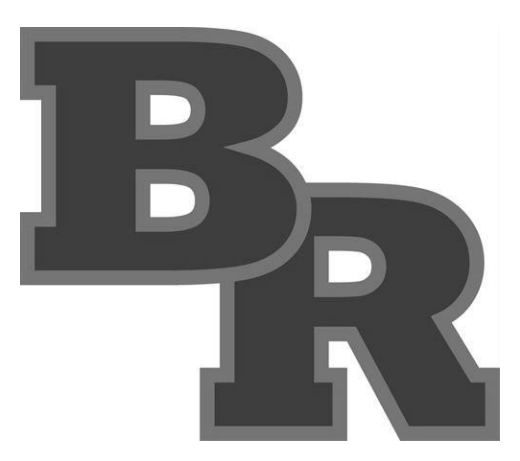


NEVADA JOINT UNION HIGH SCHOOL DISTRICT HVAC SYSTEM IMPROVEMENTS BUILDING "A" FOR BEAR RIVER HIGH SCHOOL



PROJECT INFORMATION

SCOPE: REPLACEMENT OF EXISTING HVAC SYSTEM WITHIN BUILDING "A"
SITE: BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD
GRASS VALLEY CA 95959

OWNER'S REPRESENTATIVE: PAUL PALMER (DISTRICT DIRECTOR)
NEVADA JOINT UNION HIGH SCHOOL DISTRICT
(530) 273-3351 EXT.#227

ZONING: P - PUBLIC

OCCUPANCY: EXISTING A, B, E, S
OCCUPANCIES (NO CHANGES TO EXISTING OCCUPANCY PROPOSED)

CONSTRUCTION TYPE: VARIES - TYPE VN

AREA OF WORK: EXISTING BUILDING:

BUILDING A - ADMINISTRATION/ CLASSROOMS
NO ADDITIONAL BUILDING AREA PROPOSED

CODE ANALYSIS

ALL WORK SHALL CONFORM TO THE FOLLOWING MODEL CODES:
2015 STATE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2012 EDITION (THE GREENBOOK)
2016 CALIFORNIA BUILDING CODE (CBC)
2016 CALIFORNIA MECHANICAL CODE (CMC)
2016 CALIFORNIA ELECTRICAL CODE (CEC)
2016 CALIFORNIA ENERGY CODE (CEC T-24)
2016 CALIFORNIA PLUMBING CODE (CPC)
2016 CALIFORNIA FIRE CODE (CFC)
2016 CALIFORNIA GREEN BUILDING CODE
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
ALL LOCAL CODES AND ORDINANCES



Revisions table with columns for revision number, description, and date.

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Andrew J. Pawlowski, Architect, LEED AP
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530.478.9416 - f
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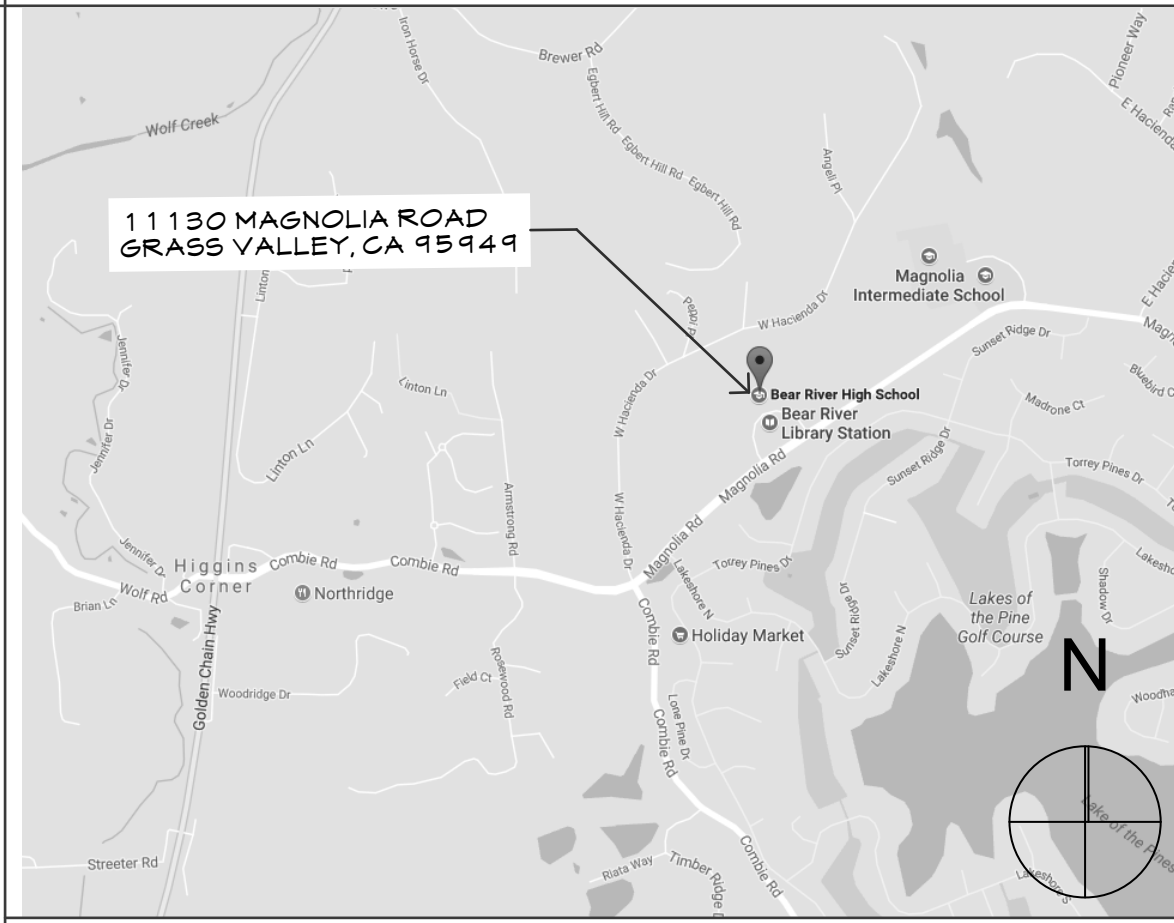
ARCHITECT'S SIGNATURE BLOCK

Signature and date fields for Andrew J. Pawlowski, dated 02.28.18. Includes fields for license number (C 25996) and expiration date (10.31.19).

GENERAL NOTES

DO NOT SCALE THE CONSTRUCTION DOCUMENTS. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED GRAPHICS.
SPECIFICATIONS, DRAWINGS, AND DETAILS TAKE PRECEDENCE OVER THESE GENERAL NOTES.
VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK, NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
UNLESS NOTED OTHERWISE, DIMENSIONS ARE TO FACE OF STUD AT NEW CONSTRUCTION AND FACE OF FINISH AT EXISTING CONSTRUCTION.
DO NOT PROCEED WITH SHOP FABRICATION PRIOR TO OBTAINING FIELD DIMENSIONS.
DO NOT MODIFY, CUT, OR OTHERWISE COMPROMISE THE INTEGRITY OF STRUCTURAL ELEMENTS WITHOUT WRITTEN CONSENT AND GUIDANCE FROM THE STRUCTURAL ENGINEER.
UNLESS NOTED TO BE EXPOSED CONSTRUCTION, DO NOT EXPOSE PIPES, CONDUITS, DUCTS, ETC. FLASH, CAULK, AND SEAL WHERE SHOWN IN DRAWINGS AND WHERE REQUIRED TO PREVENT THE INFILTRATION OF MOISTURE.
PENETRATIONS IN FIRE RATED ASSEMBLIES AND BEARING WALLS SHALL BE PROTECTED AS REQUIRED BY CBC CHAPTER 7.

VICINITY MAP



SHEET INDEX

Table listing sheet numbers and titles: A-0 COVER SHEET, A-0.1 CONSTRUCTION PHASING PLAN, A-1 SITE PLAN, A-2 ENLARGED SITE PLAN, A-3 FLOOR PLANS, A-5 REFLECTED CEILING PLANS, A-6 ROOF PLAN, A-7 DETAILS, A-8 RESTROOM ENLARGED PLANS, M0.1A HVAC NOTES, LEGEND, & SCHEMATIC, M0.2 HVAC SCHEDULES, M0.3 VRF PIPING AND CONTROLS SCHEMATIC, M0.4A HVAC DETAILS, M0.4B HVAC DETAILS, M1.1 HVAC FLOOR PLANS, M1.2 HVAC AS-BUILT & DEMO PLANS, M2.1 ROOF HVAC PLANS, M3.1 MECHANICAL PIPING PLAN, E0.1 SYMBOL LIST & DRAWING INDEX, E0.2 SCHEDULES, ONE-LINE, DETAILS & RISER, E1.1 BUILDING "A" ELECTRICAL PLAN - FIRST FLOOR, E1.2 BUILDING "A" ELECTRICAL PLAN - SECOND FLOOR, E1.3 BUILDING "A" ELECTRICAL PLAN - ROOF, S0.1 SPECIFICATIONS, S1.0 SECOND FLOOR FRAMING PLAN, S1.1 ROOF FRAMING PLAN, S1.2 DETAILS, T24.1 TITLE 24 ENERGY CALCULATIONS MECHANICAL COMPLIANCE

STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS
(Application No. 02-116361 File No. 29-H3)
The drawings or sheets listed on the cover or index sheet have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:
1) design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2) coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.
The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1, (Title 24, Part 1, Section 4-317 [b])

PROJECT DIRECTORY

ARCHITECT: SITELINE ARCHITECTURE
ANDREW PAWLOWSKI, #C25996
644 ZION STREET
NEVADA CITY, CA 95959
(530) 478-9415
FAX: (530) 478-9416
ELECTRICAL ENGINEER: THE ENGINEERING ENTERPRISE
SCOTT WHEELER, #E015494
1125 HIGH STREET
AUBURN, CA 95603
(530) 886-8556 ext. #102
FAX: (530) 886-8557
MECHANICAL ENGINEER: MELAS ENERGY ENGINEERING
MICHAEL MELAS, #M-26789
541 UREN STREET
NEVADA CITY, CA 95959
(530) 265-2492
FAX: (530) 265-2273
STRUCTURAL ENGINEER: LINCHPIN STRUCTURAL ENGINEERING
DOUG SADOW, #S096
10031 WEST RIVER STREET
TRUCKEE, CA 96161
(530) 563-6341

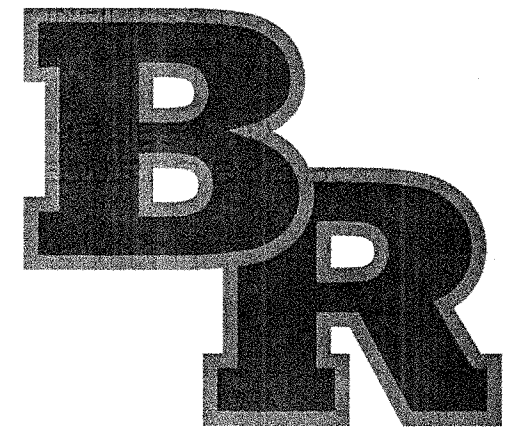
APPROVALS

HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, APR# 21-1730-85

Approval table with columns for date (3/16/18), scale (66357-29), and project number (17-459).

COVER SHEET
A-0

NEVADA JOINT UNION HIGH SCHOOL DISTRICT HVAC SYSTEM IMPROVEMENTS BUILDING "A" FOR BEAR RIVER HIGH SCHOOL



PROJECT INFORMATION

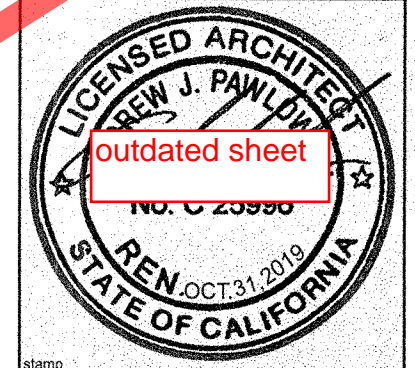
SCOPE: REPLACEMENT OF EXISTING HVAC SYSTEM WITHIN BUILDING "A" & ALTERATION TO BUILDING "C"
SITE: BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD
GRASS VALLEY CA 95959
OWNER'S REPRESENTATIVE: PAUL PALMER (DISTRICT DIRECTOR)
NEVADA JOINT UNION HIGH SCHOOL DISTRICT
(530) 273-3351 EXT.#227
ZONING: P - PUBLIC
OCCUPANCY: EXISTING A, B, E, S
OCCUPANCIES (NO CHANGES TO EXISTING OCCUPANCY PROPOSED)

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2016 CALIFORNIA FIRE CODE (CFC)
2016 CALIFORNIA GREEN BUILDING CODE
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
ALL LOCAL CODES AND ORDINANCES

CONSTRUCTION TYPE: VARIES - TYPE VN

AREA OF WORK: EXISTING BUILDING:
BUILDING A - ADMINISTRATION/CLASSROOMS
NO ADDITIONAL BUILDING AREA PROPOSED



Revisions table with columns for revision number, description, and date.

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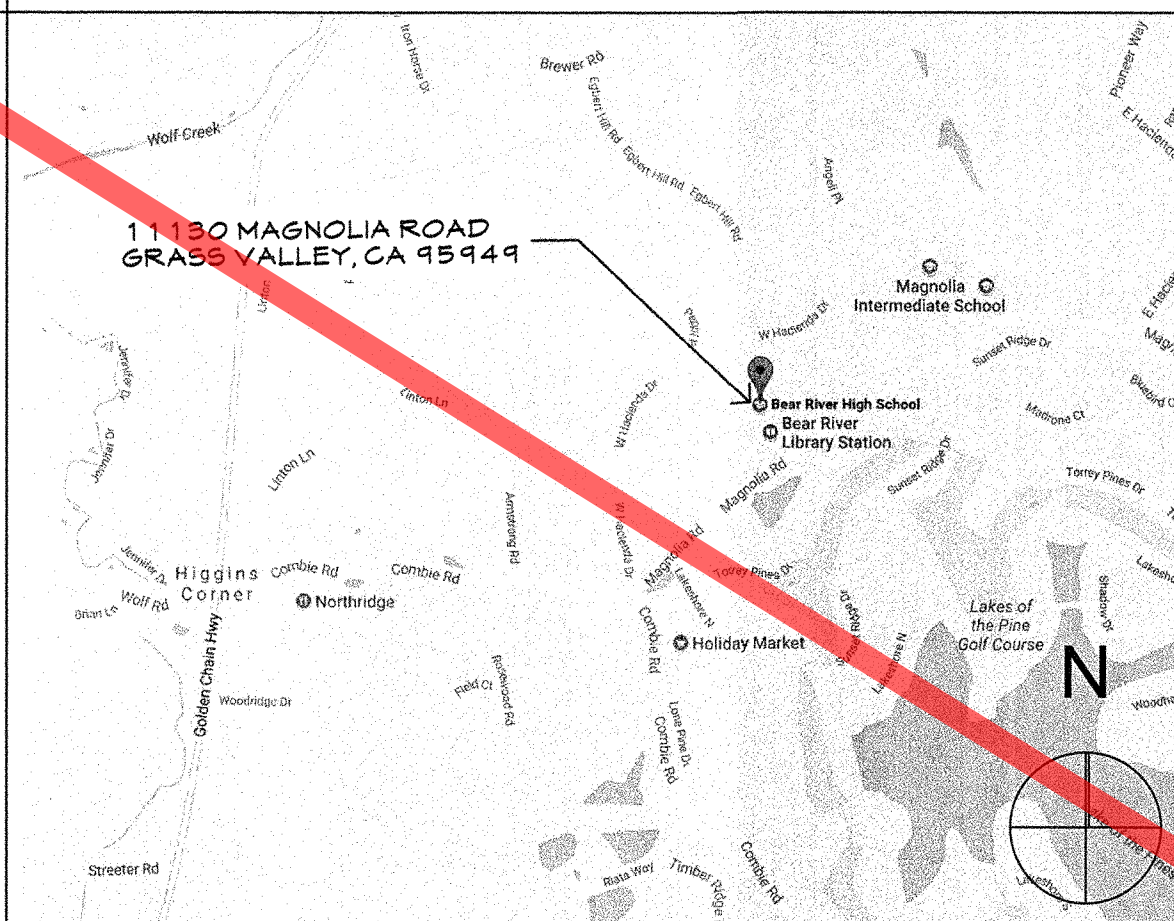
ARCHITECT'S SIGNATURE BLOCK

Signature block containing fields for architect's name (Andrew J. Pawlowski), license number (C 25996), and expiration date (10.31.19).

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VICINITY MAP



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The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1. (Title 24, Part 1, Section 4-317(b))

PROJECT DIRECTORY

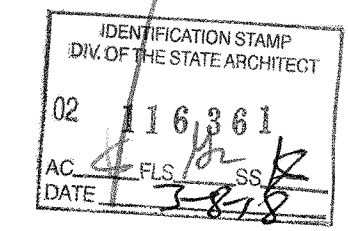
Table listing project team members: Architect (Siteline Architecture), Electrical Engineer (The Engineering Enterprise), Mechanical Engineer (Melas Energy Engineering), and Structural Engineer (Linchpin Structural Engineering).

APPROVALS

Table for project approvals with columns for name, title, and date.

HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, APN# 21-1730-85

3/2/18
66357-29
17-459



COVER SHEET
A-0

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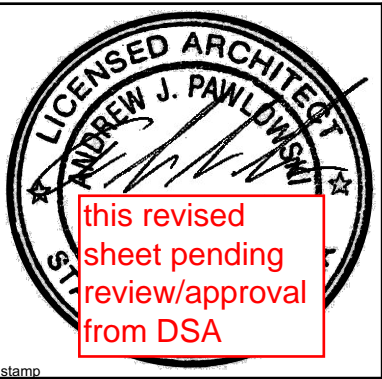
CONSTRUCTION PHASING LEGEND

PHASE 1

JUNE 11 - AUGUST 10
7:00 AM - 11:00 PM

PHASE 2

JUNE 11 - SEPTEMBER 03
7:00 AM - 11:00 PM



Revisions

NO. DESCRIPTION DATE

1 BIG DISTRIBUTION 03.16.18

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Andrew J. Pawlowski, Architect, LEED AP
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Nevada City, CA 95959
530.478.9418 - f
www.sitelinearch.com

HVAC SYSTEM IMPROVEMENTS
BUILDING "A"

BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, APR# 21-130-85

3/19/18

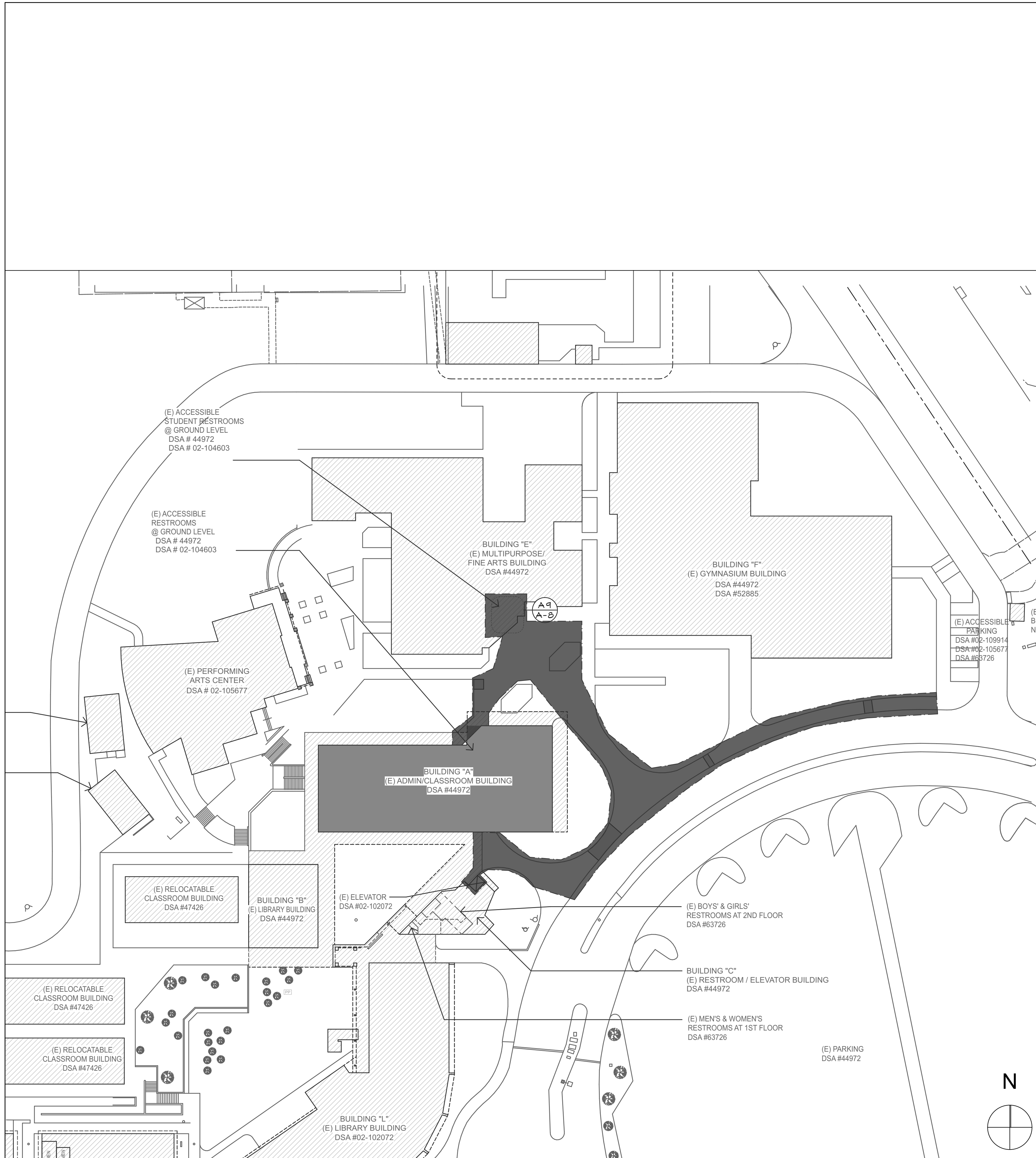
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66357-29

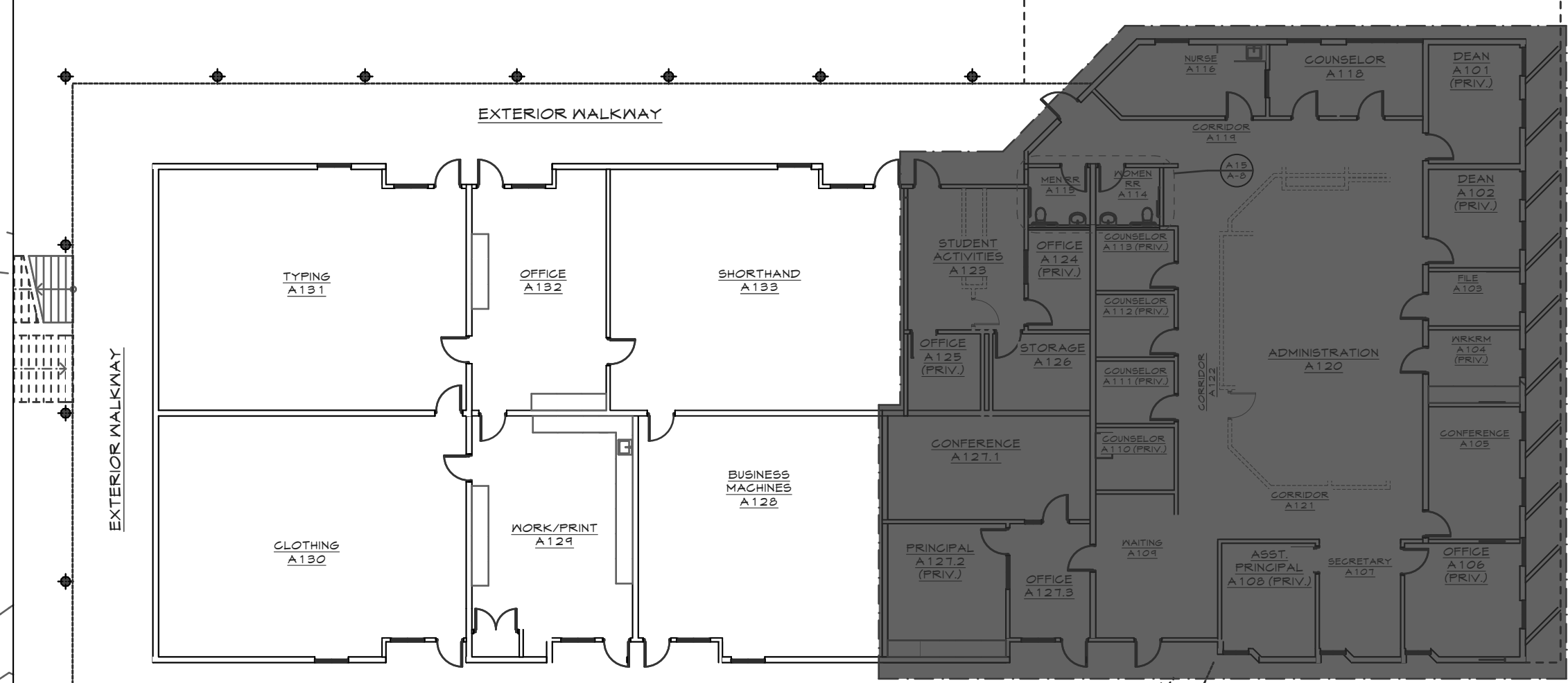
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CONSTRUCTION
PHASING PLAN

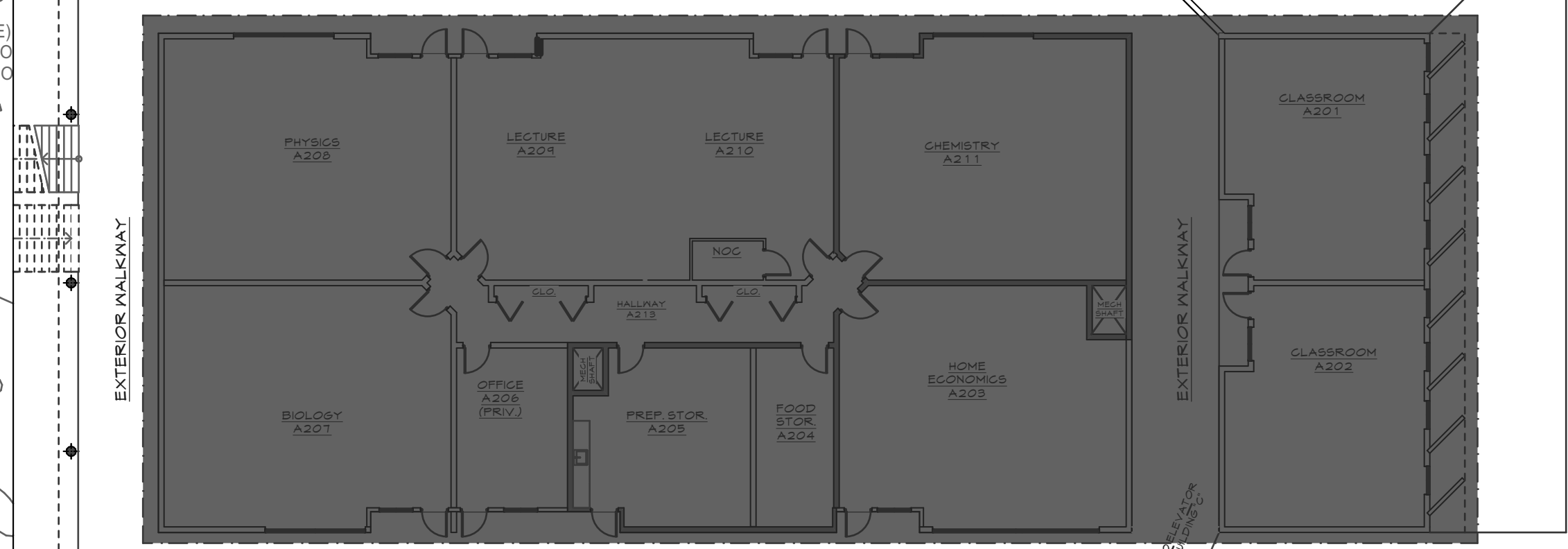
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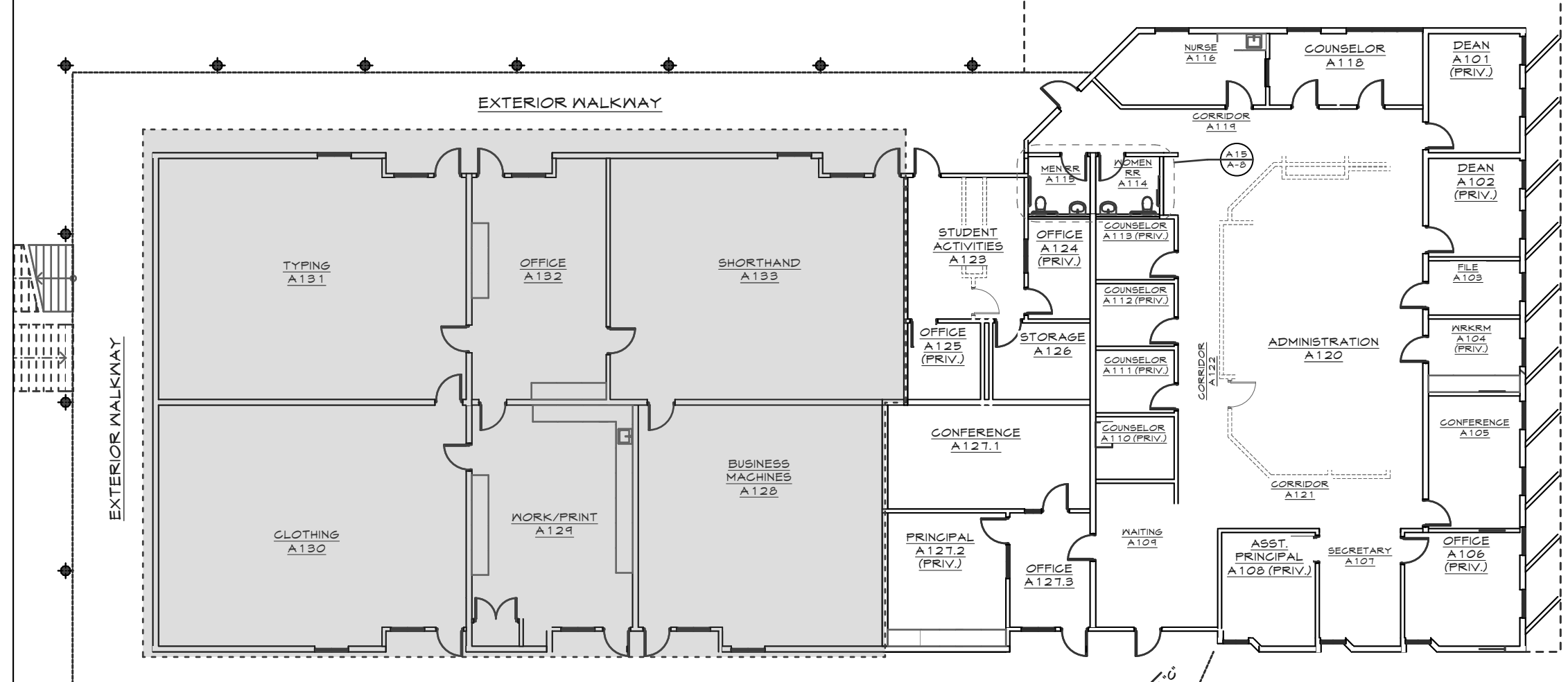
A 15 ENLARGED SITE PHASING PLAN



G6 FIRST FLOOR PHASING PLAN



D6 SECOND FLOOR PHASING PLAN



A6 FIRST FLOOR PHASING PLAN

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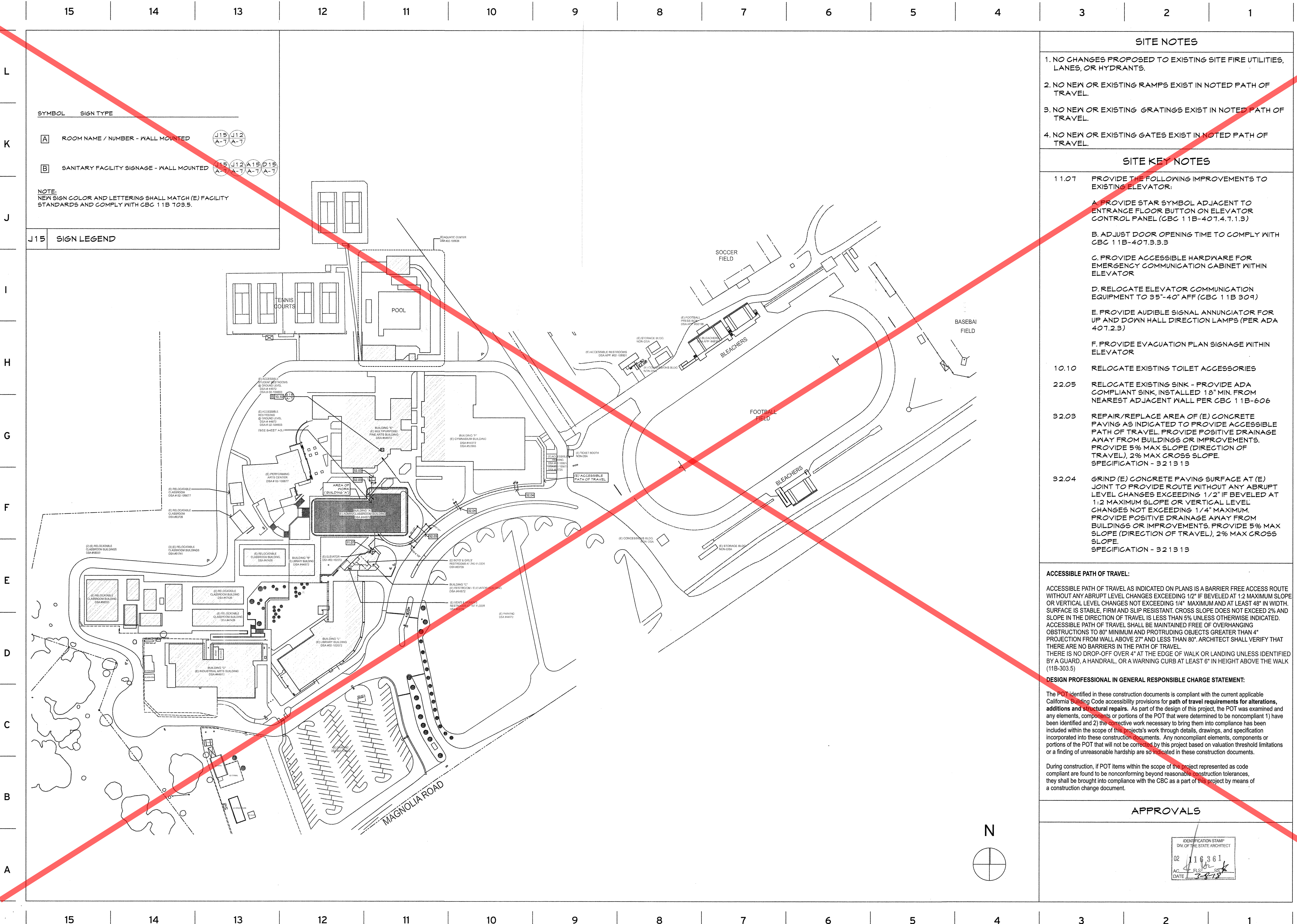
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SYMBOL	SIGN TYPE
[A]	ROOM NAME / NUMBER - WALL MOUNTED
[B]	SANITARY FACILITY SIGNAGE - WALL MOUNTED

NOTE:
NEW SIGN COLOR AND LETTERING SHALL MATCH (E) FACILITY STANDARDS AND COMPLY WITH CBC 11B TO3.5.

J15 SIGN LEGEND

SITE NOTES

- NO CHANGES PROPOSED TO EXISTING SITE FIRE UTILITIES, LANES, OR HYDRANTS.
- NO NEW OR EXISTING RAMPS EXIST IN NOTED PATH OF TRAVEL.
- NO NEW OR EXISTING GRATINGS EXIST IN NOTED PATH OF TRAVEL.
- NO NEW OR EXISTING GATES EXIST IN NOTED PATH OF TRAVEL.

SITE KEY NOTES

- 11.07 PROVIDE THE FOLLOWING IMPROVEMENTS TO EXISTING ELEVATOR:
- A. PROVIDE STAR SYMBOL ADJACENT TO ENTRANCE FLOOR BUTTON ON ELEVATOR CONTROL PANEL (CBC 11B-407.4.7.1.3)
 - B. ADJUST DOOR OPENING TIME TO COMPLY WITH CBC 11B-407.3.3.3
 - C. PROVIDE ACCESSIBLE HARDWARE FOR EMERGENCY COMMUNICATION CABINET WITHIN ELEVATOR
 - D. RELOCATE ELEVATOR COMMUNICATION EQUIPMENT TO 35"-40" AFF (CBC 11B 309)
 - E. PROVIDE AUDIBLE SIGNAL ANNUNCIATOR FOR UP AND DOWN HALL DIRECTION LAMPS (PER ADA 407.2.3)
 - F. PROVIDE EVACUATION PLAN SIGNAGE WITHIN ELEVATOR
- 10.10 RELOCATE EXISTING TOILET ACCESSORIES
- 22.05 RELOCATE EXISTING SINK - PROVIDE ADA COMPLIANT SINK, INSTALLED 18" MIN. FROM NEAREST ADJACENT WALL PER CBC 11B-606
- 32.03 REPAIR/REPLACE AREA OF (E) CONCRETE PAVING AS INDICATED TO PROVIDE ACCESSIBLE PATH OF TRAVEL, PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS OR IMPROVEMENTS. PROVIDE 5% MAX SLOPE (DIRECTION OF TRAVEL), 2% MAX CROSS SLOPE. SPECIFICATION - 321313
- 32.04 GRIND (E) CONCRETE PAVING SURFACE AT (E) JOINT TO PROVIDE ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS OR IMPROVEMENTS. PROVIDE 5% MAX SLOPE (DIRECTION OF TRAVEL), 2% MAX CROSS SLOPE. SPECIFICATION - 321313

ACCESSIBLE PATH OF TRAVEL:

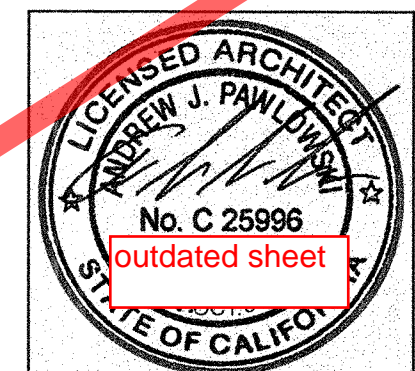
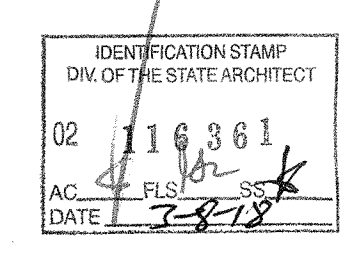
ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL. THERE IS NO DROP-OFF OVER 4" AT THE EDGE OF WALK OR LANDING UNLESS IDENTIFIED BY A GUARD, A HANDRAIL, OR A WARNING CURB AT LEAST 6" IN HEIGHT ABOVE THE WALK (11B-303.5)

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:

The POT identified in these construction documents is compliant with the current applicable California Building Code 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 1) have been identified and 2) the corrective work necessary to bring them into compliance has been included within the scope of this project's work through details, drawings, and specification 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 so indicated in these construction documents.

During construction, if POT items within the scope of the project represented as code compliant are found to be nonconforming beyond reasonable construction tolerances, they shall be brought into compliance with the CBC as a part of this project by means of a construction change document.

APPROVALS



Revisions	
1	DSR PLAN CHECK 01 03/22/18

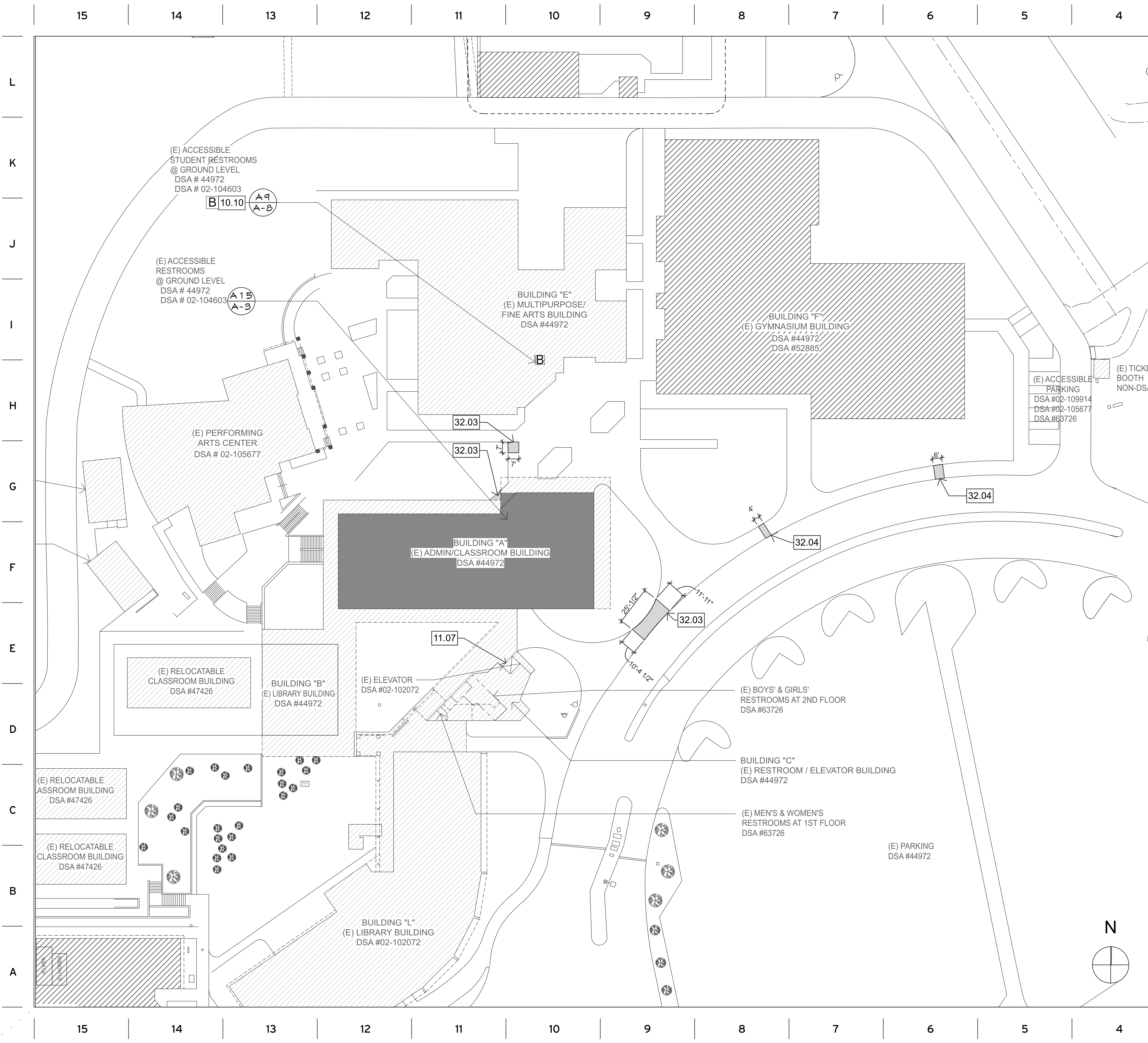
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sitaline architecture
Andrew J. Pawlowski, Architect, LEED-AP
644 Zion Street
Nevada City, CA 95959
530.478.9415 - F
530.478.9416 - T
www.sitalinearch.com

HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, CA 95622

DATE	3/2/18
SCALE	1" = 80'-0"
PROJECT TRACKING #	66357-29
DATE	17-459

SITE PLAN
A-1



SITE KEY NOTES

- 11.07 PROVIDE THE FOLLOWING IMPROVEMENTS TO EXISTING ELEVATOR:
- A. PROVIDE STAR SYMBOL ADJACENT TO ENTRANCE FLOOR BUTTON ON ELEVATOR CONTROL PANEL (CBC 11B-407.4.1.1.3)
 - B. ADJUST DOOR OPENING TIME TO COMPLY WITH CBC 11B-407.3.3.3
 - C. PROVIDE ACCESSIBLE HARDWARE FOR EMERGENCY COMMUNICATION CABINET WITHIN ELEVATOR
 - D. RELOCATE ELEVATOR COMMUNICATION EQUIPMENT TO 35"-40" AFF (CBC 11B 309)
 - E. PROVIDE AUDIBLE SIGNAL ANNUNCIATOR FOR UP AND DOWN HALL DIRECTION LAMPS (PER ADA 407.2.3)
 - F. PROVIDE EVACUATION PLAN SIGNAGE WITHIN ELEVATOR
- 10.10 RELOCATE EXISTING TOILET ACCESSORIES
- 32.03 REPAIR/REPLACE AREA OF (E) CONCRETE PAVING AS INDICATED TO PROVIDE ACCESSIBLE PATH OF TRAVEL. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS OR IMPROVEMENTS. PROVIDE 5% MAX SLOPE (DIRECTION OF TRAVEL). 2% MAX CROSS SLOPE. SPECIFICATION - 321313
- 32.04 GRIND (E) CONCRETE PAVING SURFACE AT (E) JOINT TO PROVIDE ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS OR IMPROVEMENTS. PROVIDE 5% MAX SLOPE (DIRECTION OF TRAVEL). 2% MAX CROSS SLOPE. SPECIFICATION - 321313

ACCESSIBLE PATH OF TRAVEL:

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLANS IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL. THERE IS NO DROP-OFF OVER 4" AT THE EDGE OF WALK OR LANDING UNLESS IDENTIFIED BY A GUARD, A HANDRAIL, OR A WARNING CURB AT LEAST 6" IN HEIGHT ABOVE THE WALK (11B-303.5)

SYMBOLS LEGEND

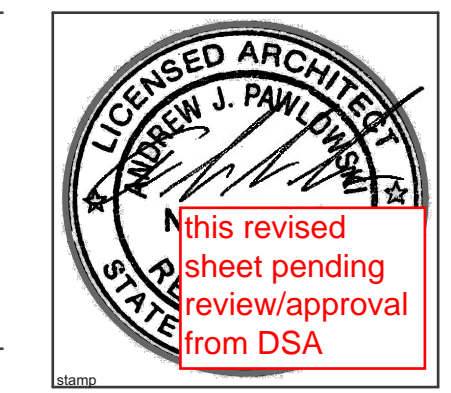
SYMBOL	SIGN TYPE
[A]	ROOM NAME / NUMBER - WALL MOUNTED
[B]	SANITARY FACILITY SIGNAGE - WALL MOUNTED

NOTE:
NEW SIGN COLOR AND LETTERING SHALL MATCH (E) FACILITY STANDARDS AND COMPLY WITH CBC 11B 703.5.

WALLS

EXISTING 1-HOUR RATED FIRE SEPARATION WALL

APPROVALS



Revisions

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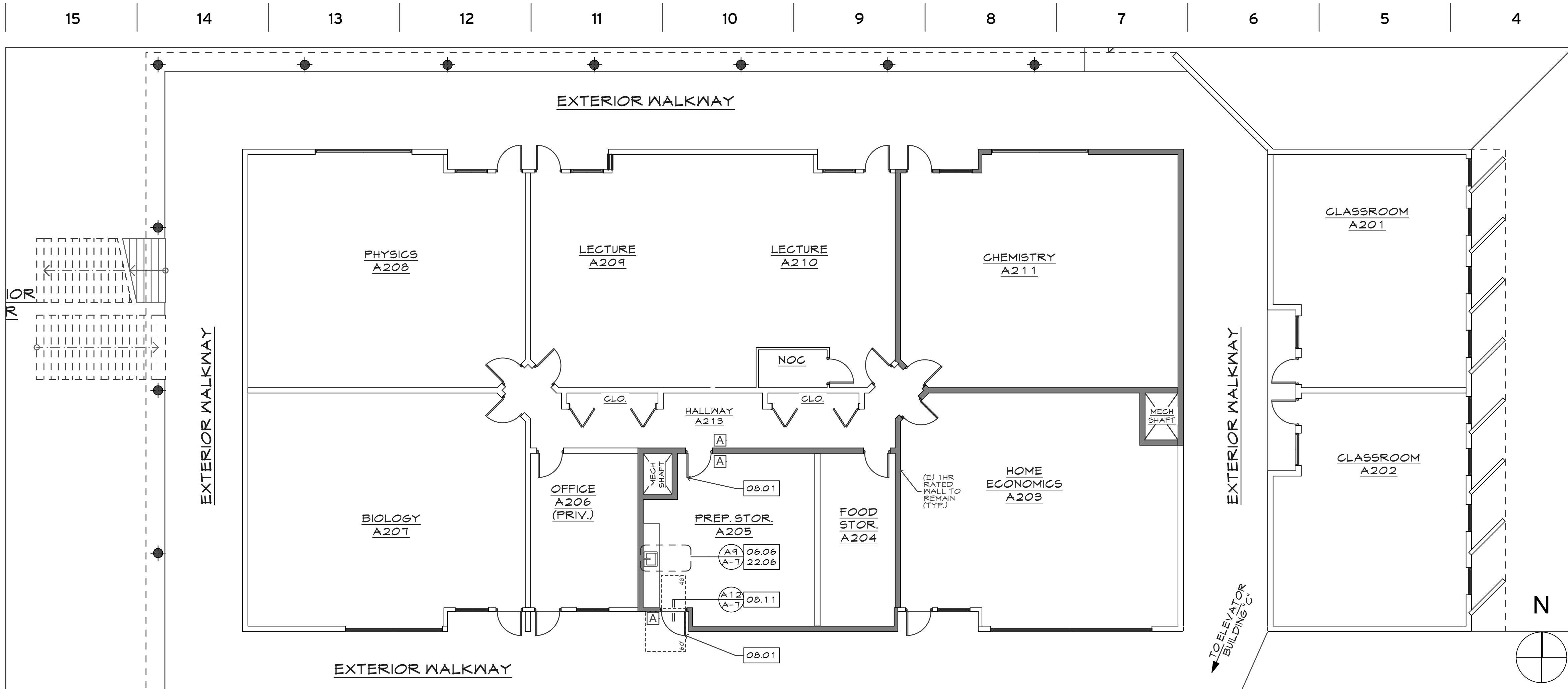
644 Zion Street
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**HVAC SYSTEM IMPROVEMENTS
BUILDING "A"**

BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, APR# 21-1730-95

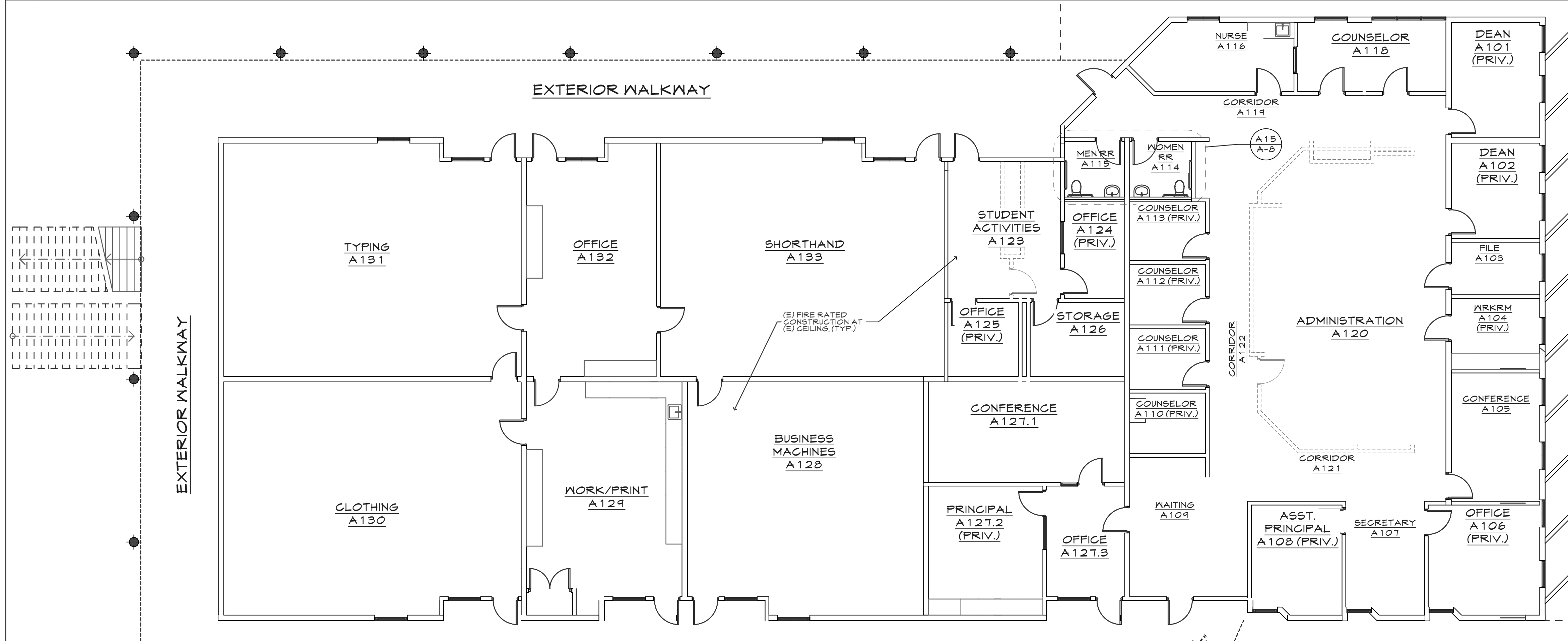
DATE: 3/16/18
SCALE: 1" = 30'-0"
PROJECT NUMBER: 66357-29
SHEET: 17-459

ENLARGED SITE PLAN
A-2



G15 SECOND FLOOR PLAN

1/8" = 1'-0"



A15 FIRST FLOOR PLAN

1/8" = 1'-0"

NOTES

1. PROPOSED DEMOLITION SHOWN IS INTENDED TO BE LIMITED. IF THE CONTRACTOR DETERMINES IN THE FIELD THAT ANY OF THE PROPOSED WORK WILL AFFECT THE INTEGRITY OF THE REMAINING STRUCTURE IN ANY WAY, THE WORK SHALL BE STOPPED AND THE ARCHITECT AND/OR STRUCTURAL ENGINEER SHALL BE CONTACTED PRIOR TO PROCEEDING.
2. CONTRACTOR TO MAINTAIN EXISTING FIRE RATED ASSEMBLIES.
3. MAINTAIN EXISTING FIRE RATING BETWEEN FIRST AND SECOND FLOOR.
4. MAINTAIN EXISTING FIRE RATING BETWEEN SECOND FLOOR AND ROOF.

KEY NOTES

- 06.06 MODIFY / REPLACE EXISTING DOORS AND HARDWARE
- 08.01 REPLACE EXISTING DOOR HARDWARE WITH LEVER TYPE, ADJUST CLOSER AS REQUIRED FOR DISABLED ACCESSIBILITY.
- 08.11 REPLACE EXISTING THRESHOLD
- 22.06 REMOVE EXISTING SINK. INSTALL NEW SINK, MFR: PROFLO, MODEL #: PFSR252264, PROVIDE NEW 15 GPM SINGLE LEVER FAUCET, OR APPROVED EQUAL.

LEGEND

- SYMBOL SIGN TYPE
- [A] ROOM NAME / NUMBER - WALL MOUNTED
 - [B] SANITARY FACILITY SIGNAGE - WALL MOUNTED
- NOTE:
NEW SIGN COLOR AND LETTERING SHALL MATCH (E) FACILITY STANDARDS AND COMPLY WITH CBC 11B 703.5.
- WALLS
[Solid Line] EXISTING 1-HOUR RATED FIRE SEPARATION WALL



Revisions
<p>1. This revised sheet pending review/approval from DSA</p>
<p>2. BIG DISTRIBUTION 03.16.15</p>

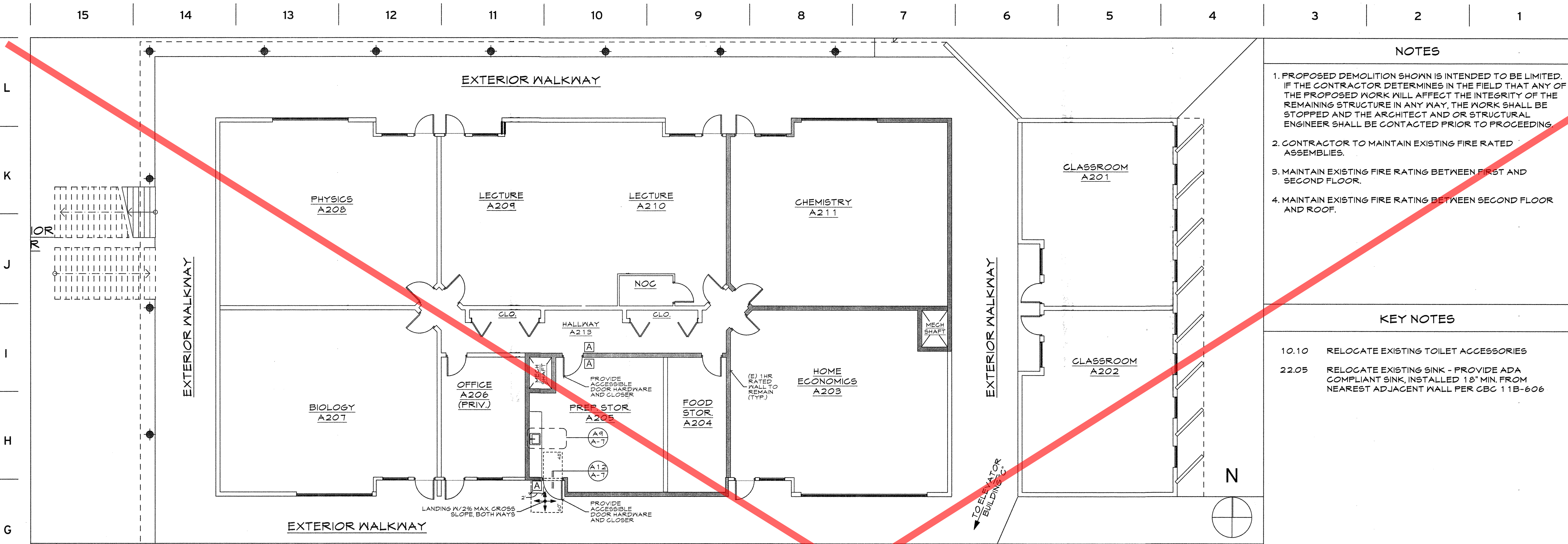
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HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, APR# 21-130-85

DATE	3/16/18
SCALE	AS NOTED
PROJECT NUMBER	66357-29
REV.	17-459

FLOOR PLANS
A-3



NOTES

1. PROPOSED DEMOLITION SHOWN IS INTENDED TO BE LIMITED. IF THE CONTRACTOR DETERMINES IN THE FIELD THAT ANY OF THE PROPOSED WORK WILL AFFECT THE INTEGRITY OF THE REMAINING STRUCTURE IN ANY WAY, THE WORK SHALL BE STOPPED AND THE ARCHITECT AND/OR STRUCTURAL ENGINEER SHALL BE CONTACTED PRIOR TO PROCEEDING.
2. CONTRACTOR TO MAINTAIN EXISTING FIRE RATED ASSEMBLIES.
3. MAINTAIN EXISTING FIRE RATING BETWEEN FIRST AND SECOND FLOOR.
4. MAINTAIN EXISTING FIRE RATING BETWEEN SECOND FLOOR AND ROOF.

KEY NOTES

10.10 RELOCATE EXISTING TOILET ACCESSORIES

22.05 RELOCATE EXISTING SINK - PROVIDE ADA COMPLIANT SINK, INSTALLED 18" MIN. FROM NEAREST ADJACENT WALL PER CBC 11B-606

LEGEND

SYMBOL SIGN TYPE

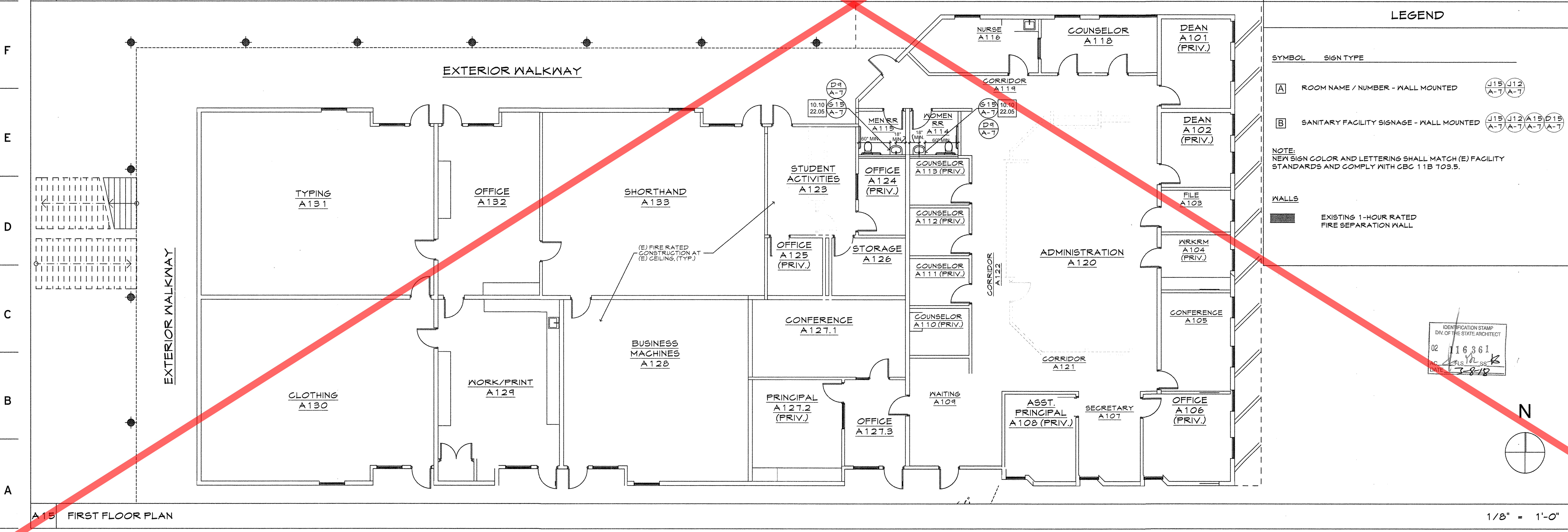
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[B] SANITARY FACILITY SIGNAGE - WALL MOUNTED

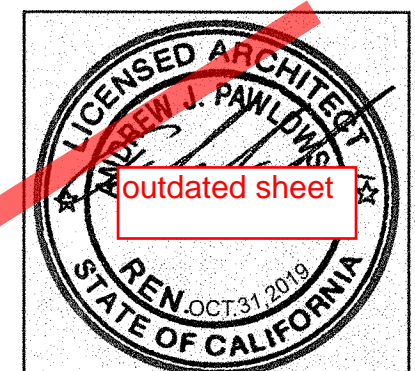
NOTE: NEW SIGN COLOR AND LETTERING SHALL MATCH (E) FACILITY STANDARDS AND COMPLY WITH CBC 11B 109.5.

WALLS

[Hatched Box] EXISTING 1-HOUR RATED FIRE SEPARATION WALL



IDENTIFICATION STAMP
 DIV. OF THE STATE ARCHITECT
 02 116361
 DATE: 7-8-18



Revisions

1	DEA PLAN CHECK 01 08.02.18
---	----------------------------

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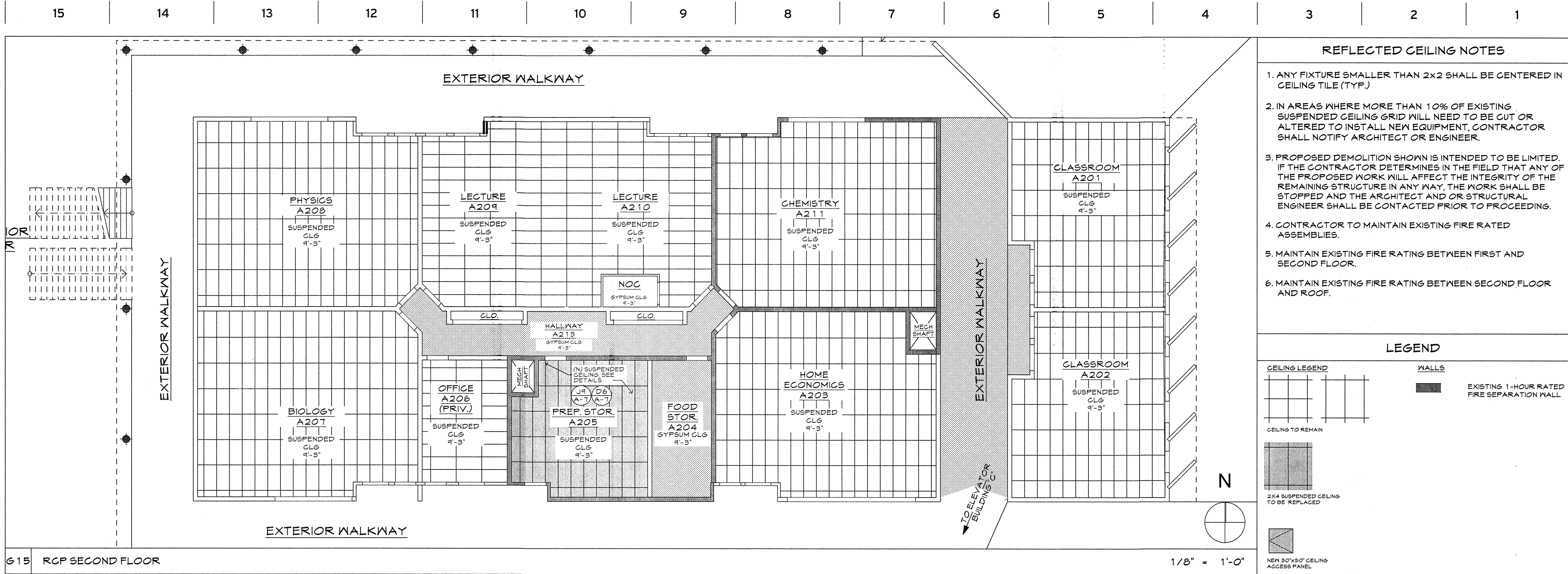
HVAC SYSTEM IMPROVEMENTS
 BUILDING "A"

BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD, GRASS VALLEY, CA 95627-1300-05

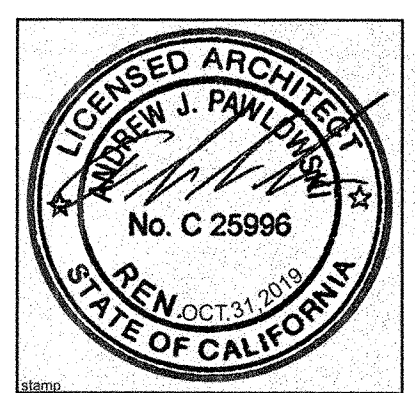
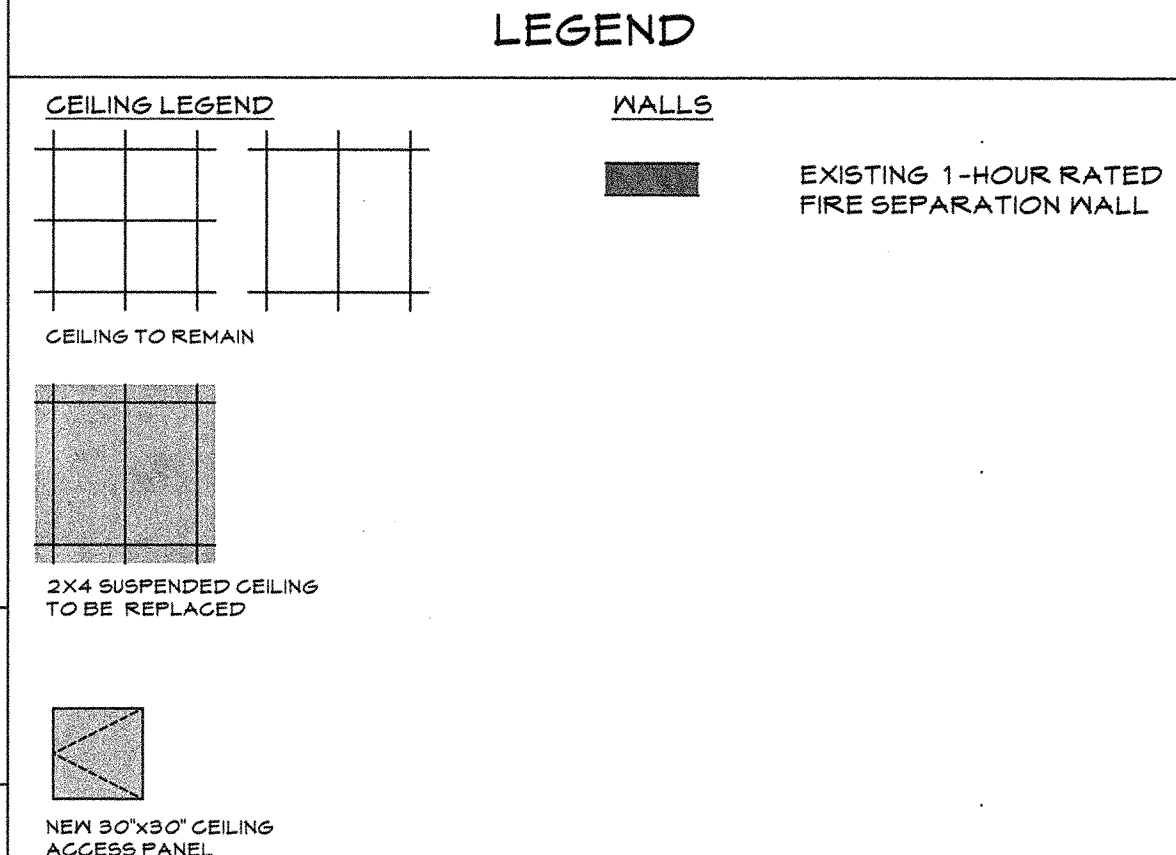
DATE: 3/2/18
 SCALE: AS NOTED
 PROJECT NUMBER: 66357-29
 SHEET NUMBER: 17-459

FLOOR PLANS

A-3



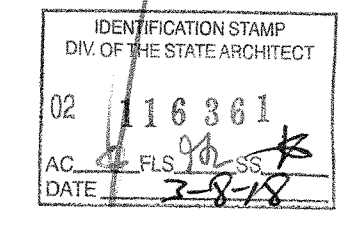
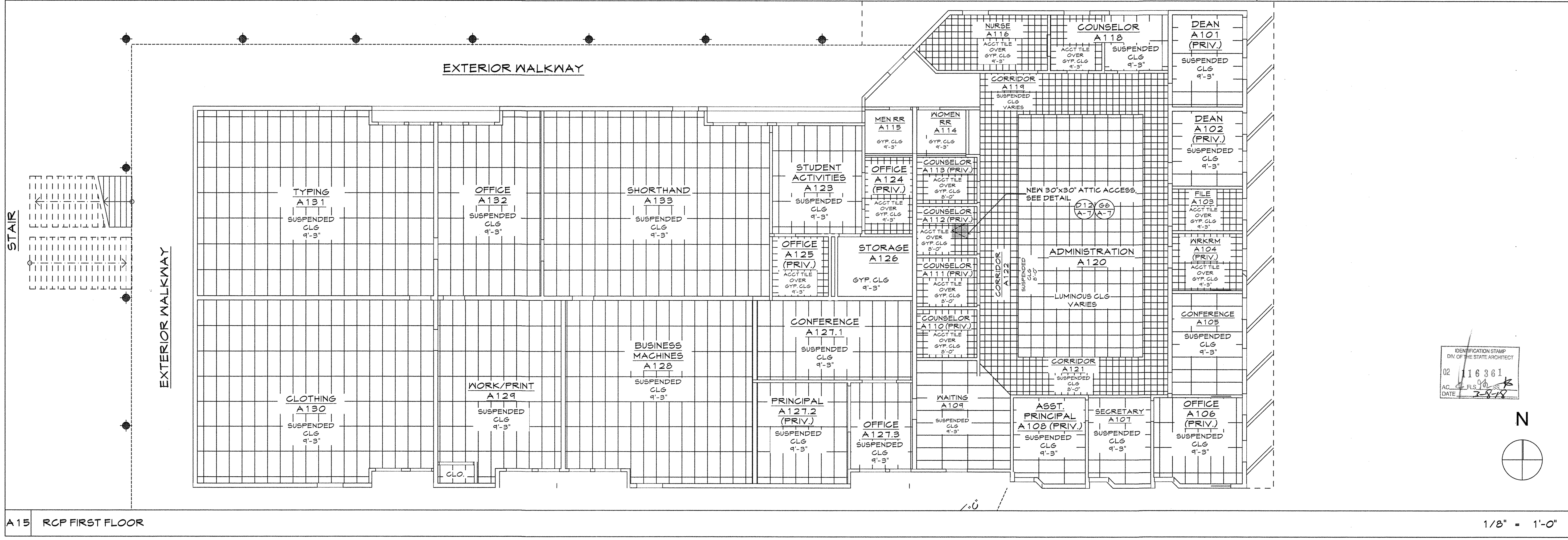
- ### REFLECTED CEILING NOTES
1. ANY FIXTURE SMALLER THAN 2X2 SHALL BE CENTERED IN CEILING TILE (TYP.)
 2. IN AREAS WHERE MORE THAN 10% OF EXISTING SUSPENDED CEILING GRID WILL NEED TO BE CUT OR ALTERED TO INSTALL NEW EQUIPMENT, CONTRACTOR SHALL NOTIFY ARCHITECT OR ENGINEER.
 3. PROPOSED DEMOLITION SHOWN IS INTENDED TO BE LIMITED. IF THE CONTRACTOR DETERMINES IN THE FIELD THAT ANY OF THE PROPOSED WORK WILL AFFECT THE INTEGRITY OF THE REMAINING STRUCTURE IN ANY WAY, THE WORK SHALL BE STOPPED AND THE ARCHITECT AND OR STRUCTURAL ENGINEER SHALL BE CONTACTED PRIOR TO PROCEEDING.
 4. CONTRACTOR TO MAINTAIN EXISTING FIRE RATED ASSEMBLIES.
 5. MAINTAIN EXISTING FIRE RATING BETWEEN FIRST AND SECOND FLOOR.
 6. MAINTAIN EXISTING FIRE RATING BETWEEN SECOND FLOOR AND ROOF.



Revisions
1. 03/02/18

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HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, CA 95945

DATE	3/2/18
SCALE	AS NOTED
PROJECT NO.	66357-29
PROJECT NAME	17-459

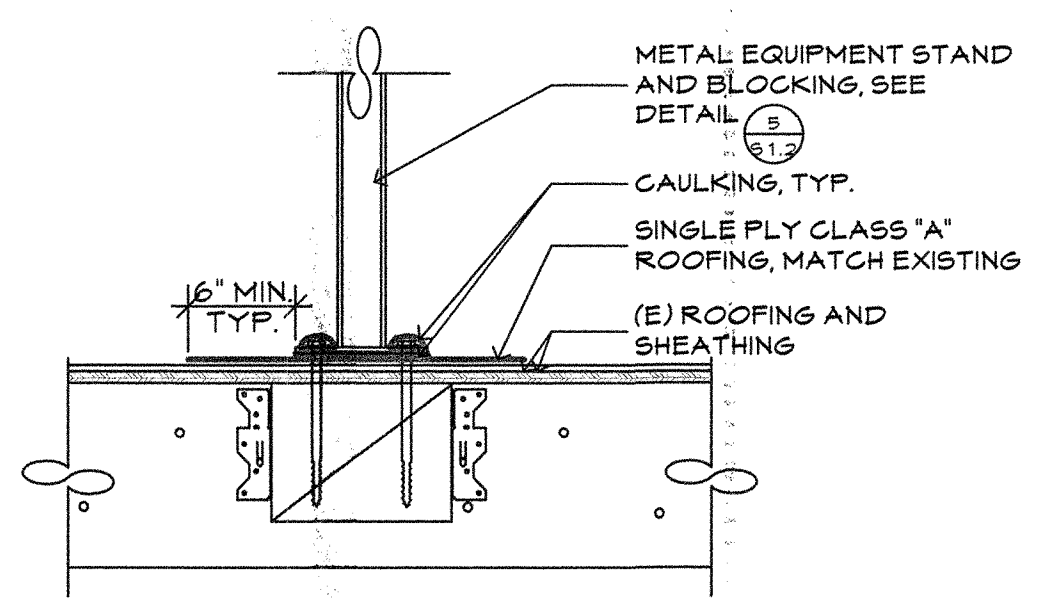
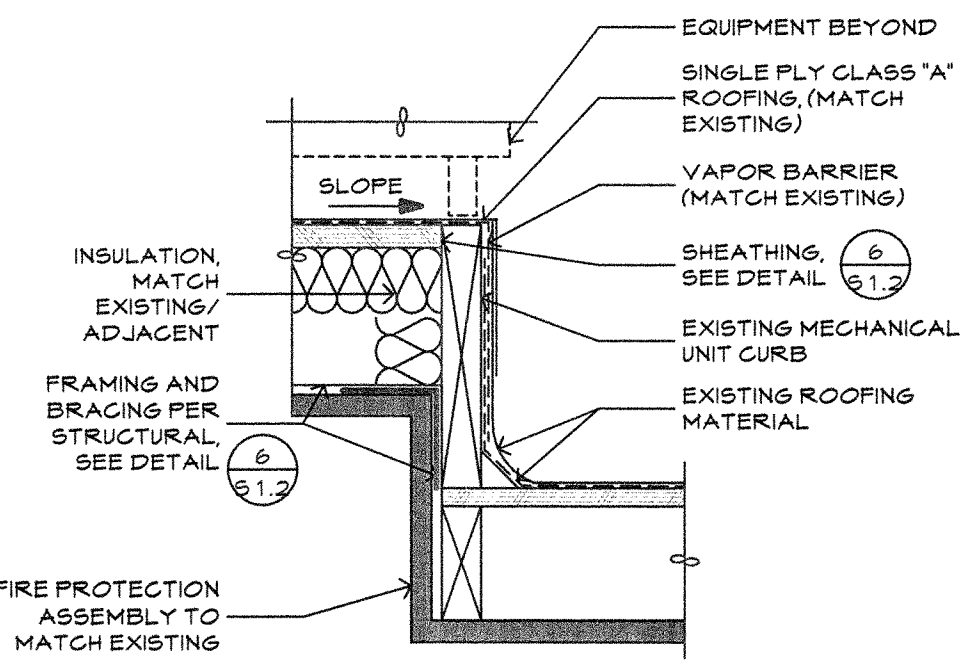
REFLECTED CEILING PLANS
A-5

15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

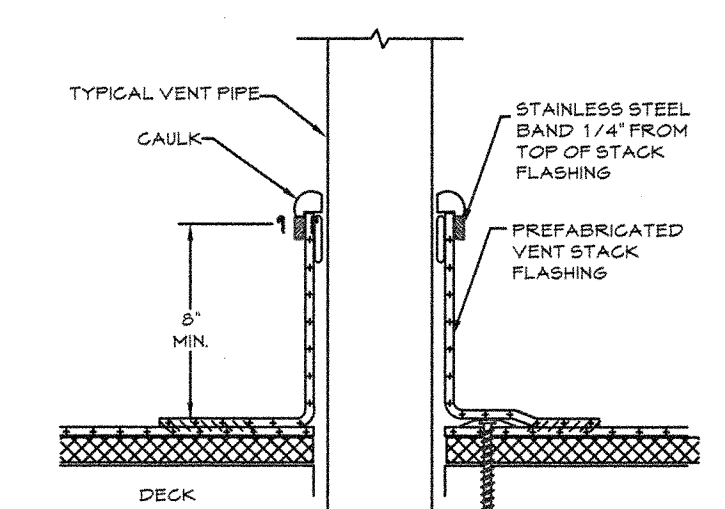
L
K
J
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D
C
B
A

ROOF NOTES

1. ALL ROOFING MATERIALS SHALL HAVE MINIMUM CLASS "A" FIRE RATING.
2. INSTALLATION OF ROOFING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

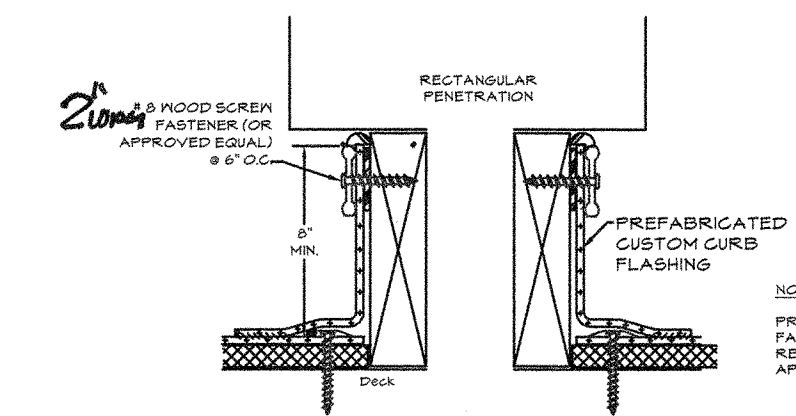


J9 MECHANICAL UNIT CURB @ INFILL N.T.S. J6 MECHANICAL UNIT SLEEPER N.T.S.



NOTE: PROVIDE DWD-LAST KD/VHD FASTENERS PER MANUFACTURER'S RECOMMENDATIONS, OR APPROVED EQUAL.
NOTE 1: MEMBRANE ATTACHMENT AROUND THE PENETRATION WILL BE THE SAME AS THE DECK MEMBRANE, MAX. 18-INCHES ON CENTER, AND A MINIMUM OF ONE PLATE/FASTENER PER FLASHING.

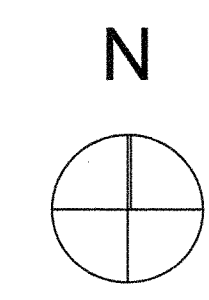
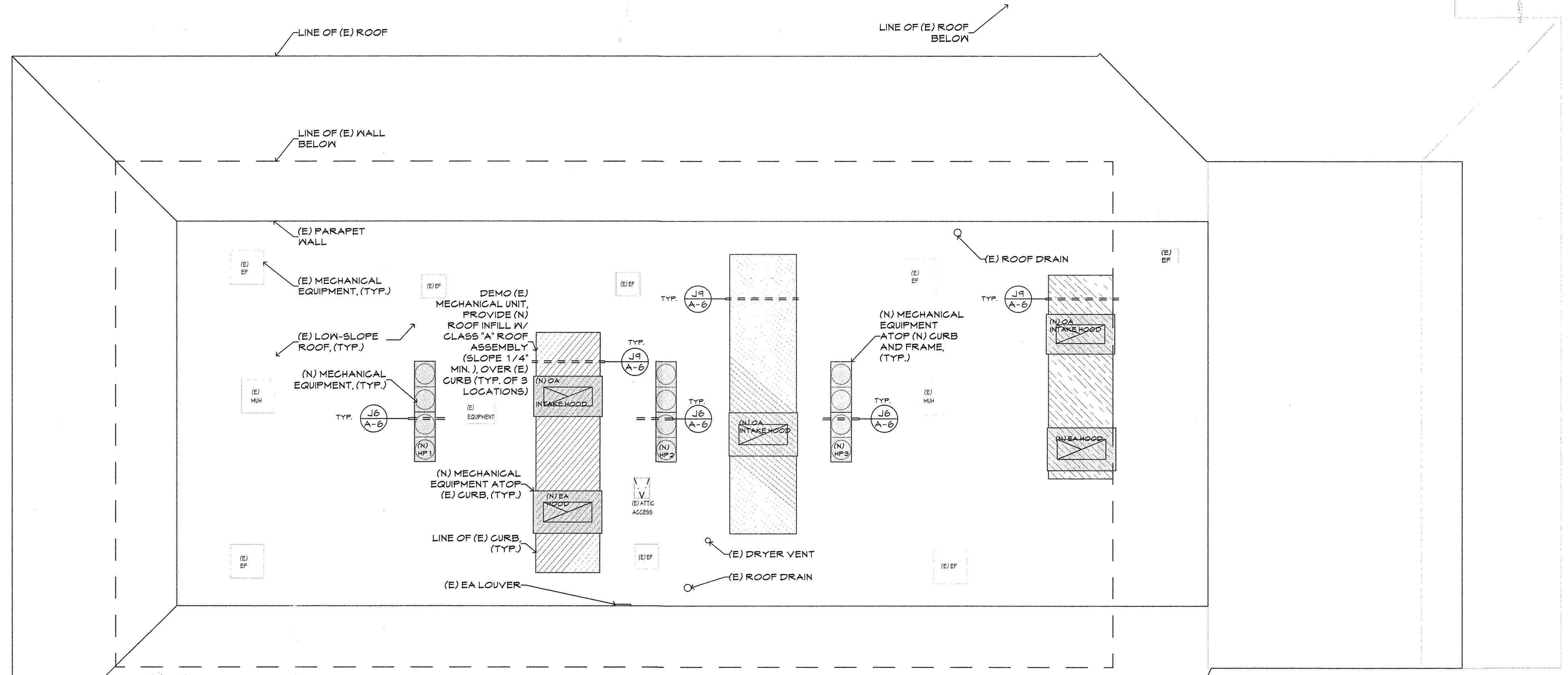
G3 ROUND PENETRATION N.T.S.



NOTE 1: PERIMETER FASTENERS OF THE DECK MEMBRANE WILL BE THE SAME FASTENERS PATTERS AS THE FIELD MEMBRANE, MAX. 12-INCHES ON CENTER, AND NO LESS THAN ONE FASTENER PER SIDE.
NOTE 2: ALL TERMINATION BAR TO HAVE A FASTENER 1-INCH MAX FROM EACH CORNER.

D3 RECTANGULAR PENETRATION N.T.S.

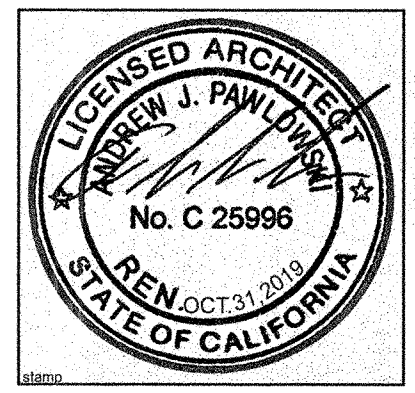
APPROVALS



A 15 ROOF PLAN

1/8" = 1'-0"

15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1



Revisions	
1	DSA FLANGHECK 01 08.02.18

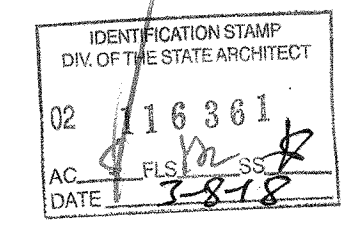
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HVAC SYSTEM IMPROVEMENTS BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, CA 95926
APN# 211-730-85

DATE	3/2/18
AS NOTED	
PROJECT TRACKING	66357-29
	17-459

ROOF PLAN
A-6



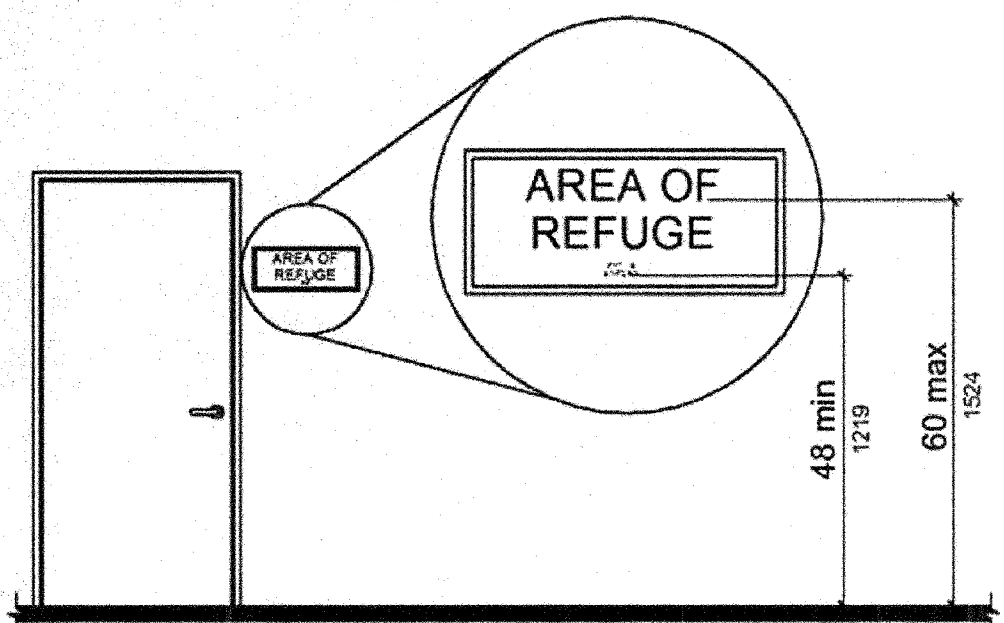


FIGURE 11B-703.4.1 HEIGHT OF TACTILE CHARACTERS ABOVE FINISH FLOOR OR GROUND

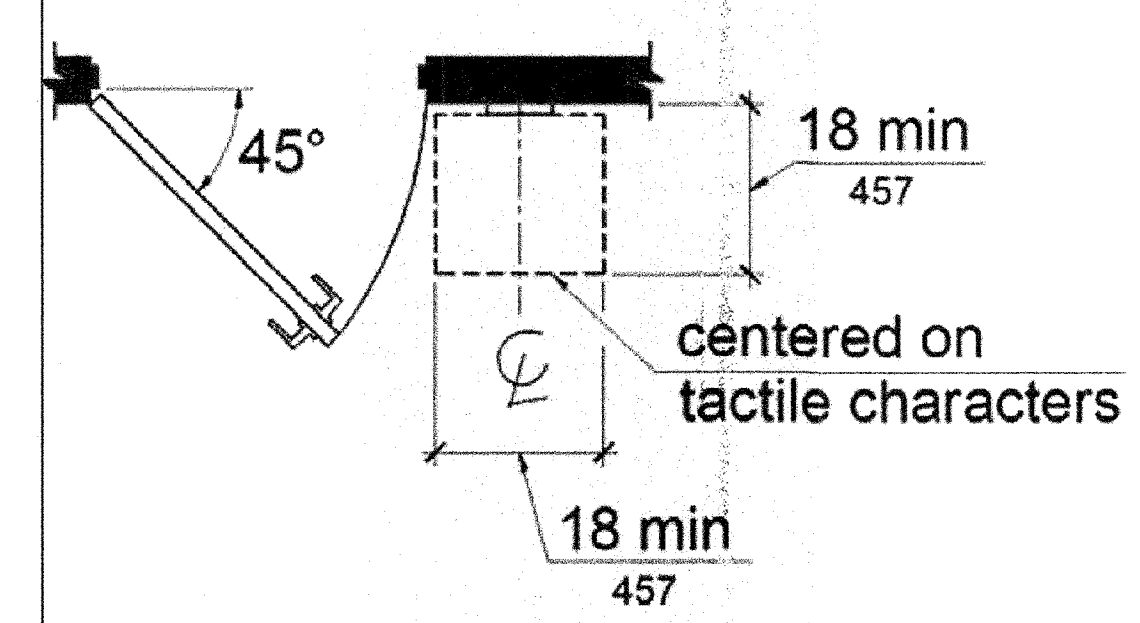


FIGURE 11B-703.4.2 LOCATION OF TACTILE SIGNS AT DOORS

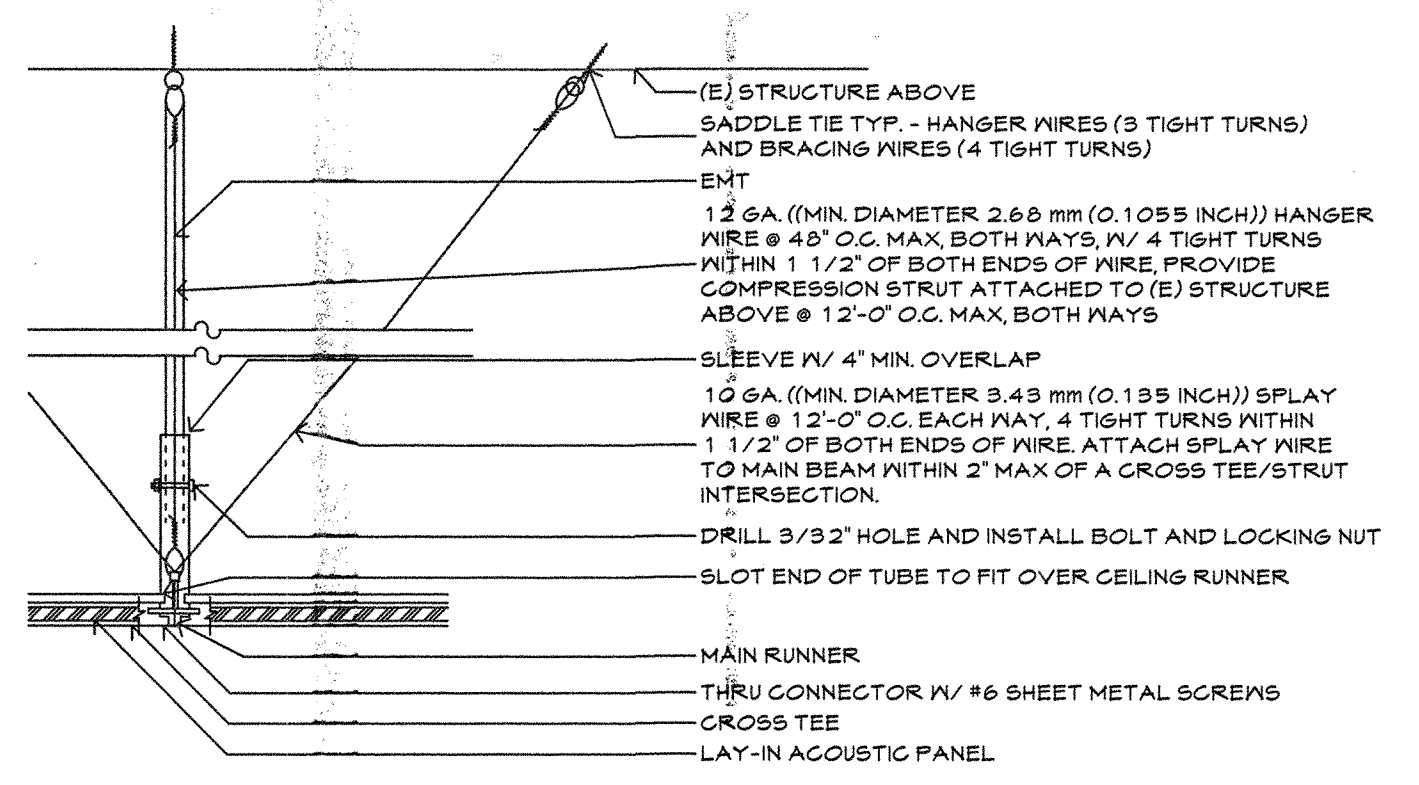
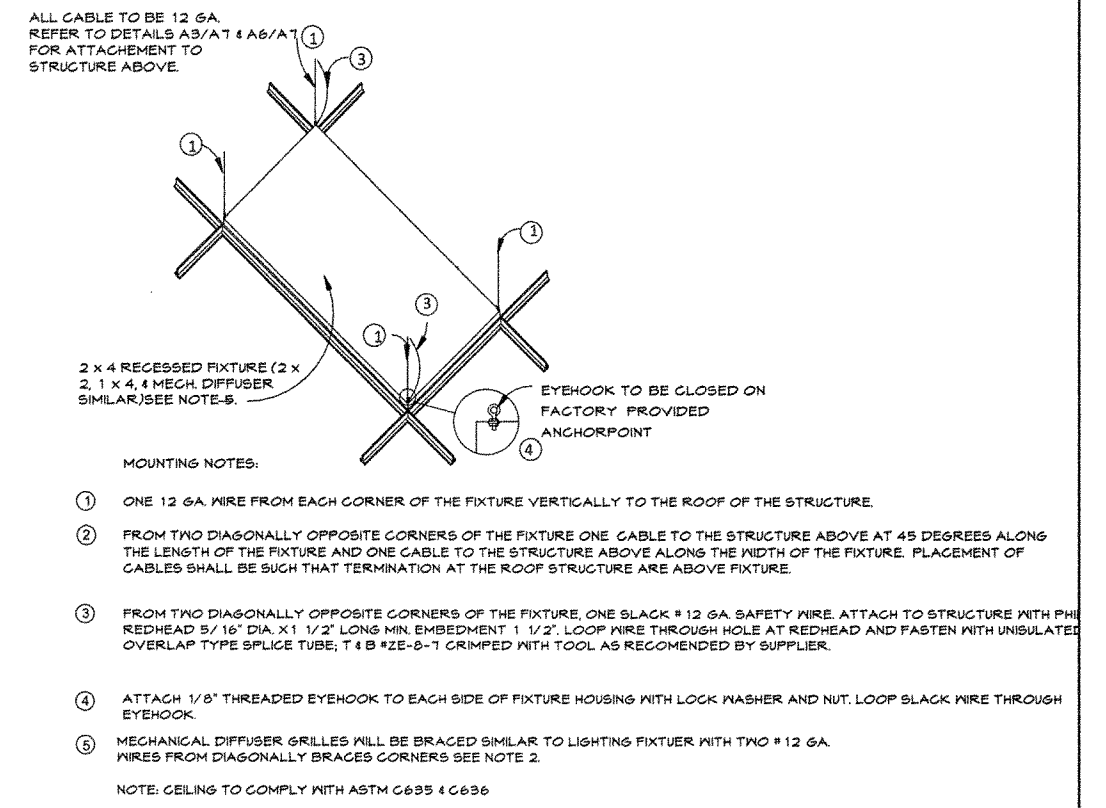


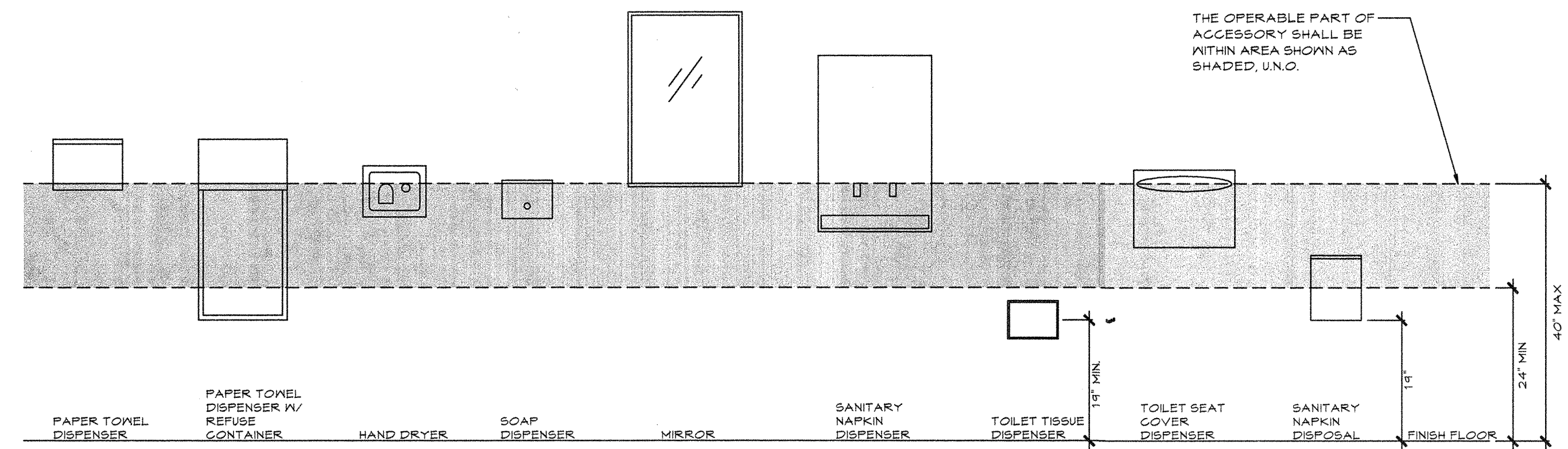
Table with 2 columns: Size (Diameter) and L (Maximum Height). It lists EMT sizes from 1/2" to 4" and their corresponding maximum heights from 4'-0" to 26'-0".

J15 TACTILE CHARACTER HEIGHT N.T.S.

J12 TACTILE SIGN LOCATION N.T.S.

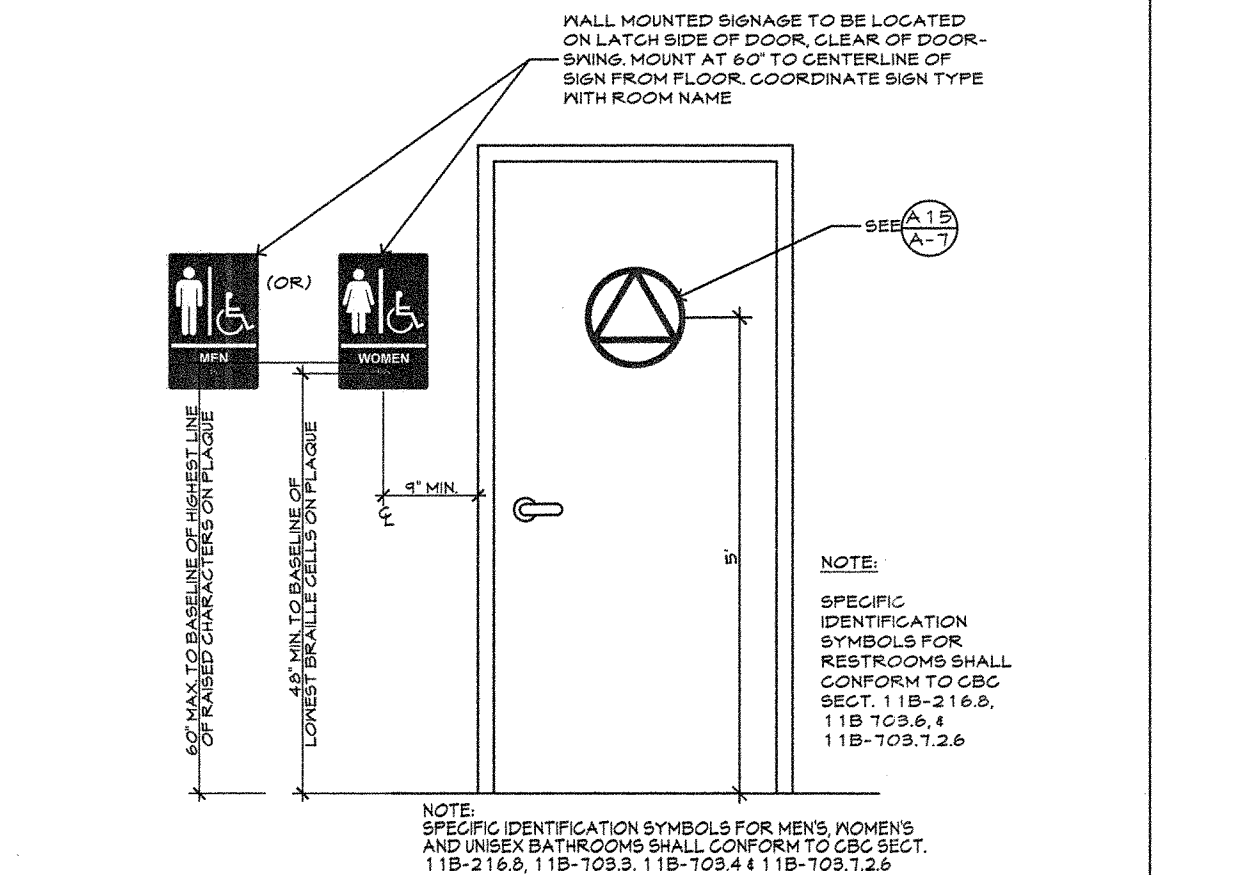
J9 SUSPENDED CEILING GRID N.T.S.

J6 SUSPENDED CEILING REINFORCEMENT N.T.S.

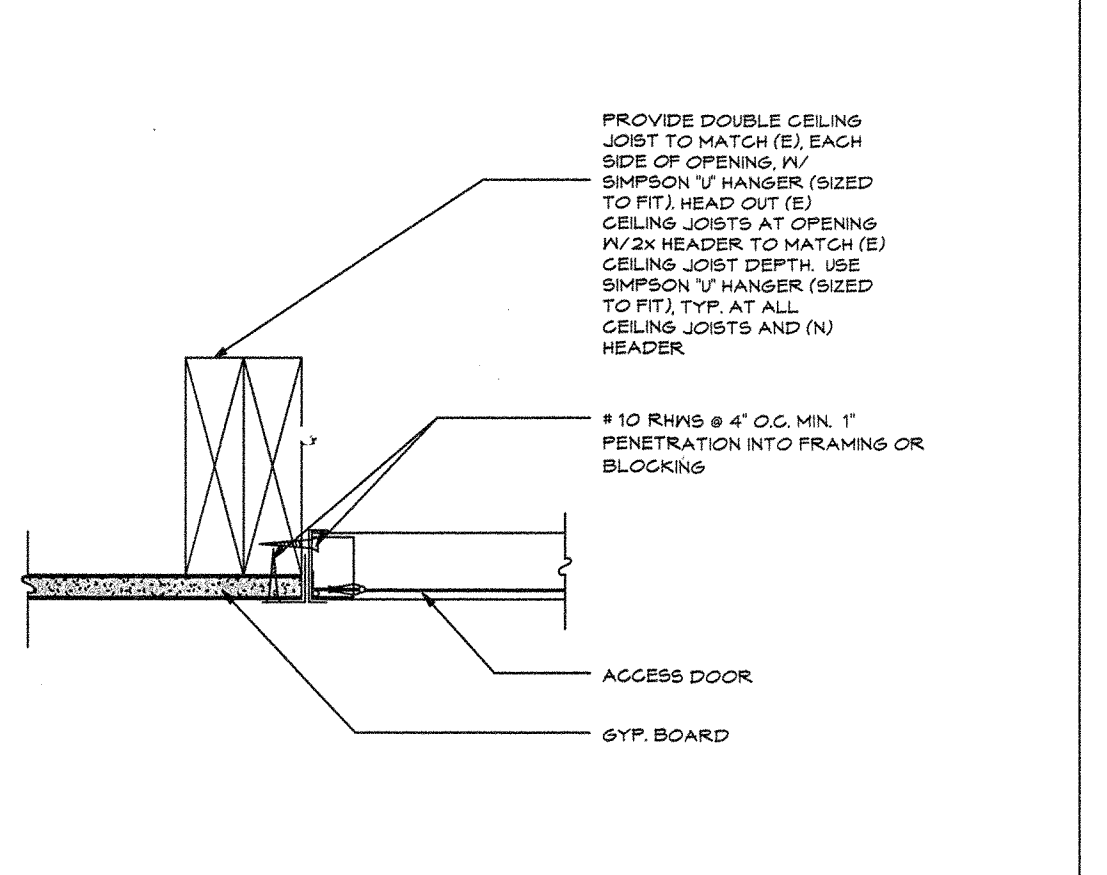


- NOTES: 1. CONTROLS SHALL BE OPERABLE WITH ONE HAND AND NOT REQUIRE TIGHT GRASPING, FINGERING, OR TWISTING OF THE WRIST. 2. FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5 lbf.

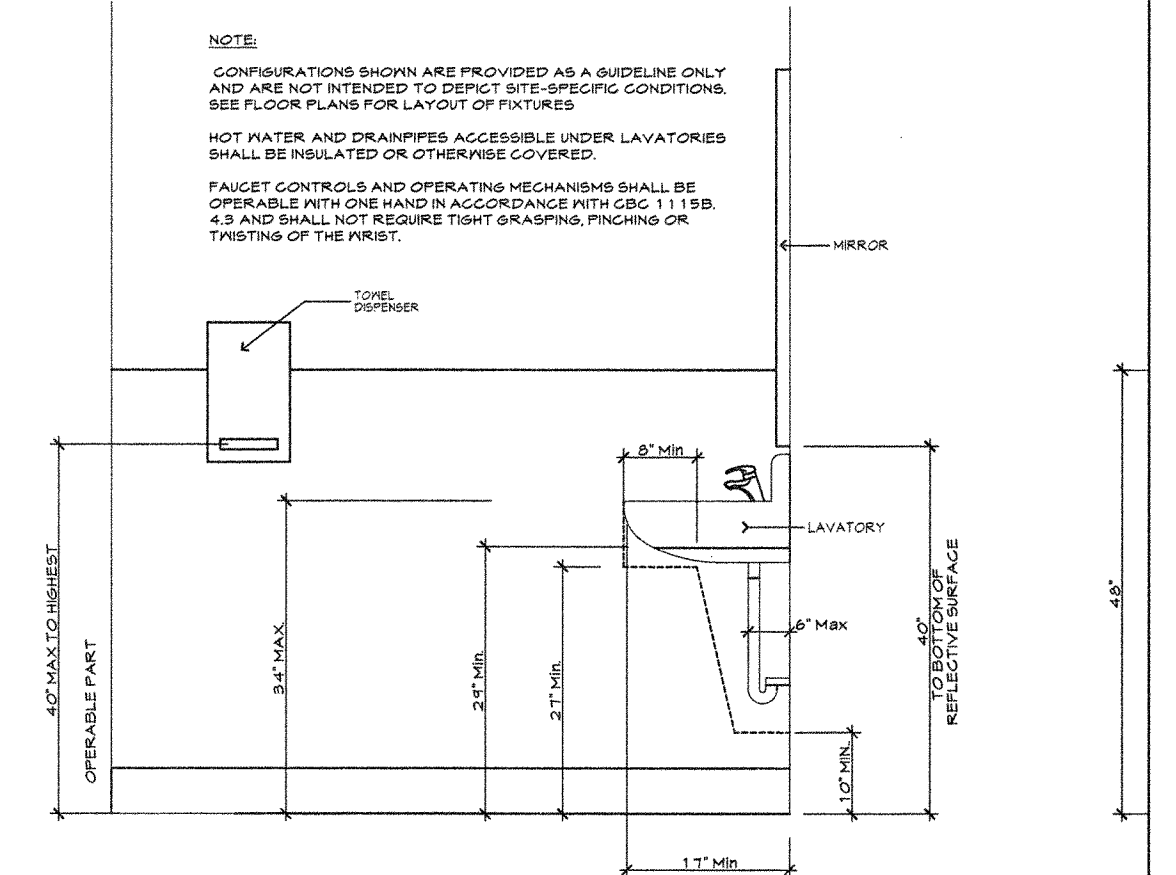
G15 ACCESSIBLE MOUNTING HEIGHTS N.T.S.



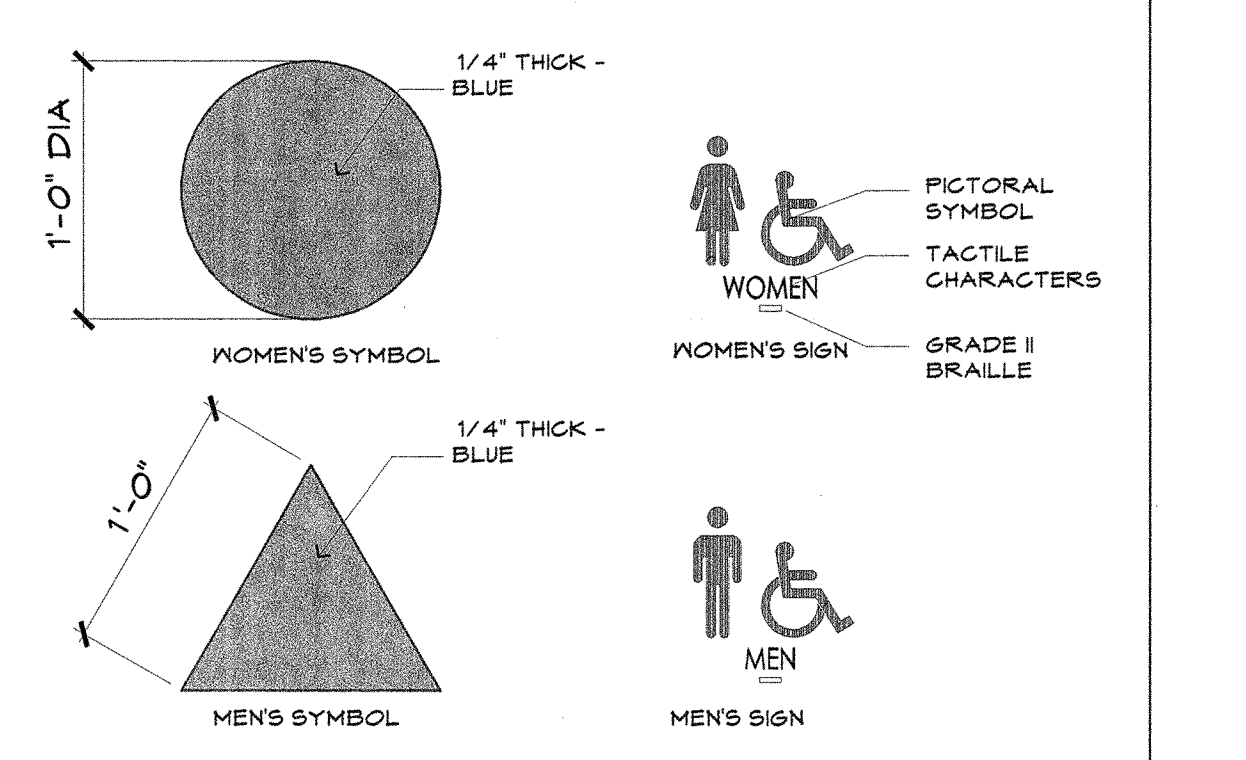
D15 RESTROOM SIGNAGE



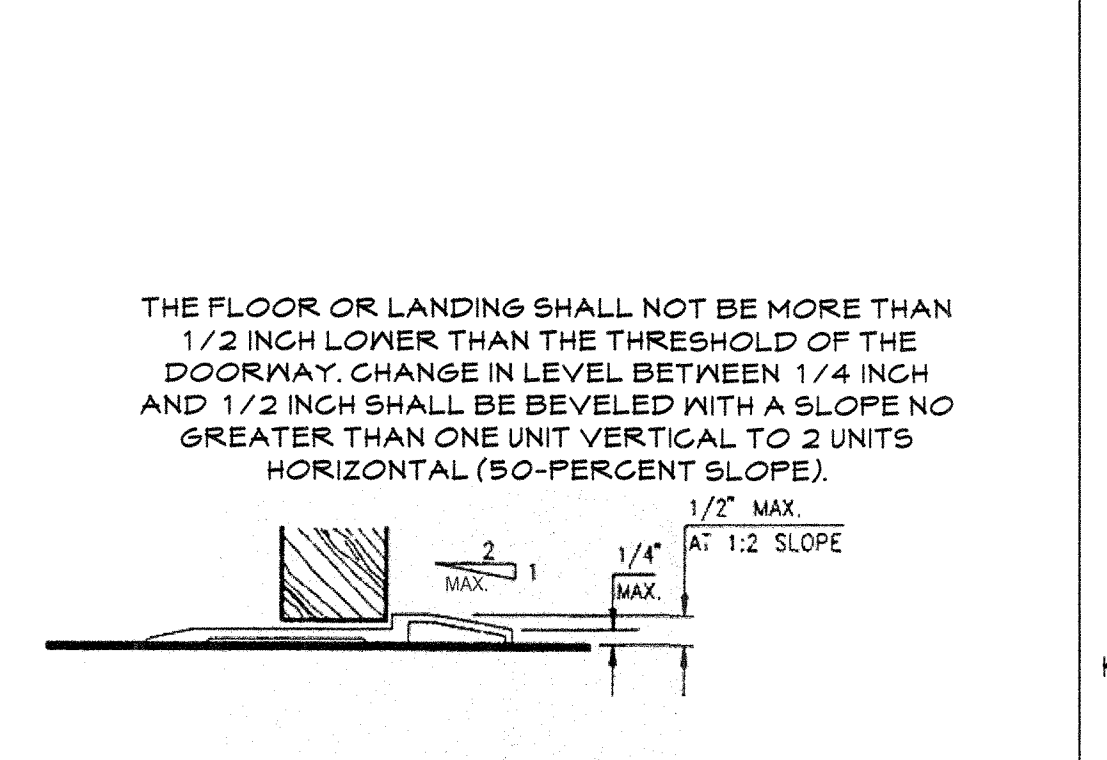
D12 CEILING ACCESS DOOR



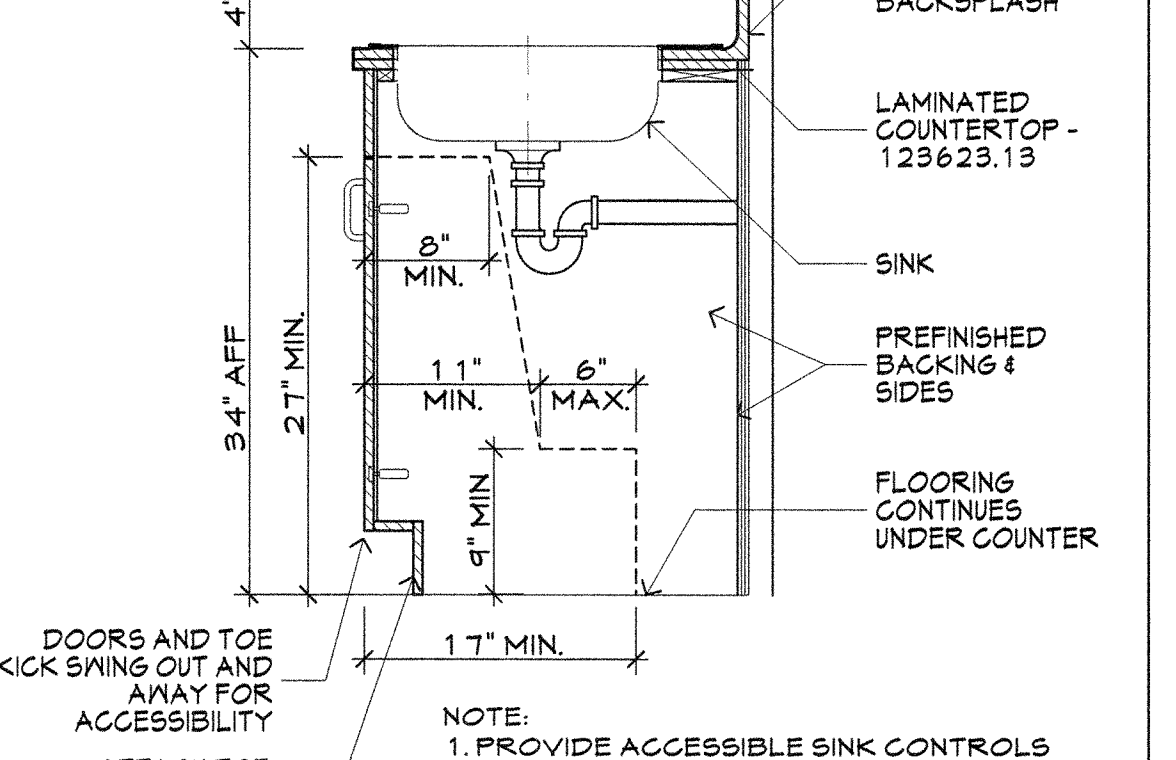
D9 ACCESSIBLE SINK



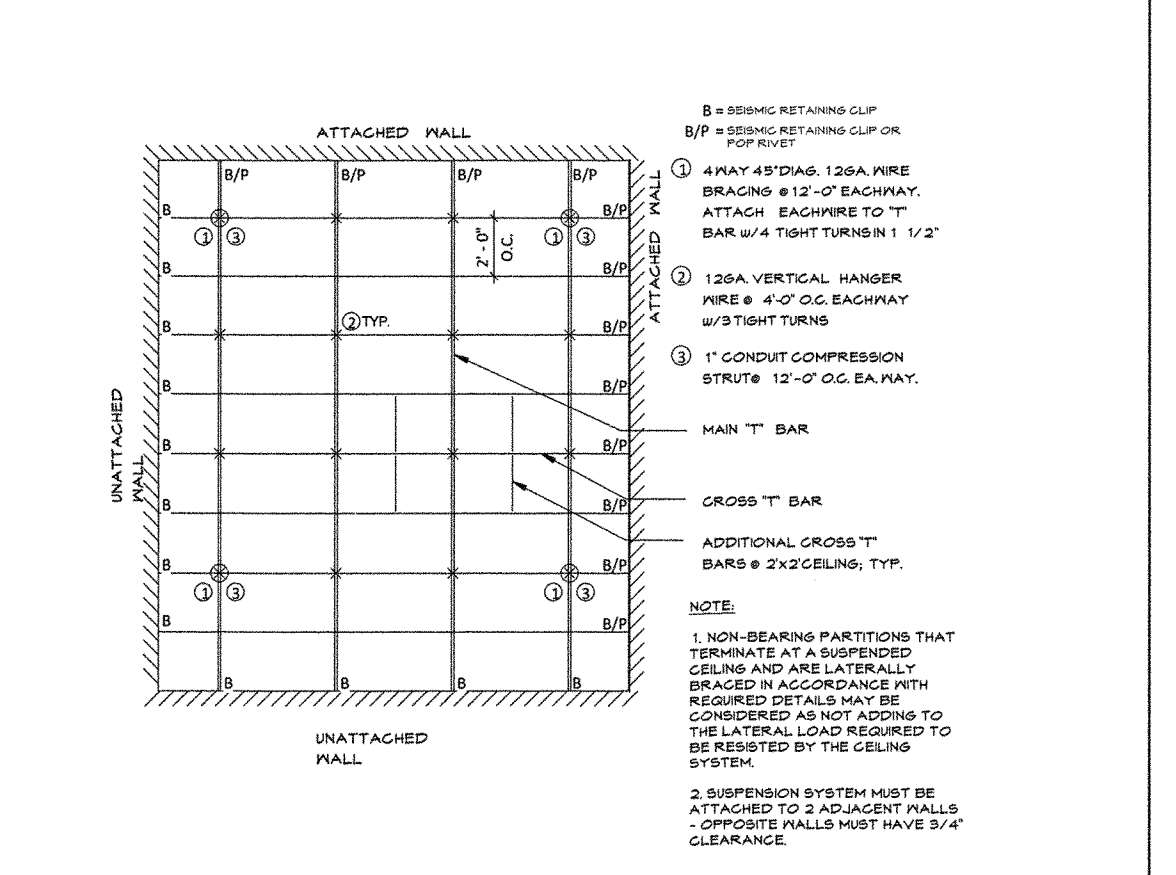
A15 RESTROOM DOOR SIGNAGE



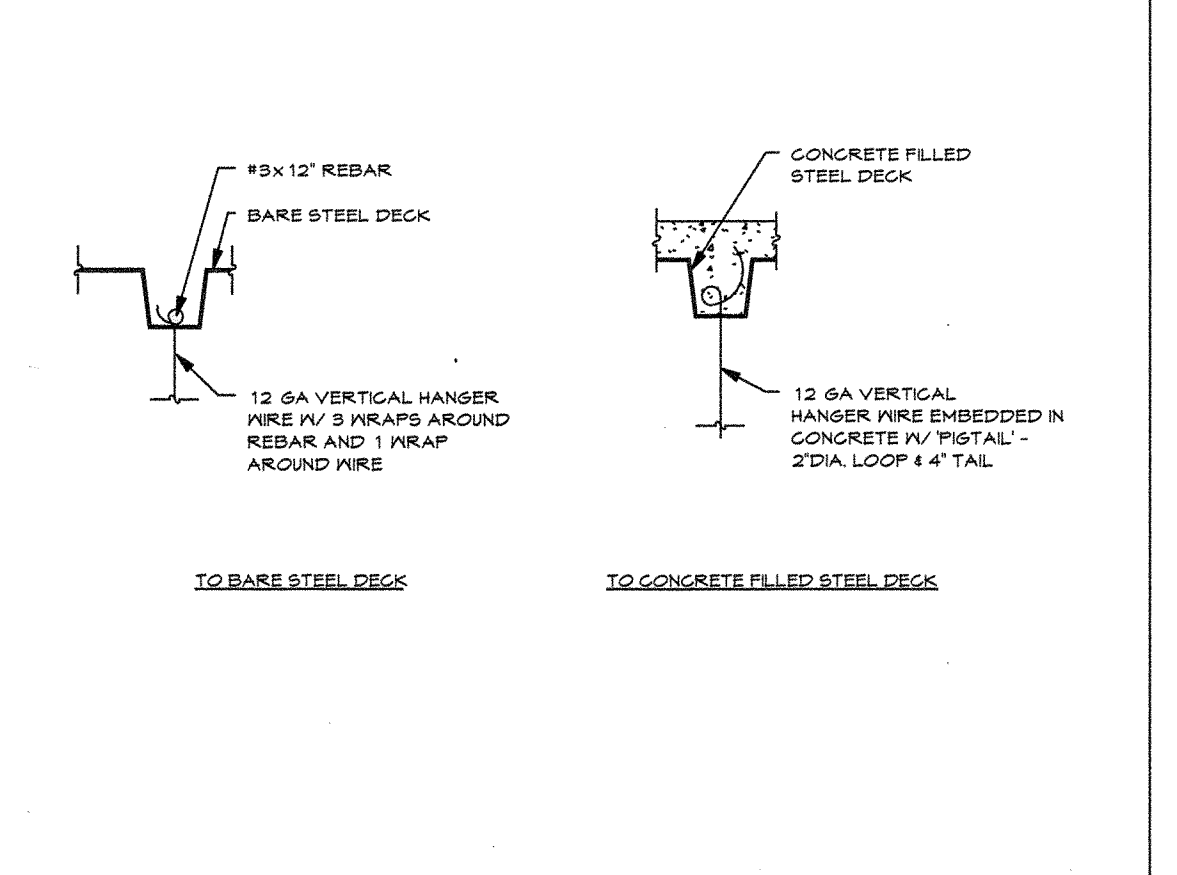
A12 ACCESSIBLE THRESHOLD



A9 BASE CAB WITH SINK AND ACCESSIBLE DOORS



D6 SUSPENDED CEILING SUSPENSION SYSTEM N.T.S.



D3 ALT. WIRE ATTACHMENT - CONCRETE N.T.S.

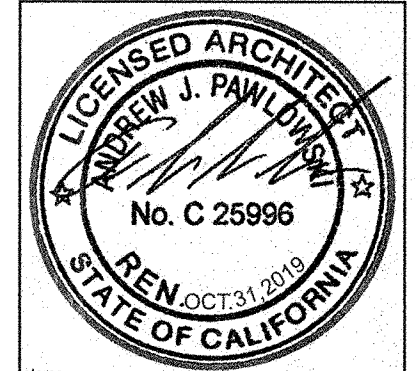
A15 RESTROOM DOOR SIGNAGE

A12 ACCESSIBLE THRESHOLD

A9 BASE CAB WITH SINK AND ACCESSIBLE DOORS

A6 WIRE ATTACHMENTS - WOOD N.T.S.

A3 WIRE ATTACHMENTS - CONCRETE N.T.S.

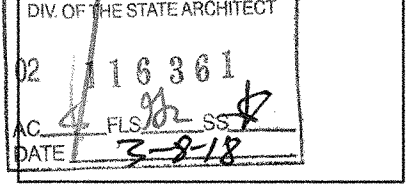


Revisions table with 2 columns: Revision number and Description. Revision 1 is for Design Check 01 dated 08.02.18.

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HVAC SYSTEM IMPROVEMENTS BUILDING 'A' BEAR RIVER HIGH SCHOOL, 11190 MAGNOLIA ROAD, GRASS VALLEY, A/FN# 21-170-05



3/2/18 AS NOTED 66357-29 17-459

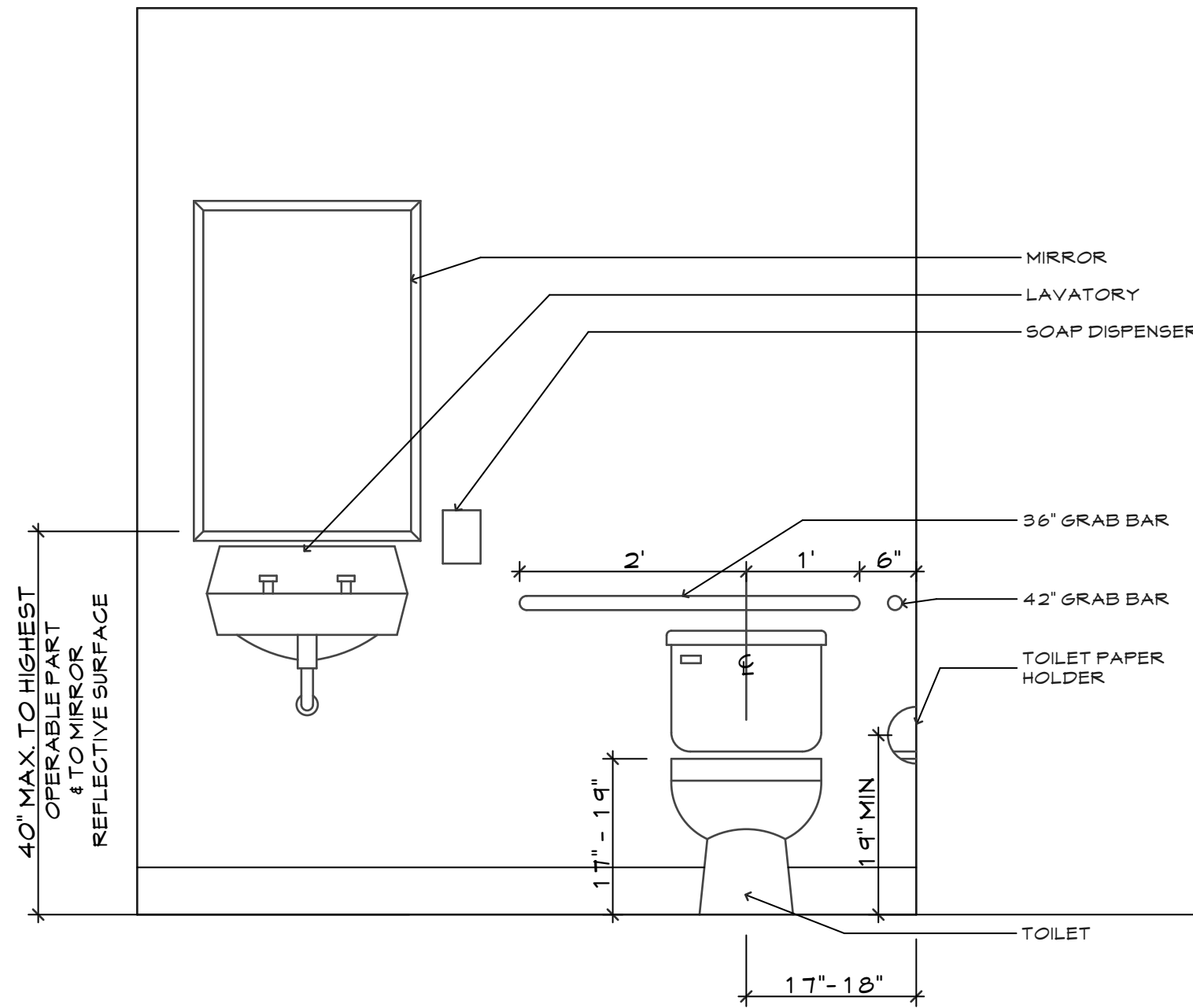
DETAILS A-7

NOTE: CONFIGURATIONS SHOWN ARE PROVIDED AS A GUIDELINE ONLY AND ARE NOT INTENDED TO DEPICT SITE-SPECIFIC CONDITIONS. SEE FLOOR PLANS FOR LAYOUT OF FIXTURES

The diameter or width of the gripping surfaces of a grab bar shall be 1 1/4 inches to 1 1/2 inches or the shape shall provide an equivalent gripping surface. If grab bars are mounted adjacent to a wall, the space between the wall and the grab bars shall be 1 1/2 inches.

Mirrors, towel bars, waste receptacles to be mounted no higher than 40 inches A.F.F. to the point of use.

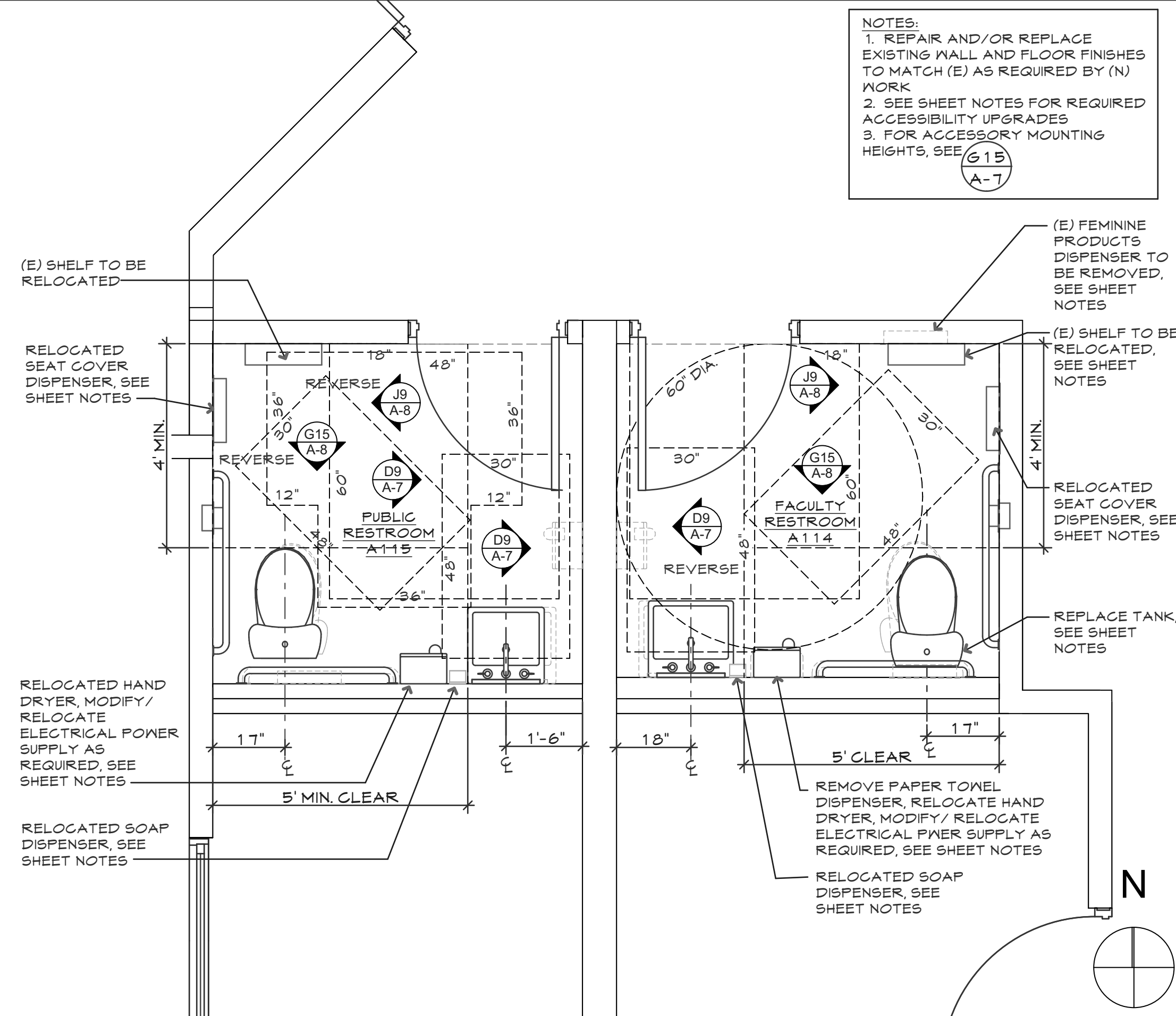
Faucet controls and operating mechanisms shall be operable with one hand in accordance with CBC 1115B.4.3 and shall not require tight grasping, pinching or twisting of the wrist.



G15 LAVATORY AND TOILET FIXTURE CLEARANCES

NOT TO SCALE

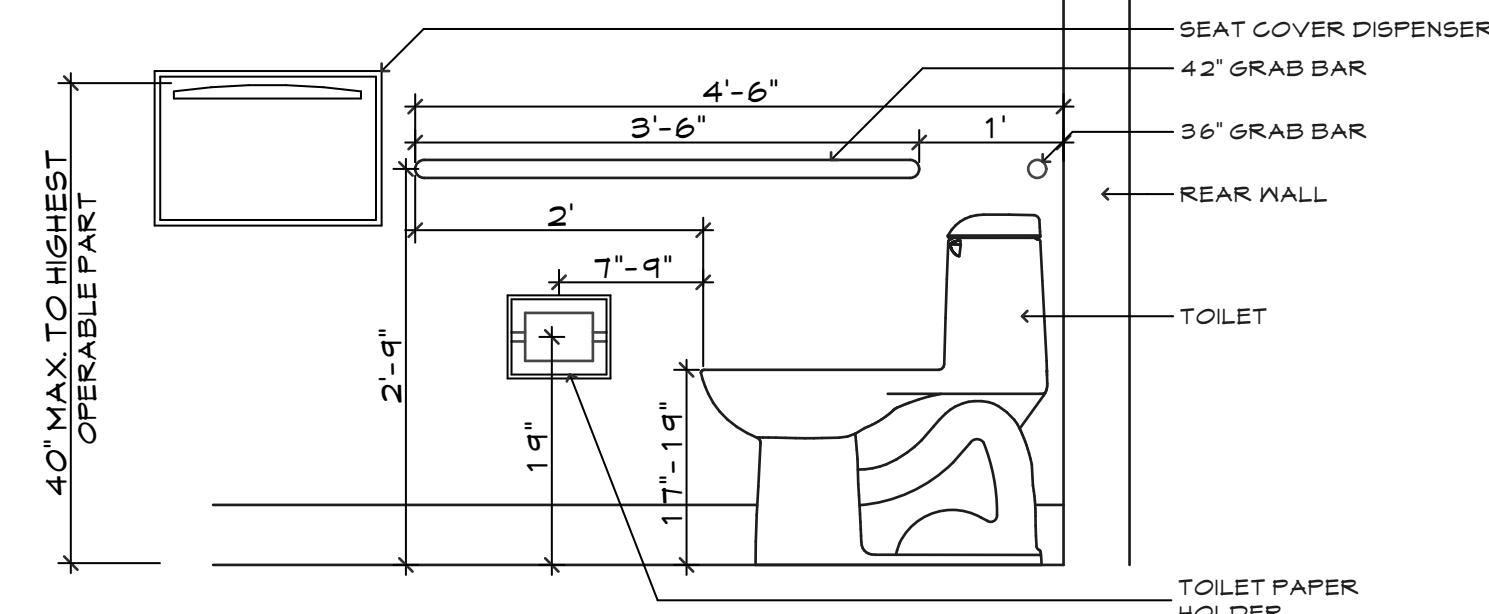
NOTES:
1. REPAIR AND/OR REPLACE EXISTING WALL AND FLOOR FINISHES TO MATCH (E) AS REQUIRED BY (N) WORK
2. SEE SHEET NOTES FOR REQUIRED ACCESSIBILITY UPGRADES
3. FOR ACCESSORY MOUNTING HEIGHTS, SEE (G15) (A-7)



A15 PARTIAL FLOOR PLAN - BUILDING A PUBLIC AND FACULTY RESTROOMS

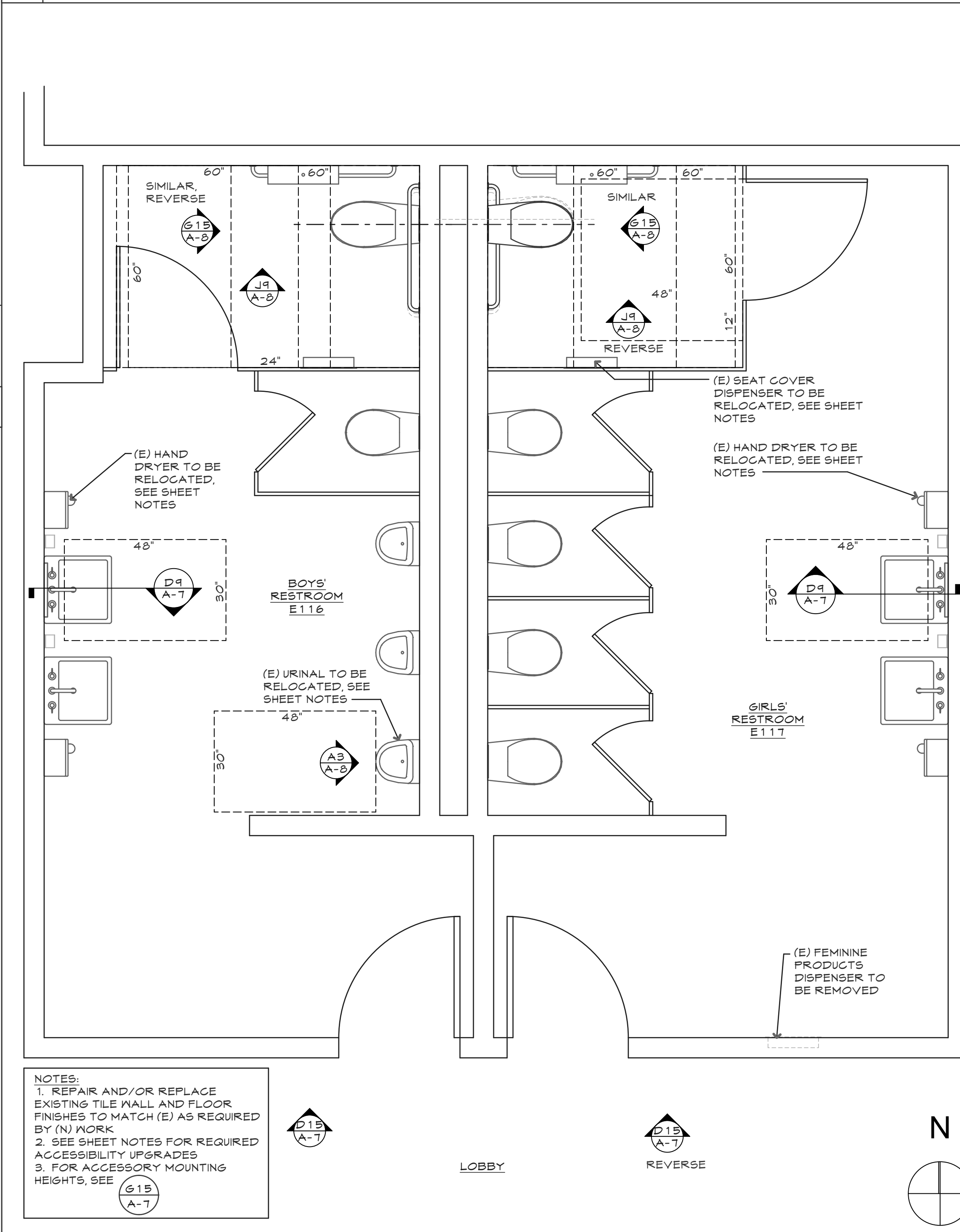
1/2" = 1'-0"

NOTE: CONFIGURATIONS SHOWN ARE PROVIDED AS A GUIDELINE ONLY AND ARE NOT INTENDED TO DEPICT SITE-SPECIFIC CONDITIONS. SEE FLOOR PLANS FOR LAYOUT OF FIXTURES



J9 TOILET FIXTURE CLEARANCES

NOT TO SCALE



A9 PARTIAL FLOOR PLAN - BUILDING E STUDENT RESTROOMS

1/2" = 1'-0"

SHEET NOTES

ROOM A114 - FACULTY RESTROOM

- REMOVE FEMINE PRODUCTS DISPENSER AND INSTALL STAINLESS STEEL COVER AT LOCATION OF REMOVED ACCESSORY
- REPLACE DOOR HARDWARE WITH NEW LEVER-TYPE PRIVACY LOCKSET, PROVIDE COVER PLATES AT REMOVED HARDWARE
- RELOCATE GRAB BAR ON SIDENALL TO 11" FROM REAR WALL
- RELOCATE BAR ON REAR WALL TO 6" MAX. FROM SIDE WALL AND 12" MIN. TO CENTERLINE OF TOILET
- RELOCATE TOILET TO 17" FROM SIDENALL TO CENTER AND 48" FROM FRONT WALL TO FRONT OF TOILET. SANCUT AND REMOVE PORTIONS OF EXISTING SLAB, AND MODIFY AND/OR EXTEND (E) PLUMBING SUPPLY AND WASTE LINES AS REQUIRED.
- REPLACE (E) TOILET TANK WITH (N) TANK HAVING FLUSH CONTROL ON WIDE SIDE OF TOILET
- WRAP WASTE LINE AT LAVATORY
- RELOCATE LAVATORY
- RELOCATE SHELF TO +48" A.F.F. TO SURFACE OF SHELF
- RELOCATE HAND DRYER, PAPER TOWEL DISPENSER, SOAP DISPENSER, MIRROR, AND SEAT COVER DISPENSER

ROOM A115 - PUBLIC RESTROOM

- REPLACE LAVATORY WITH ELKAY WALL HUNG LAVATORY, MODEL ELY 1817 OR EQUAL
- RELOCATE SOAP DISPENSER, HAND DRYER, MIRROR, AND SEAT COVER DISPENSER
- RELOCATE TOILET, SANCUT AND REMOVE PORTIONS OF EXISTING SLAB, AND MODIFY AND/OR EXTEND (E) PLUMBING SUPPLY, VENT AND WASTE LINES AS REQUIRED.
- RELOCATE GRAB BAR ON REAR WALL
- RELOCATE GRAB BAR ON SIDENALL
- RELOCATE SHELF TO +48" A.F.F. TO SURFACE OF SHELF
- WRAP WASTE LINE AT LAVATORY
- REPLACE DOOR HARDWARE WITH NEW LEVER-TYPE PRIVACY LOCKSET, PROVIDE COVER PLATES AT REMOVED HARDWARE

ROOM E116 - BOY'S RESTROOM

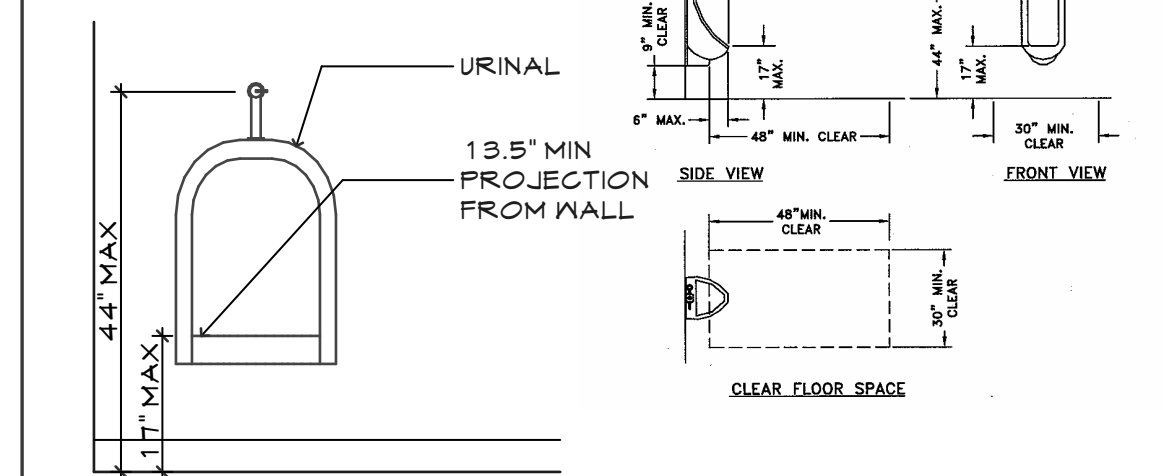
- RELOCATE HAND DRYER
- RELOCATE URINAL
- PROVIDE NEW ROOM I.D. WALL SIGNAGE AT LATCH SIDE OF DOOR
- REPLACE FLUSH CONTROL WITH NEW CONTROL ON WIDE SIDE OF STALL
- RELOCATE GRAB BAR ON REAR WALL OF ACCESSIBLE STALL
- REPLACE ACCESSIBLE STALL PARTITION DOOR HARDWARE, INCLUDING LATCH, HANDLE AND CLOSER
- RELOCATE ACCESSIBLE STALL TOILET PAPER DISPENSER
- INSTALL COAT HOOK IN ACCESSIBLE STALL AT +47" A.F.F.

ROOM E117 - GIRLS' RESTROOM

- RELOCATE ACCESSIBLE TOILET TO, SANCUT AND REMOVE PORTIONS OF EXISTING SLAB, AND MODIFY AND/OR EXTEND (E) PLUMBING SUPPLY, VENT AND WASTE LINES AS REQUIRED.
- RELOCATE GRAB BAR ON REAR WALL OF ACCESSIBLE STALL
- RELOCATE ACCESSIBLE STALL SEAT COVER DISPENSER AND HAND DRYER
- RELOCATE ACCESSIBLE STALL TOILET PAPER DISPENSER
- REMOVE FEMINE PRODUCTS DISPENSER AND INSTALL STAINLESS STEEL COVER AT LOCATION OF REMOVED ACCESSORY
- WRAP WASTE LINES AT LAVATORY

Walls and partitions within 2 feet of urinals and water closets shall have a smooth, hard, nonabsorbent surface, to a height of 4 feet above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture. (CBC 1210.2)

NOTE: CONFIGURATIONS SHOWN ARE PROVIDED AS A GUIDELINE ONLY AND ARE NOT INTENDED TO DEPICT SITE-SPECIFIC CONDITIONS. SEE FLOOR PLANS FOR LAYOUT OF FIXTURES



A3 URINAL



Revisions

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BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, APR# 21-130-85

DATE: 3/16/18
SCALE: 66357-29
PROJECT NUMBER: 17-459

RESTROOM ENLARGED PLANS
A-8

HVAC NOTES

SCOPE OF WORK

- REPLACE EXISTING VAV REHEAT SYSTEM WITH NEW VARIABLE REFRIGERANT FLOW SYSTEM.
- CONTRACTOR SHALL BE RESPONSIBLE OF EQUIPMENT REMOVAL FROM THE PREMISES.
- REMOVE EXISTING ROOFTOP AIR HANDLERS.
- EXISTING VAV BOXES SHALL BE REPLACED WITH REFRIGERANT FANCOIL UNITS.
- EXISTING SUPPLY AIR DISTRIBUTION DOWNSTREAM OF VAV BOXES SHALL BE RE-USED.
- EXISTING SUPPLY AIR UPSTREAM OF VAV BOXES SHALL BE REUSED FOR OUTSIDE AIR TO FANCOIL UNITS.
- ALL HOT WATER SUPPLY AND RETURN PIPING TO VAV BOXES SHALL BE REMOVED, PIPING SHALL NOT BE ABANDONED IN PLACE.
- ALL EXISTING THERMOSTATS SHALL BE REPLACED WITH NEW THERMOSTATS IN THE SAME LOCATION UNLESS OTHERWISE NOTED.
- FURNISH AND INSTALL ALL MATERIALS AND PERFORM ALL LABOR NECESSARY FOR A COMPLETE INSTALLATION OF HVAC WORK INDICATED ON THE DRAWINGS. ALSO PROVIDE ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED WHICH CAN REASONABLY BE INFERRED OR TAKEN AS BELONGING TO THE WORK AND NECESSARY TO PROVIDE THE COMPLETE SYSTEM.
- IT IS THE INSTALLING CONTRACTOR'S RESPONSIBILITY TO ASSURE ALL MECHANICAL SYSTEMS FUNCTION PROPERLY, SAFELY, AND MEET ALL LOCAL, STATE AND REGIONAL CODES.
- ALL WORK IS TO CONFORM TO THE ACCEPTED STANDARDS OF THE TRADE. THE ENGINEER IS TO BE NOTIFIED IF ANY SUBSTITUTIONS ARE SEEN TO BE NECESSARY.
- VRF COMMISSIONING
 - THE VARIABLE REFRIGERANT FLOW (VRF) SYSTEM SHALL BE INSTALLED BY A MANUFACTURER CERTIFIED MECHANICAL CONTRACTORS THAT HAS SUCCESSFULLY COMPLETED THE MITSUBISHI CITY MULTI VRF INSTALLATION COURSE.
 - ALL VRF SYSTEMS SHALL BE TESTED AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE REFRIGERANT PIPING SHALL BE PRESSURIZED TO 550 PSIG FOR A MINIMUM OF TWO DAYS AND PIPING MUST HOLD STEADY PRESSURE TO ENSURE NO LEAKS EXIST IN THE SYSTEM.
 - THE MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT AT START UP AND AT ALL SYSTEM PROGRAMMING TO ENSURE THE SYSTEM IS PROPERLY INSTALLED AND CONFIGURED. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL SYSTEM PROGRAMMING AS REQUIRED FOR THE OWNER INTENDED.

OPERATION

- THE OWNER SHALL BE PROVIDED WITH PROPER TRAINING IN THE USE OF THE CONTROL SYSTEM MANAGEMENT AND INTEGRATE IT INTO THE OWNER'S COMPUTER SYSTEM AS REQUIRED FOR A COMPLETE OPERATIONAL SYSTEM.
- REFRIGERANT PIPING BETWEEN OUTDOOR CONDENSING UNITS AND BUILDING SHALL BE INSULATED WITH 3/4" (MIN.) ARMACELL TYPE INSULATION. REFRIGERANT PIPING WITHIN BUILDING MAY BE INSULATED WITH 1/2" THICK INSULATION. ALL PIPING SHALL BE RUN IN A NEAT ORDERLY FASHION, PERPENDICULAR OR PARALLEL TO FRAMING. ALL PIPING INSTALLATIONS SHALL UTILIZE UNI-STRUT ASSEMBLIES, POWER-STRUT ASSEMBLIES OR OTHER PIPE MOUNTING HARDWARE WHICH ARE IN CONFORMANCE WITH 2016 CFC AND SMACNA GUIDELINES.
- CONTRACTOR SHALL PARTICIPATE IN BID WALK-THRU AND SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS. BIDS SHALL BE ADJUSTED TO ACCOMMODATE ANY EXISTING CONDITIONS WHICH ARE NOT SHOWN ON PLANS AND ARE VISIBLE DURING WALK-THRU. ANY AND ALL DEVIATIONS FROM PLANS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION.
- CONTROLS - GENERAL
 - REFER TO SCHEMATIC ON PLANS AND SPECIFICATIONS FOR COMPONENTS AND COMPLETE CONTROL DESCRIPTION.
 - CONTRACTOR SHALL COORDINATE WITH SCHOOL DISTRICT'S ENERGY MANAGEMENT SYSTEM'S VENDOR TO PROVIDE A COMPLETE FUNCTIONING SYSTEM.
 - THE VENTILATION SYSTEMS SHALL BE WIRED TO OPERATE CONTINUOUSLY DURING OCCUPIED HOURS. DURING UNOCCUPIED HOURS THE UNIT SHALL CYCLE ON AND OFF WITH A DEMAND FOR HEATING AND COOLING.
 - THERMOSTATS SHALL BE INSTALLED WHERE INDICATED ON PLANS, 60 INCHES ABOVE FINISHED FLOOR LEVEL.
 - INSTALLING SUB-CONTRACTOR SHALL PROVIDE ENGINEER WITH COMPLETE CONTROL SCHEMATIC INCLUDING SUBMITTALS FOR EACH COMPONENT.
 - ALL LOW VOLTAGE WIRING FOR CONTROLS AND SENSORS IS THE RESPONSIBILITY OF THE MECHANICAL/HVAC CONTRACTOR. ALL CONDUIT FULLS (AND LOW VOLTAGE WIRING INSTALLATION) IS TO BE COORDINATED WITH ELECTRICAL CONTRACTOR DURING CONSTRUCTION.
 - THE CONTROL SYSTEM SHALL CONSIST OF A LOW VOLTAGE COMMUNICATION NETWORK OF UNITARY BUILT-IN CONTROLLERS WITH ON-BOARD COMMUNICATIONS AND A WEB-BASED OPERATOR INTERFACE. A WEB CONTROLLER WITH A NETWORK INTERFACE CARD SHALL GATHER DATA FROM THIS SYSTEM AND GENERATE

- WEB PAGES ACCESSIBLE THROUGH A CONVENTIONAL WEB BROWSER ON EACH PC CONNECTED TO THE NETWORK. OPERATORS SHALL BE ABLE TO PERFORM ALL NORMAL OPERATOR FUNCTIONS THROUGH THE WEB BROWSER INTERFACE.
- SYSTEM CONTROLS AND CONTROL COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- FURNISH ENERGY CONSERVATION FEATURES SUCH AS OPTIMAL START, NIGHT SETBACK, REQUEST-BASED LOGIC, AND DEMAND LEVEL ADJUSTMENT OF OVERALL SYSTEM CAPACITY AS SPECIFIED IN THE SEQUENCE.
- SYSTEM SHALL PROVIDE DIRECT AND REVERSE-ACTING ON AND OFF ALGORITHMS BASED ON AN INPUT CONDITION OR GROUP CONDITIONS TO CYCLE A BINARY OUTPUT OR MULTIPLE BINARY OUTPUTS.
- PROVIDE CAPABILITY FOR FUTURE SYSTEM EXPANSION TO INCLUDE MONITORING AND USE OF OCCUPANT CARD ACCESS, LIGHTING CONTROL AND GENERAL EQUIPMENT CONTROL.
- SYSTEM SHALL BE CAPABLE OF EMAIL GENERATION FOR REMOTE ALARM ANNUNCIATION.
- CONTROL SYSTEM START-UP SHALL BE A REQUIRED SERVICE TO BE COMPLETED BY THE MANUFACTURER OR A DULY AUTHORIZED, COMPETENT REPRESENTATIVE THAT HAS BEEN FACTORY TRAINED IN MITSUBISHI ELECTRIC CONTROLS SYSTEM CONFIGURATION AND OPERATION. THE REPRESENTATIVE SHALL PROVIDE PROOF OF CERTIFICATION FOR MITSUBISHI ELECTRIC CONTROLS APPLICATIONS TRAINING INDICATING SUCCESSFUL COMPLETION OF NO MORE THAN TWO (2) YEARS PRIOR TO SYSTEM INSTALLATION. THIS CERTIFICATION SHALL BE INCLUDED AS PART OF THE EQUIPMENT AND/OR CONTROLS SUBMITTALS. THIS SERVICE SHALL BE EQUIPMENT AND SYSTEM COUNT DEPENDENT AND SHALL BE A MINIMUM OF ONE (1) EIGHT (8) HOUR PERIOD TO BE COMPLETED DURING NORMAL WORKING HOURS.
- SUPPLY AIR DIFFUSERS AND RETURN/EXHAUST GRILLES SHALL BE SHOEMAKER OR EQUAL. PROPOSED MODEL NUMBERS FOR DIFFERENT APPLICATIONS ARE AS FOLLOWS:

APPLICATION	MODEL #	REMARKS
CLG T-BAR W/ FILTERED RETURN	905 FG	24"x24" AIRFOIL BLADE FILTER GRILLE
CLG T-BAR EXHAUST	100-600	PROVIDE 20"x20"x2" MERV-8 FILTER
CLG T-BAR MAKE-UP AL AIR TRANSFER		EGGCRATE GRILLE WITH T-BAR PANEL ALUMINUM LATTICE T-BAR GRILLE

- LOCATIONS OF DIFFUSERS AND GRILLES ON PLANS ARE APPROXIMATE AND MAY HAVE TO BE RELOCATED TO AVOID OBSTACLES, SUCH AS LIGHT FIXTURES AND SPRINKLERS.
- BAROMETRIC INTAKE DAMPERS SHALL BE A NON-METALLIC DAMPER, RUSKIN MODEL # NM5E, OR EQUAL. DAMPERS SHALL BE NEOPRENE COATED FIBERGLASS WITH 1/8 GAGE GALVANIZED FRAME. DAMPERS SHALL OPEN WITH 0.25" WG PRESSURE.
- FIRE DAMPERS
 - HORIZONTAL RECTANGULAR, POTTORFF # VFD-10-B WITH OUT OF THE AIRSTREAM CURTAIN STYLE BLADES. PROVIDE INTEGRAL SLEEVE.
 - HORIZONTAL ROUND, POTTORFF # FD-12BR WITH FUSIBLE LINK.
 - DAMPERS SHALL BE UL LISTED AND LISTED BY THE CALIFORNIA STATE FIRE MARSHALL.
- OUTSIDE AIR INTAKE SHALL BE A MINIMUM OF 10 FEET AWAY FROM OR 3 FEET BELOW EXHAUST AIR DISCHARGE OR PLUMBING VENTS. COVER AIR INTAKE WITH 1" MESH WIRE.
- SLOPE ALL CONDENSATE LINES AT 1/4" PER FOOT. CONDENSATE SHALL TERMINATE INDIRECTLY TO SINK TAIL PIECE OR OTHER APPROVED PLUMBING FIXTURE. CONDENSATE PIPING SHALL BE COPPER UNLESS OTHERWISE NOTED. IN LIEU OF SECONDARY DRAIN, FLOAT SWITCH FOR AIR HANDLER WILL INTERRUPT POWER TO THE FANCOIL UNIT WHEN MOISTURE IS DETECTED IN THE DRAIN PAN.
- DUCT MATERIAL AND SEALING:
 - DUCTING IN CONCEALED LOCATION SHALL BE GALVANIZED SHEET METAL. FIRE-INSULATED FLEX DUCT MAY BE USED AS LEADERS (5' MAX.) TO AND FROM AIR TERMINALS. PER CMC 603.4.1. DUCT SHALL BE MANUFACTURED IN ACCORDANCE WITH CHAPTER 6 OF THE 2016 CMC AND SMACNA GUIDELINES.
 - FIRE-INSULATED FLEX DUCT SHALL HAVE AN R-VALUE = 6.0.
 - FACTORY-FABRICATED DUCT SYSTEMS SHALL COMPLY WITH UL181.
 - METAL TO METAL JOINTS SHALL BE SEALED WITH MASTIC SEALANT TO PROVIDE AIRTIGHT PROTECTION PRIOR TO INSULATION. APPLY SEALANT ACCORDING TO MANUFACTURER'S RECOMMENDATION.
 - INNER LINING OF FLEX DUCTING SHALL BE SECURELY FASTENED WITH A PANDUIT STRAP. THE EXTERIOR LINING (INSULATION) SHALL BE SECURELY TAPED TO THE SHEET METAL FITTING.
 - WHERE TURNS AND/OR TRANSITIONS EXCEED 45 DEGREES USE SHEET METAL FITTINGS AND ELBOWS. PROVIDE SHEET METAL SLEEVES FOR ALL SPLICES.
 - CORRUGATED ALUMINUM FLEX DUCT SHALL NOT BE ALLOWED.

- TAPES AND MASTIC SEALANTS SHALL COMPLY WITH UL181, UL 181A, OR UL181B.
- INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE. DIVERGENCE UPSTREAM OF EQUIPMENT SHALL NOT EXCEED 20 DEGREES. CONVERGENCE DOWNSTREAM SHALL NOT EXCEED 30 DEGREES.
- SUPPORTS AND HANGERS FOR DUCTING SHALL BE IN ACCORDANCE WITH THE 2016 UNIFORM MECHANICAL CODE AND IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE AND. DUCTS SHALL BE SUPPORTED AT EACH CHANGE OF DIRECTION, SUPPORTS AND 8' INTERVALS (MIN.). DUCT REFER TO STRUCTURAL PLANS FOR EQUIPMENT SUPPORT DETAILS.
- WRAP ALL UNLINED CONCEALED SUPPLY AND RETURN DUCTS WITH O.C. FIBERGLASS DUCT WRAP OR JM MICROLITE, 2" THICK AND 1" PER CUBIC FOOT DENSITY. WRAP INSULATION ENTIRELY AROUND DUCT AND WIRE SECURELY IN PLACE WITH #16 WIRE 12" O.C. ON EACH SIDE OF STANDING SEAM AND OVER INSULATION JOINT. LAP ALL INSULATION JOINTS 3" MIN. INSULATE DUCTS TIGHT AGAINST OTHER WORK BEFORE HANGING IN PLACE.
- DUCTS WITHIN 5 FEET OF AIR MOVING DEVICE SHALL BE LINED ON THE INTERIOR WITH 1" QUENO CORNING TYPE 150 AEROFLEX, OR EQUAL. MATERIAL HAS A K' OF 0.28 (BTU/HR-FT-F).
- AT TIME OF ROUGH INSTALLATION OR DURING STORAGE OF THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HVAC SYSTEM, ALL DUCTING AND RELATED AIR DISTRIBUTION COMPONENTS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL, OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM.
- AIR DISTRIBUTION SYSTEM SHALL BE BALANCED WITH AN APPROVED AND CALIBRATED AIR FLOW MEASURING DEVICE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). AN INDEPENDENT CONTRACTOR SHALL PROVIDE THE AIR BALANCE. FLOW RATES WITHIN 4% OF THE DESIGN FLOW RATES PROVIDED ARCHITECT WITH COMPLETE AIR BALANCE REPORT IN ACCORDANCE WITH THE SPECIFICATIONS.
- NO DUCTED OR NON-DUCTED AIR MOVING DEVICE SHALL TERMINATE IN ATTIC.



Revisions
3-2-2018 BACKCHECK

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HVAC System Improvements Building A
 for
BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD, GRASS VALLEY, CA

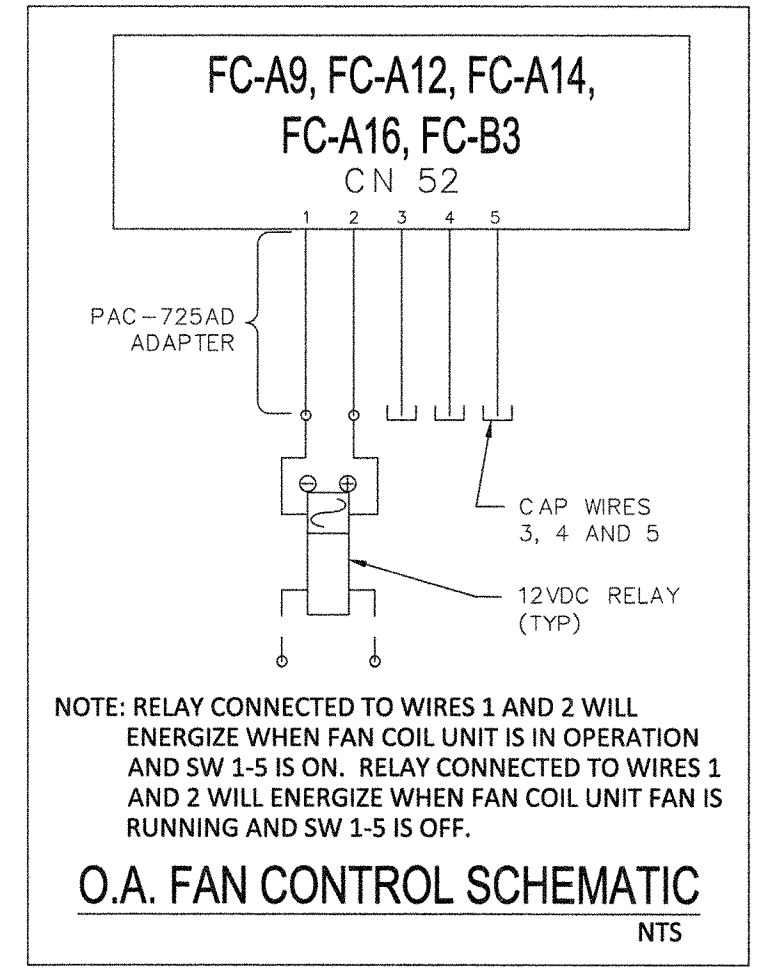
Date:	12-8-2017
Scale:	
Project Number:	17-174

HVAC NOTES, LEGEND & SCHEMATIC

M0.1A

HVAC LEGEND

	(N) 24"x10" RA 40 CFM	NEW RETURN GRILLE SIZE AND FLOW RATE LISTED
	(N) 4"x10" EA 40 CFM	NEW CEILING EXHAUST GRILLE SIZE AND FLOW RATE LISTED
		RECTANGULAR SUPPLY AIR CROSS SECTION
		RECTANGULAR RETURN AIR CROSS SECTION
	(E) 12"x6" SA 40 CFM	EXISTING SUPPLY DIFFUSER TO REMAIN SIZE AND FLOW RATE LISTED ARROWS INDICATE THRU PATTERN
		EXISTING DIFFUSER / GRILL TO BE REMOVED
		VARIABLE AIR VOLUME TERMINAL UNIT TO BE REMOVED
		THERMOSTAT
		FIRE DAMPER
		FIRE / SMOKE DAMPER: ROUND = POTTORFF FSD-12BR, RECTANGULAR = POTTORFF FSD-151 SEE SHEET M0.4B
		BALANCING DAMPER
	10"	NEW RIGID ROUND DUCT, DIAMETER NOTED
	28x12	NEW RECTANGULAR DUCT, SIZE (WIDTH x HEIGHT) NOTED
	10"	NEW FLEXIBLE DUCT, DIAMETER NOTED
	14x9	EXISTING DUCT TO REMAIN, SIZE (WIDTH X HEIGHT) NOTED
		EXISTING DUCT TO BE REMOVED
		EXISTING HOT WATER SUPPLY & RETURN PIPING TO BE REMOVED
		EXISTING CONDENSATE PIPING TO BE REMOVED
FC-B3		EQUIPMENT TAG
AC		ABOVE CEILING
HP		HEAT PUMP
CU		CONDENSING UNIT
FC		FAN COIL UNIT
MUA		MAKE-UP AIR HOOD
EF		EXHAUST FAN
OA		OUTSIDE AIR
RA		RETURN AIR
EA		EXHAUST AIR
MUA		MAKE UP AIR
CFM		CUBIC FEET PER MINUTE
VTR		PLUMBING VENT THROUGH ROOF
AVTR		ACID PLUMBING VENT THROUGH ROOF
RD		ROOF DRAIN
ORD		OVERFLOW ROOF DRAIN



MEP Component Anchorage Note
 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 requirements prescribed in the 2016 CBC, Sections 1616A.1.18 through 1616A.1.26 and ASCE 7-10 Chapter 13, 26 and 30.

- All permanent equipment and components.
- Temporary or movable equipment that is permanently attached (e.g. hard wired) to the building utility services such as electricity, gas or water.
- Movable equipment which is stationed in one place for more than 8 hours and heavier than 400 pounds or has a center of mass located 4 feet or more above the adjacent floor or roof level that directly support the component 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.

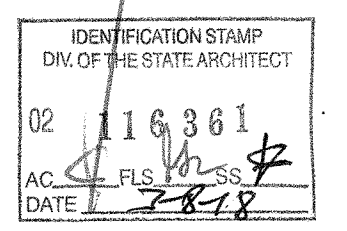
- Components weighing less than 400 pounds and have a center of mass located 4 feet or less above the adjacent floor or roof level that directly support the component.
- Components weighing less than 20 pounds, or in the case of distributed systems, less than 5 pounds per foot, which are suspended from 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.

Piping, Ductwork, and Electrical Distribution System Bracing Note
 Piping, ductwork, and electrical distribution systems shall be braced to comply with the forces and displacements prescribed in ASCE 7-10 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.1.24, 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 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 of and during the hanging and bracing of the distribution systems. The Structural Engineer of Record shall verify the adequacy of the structure to support the hanger and brace loads.

- Mechanical Piping (MP), Mechanical Ducts (MD), Plumbing Piping (PP), Electrical Distribution Systems (E):
- MP MD PP E - Option 1: Detailed on the approved drawings with project specific notes and details.
 - MP MD PP E - Option 2: Shall comply with the applicable OSHPD Pre-Approval (OPM) # OPM-0043-13 MASON INDUSTRIES or OPM-0052-13 EATONS B-LINE
 - MP MD PP E - 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 Level _____ for the project and conditions.

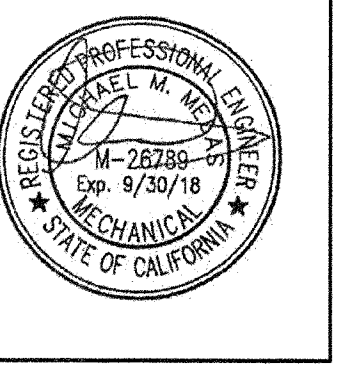


FAN SCHEDULE												
SYMBOL	QTY.	COOLING DESCRIPTION	FAN		ELECT.			MFGR & MODEL NO.	WEIGHT (LBS)	SONES	REMARKS	
			CFM	S.P. (WC)	VOLTAGE	RPM	WATTS					
EF-A1	1	IN-LINE EXHAUST FAN	425	0.3	115 V. 1 PHASE	---	132	PANASONIC WHISPERLINE™ FV-40-NLF1	19.1	2.1	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=22", W=14-7/8", H=11"	
EF-A2	1	IN-LINE EXHAUST FAN	425	0.3	115 V. 1 PHASE	---	132	PANASONIC WHISPERLINE™ FV-40-NLF1	19.1	2.1	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=22", W=14-7/8", H=11"	
EF-A5	1	IN-LINE EXHAUST FAN	400	0.3	115 V. 1 PHASE	---	132	PANASONIC WHISPERLINE™ FV-40-NLF1	19.1	2.1	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=22", W=14-7/8", H=11"	
EF-A6	1	IN-LINE EXHAUST FAN	350	0.3	115 V. 1 PHASE	---	132	PANASONIC WHISPERLINE™ FV-40-NLF1	19.1	2.1	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=22", W=14-7/8", H=11"	
EF-A8	1	IN-LINE EXHAUST FAN	300	0.4	115 V. 1 PHASE	---	98	PANASONIC WHISPERLINE™ FV-30-NLF1	19.1	1.2	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=22", W=14-7/8", H=11"	
EF-B4	1	IN-LINE EXHAUST FAN	250	0.5	115 V. 1 PHASE	---	98	PANASONIC WHISPERLINE™ FV-30-NLF1	19.1	1.2	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=23-5/8", W=12-1/8", H=11"	
EF-B5	1	IN-LINE EXHAUST FAN	250	0.5	115 V. 1 PHASE	---	98	PANASONIC WHISPERLINE™ FV-30-NLF1	19.1	1.2	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=23-5/8", W=12-1/8", H=11"	
EF-B6	1	IN-LINE EXHAUST FAN	300	0.4	115 V. 1 PHASE	---	98	PANASONIC WHISPERLINE™ FV-30-NLF1	19.1	1.2	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=23-5/8", W=12-1/8", H=11"	
EF-B9	1	IN-LINE EXHAUST FAN	280	0.4	115 V. 1 PHASE	---	98	PANASONIC WHISPERLINE™ FV-30-NLF1	19.1	1.2	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=23-5/8", W=12-1/8", H=11"	
EF-B10	1	IN-LINE EXHAUST FAN	280	0.4	115 V. 1 PHASE	---	98	PANASONIC WHISPERLINE™ FV-30-NLF1	19.1	1.2	UNIT HAS BUILT-IN BACKDRAFT DAMPER FAN SHALL BE ENERGIZED BY LIGHT CIRCUIT IN ROOM WHICH IT SERVES, SUSPEND FAN FROM ROOF FRAMING L=23-5/8", W=12-1/8", H=11"	
SF-A9	1	IN-LINE SUPPLY FAN	100	0.4	120 V. 1 PHASE	3139	17.1	FANTECH FG 4XL EC	5.5	N/A	FAN SHALL BE ENERGIZED BY FAN IN FC-A9 SEE DETAIL, SHT MO.1 SUSPEND FAN FROM ROOF FRAMING	
SF-A12	1	IN-LINE SUPPLY FAN	100	0.4	120 V. 1 PHASE	3139	17.1	FANTECH FG 4XL EC	5.5	N/A	FAN SHALL BE ENERGIZED BY FAN IN FC-A12 SEE DETAIL, SHT MO.1 SUSPEND FAN FROM ROOF FRAMING	
SF-A14	1	IN-LINE SUPPLY FAN	100	0.4	120 V. 1 PHASE	3139	17.1	FANTECH FG 4XL EC	5.5	N/A	FAN SHALL BE ENERGIZED BY FAN IN FC-A14 SEE DETAIL, SHT MO.1 SUSPEND FAN FROM ROOF FRAMING	
SF-A16	1	IN-LINE SUPPLY FAN	50	0.3	120 V. 1 PHASE	2036	6.3	FANTECH FG 4XL EC	5.5	N/A	FAN SHALL BE ENERGIZED BY FAN IN FC-A16 SEE DETAIL, SHT MO.1 SUSPEND FAN FROM ROOF FRAMING	
SF-B3	1	IN-LINE SUPPLY FAN	50	0.3	120 V. 1 PHASE	2036	6.3	FANTECH FG 4XL EC	5.5	N/A	FAN SHALL BE ENERGIZED BY FAN IN FC-B3 SEE DETAIL, SHT MO.1 SUSPEND FAN FROM ROOF FRAMING	

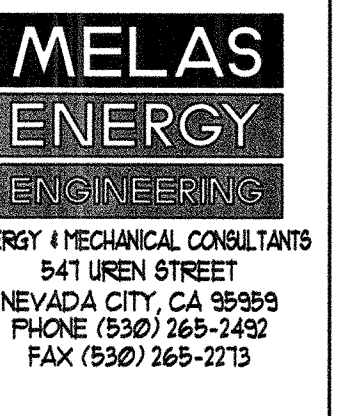
NOTES:
 1. INSTALL/MOUNT EXHAUST FANS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 2. ALL EXHAUST FANS, "EF", SHALL BE PROVIDED WITH SPEED CONTROLLERS. LOCATE SPEED CONTROLLER AT FAN HOUSING FOR US IN BALANCING SYSTEM ONLY.
 3. ALL SUPPLY FANS, "SF", SHALL BE ADJUSTED TO PROVIDE INDICATED AIRFLOW RATES. AIRFLOWS CAN BE ADJUSTED WITH ON-BOARD POTENTIOMETERS.

GRAVITY INTAKE/RELIEF VENTILATOR SCHEDULE																
SYMBOL	DESCRIPTION	Qty.	THROAT DIMENSIONS			UNIT DIMENSIONS			CURB CAP		MFGR & MODEL NO.	WEIGHT (LBS)	VOLUME			REMARKS
			W (IN.)	L (IN.)	H (IN.)	W (IN.)	D (IN.)	W (IN.)	L (IN.)	CFM			S.P. (WC)	(FPM)		
OAH-1	FILTERED OUTSIDE AIR INTAKE HOOD	1	26	68	19	55	96	32	74	GREENHECK FGI-26X68	230	1,750	0.008	143	GALVANIZED STEEL CONSTRUCTION WITH BIRDSCREEN UNIT SHALL BE HINGED OPEN INSTALL (6) 30"X14" MERV-8 FILTERS ON THE SIDES PROVIDE A SHEET METAL CAP ON THE ENDS	
OAH-2	FILTERED OUTSIDE AIR INTAKE HOOD	1	26	68	19	55	96	32	74	GREENHECK FGI-26X68	230	1,160	0.004	94	GALVANIZED STEEL CONSTRUCTION WITH BIRDSCREEN UNIT SHALL BE HINGED OPEN INSTALL (6) 30"X14" MERV-8 FILTERS ON THE SIDES PROVIDE A SHEET METAL CAP ON THE ENDS	
OAH-3	FILTERED OUTSIDE AIR INTAKE HOOD	1	28	68	19	60	96	34	74	GREENHECK FGI-28X68	246	3,010	0.018	228	GALVANIZED STEEL CONSTRUCTION WITH BIRDSCREEN UNIT SHALL BE HINGED OPEN INSTALL (6) 30"X14" MERV-8 FILTERS ON THE SIDES PROVIDE A SHEET METAL CAP ON THE ENDS	
EAH-1	EXHAUST AIR RELIEF HOOD	1	28	68	19	60	96	34	74	GREENHECK FGR-28X68	246	1,600	0.008	121	GALVANIZED STEEL CONSTRUCTION WITH BIRDSCREEN UNIT SHALL BE HINGED OPEN	
EAH-2	EXHAUST AIR RELIEF HOOD	1	28	68	19	60	96	34	74	GREENHECK FGR-28X68	246	300	0.0005	23	GALVANIZED STEEL CONSTRUCTION WITH BIRDSCREEN UNIT SHALL BE HINGED OPEN	

NOTES:
 1. UNITS SHALL BE INSTALLED ON PRE-FAB CURBS CONSTRUCTED OF 18 GAGE GALVANIZED STEEL. CURBS SHALL 12" IN HEIGHT.



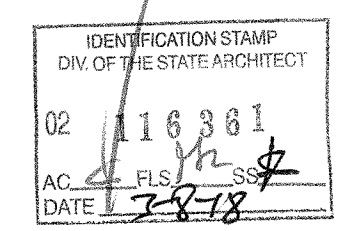
Revisions
 3-2-2018 BACKCHECK



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HVAC System Improvements
 Building A
 for
 BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD, GRASS VALLEY, CA

DATE: 12-8-2017
 PROJECT NUMBER: 17-174



HVAC SCHEDULES
 M0.1B

Quantities

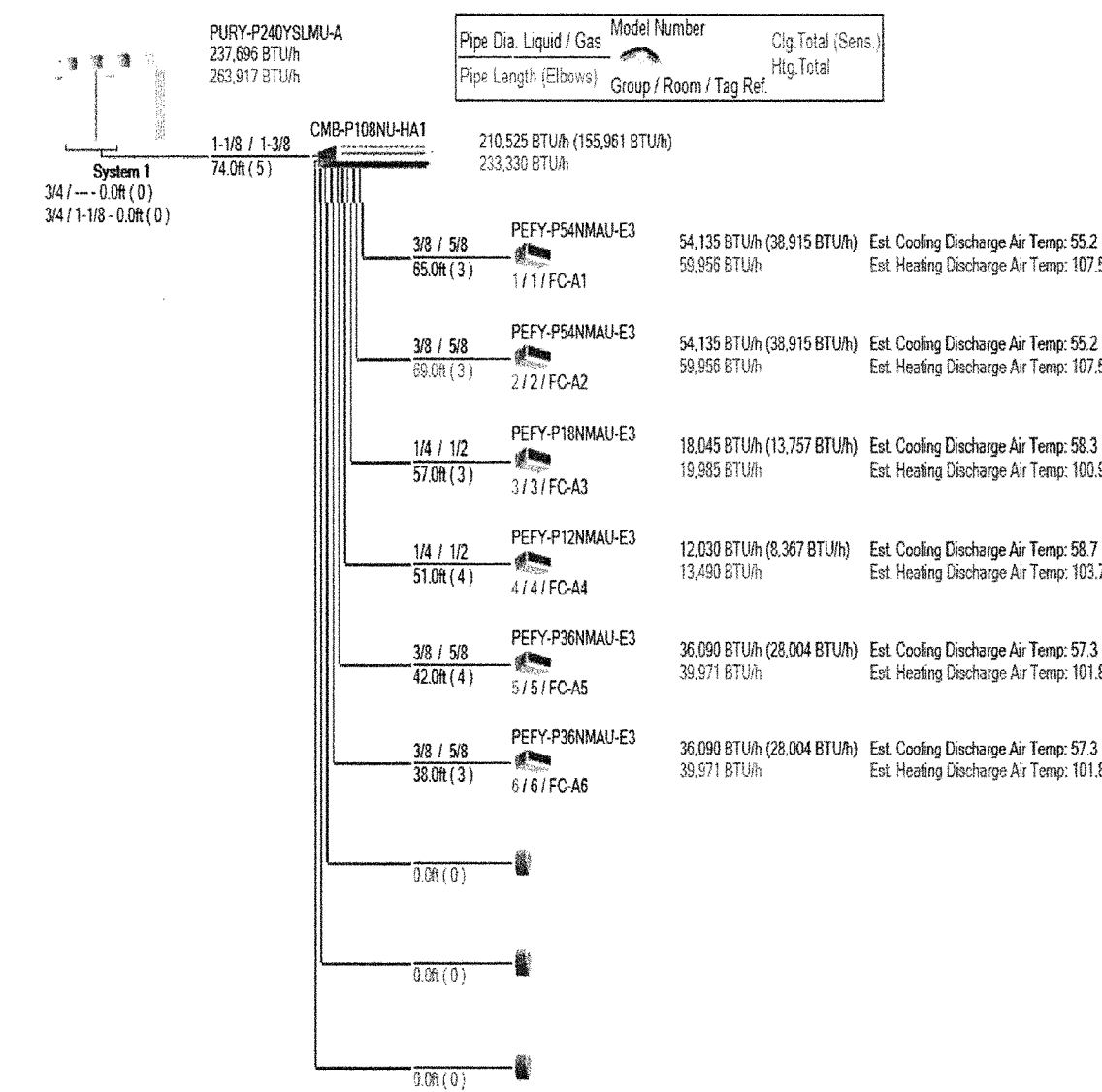
Qty	Model	Description
27	PAC-YT53CRAU-J	Simple MA controller
1	PURY-P240YSLMU-A	R410A R2 Series Outdoor Unit
1	PURY-P336YSLMU-A	R410A R2 Series Outdoor Unit
1	CMB-P108NU-HA1	BC Controller Main
1	CMB-P1013NU-GA1	BC Controller Main
1	CMB-P1016NU-HA	BC Controller Main
5	PEFY-P54NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
3	PEFY-P18NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
3	PEFY-P12NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
4	PEFY-P36NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
3	PEFY-P30NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
5	PLFY-P12NEMU-E	Ceiling cassette (4-way airflow) type Indoor Unit
1	PEFY-P24NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
3	PEFY-P48NMAU-E3	Ceiling concealed type (ducted) Indoor Unit
3	CMY-ER200CBK	Twinning Kit
1	EW-50A	System Remote Controller

Refrigerant Piping Materials

Pipe Size (inch)	Total Length (feet)	Number of Bends
3/4	0	0
1 1/8	210	14
3/8	670	54
5/8	670	54
1/4	437	41
1/2	437	41
1 3/8	148	10
7/8	0	0
1 5/8	62	4

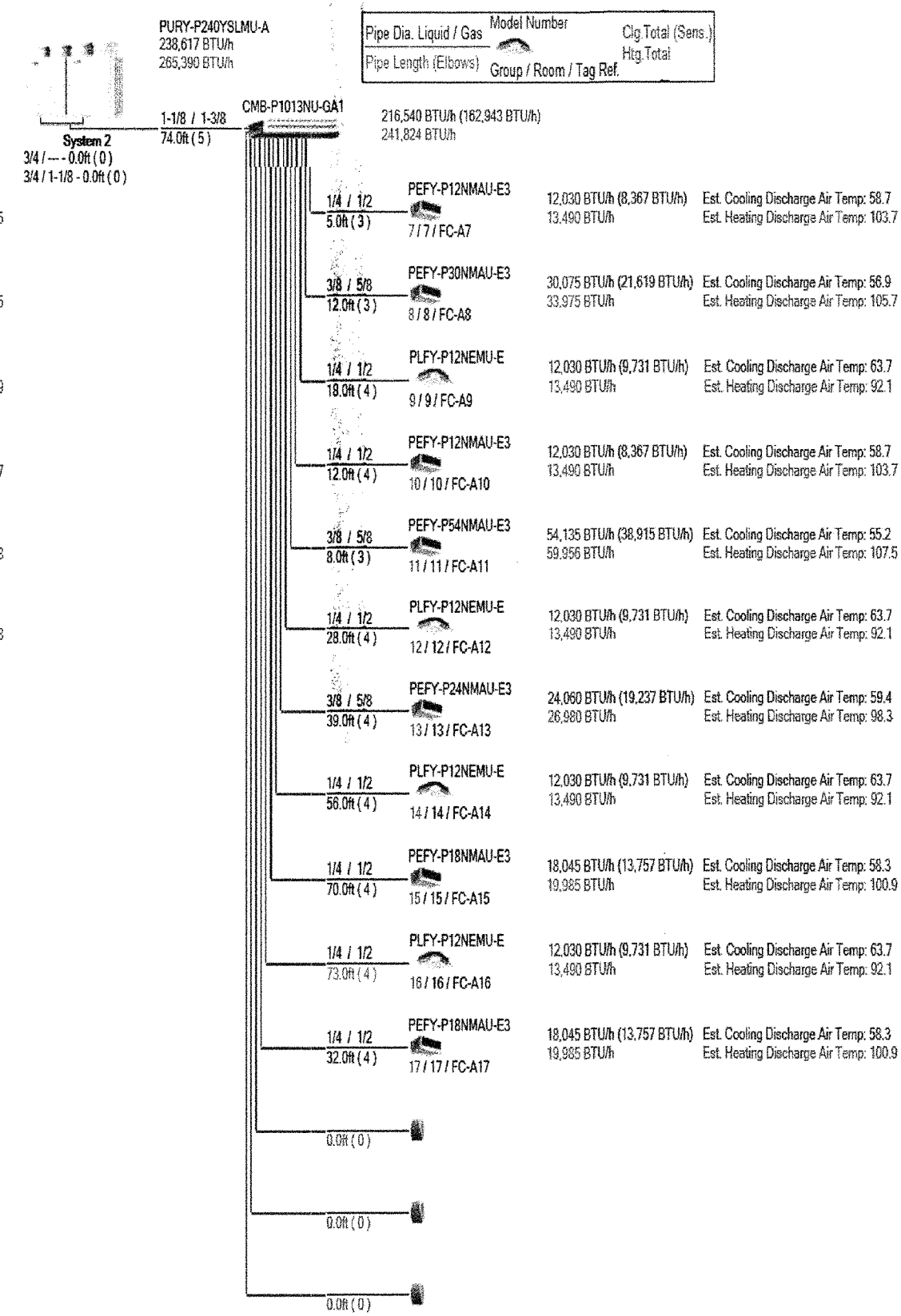
HP-1 Centralized System - 1 : System 1

Piping Diagram Image (Design View)



HP-2 Centralized System - 1 : System 2

Piping Diagram Image (Design View)



HP-3 Centralized System - 1 : System 3

Piping Diagram Image (Design View)

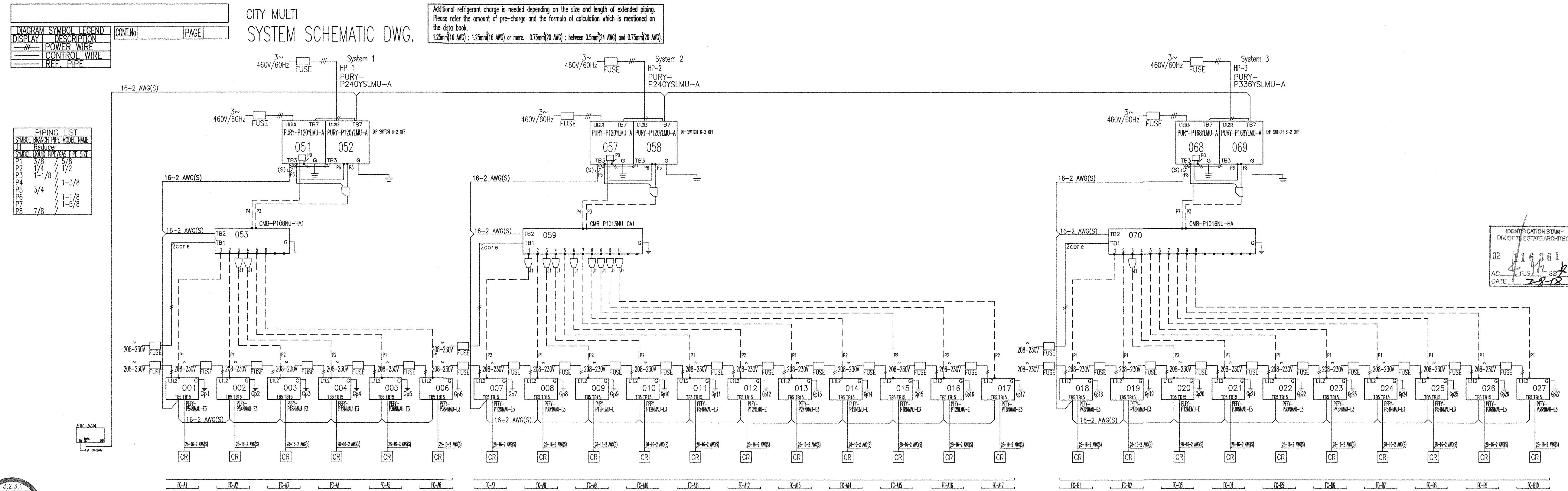
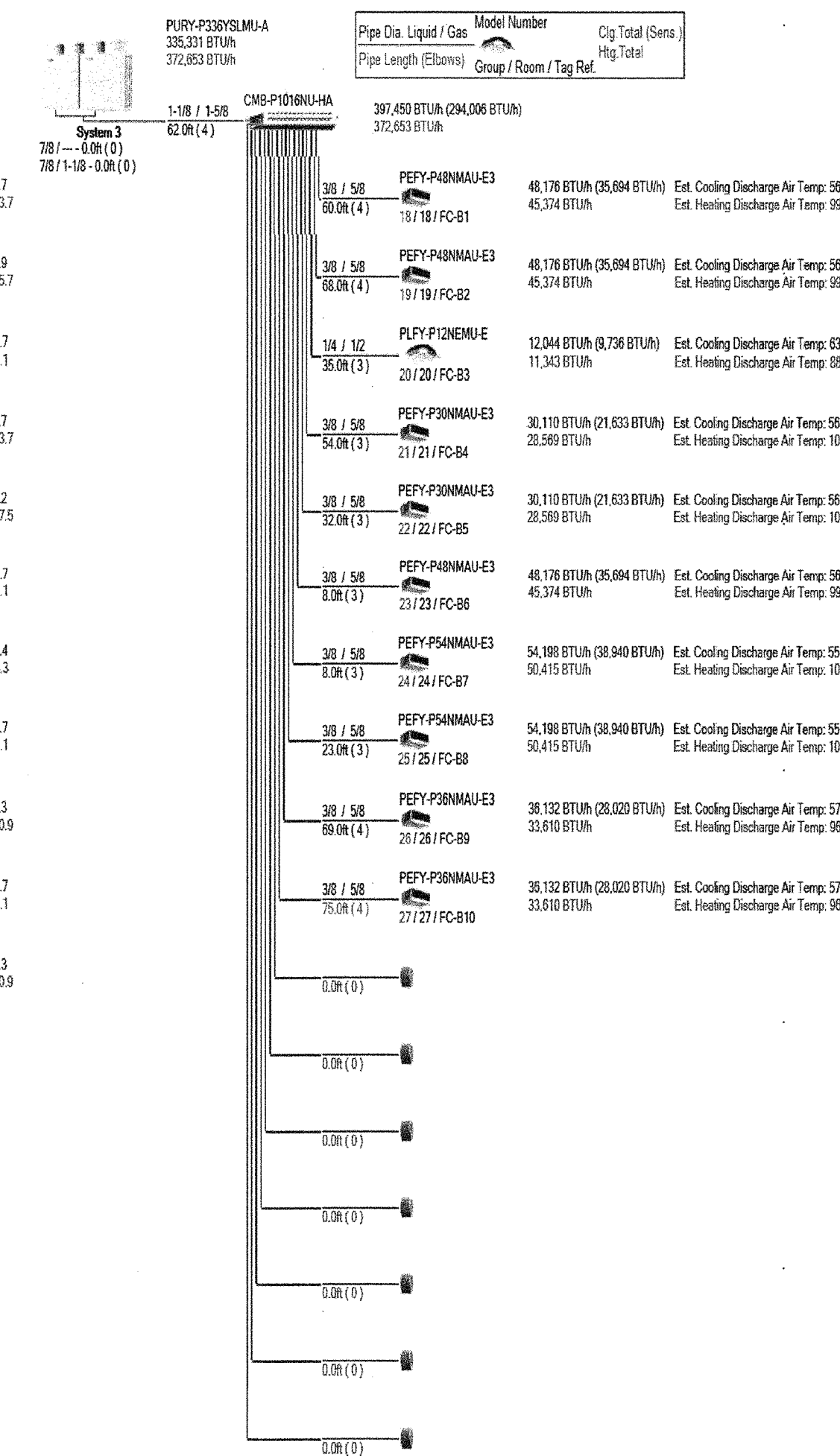


DIAGRAM SYMBOL	DESCRIPTION
[Symbol]	DISPLAY
[Symbol]	POWER WIRE
[Symbol]	CONTROL WIRE
[Symbol]	REF. PIPE

PIPE SIZE	DESCRIPTION
P1	3/8"
P2	1/2"
P3	3/4"
P4	1-1/8"
P5	1-3/8"
P6	1-1/8"
P7	1-1/8"
P8	7/8"

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Revisions
3-2-2018 BACKCHECK

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HVAC System Improvements for Building A
 BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD, GRASS VALLEY, CA

12-8-2017
17-174

VRF PIPING & CONTROLS SCHEMATIC

M0.2

MITSUBISHI CITY MULTI VRF INDOOR UNIT SCHEDULE

Table with columns for System Tag (FC-A1 to FC-A15), Room Name, Model, Type, Nominal Cooling Capacity (BTU/h), Nominal Heating Capacity (BTU/h), Weight (Lbs), Design Conditions (Cooling/Heating Design Entering Temp DBWB, Diversity, Refrig Pipe Dim), Performance Data (Cooling Total Capacity, Cooling Sensible Capacity, Heating Capacity, Peak Fan Airflow, Max Fan ESP, Outside Airflow), Electrical Data (Voltage / Phase, Electrical MCA/MFS), and Notes / Options.

MITSUBISHI CITY MULTI VRF INDOOR UI

Table with columns for System Tag (FC-A16 to FC-B10), Room Name, Model, Type, Nominal Cooling Capacity (BTU/h), Nominal Heating Capacity (BTU/h), Weight (Lbs), Design Conditions (Cooling/Heating Design Entering Temp DBWB, Diversity, Refrig Pipe Dim), Performance Data (Cooling Total Capacity, Cooling Sensible Capacity, Heating Capacity, Peak Fan Airflow, Max Fan ESP, Outside Airflow), Electrical Data (Voltage / Phase, Electrical MCA/MFS), and Notes / Options.

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities
4 See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices
Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system. Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply. It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.
6 It is recommended to always base heating corrected capacity on full demand.

VRF HEAT RECOVERY BRANCH CIRCUIT CONTROLLER

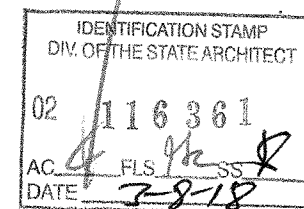
Table with columns for System Tag (BCC-1, BCC-2, BCC-3), M-Net Address, Model Number, Type, Number of Ports, Connected Capacity to BC, Weight (lbs), Voltage / Phase, MCA, and Notes / Options.

Notes & Options:
1 Include Diamondback Ball Valves BV-Series, 700PSIG working pressure, full port, 410A rated.
2 For sub BC controller CMB-P1013NU-GB1 or -GB, the total connectable indoor unit capacity can be 126,000 BTUs or less. If two sub BC controllers are used, the total indoor unit capacity connected to BOTH sub BC controllers also cannot exceed 126,000 BTUs. For sub BC controller CMB-P1016NU-HB1 the total connectable indoor unit capacity can be 126,000 BTUs or less. However, if two sub controllers are used, and one of them is CMB-1016NU-HB1, the total indoor unit capacity connected to BOTH sub controllers must NOT exceed 168,000 BTUs.

MITSUBISHI CITY MULTI VRF OUTDOOR UNIT

Table with columns for System Tag (HP-1, HP-2, HP-3), M-Net Address, Model Number, Modules, Weight (Lbs), Nominal Cooling Capacity (BTU/h), Nominal Heating Capacity (BTU/h), Cooling Efficiency (EER/IEER/SEER), Heating COP @ 47°F (HSPF), Design Cooling Outdoor Temp DB (°F), Design Heating Outdoor Temp WB (°F), Corrected Cooling Total Capacity (BTU/h), Corrected Heating Capacity (BTU/h), Voltage / Phase, MCA, Recommended Fuse Size (RFS), and Notes / Options.

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 Efficiency values for EER, IEER, COP are based on AHRI 1230 test method for mixture of ducted & non-ducted indoor units.
4 For systems with multiple modules, refrigerant pipe dimensions indicate total system combined piping downstream of module twinning.
5 Added field charge listed is in addition to factory charge, this must be updated based upon final as-built piping layout.



Revisions
3-2-2018 BACKCHECK



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HVAC System Improvements
for
Building A
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, CA

12-8-2017
17-174

VRF EQUIPMENT
M0.3

System No. C-AJ-8099

ANSIUL1479 (ASTM E814)	CANULC S115
F Rating — 3 Hr	F Rating — 3 Hr
T Ratings — 0 and 3/4 Hr (See Item 2)	FT Ratings — 0 and 3/4 Hr (See Item 2)
	FH Rating — 2 Hr
	FTH Ratings — 0 and 3/4 Hr (See Item 2)

SECTION A-A

- Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor or min 5 in. (127 mm) reinforced lightweight or normal weight concrete wall. Wall may also be constructed of any UL Classified Concrete Blocks*. Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow core Precast Concrete Units*. Max area of square, rectangular or circular opening is 192 sq in. (1239 cm²) with max dimension of 24 in. (61 cm). When Precast Concrete Unit floors are used, max area of square, rectangular or circular opening is 49 sq in. (316 cm²) with max dimension of 7 in. (17.8 cm).
- Through-Penetrant — One or more pipes or tubes to be installed within the opening. The total number of through-penetrants is dependent on the size of the opening and types and sizes of the penetrants. Any combination of the penetrants described below may be used provided that the following parameters relative to the annular spaces and the spacings between the pipes are maintained. The separation between cable bundle, tubes and insulated tubes shall be a min 1/2 in. (13 mm) to max 3-1/8 in. (79 mm). The annular space between penetrants and the periphery of opening shall be a min 1/2 in. (13 mm) to max 5 in. (127 mm). Pipes or tubes to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubes may be used:
 - Copper Tubing — Nom 3 in. (76 mm) diam (or smaller) Type L (or heavier) copper tube.
 - Copper Pipe — Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe.
 - Steel Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - Iron Pipe — Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.
 - Conduit — Nom 3 in. (76 mm) diam (or smaller) electric metallic tubing (EMT) or steel conduit.
 - Flexible Steel Conduit — Nom 1 in. (25 mm) diameter (or smaller) flexible steel conduit.
- Flexible Metal Conduit (FMC) category in the Electrical Construction Material Directory for names of manufacturers.
- Through Penetrating Product* — Flexible Metal Piping — The following types of steel flexible metal gas piping may be used:
 - 1) Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
 - 2) Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
 - 3) Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG LLC

The hourly T Rating is 3/4 hr when a pipe or tube with fiber-glass insulation is used, or 0 hr when a pipe or tube, a pipe or tube with AB/PVC insulation or a cable bundle is used. The T Rating is 0 hr when metallic penetrants without pipe insulation are used.

3. Pipes Insulation — (Optional) — The following types of pipe insulation may be used with metallic penetrants (Items 2A, 2B, 2C, 2D and 2F):

- Pipe Covering* — Nom 1 in. (25 mm) thick (or thinner) hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
- See Pipe and Equipment Covering - Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
- Tube Insulation-Plastics** — Nom 3/4 in. (19 mm) thick (or thinner) acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.
- See Plastics** (CMFZZ) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

4. Cables — Max 2 in. (51 mm) diam tight bundle of cables installed within the opening and rigidly supported on both sides of floor or wall assembly. The space between the cables and periphery of the opening shall range from min 2 in. (51 mm) to max 4 in. (102 mm). Any combination of the following types and sizes of metallic conductor of fiber optic cable may be used:

- Max 500 kcmil single copper conductor power cable with thermoplastic insulation and polyvinyl chloride (PVC) jacket.
- Max 300 pair No. 24 AWG copper conductor telecommunication cables with PVC insulation and jacket material.
- Max 7/0 copper conductor No. 12 AWG multiconductor power and control cables with PVC or cross-linked polyethylene (XLPE) insulation and PVC jacket.
- Multiple fiber optical communication cables jacketed with PVC and having a max outside diam of 1/2 in.
- Max 3/0 copper conductor No. 12 AWG with bare aluminum ground, PVC insulated steel Metal-Clad cable.

5. Firestop System — The firestop system shall consist of the following:

- Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or both surfaces of wall to accommodate the required thickness of fill material. When Precast Concrete Unit floors are used, packing material shall be installed at a thickness equal to the thickness of the floor minus 1/2 in. (13 mm), flush with bottom surface of floor.
- Fill Void or Cavity Materials* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

***Bearing the UL Recognized Component Marking

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

**Bearing the UL Listing Mark

System No. C-AJ-8099

SECTION A-A

HILTI Firestop Systems

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Page: 1 of 2

UL/cUL SYSTEM NO. W-L-8065

MULTIPLE PENETRATING ITEMS THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR.

FRONT VIEW

SECTION A-A

HILTI Firestop Systems

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Page: 2 of 2

UL/cUL SYSTEM NO. W-L-8065

MULTIPLE PENETRATING ITEMS THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR.

- GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300, U400, OR V400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
- [NOT SHOWN] WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 3-1/2" WIDE.
- OPENING TO BE "FRAMED-OUT" WITH ADDITIONAL FRAMING MEMBERS.
- ONE OR MORE OF THE FOLLOWING PIPES, CONDUITS, OR TUBES, AND IN ANY COMBINATION, MAY BE INSTALLED WITHIN THE OPENING:
 - MAXIMUM 3" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
 - MAXIMUM 3" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
 - MAXIMUM 3" NOMINAL DIAMETER COPPER PIPE OR TUBING.
 - MAXIMUM 3" NOMINAL DIAMETER STEEL CONDUIT OR EMT.
 - MAXIMUM 2" NOMINAL DIAMETER PVC PLASTIC PIPE (SCHEDULE 40) (CLOSED OR VENTED PIPING SYSTEM) (CELLULAR OR SOLID CORE).
 - MAXIMUM 2" NOMINAL DIAMETER CPVC PLASTIC PIPE (SDR 13.5) (CLOSED PIPING SYSTEM ONLY)
 - MAXIMUM 2" NOMINAL DIAMETER RIGID NON METALLIC CONDUIT (RNC) (SCHEDULE 40).
 - MAXIMUM 1" NOMINAL DIAMETER CROSS-LINKED POLYETHYLENE (PEX) TUBING (CLOSED PIPING SYSTEM ONLY).
- ONE OR MORE METALLIC PENETRANTS OR TUBES MAY BE INSULATED WITH ANY OF THE FOLLOWING TYPES OF INSULATION:
 - MINIMUM 1" TO MAXIMUM 2" THICK GLASS-FIBER PIPE INSULATION.
 - MINIMUM 1/2" TO MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION.
 - MINIMUM 1" TO MAXIMUM 2" THICK MINERAL FIBER PIPE INSULATION SECURED WITH 18 GA. STEEL WIRE SPACED 12" OC.
- MAXIMUM 3" DIAMETER CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING:
 - MAXIMUM 25 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
 - MAXIMUM 7/0 NO. 12 AWG COPPER CONDUCTOR WITH PVC JACKET.
 - MAXIMUM 1/2" DIAMETER FIBER OPTIC CABLE WITH PVC JACKET.
 - MAXIMUM 3/0 NO. 8 AWG WITH BARE ALUMINUM GROUND STEEL METAL-CLAD CABLE.
 - MAXIMUM 3/0 (+GROUND) NO. 12 AWG ROMEX CABLE WITH PVC JACKET.
 - RGU COAXIAL CABLE (MAXIMUM 1/2" DIAMETER) WITH PVC JACKET.
- MINIMUM 3-1/2" OR 4-3/4" THICKNESS MINERAL WOOL (MINIMUM 4 PCF DENSITY) TIGHTLY PACKED FOR 1-HR. OR 2-HR. FIRE-RATING, RESPECTIVELY.
- MINIMUM 5/8" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT.
- MINIMUM 1/4" BEAD HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES:

- MAXIMUM SIZE OF OPENING TO BE ONE OF THE FOLLOWING:
 - 22-3/4" x 8" IN STEEL STUD WALLS.
 - 14-1/2" x 8" IN WOOD STUD WALLS.
- ANNULAR SPACE BETWEEN PENETRANTS = MINIMUM 1", MAXIMUM 22".
- ANNULAR SPACE BETWEEN PENETRANTS AND OPENING = MINIMUM 0", MAXIMUM 22".

HILTI Firestop Systems

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Page: 1 of 2

METAL PIPE THROUGH 1 OR 2 HR WALL ASSEMBLY

UL * UL-5028 SCALE: NONE

- GYPSUM WALL ASSEMBLY (1 OR 2 HR FIRE RATING) (2 HR SHOWN) SEE ARCHITECTURAL WALL DETAIL
- PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
 - MAX. 4" STEEL PIPE (SCH. 40 OR HEAVIER)
 - MAX. 2" COPPER PIPE OR TUBING
- MIN. 1/2" TO MAX. 3/4" THICK AB/PVC FOAM PIPE INSULATION
- HILTI FS-ONE FIRESTOP SEALANT:
 - MIN. 3/8" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT, OR EQ.
- MIN. 1/2" BEAD HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT, OR EQUAL, APPLIED AT POINT OF CONTACT.

NOTES:

- MAXIMUM DIA. OF OPENING = 1 1/2"
- ANNULAR SPACE = 0" MIN. 1 1/2" MAX.

PIPE SUPPORT DETAIL

SCALE: NONE

- 3/8" DIA. x 2-1/2" EMBED SIMPSON TITEN HD ROD HANGER
- 3/8" DIA. x 3" LAG SCREW WITH COUPLER HEAD
- 3/8" DIA. THREADED ROD
- PIPE CLEVIS HANGER
- MAX ROD SPACING IS 7'-0" OC

PIPE SUPPORT DETAIL

SCALE: NONE

- HANGER RODS - SEE ANCHORAGE DETAILS 1, 2 44 ON SHEET 512
- BC CONTROLLER
- 24 GAGE DRAIN PAN, EXTEND PAN BEYOND BALL VALVES
- BC CONTROLLER MOUNTING DETAIL
- SCALE: NONE

VIEW OF BC CONTROLLER

SCALE: NONE

- REFRIGERATION LINES TO INDOOR UNITS
- LOWER BALL VALVES SHOWN IN LIGHT TONE
- NOTE G2
- BC CONTROLLER DETAIL
- SCALE: NONE

BC CONTROLLER DETAIL

SCALE: NONE

GENERAL NOTES:

- ALL REFRIGERATION PIPING BETWEEN INDOOR UNITS/FAN COILS AND THE GC BC CONTROLLER SHALL BE PRE-INSULATED COPPER. SIZES AS REQUIRED BY THE MANUFACTURER. 1/2" INSULATION TYP.
- PROVIDE BALL VALVES FOR EACH REFRIGERANT CIRCUIT, INCLUDING UNUSED CIRCUITS ON BC CONTROLLER. ORIENT EACH BALL VALVE TO PREVENT INTERFERENCE WITH OPERATION OF ADJACENT BALL VALVES. SIZE BALL VALVES TO MATCH LINE SIZE IT IS INSTALLED ON. BALL VALVES SHALL BE MITSUBISHI DIAMONDBACK BY-BB SERIES, OR EQUAL.
- ALL REFRIGERATION PIPE BETWEEN THE OUTDOOR UNITS/CONDENSERS AND THE BC CONTROLLER SHALL BE INSULATED WITH MIN. 1/2" THICK ARMACELL OR EQUAL PIPE INSULATION. ALL PIPING SHALL BE APPROVED COPPER PIPING. PROTECT ALL EXTERIOR PIPING WITH PVC JACKETING.
- ALL REFRIGERATION PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND IN ACCORDANCE WITH THE LOCAL CODE REQUIREMENTS AND THE SMACNA GUIDE FOR SEISMIC RESTRAINTS. UTILIZE UNISTRUT, POWER STRUT OR OTHER APPROVED ANCHORAGE FOR ALL REFRIGERANT PIPING. ALL LINES SHALL BE RUN IN A NEAT AND ORDERLY CONFIGURATION.
- 1/4" CONDENSATE DRAIN PIPE CONNECTION

DUCT MOUNTING DETAIL

SCALE: NONE

- 3/8" DIA. x 2-1/2" EMBED SIMPSON TITEN HD CONCRETE ANCHOR INTO LOW FLUTE
- #12x23" WOOD SCREW
- 1"x22 GA STRAP HANGER
- MAX STRAP SPACING IS 10'-0" OC

DUCT MOUNTING DETAIL

SCALE: NONE

- REFRIGERATION LINES TO INDOOR UNITS
- LOWER BALL VALVES SHOWN IN LIGHT TONE
- NOTE G2
- BC CONTROLLER DETAIL
- SCALE: NONE

BC CONTROLLER DETAIL

SCALE: NONE

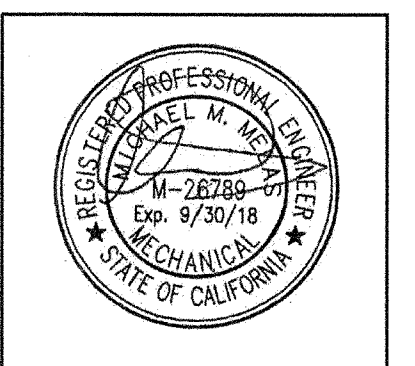
GENERAL NOTES:

- ALL REFRIGERATION PIPING BETWEEN INDOOR UNITS/FAN COILS AND THE GC BC CONTROLLER SHALL BE PRE-INSULATED COPPER. SIZES AS REQUIRED BY THE MANUFACTURER. 1/2" INSULATION TYP.
- PROVIDE BALL VALVES FOR EACH REFRIGERANT CIRCUIT, INCLUDING UNUSED CIRCUITS ON BC CONTROLLER. ORIENT EACH BALL VALVE TO PREVENT INTERFERENCE WITH OPERATION OF ADJACENT BALL VALVES. SIZE BALL VALVES TO MATCH LINE SIZE IT IS INSTALLED ON. BALL VALVES SHALL BE MITSUBISHI DIAMONDBACK BY-BB SERIES, OR EQUAL.
- ALL REFRIGERATION PIPE BETWEEN THE OUTDOOR UNITS/CONDENSERS AND THE BC CONTROLLER SHALL BE INSULATED WITH MIN. 1/2" THICK ARMACELL OR EQUAL PIPE INSULATION. ALL PIPING SHALL BE APPROVED COPPER PIPING. PROTECT ALL EXTERIOR PIPING WITH PVC JACKETING.
- ALL REFRIGERATION PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND IN ACCORDANCE WITH THE LOCAL CODE REQUIREMENTS AND THE SMACNA GUIDE FOR SEISMIC RESTRAINTS. UTILIZE UNISTRUT, POWER STRUT OR OTHER APPROVED ANCHORAGE FOR ALL REFRIGERANT PIPING. ALL LINES SHALL BE RUN IN A NEAT AND ORDERLY CONFIGURATION.
- 1/4" CONDENSATE DRAIN PIPE CONNECTION

HILTI Firestop Systems

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Page: 1 of 2



Revisions

3-2-2018	BACKCHECK
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HVAC System Improvements

Building A

for
BEAR RIVER HIGH SCHOOL

11130 MAGNOLIA ROAD, GRASS VALLEY, CA

Date: 12-8-2017

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

Project: 17-174

HVAC DETAILS

M0.4A

POTTORFF[®] 1 1/2 hour • UL class 1 — combination fire smoke damper airfoil blade model FSD-151

Application
The FSD-151 combination fire smoke damper employs airfoil blades for jointed-origin control of fire and smoke in static and dynamic smoke management systems. The FSD-151 is qualified to 4,000 fpm (20 m/s) and 6 in. wg. (1.5 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 2 hours.

Standard Construction
Frame: 6" x 1" (152 x 25) galvanized steel hat channel with interlocking corner gusset. Equivalent to 13 gauge (2.4) channel frame. Low profile head and air are used on sizes less than 15" (380) high.
Blades: 6" x 14 gauge (152 x 2.0) equivalent galvanized — steel airfoil.

Actuator
Sleeve: 16" x 20 gauge (406 x 1.0) galvanized steel.
Axles: 1/2" (13) diameter plated steel hex.
Linkage: Concealed in frame.
Bearings: Stainless steel oilite, sleeve-type.
Seals: Silicone blade edge seals integrally rolled and mechanically fastened to blades. Flexible metal joints seals.

Fire Closure Device: HS-10 (electric) PFV (pneumatic)
Fire Closure Temperature: 165°F (75°C)
Minimum Size: 6" x 6" (152 x 152)
Maximum Size: Single section: 32" x 48" (813 x 1219)
Multiple section: Vertical: 144" x 48" (3658 x 1219) or 128" x 96" (3251 x 2438)
Horizontal: 120" x 96" (3048 x 2438)

Options
Installation: Vertical Mount Horizontal Mount
Velocity Rating: 2000 fpm 3500 fpm 4000 fpm
Temperature Rating: 250°F 350°F
 Alternate actuator: Internal mount (actuator in air-stream), 24 VAC 230 VAC Pneumatic 24V Modulating**
 Opposed blade Parallel blade
 Alternate power-close, spring-open position.**
 Alternate Actuator: Internal Mount (actuator in air-stream) 24 VAC
 DRS-30 — Two temperature fire closure device. (Includes PI-50 switch package)
 PI-50 — Dual position indicator switch package.
 Alternate factory installed sleeve: Gauge: 18 (1.3) 16 (1.0) 14 (2.0) 10 (3.3)
Lengths: 20" (508) 24" (610) Other
 Side Plate No Sleeve (Actuator must be internally mounted)
 Transitions: Flanged Round Oval
 Duct connections: 1" (25) S-cup DM25 DM35 S & Drive Ward
 Retaining angle systems: Gauge: 20 (1.6) 16 (1.4)
Picture frame: 350°F (single-side) 350°F (2-sided)
Individual angle sets: SS (single-side) DS (2-sided)
 Alternate fire closure temperature: 212°F (100°C) 250°F (121°C) 350°F (177°C)
 Duct smoke detector factory mounted and wired: D4120 (100-4,000 fpm [0.5-20.3 m/s]) D151 (0-3,000 fpm [0-15.2 m/s])
 Duct access door factory mounted in common sleeve.
 Remote control stations: RCP-1 (single) RCP-1K (single, key controlled) RCP-1M (single, momentary switch)
 Generic mullion for oversized masonry or concrete wall openings.
Information is subject to change without notice or obligation.

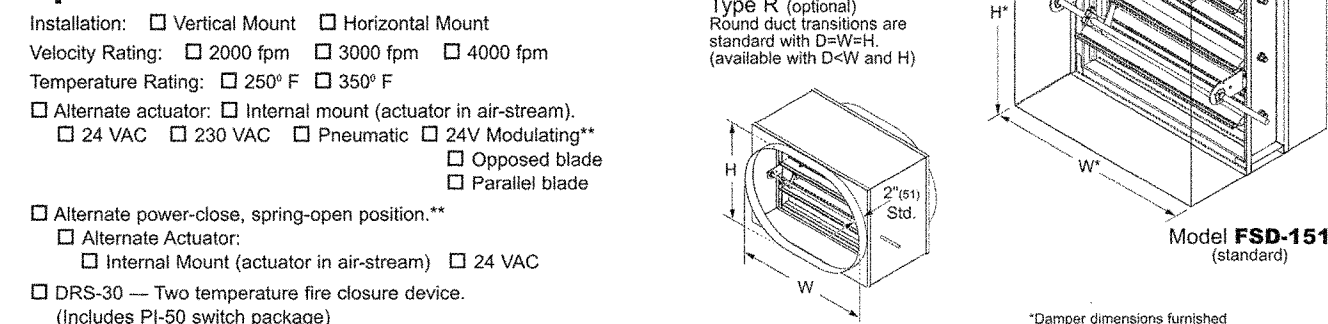


Table with columns for Damper Height, Actuator Model, and various dimensions. Includes notes on sleeve length and damper mounting.

Air Performance
Pottorff certifies that the model FSD-151 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Rating Program. The AMCA Certified Rating Seal applies to air performance ratings only.
NOTE: Dimensions in parentheses () are millimeters.
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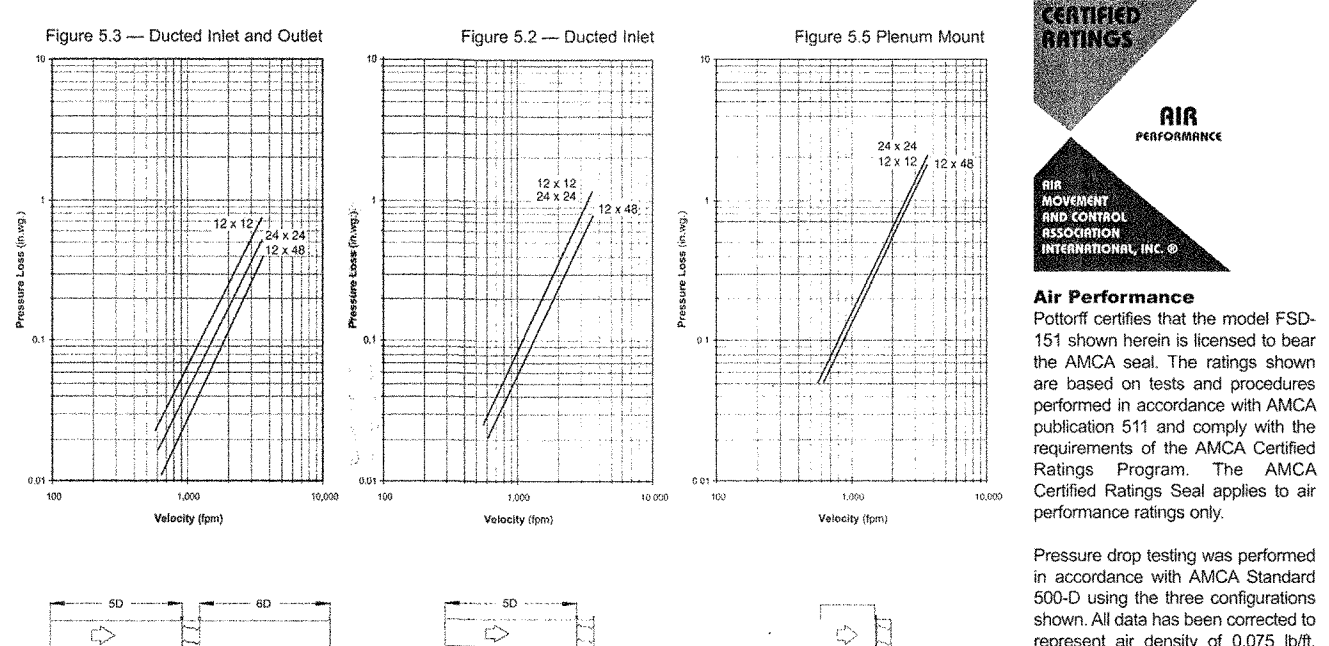
Actuator and Sleeve Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Table with columns for Damper Height, Actuator Model, and various dimensions. Includes notes on sleeve length and damper mounting.

NOTE: 1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
2. Damper may be rotated 180° to position actuator area on the left side.
3. The entire damper frame is not required to be installed within the wall, partition or floor.
However, the closed plane of the damper blades must be inside the wall, partition or floor.
4. Dimensions for FSNF24 apply to FSAF24-SR and FSAF24-BAL.
5. Dimensions for FSLF24 apply to FSAF24-SR.
6. Dimensions for ML4115/ML8115 apply to MS4209/MS8209.
7. For dimensions on actuators not shown above, contact factory.

Airflow Performance Data Pressure Loss vs. Velocity



Ducted Inlet and Outlet
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.
Information is subject to change without notice or obligation.
NOTE: Dimensions in parentheses () are millimeters.
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POTTORFF[®] 1 1/2 hour • UL class 1 — combination fire smoke damper round blade model FSD-125R

Application
The FSD-125R combination fire smoke damper employs a single round blade for jointed-origin control of fire and smoke in static and dynamic smoke management systems. This unique damper comes standard with mounting plates for interface to round or square openings in masonry, metal stud, or wood stud assemblies and is ideal for all round duct applications. The FSD-125R, standard construction, is qualified to 2000 fpm (10.2 m/s) and 4 in. wg. (1.0 kPa) at 250°F (121°C). Optional construction is qualified to 3000 fpm (15.3 m/s) and 4 in. wg. (1.0 kPa) at 350°F (177°C) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 2 hours.

Standard Construction
Sleeve/frame: Integral 16" x 20 gauge (406 x 1.0) galvanized steel with reinforcing blades.
Retaining Plates: Dual sided system suitable for round or square penetrations.
Blade: 14 gauge (2.0) equivalent galvanized steel — round.
Axles: 1/2" (13) diameter plated steel, D-8" (203), 1/2" (19), D-8" (203).

Linkage: In the air-stream.
Bearings: Bronze oilite, sleeve-type.
Seal: Silicone blade edge seal.
Actuator: 120 VAC, power-open, spring-close, external mount.
Fire Closure Device: HS-10 (electric actuator) PFV (pneumatic actuator)
Fire Closure Temperature: 165°F (75°C)
Minimum Size: 6" Ø (152 Ø)
Maximum Size: 24" Ø (610 Ø)

Options
 Alternate actuator: 24 VAC 230 VAC Pneumatic
 DRS-30 — Two temperature fire closure device. (Includes actuator with auxiliary switches)
 Alternate sleeve/frame length: 20" (508) 24" (610)
 Single-sided mounting plate.
 Duct access door factory mounted to sleeve/frame.
 Alternate fire closure temperature: 212°F (100°C) 250°F (121°C) 350°F (177°C)
 Remote control stations: RCP-1 (single) RCP-1K (single, key controlled) RCP-1M (single, momentary switch)
 Type - 304 stainless steel construction.



Table with columns for Damper Diameter, Actuator Model, and various dimensions. Includes notes on sleeve length and damper mounting.

NOTE: 1. Standard length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
2. The entire damper sleeve/frame is not required to be installed within the wall, partition or floor.
However, the closed plane of the damper blades must be inside the wall, partition or floor.
3. Dimensions for ML4115/ML8115 apply to MS4209/MS8209.
4. See installation instructions for detail details.

Air Performance
Pottorff certifies that the model FSD-125R shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Rating Program. The AMCA Certified Rating Seal applies to air performance ratings only.
Pressure drop testing was performed in accordance with AMCA Standard 500-D using the three configurations shown. All data has been corrected to represent air density of 0.075 lb/ft. Actual pressure drop in any ducted HVAC system is a combination of many elements. This information, along with analysis of other system influences, should be used to estimate actual pressure losses for a damper installed in a given HVAC system.
Information is subject to change without notice or obligation.
NOTE: Dimensions in parentheses () are millimeters.
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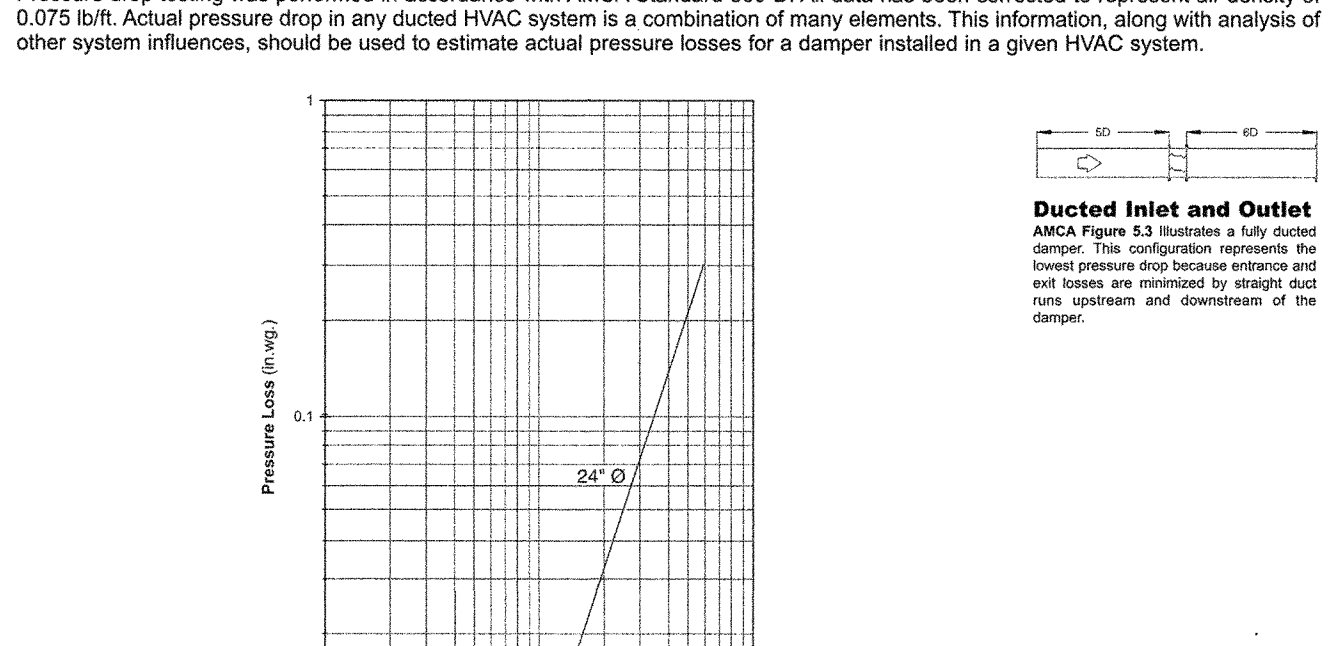
Actuator and Sleeve Dimensional Data

The drawings and corresponding table illustrate the position of the damper and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining plates and duct connections.

Table with columns for Damper Diameter, Actuator Model, and various dimensions. Includes notes on sleeve length and damper mounting.

NOTE: 1. Standard length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
2. The entire damper sleeve/frame is not required to be installed within the wall, partition or floor.
However, the closed plane of the damper blades must be inside the wall, partition or floor.
3. Dimensions for ML4115/ML8115 apply to MS4209/MS8209.
4. See installation instructions for detail details.

Pressure Drop Performance Data



Ducted Inlet and Outlet
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.
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NOTE: Dimensions in parentheses () are millimeters.
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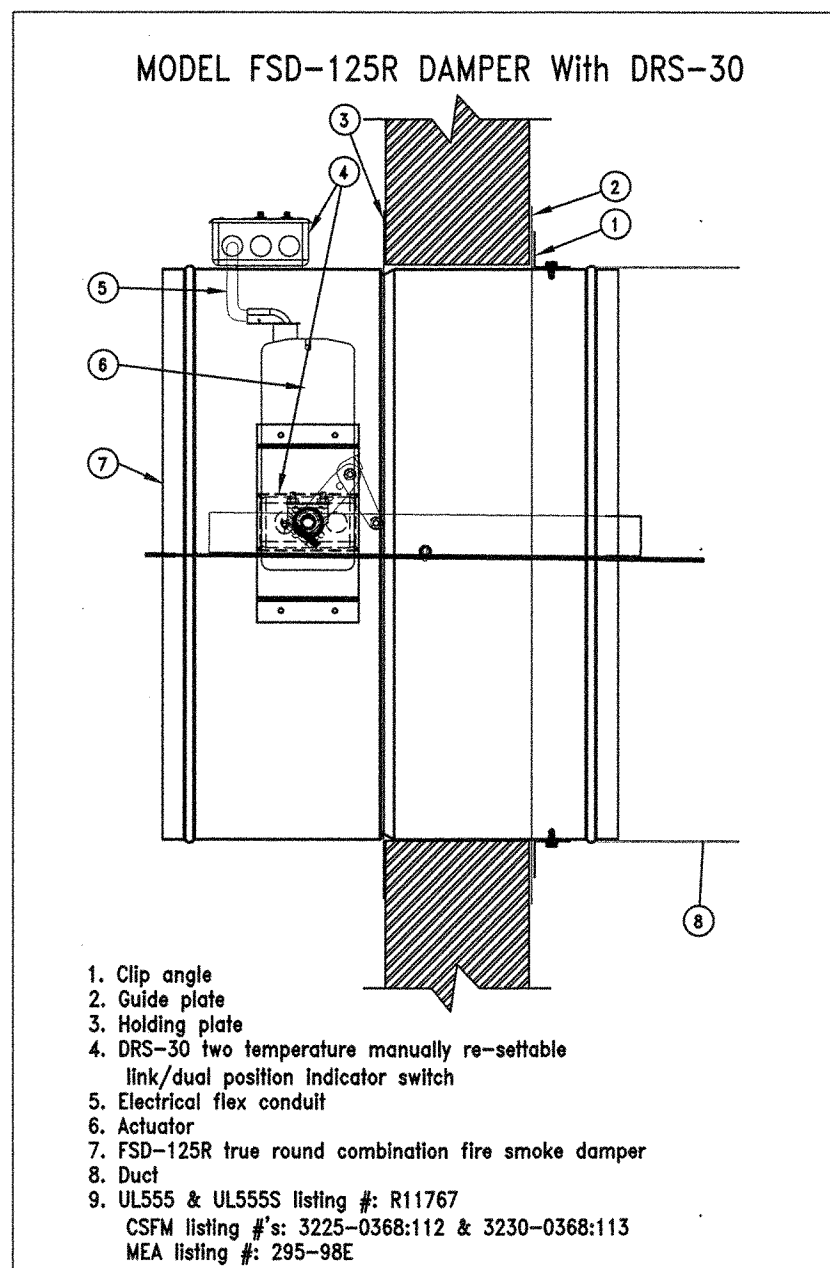
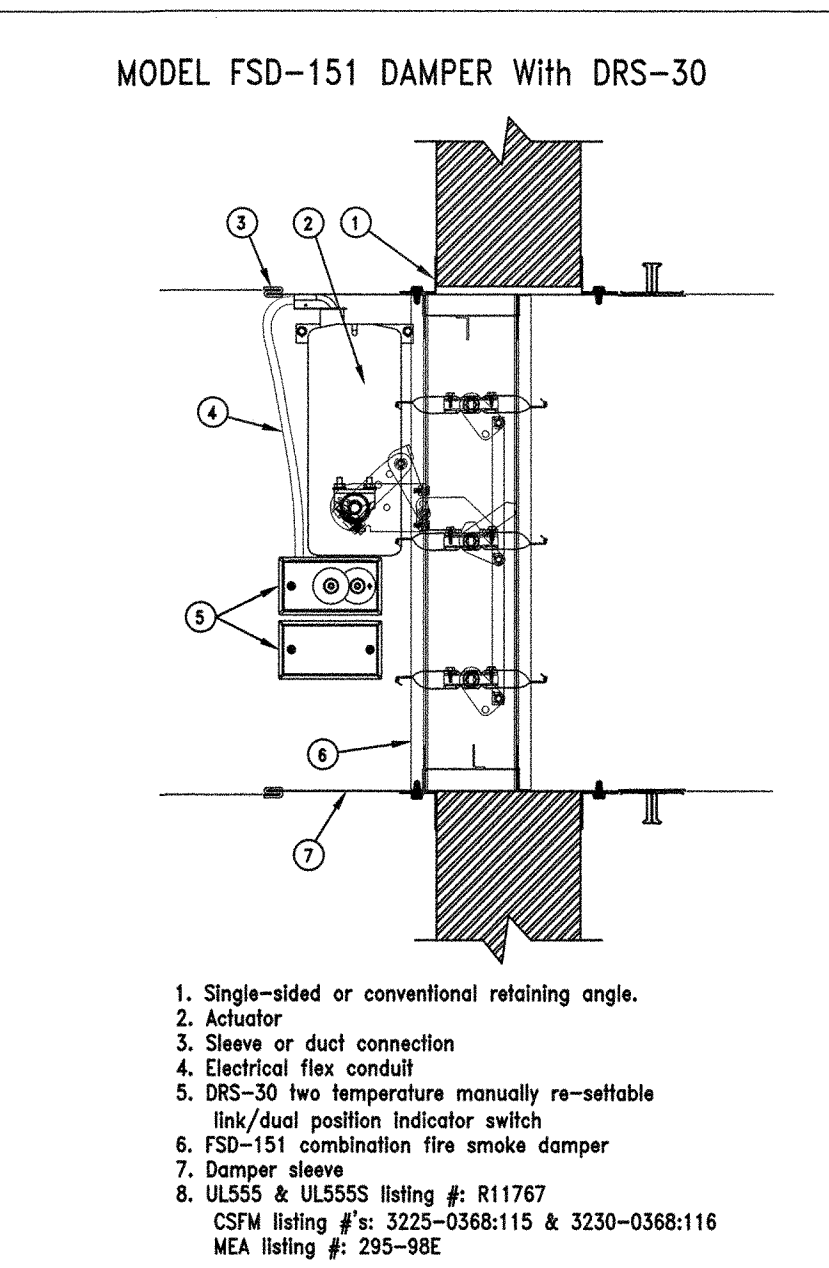
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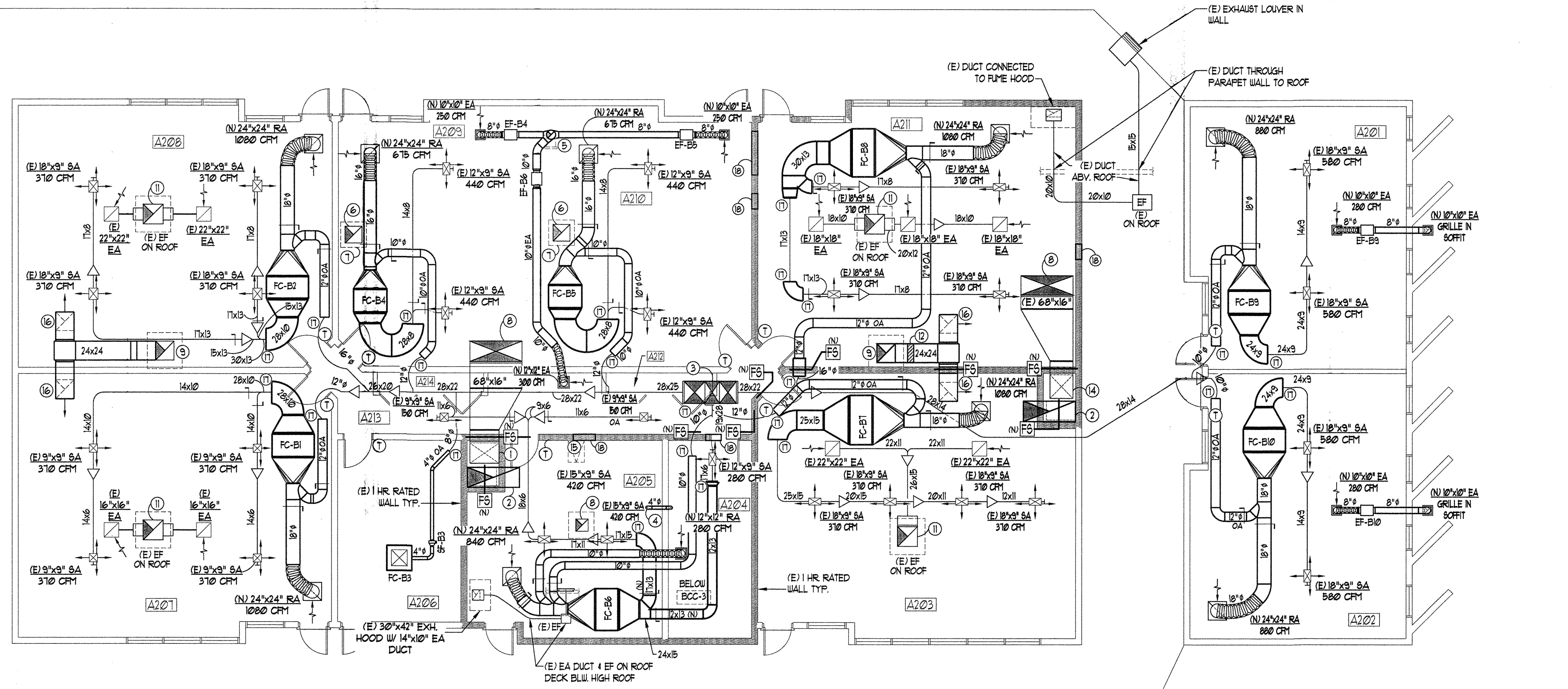
- 1. Single-sided or conventional retaining angle.
- 2. Actuator
- 3. Sleeve or duct connection
- 4. Electrical flex conduit
- 5. DRS-30 two temperature manually re-settable link/dual position indicator switch
- 6. FSD-151 combination fire smoke damper
- 7. Damper sleeve
- 8. UL555 & UL555S listing #: R11767
CSFM listing #s: 3225-0368:115 & 3230-0368:116
MEA listing #: 295-98C

- 1. Clip angle
- 2. Guide plate
- 3. Holding plate
- 4. DRS-30 two temperature manually re-settable link/dual position indicator switch
- 5. Electrical flex conduit
- 6. Actuator
- 7. FSD-125R true round combination fire smoke damper
- 8. Duct
- 9. UL555 & UL555S listing #: R11767
CSFM listing #s: 3225-0368:112 & 3230-0368:113
MEA listing #: 295-98C

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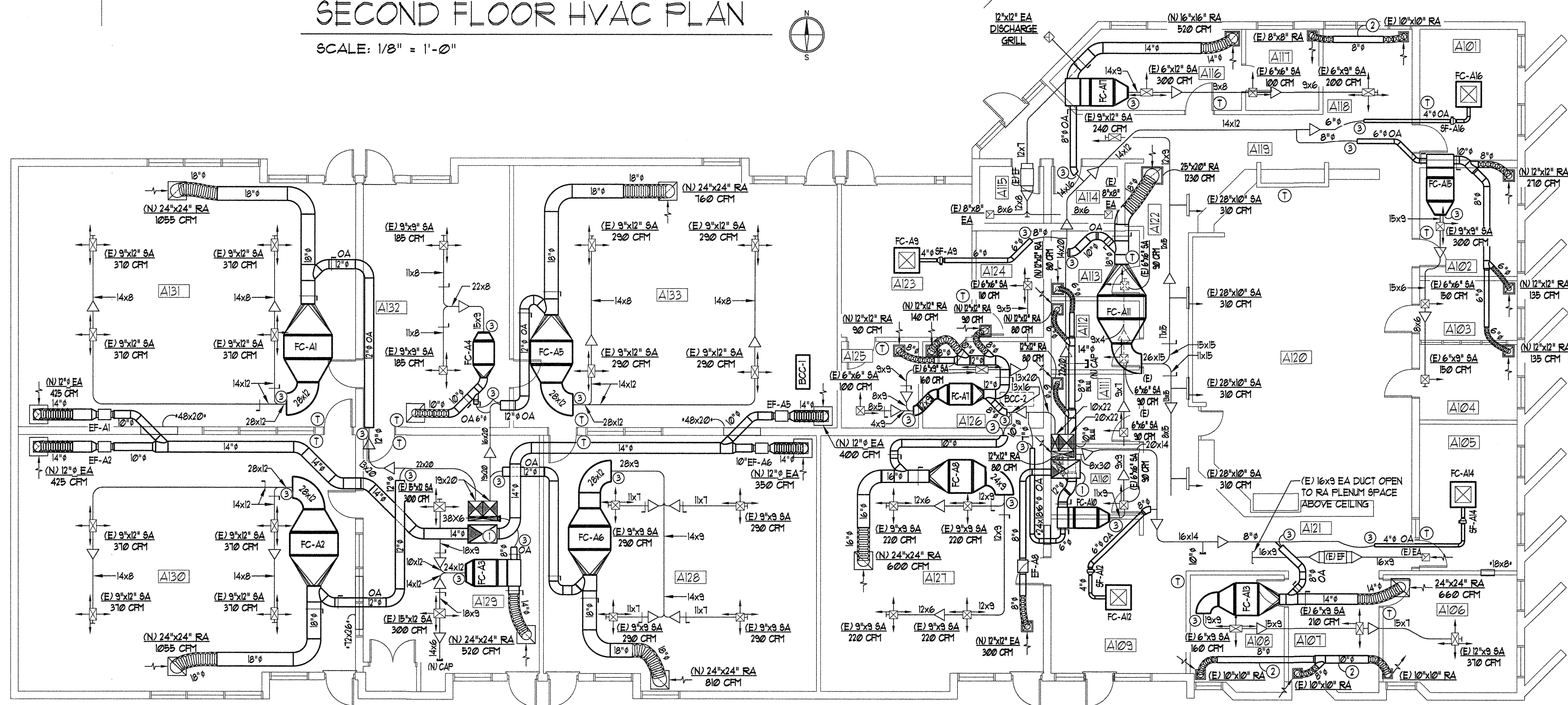
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HVAC DETAILS
M0.4B



SECOND FLOOR HVAC PLAN

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

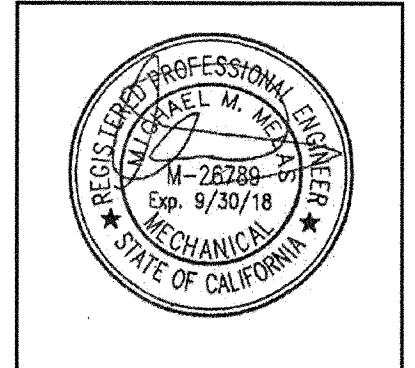
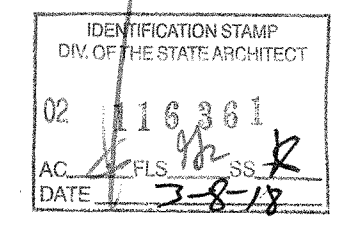


FIRST FLOOR HVAC PLAN

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

- SECOND FLOOR KEYED NOTES**
1. USE (E) 36"x24" SA DUCT DROP TO BELOW WITH SOUND LINING FOR OUTDOOR AIR INTAKE
 2. (E) 36"x24" RA DUCT OPEN TO RA SHAFT WITH TRANSITION TO 68"x28" DUCT THROUGH ROOF WITH FD. USE (E) RA DUCT FOR (N) EXHAUST AIR
 3. (E) 68"x28" SA DROP THROUGH ROOF THAT IS SPLIT INTO 21"x28", 18"x28" & 22"x28" DUCTS. USE (E) SA DUCTS FOR (N) OUTDOOR AIR INTAKE
 4. (E) 4" DRYER VENT THROUGH ROOF
 5. (N) 12" EA RISE TO 18"x18" LOUVER THROUGH PARAPET
 6. (E) 22"x22" EA TRANSITION TO 18"x18" DUCT THRU ROOF
 7. (E) EF ON ROOF
 8. USE (E) 68"x26" SA DUCT DROP THRU ROOF FOR (N) OUTDOOR AIR INTAKE
 9. (E) 24"x24" DUCT TO MUH ON ROOF
 10. (E) 16"x16" EA DUCT THRU ROOF TO (E) EF ON ROOF
 11. (E) 26"x26" EA DUCT THROUGH ROOF
 12. (N) 24"x24" BAROMETRIC INTAKE DAMPER
 13. (E) EA LOUVER IN PARAPET WALL
 14. USE (E) 30"x30" SA DUCT DROP TO BELOW WITH SOUND LINING FOR (N) OUTDOOR AIR INTAKE
 15. ROOF ACCESS
 16. (N) 24"x24" MIA GRILL
 17. POINT OF CONNECTION OF (N) DUCT TO (E) DUCT
 18. REMOVE (E) FIRE-DAMPENED TRANSFER GRILL ABOVE CEILING AND REPAIR WALL TO MATCH (E) FIRE RATING
- NOTE:**
1. SEE STRUCTURAL SHEET 812 FOR FAN COIL AND BC CONTROLLER HANGING / ANCHORAGE DETAILS
 2. ALL (E) FIRE DAMPERS TO BE REPLACED WITH (N) FIRE / SMOKE DAMPERS [FC] SEE SHEET M04B

- FIRST FLOOR KEYED NOTES**
1. CONNECT (N) EXHAUST DUCTS TO (E) 36"x24" RA SHAFT
 2. (N) RETURN AIR TRANSFER DUCTS
 3. POINT OF CONNECTION OF (N) DUCT TO (E) DUCT
- NOTE:**
1. SEE STRUCTURAL DETAILS 1.2.44 ON SHEET 812 FOR FAN COIL AND BC CONTROLLER HANGING / ANCHORAGE DETAILS



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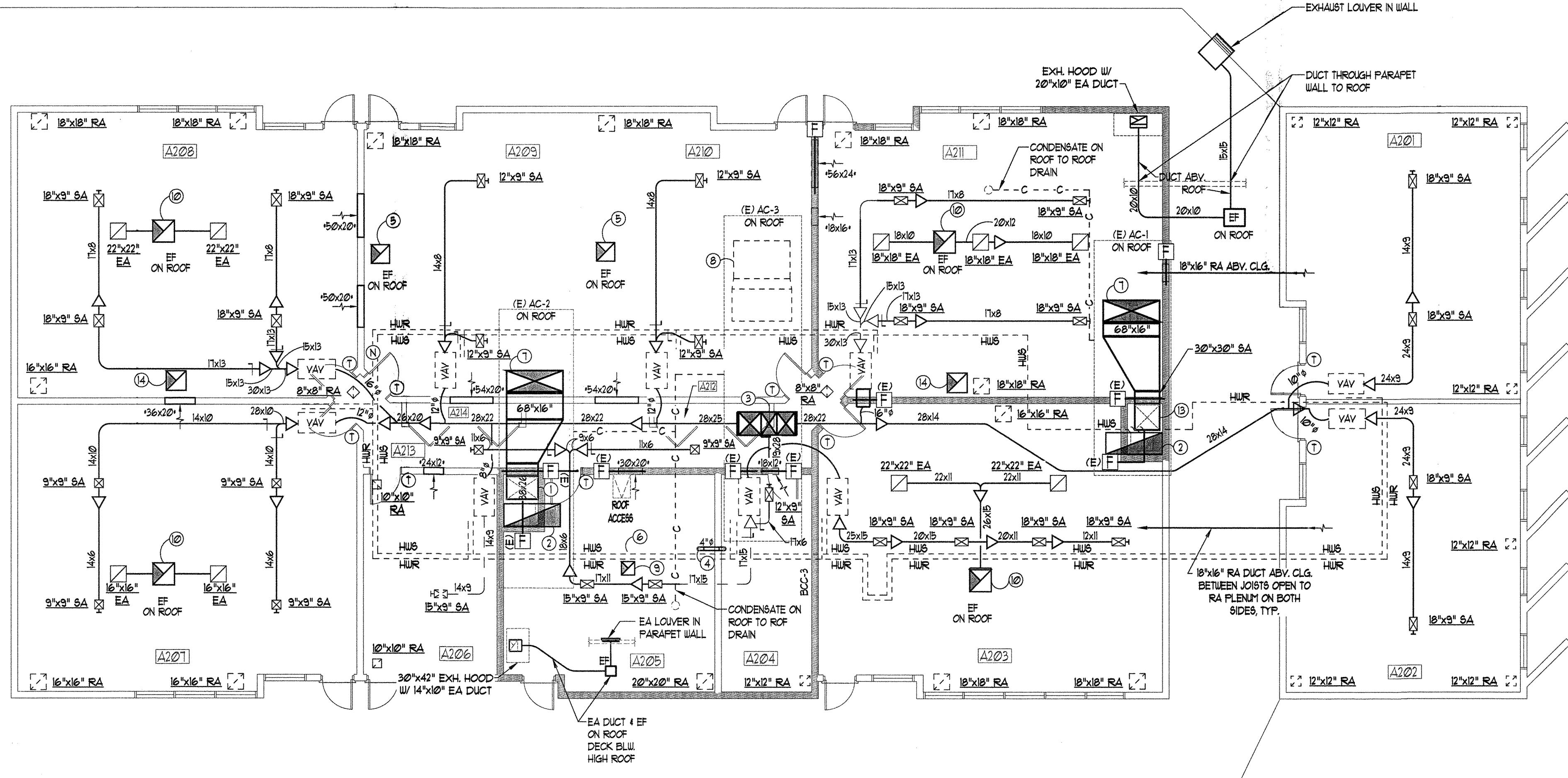
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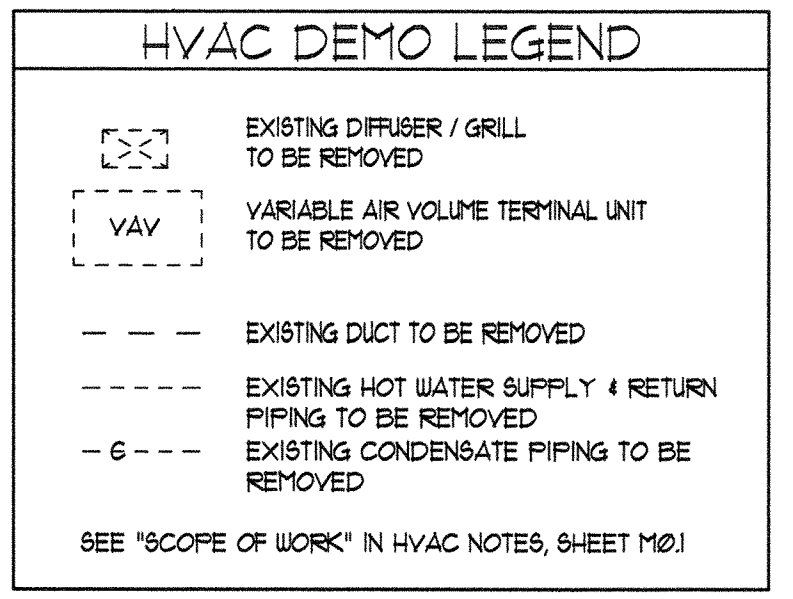
HVAC System Improvements for Building A
 BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD, GRASS VALLEY, CA

DATE: 12-8-2017
 PROJECT TRACKING #: 17-174

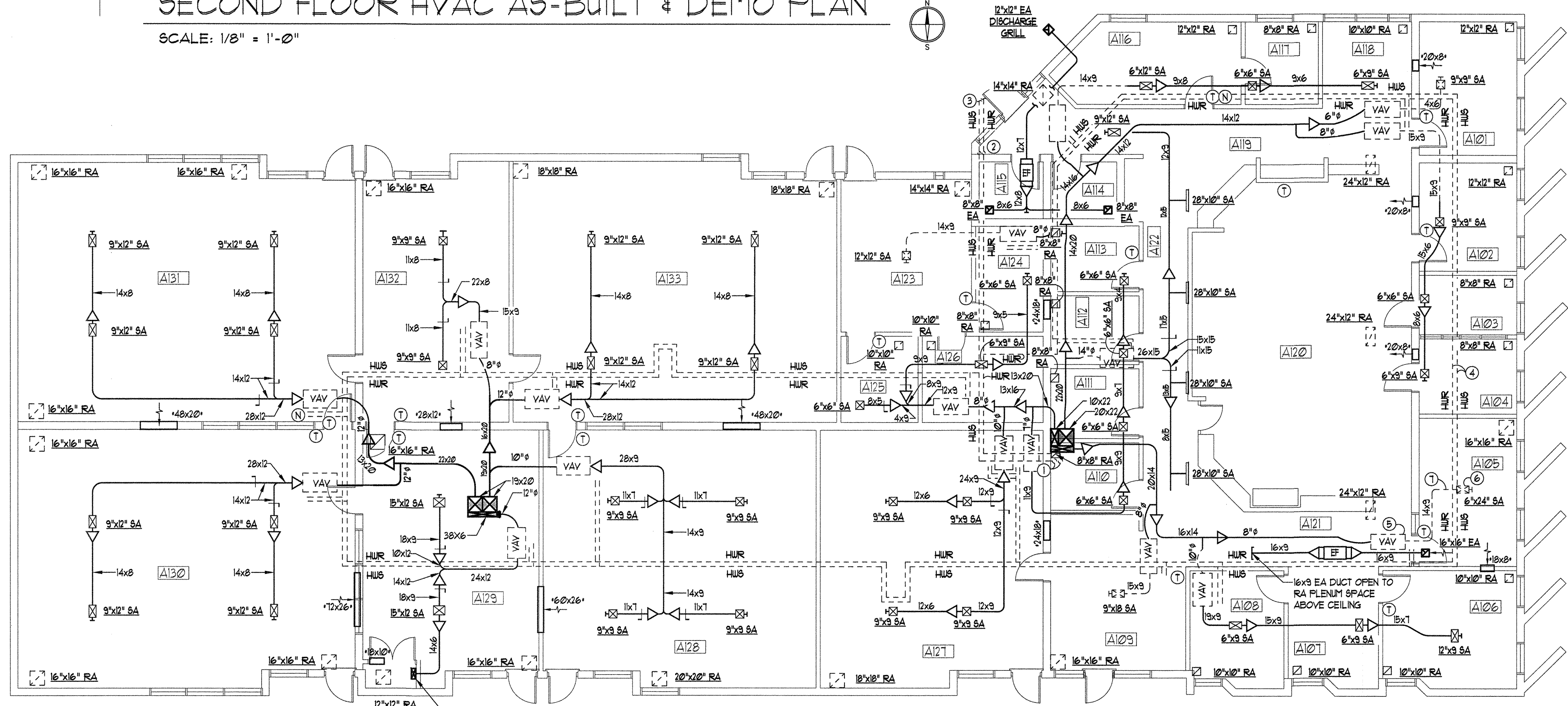
HVAC FLOOR PLANS
M1.1



- SECOND FLOOR KEYED NOTES**
- (E) 36" x 24" SA DUCT DROP TO BELOW WITH SOUND LINING
 - 36" x 24" RA DUCT OPEN TO RA SHAFT WITH ST-1 & TRANSITION TO 68" x 28" UP THROUGH ROOF WITH FD.
 - 68" x 28" SA DROP THRU ROOF & SPLIT TO 21" x 28", 19" x 28" & 22" x 28"
 - (E) 4" DRYER VENT THROUGH ROOF
 - (E) 22" x 22" EA TRANSITION TO 18" x 18" DUCT THRU ROOF
 - (E) EF ON ROOF
 - (E) 68" x 28" SA DUCT DROP THRU ROOF
 - (E) 68" x 44" RA DUCT THRU ROOF TO BE REMOVED, CAP, SEAL & INSULATE (E) PENETRATION
 - (E) 16" x 16" EA DUCT THRU ROOF TO (E) EF ON ROOF
 - (E) 26" x 26" EA DUCT THROUGH ROOF
 - NOT USED
 - (E) EA LOUVER IN PARAPET WALL
 - (E) 30" x 30" SA DUCT DROP TO BELOW WITH SOUND LINING
 - 24" x 24" SCREENED OPENING TO MH ON ROOF

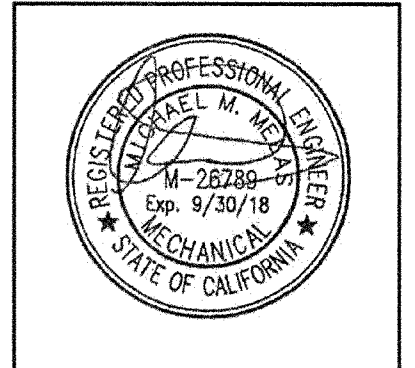
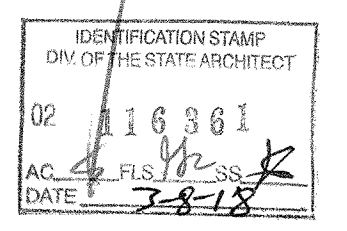


SECOND FLOOR HVAC AS-BUILT & DEMO PLAN
SCALE: 1/8" = 1'-0"



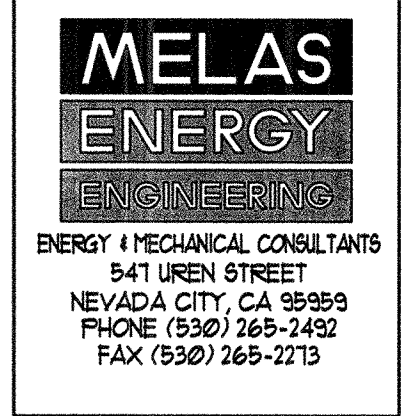
- FIRST FLOOR KEYED NOTES**
- 1 1/4" HUB RISER TO ABOVE & 1/4" HUR DROP FROM ABOVE
 - 2" HUB RISER & 2" HUR DROP - TO BE CAPPED
 - 2" HUB & 2" HUR UNDER SLAB TO CENTRAL BOILER
 - HOT WATER PIPING TO BE REMOVED, TYP.
 - VAV BOX TO BE REMOVED, TYP.
 - REGISTER TO BE REMOVED, TYP.
 - DUCT TO BE REMOVED, TYP.

FIRST FLOOR HVAC AS-BUILT & DEMO PLAN
SCALE: 1/8" = 1'-0"



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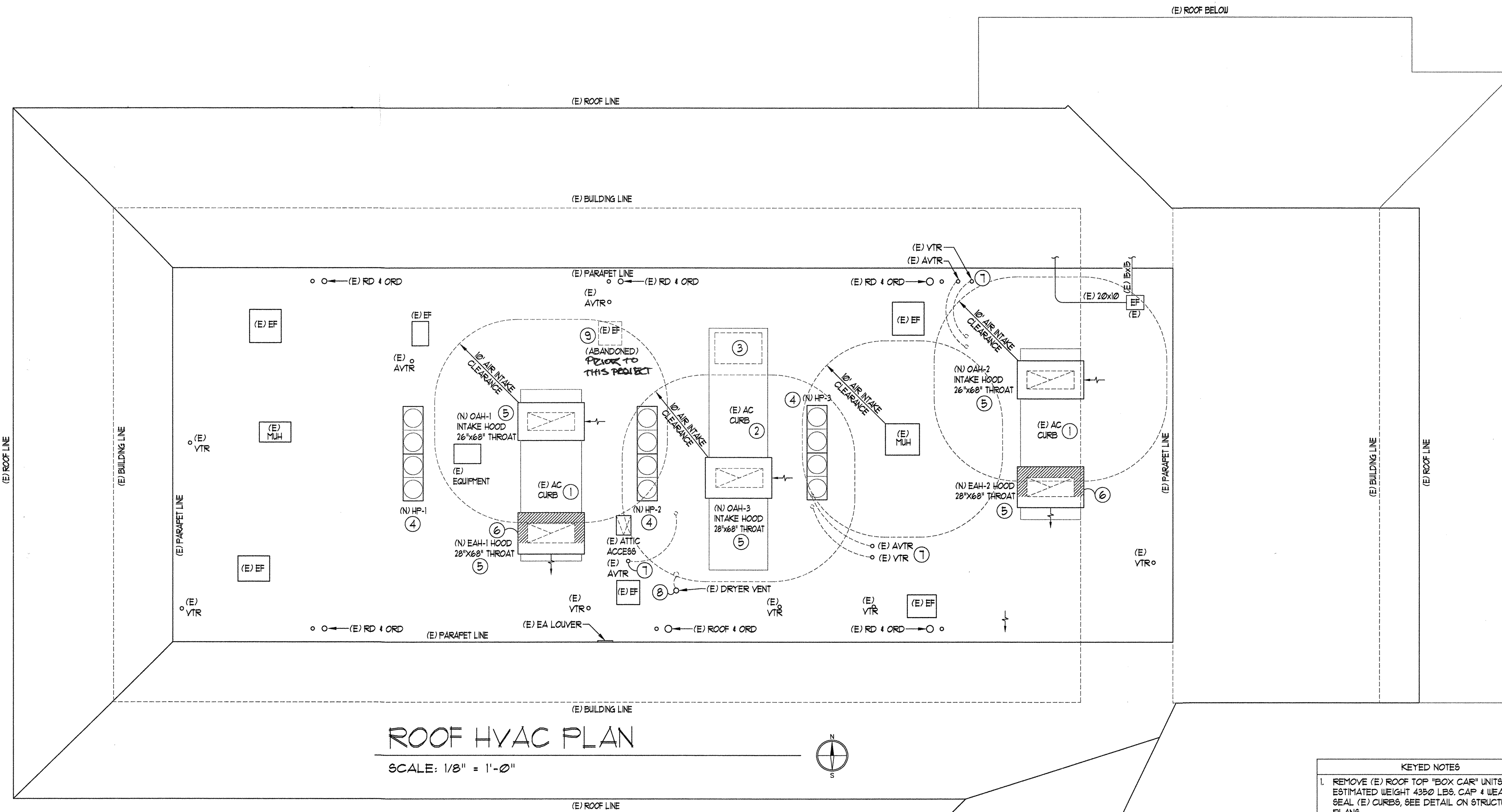


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HVAC System Improvements Building A
for
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11130 MAGNOLIA ROAD, GRASS VALLEY, CA

DATE: 12-8-2017
SCALE: 17-174

HVAC AS-BUILT & DEMO PLANS
M1.2



- KEYED NOTES**
1. REMOVE (E) ROOF TOP "BOX CAR" UNITS, ESTIMATED WEIGHT 4350 LBS. CAP & WEATHER SEAL (E) CURBS, SEE DETAIL ON STRUCTURAL PLANS
 2. REMOVE (E) ROOF TOP "BOX CAR" UNITS, ESTIMATED WEIGHT 8100 LBS. CAP & WEATHER SEAL (E) CURBS, SEE DETAIL ON STRUCTURAL PLANS
 3. REMOVE (E) DUCT THROUGH ROOF, CAP, SEAL AND INSULATE PENETRATION
 4. SEE STRUCTURAL SHEETS 501 & 512 FOR HEAT PUMP ANCHORAGE DETAILS
 5. INSTALL HOODS PER MANUFACTURER'S INSTRUCTIONS ON PRE-FAB CURBS, GREENHECK - GPI or EQUAL. INTEGRATE FLASHING INTO NEW COVER OVER (E) CURBS
 6. CLOSE OFF THREE SIDES OF EXHAUST HOODS WITH SHEET METAL. SO EXHAUST AIR OPENING IS 10' (MIN) FROM OUTDOOR AIR INTAKE HOOD
 7. RELOCATE (E) FLUIMING VENTS 10' (MIN) FROM OUTDOOR INTAKE HOODS, REPAIR ROOF. VENT MATERIAL FOR AVTR SHALL BE GLASS (SIMILAR TO EXISTING) or FIRE RETARDANT POLYPROPYLENE. VENT MATERIAL FOR STANDARD VENT SHALL BE CAST IRON.
 8. RELOCATE (E) DRYER VENT 10' (MIN) FROM OUTDOOR INTAKE HOODS. (IF DRYER VENT IS NO LONGER IN USE, REMOVE AND CAP DUCTING, REPAIR ROOF. FIELD VERIFY)
 9. REMOVE ABANDONED EXHAUST FAN HOOD, CAP AND WEATHER SEAL OPENING.

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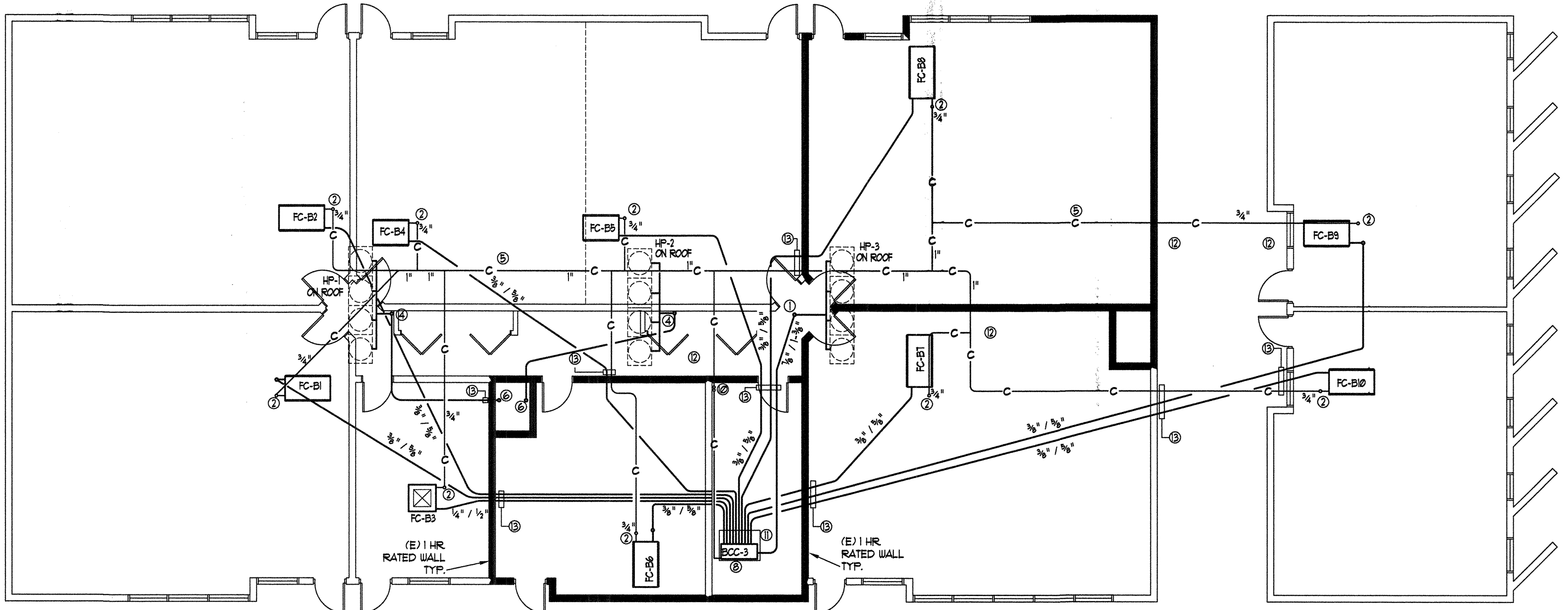
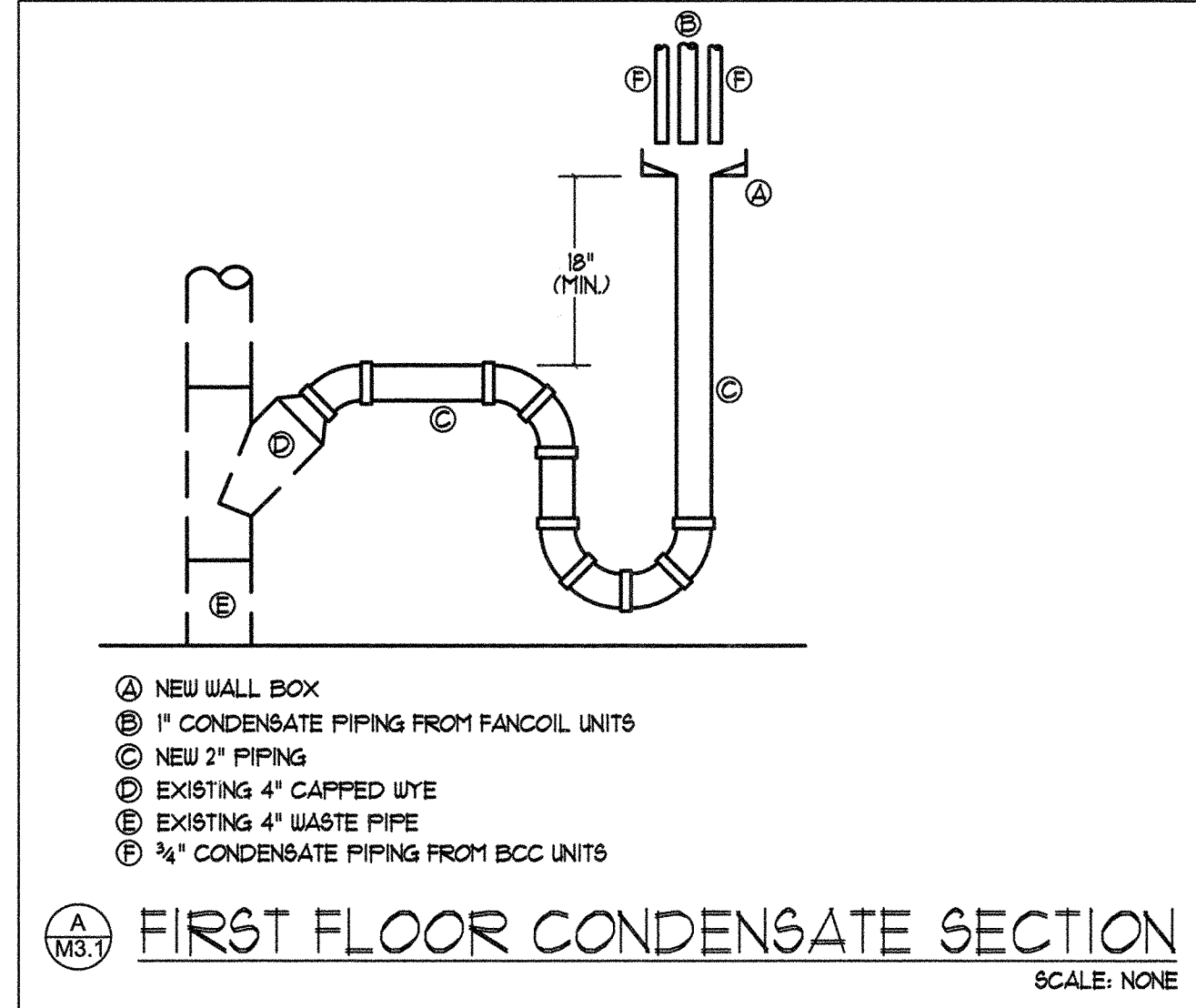
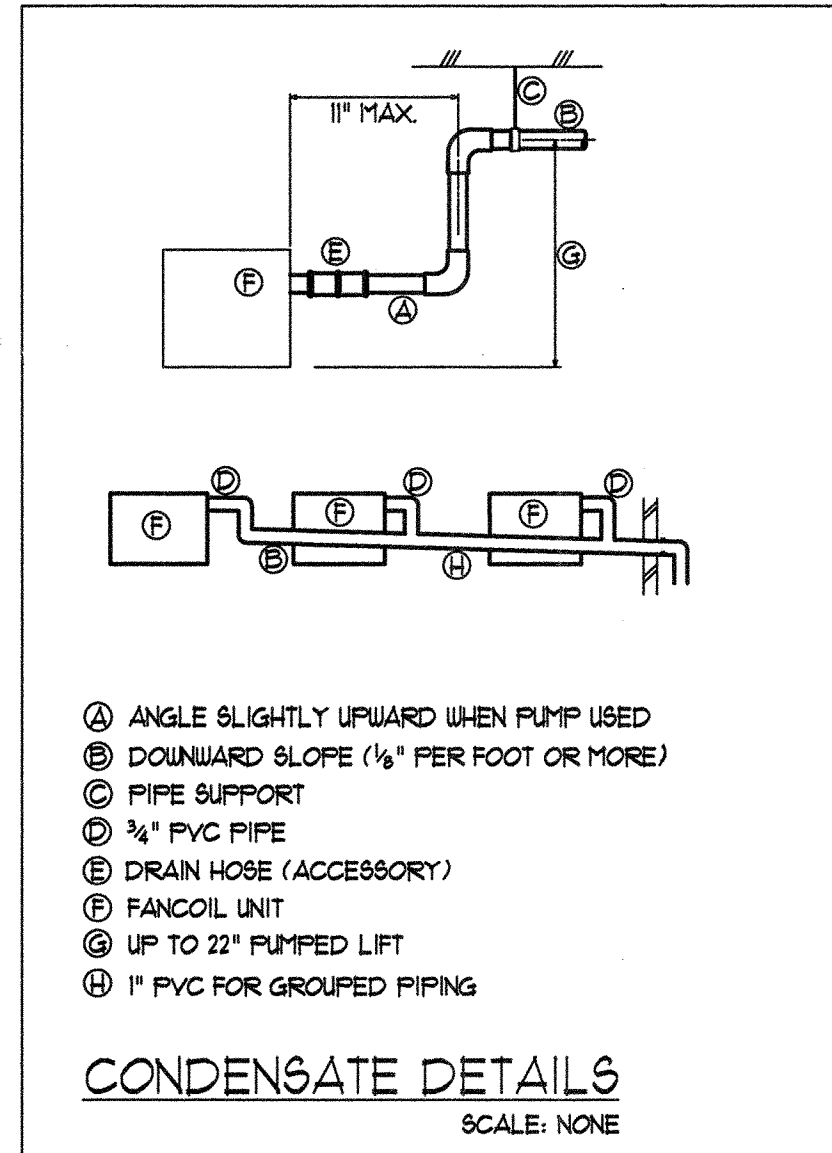
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**HVAC System Improvements
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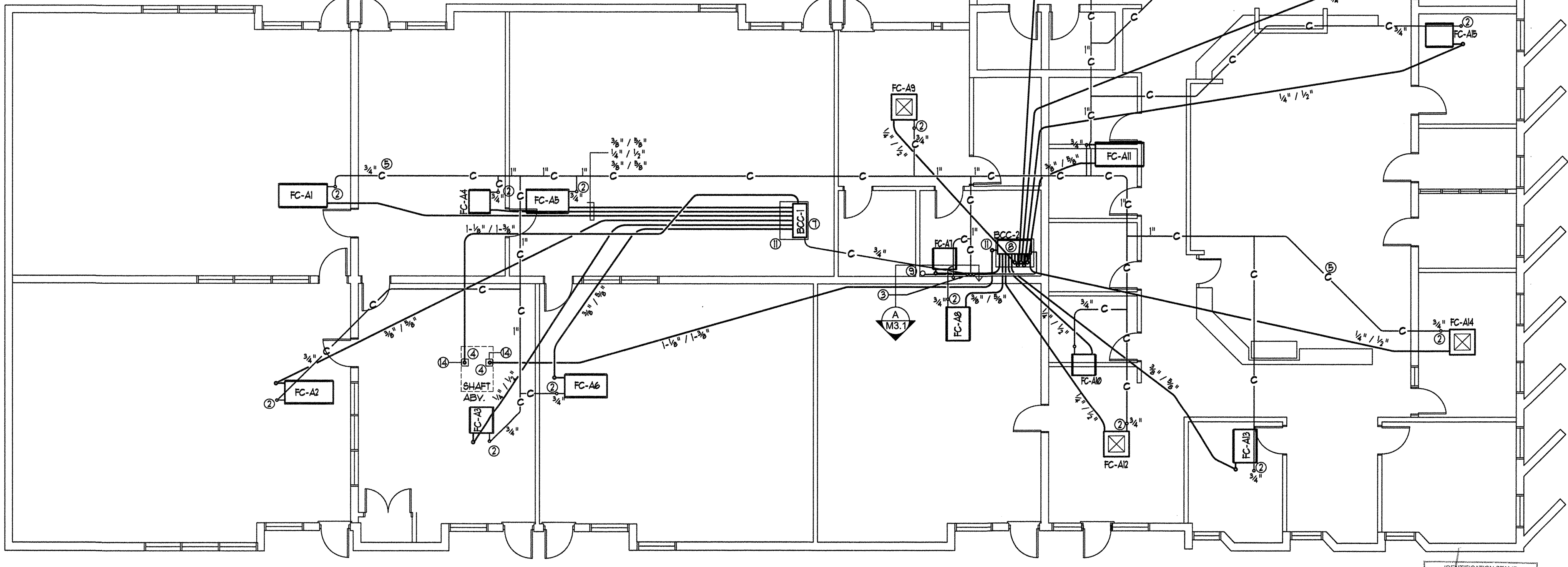
DATE:	12-8-2017
PROJECT NUMBER:	17-174

ROOF HVAC PLAN

M2.1



- SHEET NOTES**
- ① REFRIGERANT PIPING THRU ROOF TO HP-1, HP-2 & HP-3
 - ② CONDENSATE RISER TO 22" ABOVE THE BASE OF THE FANCOIL, TYPICAL OF EACH FANCOIL
 - ③ CONDENSATE DROP FROM ABOVE CEILING. TERMINATE 1" CONDENSATE INDIRECTLY TO NEW WALL BOX. SEE DETAIL ON THIS SHEET
 - ④ REFRIGERANT PIPE RISERS TO SECOND FLOOR
 - ⑤ CONDENSATE PIPE, TYP.
 - ⑥ REFRIGERANT PIPING IN CHASE TO FIRST FLOOR BC CONTROLLERS
 - ⑦ SUSPEND BC CONTROLLER ABOVE CEILING
 - ⑧ SUSPEND BC CONTROLLER BELOW THE CEILING 6 FEET ABOVE THE FLOOR
 - ⑨ EXISTING 4" WASTE PIPE
 - ⑩ TERMINATE CONDENSATE FOR THE UPPER LEVEL IN THE SINK TAIL PIECE. BC CONTROLLER CONDENSATE LINE SHALL HAVE A SEPARATE CONNECTION TO THE TAIL PIECE.
 - ⑪ DRAIN PAN BELOW BC CONTROLLER
 - ⑫ FIRESTOP SYSTEM UL-UL5208, SHEET M2.4A
 - ⑬ FIRESTOP SYSTEM UL-W-L-8065, SHEET M2.4A
 - ⑭ FIRESTOP SYSTEM UL-C-AJ-8099, SHEET M2.4A



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HVAC System Improvements for Building A
for
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD, GRASS VALLEY, CA

DATE: 12-8-2017
PROJECT NO.: 17-174

MECHANICAL PIPING PLAN
M3.1

SYMBOLS LIST

GENERAL NOTES

DRAWING INDEX

POWER DISTRIBUTION

ABBREVIATIONS

Table of electrical symbols and their descriptions, including switchboards, panelboards, transformers, motors, and various control devices.

Table of electrical abbreviations such as AMPERES (A), ARC FAULT CIRCUIT INTERRUPTER (AFI), and various equipment types like MCC, MCB, and MTC.

CONVENTIONS

Table of conventions for numbered notes, equipment identification tags, and fixture identification tags.

General notes detailing construction requirements, safety protocols, and specific instructions for the electrical installation.

FIRE ALARM

Notes regarding fire alarm system components, including motor-operated fire/smoke dampers and remote mounted control modules.

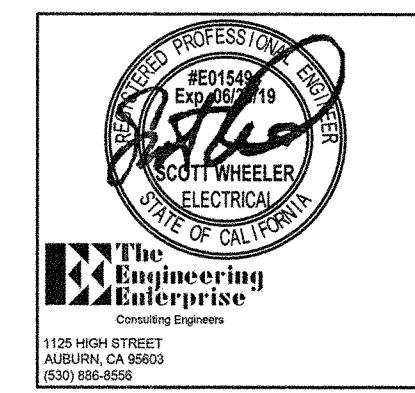
RATED WALL LEGEND

Legend for rated walls, specifically defining the symbol for an existing 1 HR rated wall.

Electrical Sheet Matrix table showing sheet numbers and names for various drawing sections like SCHEDULES, FIRST FLOOR, and ROOF.

POWER DISTRIBUTION

Table of power distribution symbols and their descriptions, including conduit runs, homeruns, and raceway types.



Revisions table with columns for revision number and description.

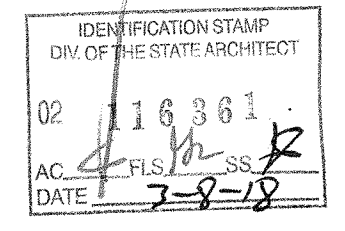
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Project title: HVAC SYSTEM IMPROVEMENTS BUILDING "A" for BEAR RIVER HIGH SCHOOL, 11130 MAGNOLIA ROAD GRASS VALLEY.

Project metadata table including date (03/02/18), sheet number (66357-29), and project number (17-459).

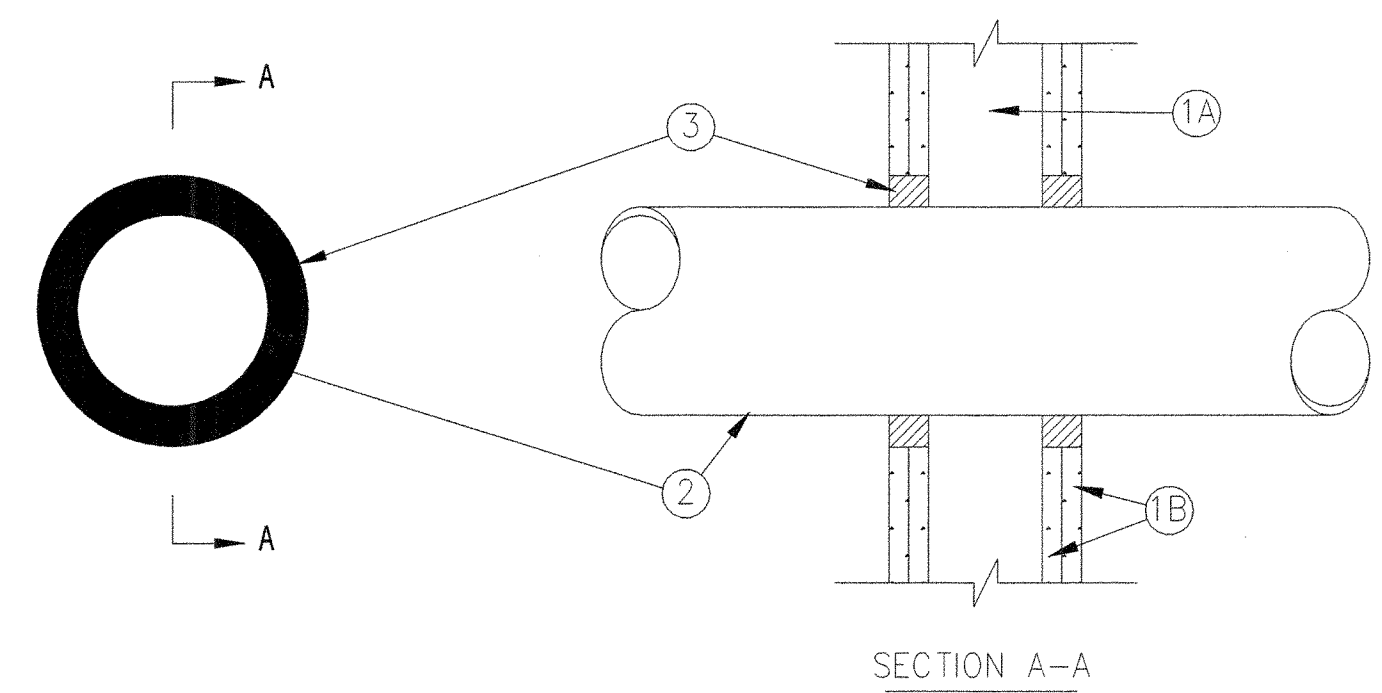
SYMBOLS LIST & DRAWING INDEX E0.1



Branch Panel: (E) HA1 (4)											
Location: CORRIDOR A213 Served From MSB											
Phases 3											
A.I.C. Rating: Bus Rating 400 A											
Main Rating: 400 A											
Mounting: SURFACE											
Volts: 480/277 Wye											
Wires 4											
Main Type: MCB											
LOAD SERVED											
(E) EWH-1	20 A	3	1	3.00	0.57		2	3	15 A		(E) HWP-1 (1HP)
				3.00	0.57		4				
							4				
(E) RR RELAY HONEYWELL	15 A	3	7	0.33	0.33		8	3	30 A		(E) AIR COMPRESSOR
				0.33	0.33		10				
							12				
HP-1A/1B {2}	60 A	3	13	8.00	0.00		14				Space
							16				Space
							18				Space
HP3A/3B {3}	100 A	3	19	14.00	7.46		20	3	50 A		(N) TX-TG {1}
							22				
							24				
Space				25	0.00	8.00		26	3	60 A	HP-2A/2B {1} {5}
Space							28				
(E) EMERGENCY LIGHTING	20 A	1	29				30				
Total Load:				41.69	kVA						
				151	A						
				40.08	kVA						
				145	A						
				40.33	kVA						
				146	A						
Load Classification				Connected...							Panel Totals
MECH				108	kVA	109.71%					108.40
Other				0	kVA	100.00%	0	kVA			118.90
											Total Conn.: 130 A
											Total Est. Demand: 143 A

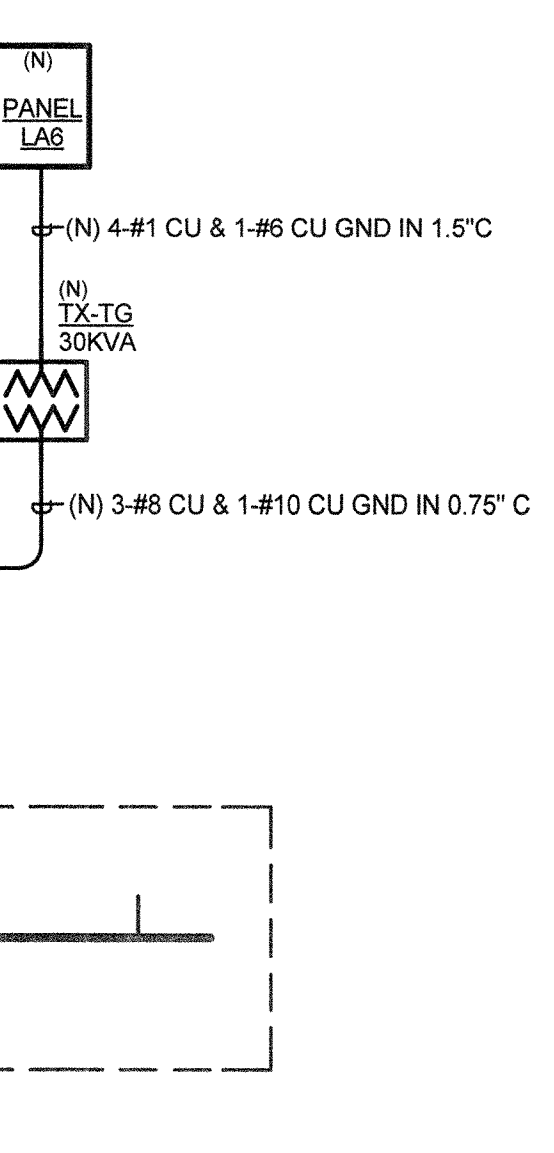
Branch Panel: (N) PANE LA6											
Location: FOOD STOR. A204 Served From (N) TRANSFORMER...											
Phases 3											
A.I.C. Rating: 10K											
Bus Rating 100 A											
Main Rating: 100 A											
Mounting: SURFACE											
Volts: 120/208 Wye											
Wires 4											
Main Type: MCB											
LOAD SERVED											
MECH FC-A1,A2,A3	20 A	2	1	1.10	0.89		2	2	20 A		MECH FC-A4,A5,A6
							4				
MECH FC-A7,A8,A9,A10,A11	20 A	2	5			1.10	0.89		6	2	20 A
						1.57	0.93		8		
									10	2	20 A
MECH FC-B1,B2	20 A	2	9			1.17	0.45		12		
									14	2	20 A
						0.65	1.60		16		
MECH FC-B5,B6	20 A	2	13	0.65	1.60				18	1	20 A
						0.73	0.27		20		{1} FIRE SMOKE DAMPERS...
									22		Space
									24		Space
									26		Space
									28		Space
									30		Space
Total Load:				7.46	kVA						
				63	A						
				50	A						
				43	A						
Load Classification				Connected...							Panel Totals
MECH				18	kVA	102.21%	19	kVA			18.40
Other				0	kVA	100.00%	0	kVA			18.80
											Total Conn.: 51 A
											Total Est. Demand: 52 A

System No. W-L-1054
 F Ratings - 1 and 2 Hr (See Items 1 and 3)
 T Rating - 0 Hr
 L Rating At Ambient - Less Than 1 CFM/Sq Ft
 L Rating At 400 F - 4 CFM/Sq Ft



B RATED PENETRATION DETAIL
 E-0.2 NONE

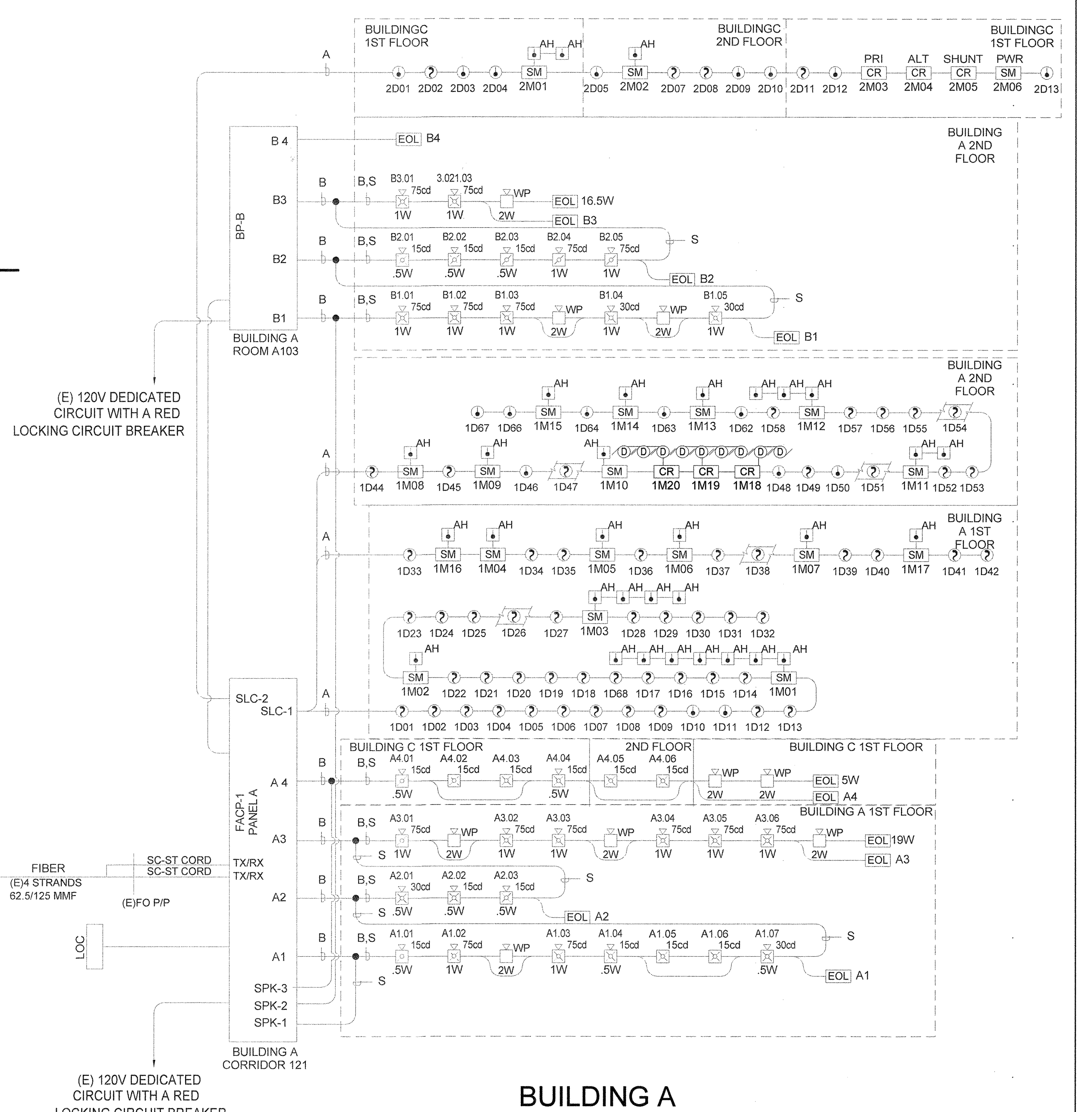
1. Wall Assembly -- The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs -- Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
 B. Gypsum Board -- 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls.
 The F Rating of the firestop system is equal to the fire rating of the wall assembly.
 2. Through-Penetrants -- One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 A. Steel Pipe -- Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
 B. Iron Pipe -- Nom 30 in. diam (or smaller) cast or ductile iron pipe.
 C. Conduit -- Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
 D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
 E. Copper Pipe -- Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.
 3. Fill, Void or Cavity Material -- Sealant -- Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-One Sealant
 *Bearing the UL Classification Mark



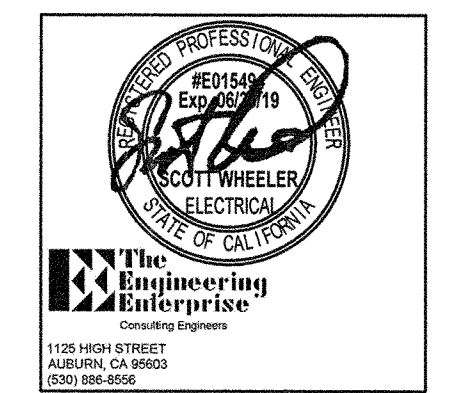
A One-Line
 E-0.2 SCALE: 12" = 1'-0"

GENERAL SHEET NOTES

A FIXTURES "SCREENED BACK" LINE COLOR/WEIGHT ARE EXISTING.



C FIRE ALARM RISER
 E-0.2 NOT TO SCALE



REVISIONS

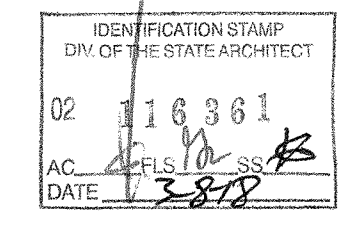
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HVAC SYSTEM IMPROVEMENTS
 BUILDING "A"
 for
 BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD GRASS VALLEY

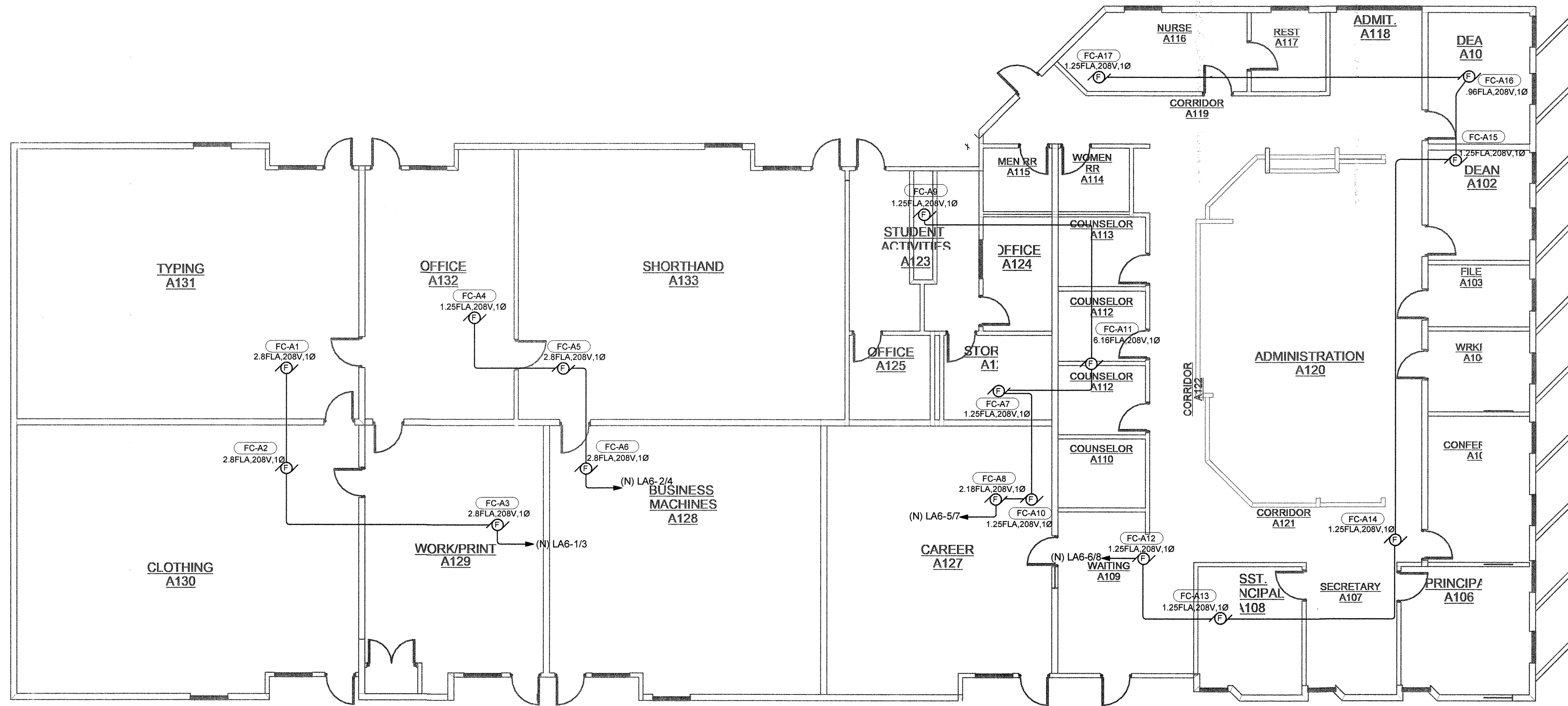
DATE	03/02/18
PROJECT NUMBER	66357-29
PROJECT NUMBER	17-459

SCHEDULES, ONE-LINE, DETAILS & RISER
E0.2

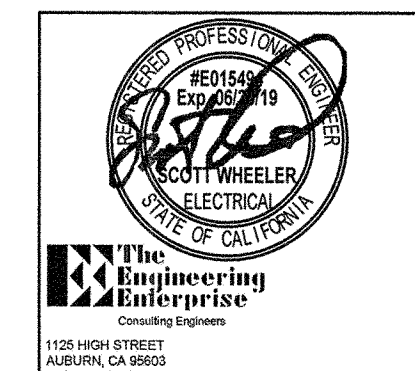


GENERAL SHEET NOTES

A ANY CONDUIT PENETRATING A RATED WALL SHALL BE PER DETAIL B/E0.2



A BUILDING A FIRST FLOOR - ELECTRICAL PLAN
E-1.1 SCALE: 1/8" = 1'-0"



REVISIONS

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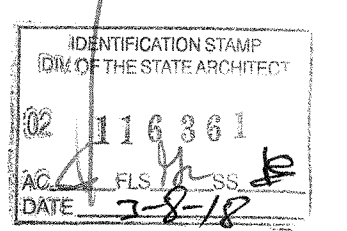
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HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
for
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD GRASS VALLEY

DATE	03/02/18
SCALE	1/8" = 1'-0"
PROJECT NUMBER	66357-29
ISSUE	17-459



BUILDING "A"
ELECTRICAL PLAN
FIRST FLOOR

E1.1

15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

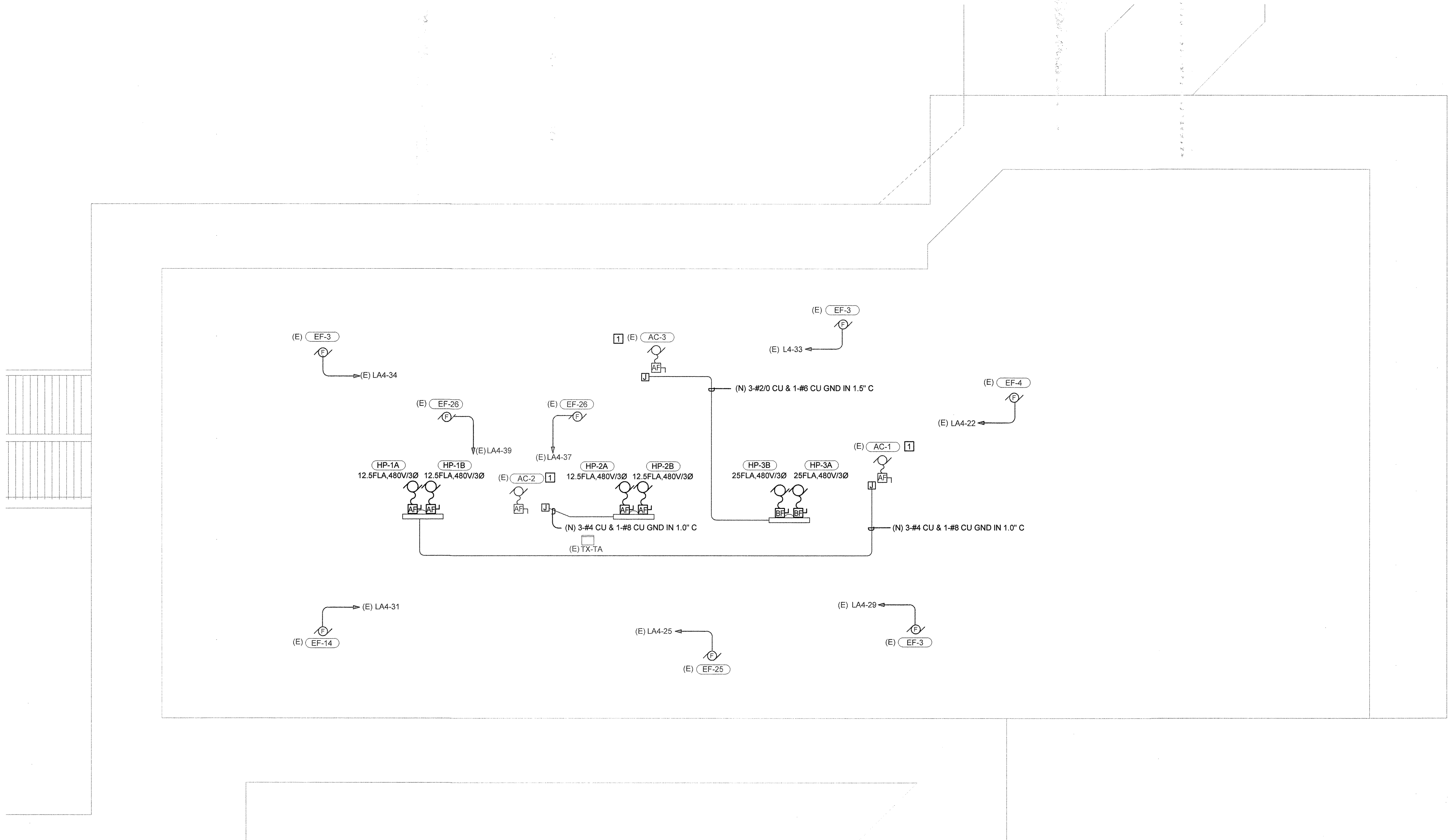
L
K
J
I
H
G
F
E
D
C
B
A

GENERAL SHEET NOTES

A FIXTURES "SCREENED BACK" LINE COLOR/WEIGHT ARE EXISTING.

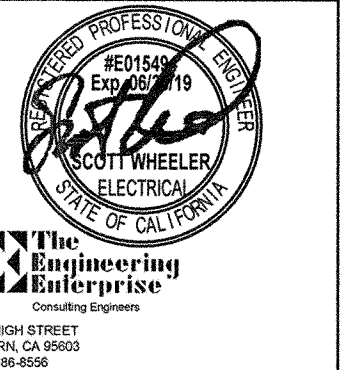
NUMBERED SHEET NOTES

1 REMOVE EXISTING AC UNIT POWER FEED. INTERCEPT EXISTING FEED WITH, PULLBOX AND ROUTE NEW FEEDER TO NEW UNITS AS SHOWN.



A BUILDING A ROOF-ELECTRICAL PLAN
E-13 SCALE: 1/8" = 1'-0"

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DIV. OF THE STATE ARCHITECT
02 116361
AC. [Signature]
DATE 7-8-18



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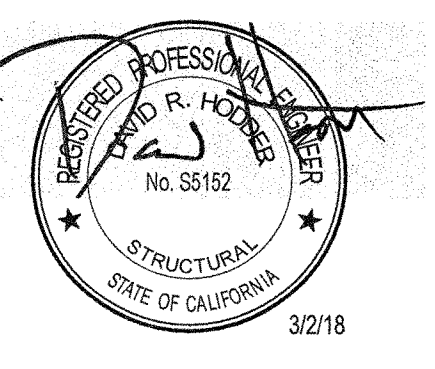
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HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
for
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD GRASS VALLEY

date	03/02/18
scale	1/8" = 1'-0"
project tracking #	66357-29
job #	17-459

BUILDING "A"
ELECTRICAL PLAN
ROOF
E1.3

15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1



REVISIONS table with columns for revision number and description.

These Drawings have been prepared by Linchin Structural Engineering Inc. They are not suitable for use on other projects...

HVAC SYSTEM IMPROVEMENTS
BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD GRASS VALLEY, CA

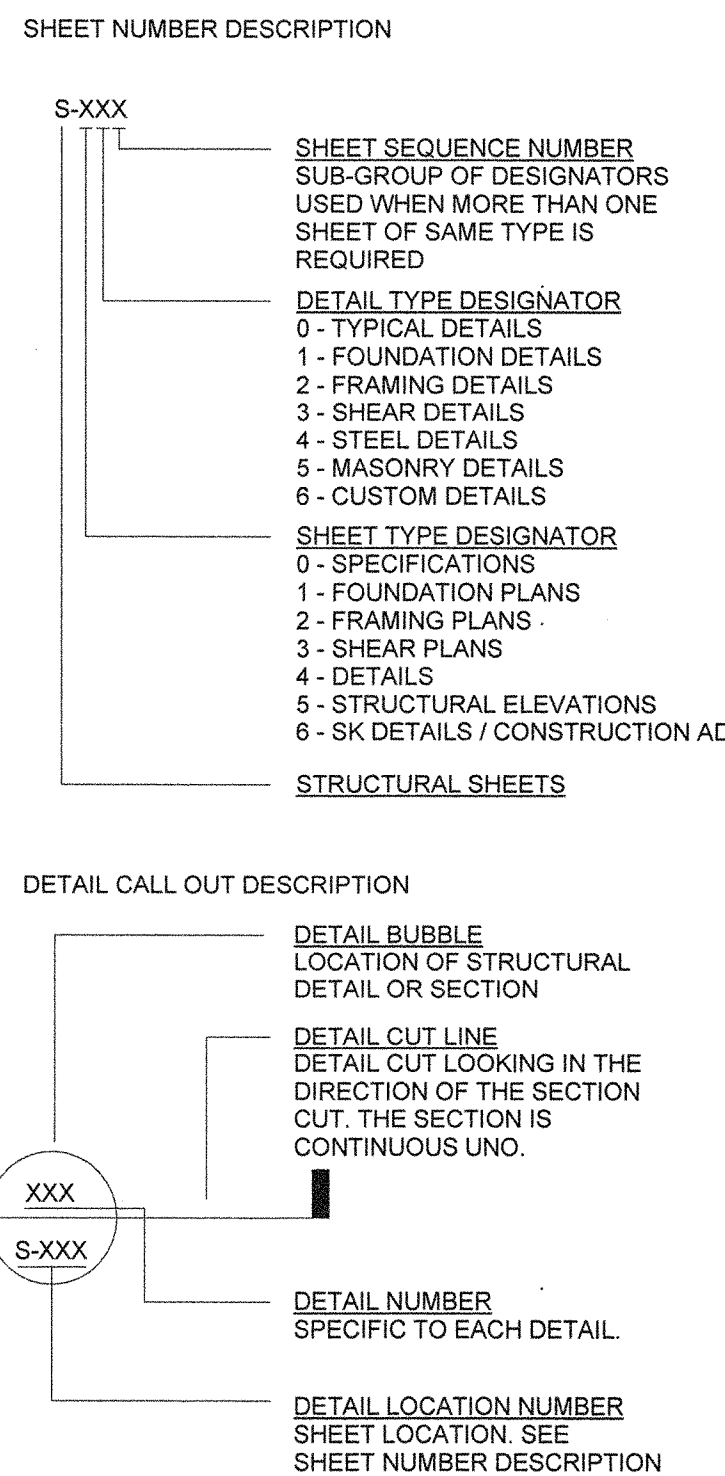
DESIGNED BY DH
DRAFTED BY AP

SITELINE ARCHITECTURE
644 ZION STREET
NEVADA CITY, CA 95959

PROJECT# 1980
ISSUE DATE 3/2/18
SCALE As indicated
SPECIFICATIONS

S0.1

STRUCTURAL PLANS & DETAILS LEGEND



STRUCTURAL ABBREVIATIONS

- AB - ANCHOR BOLT
ABV - ABOVE
ADDL - ADDITIONAL
ADJ - ADJACENT
ARCH - ARCHITECTURAL
BLKG - BLOCKING
BLW - BELOW
BN - BOUNDARY NAILS
BTWN - BETWEEN
CBC - CALIFORNIA BUILDING CODE
CJ - CONSTRUCTION JOINT
CL - CENTERLINE
CLR - CLEARANCE
COL - COLUMN
CONC - CONCRETE
CONT - CONTINUOUS
DIAM - DIAMETER
DF - DOUGLAS FIR
DFPT - DOUGLAS FIR PRESSURE TREATED
DL - DEAD LOAD
DN - DOWN
E - EXISTING
ELECT - ELECTRICAL
EN - EDGE NAIL
ENGR - ENGINEER
ES - EACH SIDE
EW - EACH WAY
FDN - FOUNDATION
FF - FINISH FLOOR
FH - FREE OF HEART CORE
FOS - FACE OF STUD
FS - FAR SIDE
GA - GAGE
GALV - GALVANIZED
GC - GENERAL CONTRACTOR
GLB - GLUED LAMINATED BEAM
GYP BD - GYPSUM BOARD
HD - HOLDDOWN
HORIZ - HORIZONTAL
HSS - HOLLOW STRUCTURAL SECTION
IBC - INTERNATIONAL BUILDING CODE
INTR - INTERMEDIATE
INV - INVERTED
K - KIPS
KP - KING POST
KS - KING STUD
L - LIVE LOAD
LLV - LONG LEG VERTICAL
LLH - LONG LEG HORIZONTAL
LSL - LAMINATED STRAND LUMBER
LVL - LAMINATED VENEER LUMBER
LWT - LIGHTWEIGHT
MAX - MAXIMUM
MECH - MECHANICAL
MFR - MANUFACTURER
MIN - MINIMUM
MISC - MISCELLANEOUS
NS - NEAR SIDE
OC - ON CENTER
OCCEW - ON CENTER EACH WAY
OF - OUTER FACE
OH - OPPOSITE HAND
OPNG - OPENING
P - PLATE
PLF - POUNDS PER LINEAR FOOT
PSF - POUNDS PER SQUARE FOOT
PSL - PARALLEL STRAND LUMBER
PT - PRESSURE TREATED
PLYWOOD - PLYWOOD
REINF - REINFORCEMENT
SCHED - SCHEDULE
SHTG - SHEATHING
SIM - SIMILAR
SMS - SHEET METAL SCREW
SOG - SLAB ON GRADE
STAG - STAGGERED
STD HK - STANDARD HOOK
STIFF - STIFFENER
STL - STEEL
SW - SHEARWALL
SYM - SYMMETRICAL
T&B - TOP & BOTTOM
T&G - TONGUE AND GROOVED
THRU - THROUGH
TJE - TIE NAIL
TS - TUBE STEEL
TYP - TYPICAL
UBC - UNIFORM BUILDING CODE
UNO - UNLESS NOTED OTHERWISE
VERT - VERTICAL
VIF - VERIFY IN FIELD
W - WITH
WWF - WELDED WIRE FABRIC

WOOD

WOOD SHEATHING (STRUCTURAL): SHEATHING ON ROOF SURFACES SHALL BE PLYWOOD OR GLUE LAMINATED MEMBERS... FRAMING LUMBER (MANUFACTURED): SHALL BE MANUFACTURED BY TRUS JOIST CORPORATION... MEMBERS HAVE BEEN DESIGNED TO SERVICEABILITY AND OTHER PERFORMANCE-BASED REQUIREMENTS...

PRESERVATIVE TREATED WOOD REQUIREMENTS

Table with columns: APPLICATION, SPECIFIED MATERIAL, PRESERVATIVE TREATMENT (1), CONNECTORS & FASTENERS (2)(3)

- 1. CCA: CHROMATED COPPER ARSENATE
SBX: DOT SODIUM BORATE
ACQ: ALKALINE COPPER QUAT
CBA & CA: COPPER AZOLE
2. CONNECTORS: JOIST HANGERS, STRAPS, FRAMING CONNECTORS, COLUMN CAPS AND BASES, ETC.
3. G80, G90 & G185 PER ASTM A653 BATCH/POST HOT-DIP GALVANIZED PER ASTM A123 FOR CONNECTORS...
4. AT CONTRACTOR'S OPTION, LEDGERS AND TOP PLATES A MINIMUM OF 8 FEET ABOVE GRADE ON CONCRETE OR MASONRY WALLS...

GENERAL REQUIREMENTS: PROVIDE MINIMUM NAILING PER 2018 CBC TABLE 2304.10.1 OR MORE, AS OTHERWISE SHOWN, STAGGER ALL NAILING TO PREVENT SPLITTING OF WOOD MEMBERS. PRESSURE TREAT ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY... FRAMING CONNECTORS: SHALL HAVE ICC APPROVAL AND BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, SAN LEANDRO, CA, OR PRE-APPROVED EQUAL...

FRAMING CONNECTORS: SHALL HAVE ICC APPROVAL AND BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, SAN LEANDRO, CA, OR PRE-APPROVED EQUAL. PROVIDE MAXIMUM SIZE AND QUANTITY OF NAILS OR BOLTS PER MANUFACTURER, EXCEPT AS NOTED OTHERWISE...

CARPENTRY

NAILS: CONNECTION DESIGNS ARE BASED ON "COMMON WIRE" NAILS WITH THE FOLLOWING PROPERTIES:

Table with columns: PENNYWEIGHT, DIAMETER (INCHES), LENGTH (INCHES)

STATEMENT OF TESTS AND SPECIAL INSPECTIONS

SPECIAL INSPECTION SHALL REFERENCE SECTION 107.1 TO THE CALIFORNIA ADMINISTRATIVE CODE SPECIAL INSPECTION. SPECIAL INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING LABORATORY PER THE REQUIREMENTS OF CBC CHAPTER 17A AND THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION AND THE CONTRACT DOCUMENTS...

- 1. TEST AND INSPECTION OF POST INSTALLED ANCHORS IN CONCRETE PER CBC '16 TABLE 1705A.3.4b AND CBC '16 1910A.5.
2. STRUCTURAL STEEL PER CBC '16 SECTIONS 1705A.2, 2203A.1, AND TABLE 1705A.2.1, DSA IR 17-3, AND AISI 360 CHAPTER N.

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02 116361
DATE 3-8-18

PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEM BRACING:

- 1. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO RESIST THE FORCES PRESCRIBED IN ASCE 7-10 CHAPTER 13, ESPECIALLY SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.8.6, 13.8.7, AND 13.8.5. ITEM 6, AND 2016 CBC, DESIGN SHALL BE BY THE CONTRACTOR'S CIVIL OR STRUCTURAL ENGINEER SUBJECT TO REVIEW & APPROVAL BY THE ARCHITECT AND DSA.
2. THE BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL COMPLY WITH ONE OF THE OSHPD PRE-APPROVALS WITH AN OPA #, SUCH AS MASON INDUSTRIES (OPA 349), OR ISAT (OPA 465) AS MODIFIED TO SATISFY ANCHORAGE REQUIREMENTS OF ACI 318, APPENDIX D.
3. COPIES OF THE MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING HANGING AND BRACING OF THE PIPE, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS.
4. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.
5. SEE DESIGN CRITERIA SUB-SECTION FOR SEISMIC DESIGN CRITERIA.

UNISTRUT FRAMING:

- 1. UNISTRUT FRAMING SHALL BE AS MANUFACTURED BY UNISTRUT CORPORATION, WAYNE, MICHIGAN, OR APPROVED EQUIVALENT W/ DIVISION OF THE STATE ARCHITECT PRE-APPROVAL. ALL SUBSTITUTIONS MUST BE APPROVED IN ADVANCE BY DSA AND THE STRUCTURAL ENGINEER.
2. INSTALL PER THESE DRAWINGS AND THE MANUFACTURER'S RECOMMENDATIONS, WHICHEVER IS MORE STRINGENT, TYPICAL. INSTALL AS REQUIRED TO OBTAIN MAXIMUM RATED CAPACITIES OF ALL COMPONENTS AND CONNECTIONS.
3. CONTRACTOR SHALL OBTAIN COPIES OF UNISTRUT'S "GENERAL ENGINEERING CATALOG" LATEST EDITION, AND UNISTRUT'S OSHPD APPROVAL, "OPA-0120" (LATEST REVISION). ALL UNISTRUT INSTALLATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THESE DOCUMENTS. MAINTAIN A COPY OF THESE DOCUMENTS AT THE JOBSITE.
4. PROVIDE CHANNEL NUTS AT ALL BOLTS, UNO. TORQUE ALL BOLTS IN PRESENCE OF PROJECT INSPECTOR. REQUIRED TORQUE SHALL BE PER UNISTRUT REQUIREMENTS.
5. MISC. ANCHILLARY HARDWARE NOTED SHALL BE UNISTRUT STD. HARDWARE, UNO. PROVIDE ALL ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION, TYP. WHETHER SHOWN OR NOT.
6. MEMBERS SHALL BE ELECTROGALVANIZED STEEL, UNO.
7. USE "AW" (ALTERNATE WELD) MEMBERS AT BUILT-UP WELDED SECTIONS, UNO.
8. USE SOLID BACKS OPPOSITE MEMBER GROOVES (NO PRE-PUNCHED HOLE PATTERN), UNO.

EQUIPMENT ANCHORAGE NOTES:

- 1. ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE HORIZONTAL AND VERTICAL FORCES PRESCRIBED IN THE 2016 CBC, AND ASCE 7-10 SECTIONS 13.3, 13.4, 13.6 AND CHAPTERS 26 TO 30 (WIND).
2. THE ATTACHMENT OF THE FOLLOWING ITEMS SHALL BE DESIGNED BY THE CONTRACTOR'S CIVIL OR STRUCTURAL ENGINEER TO RESIST THE FORCES PRESCRIBED ABOVE, BUT NEED NOT TO BE DETAIL ON THE PLANS:
A. EQUIPMENT WEIGHING LESS THAN 400 POUNDS SUPPORTED DIRECTLY ON THE FLOOR OR ROOF.
B. FURNITURE REQUIRED TO BE ATTACHED IN ACCORDANCE WITH ACSE 7-10 SECTION 13.5.
C. TEMPORARY OR MOVABLE EQUIPMENT WITH FLEXIBLE CONNECTION TO POWER OR UTILITIES.
D. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUPPORTED BY VIBRATION ISOLATORS.
E. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.
3. FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE MECHANICAL/ELECTRICAL ENGINEER AND THE FIELD REPRESENTATIVE OF THE DIVISION OF THE STATE ARCHITECT.

GENERAL NOTES

ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THESE GENERAL NOTES, AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ENGINEER, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK. THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION. THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE REQUIRED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY, ERECTION MEANS, METHODS, AND SEQUENCES; TEMPORARY SHORING, FORMWORK, AND BRACING; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES; PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEWASCE STANDARD NO. 37-02 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION." CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STANDARDS: ALL METHODS, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE 2016 CALIFORNIA BUILDING CODE (CBC) AS AMENDED AND ADOPTED BY DIVISION OF THE STATE ARCHITECT.

CONTRACT DRAWINGS / DIMENSIONS

ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. CONSULTANT DRAWINGS BY OTHER DISCIPLINES ARE SUPPLEMENTARY TO ARCHITECTURAL DRAWINGS. REPORT DIMENSIONAL OMISSIONS OR DISCREPANCIES BETWEEN ARCHITECTURAL DRAWINGS AND STRUCTURAL, MECHANICAL, ELECTRICAL OR CIVIL DRAWINGS TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS. PRIMARY STRUCTURAL ELEMENTS ARE DIMENSIONED ON STRUCTURAL PLANS AND DETAILS AND OVERALL LAYOUT OF STRUCTURAL PORTION OF WORK. SOME SECONDARY ELEMENTS ARE NOT DIMENSIONED SUCH AS: WALL CONFIGURATIONS (INCLUDING EXACT DOOR AND WINDOW LOCATIONS), ALCOVES, SLAB SLOPES AND DEPRESSIONS, CURBS, ETC. VERTICAL DIMENSIONAL CONTROL IS DEFINED BY ARCHITECTURAL WALL SECTIONS AND BUILDING SECTIONS. STRUCTURAL DETAILS SHOW DIMENSIONAL RELATIONSHIPS TO CONTROL DIMENSIONS DEFINED BY ARCHITECTURAL DRAWINGS. DETAILING AND SHOP DRAWING PRODUCTION FOR STRUCTURAL ELEMENTS WILL REQUIRE DIMENSIONAL INFORMATION CONTAINED IN BOTH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

DESIGN CRITERIA

RISK CATEGORY: III - TABLE 1604.5

VERTICAL LOADS table with columns: AREA, DESIGN DEAD LOAD, LIVE LOAD, CONCENTRATED LOADS

SNOW

Pg = 29 PSF (PER NEVADA COUNTY GIS)
Pf = 29 PSF (NO REDUCTION TAKEN)

LATERAL FORCES

WIND

ROOFTOP STRUCTURES AND EQUIPMENT FOR BUILDINGS WITH h <= 60 FT (ASCE 7-10 30.11)

- Fh = qh * GCr * Af * I
EXPOSURE CATEGORY = C
RISK CATEGORY = II
BASIC WIND SPEED, V = 110 MPH (ULTIMATE)
qh = 0.00256 * Kz * Kt * Kd * V^2
Kz = 1.01, Kt = 1.0, Kd = 0.9
GCr = 1.9, Af = 32 FT^2
(+/-) Fh = 53.5 PSF (ULT)

SEISMIC:

- Fp = 0.4 * ap * Sds * Wp / (Rp * Ip) * (1 + 2 * z/h)
SEISMIC IMPORTANCE FACTOR, Ip = 1
SPECTRAL RESPONSE ACCELERATION Ss = 0.513, S1 = 0.239
SITE CLASS PER TABLE 20.3-1 OF ASCE 7-10 = D
SPECTRAL RESPONSE COEFFICIENTS: Sds = 0.475, Sd1 = 0.306
SEISMIC DESIGN CATEGORY = D
ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE ANALYSIS
COMPONENT RESPONSE MODIFICATION FACTOR PER TABLE 13.6-1 (ASCE 7-10) RP = 6.0
RATIO OF HEIGHT OF COMPONENT ANCHORAGE TO STRUCTURE HEIGHT
SYSTEM 1 & 2 (SECOND FLOOR) -> zh = 140/26.5
SYSTEM 3 (ROOF LEVEL) -> zh = 1.0
Fp = 0.238 Wp
ASCE 7-10 CH 13 - NONSTRUCTURAL COMPONENTS EXEMPTION

- 3.1.4.6.c.i) THE COMPONENT WEIGHS 400 lb (1,780 N) OR LESS AND HAS A CENTER OF MASS LOCATED 4 ft (1.22 m) OR LESS ABOVE THE ADJACENT FLOOR LEVEL.
3.1.4.6.c.ii) THE COMPONENT WEIGHS 20 lb (89 N) OR LESS OR, IN THE CASE OF A DISTRIBUTED SYSTEM, 5 lb/ft (73 N/m) OR LESS.

(ZINC PLATED) CARBON STEEL SIMPSON TITEN HD SCREW ANCHOR AND TITEN HD ROD HANGER
INSTALLED IN THE SOFFIT OF SAND-LIGHTWEIGHT CONCRETE OVER METAL DECK
(ICC REPORT NO. ESR-2713)
(OR EQUIVALENT AS APPROVED BY STRUCTURAL ENGINEER AND DSA)

Table with columns: ANCHOR TYPE, ANCHOR DIAMETER (INCHES), MINIMUM HOLE DEPTH (INCHES), NOMINAL EMBEDMENT DEPTH (INCHES), EFFECTIVE EMBEDMENT DEPTH (INCHES), MINIMUM CONCRETE SLAB THICKNESS (INCHES), MINIMUM SHEAR (POUNDS), ALLOWABLE TENSION (POUNDS), TENSILE TEST LOAD (POUNDS), TEST TORQUE (ft.-lbs.)

- NOTES:
1. VALUES IN TABLES ARE BASED ON 3000 PSI/ 110 PCF LIGHTWEIGHT CRACKED CONCRETE FOR TEST VALUES AND FOR ALLOWABLE LOADS.
2. ALL TABLE VALUES CONSIDER INSTALLATION AT THE LOWER FLUTE OF THE STEEL DECK.
3. THE MINIMUM ANCHOR SPACING ALONG THE FLUTE MUST BE THE GREATER OF 3*(h_ef) OR 1.5 TIMES THE FLUTE WIDTH.
4. LOCATE AND AVOID REINFORCEMENT WHEN INSTALLING, TYPICAL.
5. TEST AND INSPECT ANCHORS PER CBC SECTION 1910A.5 AND TABLE 1705A.3.

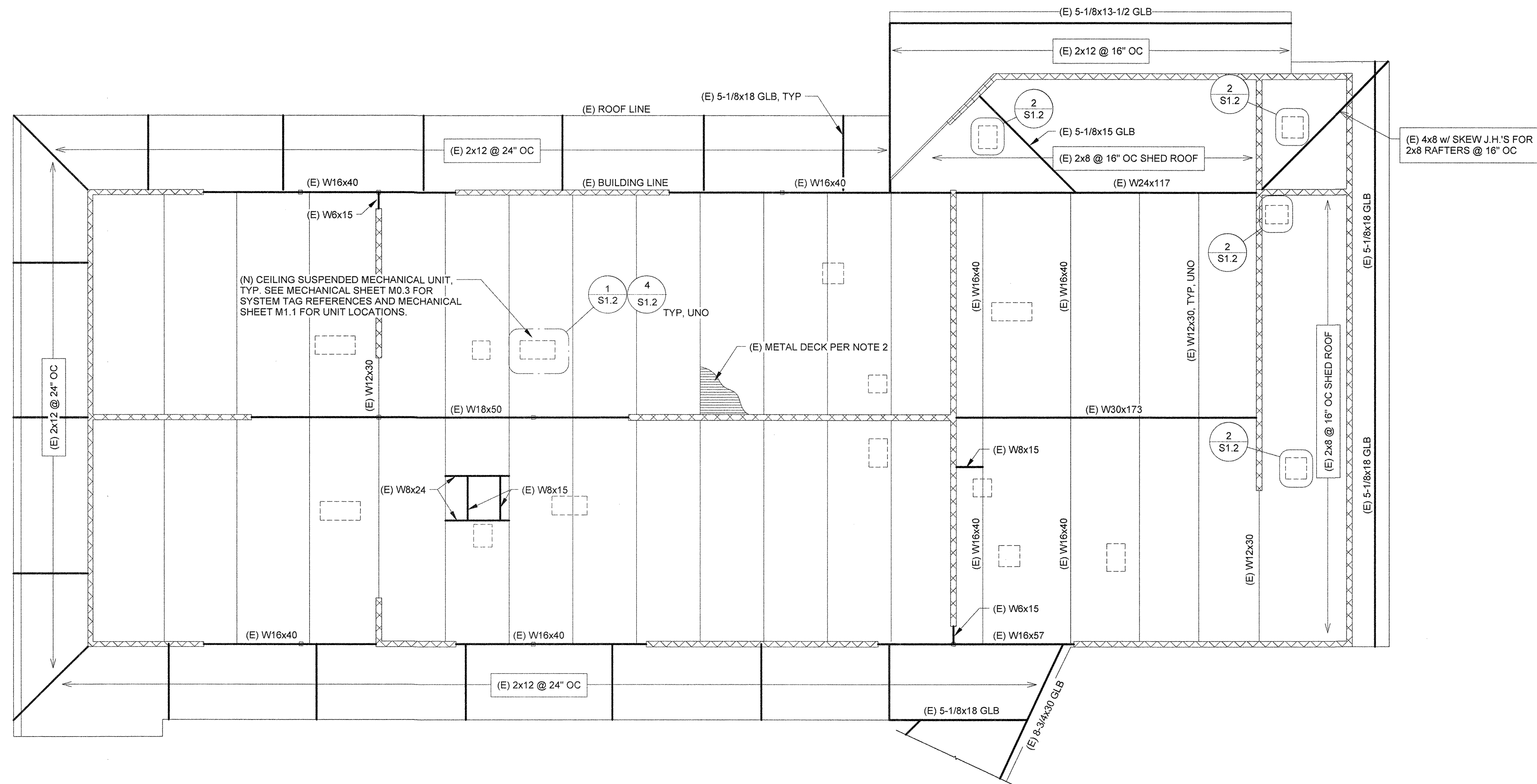
(ZINC PLATED) CARBON STEEL SIMPSON STRONG-BOLT 2
INSTALLED IN THE SOFFIT OF SAND-LIGHTWEIGHT CONCRETE OVER METAL DECK
(ICC REPORT NO. ESR-3037)
(OR EQUIVALENT AS APPROVED BY STRUCTURAL ENGINEER AND DSA)

Table with columns: ANCHOR DIAMETER (INCHES), NOMINAL EMBEDMENT DEPTH (INCHES), EFFECTIVE DEPTH OF EMBEDMENT (INCHES), MINIMUM HOLE DEPTH (INCHES), MINIMUM SPACING ALONG FLUTE (INCHES), MINIMUM CONC. SLAB THICKNESS (INCHES), ALLOWABLE SHEAR (POUNDS), ALLOWABLE TENSION (POUNDS), TENSILE TEST LOAD (POUNDS), TEST TORQUE (ft.-lbs.)

- NOTES:
1. VALUES IN TABLES ARE BASED ON 3000 PSI/ 110 PCF LIGHTWEIGHT CRACKED CONCRETE FOR TEST VALUES AND FOR ALLOWABLE LOADS.
2. ALL TABLE VALUES CONSIDER INSTALLATION AT THE LOWER FLUTE OF THE STEEL DECK.
3. THE MINIMUM ANCHOR SPACING ALONG THE FLUTE MUST BE THE GREATER OF 3*(h_ef) OR 1.5 TIMES THE FLUTE WIDTH.
4. LOCATE AND AVOID REINFORCEMENT WHEN INSTALLING, TYPICAL.
5. TEST AND INSPECT ANCHORS PER CBC SECTION 1910A.5 AND TABLE 1705A.3.

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(E) SECOND FLOOR FRAMING PLAN
1" = 10'-0"

NOTES:
 1) ALL FRAMING IS AS-BUILT CONDITIONS, UNO, RAFTERS AND DECKING NOT SHOWN FOR CLARITY.
 2) EXISTING FLOOR IS 2" QL-95-18 METAL DECK w/ 2-1/2" LIGHTWEIGHT CONCRETE OVER DECK, TYP, UNO.
 3) EXISTING BEAMS ARE W12x30, UNO.
FC UNITS AND BC CONTROLLER:
 - MAX WEIGHT OF 172 LBS



REVISIONS

NO.	DESCRIPTION

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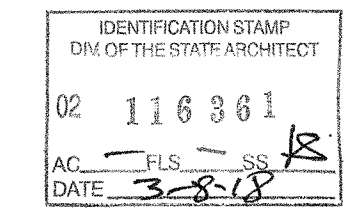
HVAC SYSTEM IMPROVEMENTS
 BUILDING "A"
 BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD GRASS VALLEY, CA

DESIGNED BY: DH
 DRAFTED BY: AP
 CLIENT INFORMATION:
 SITELINE ARCHITECTURE
 644 ZION STREET
 NEVADA CITY, CA 95959

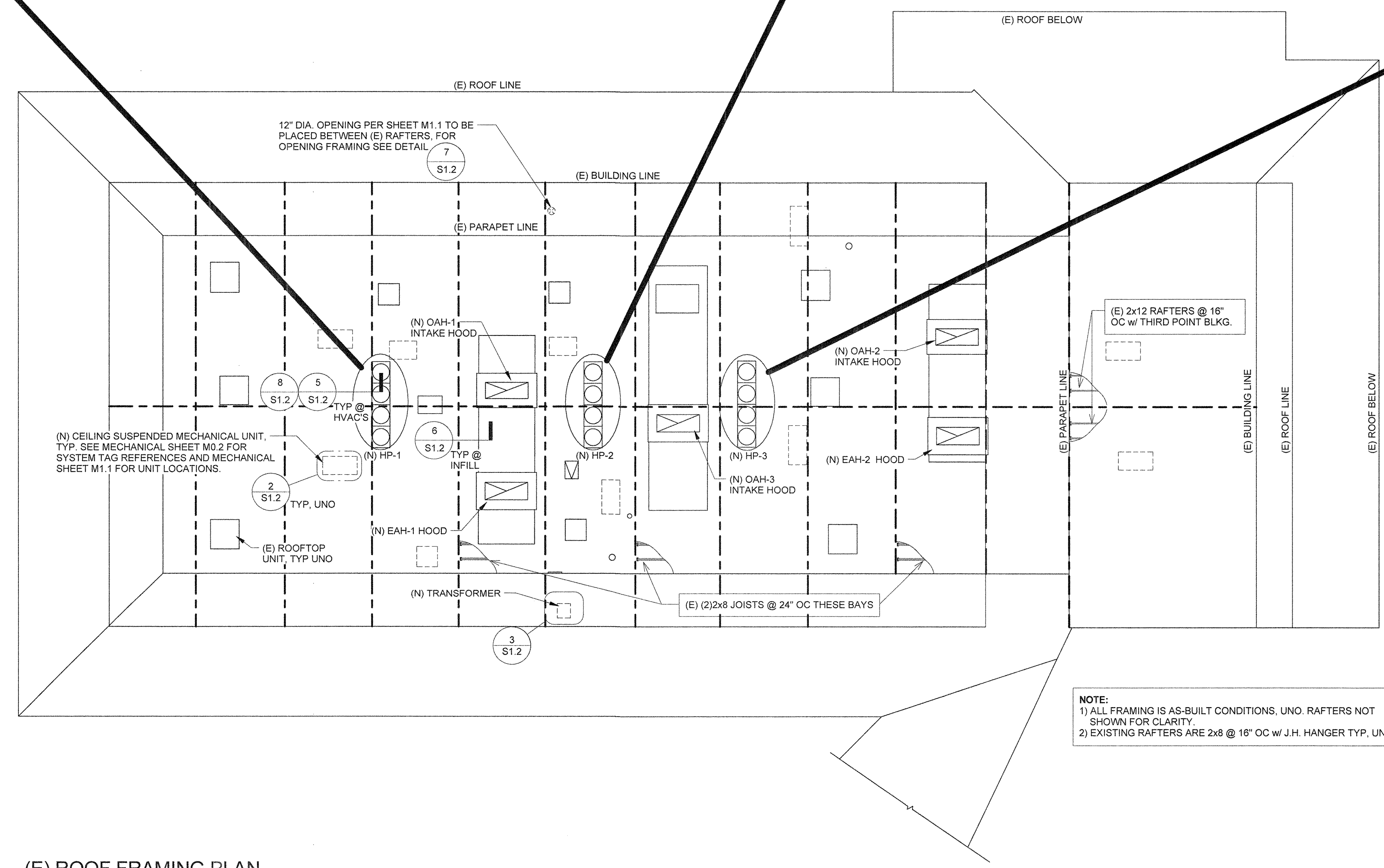
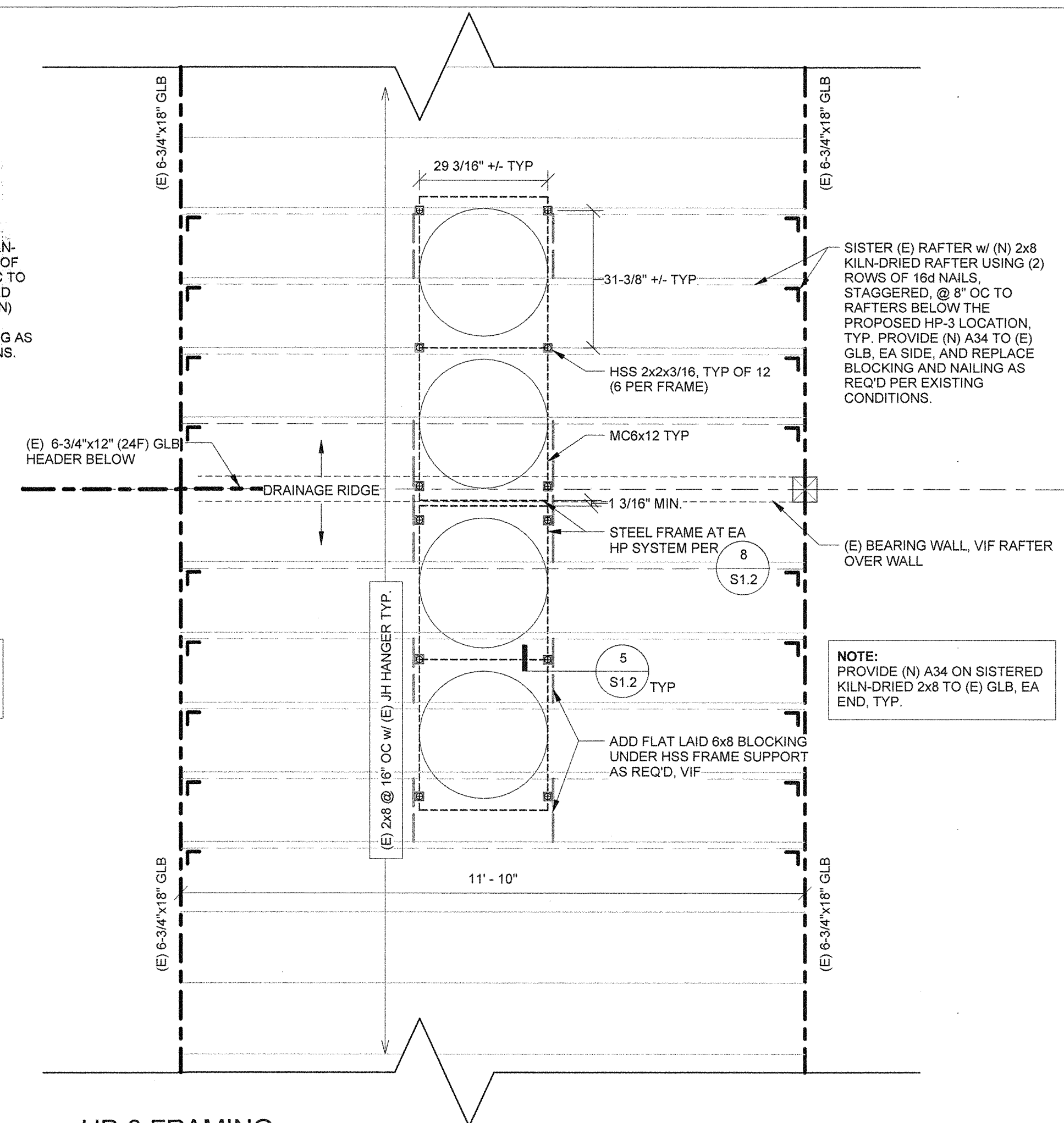
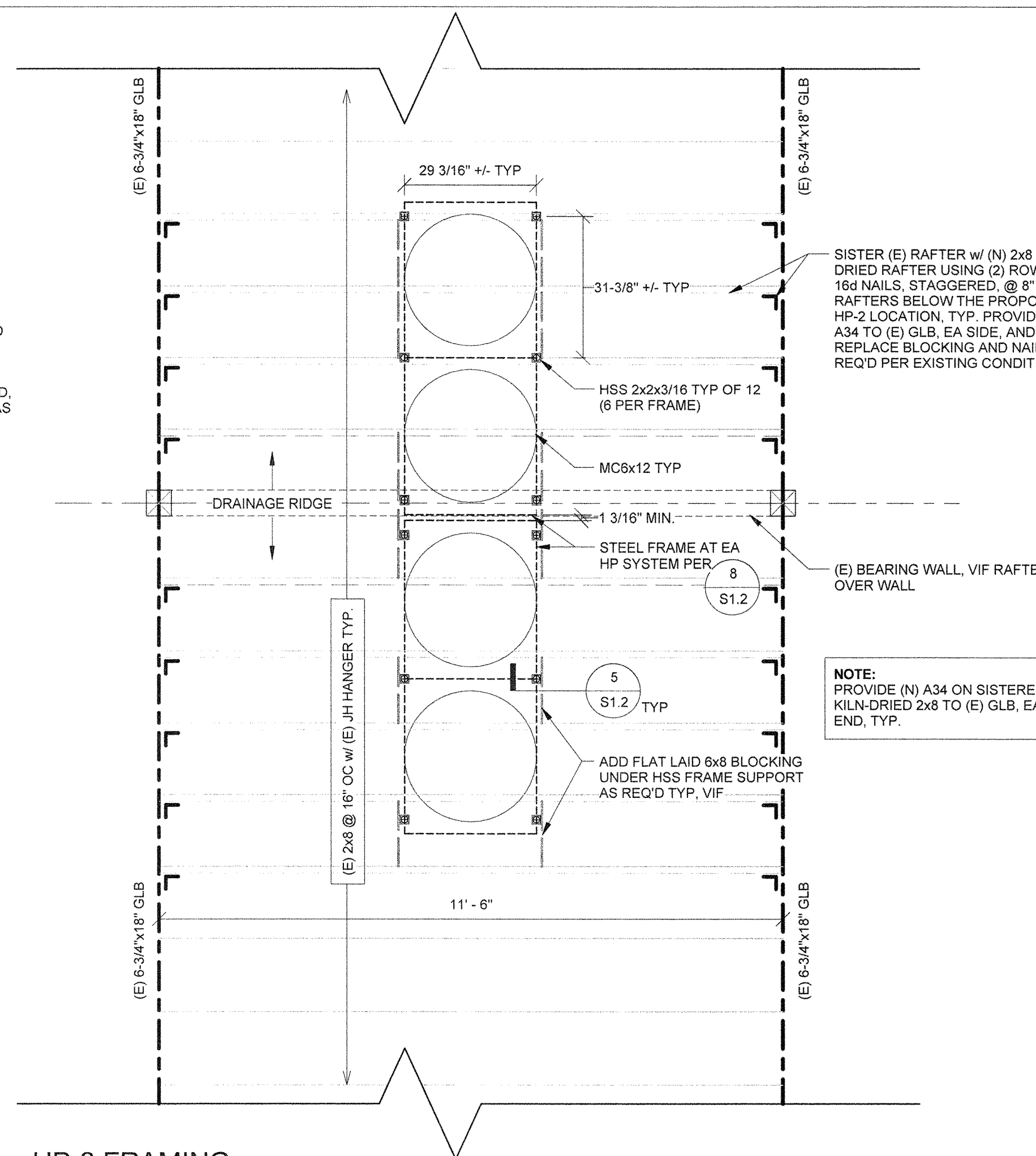
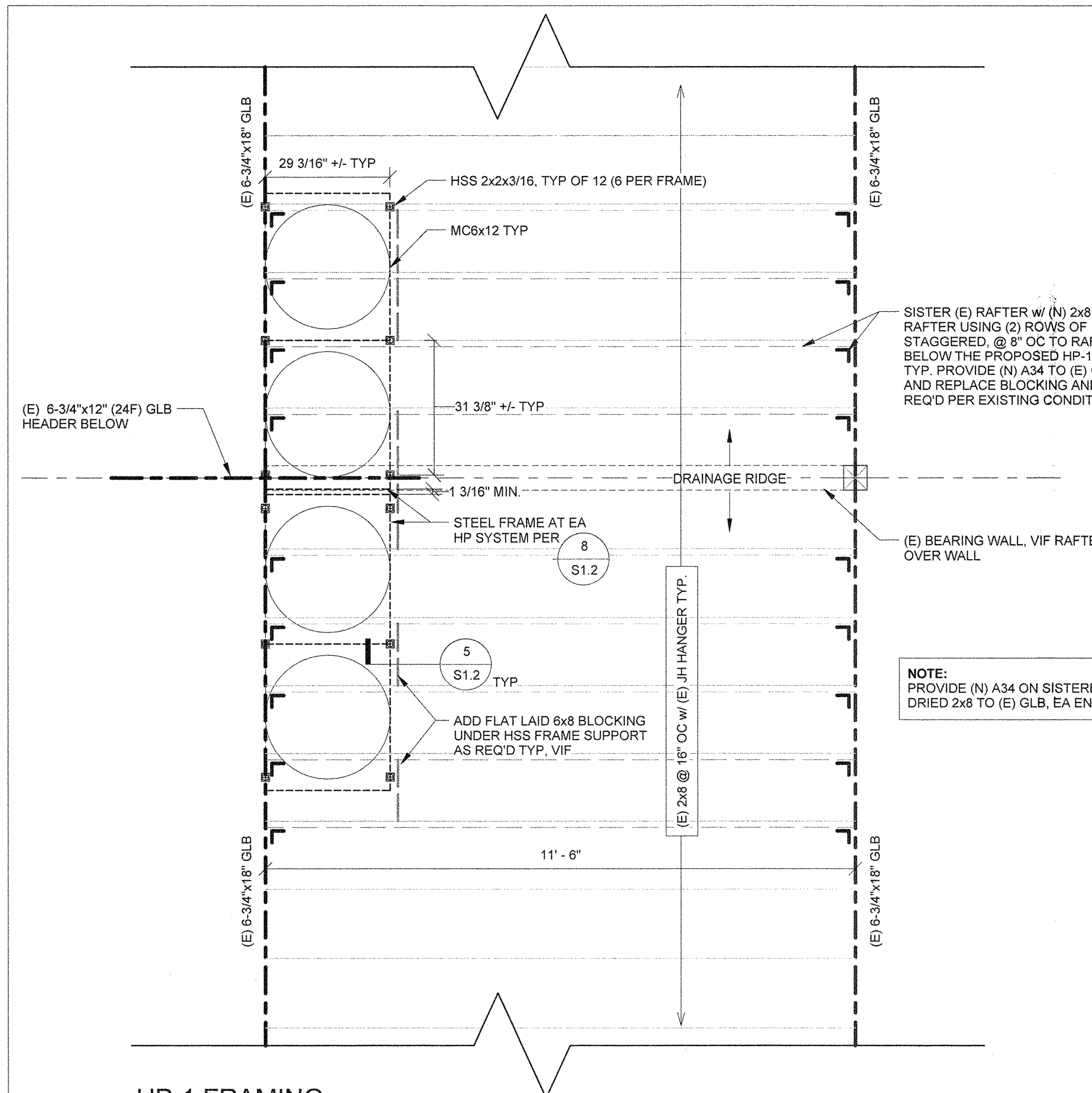
PROJECT#: 1960
 ISSUE DATE: 3/2/18
 SCALE: 1" = 10'-0"

SECOND FLOOR FRAMING PLAN

S1.0

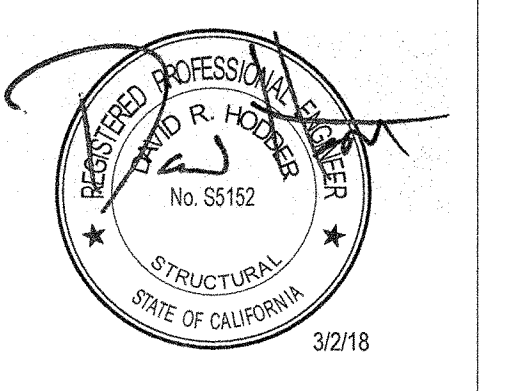


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NOTES:
HVAC:
 - MAX WEIGHT OF EACH HVAC MODULE = 730 LBS.
 - EACH HP SYSTEM IS A COMBINATION OF TWO MODULES FOR A NET WEIGHT OF 1460 LBS.
 - EACH UNIT IS ATTACHED TO STEEL FRAME PER DETAIL 8/S1.2.
 - BOTTOM OF UNIT MUST BE 27" MIN. ABOVE ROOF (12" ABOVE SNOW DEPTH).
 - THE EQUIPMENT MANUFACTURER REQUIRES SUPPORTS MUST BE AN OPEN CONSTRUCTION TO MINIMIZE SNOW DRIFTING AND/OR ICE FORMATION DURING DEFROST.
FC UNITS AND BC CONTROLLER:
 - MAX WEIGHT OF 172 LBS
TRANSFORMER:
 - MAX WEIGHT OF 415 LBS
(N) OAH AND EAH HOODS:
 - MAX WEIGHT OF 250 LBS

NOTE:
 1) ALL FRAMING IS AS-BUILT CONDITIONS, UNO, RAFTERS NOT SHOWN FOR CLARITY.
 2) EXISTING RAFTERS ARE 2x8 @ 16" OC w/ J.H. HANGER TYP, UNO.



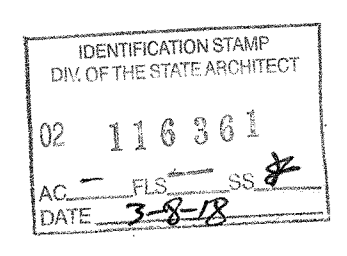
REVISIONS

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HVAC SYSTEM IMPROVEMENTS
 BUILDING "A"
 BEAR RIVER HIGH SCHOOL
 11130 MAGNOLIA ROAD GRASS VALLEY, CA

DESIGNED BY: DH
 DRAFTED BY: AP
 CLIENT INFORMATION: SITELINE ARCHITECTURE, 644 ZION STREET, NEVADA CITY, CA 95959
 PROJECT#: 1950
 ISSUE DATE: 3/2/18
 SCALE: As indicated

ROOF FRAMING PLAN
S1.1



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**HVAC SYSTEM
IMPROVEMENTS**

BUILDING "A"
BEAR RIVER HIGH SCHOOL
11130 MAGNOLIA ROAD GRASS VALLEY, CA

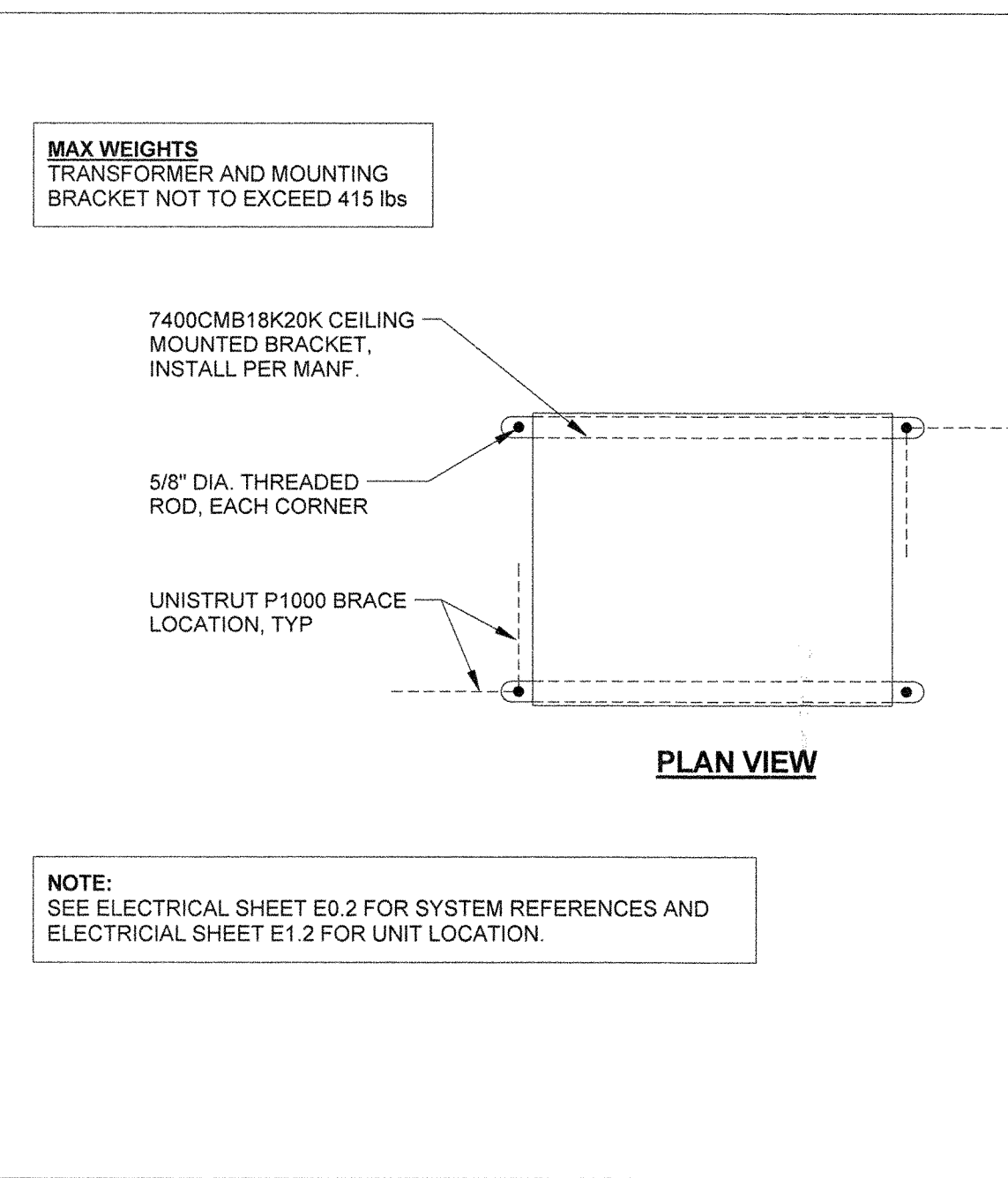
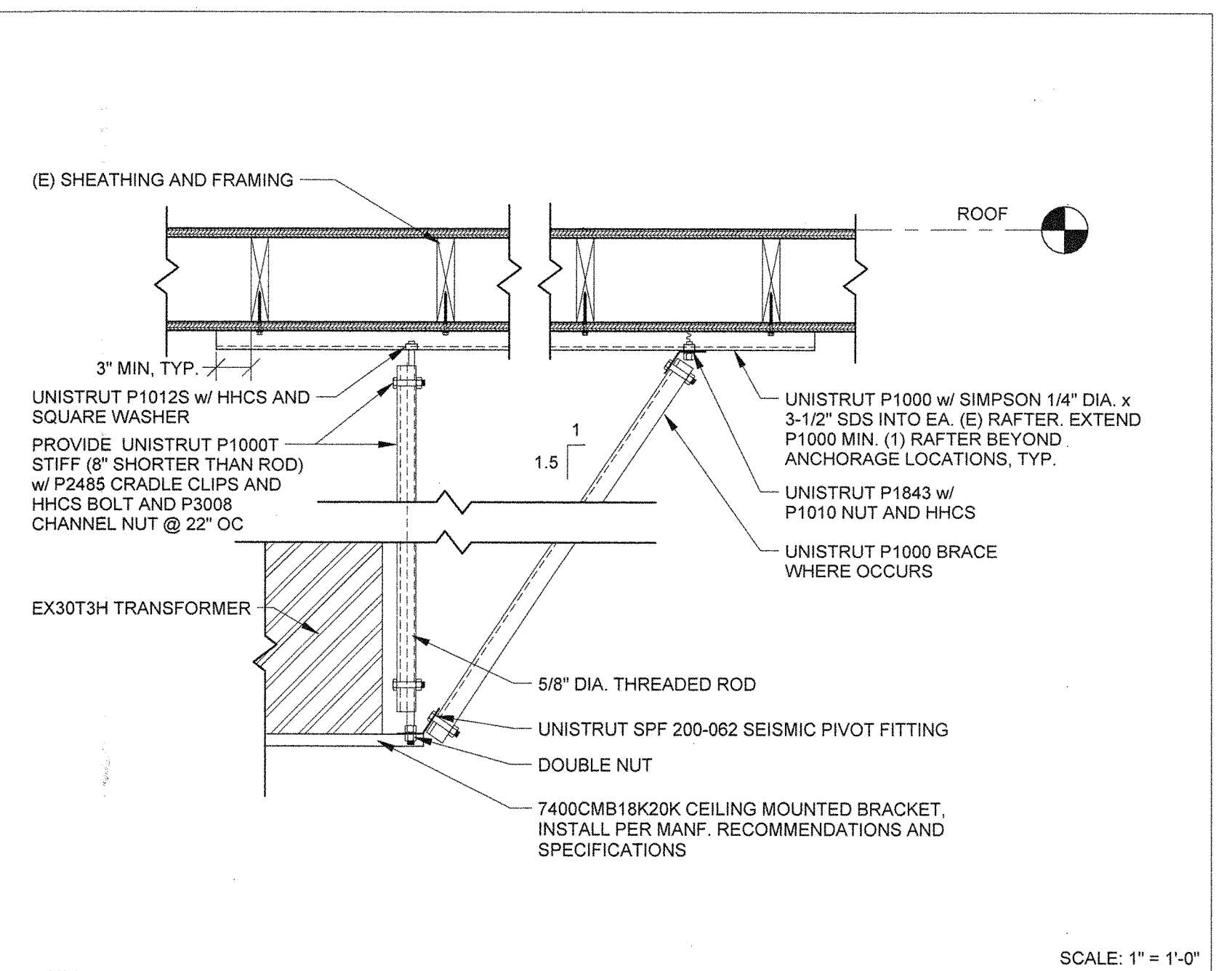
DESIGNED BY DH
DRAFTED BY AP

CLIENT INFORMATION
SITELINE ARCHITECTURE
644 ZION STREET
NEVADA CITY, CA 95959

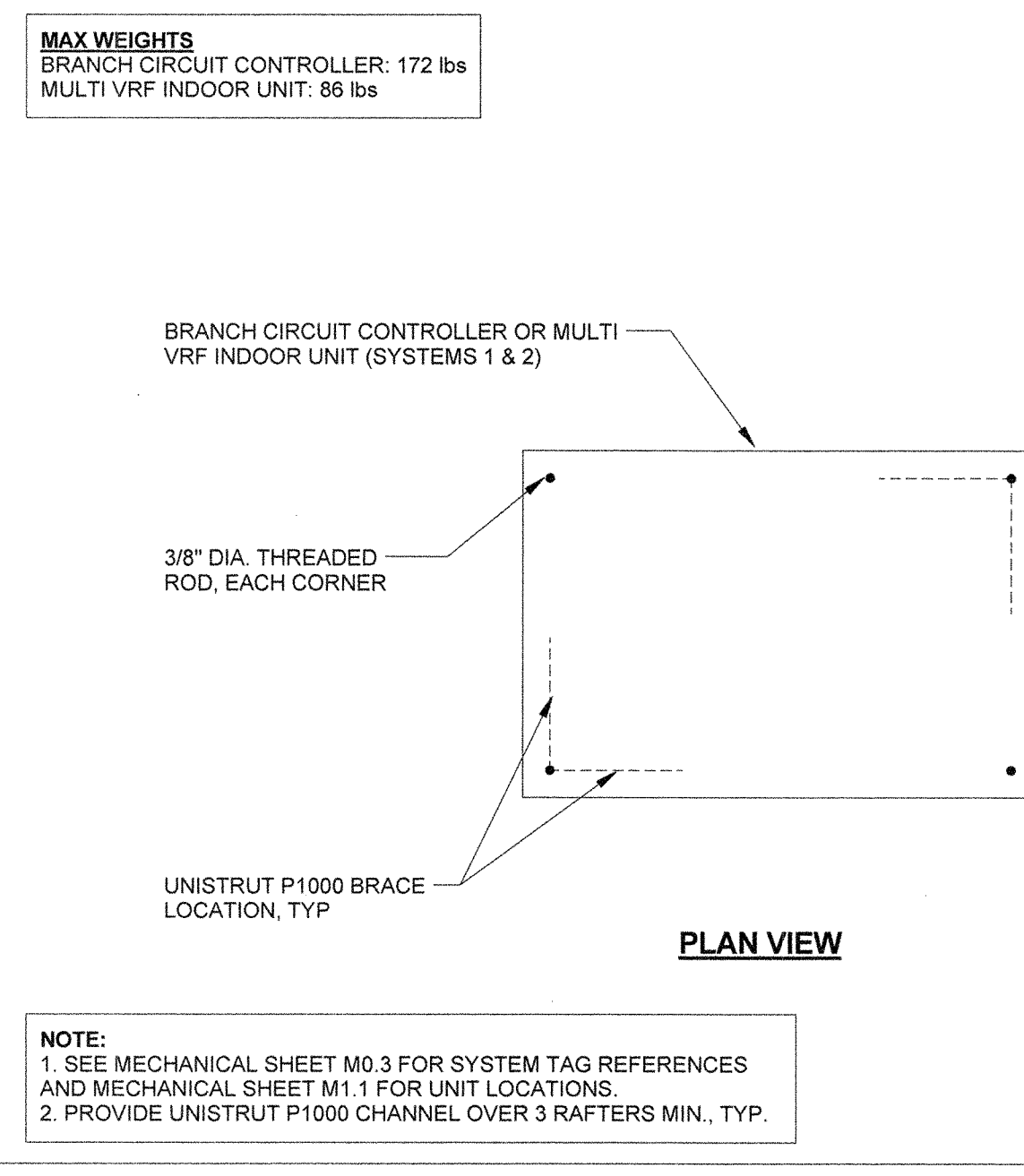
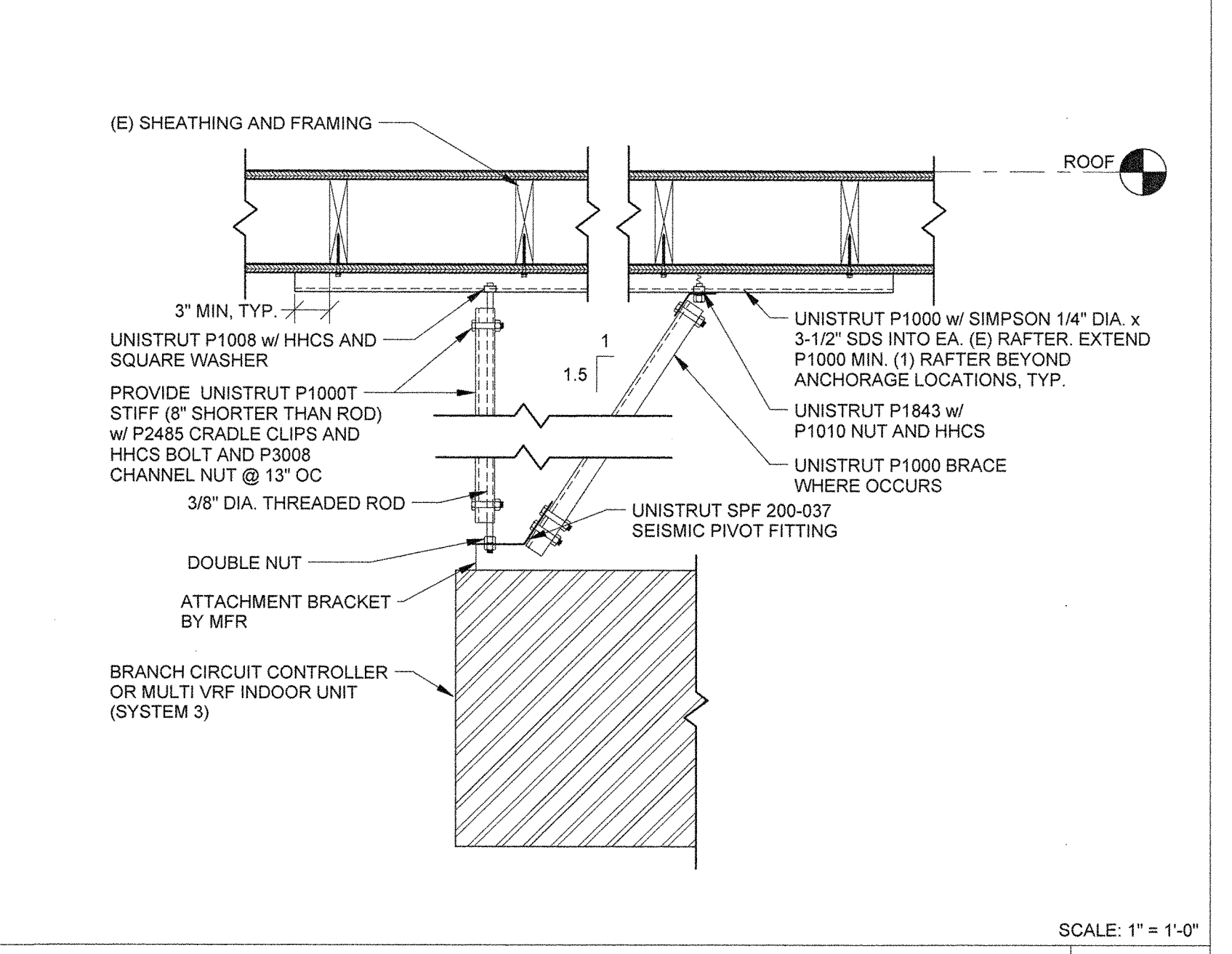
PROJECT# 1960
ISSUE DATE 3/2/18
SCALE As indicated

DETAILS

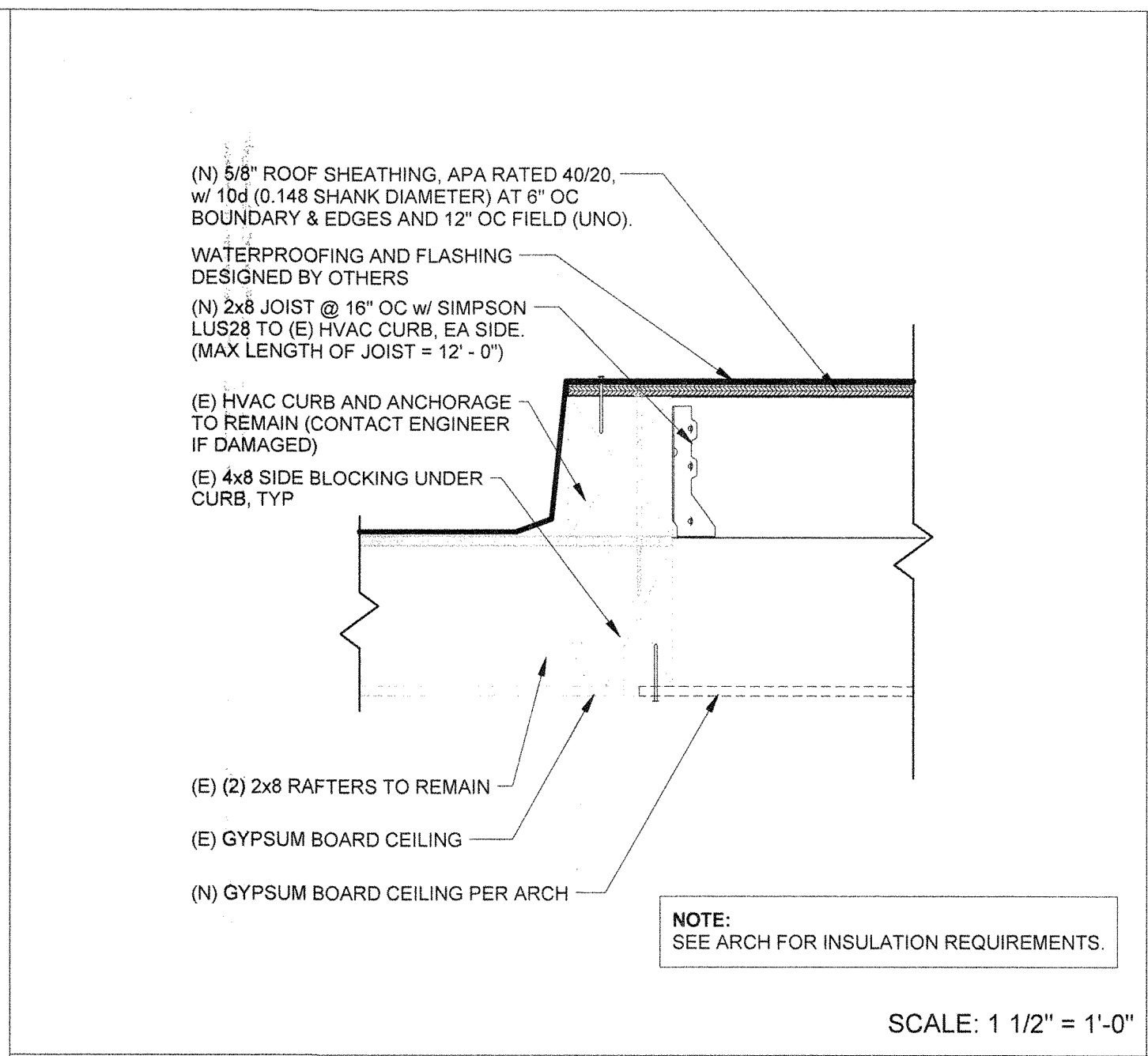
S1.2



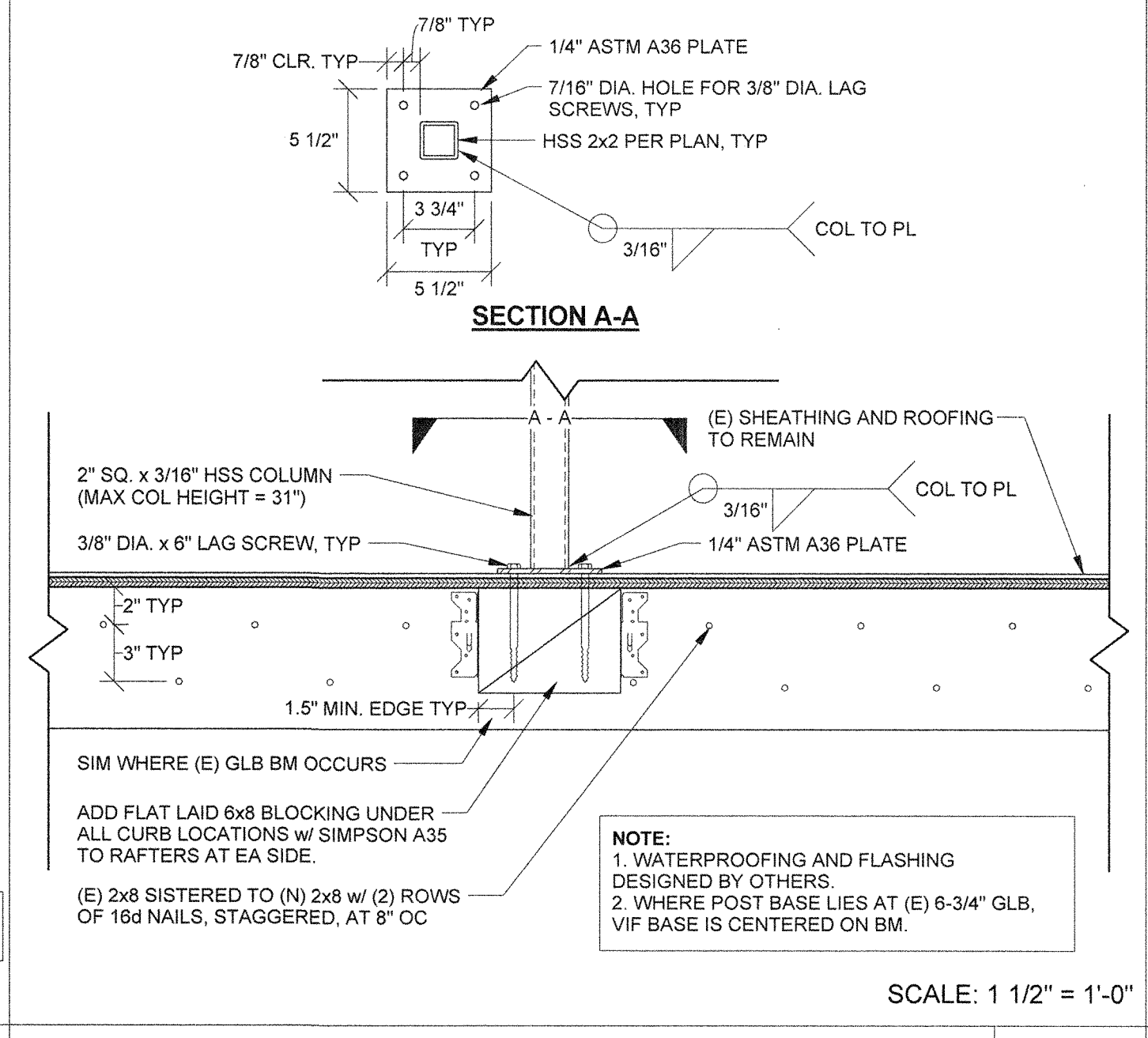
TRANSFORMER ANCHORAGE AT ROOF 3



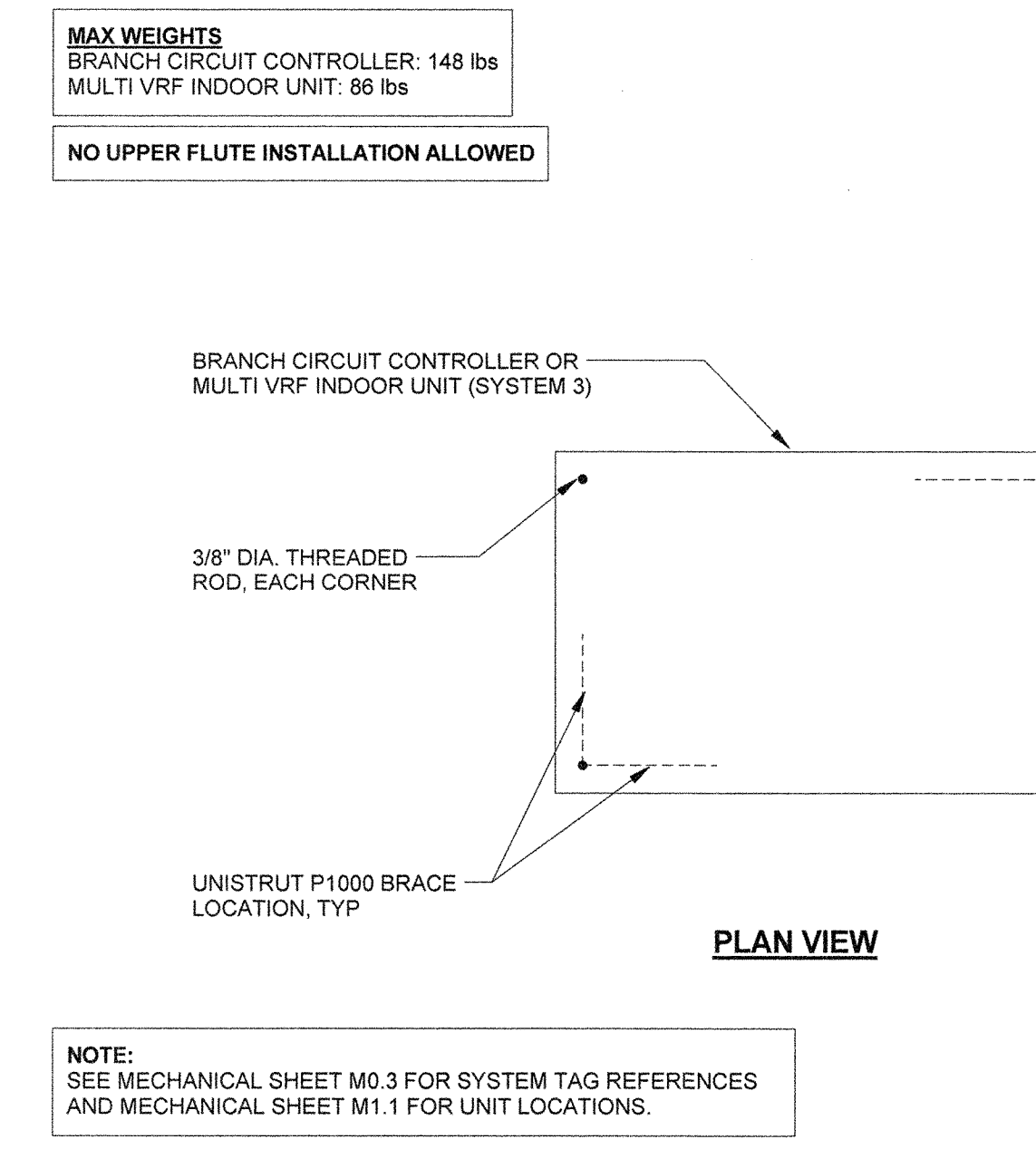
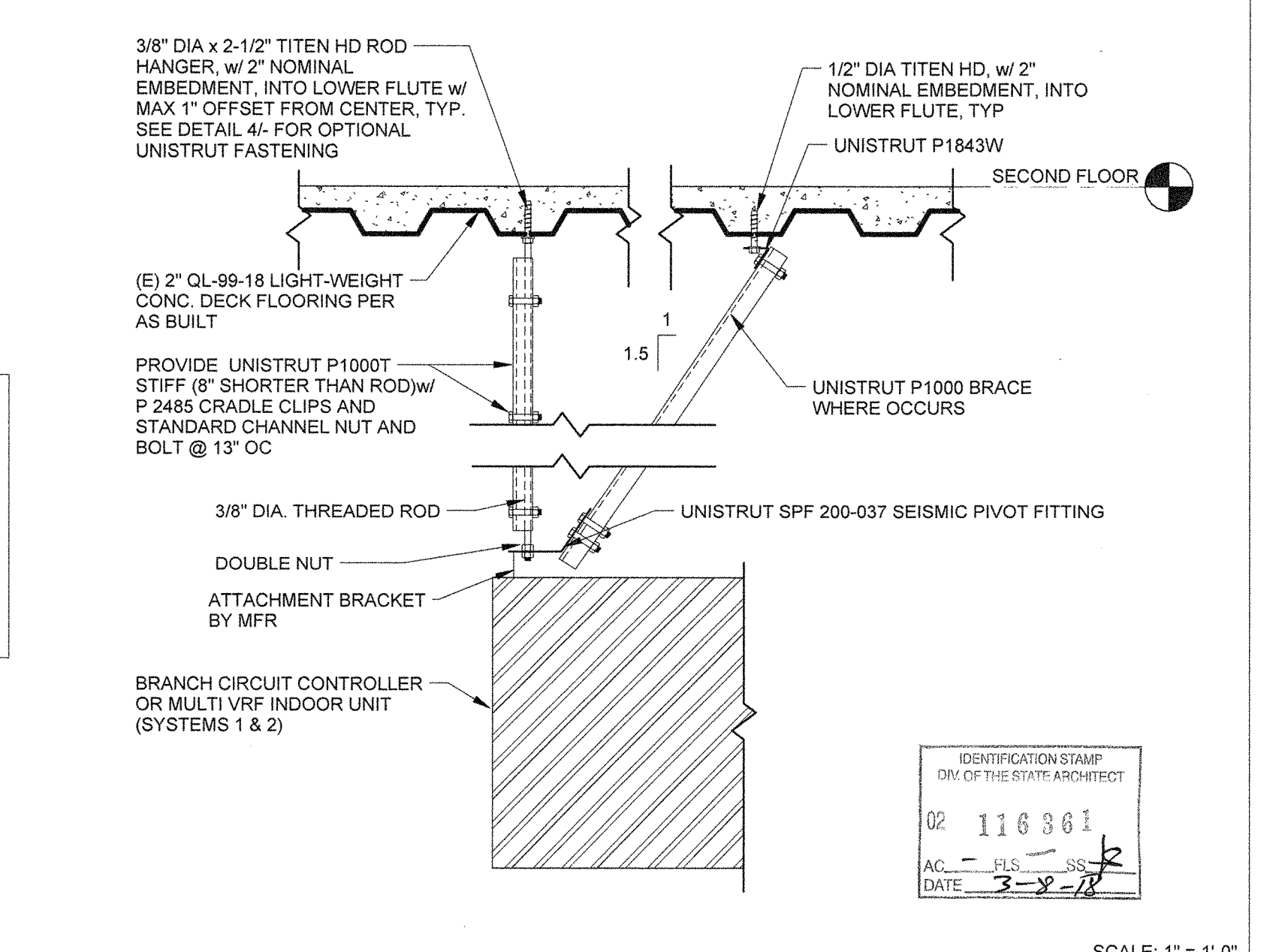
TYPICAL UNISTRUT ANCHORAGE AT ROOF 2



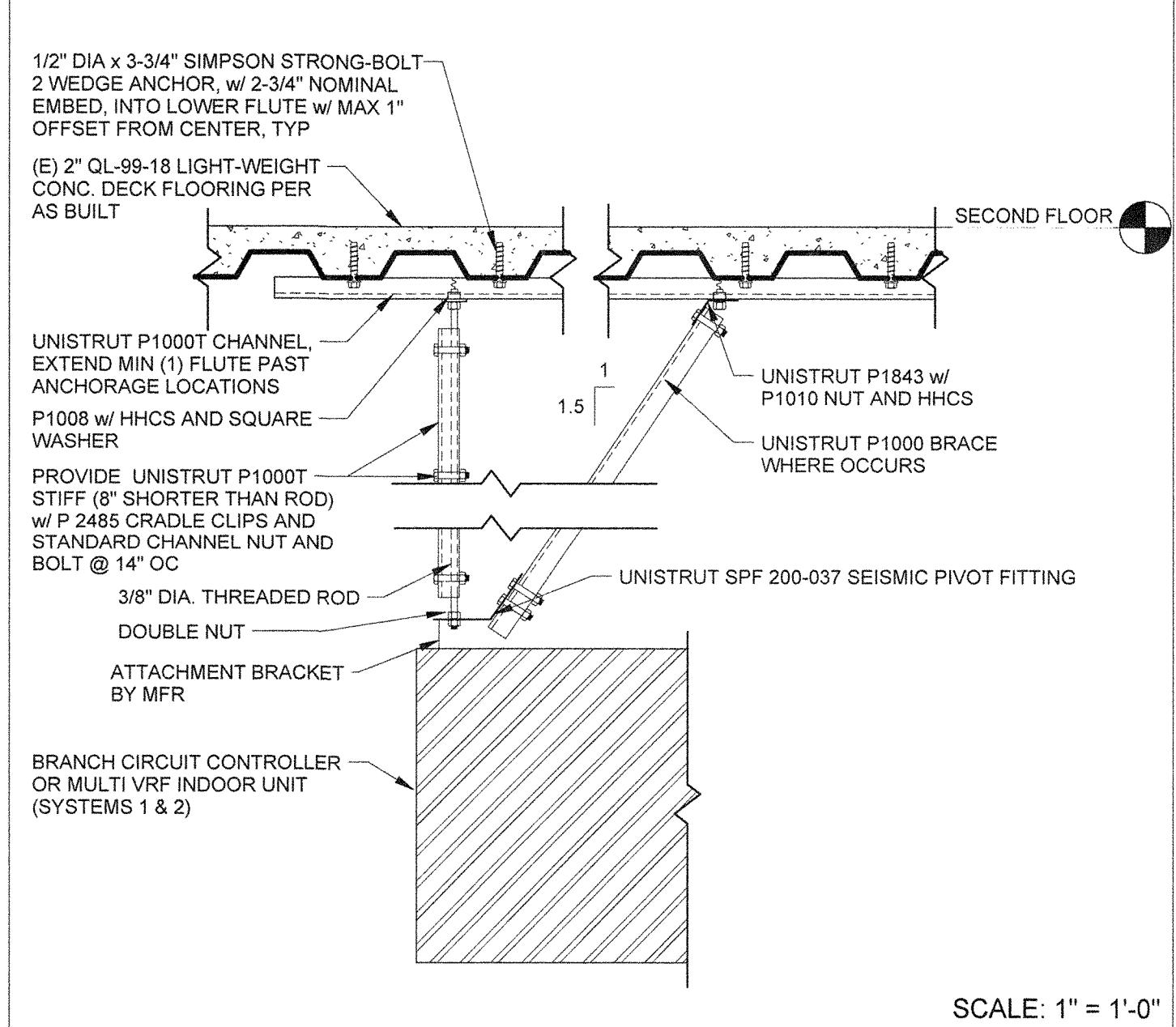
TYPICAL IN-FILL AT OLD HVAC LOCATIONS 6



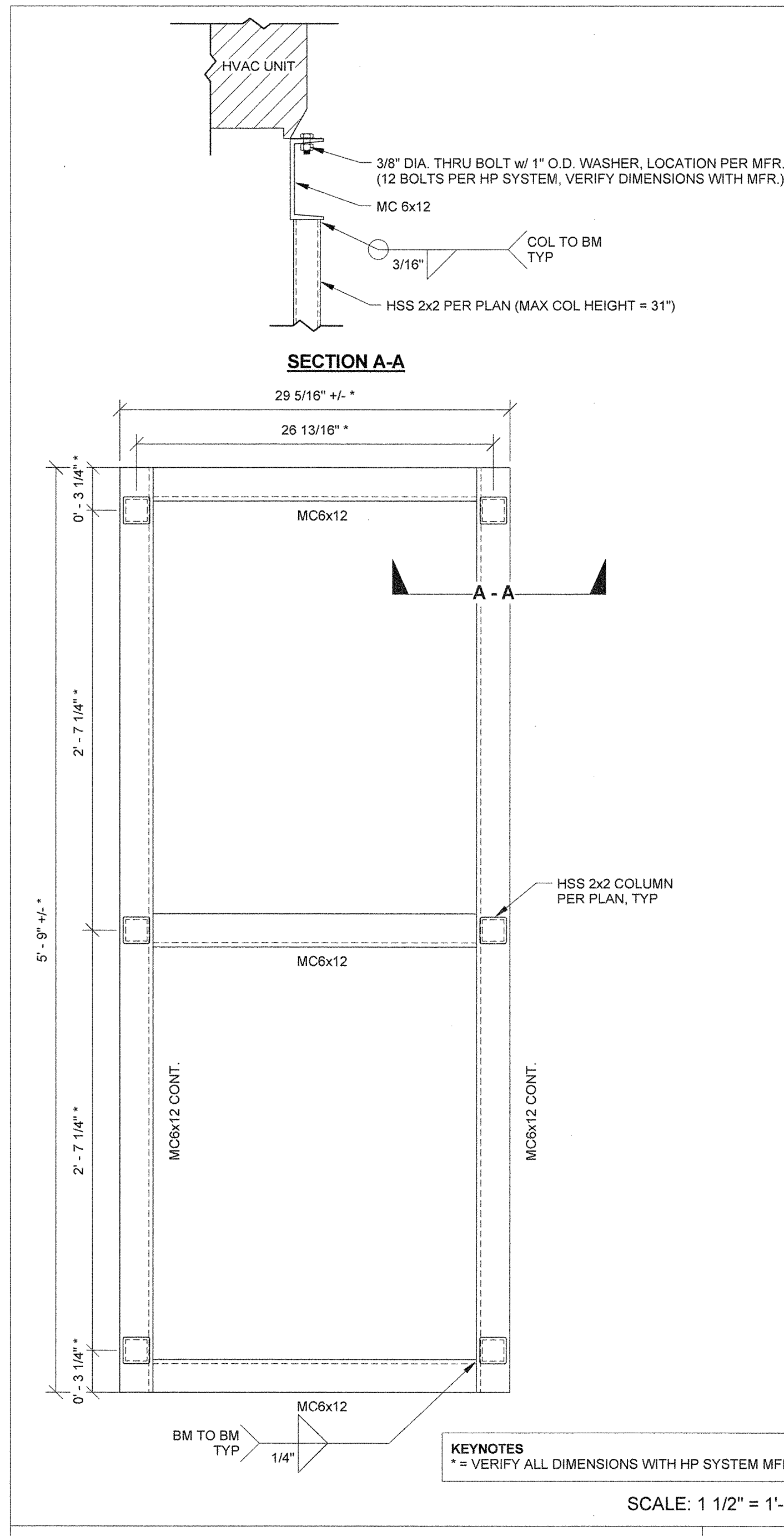
TYPICAL HVAC CURB ATTACHMENT 5



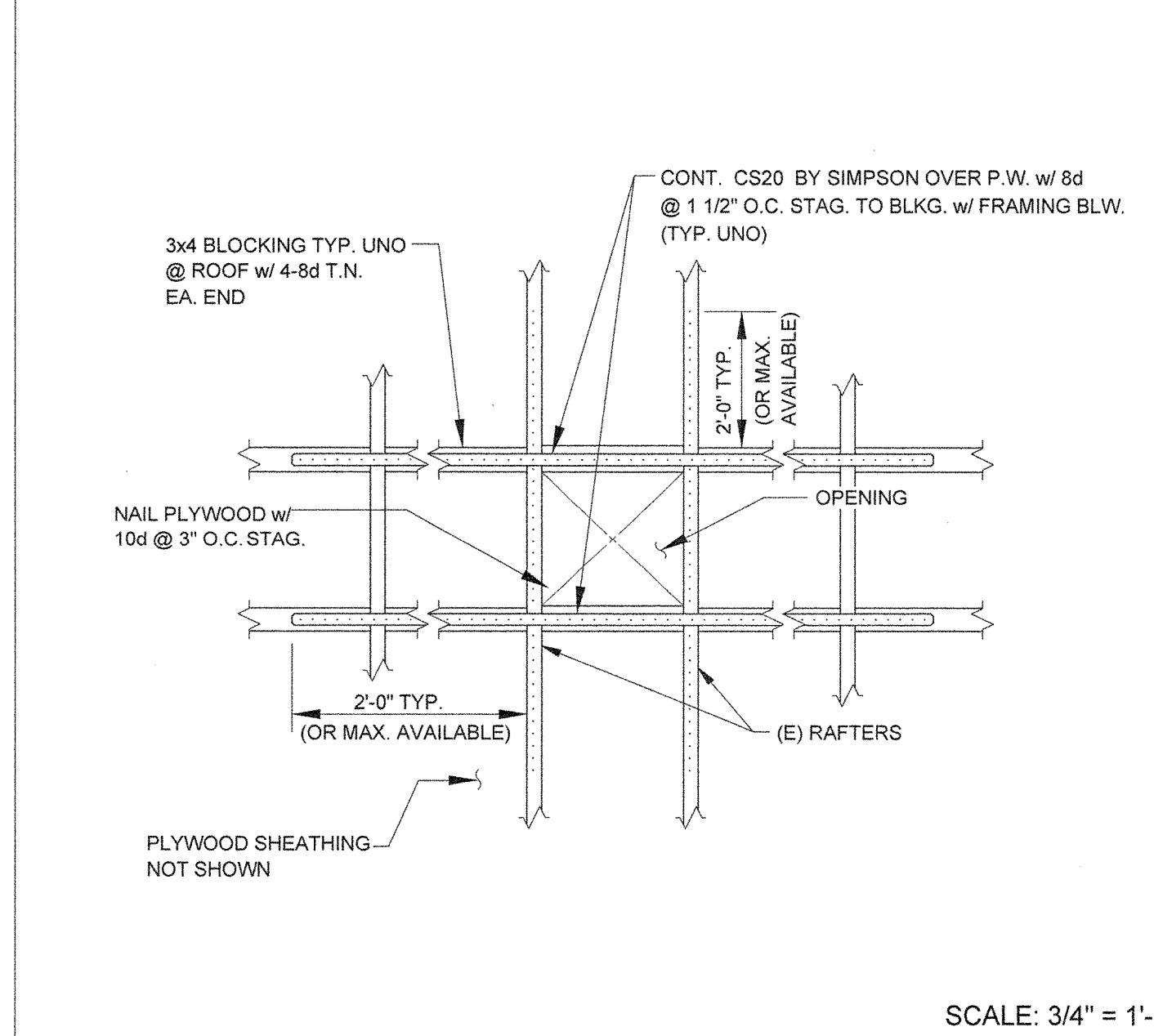
METAL DECK ANCHORAGE AT FLOOR - OPTION 1 1



METAL DECK UNISTRUT ANCHORAGE - OPTION 2 4



TYPICAL HVAC FRAME 8



TYP. ROOF OPENING NAILING DETAIL 7

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STATE OF CALIFORNIA MECHANICAL SYSTEMS CERTIFICATE OF COMPLIANCE

Mechanical Systems Bear River High School VRF Analysis 12/7/2017

Table with columns for equipment type, quantity, and compliance status (Pass/Fail/NA).

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

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Documentation Author's Declaration Statement signed by Christopher J. Miller.

Responsible Person's Declaration Statement signed by Michael Melas.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

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Mechanical Systems Bear River High School VRF Analysis 12/7/2017

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

STATE OF CALIFORNIA MECHANICAL VENTILATION AND REHEAT CERTIFICATE OF COMPLIANCE

Mechanical Ventilation & Reheat Bear River High School VRF Analysis 12/7/2017

Table with columns for room name, area, occupancy, and compliance status (Pass/Fail/NA).

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance May 2016

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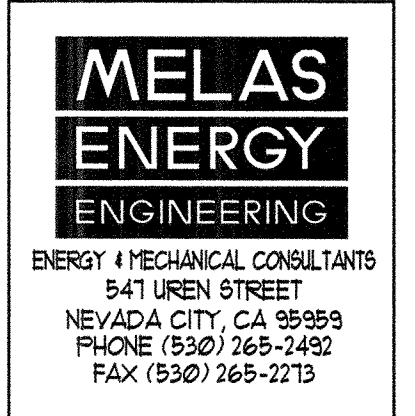
Mechanical Ventilation & Reheat Bear River High School VRF Analysis 12/7/2017

Table with columns for room name, area, occupancy, and compliance status (Pass/Fail/NA).

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance May 2016



Revisions



sateline architecture Andrew J. Pawowski, Architect, LEED AP

HVAC System Improvements for Building A BEAR RIVER HIGH SCHOOL 11130 MAGNOLIA ROAD, GRASS VALLEY, CA

12-8-2017 17-174

TITLE-24 ENERGY CALCULATIONS MECHANICAL COMPLIANCE

T24.1

