCALE

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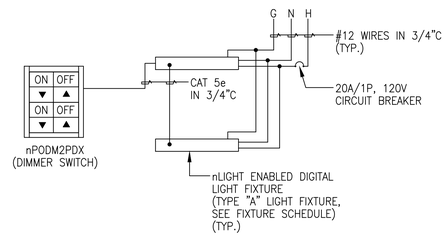
SINGLE LINE DIAGRAM
SIGNAL RISER DIAGRAM

E4.1

LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURERS MODEL NO.	LAMPS QTY.	LAMPS TYPE	TOTAL WATTS	VOLTS	MOUNTING	DESCRIPTION AND REMARKS
A	LITHONIA LIGHTING CAT #2VTL4 40L-ADP EZ1-LP835-N80	–	LED	39	277	RECESSED LAY-IN	2'x4' LED LIGHT FIXTURE WITH VOLUMETRIC OPTICS AND HIGH EFFICIENCY DRIVER.
B	BETA CALCO CAT #50-6750 30A MSDD	–	LED	48	277	PENDANT	DOWNLIGHT FIXTURE
B1	LITHONIA LIGHTING CAT #506750-30A MSDD EM	–	LED	48	277	PENDANT	SAME AS TYPE "B" LIGHT FIXTURE EXCEPT WITH EMERGENCY BATTER PACK.
C	PEERLESS CAT #BRM9L-4FT-MSL4 80CRI 35K ID1000 LMF 60/40 DARK nLIGHT MVOLT SCT PDT ADC F2/12FC110	–	LED	32	277	PENDANT	4FT. DIRECT/INDIRECTLED LIGHT FIXTURE WITH SOFT SHINE OPTICS AND INTEGRATED DAYLIGHT DIMMING PHOTOSENSOR AND OCCUPANCY MOTION SENSOR.
C1	PEERLESS CAT #BRM9L-8FT-MSL8 80CRI 35K ID1000 LMF 60/40 DARK nLIGHT MVOLT SCT PDT ADC F2/12FC110	–	LED	64	277	PENDANT	SAME AS TYPE "C" LIGHT FIXTURE EXCEPT WITH 8FT. LENGTH.
C2	PEERLESS CAT #BRM9L LSL-32FT-MSL32 80CRI 35K ID1000 LMF 60/40 DARK nLIGHT MVOLT ZT F1/12F	–	LED	256	277	PENDANT	SAME AS TYPE "C" LIGHT FIXTURE EXCEPT WITH 32FT. LENGTH AND WITHOUT INTEGRATED SENSORS.
C3	PEERLESS CAT #BRM9L LLP-48FT-MSL48 80CRI 35K ID1000 LMF 60/40 DARK nLIGHT MVOLT ZT F1/12F	–	LED	384	277	PENDANT	SAME AS TYPE "C" LIGHT FIXTURE EXCEPT WITH 48FT. LENGTH AND WITHOUT INTEGRATED SENSORS.
D	LITHONIA LIGHTING CAT #STL4 30L EZ1-LP835-N80	–	LED	27	277	SURFACE	4FT. LED LIGHT FIXTURE WITH CRESCENT SHAPE LINEAR FACETED REFRACTOR, HIGH EFFICIENCY DRIVER.
E	LITHONIA LIGHTING CAT #EVO 35/30 4AR MWD LSS MVOLT E21	–	LED	17.3	277	RECESSED	4" LED DOWNLIGHT FIXTURE WITH CLEAR APERTURE AND SEMI-SPECULAR FINISH.
F	LITHONIA LIGHTING CAT #OLCFM15 MVOLT-DDB	–	LED	32	277	SURFACE	11 3/4" LED LIGHT FIXTURE WITH DARK BRONZE FINISH. SUITABLE FOR OUTDOOR APPLICATION.
X	LITHONIA LIGHTING CAT #LEDSW1G-120-ELNSD	–	LED	7	120	UNIVERSAL	LED EXIT LIGHT FIXTURE WITH GREEN LETTERS ON WHITE BACKGROUND.



1 / E5.1 LIGHTING CONTROL WIRING DIAGRAM

NOT TO SCALE

(E) PANEL # 9LA — LOCATION — FEEDER SIZE EXISTING

VOLTS 120/208V,3PH,4W — MLO [X] FEED THRU LUGS [ ] — FLUSH [ ] SURFACE [X]
AMPS 100 — MCB [ ] MCB AMPS — NEMA 1 [1] NEMA 3R [ ]
AIC RATING 10K — BUS AMPS 100

DESCRIPTION	LOAD (VA) A	B	C	BKR/ POLE	CKT No.		BKR/ POLE	LOAD (VA) A	B	C	DESCRIPTION	
(E) LOAD	900			20/1	1	2	20/1				(E) LOAD	
		540			3	4						
			720		5	6						
	540				7	8		720			RECEPT RM E4 THRU E7	
		720			9	10			720			
			540		11	12				720		
	1000				13	14		720				1
		1000			15	16			1080		RECEPT RM E3	
			1000		17	18				1080		
	1000				19	20		1080				
2 RECEPT RM E8 THRU E11		900			21	22	20/2		1000		250V RECEPT	3
			720		23	24				1000		
3 250V RECEPT	1000			20/2	25	26	20/1	900			RECEPT RM E13 THRU E16	2
		1000			27	28			720			
SPARE				20/1	29	30					SPARE	
SUBTOTAL	4440	4160	2980					3420	3520	2800		SUBTOTAL

TOTAL LOAD 21.32 KVA; @ 208 VOLTS = 59.2 AMPS

(E) PANEL # 11H — LOCATION — FEEDER SIZE EXISTIING

VOLTS 277/480V,3PH,4W — MLO [ ] FEED THRU LUGS [ ] — FLUSH [ ] SURFACE [X]
AMPS 225 — MCB [ ] MCB AMPS — NEMA 1 [X] NEMA 3R [ ]
AIC RATING 10K — BUS AMPS 100

DESCRIPTION	LOAD (VA) A	B	C	BKR/ POLE	CKT No.		BKR/ POLE	LOAD (VA) A	B	C	DESCRIPTION
(E) LOAD				20/1	1	2					
					3	4	30/3				(E) AC-E1
					5	6					
					7	8					
					9	10	25/3				(E) AC-E2
					11	12					
					13	14					
					15	16	25/3				(E) AC-E3
SPACE				-	17	18					
				-	19	20		1933			
				-	21	22	20/3		1933		(N) AC-E4
				-	23	24				1933		2
				-	25	26	-				SPACE
				-	27	28	-				
				-	29	30	-				
				-	31	32	-				
				-	33	34	-				
				-	35	36	-				
				-	37	38	20/1				(E) LOAD
				-	39	40					
				-	41	42					
SUBTOTAL								1933	1933	1933	SUBTOTAL

TOTAL LOAD 5.80 KVA; @ 480 VOLTS = 7.0 AMPS

(E) PANEL # 3LA — LOCATION — FEEDER SIZE EXISTING

VOLTS 120/208V,3PH,4W — MLO [X] FEED THRU LUGS [ ] — FLUSH [ ] SURFACE [X]
AMPS 225 — MCB [ ] MCB AMPS — NEMA 1 [X] NEMA 3R [ ]
AIC RATING 10K — BUS AMPS 225

DESCRIPTION	LOAD (VA) A	B	C	BKR/ POLE	CKT No.		BKR/ POLE	LOAD (VA) A	B	C	DESCRIPTION	
(E) LOAD	240			20/1	1	2	20/1	1080			(E) LOAD	
		400			3	4			1260			
			800		5	6				900		
	100				7	8		1260				
		120			9	10			900			
			1080		11	12				1260		
	540				13	14		900				
		1080			15	16			900			
			900		17	18				1080		
	1200				19	20		900			RECEPT RM 109 & 111	
		1200			21	22			720			1
			1200		23	24				540		
	1200				25	26					SPARE	
		1200			27	28						
			1200		29	30						
	1200				31	32						
		1200			33	34						
					35	36						
SPACE				-	37	38		10780				
				-	39	40	150/3		11320		(E) PNL 3LB	
				-	41	42				8440		
SUBTOTAL	4480	5200	5180					14920	15100	12220		SUBTOTAL

TOTAL LOAD 57.10 KVA; @ 208 VOLTS = 158.6 AMPS

GENERAL NOTE:

ALL CIRCUITS AND LOADS IN THESE PANELS ARE (E) TO REMAIN, U.O.N.

SHEET NOTES:

1. UTILIZE (E) SPARE CIRCUIT BREAKER FOR (N) RECEPTACLES.
2. INSTALL (N) CIRCUIT BREAKER IN (E) SPACES, SIZE AS SHOWN. (N) CIRCUIT BREAKER TYPE AND INTERRUPTING RATING SHALL MATCH (E).
3. REPLACE (E) CIRCUIT BREAKERS, SIZE AS SHOWN. (N) CIRCUIT BREAKER TYPE AND INTERRUPTING RATING SHALL MATCH (E).

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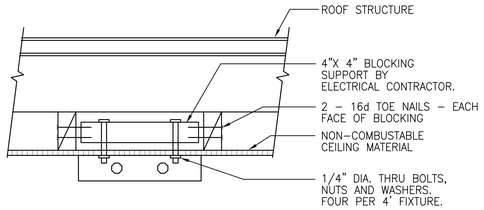
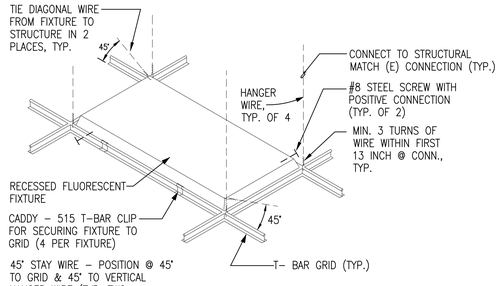
SCHEDULES AND DETAIL

E5.1



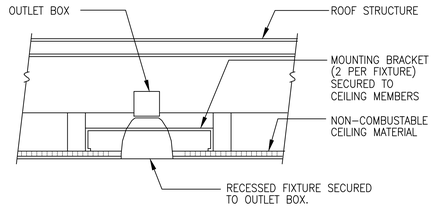
1 E5.2 SURFACE MOUNTED LIGHTING FIXTURE DETAIL

N.T.S.



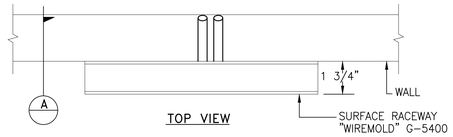
2 E5.2 TYPICAL SUPPORT REQUIREMENTS FOR RECESSED LIGHT FIXTURES

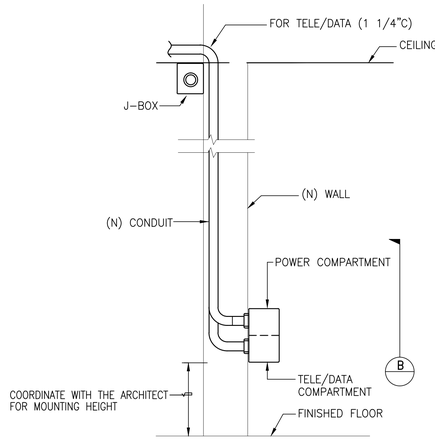
NOT TO SCALE



3 E5.2 RECESSED DOWNLIGHT FIXTURE DETAIL

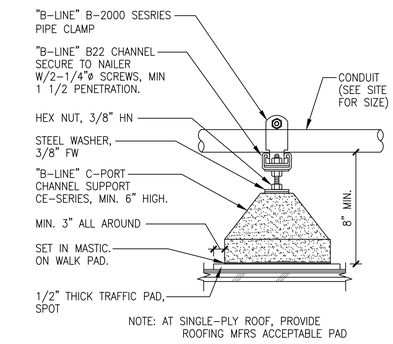
NOT TO SCALE





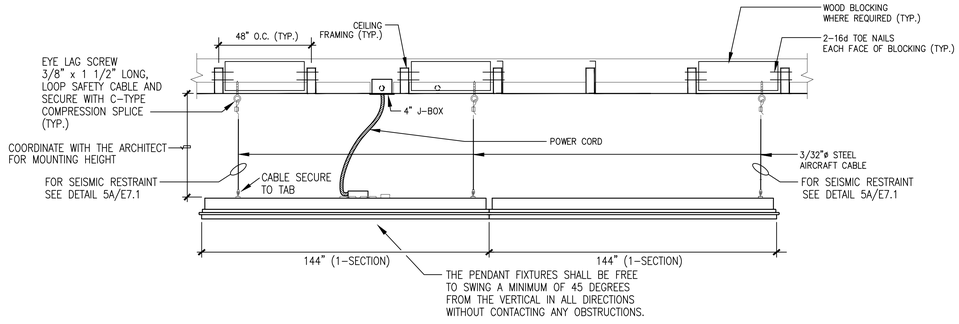
SECTION A

NOT TO SCALE



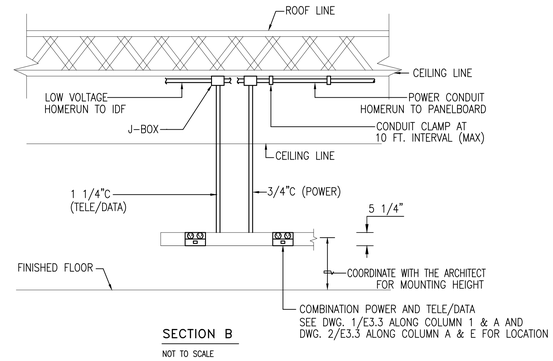
5 E5.2 ROOF CONDUIT SUPPORT

NOT TO SCALE



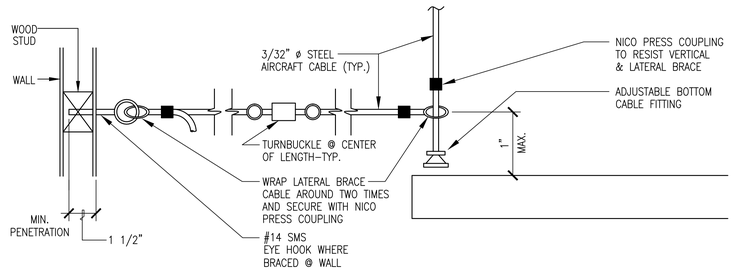
6 E5.2 PENDANT LIGHT FIXTURE MOUNTING DETAIL

NOT TO SCALE



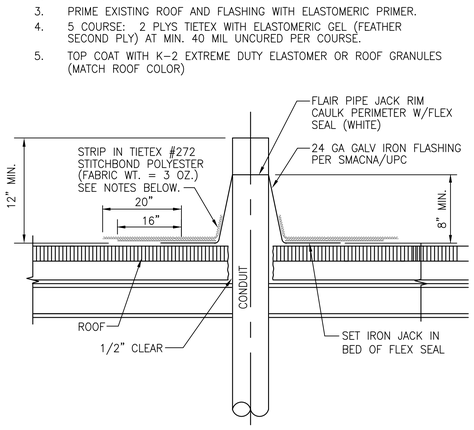
SECTION B

NOT TO SCALE



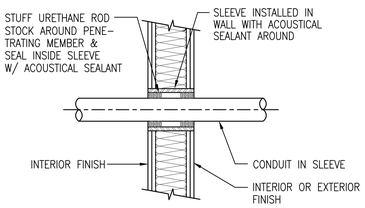
7 E5.2 SEISMIC RESTRAINT DETAIL

NOT TO SCALE



8 E5.2 CONDUIT ROOF PENETRATION

NOT TO SCALE

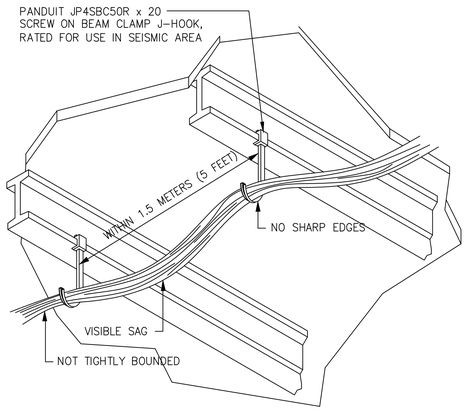


NOTE: PATCH AND FINISH TO MATCH (E)

THESE RECOMMENDATIONS ARE BASED ON PRODUCT PERFORMANCE PER ASTME–814(UL1479) FIRE TEST AND UL THROUGH PENETRATION FIRESTOP SYSTEM #WL1001.

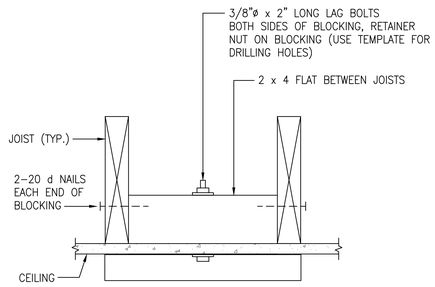
9 E5.2 TYPICAL WALL PENETRATION

NOT TO SCALE



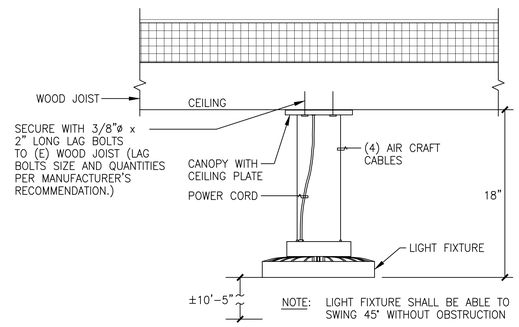
10 E5.2 DETAIL – CABLE PATH WAY

NOT TO SCALE



11 E5.2 CABLE TRAY UPPER SUPPORT MOUNTING DETAIL

NOT TO SCALE



12 E5.2 PENDANT MOUNTED LIGHTING FIXTURE DETAIL

NOT TO SCALE

NOTES:

1. ALL SURFACES TO BE CLEANED e.g. FREE OF DIRT, GREASE, SCALE PAINT, ETC.
2. WIRE BRUSH ALL LOOSE MATERIAL AS REQUIRED.
3. PRIME EXISTING ROOF AND FLASHING WITH ELASTOMERIC PRIMER.
4. 5 COURSE: 2 PLYS TIETEX WITH ELASTOMERIC GEL (FEATHER SECOND PLY) AT MIN. 40 MIL UNCURED PER COURSE.
5. TOP COAT WITH K–2 EXTREME DUTY ELASTOMER OR ROOF GRANULES (MATCH ROOF COLOR)

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DETAILS

E5.2

GENERAL NOTES

1. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA ELECTRICAL CODE, SPECIFICATIONS AND STANDARD, THE LATEST RULES AND REGULATIONS OF THE SAFETY ORDERS ISSUED BY THE DIVISION OF INDUSTRIAL SAFETY, THE NATIONAL BOARD OF FIRE UNDERWRITERS AND ALL APPLICABLE STATE AND LOCAL CODES ISSUED BY AUTHORITIES HAVING JURISDICTION.
2. PRIOR TO SUBMITTING PROPOSAL, BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS. VISIT CONSTRUCTION SITE AND ATTEND THE PRE-BID MEETING TO BE FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANYWAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
3. FIELD VERIFY TO CONFIRM ALL FIRE RATED CEILINGS AND WALLS. PROVIDE FIRE STOP SEALS PER UNIFORM BUILDING CODE FOR CONDUIT PENETRATION THROUGH FIRE RATED FLOORS, WALLS AND CEILINGS.
4. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITER'S LABORATORIES AND BEAR THEIR LABEL.
5. CONDUIT ROUTING SHOWN IS ESSENTIALLY DIAGRAMMATIC. CONTRACTOR SHALL LAYOUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES. ALL EXPOSED CONDUIT, BOXES, FITTINGS, SUPPORT, ETC. SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
6. THE CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL AND OTHER DRAWINGS RELATED TO THIS PROJECT FOR ADDITIONAL WORK TO BE PROVIDED.
7. THE OWNER RETAINS FIRST SALVAGE RIGHTS TO ALL EXISTING EQUIPMENT REMOVED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE OWNER FOR DISPOSITION OF THE EXISTING EQUIPMENT TO BE REMOVED BY HIM. THE CONTRACTOR SHALL INCLUDE IN HIS BID PROPOSAL ALL COSTS RELATED TO THE DISPOSAL OF EXISTING EQUIPMENT REMOVED UNDER THIS CONTRACT.
8. ANY POWER SHUTDOWN SHALL BE COORDINATED WITH SCHOOL DISTRICT PROJECT MANAGER. A SHUTDOWN SCHEDULE SHALL BE PRESENTED TO SCHOOL DISTRICT FOR APPROVAL TWO WEEKS PRIOR TO COMMENCEMENT OF WORK. SHUTDOWN SHALL BE PERFORMED IN OVERTIME HOURS IF SO DIRECTED BY SCHOOL DISTRICT.
9. DEMOLITION WORK SHALL BE PROVIDED AS REQUIRED TO ACCOMPLISHED NEW WORK CALLED FOR AND AS NOTED. WORK SHALL BE PERFORMED CAREFULLY TO AVOID DAMAGE TO SURFACES, STRUCTURES, AND EQUIPMENT NOT BEING REMOVED. EXISTING EQUIPMENT AND/OR ELECTRICAL WIRING WHICH IS TO REMAIN, BUT HAS BEEN REMOVED TO FACILITATE THE INSTALLATION OF THE NEW EQUIPMENT, SHALL BE RESTORED TO ITS ORIGINAL OPERATING CONDITION.
10. BLANK COVERS SHALL BE INSTALLED WHEREVER DEVICE IS REMOVED AND OUTLET BOX REMAINS IN PLACE.
11. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CONDUCTORS SHALL BE 12 AWG THWN STRANDED COPPER ONL.Y.
12. UNLESS OTHERWISE INDICATED, THE MINIMUM SIZE OF CONDUIT SHALL BE 3/4".
13. GREEN INSULATED GROUND CONDUCTORS SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUIT WIRING.
14. PROVIDE LABELS ON ALL EQUIPMENT AND DEVICES. LABELS SHALL BE SELF-ADHESIVE PHENOLIC TYPE AND WHITE LETTER ON BLACK BACKGROUND, PROVIDE BRADY OR DYMO TYPE LABELS (CIRCUIT IDENTIFICATION) FOR ALL SWITCHES AND RECEPTACLES.
15. THE CONTRACTOR SHALL PROVIDE TYPEWRITTEN DIRECTORIES FOR ALL ELECTRICAL PANELS INVOLVED IN THIS PROJECT. THE PANEL DIRECTORIES SHALL REFLECT THE AS-BUILT CIRCUITS. ONE COPY OF THE SCHEDULE SHALL BE TAPED TO THE INSIDE OF THE PANEL DOOR, AND ONE COPY SHALL BE SUBMITTED TO THE ENGINEER AS AN "AS-BUILT" DRAWING.
16. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A SEISMIC FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA:
    a. THE TOTAL DESIGN LATERAL SEISMIC FORCE SHALL BE DETERMINED PER CALIFORNIA BUILDING CODE (CBC) 2013. FORCES SHALL BE APPLIED IN THE HORIZONTAL DIRECTIONS, WHICH RESULT IN THE MOST CRITICAL LOADING FOR DESIGN.
    b. THE VALUE OF A_p(COMPONENT AMPLIFICATION FACTOR), R_p (COMPONENT RESPONSE MODIFICATION FACTOR), C_a(SEISMIC COEFFICIENT) AND Ip(SEISMIC IMPORTANCE FACTOR) BE DETERMINED PER CALIFORNIA BUILDING CODE (CBC) 2013.

    WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE FIELD REPRESENTATIVE OF THE DIVISION OF THE STATE ARCHITECT.
17. CERTAIN REMODELING OF ELECTRICAL FACILITIES WILL BE REQUIRED IN THE EXISTING BUILDING. THE DRAWINGS SHOWING LOCATION OF EQUIPMENT IN EXISTING AREAS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL CONCEAL ALL WORK; IF THIS NOT POSSIBLE, SURFACE RACEWAY SUCH AS WIREMOLD SHALL BE USED ONLY WITH THE APPROVAL OF THE ARCHITECT AND OWNER.
18. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING PAINTING AND/OR OTHER REPAIRS DUE TO THE INSTALLATION OF ELECTRICAL WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, ETC., AS REQUIRED. THIS SHALL INCLUDE ALL WALLS, CEILINGS, ROOFS, PAVEMENT, PLANTERS, ETC.
19. OUTLETS MOUNTED ON WALL BACK TO BACK SHALL MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF 24" OR BE SEPARATED BY A STUD.
20. ALL EXPOSED CONDUITS, BOXES AND CABINETS INSTALLED IN FINISHED AREAS SHALL BE PAINTED TO MATCH COLOR OF ADJACENT WALL OR CEILING.
21. THE CONTRACTOR SHALL MAINTAIN AT THE JOB SITE, AN UP TO DATE "AS BUILT" DRAWING SET. THE "AS BUILT" DRAWING SET SHALL REFLECT ALL APPROVED CHANGES TO THE DESIGN DRAWINGS. THE "AS BUILT" DRAWING SET SHALL BE KEPT CLEAN AND IN GOOD CONDITION AND SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE PROJECT. THESE DRAWINGS SHALL BE UPDATED DAILY AND BE CHECKED WEEKLY BY IOR. THE PROGRESS PAYMENT IS TIED TO THEIR COMPLETION.
22. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SCHEDULE AND PERFORM A COMPLETE FUNCTIONAL TEST TO DEMONSTRATE TO THE OWNER THAT THE NEW INSTALLATION IS OPERATING AS INTENDED. ANY DEFECTS OR DEFICIENCIES IN THE MATERIALS OR WORK SHALL CORRECTED IMMEDIATELY BY AND AT THE CONTRACTOR'S EXPENSE.
23. PROVIDE ACCESSIBLE PANEL FOR HEAT DETECTOR ABOVE CEILING WHERE REQUIRED.

FIRE ALARM L E G E N D

WIRING

SYMBOL	DESCRIPTION
	WIRING CONCEALED IN CEILING OR WALL. LINE WEIGHT TOP TO BOTTOM= NEW, EXISTING TO REMAIN, FUTURE
	WIRING CONCEALED IN FLOOR OR UNDER GRADE OR ROUTED IN CEILING SPACE OF FLOOR BELOW. LINE WEIGHT TOP TO BOTTOM= NEW, EXISTING TO REMAIN, FUTURE
	WIRING EXPOSED, LINE WEIGHT TOP TO BOTTOM= NEW, EXISTING TO REMAIN, FUTURE
	EXISTING ITEM TO BE REMOVED
LV	LOW VOLTAGE CABLE IN CONDUIT
	STROKES INDICATE QUANTITY OF #12 AWG. CONDUCTORS IF MORE THAN 3, UON. NOTE: WIRING STROKES FOR 20A BRANCH CIRCUITS ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL USE INFORMATION IN PANEL AND BRANCH CIRCUIT SCHEDULES TO PROVIDE REQUIRED CIRCUITING. ALL SHARED NEUTRAL SHALL BE #10 U.O.N.
	GROUND GROUND, ISOLATED
	HOT NEUTRAL
L1A-1,3 HD1A	HOME RUN WIRING TO INDICATED DESTINATION, 3/4"C. MIN. OR AS OTHERWISE NOTED. CONTRACTOR SHALL USE CIRCUIT SIZES NOTED IN RESPECTIVE SCHEDULES AND INFORMATION IN THE FEEDER AND BRANCH CIRCUIT SCHEDULES.
	CONDUIT RUN TURNED UP THROUGH FLOOR OR CEILING. CORE & FIREPROOF AS REQUIRED.
	CONDUIT RUN TURNED DOWN THROUGH FLOOR OR CEILING. CORE & FIREPROOF AS REQUIRED.
	CONDUIT STUBBED OUT AT LOCATION SHOWN. PROVIDE INSULATED BUSHING & PULLROPE.
	RACEWAY STUBBED OUT FOR FUTURE CONTINUATION; CAP, MARK AND RECORD LOCATION.
J	JUNCTION BOXES, WALL, CEILING AND FLUSH FLOOR MOUNTED. 4" SQ. BOX MIN., LARGER IF REQUIRED
	WIRING EXTENSION POINT – CONDUIT TO MC CABLE OR MANUFACTURED WIRING SYSTEM J-BOX ABOVE ACCESSIBLE CEILINGS AREAS, OR EXTEND CONDUIT & WIRE IN EXPOSED OR "HARD" CEILING AREAS. SHADED= ON ALT. POWER SOURCE (EMERG,UPS,ETC.)
PB	PULL BOX, MIN. SIZE PER NEC., UON.
	FLEXIBLE CONDUIT CONNECTION
	POWER CONNECTION TO DIV 15 FIRE/SMOKE DAMPER. REFER TO FSD CONNECTION DETAIL IF NOT SHOWN
	LOW VOLTAGE SYSTEM GROUND CONNECTION
	GROUND ROD CONNECTION
	GROUND ROD CONNECTION WITH TEST WELL BOX
	LIGHTNING SYSTEM AIR TERMINAL

FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL AND ASSOCIATED COMPONENTS. PROVIDE 120V POWER AS REQUIRED OR AS INDICATED.
ANN	ANNUNCIATOR
	SMOKE DETECTOR
A	ABOVE CELING HEAT DETECTOR
F	FIRE ALARM SYSTEM MANUAL PULL STATION,
F	STROBE
F	WALL MOUNTED HORN/STROBE
F WP	HORN WEATHERPROOF

APPLICABLE CODES

1. 2016 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR)
2. 2016 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 & 2 (PART 2, TITLE 24, CCR)
3. 2016 CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24, CCR)
4. 2016 CALIFORNIA MECHANICAL CODE (PART 4, TITLE 24, CCR)
5. 2016 CALIFORNIA PLUMBING CODE (PART 5, TITLE 24, CCR)
6. 2016 CALIFORNIA ENERGY CODE (PART 6, TITLE 24, CCR)
7. 2016 CALIFORNIA FIRE CODE (PART 9, TITLE 24, CCR)
8. 2016 CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24, CCR)
9. NFPA 13, 2016 EDITION, THE INSTALLATION OF AUTOMATIC SPRINKLER SYSTEMS, AS AMENDED
10. NFPA 14, 2016 EDITION, THE INSTALLATION OF STANDPIPE, PRIVATE HYDRANT AND HOSE SYSTEMS
11. NFPA 24, 2016 EDITION, THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES
12. NFPA 72, 2016 EDITION, NATIONAL FIRE ALARM CODE, AS AMENDED
13. 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN.

FIRE ALARM SCOPE OF WORK

THE INTENT OF THIS PROJECT IS TO PROVIDE A COMPLETE FIRE ALARM SYSTEM FOR THE INNOVATION HUB ALTERATION BUILDING.

FIRE ALARM SYSTEM GENERAL NOTE

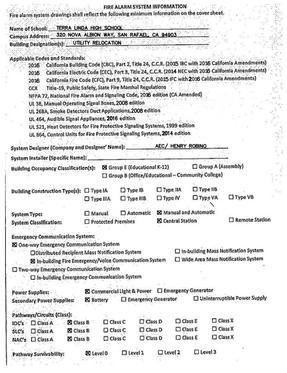
THE FIRE DETECTION AND ALARM SYSTEM, UPON ACTIVATION OF AN INITIATING DEVICE, SHALL ALERT ALL OCCUPANTS AND SHALL TRANSMIT THE ALARM SIGNAL TO AN APPROVED SUPERVISING CENTRAL MONITORING STATION.

NFPA 72 REQUIREMENTS

1. POWER SERVICE SHALL BE ON A DEDICATED BRANCH CIRCUIT WITH A RED MARKING AND IDENTFIED PER (NFPA 72 SEC. 10.6.5.2.2)
2. PROVIDE TEMPORAL- THREE DISTINCTIVE FIRE ALARM SOUND, (CFC SEC. 907.5.2.1.3, NFPA 72 SEC. 18.4.2.1).
3. AUDIBLE FIRE ALARM SOUND LEVEL SHALL BE AT LEAST 15 DBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPINABLE AREAS, (NFPA 72 SEC. 18.4.3.1). (IE. CLASSROOM AVERAGE AMBIENT ROOM NOISE IS 45 DBA PLUS 15 DBA EQUALS = 60 DBA MINIMUM ALARM TONE REQUIRED)
4. STROBES SHALL FLASH AT A RATE OF NOT EXCEEDING TWO FLASHES PER SECOND NOR BELESS THAN ONE FLASH EVERY SECOND, (2013 NFPA 72 SEC. 18.5.3.1).
5. FINAL FIRE ALARM TEST SHALL BE MADE WITH THE DSA INSPECTOR OF RECORD (IOR). LOCAL FIRE AUTHORITY SHALL BE NOTIFIED OF THE DATE AND TIME OF FINAL FIRE ALARM TESTING AND SHALL ASSIST/WITNESS SUCH TESTING WHEN ABLE.
6. FIRE ALARM CONTRACTOR SHALL PROVIDE A "RECORD OF COMPLETION" TO THE INSPECTOR OF RECORD (IOR)/DSA AFTER COMPLETION OF OPERATIONAL ACCEPTANCE TESTS, (2013 NFPA 72 SEC. 7.8.2 AND FIGURE 7.8.2).

ABBREVIATIONS

(E)	EXISTING TO REMAIN
(F)	FUTURE
(R)	EXISTING TO BE REMOVED
(RL)	EXISTING TO BE RELOCATED
AB	ABOVE COUNTER BACKSPLASH
ACU	AIR CONDITIONING UNIT
AC	ALTERNATING CURRENT
A, AMP	AMPERES
AF	AMPERE (RATED) FUSE OR CB FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM (ALLOY)
ALC	AUTOMATIC LIGHTING CONTROL
AS	AMPERE (RATED) SWITCH
AT	CIRCUIT BRKR TRIP SETTING (AMPS)
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
B	BELL (FIRE ALARM)
BAT	BATTERY
BG	BELOW GRADE
C	CONDUIT (CIRCULAR RACEWAY)
CAB	CABINET
CKT	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY
CU	COPPER
DC	DIRECT CURRENT
DIV	DIVISION
DPST	DOUBLE POLE SINGLE THROW
DWG	DRAWING
ENCL	ENCLOSURE
EO	ELECTRICALLY OPERATED
EOL	END OF LINE
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FSD	FIRE/SMOKE DAMPER
GND	GROUND
K	KEY OPERATED
MAX	MAXIMUM
MIN	MINIMUM
MTD	MOUNTED
MTR	MOTOR
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NO	NORMALLY OPEN
NTS	NOT TO SCALE
NP	NAMEPLATE
OC	ON CENTER
PNL	PANEL
+,POS	POSITIVE
REQD	REQUIRED
RNC	RIGID NON-METALLIC CONDUIT (PVC)
RSE	REMOTE SIGNAL EXPANDER
RST	REMOTE STATION TRANSMITTER
S.A.D.	SEE ARCHITECTURAL DRAWINGS
TYP	TYPICAL
UL	UNDERWRITERS LAB
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY


FIRE ALARM SYSTEM INFORMATION

Fire alarm system drawings shall reflect the following minimum information on the cover sheet.

Name of School: TERRA LINDA HIGH SCHOOL

Campus Address: 320 NOVA ALBON WAY, SAN RAFAEL, CA 94903

Building Designation(s): UTILITY RELOCATION

Applicable Codes and Standards:
- 2016 California Building Code (CBC), Part 2, Title 24, C.C.R. (2015 IBC with 2016 California Amendments)
- 2016 California Electric Code (CEC), Part 3, Title 24, C.C.R. (2014 NEC with 2016 California Amendments)
- 2016 California Fire Code (CFC), Part 9, Title 24, C.C.R. (2015 IFC with 2016 California Amendments)
- CCR Title 19, Public Safety, State Fire Marshal Regulations
- NFPA 72, National Fire Alarm and Signaling Code, 2016 edition (CA Amended)
- UL 38, Manual Operating Signal Boxes, 2008 edition
- UL 268A, Smoke Detectors Duct Applications, 2008 edition
- UL 464, Audible Signal Appliances, 2016 edition
- UL 513, Heat Detectors for Fire Protective Signaling Systems, 1999 edition
- UL 864, Control Units for Fire Protective Signaling Systems, 2014 edition

System Designer (Company and Designer' Name): AEC/ HENRY ROBINO

System Installer (Specific Name):

Building Occupancy Classification(s): ☒ Group E (Educational K-12) ☐ Group A (Assembly) ☐ Group B (Office/Educational – Community College)

Building Construction Type(s): ☐ Type IA ☐ Type IB ☐ Type IIA ☐ Type IIB ☐ Type III ☐ Type IIIA ☐ Type IIIB ☐ Type IV ☐ Type IVA ☐ Type VA ☐ Type VB

System Type: ☐ Manual ☒ Automatic ☒ Manual and Automatic

System Classification: ☐ Protected Premises ☒ Central Station ☐ Remote Station

Emergency Communication Systems:
- ☒ One-way Emergency Communication System
  - ☒ Distributed Recipient Mass Notification System
  - ☒ In-building Fire Emergency/Voice Communication System
  - ☐ In-building Mass Notification System
  - ☐ Wide Area Mass Notification System
- ☐ Two-way Emergency Communication System
  - ☐ In-building Emergency Communication System

Power Supplies: ☒ Commercial Light & Power ☐ Emergency Generator

Secondary Power Supplies: ☒ Battery ☐ Emergency Generator ☐ Uninterruptible Power Supply

Pathways/Circuits (Class):

IDC's	☐ Class A	☒ Class B	☐ Class C	☐ Class D	☐ Class E	☐ Class X	
SLC's	☐ Class A	☒ Class B	☐ Class C	☐ Class D	☐ Class E	☐ Class X	
NAC's	☐ Class A	☒ Class B	☐ Class C	☐ Class D	☐ Class E	☐ Class X	

Pathway Survivability: ☒ Level 0 ☐ Level 1 ☐ Level 2 ☐ Level 3

FIRE ALARM DRAWING LIST

FIRE ALARM SYSTEM NOTES

1. ALL WIRING SHALL BE IN CONDUIT, U.O.N. MINIMUM CONDUIT SIZE SHALL BE 3/4"C.
2. PROVIDE AND INSTALL ALL CONDUIT, BOXES, CONDUCTORS, POWER SUPPLY, RELAYS, ZONE MODULES, CARDS, SWITCHES ETC. FOR A COMPLETE AND OPERABLE FIRE ALARM SYSTEM.
3. ALL REQUIREMENT OF CONTRACT SPECIFICATIONS AND DRAWING APPLY.
4. INSTALLATION SHALL CONFORM TO REQUIREMENTS OF APPLICABLE ELECTRICAL CODES.
5. TEE-TAP INSIDE BUILDING IN JUNCTION BOX. USE TERMINAL BLOCKS.
6. FIRE ALARM FIELD WIRING SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
7. 120VAC 60Hz INPUT POWER FOR FIRE ALARM CONTROLS SHALL BE A DEDICATED, LOCKING BREAKER PROPERLY LABELED "SOURCE FROM LINE OF MAIN DISCONNECT" OR "EMERGENCY POWER".
8. ALL WIRING INCLUDING SHIELDS MUST BE DRY AND FREE OF SHORTS AND GROUNDS.
9. 120VAC IS NOT PERMITTED IN SAME CONDUIT WITH LOW VOLTAGE WIRING.
10. DO NOT APPLY POWER EXCEPT IN THE PRESENCE OF A FACTORY-TRAINED FIRE ALARM TECHNICAL REPRESENTATIVE.
11. THERE WILL BE NO CONDUIT ENTRY ALLOWED 18" OR LOWER ON THE SIDE PANELS OR THROUGH THE BOTTOM OF ALL CONTROL EQUIPMENT BACKBOXES.
12. ALL VISUAL ALARM IN EVERY ROOMS OR EXTERIOR WHERE OCCUR SHALL BE SYNCHRONIZED.
13. VISUAL DEVICE SHOULD NOT EXCEED 2 FLASHES PER SECOND AND SHOULD NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE THAT MEETS NFPA STROBE INTENSITY REQUIREMENTS WHICH VARIES WITH VIEWING CONDITIONS AND ROOM SIZES.
14. UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATER-TIGHT FITTINGS AND WIRES TO BE APPROVED FOR WET LOCATIONS.
15. AUDIBLE DEVICE(S) TO BE AT LEAST 15dBA ABOVE THE EQUIVALENT SOUND LEVEL BUT NOT LESS THAN 75dBA AT 10' OR MORE THAN 110dBA AT THE MINIMUM HEARING DISTANCE.
16. AUDIBLE DEVICE SHALL SOUND THE CALIFORNIA UNIFORM FIRE ALARM SIGNAL.
17. FINAL FIRE ALARM TEST SHALL BE MADE WITH THE DSA INSPECTOR OF RECORD (IOR). LOCAL FIRE AUTHORITY SHALL BE NOTIFIED OF DATA AND TIME OF FINAL FIRE ALARM TESTING AND SHALL ASSIST/WITNESS SUCH TESTING WHEN ABLE.
18. FIRE ALARM CONTRACTOR SHALL PROVIDE A COMPLETED AND SIGNED" CERTIFICATE OF COMPLETION" AFTER COMPLETION OF OPERATIONAL ACCEPTANCE TESTS. (NFPA 72 SEC. 7.8.2 & 14.6.1).
19. PROVIDE TEMPORAL THREE DISTINCTIVE FIRE ALARM SOUND (CFC SEC. 907.5.2.1.3 NFPA 72 SEC. 18.4.2.1)
20. POWER SERVICE SHALL BE ON A DEDICATED BRANCH CIRCUIT WITH RED MARKING AND IDENTIFIED PER NFPA SEC 10.6.5.2.2 .
21. WIRING AND MATERIALS SHALL BE PER CEC/NEC ART. 760.
22. A DOCUMENTATION CABINET SHALL BE INSTALLED PROXIMAL TO THE FACU. (NFPA 72, 7.7.2.1)
23. ALL RECORD DOCUMENTATION SHALL BE STORED IN THE DOCUMENT CABINET. (NFPA 72, 7.7.2.2)
24. THE DOCUMENT CABINET SHALL BE PROMINENTLY LABELED SYSTEM RECORD DOCUMENT (NFPA 72, 7.7.2.4.)

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310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS
Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903
(415) 492-3105

Date	Issued For
06/08/18	DSA Sumittal

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10
Santa Clara, CA 95054
phone (408) 970-9888
fax (408) 970-9316
www.aec-engineers.com
PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP#: 01-117586
AC___FLS___SS___
DATE_____

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA
(415) 981-2345
WWW.HED.DESIGN

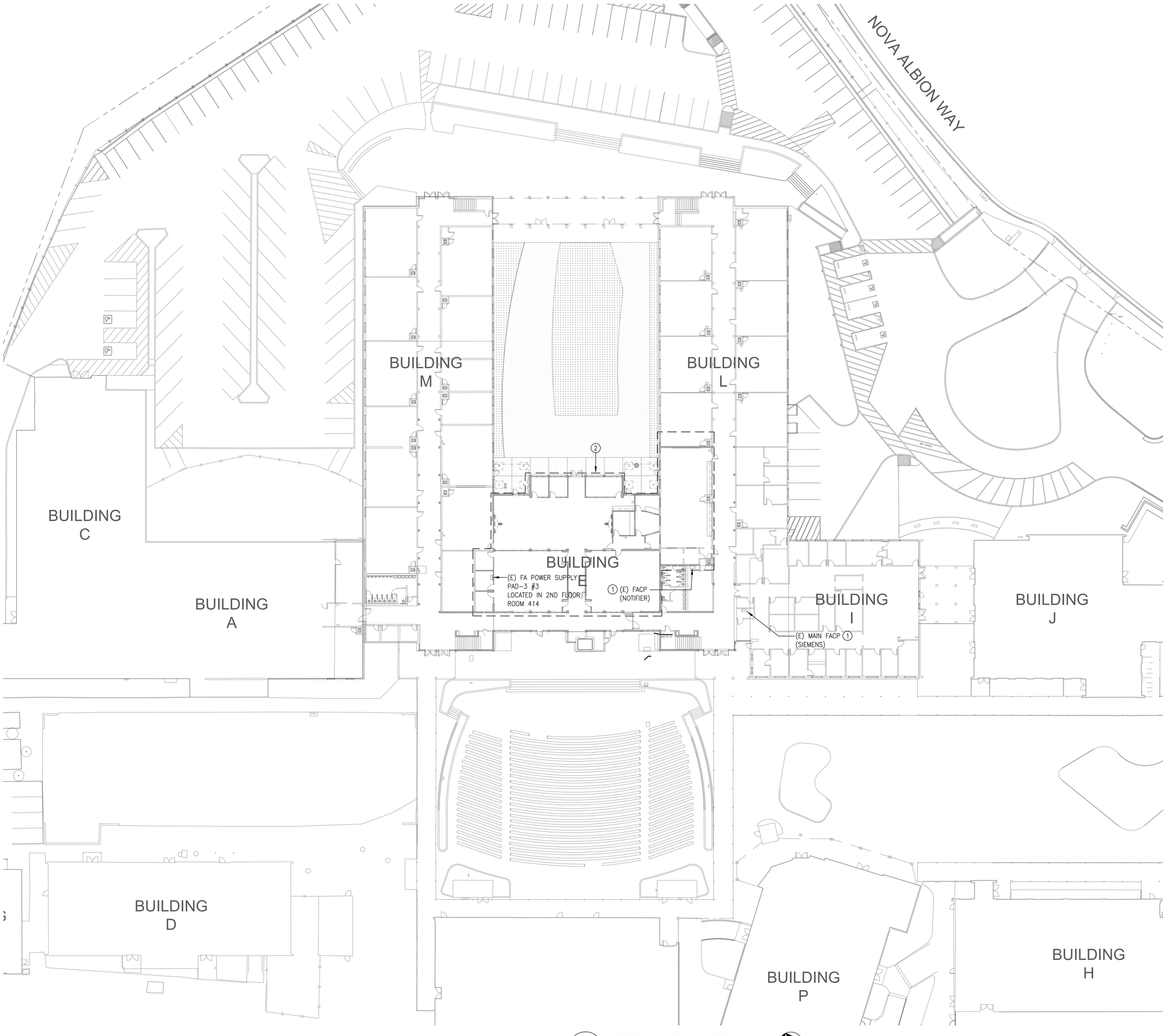
2017-03489-000

FIRE ALARM
COVER SHEET

FA0.1

SHEET NOTES:

1. (E) FACP TO REMAIN. REPROGRAM AS REQUIRED DURING CONSTRUCTION AND AFTER COMPLETION OF WORK IN THE INNOVATION HUB.
2. SEE FA2.1 FOR MORE INFORMATION.



1 / FA1.1 FIRE ALARM SITE PLAN

0 5 10 20 40 60
GRAPHIC SCALE IN FEET

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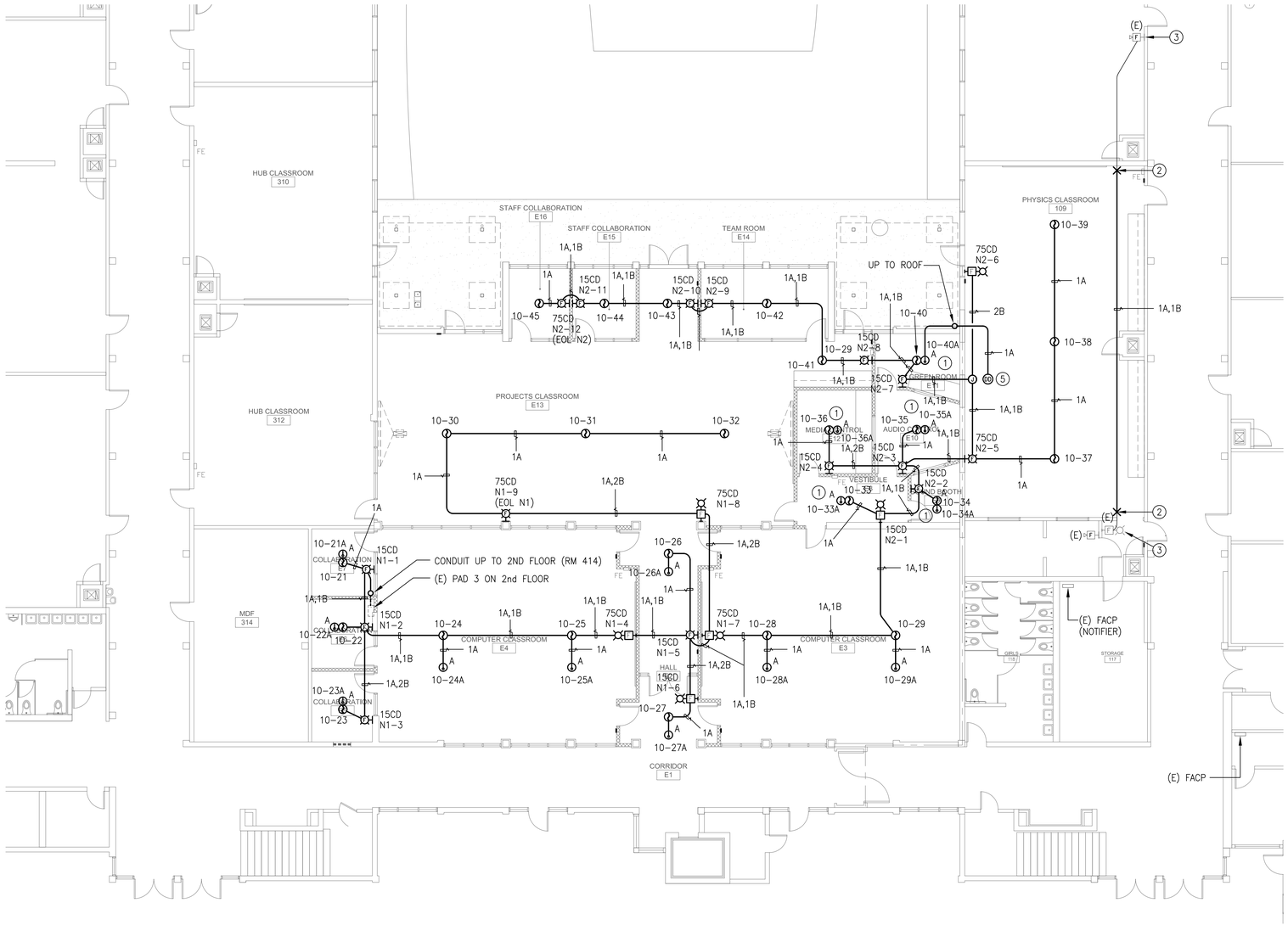
FIRE ALARM
SITE PLAN

FA1.1

SHEET NOTES:

1. PROVIDE ACCESS PANEL FOR INSTALLATION/MAINTENANCE PURPOSES. COORDINATE WITH THE ARCHITECT.
2. CONNECT (N) AND (E) CONDUIT.
3. TERMINATE (N) WIRES AS SHOWN IN (E) FA DEVICE.
4. REINSTALL (19) SMOKE DETECTORS, (9) HORN/STROBE AND (2) STROBES THAT HAVE BEEN REMOVED AS SHOWN ON THE DEMOLITION PLAN E2.0. SET CANDELA AS SHOWN ON THIS PLAN.
5. COORDINATE WITH MECHANICAL FOR EXACT LOCATION.
6. ALL HEAT DETECTORS ABOVE CEILING ARE WITH MONITOR MODULES. SEE RISER DIAGRAM ON SHEET FA3.1.



1 FA2.1 FIRE ALARM PLAN 4 6

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

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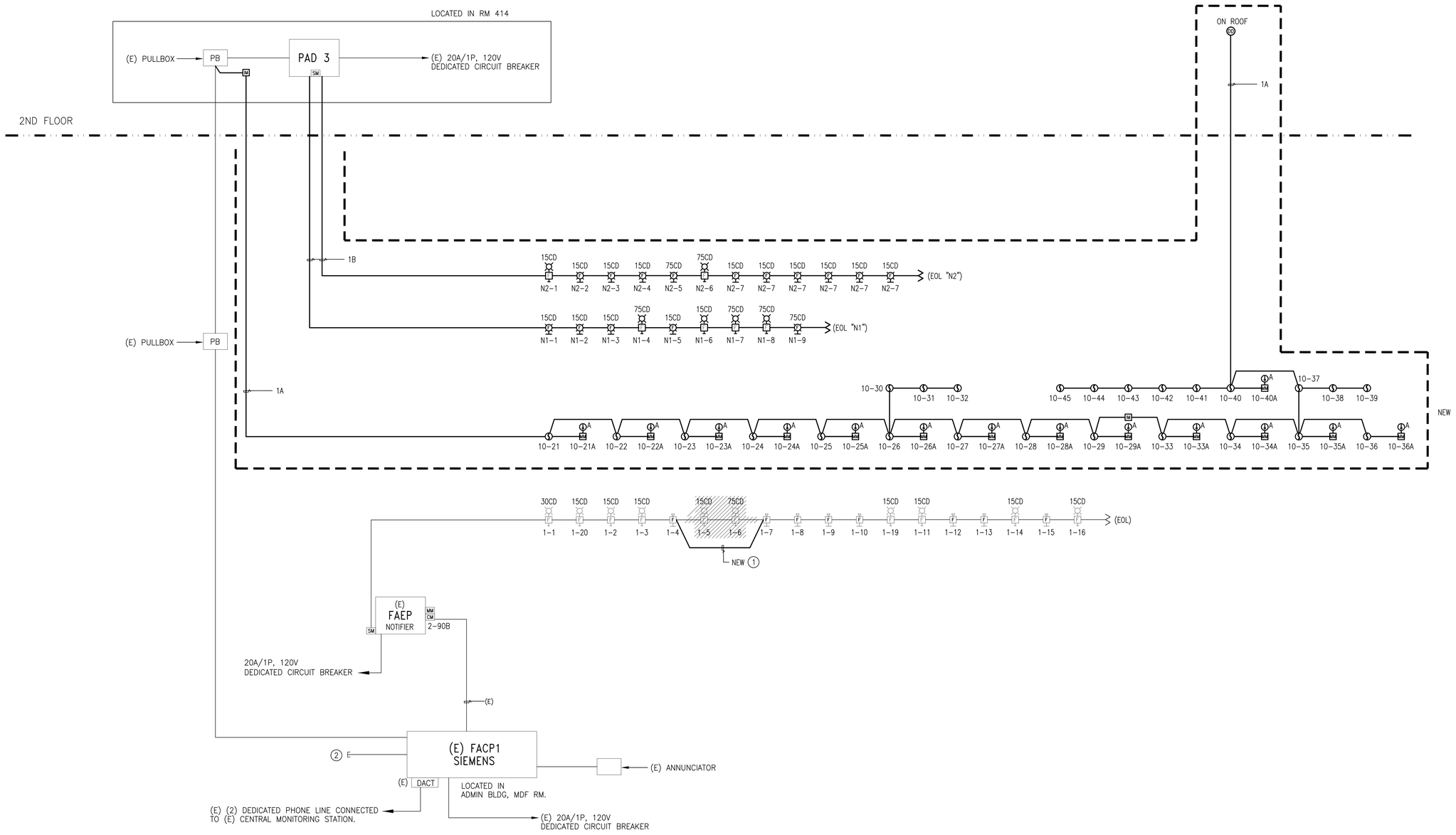
FIRE ALARM PLAN

FA2.1



2 / FA2.1 FIRE ALARM RISER DIAGRAM ③④

NTS

FIRE ALARM WIRING LEGEND

SYMBOL	WIRE TYPE	USED ON
A	2-CONDUCTOR, #16 AWG SOLID BARE COPPER UNSHIELDED (990)	ADDRESSABLE ALARM INITIATING DEVICES: – SMOKE & HEAT DETECTORS – INTERFACE MODULES – PULL STATION
B	2-CONDUCTOR, #14 AWG FPL STRANDED (BLACK/RED) (994S)	AUDIO/VISUAL FROM RSB OR FACP INDICATING DEVICES: – (SYNC HORN/STROBE CIRCUITS)
	2-CONDUCTOR, #12 AWG THHN SOLID (GROUNDED WIRE)	120 VAC POWER WIRING TO: – F.A. CONTROL PANEL – POWER SUPPLY PANEL

FIRE ALARM EQUIPMENT LIST

	MANUFACTURER	MODEL	DESCRIPTION	CSFM NUMBER
FACP	SIEMENS	XLS	(E) FIRE ALARM CONTROL PANEL	7165-0067:0222
PAD-3	SIEMENS	PAD-3	(E) AUXILIARY POWER SUPPLY & NAC EXTENDER	7315-0067:0268
⑦	SIEMENS SIEMENS	HFP-11 DB-11	INTELLIGENT THERMAL DETECTOR DETECTOR MOUNTING BASE	7272-0067:0203 7300-0067:0134
00	SIEMENS	AD-HR	AIR DUCT DETECTOR WITH RELAY/SAMPLING TUBE	3240-0067:0230
④	SIEMENS SIEMENS	HFPT-11 DB-11	INTELLIGENT THERMAL DETECTOR DETECTOR RELAY BASE FOR HFP-11	
MM	SIEMENS	HTRI-S	MONITOR MODULE	7300-0067:0242
IM	SIEMENS	HLIM	ISOLATOR MODULE	7300-0067:0242
15	SIEMENS	ZR-MC-R	24V STROBE (RED) SET AT 15CD	7125-0067:0252
75	SIEMENS	ZR-MC-R	24V STROBE (RED) SET AT 75CD	7125-0067:0252
15	SIEMENS	ZH-MC-R	24V STROBE (RED) SET AT 15CD	7125-0067:0254
75	SIEMENS	ZH-MC-R	24V STROBE (RED) SET AT 75CD	7125-0067:0254
	West Penn	D990	Cable, 2 #16 Awg Twisted Pair Type CMR Solid	7161-0859:0101
	West Penn	D994S	Cable, 2 #14 Awg Twisted Pair	7161-0859:0101
	West Penn	998S	Cable, 2 #12 Awg Twisted Pair	7161-0859:0101

SHEET NOTES:

1. SEE FA2.1 FOR MORE INFORMATION.
2. SEE NOTE ④ ON SHEEET FA2.1 FOR MORE INFORMATION.
3. (E) FIRE ALARM SYSTEM INFORMATION OBTAINED FROM MODERNIZATION PROJECTS WITH DSA APP #01-106489, 01-104196.
4. THIS WORK IN THE INNOVATION HUB IS ONLY ALTERATION AND DOES NOT INCLUDE ALTERATION OR REPLACEMENT OF THE ENTIRE FIRE ALARM SYSTEM. THEREFORE, EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS IS NOT REQUIRED PER DSA IR F-1.

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PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. NGAI
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

FILE#: 21-H1 PTN#: 65466-28

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2017-03489-000

FIRE ALARM RISER DIAGRAM, LEGEND AND EQUIPMENT LIST

FA3.1

XLS BATTERY CALCULATION

SUPERVISORY CURRENT

DESCRIPTION	QTY	MODULE CURRENT	EOL CURRENT	DEVICE CURRENT	TOTAL ROW CURRENT
CRC-6 CONTROLLABLE RELAY CARD	1	0.051			0.051
20.5mA per Active Relay	3			0.123	0.369
DLC DEVICE LOOP CARD	2	0.145			0.29
1.8mA per Device (252 Devices per DLC)	2			0.454	0.906
NIC-C NETWORK INTERFACE CARD	1	0.12			0.12
PMI PERSON MACHINE INTERFACE	1	0.23			0.23
PSC-12 PWR SUPPLY CHARGER MODULE	1	0.15			0.15
20mA per Active Relays	2			0.04	0.08
SSD/SSD-C SYSTEM STATUS DISPLAY	1	0.2			0.2
ZIC-4A ZONE INDICATING CARD	2	0.09			0.18
# NAC Circuits	8		0.004		0.032
TOTAL CURRENT					2.61

ALARM CURRENT

XLS NOTIFICATION CIRCUITS			TOTAL CKT CURRENT LOAD
PSC-12	2.038	CIRCUIT V1	0.542
		CIRCUIT V2	0.496
		PAD 3 ACTIVATION	0.5
		HORN SILENCE	0.5
TOTAL ALARM CURRENT (AMPS)			2.038

SUMMARY

A = TOTAL SUPERVISORY CURRENT
x SUPERVISORY TIME REQUIRED
2.61 AMPS x 24 HR
= 62.64 (AMP/HR)

B = TOTAL ALARM CURRENT
x ALARM TIME REQUIRED
2.038 AMPS x .083 HR
= 8.169 (AMP/HR)

C = A + B
= 62.809 (AMP/HR)

SUPERVISORY TIME REQUIRED------24 HR
ALARM TIME REQUIRED------5 MINS. or .083 HR

BATTERY PROVIDED..... UB12900 (2)
BATTERY SIZE..... 90 (AMP/HR)

TOTAL SYSTEM REQUIRED (A/H)
= 62.809 AMP/HOUR
BATTERY RESERVE AFTER
24 HOURS SUPERVISORY
& 5 MINUTES ALARM (AMP/HOUR)

= 27.191 AMP/HOUR

(E) BATTERY = (2) 90AH

NOTE:

THIS BATTERY CALCULATION INFORMATION OBTAINED FROM DSA APP #01-106489. THERE ARE 2 SLC DEVICE LOOP CARDS THAT ARE MAXIMIZED CURRENT VALUES (0.145A EACH CARD) IN THIS CALCULATION. THEREFORE, THE ADDED SMOKE, HEAT DETECTORS, MONITOR MODULES ARE ALREADY CONSIDERED IN THE MAXIMIZED CURRENT VALUE AS SHOWN.

(E) PAD-3 Battery Calculation Work Sheet

						Standby Current (A)		Alarm Current (A)	
FARP Distributed						0.035	A	0.140	A
DIP Switch SW 1-4 off									
DIP Switch SW 1-4 off									
Auxiliary Devices									
Catalog Number	**Qty**								
		x	Standby		A	0.000	A		
Door Holders									
Catalog Number	**Qty**								
		x	Standby		A	0.000	A		
Notification Appliances									
Catalog Number	**Qty**								
ZR-MC-R-15cd Strobe	13	x	Alarm	0.064	A			0.832	A
ZR-MC-R-30cd Strobe	0	x	Alarm	0.098	A			0.000	A
ZR-MC-R-75cd Strobe	2	x	Alarm	0.175	A			0.350	A
ZR-MC-R-110cd Strobe	0	x	Alarm	0.233	A			0.000	A
SET-MC-R-15cd Horn/Strobe	2	x	Alarm	0.078	A			0.156	A
SET-MC-R-30cd Horn/Strobe	0	x	Alarm	0.113	A			0.000	A
SET-MC-R-75cd Horn/Strobe	4	x	Alarm	0.095	A			0.380	A
SET-MC-R-110cd Horn/Strobe	0	x	Alarm	0.259	A			0.000	A
Total Standby Current						**0.0350**	**A**		
Total Alarm Current								**1.858**	**A**
Hours of Standby required by NFPA 72 Standards, (4,24 or 60)				**X**	**24**	HOURS			
Total A.H required for standby:								**0.84**	**AH**
15 Minute of Alarm operation per NFPA 72 Standards				**X**	15min.	(0.25 Hours)			
Total A.H required for Alarm:								**0.46**	**AH**
Add total standby current and alarm current:								1.30	**AH**
De-rating factor (20% extra insurance to meet desired performance							**X**	1.20%	
Total A.H required for battery back-up								**1.57**	**AH**

Notes:
1 The alarm current must never exceed 6.14 Amps
2 Supplied Battery Set 7.0amp

SLC DEVICE LABEL (MODULE)

10 - 20
10 = SIGNALING LINE CIRCUIT (LOOP) NUMBER
20 = DEVICE NUMBER

SLC DEVICE LABEL (DETECTOR)

10 - 20
10 = SIGNALING LINE CIRCUIT (LOOP) NUMBER
20 = DEVICE NUMBER

NAC DEVICE LABEL

N1 - 1
N1 = NOTIFICATION APPLIANCE CIRCUIT NUMBER
1 = DEVICE NUMBER

CABLE DESIGNATIONS

1 A
1 = CABLE QTY
A = CABLE TYPE

VOLTAGE DROP (VD) CALCULATION

PROJ. NAME------- TERRA LINDA HS
SIG CKT #-------- N1

DEVICE #	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
GAUGE WIRE	14	14	14	14	14	14	14	14	14
DISTANCE (FT)	30	15	20	65	15	15	20	25	35
AMPS @ DEVICE	0.064	0.064	0.064	0.195	0.064	0.078	0.195	0.195	0.175
AMPS DEVELOPED	1.094	1.03	0.966	0.902	0.707	0.643	0.565	0.370	0.175
VOLT. DROP	0.20151	0.09486	0.11862	0.35999	0.06511	0.05922	0.06938	0.05680	0.03761

TOTAL CKT V.D.= 1.06311
CKT VOLTAGE= 20.4
VOLT. @ LAST DEVICE 19.33689
% VOLTAGE DROP= 5.21133

VOLTAGE DROP (VD) CALCULATION

PROJ. NAME------- TERRA LINDA HS
SIG CKT #-------- N2

DEVICE #	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
GAUGE WIRE	12	12	12	12	12	12	12	12	12	12	12	12
DISTANCE (FT)	155	15	10	20	30	35	35	15	40	5	25	5
AMPS @ DEVICE	0.078	0.064	0.064	0.064	0.175	0.195	0.064	0.064	0.064	0.064	0.064	0.064
AMPS DEVELOPED	1.024	0.946	0.882	0.818	0.754	0.579	0.384	0.32	0.256	0.192	0.128	0.064
VOLT. DROP	0.61266	0.05477	0.03405	0.06315	0.08731	0.07822	0.05188	0.01853	0.03953	0.00371	0.01235	0.00124

TOTAL CKT V.D.= 1.04010
CKT VOLTAGE= 20.4
VOLT. @ LAST DEVICE 19.35990
% VOLTAGE DROP= 5.09851

FA SYSTEM OPERATIONAL MATRIX

	FACP ALARM	ANNUNCIATE ALARM	ACTIVATE AUDIO/VISUAL THROUGHOUT TH BLDG	ANNUNCIATE ALARM, TROUBLE AND SUPERVISORY TO REMOTE CENTRAL STATION	CLOSE ASSOCIATED FIRE SMOKE DAMPER	DOOR HOLDER RELEASE
MANUAL PULL STATION	X			X		
AREA SMOKE DETECTOR	X			X		
FSD SMOKE DETECTOR	X			X		
AREA HEAT DETECTOR			X			
FLOW AND TAMPER	X			X		

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FIRE ALARM VOLTAGE DROP AND BATTERY CALCULATION,

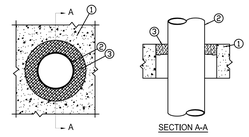
FA4.1

THROUGH–PENETRATION FIRESTOP SYSTEM DETAILS

(Formerly System No. 202)

F RATING - 3 HOUR

T RATING - 0 HOUR



1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX THROUGH OPENING SIZE IS 12.4 SQ. IN.

   SEE CONCRETE BLOCKS (CAZT) CATEGORY IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. PIPE OR CONDUIT - NOM. 10 IN. DIA. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIA. (OR SMALLER) RIGID STEEL CONDUIT, NOM 4 IN. DIA. (OR SMALLER) STEEL EMT OR NOM 3 IN. DIA. (OR SMALLER), TYPE L (OR HEAVIER) COPPER PIPE. MAX ONE PIPE OR CONDUIT PER THROUGH OPENING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF OPENING IS 3/4 IN. MIN ANULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF OPENING IS 0 IN. (POINT CONTACT). PIIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

3. FILL VOID OR CAVITY MATERIALS - PUTTY-MOLDABLE PUTTY MATERIAL KNEEDED BY HAND AND APPLIED TO FILL ANNULAR SPACE TO A MIN DEPTH OF 1 IN FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL.

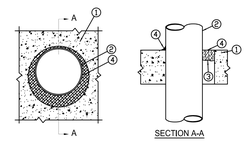
   MINNESOTA MINING & MFG. CO.- MPS-2+.
   BEARING THE UL CLASSIFICATION MARKING.

SYSTEM NO. CAJ1044
(Formerly System No. 319)

T RATING - 0 HR

L RATING AT AMBIENT - 2 CFM/SQ FT (SEE ITEM 4)

L RATING AT 400 F - LESS THAN 1 CFM/SQ FT (SEE ITEM 4)



1. FLOOR WALL ASSEMBLY-LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. EXCEPT AS NOTED IN TABLE UNDER ITEM 4, MIN THICKNESS OF SOLID CONCRETE FLOOR OR WALL ASSEMBLY IS 4-1/2 IN. FLOOR MAY ALSO BE CONSTRUCTED OF ANY MIN 6 IN. THICK UL CLASSIFIED HOLLOW-CORE. PRECOAT CONCRETE UNITS. WHEN FLOOR IS CONSTRUCTED OF HOLLOW-CORE PRECOAT CONCETE UNITS, PACKING MATERIALS (ITEM 3) AND CAULK FILL MATERIAL (ITEM 4) TO BE INSTALLED SYMETRYCALLY ON BOTH SIDES OF THE FLOOR, FLUSH WITH FLOOR SURFACE. WALL ASSEMBLY MAY ALSO BE CONSTRUCTED OF CLASSIFIED CONCRETE BLOCKS. MAX DIA. OF OPENING IS 32 IN.
   SEE CONCTRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (CFTV) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURER

   1A. STEEL SLEVE - (OPTIONAL NOT SHOWN) NOM 16 IN. (OR SMALLER) SCHEDULE 10 (ORHEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY. SLEEVE MAY EXTEND A MAX OF 2 IN. ABOVE TOP FLOOR OR BEYOND EITHER SURFACE OF WALL.

2. PIPE OR CONDUIT - NOM 30 IN.DIA. (OR SMALLER) CAST IRON OR SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIA. (OR SMALLER) STEEL CONDUIT, NOM 3 IN. DIA. (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE OR NOM 4 IN. DIA. (OR SMALLER) STEEL ELECTRICAL METALIC TUBING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING NOT TO EXCEED 2 IM. MIN ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING IS 0 IN. (POINT CONTACT). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDE OF FLOOR OR WALL ASSEMBLY.

3. PACKING MATERIAL - POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF THIGHTLY-PACKRD MINERAL WOOL BATT OR GLASS FIBER INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OF FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4).

4. FILL, VOID OR CAVITY MATERIAL - CAULK - APPLIED TO FILL THE ANNULAR SPACE FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED CAULK THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL, FLUSH WITH WALL SURFACE. THE HOURLY F RATING AND THE MIN REQUIRED CAULK THICKNESS ARE DEPENDENT UPON A NUMBER OF PARAMETERS, AS SHOWN ON THE FOLLOWING TABLE.

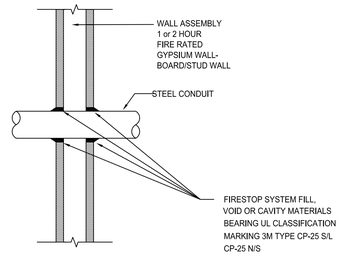
MIN FLOOR OR WALL THKNS, IN	NOM PIPE TUBE OR CONDUIT DIA. IN.	MAX ANNULAR SPACE, IN	MAX CAULK THKNS, IN	F RATING, HR
2-1/2	1/2-12	1-3/8	1/2	2
2-1/2	1/2-12	2-7/8	1	2
4-1/2	1/2-6	1-3/8	1/4(a)	2
4-1/2	1/2-12	1-1/4	1/2	3
4-1/2	1/2-20	2	1	3
4-1/2	22-30	2	2	3
5-1/2	1/2-6	1-3/8	1(b)	4

(a) MIN 2 IN THICKNESS OF MINERAL-WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE.
(b) MIN 1 IN. THICKNESS OF MINERAL-WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. MIN 1IN. THICKNESS OF CAULK TO BE INSTALLED FLUSH WITH EACH SURFACE FLOOR OR WALL ASSEMBLY.

MINNESOTA MINING & MANUKACTURING CO - TYPES CP-25 WB, CP-25 WB+.
(NOTE: L RATING AND OR USE OF OPTIONAL SLEEVE APPLY ONLY WHEN TYPE CP-25WB+ CAULK IS USED).

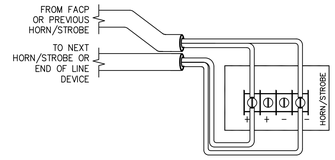
SYSTEM NO. WL1001
(Formerly System No. 147)

F RATING - 1 & 2 HOUR
T RATING - 0, 1, 1-1/2 & 2 HOUR



1. SEAL ALL PENETRATIONS IN ACCORDANCE WITH APPLICABLE CODES TO PRESERVE ORIGINAL FIRE HOUR RESISTANCE OF WALLS, FLOORS OR CEILINGS. USE UL DIRECTOY ASSEMBLY NOS. 49 & 328, AS APPLICABLE FOR ALL FIRE WALL PENETRATIONS.

2. AT FIRE SEPARATION WALLS, WRAP CONDUIT WITH 3M CONDUIT WRAP FS-195 TO WITHIN 1/4" OF OPENING; FILL THE GAP AND COVER EDGE OF WRAP WITH 3M-CP25 CAULK AND/OR #303 PUTTY.

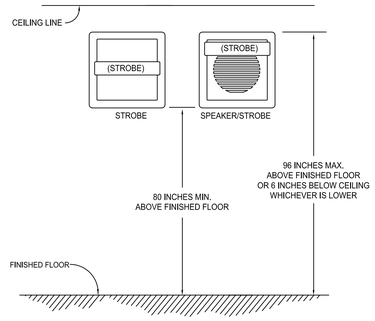


HORN/STROBE CIRCUIT, 24VDC

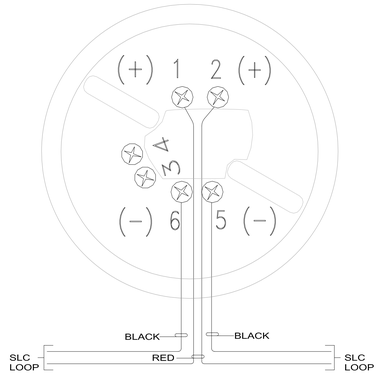
NOTE:

1. STROBE CIRCUIT COMING FROM THE NAC USE: 24K, END OF LINE DEVICE.

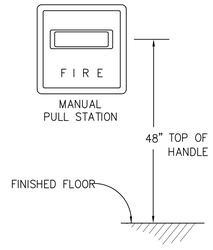
HORN/STROBE, STROBE & HORN DETAILS



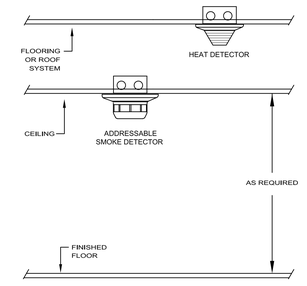
TYPICAL MOUNTING ELEVATION DETAIL OF STROBE & HORN/STROBE



DETECTOR BASE



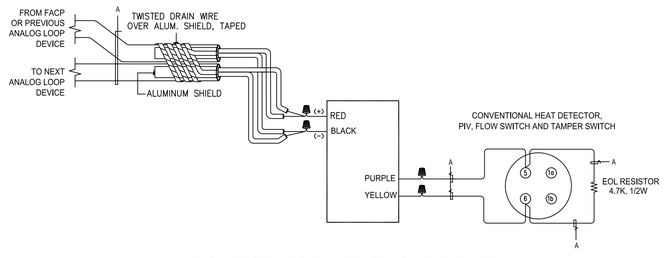
MANUAL PULL STATION ELEVATION



DETECTORS MOUNTING DETAIL

SCALE: N.T.S.

MONITOR MODULE FOR HEAT DETECTOR



MONITOR MODULE, SINGLE INPUT

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FIRE ALARM DETAILS

FA5.1